United States Air Force 611th Civil Engineer Squadron

Elmendorf AFB, Alaska

Final

Addendum to the Work Plan
Galena Airport and Kalakaket Creek Radio Relay Station, Alaska

September 1994

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Galena Airport and Kalakaket Creek
Radio Relay Station, Alaska

Prepared by:
Radian Corporation

September 1994

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This Work Plan, written within the framework of the Installation Restoration Program, describes the work to be performed, explains project objectives, and presents rationale for conducting specific project activities. Companion documents for the current work include the Sampling and Analysis Plan and the Health and Safety Plan.

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Section 1
INTRODUCTION

This document is an addendum to the *Installation Restoration Program (IRP) Stage 3 Work Plan, Galena and Campion Air Force Stations, Alaska* (Radian, June 1992), hereafter referred to as the 1992 Work Plan. The purposes of this addendum are to:

1. Describe the potential Areas of Concern (AOCs) at Kalakaket Creek Radio Relay Station (RRS) (not previously addressed in the original work plan);

2. Describe the work to be performed at Kalakaket Creek RRS in support of the Site Investigations as outlined in the Scope of Work dated 18 July 1994;

3. Describe the additional IRP work to be performed at Galena sites originally described in the work plan; and

4. Outline the investigative activities that will be completed at all sites and AOCs.

This Work Plan Addendum is not intended as a stand-alone document and must be implemented in conjunction with the 1992 Work Plan. This document shares the same basic outline as the 1992 Work Plan; the main sections (i.e. 1.0, 2.0, etc.) correspond to those in the 1992 Work Plan. However, in order to avoid redundancy, the subsections in the addendum contain only the new information.

1.1 Description of Current Study

The current investigation includes the gathering of additional information at Galena Airport sites in support of the RI/FS started in September of 1991. Data will also be gathered to characterize a soil stockpile and floodwater outfall. In addition, the 1994 field efforts will include sampling and field screening of soils collected from Kalakaket Creek RRS, located approximately 22 miles south of Galena Airport, in support of the abandoned installation's Preliminary Assessment/Site Inspection (PA/SI). The locations of Galena Airport and Kalakaket Creek RRS are shown in Figure 1-1. This section outlines the modified project objectives; the methodology used to achieve these objectives is provided in the companion document, the 1994 Addendum to the Sampling and Analysis Plan.

1.1.1 Project Objectives

Galena Airport—The current environmental investigation work planned for Galena Airport encompasses sampling and testing activities at both newly defined areas and previously investigated sites. The overall objective of the project is to conduct a round of groundwater sampling at all existing sites, determine the presence or absence of dioxins at the Fire Protection Training Area (FPTA), assess the impact of pesticide use on surface soils across the main base area, characterize stockpiled soil for treatment, and assess the impact of floodwater outfall on the soils near the Yukon River.

Kalakaket Creek RRS—An initial SI is planned at Kalakaket Creek RRS to identify AOCs and to confirm the presence or absence of contamination at the facility. Data from the investigations will be used to plan additional investigation if required or remove the potential AOCs from the list of possible sites for further investigations. This will be accomplished by conducting a records search and collecting soil samples for field screening and laboratory analysis at identified potential AOCs.

The records search will be initiated prior to the start of field work. The specific goal of the search is to obtain recorded information on all potential AOCs and to determine past waste handling practices at the site. This information will focus the field screening activities on those that are most likely to contain soil contaminants and will help identify sources and types of any contamination. Also included in the records search task are plans to interview past workers at Kalakaket Creek RRS.

The goal of the field-screening task is to quickly and efficiently determine the presence or absence of contamination over larger areas while minimizing the total analytical costs. A subset of those samples collected and screened will be sent to an analytical laboratory for confirmational analysis. Details on the methods that will

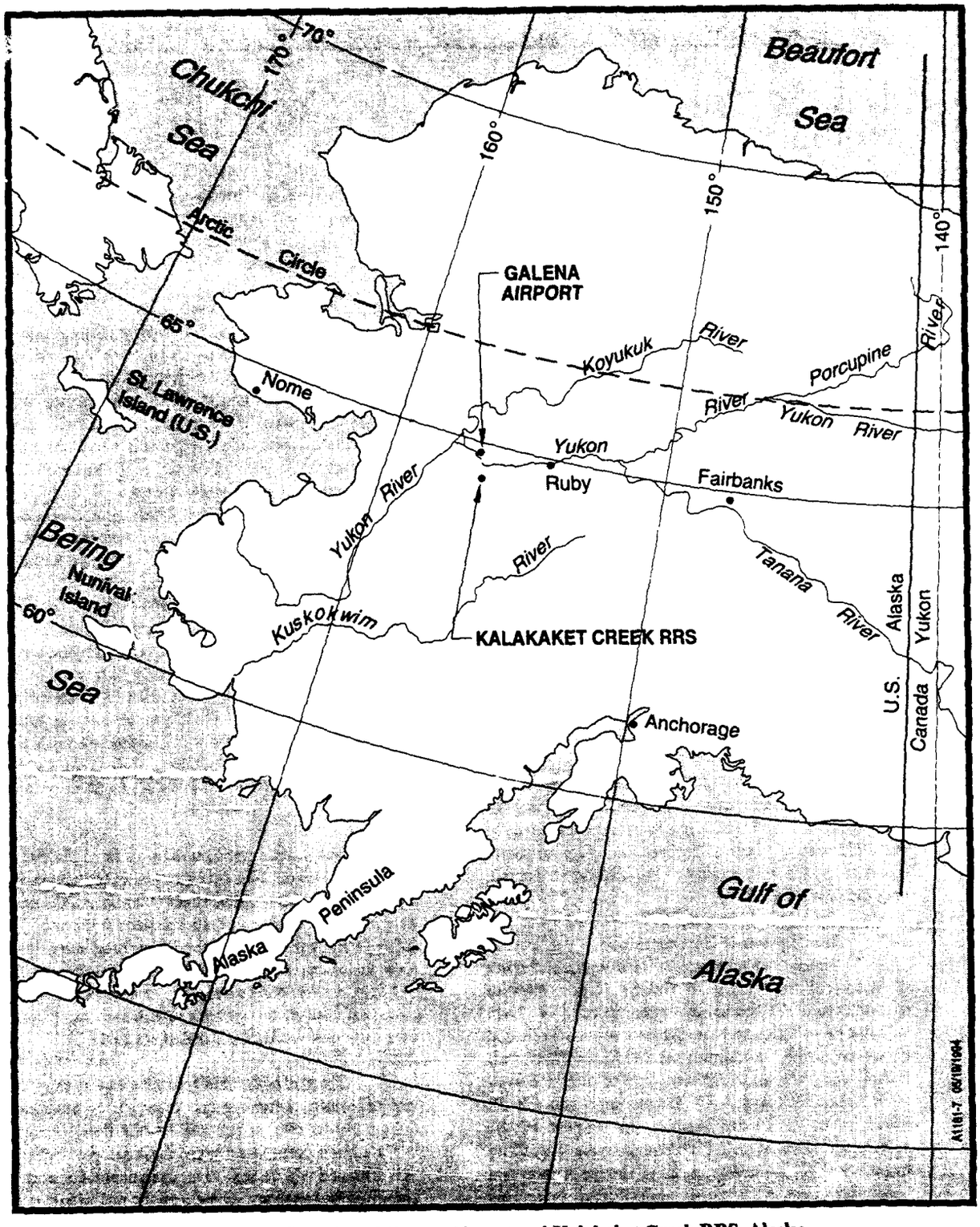


Figure 1-1. Location of Galena Airport and Kalakaket Creek RRS, Alaska

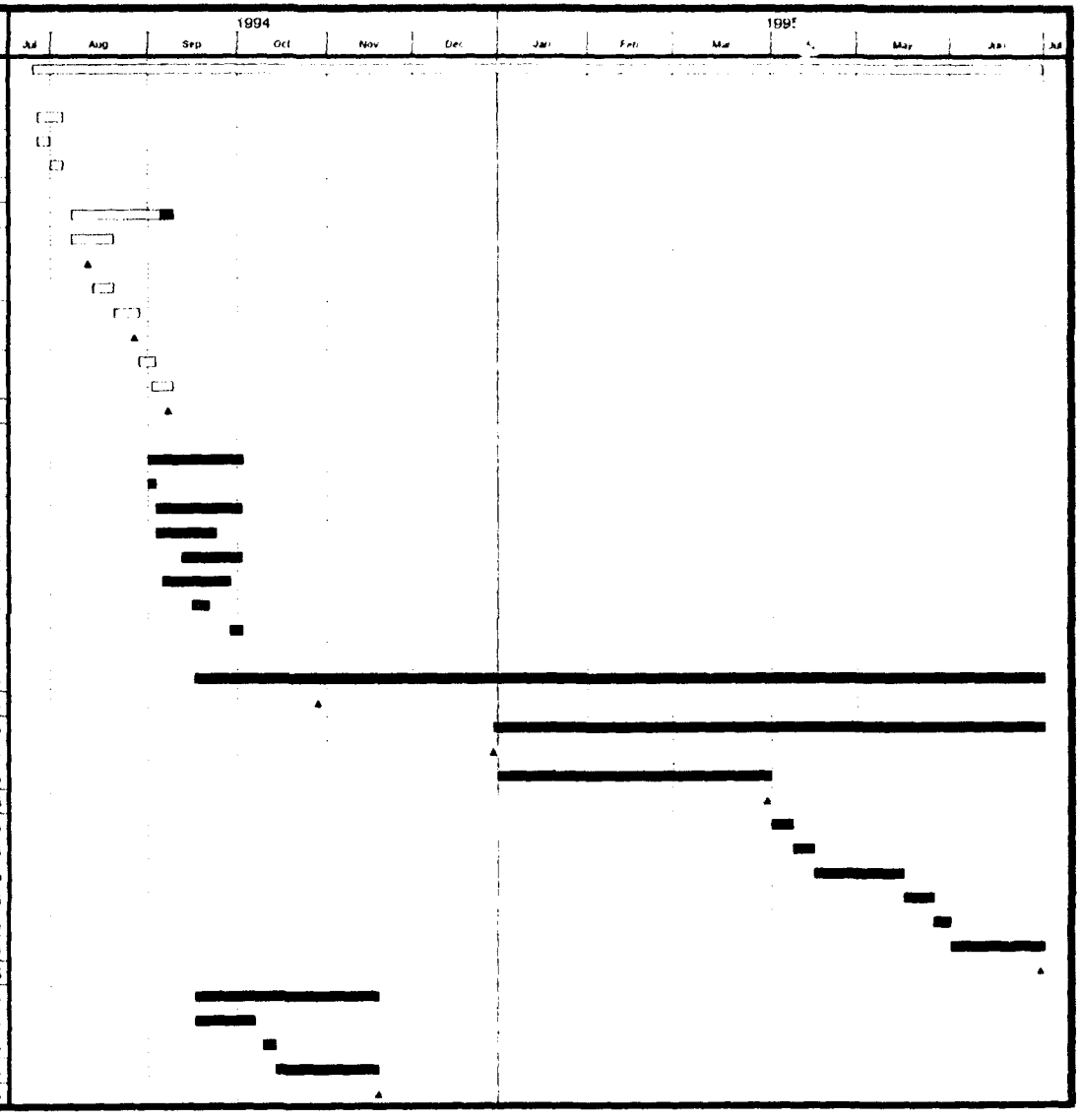
be used to perform the field-screening tasks are given in Section 2.0 of the Addendum to the Sampling and Analysis Plan.

1.1.2 Project Schedule

The project schedule is shown in Figure 1-2.

Figure 1-2. Schedule for Kalakaket Creek RFS PA/SI & Galena Airport RI/FS
1994 - 1995

Task Name	Start Date	End Date
KALAKAKET CREEK PA/SI & GALENA	26-Jul-94	30-Jun-95
SITE ASSESSMENT	27-Jul-94	3-Aug-94
Literature Search	27-Jul-94	29-Jul-94
Kalakaket Site Visit	1-Aug-94	3-Aug-94
SCOPING DOCUMENTS	8-Aug-94	9-Sep-94
Draft Preparation	8-Aug-94	19-Aug-94
Work Plan Outline Submittal	12-Aug-94	12-Aug-94
AFCEE Review of Outline	15-Aug-94	19-Aug-94
Draft Preparation	22-Aug-94	29-Aug-94
Submittal of Review Draft	29-Aug-94	29-Aug-94
AFCEE Review	30-Aug-94	2-Sep-94
Final Document Preparation	2-Sep-94	9-Sep-94
Submittal of Final Documents	**9-Sep-94**	**9-Sep-94**
FIELD INVESTIGATION	1-Sep-94	4-Oct-94
Field Mobilization	1-Sep-94	2-Sep-94
Site Work	6-Sep-94	3-Oct-94
Crew ONE	6-Sep-94	23-Sep-94
Crew TWO	14-Sep-94	3-Oct-94
Galena Investigation	7-Sep-94	29-Sep-94
Kalakaket Investigation	16-Sep-94	22-Sep-94
Demobilization	29-Sep-94	4-Oct-94
REPORTING	19-Sep-94	30-Jun-95
Photo Notebook Due	**28-Oct-94**	**28-Oct-94**
KALAKAKET CREEK PA/SI (1)	30-Dec-94	30-Jun-95
Receipt of Valid Data	30-Dec-94	30-Dec-94
Draft Preparation	3-Jan-95	31-Mar-95
Submittal of Pre Draft Report	**31-Mar-95**	**31-Mar-95**
AFCEE Review of Pre Draft	3-Apr-95	7-Apr-95
Preparation of Final Draft	10-Apr-95	14-Apr-95
AFCEE, ADEC & 611th Rev. Draft	17-Apr-95	15-May-95
Response to Comments	16-May-95	24-May-95
AFCEE Review of Response	25-May-95	31-May-95
Preparation of Final Report	1-Jun-95	30-Jun-95
Submittal of Final Report	**30-Jun-95**	**30-Jun-95**
GALENA/CAMPION RI TECH MEMO(1)	19-Sep-94	16-Nov-94
Prepare Response to Comments	19-Sep-94	6-Oct-94
AFCEE Rev. Response to Comment	11-Oct-94	13-Oct-94
Preparation of Final Report	14-Oct-94	16-Nov-94
Submit Final RI Tech Memo	**17-Nov-94**	**17-Nov-94**



Shaded Events denote Deliverable Submittals
(1) = Estimated Start Date
KCPASIWP
7-Sep-94

Figure 1-2. Project Schedule

Section 2
SUMMARY OF EXISTING INFORMATION

This section contains location-specific information for the new areas of investigation not included in Section 2.0 of the 1992 Work Plan. This includes the soil stockpile and the floodwater outfall at Galena Airport and the Kalakaket Creek RRS.

2.1 Galena Environmental Setting

Descriptions of the environmental setting at each investigation area at Galena were provided in Sections 2.2.1 through 2.2.5 of the 1992 Work Plan. Following completion of the 1992 and 1993 field program, several additional sites were included in the IRP work at Galena. The environmental setting for all existing sites at Galena is summarized in Section 2.0 of the *Draft Remedial Investigation Technical Memorandum* (Radian, May 1994). The following sections identify and describe the new areas of investigation and summarize the existing information for each area. Section 3.0 discusses the tasks that will be conducted at these areas during the 1994 field season.

2.1.1 Stockpiled Soil from Vehicle Maintenance Building Excavation

During the excavating of soils for the construction of the new Vehicle Maintenance Building at Galena Airport, high levels of pesticides DDT, DDE, and DDD were detected in the southwest corner of the building's footprint (Shannon & Wilson, Inc., 1993, 1994). An approved plan was carried out that allowed the pesticide-contaminated soils to be temporarily stockpiled near the site before treatment. A total of 566 cubic yards of soil was placed in Block 9, Lot 9 of Galena Airport, across the street from the Birchwood Hangar. The pile currently measures 70 ft by 70 ft, is covered with black plastic, and is enclosed by a temporary fence. Appendix A includes a draft report and addendum outlining the results of pesticide sampling at the new Vehicle Maintenance Building, as well as correspondence regarding the work at this location.

A surface soil sample collected at the excavation site contained 1,154 mg/kg total DDT (DEC letter dated 6 January 1994). Additional samples collected at the site by the Air Force contained 1.3 mg/kg to 150 mg/kg DDT. Grab and composite samples taken from eight truckloads of soil during the stockpiling activities contained between 0.20 mg/kg and 3.42 mg/kg total DDT. These data are also included in Appendix A. The purpose of the 1994 investigation is to collect and analyze a sufficient number of soil samples from the stockpiled soil to statistically characterize the level of pesticide contamination. The maximum and average concentration of target pesticides will be determined as well as the potential location of contaminant hotspots within the stockpile.

2.1.2 Floodwater Pump Station Outfall

EPA Region X has requested that the Air Force collect samples from the floodwater pump station outfall located outside the dike near the Yukon River. Floodwater and surface runoff originating as snow melt at breakup collects in the southwestern portion of the diked area of Galena Airport. Pumps transfer the water outside the dike where it is released near the Yukon River. Since soil contamination is present within the dike at Galena Airport, the potential exists for the transfer of contaminants to the floodwater outfall through surface water pathways. Soil samples from the point of release will be collected and analyzed to detect if the area has been contaminated from floodwater pumping.

2.2 Kalakaket Creek RRS Environmental Setting

The regional meteorological and geological environmental setting is summarized in Section 2 of the Draft RI Technical Memorandum. Site specific environmental setting is described in detail in the *Installation Restoration Program Preliminary Assessment, Kalakaket Creek RRS, Alaska* (HMTC, April 1989) and *Preliminary Assessment Kalakaket Creek* (CH2M Hill, January 1994) and is briefly summarized below.

The RRS facility was constructed on the top of a mountain composed of metamorphic igneous rock. It was reported that blasting was required to level the site prior to the start of construction (Danny Patrick, personal communication, August 1994). Two test pits excavated and logged by the U.S. Army Corps of Engineers in 1956 show that the upper 2 to 4 feet (ft) was composed of cobbles, boulders, gravel and voids. Below this unit to a

depth of 7 ft was a unit composed of gravel, cobbles, boulders, and approximately 30 percent silt. Bedrock that was encountered at 7 ft bgl was composed of dense and massive greenish-grey greywacke and quartzite. The bedrock was slightly weathered to a depth of approximately 3 inches from the top of the solid rock. Minor fractures that trend east-west were observed in one of the two test pits. No groundwater was observed in either test pit.

While specific groundwater data are not available for the site, some inferences can be made on the basis of regional geology and topography. It is unlikely that shallow groundwater exists beneath the site. The soils are very shallow and the local bedrock does not appear to be extensively fractured. If groundwater is present at the site, it is restricted to fracture traces or faults that provide conduits for water movement through the bedrock. Surface water runoff probably plays a more important role in the migration of precipitation from the site. Kalakaket Creek, located approximately 3,900 ft west of the site, and an unnamed tributary of Kala Creek, located approximately 3,000 ft east of the site, are the closest surface water to the site. A shallow well dug into the alluvial aquifer of the unnamed tributary supplied Kalakaket Creek with its potable water.

The management of fish and wildlife is the only known surface water use in the area. Even though the potential sources at the areas of concern are unlined, surface water is not believed to be a significant pathway for the transfer of contaminants from the site. There are no sufficient surface water bodies within a mile of the site and the amount of surface drainage originating from the site that flows into the local creeks is believed to be a very small percentage of the total surface water discharge of the watershed (CH2M Hill, 1994).

2.2.1 Antenna Day Tanks

Each tropospheric and microwave antenna was originally constructed with several large furnaces and blowers to keep the antenna from icing in the winter. A day tank with a capacity of 1,500 to 1,000 gallons was installed below each antenna to provide fuel for the furnaces. A total of 6 day tanks were installed at the site. Interviews with persons involved with the operation of the facility suggest that these furnaces were not used during the operation of the facility (Danny Patrick, personal communication, August 1994). The tanks were installed above ground on concrete saddles and were connected to the large fuel storage tanks by a 2 inch pipe that was buried at least 18 inches below grade. Recently located as-built drawings indicate that two potential low-point drains may have been present in the fuel lines. During the August 1994 site visit, some surface staining on the soil located immediately beneath the tank valves was observed. It also appears that the buried fuel lines have been cut and partially removed. All tanks are currently empty.

2.2.2 Vehicle Maintenance Garage (VMG)

A 2000 ft^2 garage, located in the northern portion of the top camp, was used for vehicle storage and maintenance. There appear to be no floor drains in the concrete floors of the facility. However, waste oils and other liquids may have been poured onto the ground in the areas around the doors of the facility. Soil staining was observed next to the building by the front garage door. An oil furnace that is located in the southwest corner of the building was supplied with furnace oil via a 2-inch underground pipe that connected the furnace with the large bulk fuel tanks. Potential exists for the contamination of soils from the release of waste motor oil, fuels, solvents, and antifreeze.

2.2.3 Paint Storage Building

A 640 ft^2 storage facility, located approximately 200 ft northeast of the VMG, was used for the temporary storage of paints, thinners and other small containers of chemicals during the operation of the facility. The building has been partially demolished and no walls are standing. The collapsed walls are partially covering the concrete slab and the surrounding soil. There is a possibility that spills or releases of chemicals stored at the facility could have occurred around the facility.

2.2.4 Equipment Building

Large diesel generators were used to provide power for the radio relay site. These generators were kept in the eastern portion of the Equipment Building. Fuel was delivered to the generators through a buried 2-inch pipeline from the bulk fuel storage containers located approximately 200 ft south of the building. Standard maintenance practices may have resulted in the spill/release of waste oil, solvents, and fuels around the building. Typically, in the past at similar sites, waste liquids have been poured on the ground close to the building doors. Some soil staining and vegetative stress were noted in the area around the eastern door to the facility. However, this area also appears to correspond to

the building's parking lot, and the soil staining may be the result of small leaks from vehicles.

2.2.5 Equipment Building Transformers

A 208 to 2,300 volt three phase transformer was located on a concrete pad adjacent to the southern wall of the Equipment Building. Leaks or maintenance activities have resulted in the release of insulating oils that contain PCB. During the cleanup activities conducted by the 5099th CEOS in 1984, PCB-contaminated soils were removed from the area surrounding the concrete transformer pad. Soils containing greater than 50 ppm PCB were drummed and removed from the site. It is assumed that the soils were screened in the field using a chlorinol-type test kit, which were commonly employed by the Air Force at remote sites (CH2M Hill, 1994). The excavation has remained open since the initial cleanup activities.

2.2.6 Fuel Oil Tank Fill Area

Two 3,000 barrel aboveground storage tanks are located in the southeast portion of top camp and used to store fuel oils for the generation of heat and electricity. These tanks were filled from trucks that ferried the diesel from a temporary storage tank located adjacent to the runway. A standpipe that appears to drain into an above-ground barrel filled with gravel may have served as the fill point for the tanks. It has also been reported that the tanks may have been periodically dewatered at this valve and standpipe located north of the tanks. Diesel fuel may have been released to the ground during this process.

2.2.7 Septic Tank Outfall

Wastewater generated at the facility flowed into a heated and insulated septic tank south of the Dormitory Building. The effluent from the tank was released onto the ground from a heated discharge pipe. The point of release is the steep hill slope south of the facility. The ground at this point is covered predominantly with large rocks and gravel. There appeared to be no stress to the vegetation at the discharge point during the August 1994 site visit. Sink drains in the facility may have been used to dispose of small quantities of waste liquids other than water. It has been determined that at similar installations, this was a common method of disposal of some chemicals.

2.2.8 Drum Storage Areas (DSA)

Three potential areas of past drum storage have been identified at Kalekaket Creek RRS. One of the sites occurs approximately 100 ft north of the VMG. This area is referred to as the "barrel storage dock" on a 1963 survey map completed by the U.S Army Corps of Engineers. Currently the site is not readily apparent. It is assumed that the open gravel area may mark the location of the site. An isolated drum bung was observed on the ground during the August 1994 site visit. However, it was reported that due to the consistently high winds that occur on the top of the mountain, empty or partially full drums were seldom stored at the facility (Danny Patrick, personal communication, August 1994).

The other two DSAs were located at the eastern end of the runway. All drums have been removed from these sites, and the DSA located on the southeastern portion of the runway is being taken over by the growth of alders and willows. PCB-contaminated soil was removed from this DSA in 1984. Soil staining is presently common at the DSA located north of the eastern edge of the runway. Recent review of as-built drawings and high-altitude aerial photos suggest that this may also be the location of the installations refuse landfill. The aerial photos show an area of disturbed vegetation approximately 1,000 ft north of the runway. Since all chemicals used during the operation of the facility were shipped in drums or smaller containers, it is possible that spills from a variety of chemicals could have occurred at these sites.

2.2.9 Temporary Garage

A temporary garage located south of the central portion of the runway was used for storage of vehicles and possibly refueling activities in the winter. Currently, only the building foundation remains at the site. The concrete floor has no visible floor drains and staining is not common. Some light maintenance may have occurred at the site that resulted in the release of motor oil, fuels, solvents, or antifreeze.

2.2.10 Temporary Diesel Tank

A 1,000-barrel diesel aboveground storage tank is located south of the western portion of the runway. The tank was filled from off-loading planes and was later pumped into trucks that ferried the diesel to the 3,000 barrel tanks at top camp. The tank was periodically dewatered at a valve and standpipe located south of the

tank. Diesel fuel may have been released to the ground during this process.

2.2.11 Water Pump House

Potable water was supplied to the top camp by pumping surface water and shallow groundwater from an unnamed tributary of Kala Creek located approximately 1 mile east of the site. Diesel-powered pumps were used to fill the two 216,000 and 110,000 gallon storage tanks which provided enough water to last through the long winter. A diesel day tank may have been used to store fuel for the pumps at the Pump House. Spills of fuel may have resulted from filling activities that occurred at the site.

Section 3
REMEDIAL INVESTIGATION FIELD TASKS

This section describes the general field activities that will be conducted at Galena Airport and Kalakaket Creek RRS during the 1994 field season. These activities include the RI/FS sampling that will be conducted in support of the Galena IRP investigation as well as sampling to characterize stockpiled soil for the design of remedial systems for treatment of the soil. Investigations at Kalakaket Creek RRS are centered around the inspection of AOCs and the subsequent sampling of soils to determine presence or absence of contamination. Field screening techniques will be used at both Galena Airport and Kalakaket Creek RRS to gather real-time data and tailor the selection of laboratory analytical sampling sites to best achieve site specific goals and objectives.

3.1 Site Objectives

There are three main objectives of the 1994 site investigation activities that will be conducted at Galena Airport. The first objective is to gather groundwater and soil data that will be used in support of the RI/FS to fully characterize the sites for health risk assessment, assess migration and degradation of contaminants in groundwater, and quantify the contaminated media volumes for the feasibility study. The second objective of the Galena field investigation is to characterize the contaminant levels in the stockpiled soils to aid in the accurate design of a remedial system to treat the material. The final objective of the investigation is to determine the presence or absence of soil contamination at the floodwater pump station outfall.

The objective of the SI that will be conducted at Kalakaket Creek RRS is to identify all AOCs and determine the presence or absence of contamination by using a combination of field screening and laboratory analytical techniques.

3.2 Field Investigation: Galena Airport

This section outlines the site-specific field tasks and sampling activities proposed for each of the previously investigated sites and the new areas of investigation at Galena Airport. These activities are given in Tables 3-1 and 3-2. Field activities have been scheduled for the following previously investigated sites and areas of interest (as described in the 1992 Work Plan, the Draft Remedial Investigation Technical Memorandum (Radian, May 1994), and in Section 2.0 of this Work Plan Addendum):

- FPTA;
- POL Tank Farm Area;
- Waste Accumulation Area (located within the West Unit);
- West Unit;
- Control Tower Drum Storage Area South;
- Ambient Location; and
- Base Water Supply Wells.

New areas of interest that will be investigated during the 1994 field season are the following:

- Stockpiled Soil containing DDT; and
- Floodwater Pump Station Outfall.

The locations of these areas of investigation are shown in Figure 3-1.

3.2.1 Groundwater Sampling

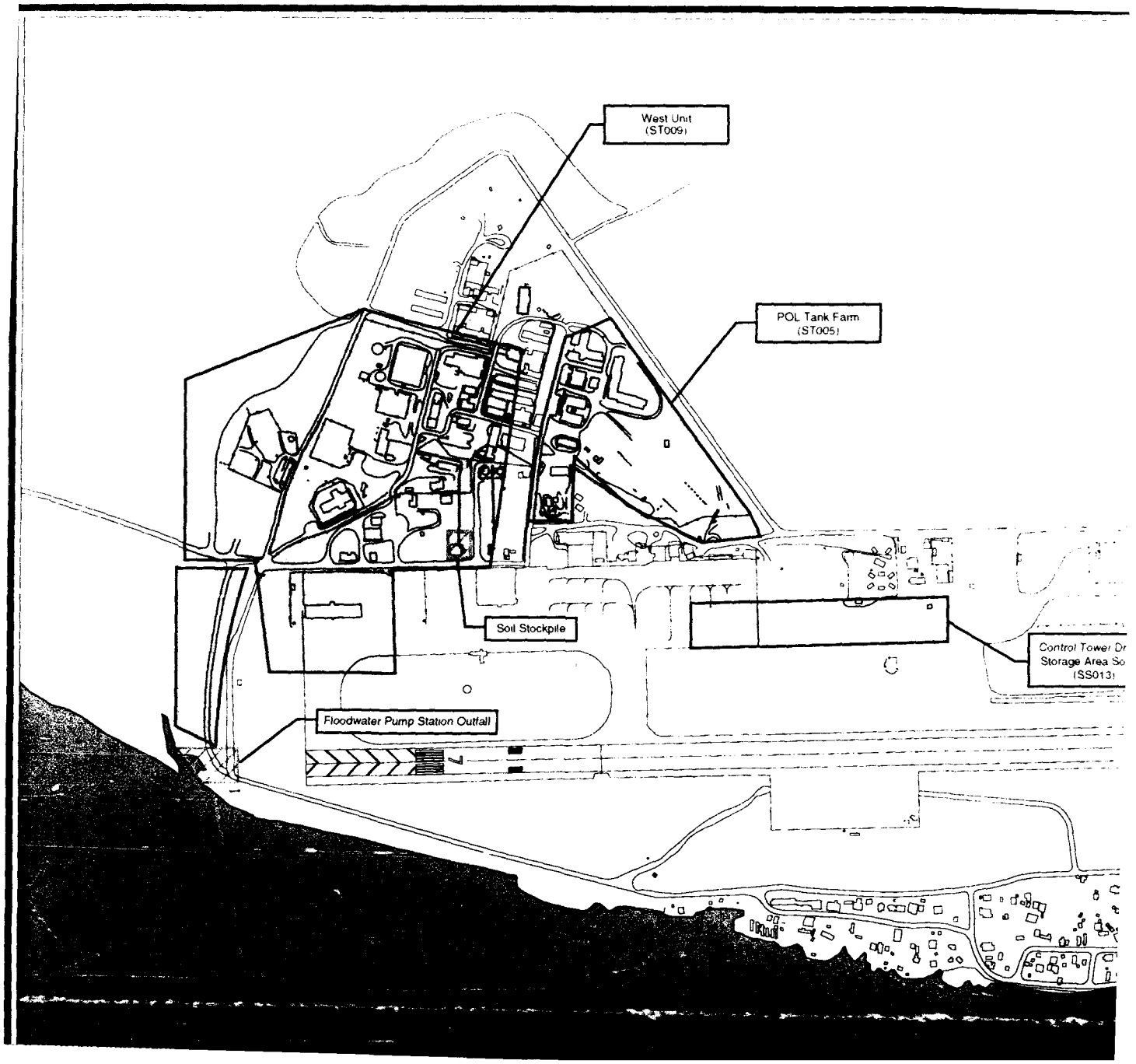
Groundwater samples will be collected from 40 monitoring wells and three water supply wells that were previously installed at these sites and areas of interest. The purposes of the groundwater sampling task are to assess the current level of contamination at previously defined sites, to identify any further migration of contaminant plumes, and to determine trends in contaminant concentrations over time. The wells that are targeted for sampling include those that have historically contained measurable levels of contaminants and those that are located potentially downgradient of known contaminant plumes or source areas. Table 3-3 lists the wells that are planned for sampling during the 1994 field season; Plate A shows the locations of these wells.

Table 3-1
Summary of Soil Sampling Activities at Kalakaket Creek RRS and Galena Airport, Alaska 1994

Sampling Locations	Field Screenings			Laboratory Analysis						
	TPH	PCB	DDT/Pest.	AK101	AK102	8240	8270	8080	6010	8280
KALAKAKET CREEK										
Ambient Location									4	
Antenna Day Tanks	8			2	2					
Vehicle Maintenance Garage	8			4	4	4	4		4	
Paint Storage Building						4	4	4	4	
Equipment Building	10	10		4	4	4		4	4	
Equipment Building Transformers		10						4		
Diesel Tank Fill Area	6			3	3					
Septic Tank Outfall				1	1	1	1	1	1	
Drum Storage Area	18	18	18	4	4	4	4	4	4	
Temporary Garage	8			2	2				2	
Temporary Diesel Tank	4			1	1					
Water Pump House	4			1	1					
SUBTOTALS	66	38	18	22	22	17	13	17	23	0
GALENA										
Fire Protection Training Area										6
Main Base			30					15		
Pump Station Outfall				4	4	4	4	4	4	
DDT Stockpiled Soil								15		
SUBTOTALS	0	0	30	4	4	4	4	34	4	6
TOTALS	**66**	**38**	**48**	**26**	**26**	**21**	**17**	**51**	**27**	**6**
Galena	**GROUNDWATER SAMPLING**									
Monitoring Wells				38	38	38[a]	32	38	6[b]	
Base Water Supply Wells				3	3	3[a]		3	0	
TOTALS	**0**	**0**	**0**	**41**	**41**	**41[a]**		**41**	**6[b]**	**0**

Table 3-2
Summary of Water Sampling Activities at Galena Airport, Alaska 1994

Sampling Locations	AK101	AK102	8260	8270	8080	6010/7060/7421
Ambient Location						2
FPTA	6	6	6		6	
POL Storage Area	10	10	10	10	10	
West Unit	19	19	19	19	19	
Control Tower Drum Storage Area	3	3	3	3	3	3
Base Water Supply Wells	3	3	3	3	3	
TOTALS	41	41	41	35	41	6


West Unit
(ST009)
POL Tank Farm
(ST005)
Soil Stockpile
Floodwater Pump Station Outfall

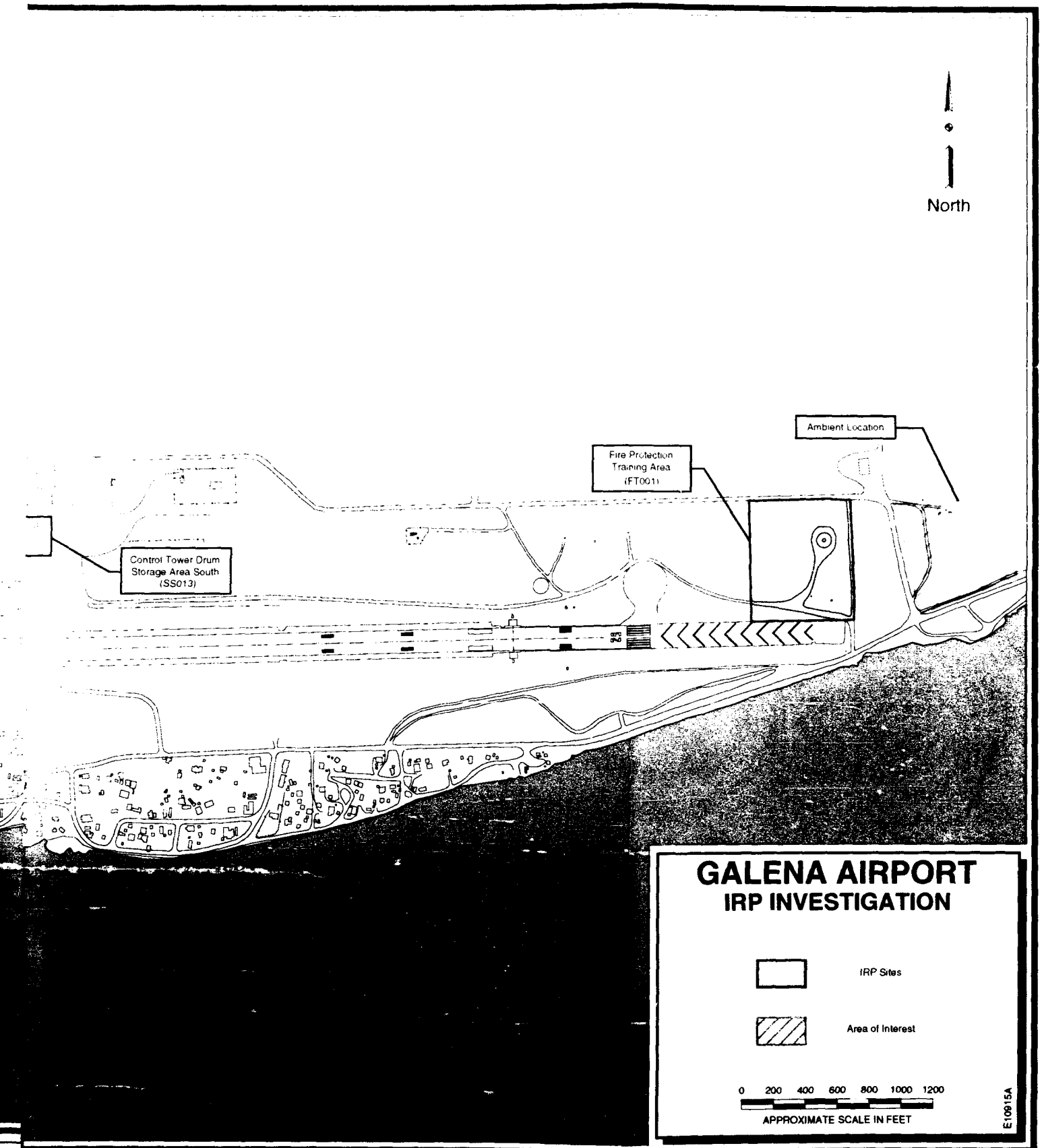


Figure 3-1. Location of Areas of Investigation
Galena Airport, Alaska

Table 3-3
Summary of Proposed Well Samples

AMBIENT LOCATION	WEST UNIT (Sites 06, 09, AND 10)
04-MW-02	06-MW-01
04-MW-03	06-MW-02
FPTA	06-MW-03
01-MW-01	06-MW-04
01-MW-02	06-MW-05
01-MW-05	06-MW-06
01-MW-06	06-MW-07
01-MW-07	09-MW-01
01-MW-08	09-MW-02
POI AREA	09-MW-03
05-MW-02	09-MW-04
05-MW-03	09-MW-05
05-MW-04	09-MW-06
05-MW-05	09-MW-08
05-MW-06	09-MW-12
05-MW-07	09-MW-15
05-MW-11	10-MW-01
05-MW-13	10-MW-03
05-MW-14	10-MW-04
05-MW-15	**WATER SUPPLY WELLS**
CONTROL TOWER DSA	WELL #1
MW-037	WELL #3
MW-038	WELL #7
MW-039	

3.2.2 Soil Sampling

Soil samples will be collected at the FPTA, the West Unit, the POL Area, the DDT-contaminated soil stockpile, and the floodwater pump station outfall. Three soil sampling locations from within the burn pit at the FPTA will be sampled at the surface and 5 ft bgl. The samples will be analyzed in the laboratory by Method SW 8280 to determine the presence or absence of dioxins in the soil at the site.

Pesticides have been detected in the soils at low levels across the installation and at high levels during the excavation for construction of the new Vehicle Maintenance Building. In an effort to identify potential hotspots of pesticide contamination in the soil, additional surface soil samples will be collected from across the POL and West Unit. The area of investigation covers a majority of the main base triangle as defined by the dike to the northeast and northwest and the paved tarmac to the south. A statistical analysis on the distribution of previously conducted surface soil sampling locations is being conducted. The analysis will determine the number and placement of additional soil samples that are required to detect hotspots of a given size with a given confidence. The hotspot that was found during the excavation of the new Vehicle Maintenance Building measured approximately 70 ft by 70 ft. Therefore, efforts will be made to locate other hotspots of this approximate size with a confidence of 80 percent. It is currently assumed that 45 sample locations will be required across the area but this may be changed after the statistical analysis is completed.

To collect real-time data and minimize sample analytical costs, a combination of field screening and laboratory analysis will be used to assess pesticide levels in soils. An immunoassay field test kit that is capable of detecting combined DDT, DDD, and DDE, at levels of 0.1, 1.0, and 10 ppm will be used to detect pesticides in soils from 30 locations. Based on the results of these initial screening samples, soil samples from an additional 15 sampling locations will be sampled and submitted to an analytical laboratory for analysis by Method SW8080.

Soils containing DDT contamination were removed from the excavation at the new Vehicle Maintenance Building construction site and stockpiled across from the Birchwood Hanger. A design of a remedial method for reducing the level of pesticides in the soils through on-site treatment will be conducted beginning in the fall of 1994. To support that effort, soil samples will be collected to determine the statistical average and maximum concentration of pesticides in the soil as well as any potential area of abnormally high pesticide concentrations. Currently it is anticipated that up to 15 soil samples will be required. Since the soils have been partially mixed during excavation, loading onto the trucks, dumping, and grading, it is assumed that the soils have been locally homogenized. Therefore, samples collected from the surface (0 to 6 inches deep) should be representative of the vertical column of soil at that point. The surface soil samples collected at the site will be analyzed in the laboratory using Method SW8080.

Two surface soil samples will be collected from the floodwater pump station outfall area and submitted to an analytical laboratory for analysis by methods AK101, AK102, SW8240, SW8270, SW8080, and SW6010. The results of the analyses will determine if the soils at the outfall have been contaminated by the release of floodwater pumped from within the dike.

3.3 Field Investigation: Kalakaket Creek RRS

This section outlines the specific field tasks and sampling activities that will be conducted at the AOCs that were identified in past PAs, additional literature searches, and the August 1994 site visit. All AOCs will be visibly inspected to determine the presence of surficial soil staining or vegetative stress. Field activities will be documented with the aid of photographs that will be compiled and presented in a photo notebook. A combination of field screening and laboratory analysis of soil samples collected at each AOC will provide information concerning the presence or absence of contaminants. The AOCs that will be investigated during this SI are shown on Figures 3-2 and 3-3 and include:

- Antenna Day Tanks;
- Vehicle Maintenance Garage;
- Paint Storage Building;
- Equipment Building Spill Area;
- Equipment Building Transformer;
- Fuel Oils Storage Tank Fill Area;
- Septic Tank Outfall;
- Drum Storage Areas;
- Temporary Vehicle Garage;
- Temporary Fuel Tank Fill Area; and
- Water Pump House.

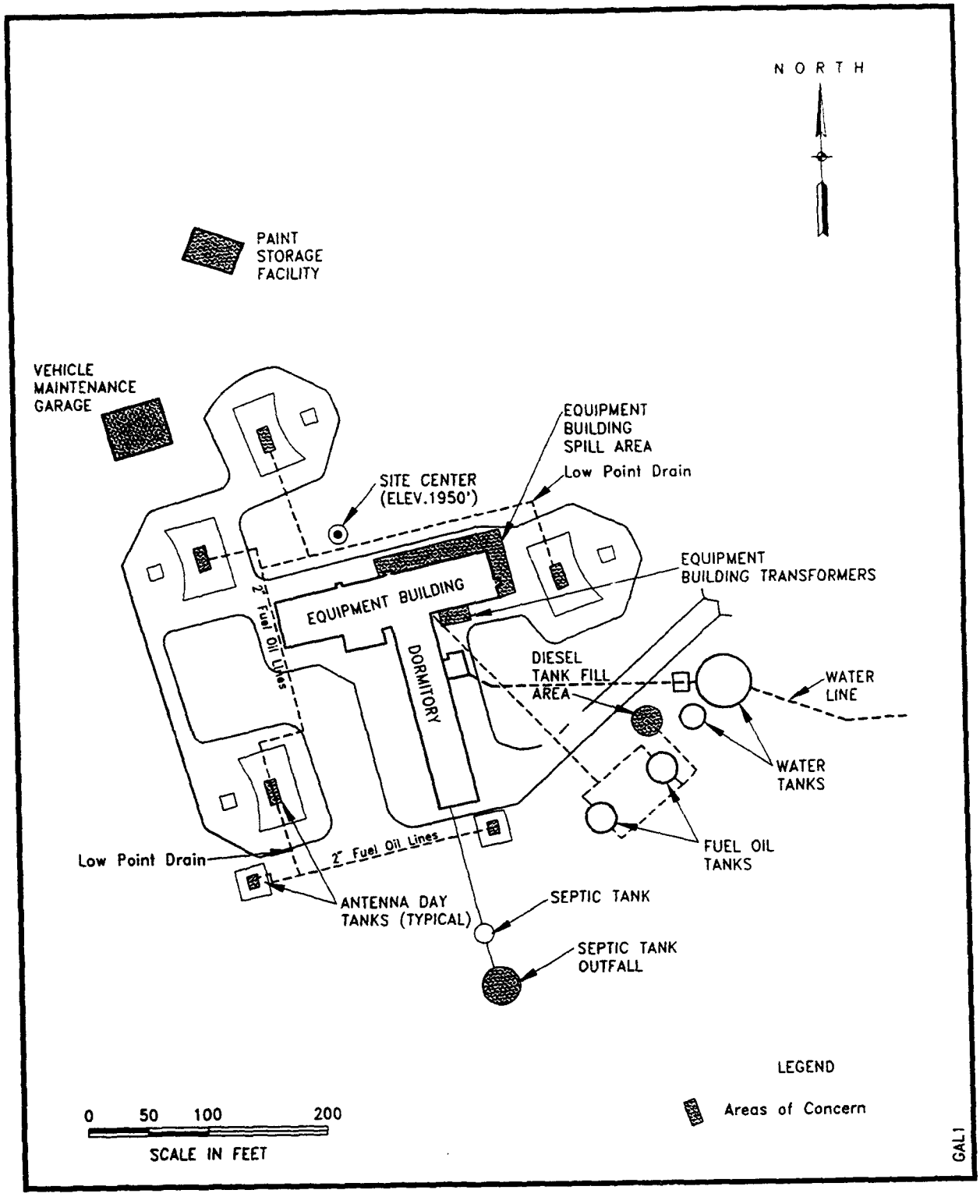


Figure 3-2 Location of Top Camp Areas of Concern, Kalakaket Creek RRS, Alaska

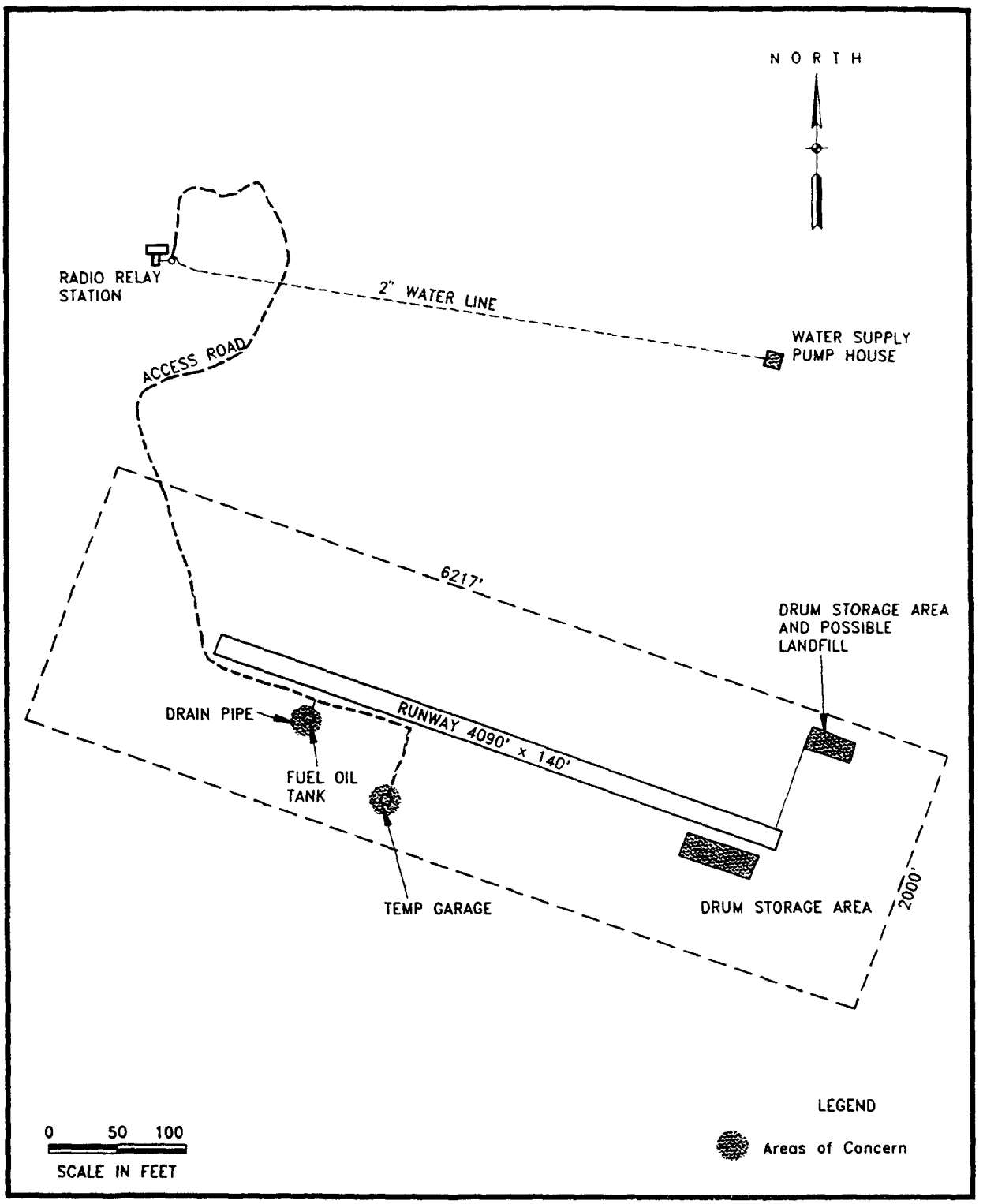


Figure 3-3 Location of Runway Areas of Concern, Kalakaket Creek RRS, Alaska

In addition to these locations, the field team may discover new AOCs during the SI at Kalakaket Creek RRS. A project team decision may be made to collect samples from any newly discovered AOCs. An ambient location will also be chosen and sampled to determine the natural background levels of metals in the area of Kalakaket Creek RRS.

Antenna Day Tanks—Each tropospheric antenna was originally constructed with several large furnaces and blowers to keep the antenna from icing in the winter. Six day tanks with a capacity of 1,000 to 1,500 gallons were installed below the antennas to provide fuel for the furnaces. Some soil staining below the tank valves was observed during the site visit. To determine if the fuel oil stored in these tanks has been released or leaked onto the ground, the following soil sampling will be conducted. One surface soil sample from each well-defined valve pit and each low point drain in the fuel lines that connect the tanks will be collected. The samples will be analyzed in the field using the field infrared (IR) total petroleum hydrocarbon (TPH) analyzer. If TPH is detected, up to four samples will be submitted to an analytical laboratory for confirmation analysis by methods AK101 and AK102. A sample with a screening result less than the method detection limit may also be submitted to help assess the accuracy of the field method.

Vehicle Maintenance Garage (VMG)—A 2000 ft^2 garage, located in the northern portion of the top camp, was used for vehicle storage and maintenance. There appear to be no floor drains in the concrete floors of the facility. However, waste oils and other liquids may have been poured onto the ground in the areas around the doors of the facility. Soil staining was observed next to the building by the front garage door. The sampling protocol for the VMG includes the collection of eight surface soil samples that will be analyzed in the field using the field IR TPH analyzer. Headspace analysis will also be conducted on the samples to assess the possible contamination from volatile constituents. The samples will be collected from the general areas around the doors of the facility but the exact locations will be determined in the field based on evidence of spills/releases (stained soil or vegetative stress). Four samples with a range of TPH and/or VOC content will be submitted to an analytical laboratory for analysis by methods AK101, AK102, SW8240, SW8270, and SW6010.

Paint Storage Building—A 640 ft^2 storage facility located to the east of the VMG was used for the temporary storage of paints, thinners, and other small containers of chemicals during the operation of the facility. The building has been partially demolished and no walls are standing. Eight soil samples will be collected from the areas near the former storage facility doors. Headspace analyses will be conducted on these samples to assess the possible presence of VOCs in the soils. Based on the results of the headspace analysis, four samples will be selected and submitted to the analytical laboratory for analysis by methods SW8240, SW8270, SW8080, and SW6010.

Equipment Building—Large diesel generators were used to provide power for the radio relay site. Standard maintenance practices may have resulted in the spill/release of waste oil and solvents around the building. Typically at similar sites, waste liquids were poured on the ground close to the building doors. Some soil staining and vegetative stress was noted in the area around the eastern door to the facility which may coincide with the RRS parking area. Ten surface soil samples will be collected from the area around the doorways and from areas with observable soil staining. These samples will be screened in the field for TPH using a field TPH analyzer and for PCBs using an immunoassay test kit. Up to four samples will be sent to an analytical laboratory for analysis by methods AK101, AK102, SW8240, SW8080, and SW6010. Samples with screening results less than the method detection limits for TPH and/or PCBs may be submitted for laboratory analysis to help assess the accuracy of the field method.

Equipment Building Transformers—PCB-contaminated soils were removed from the area surrounding the concrete transformer pad on the southeast side of the equipment building. To confirm that all contaminated soil has been removed, 10 surface soil samples will be collected and analyzed in the field for PCBs using an immunoassay field test kit. Up to four samples, with a range of PCB screening results, will be sent to an analytical lab for confirmation PCB analysis by Method SW8080.

Diesel Tank Fill Area—Two 3,000-barrel diesel aboveground storage tanks are located in the southeast portion of top camp. These tanks were filled from trucks that ferried the diesel from a temporary

storage tank located adjacent to the runway. The tanks may have been filled and periodically dewatered at a valve and standpipe located north of the tanks. Therefore, diesel fuel may have been released to the ground during this process. Six surface soil samples will be collected from this area and analyzed in the field using a field TPH test kit. Sample locations will be established in the field based on proximity to the standpipe and observed signs of spills. Up to three samples will be sent to an analytical laboratory for confirmation analysis by methods AK101 and AK102.

Septic Tank Outfall—Wastewater generated at the facility flowed into a heated septic tank south of the facility. The effluent from the tank was released onto the ground from a heated discharge pipe. Sink drains in the facility may have been used to dispose of small quantities of waste liquids other than water. One surface soil sample will be collected from the septic tank outfall area and submitted to an analytical laboratory for analysis by methods AK101, AK102, SW8240, SW8270, SW8080, and SW6010.

Drum Storage Areas (DSA)—Three areas of possible past drum storage have been identified at Kalakaket Creek RRS. All drums have been removed from the site and the areas are being reclaimed by local vegetation. PCB contaminated soil was removed from the DSA located south of the runway in 1984. Soil staining is common at the DSA located north of the runway while there is little evidence of the existence of the DSA located approximately 200 ft north of the VMG at the top camp. Eighteen soils samples will be collected (6 from each DSA) and screened in the field using a field TPH analyzer and PCB and DDT immunoassay field test kits. Sampling locations will be established in the field based on signs of surface soil contamination and past soil excavation. Four samples will be submitted to an analytical laboratory to assess the accuracy of the field screening method. The samples will be analyzed by methods AK101, AK102, SW8240, SW8270, SW8080, and SW6010.

Temporary Vehicle Garage—A temporary garage located south of the runway was used mainly for storage of vehicles and possibly refueling activities in the winter. Presently only the building foundation remains at the site; the concrete floor has no visible floor drains. Eight surface soil samples will be collected from the areas around the former doors of the facility. These samples will be analyzed in the field using an IR TPH analyzer. Up to three samples, with a range of TPH concentrations, will be sent to an analytical laboratory for confirmation analysis by methods AK101, AK102, and SW6010.

Temporary Diesel Tank—A 1,000-barrel diesel aboveground storage tank is located south of the runway. The tank was filled from off-loading planes and was later pumped into trucks that ferried the diesel to the 3,000-barrel tanks at top camp. The tank may have been periodically dewatered at a valve and standpipe located south of the tank resulting in the release of diesel fuel during this process. Four soil samples will be collected from this area and analyzed in the field using an IR TPH test kit. One sample will be sent to an analytical laboratory for confirmation analysis by methods AK101 and AK102.

Water Pump House—Potable water was supplied to the top camp by pumping surface water from an unnamed tributary of Kala Creek located approximately one mile east of the site. Diesel pumps were used to fill the two 200,000-gallon storage tanks, which provided enough water to last through the long winter. A diesel day tank may be present at the Pump House. The site will be inspected for any sign of soil staining or vegetative stress. Four surface soil samples will be collected and analyzed in the field using an IR TPH test kit. Based on the results of the analysis, a confirmation sample may be sent to an analytical laboratory for analysis by methods AK101 and AK102.

Other Unidentified AOCs—During the SI, additional potential AOCs may be discovered. The field sampling team may collect additional field screening samples to assess possible contamination at newly discovered AOCs. If the screening results suggest that contamination is present, the field team will communicate with the Alaska Restoration Team Chief and the Base IRP Project Manager, via Mike Green, the Contract Project Manager, to discuss the collection of additional laboratory samples from the soils at the AOC. One possible AOC that has yet to be confirmed is the facility's refuse landfill. Recently acquired aerial photographs suggest that the landfill may have been located north of the eastern end of the runway. This AOC may coincide with one of the DSAs. If it is located, the site should be delineated through surface inspection, if possible. There are currently no plans to assess any subsurface occurrence of contamination at the site.

Ambient Location—Four soil samples will be collected from an area near the Kalakaket Creek RRS deemed unaffected by installation activities, based on relative location and field observations. These samples will be analyzed for metals only to determine the background levels of naturally occurring elements.

Section 4
REPORTING REQUIREMENTS

This section describes the supplemental reporting requirements specified in the Statement of Work (Appendix B), and not contained in the 1992 Work Plan.

4.1 Informal Technical Information Reports (ITIRs)

As outlined in the SOW (18 July 1994) three ITIRs are scoped for delivery following the completion of the field investigation. An Analytical Data ITIR will be submitted that includes all analytical data, QC results, and cross reference tables. The Ecological and Baseline Risk Assessment ITIR will be completed in draft and final form. IRP data from Galena Airport will be loaded in to Installation Restoration Program Information Management System (IRPIMS) Data Management batch load files. These files will be developed in accordance with the IRPIMS Data Loading Handbook and delivered in electronic format.

4.2 Technical Reports

The results of the Kalakaket Creek RRS SI will be documented in a PA/SI Report. The report will document the result of the literature search, describe the site's environmental setting, and identify potential sources of contamination that may require additional investigation. In addition to the Technical Report, an annotated photo notebook will be prepared that documents all field activities.

Section 5
REFERENCES

CH2M Hill, *Preliminary Assessment, Kalakaket Creek*, January 1994.

Hazardous Materials Technical Center, *Installation Restoration Program, Preliminary Assessment, Kalakaket Creek Radio Relay Station, Alaska*, April 1989.

Patrick, Danny, Personal Communication, Interview with Todd Council, August 1994.

Radian Corporation, *Draft Installation Restoration Program, Remedial Investigation/Feasibility Study, Galena Airport and Campion Air Force Station, Alaska*, May 1994.

Radian Corporation, *Installation Restoration Program, Work Plan, Stage 3, Galena and Campion Air Force Stations, Alaska*, June 1992.

Shannon & Wilson, Inc. Field Report, *Excavation of POL Contaminated Soil, Vehicle Maintenance Facility, Galena Airport, Galena, Alaska.* November 1993.

Shannon & Wilson, Inc. Draft Addendum #1 to Final Field Report, *Contaminated Stockpile Confirmation Sampling, Vehicle Maintenance Facility, Galena, Alaska.* July 1994.

APPENDIX A

Results of Pesticide Sampling During Construction of the New Vehicle Maintenance Building

Field Report
Excavation of POL Contaminated Soil
Vehicle Maintenance Facility
Galena Airport
Galena, Alaska

November, 1993

HOFFMAN CONSTRUCTION COMPANY
CONTRACTOR REVIEW
☑ REVIEWED
☐ REVIEWED WITH COMMENTS
☐ NOT APPROVED
REVIEWED FOR GENERAL CONFORMANCE WITH CONTRACT REQUIREMENTS. CONTRACTOR'S [illegible] DOES NOT RELIEVE VENDOR OF HIS RESPONSIBILITY FOR THE ACCURACY AND COMPLETENESS OF THIS SUBMITTAL.
11-30-93 _____
DATE REVIEWED BY

Hoffman Construction
3201 C Street, Suite 610
Anchorage, Alaska 99503

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
5430 Fairbanks Street • Suite 3
Anchorage, Alaska 99518
907 • 561 • 2120

3.0 SAMPLE ANALYSES AND QA/QC

3.1 Sample Analyses

Soil samples (including QC duplicates) and field blanks collected during excavation and stockpile sampling were submitted to Friedman & Bruya, Inc. of Seattle for analytical testing. QA duplicates were sent to the government lab in Troutdale, Oregon. The soil samples were also analyzed for headspace volatile organics using a PID at the time of collection. The samples were tested in accordance with the Corps guidelines and accepted tests methods as outlined in Table A.

TABLE A

Purpose of Test	Commercial Laboratory	Contractor QC	Government QA
Identification/removal/segregation of contaminated soil	EPA 8100 Mod. EPA 8015 Mod. EPA 8020	EPA 8100 Mod. EPA 8015 Mod. EPA 8020	EPA 8100 Mod. EPA 8015 Mod. EPA 8020
Confirm contamination levels within the excavation &/or "clean line" prior to backfill	EPA 8100 Mod. EPA 8015 Mod. EPA 8020	EPA 8100 Mod. EPA 8015 Mod. EPA 8020	EPA 8100 Mod. EPA 8015 Mod. EPA 8020
Stockpile characterization	EPA 8100 Mod. EPA 8015 Mod. EPA 8020	EPA 8100 Mod. EPA 8015 Mod. EPA 8020	EPA 8100 Mod. EPA 8015 Mod. EPA 8020
Confirm solvent levels within the excavation &/or "clean line" prior to backfill (5 samples)	EPA 8260	EPA 8260	EPA 8260
Confirm PCB levels within the excavation&/or "clean lines" prior to backfill (20 samples)	EPA 8080	EPA 8080	EPA 8080
Confirm pesticide levels	EPA 8080	EPA 8080	EPA 8080
Field Blank	EPA 8015 Mod. EPA 8020	N/A	N/A

In addition, two samples of fibrous pipe insulation were submitted to Northern Testing Laboratories, Inc. of Fairbanks, Alaska, for analysis for asbestos by 40CFR Part 763 and 27 air samples were submitted to Analytical Technologies, Inc. of Renton, Washington, for analysis for airborne DDT.

3.2 Analytical Results

Analytical results for Shannon & Wilson Inc.'s test pit samples are included in Table 2. Long-term and interim stockpile soil sample analytical results are summarized in Table 4. Excavation characterization soil sample analytical results are summarized in Table 5. Analytical results for the DDT air samples, asbestos samples, and field blank samples are summarized in Table 6. Tables 2, 4, and 5 also include PID readings for each sample. Copies of the analytical laboratory reports are included as Appendix A. QA sample results from the government lab are not available at this time and will be submitted under a separate cover when available.

Analyte concentrations for samples taken at the long term storage stockpiles and from interim stockpiles that were later hauled to the long-term stockpiles ranged from 25 to 13,000 ppm Diesel Range Organics (DRO), 3 to 2,800 ppm Gasoline Range Organics (GRO), nondetectible to 2 ppm Benzene, and nondetectible to 134 ppm total BTEX. All of the samples except one taken from the long-term storage cells were above the action limits specified for contaminated soil. One of the samples taken from interim stockpiles that were later hauled to the long-term stockpiles was slightly below contaminated soil action limits (Sample 156). The stockpile characterized by this sample was tested near the end of the field work and was hauled before analytical results were available. The PID reading from Sample 156 was 110 ppm and it was anticipated that the sample was above contaminated levels.

Analyte concentrations for samples taken from interim stockpiles that were later hauled to the off-site disposal area ranged from nondetectible to 30 ppm DRO, nondetectible to 7 ppm GRO, nondetectible for Benzene, and nondetectible for total BTEX.

Analyte concentrations for samples taken to characterize the excavation limits ranged from nondetectible to 10,000 ppm DRO, nondetectible to 4,100 ppm GRO, nondetectible to 50 ppm Benzene, and nondetectible to 789 ppm total BTEX. All PCB results were nondetectible. Results for VOCs by EPA 8260 were nondetectible to 0.0014 ppm Benzene, nondetectible to 0.2 ppm Ethylbenzene, nondetectible to 0.82 ppm Toluene, non-detectible to 2.8 ppm Total Xylenes, nondetectible to 0.34 ppm Trichlorotrifluoroethane, and nondetectible to 0.055 ppm Acetone. All other analytes were nondetectible. See Figure 4 for excavation limits and sample locations.

Concentrations for the two subgrade samples from the initial interim stockpile area (Lot 8, Block 9 Galena Airport) are 40 and 50 ppm DRO respectively and nondetectible for the remaining analytes.

The concentrations for the three subgrade samples from the temporary contaminated soil storage area next to Long Term Storage Cell No. 4 were nondetectible for all analytes except for 4 ppm GRO in Sample No. 524, and 2 ppm GRO in Sample No. 525. A PID survey of this area conducted after the contaminated soils were removed indicated no soil headspace readings greater than 8 ppm.

As shown in the Appendix A laboratory reports, interferences in the form of high levels of some analytes were present in some samples and prevented the identification of other analytes at the detection limits given. In other cases, high concentrations of some contaminants exceeded the established calibration ranges.

Analyte concentrations for all field blank samples and all DDT air samples were nondetectible. The two samples submitted for asbestos analysis, Samples 2001 and 2002, contained 80% and 90% amosite asbestos respectively.

3.3 Quality Control

Quality assurance/quality control (QA/QC) samples, including field duplicate samples and field blanks were submitted for laboratory analyses. Soil field duplicates are samples collected from the

same location and submitted to the project laboratory as a "blind" sample, to provide a check that the data generated by the project laboratory is of suitable quality. Field blanks are samples that are shipped and analyzed with the analytical samples to provide an assessment of the samples' exposure to contamination between sampling and analysis. Field blanks were prepared by pouring organic-free water into laboratory supplied 40-ml vials. The field blanks were generally collected at a rate of one for every 20 investigative samples.

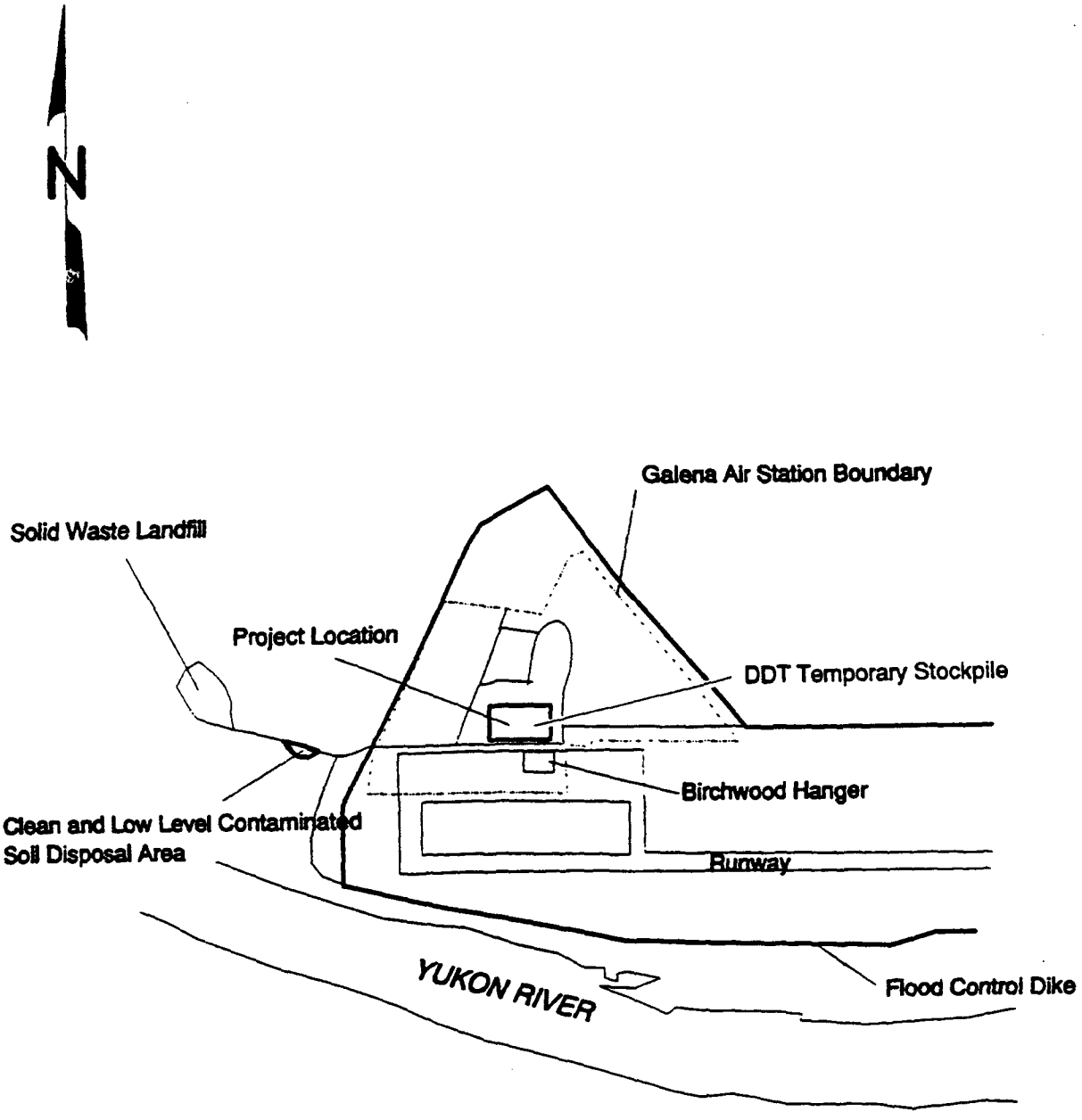
For QC purposes, duplicates of ten percent of the soil samples were submitted to Friedman & Bruya, Inc. of Seattle, Washington, to provide an internal check that the data generated by the laboratory was of suitable quality. Laboratory quality control is also performed by the laboratory as a method to demonstrate the measure of their own precision. In addition, QA duplicates of ten percent of the soil samples (collected at the same time as the QC samples) were submitted to the North Pacific Division Materials Laboratory (CENPD-PE-GT-L) at 1491 NW Graham Avenue, Troutdale, Oregon, 97060-9503. The government lab was notified in advance of the sample shipment. Lab notifications included number of samples, matrix, project name, turn around requirements, and shipping date. All QA/QC samples were labelled with unique sample numbers.

3.4 Data Validation

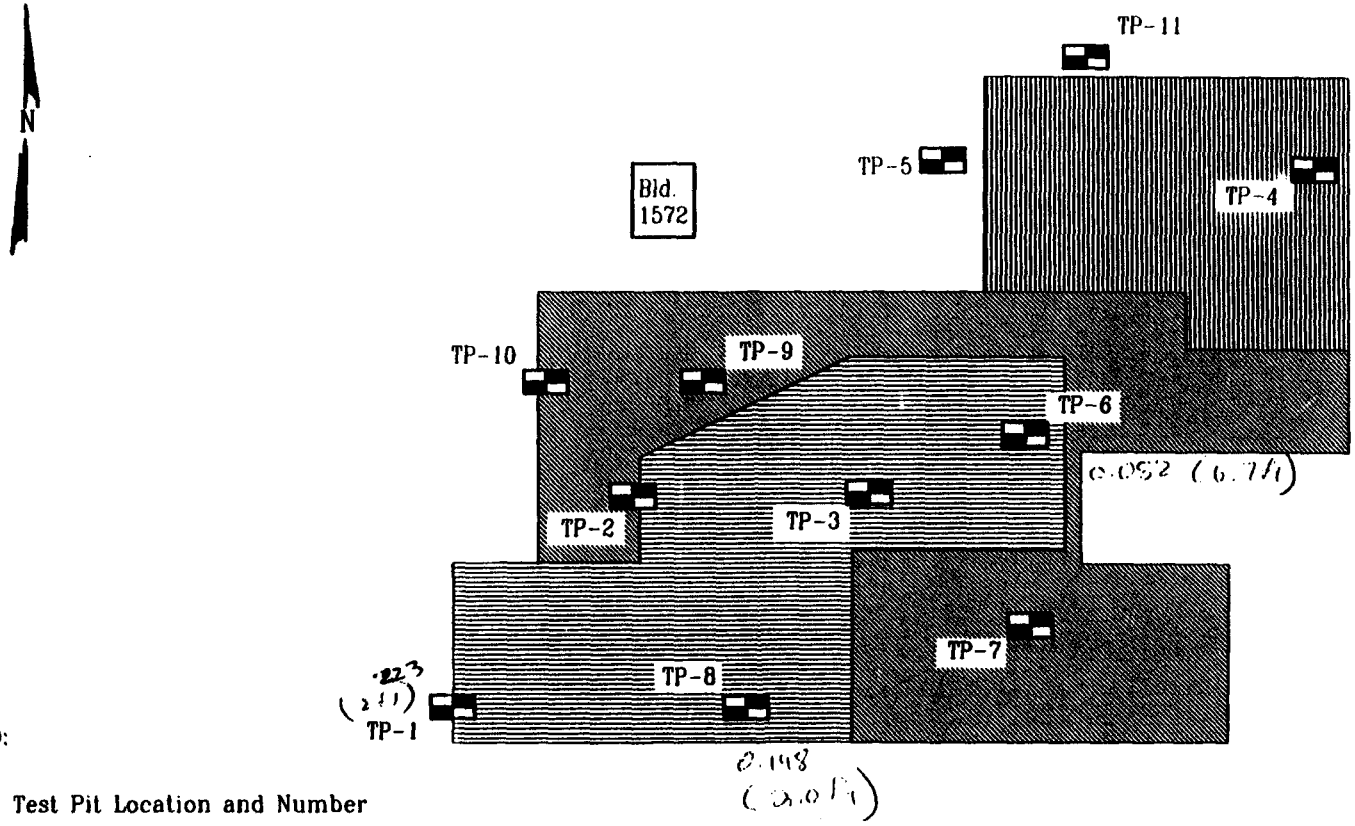
Quality Assurance (QA) and Quality Control (QC) procedures are used to ensure that sampling, documentation, and laboratory data are effective and do not detract from the quality or reliability of the results. Field duplicate samples are collected to evaluate analytical precision, which is measured in relative percent difference, or RPD. An evaluation of analytical precision can be performed only if the results of analysis of both the original sample and its field or laboratory duplicate are reported above the method detection limit, and therefore, RPDs are not calculated for all duplicate pair test results. Field duplicate analyses performed for this project exhibited RPD values ranging from 0% to 166%. Approximately 1/3 of the duplicate analyses exhibited RPDs greater than the target objective of 40%. These discrepancies between the duplicates and original samples can be partially attributed to the nonhomogeneous nature of stockpiled soils which are mixed up during excavation. Additionally, when sampling stockpiles or excavation bottoms and

sidewalls, it is sometimes difficult to attain representative duplicate samples due to soil sloughing from the sides of the sample hole during sample collection. If sloughed soil is collected as part of the sample taken from the sample hole bottom, the cross contamination could result in low duplicate precision and high RPD values.

Method blank, surrogate spike, matrix spike, and matrix spike duplicate analyses are performed to evaluate the accuracy of the laboratory's analytical process. Overall the project laboratory (FBI) QC results indicate that the accuracy of the analytical processes were within the stated objectives with few samples above target limits. QA sample results from the government's laboratory are not available at the time of this writing and will be submitted under a separate cover when available.



Vehicle Maintenance Facility Galena,Alaska	
PROJECT AND DISPOSAL AREA VICINITY MAP	
Nov 1993	Y-5259
SHANNON&WILSON, INC. GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS	Fig. 2



LEGEND:

Test Pit Location and Number

TP-1

Clean Area. The "Warm storage area". Soils from this area were classified as clean and will not undergo further testing.

Potentially Hydrocarbon Contaminated Area. Soils from this area were screened in the field and based on PID readings were temporarily stockpiled and tested prior to classifying as clean or low-level contaminated.

Hydrocarbon Contaminated Area. Soils from this area were screened in the field and based on PID readings were hauled to the long-term storage cells at Campion or temporarily stockpiled and tested prior to classifying as low-level contaminated or clean. Original HCC estimate of area contaminated based on Shannon & Wilson test pits (6000 yards).

0 25 50 100

Approximate Scale in Feet

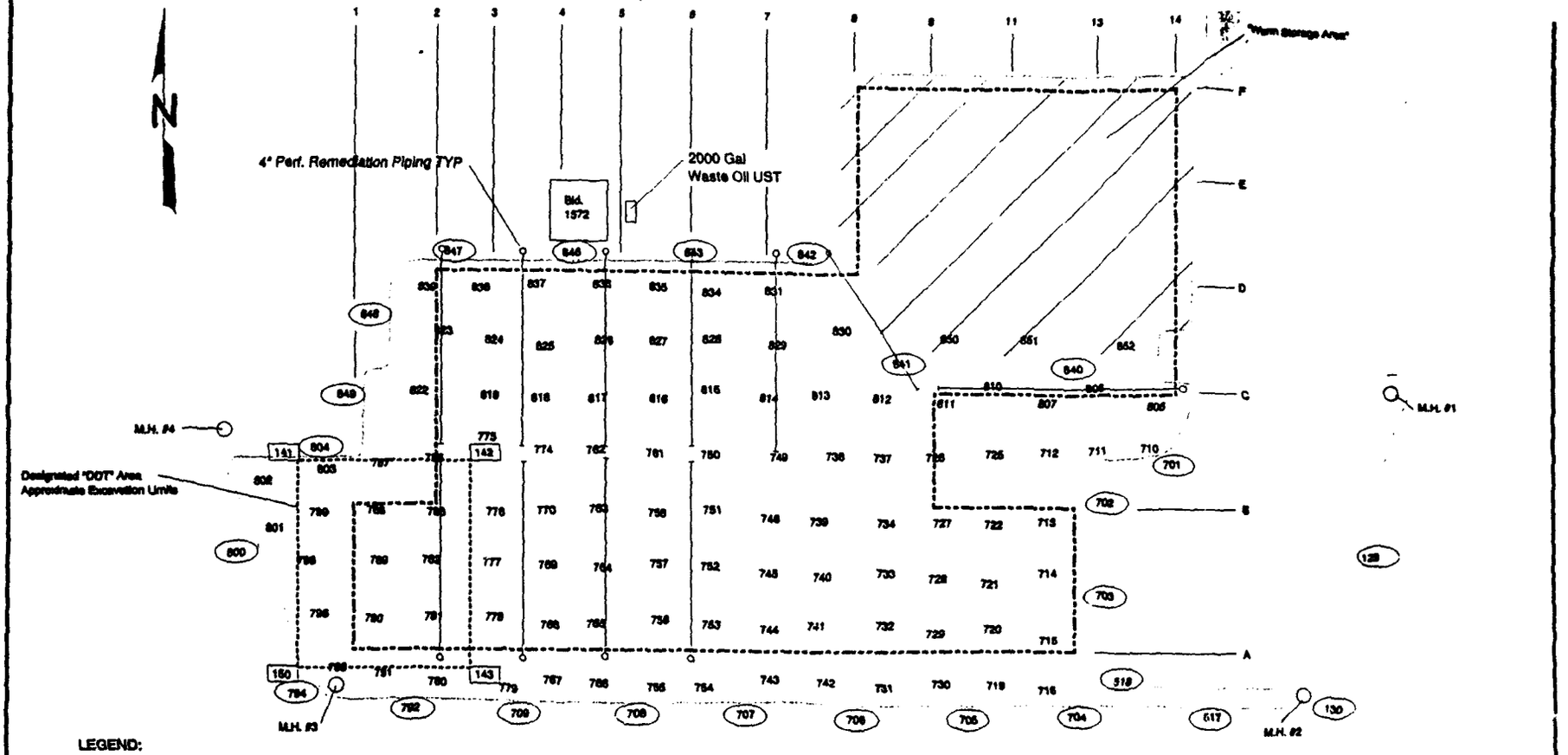
Vehicle Maintenance Facility
Galena, Alaska

TEST PIT AND CLASSIFICATION ZONE LOCATION PLAN

November, 1993 Y-5259

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 3



LEGEND:

(794) Excavation Side Wall Sample Location and Number

780 Excavation Bottom Sample Location and Number

[150] DOT Excavation Sample Location and Number

Approximate Extent of Excavation

Building Footprint

APPROXIMATE SCALE: 1" = 30'

0 15 30 60 90

(feet)

Note: See Tables 1 and 3 For Sample Descriptions and Test Results

REFERENCE: Plan is based on drawings supplied by Hoffman Construction Co.

Vehicle Maintenance Facility
Galena, Alaska

ANALYTICAL SAMPLE LOCATION PLAN

Y-5259 Nov 1993

SHANNON & WILSON, INC. | Fig. 4

TABLE 1 - TEST PIT SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number*	Date	Time	Sample Location (See Figs. 1 and Table 2)	Depth (Ft.)	Sample Classification
TP1S1	8/24/93	7:40	Test Pit No. 1, Sample No. 1, south side of test pit	2.0	Brown to gray, silty, gravelly, SAND to sandy GRAVEL [FILL]
TP1S2	8/24/93	7:45	Test Pit No. 1, Sample No. 2, south side of test pit	3.9	Brown to gray SILT w/ trace of gravel
TP1S3	8/24/93	7:50	Test Pit No. 1, Sample No. 3, south side of test pit	6.5	Brown, silty SAND; dry
TP2S1	8/24/93	8:10	Test Pit No. 2, Sample No. 1, west side of test pit	2.0	Brown, slightly silty, sandy GRAVEL [FILL] to gravelly SAND
TP2S2	8/24/93	8:15	Test Pit No. 2, Sample No. 2, west side of test pit	4.0	Brown, slightly sandy SILT; damp
TP2S3	8/24/93	8:20	Test Pit No. 2, Sample No. 3, west side of test pit	8.6	Brown, clean SAND; damp
TP3S1	8/24/93	8:45	Test Pit No. 3, Sample No. 1, west side of test pit	1.0	Brown, silty gravelly SAND; [FILL]
TP3S2	8/24/93	8:50	Test Pit No.3 , Sample No. 2, west side of test pit	3.5	Brown to gray, slightly silty SAND to slightly gravelly, sandy SILT; damp
TP3S3	8/24/93	8:55	Test Pit No. 3, Sample No. 3, west side of test pit	7.0	Gray, silty SAND
TP4S1	8/24/93	9:10	Test Pit No. 4, Sample No. 1, south side of test pit	2.0	Brown to gray, silty, gravelly SAND [FILL]
TP4S2	8/24/93	9:15	Test Pit No. 4, Sample No. 2, south side of test pit	4.5	Brown, sandy SILT, w/ trace of gravel
TP4S3	8/24/93	9:20	Test Pit No. 4, Sample No. 3, south side of test pit	7.2	Brown, slightly silty to clean SAND
TP5S1	8/24/93	9:40	Test Pit No. 5, Sample No. 1, south side of test pit	2.0	Brown, gravelly SAND [FILL]
TP5S2	8/24/93	9:45	Test Pit No. 5, Sample No. 2, south side of test pit	4.0	Brown, silty SAND to sandy SILT
TP5S3	8/24/93	9:50	Test Pit No. 5, Sample No. 3, south side of test pit	6.2	Brown, sandy SILT
TP6S1	8/24/93	10:20	Test Pit No. 6, Sample No. 1, west side of test pit	1.8	Brown, sandy GRAVEL [FILL]
TP6S2	8/24/93	10:25	Test Pit No. 6, Sample No. 2, west side of test pit	4.2	Brown, slightly gravelly, silty SAND to gravelly, sandy SILT; damp
TP6S3	8/24/93	10:30	Test Pit No. 6, Sample No. 3, west side of test pit	6.7	Brown to gray, silty SAND
TP7S1	8/24/93	11:00	Test Pit No. 7, Sample No. 1, west side of test pit	2.0	Brown, sandy GRAVEL to gravelly SAND [FILL]
TP7S2	8/24/93	11:10	Test Pit No. 7, Sample No. 2, west side of test pit	4.3	Brown, sandy GRAVEL to gravelly SAND [FILL]
TP7S3	8/24/93	11:15	Test Pit No. 7, Sample No. 3, west side of test pit	6.4	Brown to gray, sandy silt to silty SAND
TP8S1	8/24/93	11:45	Test Pit No. 8, Sample No. 1, north side of test pit	2.0	Brown to gray, sandy GRAVEL to gravelly SAND [FILL]
TP8S2	8/24/93	11:50	Test Pit No. 8, Sample No. 2, north side of test pit	4.6	Brown to gray, gravelly, silty SAND
TP8S3	8/24/93	11:55	Test Pit No. 8, Sample No. 3, north side of test pit	8.0	Brown to gray, silty SAND to sandy SILT; moist
TP9S1	8/24/93	12:50	Test Pit No. 9, Sample No. 1, south side of test pit	2.0	Brown, sandy SILT to silty SAND
TP9S2	8/24/93	12:58	Test Pit No. 9, Sample No. 2, south side of test pit	4.0	Brown, sandy SILT to silty SAND
TP9S3	8/24/93	13:00	Test Pit No. 9, Sample No. 3, south side of test pit	6.0	Brown, silty SAND (fine sand)
TP10S1	8/24/93	13:20	Test Pit No. 10, Sample No. 1, north side of test pit	2.0	Brown, slightly silty, gravelly SAND [FILL]
TP10S2	8/24/93	13:25	Test Pit No. 10, Sample No. 2, north side of test pit	4.0	Brown, slightly silty, gravelly SAND [FILL]
TP10S3	8/24/93	13:30	Test Pit No. 10, Sample No. 3, north side of test pit	5.9	Brown to gray, sandy SILT to silty SAND (fine)
TP11S1	8/24/93	14:10	Test Pit No. 11, Sample No. 1, south side of test pit	2.0	Brown, slightly silty, gravelly SAND [FILL]
TP11S2	8/24/93	14:15	Test Pit No. 11, Sample No. 2, south side of test pit	4.2	Brown silty SAND to sandy SILT
TP11S3	8/24/93	14:20	Test Pit No. 11, Sample No. 3, south side of test pit	6.0	Brown, silty SAND

* Samples collected by Linda Stanton of Shannon & Wilson, Inc.

TABLE 2 - TEST PIT HEADSPACE SCREENING AND ANALYTICAL RESULTS

		Sample Number (See Table 1 and Figure 1)											
Parameter Tested	**Method***	TP1S2	TP1S3	TP2S1	TP2S2	TP3S1	TP3S2	TP4S2	TP4S3	TP5S1	TP5S3	TP6S1	TP6S2
PID Headspace Reading - ppm	OVM 580B	146	23	2	2	1.0	81	0.3	0.3	0.0	0.3	59	18

		Sample Number (See Table 1 and Figure 1)											
Parameter Tested	**Method***	TP7S1	TP7S3	TP8S2	TP8S3	TP9S2	TP9S3	TP10S2	TP10S3	TP11S1	TP11S2		
PID Headspace Reading - ppm	OVM 580B	5.3	2.0	130	47	0.3	0.3	1.0	1.0	0.3	0.0		

		Sample Number (See Table 1 & Appendix A)											
Parameter	**Method***	TP1S1	TP2S3	TP3S3	TP4S1	TP5S2	TP6S3	TP7S2	TP8S1	TP9S1	TP10S1	TP11S3	TP11S3dup.
PID Headspace Reading - ppm	OVM 580B	607	29	542	1.0	0.3	169	18	194	1.0	1.0	0.3	0.3
Aromatic Volatile Organics (BTEX)	EPA 8020												
Benzene - ppm	EPA 8020	ND	ND	1.9	ND	ND	0.043	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	0.60	ND	30	ND	ND	0.074	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	0.93	ND	7.6	ND	ND	0.39	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	18	ND	68	ND	ND	1.2	ND	2.5	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	19.53	ND	107.5	ND	ND	1.707	ND	2.5	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	280	ND	2700	ND	ND	120	ND	170	ND	ND	ND	-
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	3300	ND	2900	52	17	5200	88	5700	35	ND	ND	-
Organochlorine Pesticides	EPA 8080												
DDD - ppm	EPA 8080	220	-	-	-	-	0.082	-	0.13	-	-	-	-
DDT - ppm	EPA 8080	1.3	-	-	-	-	ND	-	0.018	-	-	-	-
DDE - ppm	EPA 8080	1.7	-	-	-	-	ND	-	ND	-	-	-	-
Polychlorinated Biphenyls (PCBs) - pp	EPA 8080	ND	-	-	-	-	ND	-	ND	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 3 - SAMPLE LOCATIONS AND DESCRIPTIONS

Air Monitoring Samples (continued)

Sample Number	Date	Time	Sample Location (See Table 6)	Depth (Ft.)	Sample Classification
Y5259-1014-1018	10/14/93	10:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1014-1019	10/14/93	16:20	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1015-1020	10/15/93	13:45	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1015-1021	10/15/93	16:30	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1016-1022	10/16/93	16:30	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1016-1023	10/16/93	19:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1017-1024	10/17/93	14:15	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1017-1025	10/17/93	18:35	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1018-1026	10/18/93	15:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1019-1027	10/19/93	15:30	Air sample taken in area of excavation activities	N/A	Filter matrix

Field Blanks

Sample Number	Date	Time	Sample Location (See Table 6)	Depth (Ft.)	Sample Classification
Y5259-930-3001	9/30/93	10:00	Field Blank shipped with soil samples 501-504	N/A	Distilled water
Y5259-106-3002	10/6/93	8:30	Field Blank shipped with soil samples 123 & 124	N/A	Distilled water
Y5259-1014-3003	10/14/93	8:30	Field Blank shipped with soil samples 701-717, 141-148	N/A	Distilled water
Y5259-1015-3004	10/15/93	10:00	Field Blank shipped with soil samples 719-744	N/A	Distilled water
Y5259-1015-3005	10/15/93	10:00	Field Blank shipped with soil samples 745-776	N/A	Distilled water
Y5259-1018-3006	10/18/93	10:00	Field Blank shipped with soil samples 777-802	N/A	Distilled water
Y5259-1018-3007	10/18/93	10:00	Field Blank shipped with soil samples 150-159	N/A	Distilled water
Y5259-1019-3008	10/19/93	10:00	Field Blank shipped with soil samples 805-830	N/A	Distilled water
Y5259-1019-3009	10/19/93	10:00	Field Blank shipped with soil samples 831-852	N/A	Distilled water
Y5259-1020-3010	10/20/93	9:30	Field Blank shipped with soil samples 160 & 161	N/A	Distilled water

TABLE 3 - SAMPLE LOCATIONS AND DESCRIPTIONS

Excavation Bottom and Sidewall Characterization Soil Samples (continued)

Sample Number	Date	Time	Sample Location (See Fig. 4 and Table 5)	Depth (Ft.)	Sample Classification
Y5259-1018-835	10/18/93	16:45	Excavation characterization sample, location No. 835	8	Gray SAND
Y5259-1018-836	10/18/93	16:48	Excavation characterization sample, location No. 836	8	Gray SAND
Y5259-1018-837	10/18/93	16:57	Excavation characterization sample, location No. 837	8	Gray SAND
Y5259-1018-838	10/18/93	17:01	Excavation characterization sample, location No. 838	8	Gray SAND
Y5259-1018-839	10/18/93	17:06	Excavation characterization sample, location No. 839	8	Gray SAND
Y5259-1018-840	10/18/93	17:15	Excavation characterization sample, location No. 840	6	Brown SILT
Y5259-1018-841	10/18/93	17:25	Excavation characterization sample, location No. 841	6	Brown SILT
Y5259-1018-842	10/18/93	17:30	Excavation characterization sample, location No. 842	6	Gray SILT
Y5259-1018-843	10/18/93	17:40	Excavation characterization sample, location No. 843	6	Gray, silty SAND
Y5259-1018-844	10/18/93	17:40	Duplicate of No. 843	6	Gray, silty SAND
Y5259-1018-845	10/18/93	17:40	Duplicate of No. 843	6	Gray, silty SAND
Y5259-1018-846	10/18/93	17:50	Excavation characterization sample, location No. 846	6	Gray, silty SAND
Y5259-1018-847	10/18/93	18:00	Excavation characterization sample, location No. 847	6	Brown SILT
Y5259-1018-848	10/18/93	18:15	Excavation characterization sample, location No. 848	5	Brown SILT
Y5259-1018-849	10/18/93	18:20	Excavation characterization sample, location No. 849	5	Gray SILT
Y5259-1018-850	10/18/93	19:05	Excavation characterization sample, location No. 850	3	Gray, silty, sandy GRAVEL
Y5259-1018-851	10/18/93	19:10	Excavation characterization sample, location No. 851	3	Gray, silty, sandy GRAVEL
Y5259-1018-852	10/18/93	19:15	Excavation characterization sample, location No. 852	3	Gray, silty, sandy GRAVEL

Asbestos Insulation Samples

Sample Number	Date	Time	Sample Location (See Table 4)	Depth (Ft.)	Sample Classification
Y5259-929-2001	9/29/93	14:30	18" pipe from old utilidor, Grid Line 8	4'	Gray insulation
Y5259-929-2002	9/29/93	14:30	6" pipe from old utilidor, Grid Line C.8	3'	Brown insulation

Air Monitoring Samples

Sample Number	Date	Time	Sample Location (See Table 6)	Depth (Ft.)	Sample Classification
Y5259-925-1001	9/25/93	12:37	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-925-1002	9/25/93	18:40	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-926-1003	9/26/93	12:30	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-926-1004	9/26/93	18:08	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-927-1005	9/27/93	18:30	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-102-1006	10/2/93	16:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-104-1007	10/4/93	15:45	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-105-1008	10/5/93	11:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-106-1009	10/6/93	13:30	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-107-1010	10/7/93	14:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-108-1011	10/8/93	14:45	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-109-1012	10/9/93	12:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1011-1013	10/11/93	10:50	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1011-1014	10/11/93	19:30	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1012-1015	10/12/93	11:55	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1012-1016	10/12/93	15:00	Air sample taken in area of excavation activities	N/A	Filter matrix
Y5259-1013-1017	10/13/93	15:30	Air sample taken in area of excavation activities	N/A	Filter matrix

TABLE 3 - SAMPLE LOCATIONS AND DESCRIPTIONS

Excavation Bottom and Sidewall Characterization Soil Samples (continued)

Sample Number	Date	Time	Sample Location (See Fig. 4 and Table 5)	Depth (Ft.)	Sample Classification
Y5259-1015-789	10/15/93	12:14	Excavation characterization sample, location No. 789	8	Brown, gravelly SILT
Y5259-1015-790	10/15/93	13:36	Excavation characterization sample, location No. 790	8	Gray SILT
Y5259-1015-791	10/15/93	13:44	Excavation characterization sample, location No. 791	8	Brown, silty GRAVEL
Y5259-1015-792	10/15/93	13:52	Excavation characterization sample, location No. 792	7	Brown SAND
Y5259-1015-793	10/15/93	14:12	Excavation characterization sample, location No. 793	8	Brown SAND
Y5259-1015-794	10/15/93	14:21	Excavation characterization sample, location No. 794	7	Brown SAND
Y5259-1015-795	10/15/93	14:37	Excavation characterization sample, location No. 795	8	Brown SAND
Y5259-1015-796	10/15/93	14:37	Duplicate of No. 795	8	Brown SAND
Y5259-1015-797	10/15/93	14:37	Duplicate of No. 795	8	Brown SAND
Y5259-1015-798	10/15/93	14:50	Excavation characterization sample, location No. 798	8	Brown, silty GRAVEL
Y5259-1015-799	10/15/93	14:56	Excavation characterization sample, location No. 799	8	Brown, silty GRAVEL
Y5259-1015-800	10/15/93	15:16	Excavation characterization sample, location No. 800	6	Brown, gravelly SILT
Y5259-1015-801	10/15/93	15:25	Excavation characterization sample, location No. 801	8	Brown SAND
Y5259-1015-802	10/15/93	15:33	Excavation characterization sample, location No. 802	8	Brown, silty SAND
Y5259-1015-803	10/15/93	15:42	Excavation characterization sample, location No. 803	8	Gray, gravelly SILT
Y5259-1015-804	10/15/93	15:55	Excavation characterization sample, location No. 804	8	Gray, gravelly SILT
Y5259-1018-805	10/18/93	13:45	Excavation characterization sample, location No. 805	8	Gray, silty SAND
Y5259-1018-806	10/18/93	13:57	Excavation characterization sample, location No. 806	8	Gray, silty SAND
Y5259-1018-807	10/18/93	14:00	Excavation characterization sample, location No. 807	8	Gray, silty SAND
Y5259-1018-808	10/18/93	14:00	Duplicate of No. 807	8	Gray, silty SAND
Y5259-1018-809	10/18/93	14:00	Duplicate of No. 807	8	Gray, silty SAND
Y5259-1018-810	10/18/93	14:15	Excavation characterization sample, location No. 810	8	Gray, silty SAND
Y5259-1018-811	10/18/93	14:16	Excavation characterization sample, location No. 811	8	Brown SAND
Y5259-1018-812	10/18/93	14:23	Excavation characterization sample, location No. 812	8	Gray SAND
Y5259-1018-813	10/18/93	14:28	Excavation characterization sample, location No. 813	8	Gray SAND
Y5259-1018-814	10/18/93	14:33	Excavation characterization sample, location No. 814	8	Gray SAND
Y5259-1018-815	10/18/93	14:40	Excavation characterization sample, location No. 815	8	Gray SAND
Y5259-1018-816	10/18/93	14:45	Excavation characterization sample, location No. 816	8	Gray SAND
Y5259-1018-817	10/18/93	14:50	Excavation characterization sample, location No. 817	8	Gray SAND
Y5259-1018-818	10/18/93	14:55	Excavation characterization sample, location No. 818	8	Gray SAND
Y5259-1018-819	10/18/93	15:00	Excavation characterization sample, location No. 819	8	Gray SAND
Y5259-1018-820	10/18/93	15:00	Duplicate of No. 819	8	Gray SAND
Y5259-1018-821	10/18/93	15:00	Duplicate of No. 819	8	Gray SAND
Y5259-1018-822	10/18/93	15;10	Excavation characterization sample, location No. 822	8	Gray SAND
Y5259-1018-823	10/18/93	15:20	Excavation characterization sample, location No. 823	8	Gray/brown SILT with organics
Y5259-1018-824	10/18/93	15:25	Excavation characterization sample, location No. 824	8	Gray SAND
Y5259-1018-825	10/18/93	15:27	Excavation characterization sample, location No. 825	8	Gray SAND
Y5259-1018-826	10/18/93	15:30	Excavation characterization sample, location No. 826	8	Gray SAND
Y5259-1018-827	10/18/93	15:33	Excavation characterization sample, location No. 827	8	Gray SAND
Y5259-1018-828	10/18/93	15:37	Excavation characterization sample, location No. 828	8	Gray SAND
Y5259-1018-829	10/18/93	16:25	Excavation characterization sample, location No. 829	8	Gray SAND
Y5259-1018-830	10/18/93	16:30	Excavation characterization sample, location No. 830	8	Brown, silty SAND
Y5259-1018-831	10/18/93	16:37	Excavation characterization sample, location No. 831	8	Brown, silty SAND
Y5259-1018-832	10/18/93	16:37	Duplicate of No. 831	8	Brown, silty SAND
Y5259-1018-833	10/18/93	16:37	Duplicate of No. 831	8	Brown, silty SAND
Y5259-1018-834	10/18/93	16:42	Excavation characterization sample, location No. 834	8	Brown, silty SAND

TABLE 3 - SAMPLE LOCATIONS AND DESCRIPTIONS

Excavation Bottom and Sidewall Characterization Soil Samples (continued)

Sample Number	Date	Time	Sample Location (See Fig. 4 and Table 4)	Depth (Ft.)	Sample Classification
Y5259-1014-743	10/14/93	13:16	Excavation characterization sample, location No. 743	8	Brown, gr[illegible]ILT
Y5259-1014-744	10/14/93	13:27	Excavation characterization sample, location No. 744	8	Brown, sandy [illegible]T
Y5259-1014-745	10/14/93	13:40	Excavation characterization sample, location No. 745	8	Brown, sandy SILT
Y5259-1014-746	10/14/93	14:01	Excavation characterization sample, location No. 746	8	Brown, gravelly SILT
Y5259-1014-747	10/14/93	14:01	Duplicate of No. 746	8	Brown, gravelly SILT
Y5259-1014-748	10/14/93	14:01	Duplicate of No. 746	8	Brown, gravelly SILT
Y5259-1014-749	10/14/93	14:24	Excavation characterization sample, location No. 749	8	Brown, gravelly SILT
Y5259-1014-750	10/14/93	14:36	Excavation characterization sample, location No. 750	8	Brown, gravelly SILT
Y5259-1014-751	10/14/93	14:42	Excavation characterization sample, location No. 751	8	Brown, silty SAND
Y5259-1014-752	10/14/93	14:51	Excavation characterization sample, location No. 752	8	Brown, gravelly SILT
Y5259-1014-753	10/14/93	15:00	Excavation characterization sample, location No. 753	8	Brown, sandy SILT
Y5259-1014-754	10/14/93	15:01	Excavation characterization sample, location No. 754	8	Brown, silty SAND
Y5259-1014-755	10/14/93	15:16	Excavation characterization sample, location No. 755	8	Brown, gravelly SILT
Y5259-1014-756	10/14/93	15:24	Excavation characterization sample, location No. 756	8	Brown, silty SAND
Y5259-1014-757	10/14/93	15:33	Excavation characterization sample, location No. 757	8	Brown, gravelly SILT
Y5259-1014-758	10/14/93	15:55	Excavation characterization sample, location No. 758	8	Brown, gravelly SILT
Y5259-1014-759	10/14/93	15:55	Duplicate of No. 758	8	Brown, gravelly SILT
Y5259-1014-760	10/14/93	15:55	Duplicate of No. 758	8	Brown, gravelly SILT
Y5259-1014-761	10/14/93	16:05	Excavation characterization sample, location No. 761	8	Gray, sandy SILT
Y5259-1014-762	10/14/93	16:14	Excavation characterization sample, location No. 762	8	Gray, silty SAND
Y5259-1014-763	10/14/93	16:21	Excavation characterization sample, location No. 763	8	Brown, silty SAND
Y5259-1014-764	10/14/93	16:31	Excavation characterization sample, location No. 763	8	Brown, silty GRAVEL
Y5259-1014-765	10/14/93	16:42	Excavation characterization sample, location No. 765	8	Brown, gravelly SILT
Y5259-1014-766	10/14/93	17:07	Excavation characterization sample, location No. 766	8	Brown SILT
Y5259-1014-767	10/14/93	17:19	Excavation characterization sample, location No. 767	8	Brown SILT
Y5259-1014-768	10/14/93	17:29	Excavation characterization sample, location No. 768	8	Brown, gravelly SILT
Y5259-1014-769	10/14/93	17:41	Excavation characterization sample, location No. 769	8	Brown SAND
Y5259-1014-770	10/14/93	18:15	Excavation characterization sample, location No. 770	8	Brown, gravelly SILT
Y5259-1014-771	10/14/93	18:15	Duplicate of No. 770	8	Brown, gravelly SILT
Y5259-1014-772	10/14/93	18:15	Duplicate of No. 770	8	Brown, gravelly SILT
Y5259-1014-773	10/14/93	18:15	Duplicate of No. 770	8	Brown, gravelly SILT
Y5259-1014-774	10/14/93	18:42	Excavation characterization sample, location No. 774	8	Brown, gravelly SILT
Y5259-1014-775	10/14/93	18:46	Excavation characterization sample, location No. 775	8	Brown, silty GRAVEL
Y5259-1014-776	10/14/93	18:53	Excavation characterization sample, location No. 776	8	Brown, gravelly SILT
Y5259-1015-777	10/15/93	10:50	Excavation characterization sample, location No. 777	8	Brown, gravelly SILT
Y5259-1015-778	10/15/93	10:57	Excavation characterization sample, location No. 778	8	Brown, sandy SILT
Y5259-1015-779	10/15/93	11:04	Excavation characterization sample, location No. 779	8	Brown, silty SAND
Y5259-1015-780	10/15/93	11:13	Excavation characterization sample, location No. 780	8	Brown, silty SAND
Y5259-1015-781	10/15/93	11:20	Excavation characterization sample, location No. 781	8	Brown, silty SAND
Y5259-1015-782	10/15/93	11:27	Excavation characterization sample, location No. 782	8	Brown, silty SAND
Y5259-1015-783	10/15/93	11:39	Excavation characterization sample, location No. 783	8	Brown, silty GRAVEL
Y5259-1015-784	10/15/93	11:39	Duplicate of No. 783	8	Brown, silty GRAVEL
Y5259-1015-785	10/15/93	11:39	Duplicate of No. 783	8	Brown, silty GRAVEL
Y5259-1015-786	10/15/93	11:50	Excavation characterization sample, location No. 786	8	Brown, silty SAND
Y5259-1015-787	10/15/93	11:58	Excavation characterization sample, location No. 787	8	Brown SAND
Y5259-1015-788	10/15/93	12:07	Excavation characterization sample, location No. 788	8	Brown, gravelly SILT

TABLE 3 - SAMPLE LOCATIONS AND DESCRIPTIONS

Excavation Bottom and Sidewall Characterization Soil Samples

Sample Number	Date	Time	Sample Location (See Fig. 4 and Table 5)	Depth (Ft.)	Sample Classification
Y5259-109-129	10/9/93	13:00	Storm Sewer Trench, 50' south of M.H. #1	3	Gray, sandy SILT
Y5259-109-130	10/9/93	13:10	Storm Sewer Trench, at M.H. #1	4	Gray, silty, sandy GRAVEL
Y5259-109-517	10/9/93	14:45	Storm Sewer Trench, 30' west of M.H. #2	6	Gray, silty, sandy GRAVEL
Y5259-109-518	10/9/93	14:55	Storm Sewer Trench, 60' west of M.H. #2	4	Gray, silty, sandy GRAVEL
Y5259-1013-701	10/13/93	14:16	Excavation characterization sample, location No. 701	5	Brown SILT
Y5259-1013-702	10/13/93	14:33	Excavation characterization sample, location No. 702	5	Brown GRAVEL
Y5259-1013-703	10/13/93	14:44	Excavation characterization sample, location No. 703	7	Brown GRAVEL
Y5259-1013-704	10/13/93	14:55	Excavation characterization sample, location No. 704	4	Brown SILT
Y5259-1013-705	10/13/93	15:08	Excavation characterization sample, location No. 705	6	Brown SILT
Y5259-1013-706	10/13/93	15:20	Excavation characterization sample, location No. 706	7	Brown SILT
Y5259-1013-707	10/13/93	15:32	Excavation characterization sample, location No. 707	7	Brown SILT
Y5259-1013-708	10/13/93	15:45	Excavation characterization sample, location No. 708	7	Brown SILT
Y5259-1013-709	10/13/93	15:58	Excavation characterization sample, location No. 709	4	Brown GRAVEL
Y5259-1013-710	10/13/93	17:10	Excavation characterization sample, location No. 710	8	Brown, silty GRAVEL
Y5259-1013-711	10/13/93	17:21	Excavation characterization sample, location No. 711	8	Gray, gravelly SILT
Y5259-1013-712	10/13/93	17:33	Excavation characterization sample, location No. 712	8	Gray, gravelly SILT
Y5259-1013-713	10/13/93	17:45	Excavation characterization sample, location No. 713	8	Gray, gravelly SILT
Y5259-1013-714	10/13/93	17:56	Excavation characterization sample, location No. 714	8	Brown, silty GRAVEL
Y5259-1013-715	10/13/93	18:07	Excavation characterization sample, location No. 715	8	Gray, SILT
Y5259-1013-716	10/13/93	18:17	Excavation characterization sample, location No. 716	8	Brown, silty GRAVEL
Y5259-1013-717	10/13/93	18:17	Duplicate of No. 710	8	Brown, silty GRAVEL
Y5259-1013-718	10/13/93	18:17	Duplicate of No. 710	8	Brown, silty GRAVEL
Y5259-1014-719	10/14/93	9:01	Excavation characterization sample, location No. 719	8	Gray, gravelly SILT
Y5259-1014-720	10/14/93	9:11	Excavation characterization sample, location No. 720	8	Brown, silty GRAVEL
Y5259-1014-721	10/14/93	9:21	Excavation characterization sample, location No. 721	8	Brown, silty GRAVEL
Y5259-1014-722	10/14/93	9:42	Excavation characterization sample, location No. 722	8	Brown, silty GRAVEL
Y5259-1014-723	10/14/93	9:42	Duplicate of No. 722	8	Brown, silty GRAVEL
Y5259-1014-724	10/14/93	9:42	Duplicate of No. 722	8	Brown, silty GRAVEL
Y5259-1014-725	10/14/93	9:52	Excavation characterization sample, location No. 725	8	Brown, silty GRAVEL
Y5259-1014-726	10/14/93	10:00	Excavation characterization sample, location No. 726	8	Brown, silty GRAVEL
Y5259-1014-727	10/14/93	10:09	Excavation characterization sample, location No. 727	8	Brown, silty GRAVEL
Y5259-1014-728	10/14/93	10:16	Excavation characterization sample, location No. 728	8	Brown, silty GRAVEL
Y5259-1014-729	10/14/93	10:25	Excavation characterization sample, location No. 729	8	Brown, silty GRAVEL
Y5259-1014-730	10/14/93	10:31	Excavation characterization sample, location No. 730	8	Brown, gravelly SILT
Y5259-1014-731	10/14/93	10:41	Excavation characterization sample, location No. 731	8	Brown, silty SAND
Y5259-1014-732	10/14/93	10:49	Excavation characterization sample, location No. 732	8	Brown, gravelly SILT
Y5259-1014-733	10/14/93	10:56	Excavation characterization sample, location No. 733	8	Brown, sandy SILT
Y5259-1014-734	10/14/93	11:25	Excavation characterization sample, location No. 734	8	Brown, sandy SILT
Y5259-1014-735	10/14/93	11:25	Duplicate of No. 734	8	Brown, sandy SILT
Y5259-1014-736	10/14/93	11:25	Duplicate of No. 734	8	Brown, sandy SILT
Y5259-1014-737	10/14/93	11:36	Excavation characterization sample, location No. 737	8	Gray SAND
Y5259-1014-738	10/14/93	11:43	Excavation characterization sample, location No. 738	8	Gray SAND
Y5259-1014-739	10/14/93	11:51	Excavation characterization sample, location No. 739	8	Brown, gravelly SILT
Y5259-1014-740	10/14/93	11:59	Excavation characterization sample, location No. 740	8	Brown, sandy SILT
Y5259-1014-741	10/14/93	12:06	Excavation characterization sample, location No. 741	8	Brown, gravelly SILT
Y5259-1014-742	10/14/93	13:08	Excavation characterization sample, location No. 742	8	Brown, gravelly SILT

TABLE 3 - SAMPLE LOCATIONS AND DESCRIPTIONS

Stockpile Soil Samples

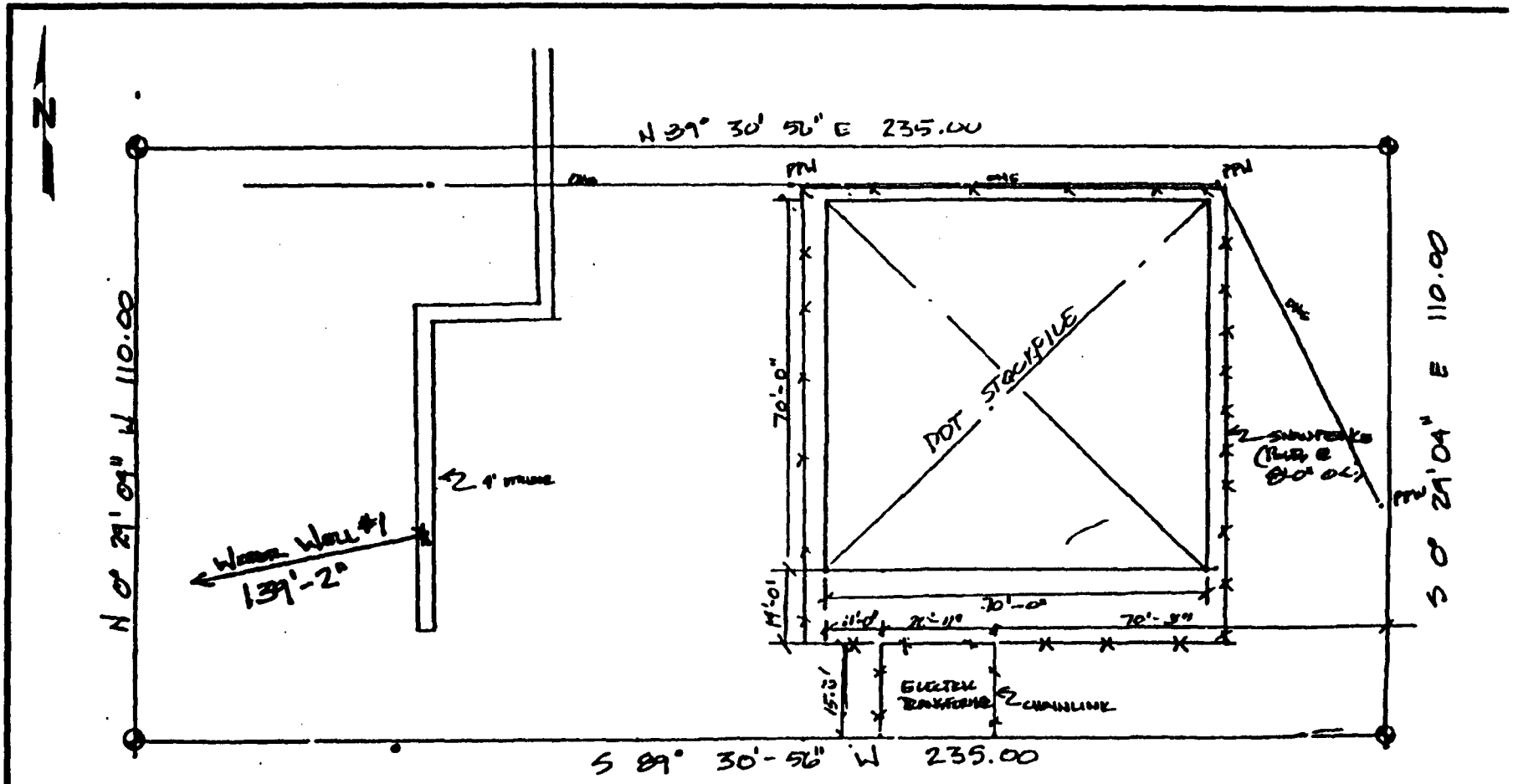
Sample Number	Date	Time	Sample Location (See Fig. 6 and Table 4)	Depth (Ft.)	Sample Classification
Y5259-108-516	10/8/93	16:30	Interim stockpile, location No. 40, to disposal site	1	Gray, silty, sandy GRAVEL
Y5259-109-131	10/9/93	20:00	Long Term Storage Cell No. 2	1	Gray, silty, sandy GRAVEL
Y5259-109-519	10/9/93	17:15	Interim stockpile, Location No. 1, to L.T. Cell No.4	1	Gray, silty, sandy GRAVEL
Y5259-1010-132	10/10/93	17:00	Long Term Storage Cell No. 2	1	Gray SILT
Y5259-1010-520	10/10/93	18:00	Interim stockpile, location No. 10, to L.T. Cell No. 10	1	Gray, sandy SILT
Y5259-1011-133	10/11/93	17:30	Long Term Storage Cell No. 3	1.5	Gray, sandy SILT
Y5259-1012-134	10/12/93	11:05	DDT Long Term Storage Cell, truck load No. 6	1	Gray, silty, sandy GRAVEL
Y5259-1012-135	10/12/93	11:45	DDT Long Term Storage Cell, truck load No. 11	1	Gray, silty, sandy GRAVEL
Y5259-1012-136	10/12/93	15:50	DDT Long Term Storage Cell, truck load No. 18	1	Gray, silty, sandy GRAVEL
Y5259-1012-137	10/12/93	16:05	DDT Long Term Storage Cell, truck load No. 24	1	Gray, sandy SILT
Y5259-1012-138	10/12/93	16:30	DDT Long Term Storage Cell, truck load No. 30	1	Gray, sandy SILT
Y5259-1012-521	10/12/93	10:35	Interim stockpile, location No. 15, to L.T. Cell No. 4	1.5	Gray, silty, sandy GRAVEL
Y5259-1012-522	10/12/93	10:35	Interim stockpile, location No. 15, duplicate of No. 521	1.5	Gray, silty, sandy GRAVEL
Y5259-1012-523	10/12/93	10:35	Interim stockpile, location No. 15, duplicate of No. 521	1.5	Gray, silty, sandy GRAVEL
Y5259-1012-139	10/12/93	18:00	Long Term Storage Cell No. 3	Surface	Gray SILT
Y5259-1012-140	10/12/93	19:30	Long Term Storage Cell No. 3	1.5	Gray, silty, sandy GRAVEL
Y5259-1013-141	10/13/93	10:00	Northwest corner of DDT excavation	1	Gray, silty, sandy GRAVEL
Y5259-1013-142	10/13/93	10:00	Northeast corner of DDT excavation	Surface	Gray, silty, sandy GRAVEL
Y5259-1013-143	10/13/93	10:00	Southeast corner of DDT excavation	3	Gray, silty, sandy GRAVEL
Y5259-1013-144	10/13/93	11:00	DDT Long Term Storage Cell, truck load No. 36	1	Gray SILT
Y5259-1013-145	10/13/93	11:00	DDT Long Term Storage Cell, duplicate of No. 144	1	Gray SILT
Y5259-1013-146	10/13/93	11:00	DDT Long Term Storage Cell, duplicate of No. 144	1	Gray SILT
Y5259-1013-147	10/13/93	15:25	DDT Long Term Storage Cell, truck load No. 41	1	Gray, sandy SILT
Y5259-1013-148	10/13/93	18:30	Soils excavated from Grid Location 16.2- A.4, to L.T Cell No.4	Varies	Not noted
Y5259-1013-149	10/13/93	18:55	Long Term Storage Cell No. 3	1	Gray, sandy SILT
Y5259-1015-150	10/15/93	15:45	Southwest corner of DDT excavation	0.5	Gray, silty, sandy GRAVEL
Y5259-1015-151	10/15/93	16:00	Soils excavated from Grid Location 5-C, to L. T. Cell No.4	Varies	Gray, SAND
Y5259-1015-152	10/15/93	18:30	Long Term Storage Cell No. 4	1.5	Gray, silty SAND
Y5259-1015-524	10/15/93	9:00	Subgrade beneath temp. storage area at Campion, location 1	Surface	Not noted
Y5259-1015-525	10/15/93	9:00	Subgrade beneath temp. storage area at Campion, location 2	Surface	Not noted
Y5259-1015-526	10/15/93	9:00	Subgrade beneath temp. storage area at Campion, location 3	Surface	Not noted
Y5259-1016-153	10/16/93	11:30	Soils excavated from Grid Location 3.5-C.3, to L. T. Cell No.4	Varies	gray, silty SAND
Y5259-1016-154	10/16/93	11:30	Soils excavated from Grid Location 3.5-C.3, dup. of No. 153	Varies	gray, silty SAND
Y5259-1016-155	10/16/93	11:30	Soils excavated from Grid Location 3.5-C.3, dup. of No. 153	Varies	gray, silty SAND
Y5259-1016-156	10/16/93	18:00	Interim stockpile, location No. 21, toL.T. Cell No. 4	1	Gray, silty, sandy GRAVEL
Y5259-1016-157	10/16/93	18:40	Soils excavated from Grid Location 2-C.7, to L.T.Cell No. 4	Varies	Gr, silty, sandy GRAVEL
Y5259-1017-158	10/17/93	9:05	Soils excavated from Grid Location 7-C.7, to L.T.Cell No. 4	Varies	Gr, silty, sandy GRAVEL
Y5259-1017-159	10/17/93	17:30	Soils excavated from Grid Location 2-C.6, to L.T.. Cell No. 4	Varies	Gray, sandy SILT
Y5259-1019-160	10/19/93	15:45	Interim stockpile, location No. 25, to disposal site	1	Not noted
Y5259-1020-161	10/20/93	16:15	Long Term Storage Cell No. 4	1	Gray, silty SAND

TABLE 3 - SAMPLE LOCATIONS AND DESCRIPTIONS

Stockpile Soil Samples

Sample Number	Date	Time	Sample Location (See Fig. 6 and Table 4)	Depth (Ft.)	Sample Classification
Y5259-922-101	9/22/93	12:00	Long Term Storage Cell No. 1, composite sample	1.5	Gray, silty, sandy GRAVEL
Y5259-922-102	9/22/93	14:00	Long Term Storage Cell No. 1, composite sample	1.5	Gray, silty, sandy GRAVEL
Y5259-922-103	9/22/93	18:00	Long Term Storage Cell No. 1, composite sample	1.5	Gray, silty, sandy GRAVEL
Y5259-923-104	9/23/93	13:00	Long Term Storage Cell No. 1, composite sample	1.5	Gray, silty, sandy GRAVEL
Y5259-923-201	9/23/93	9:00	Interim stockpile, Cell A, to DDT stockpile	1.5	Gray, silty, sandy GRAVEL
Y5259-923-202	9/23/93	9:05	Interim Stockpile, Cell A, to DDT stockpile	1.5	Gray, silty, sandy GRAVEL
Y5259-923-203	9/23/93	9:10	Interim Stockpile, Cell B, to DDT stockpile	1.5	Gray, silty, sandy GRAVEL
Y5259-924-105	9/24/93	10:15	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-924-106	9/24/93	13:50	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-924-107	9/24/93	14:35	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-924-108	9/24/93	14:45	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-924-109	9/24/93	14:55	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-924-110	9/24/93	18:30	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-924-111	9/24/93	18:30	Long Term Storage Cell No. 1, duplicate of No. 110	1.5	Gray, silty, sandy GRAVEL
Y5259-924-112	9/24/93	18:30	Long Term Storage Cell No. 1, duplicate of No. 110	1.5	Gray, silty, sandy GRAVEL
Y5259-924-113	9/24/93	20:20	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-925-114	9/25/93	12:10	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-925-115	9/25/93	15:10	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-925-116	9/25/93	17:15	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-925-117	9/25/93	19:30	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-926-118	9/26/93	10:00	Long Term Storage Cell No. 1	1.5	Gray, sandy GRAVEL
Y5259-926-119	9/26/93	11:45	Long Term Storage Cell No. 1	1.5	Gray, sandy GRAVEL
Y5259-926-120	9/26/93	16:30	Long Term Storage Cell No. 1	1.5	Gray, sandy GRAVEL
Y5259-926-121	9/26/93	18:30	Long Term Storage Cell No. 1	1.5	Gray, sandy GRAVEL
Y5259-929-501	9/29/93	18:00	Lot 9, characterize soils beneath interim cell area	Surface	Gray, sandy GRAVEL
Y5259-929-502	9/29/93	18:00	Lot 9, characterize soils beneath interim cell area	Surface	Gray, sandy GRAVEL
Y5259-101-503	10/1/93	10:00	Interim stockpile, Cell C, to disposal site	1.5	Gray, sandy, gravelly SILT
Y5259-101-504	10/1/93	10:00	Interim stockpile, Cell C, duplicate of No. 503	1.5	Gray, sandy, gravelly SILT
Y5259-101-505	10/1/93	10:00	Interim stockpile, Cell C, duplicate of No. 503	1.5	Gray, sandy, gravelly SILT
Y5259-103-506	10/3/93	12:00	Interim stockpile southwest of job shack, to disposal site	1.5	Gray, sandy GRAVEL
Y5259-104-122	10/4/93	18:30	Long Term Storage Cell No. 1	1.5	Gray, silty, sandy GRAVEL
Y5259-105-123	10/5/93	18:10	Long Term Storage Cell No. 2	1	Gray, sandy SILT
Y5259-105-124	10/5/93	18:10	Long Term Storage Cell No. 2, duplicate of No. 123	1	Gray, sandy SILT
Y5259-105-125	10/5/93	18:10	Long Term Storage Cell No. 2, duplicate of No. 123	1	Gray, sandy SILT
Y5259-106-126	10/6/93	20:00	Long Term Storage Cell No. 2	1	Gray, silty, sandy GRAVEL
Y5259-107-507	10/7/93	9:50	Interim stockpile, Cell D, to disposal site	1	Gray, silty, sandy GRAVEL
Y5259-107-508	10/7/93	9:50	Interim stockpile, Cell G, to disposal site	1	Gray, silty, sandy GRAVEL
Y5259-107-127	10/7/93	20:30	Long Term Storage Cell No. 2	1	Gray, silty, sandy GRAVEL
Y5259-108-128	10/8/93	18:15	Long Term Storage Cell No. 2	1	Gray, silty, sandy GRAVEL
Y5259-108-509	10/8/93	16:30	Interim stockpile, location No. 5, to disposal site	1	Gray, silty, sandy GRAVEL
Y5259-108-510	10/8/93	16:30	Interim stockpile, location No. 10, to disposal site	1	Gray, silty, sandy GRAVEL
Y5259-108-511	10/8/93	16:30	Interim stockpile, location No. 10, duplicate of No. 510	1	Gray, sandy SILT
Y5259-108-512	10/8/93	16:30	Interim stockpile, location No. 10, duplicate of No. 510	1	Gray, sandy SILT
Y5259-108-513	10/8/93	16:30	Interim stockpile, location No. 17, to disposal site	1	Gray, silty, sandy GRAVEL
Y5259-108-514	10/8/93	16:30	Interim stockpile, location No. 20, to disposal site	1	Gray, silty, sandy GRAVEL
Y5259-108-515	10/8/93	16:30	Interim stockpile, location No. 33, to disposal site	1	Gray, silty, sandy GRAVEL

C.T. Storage Cell #1
Has particles



BLOCK 9, LOT 9. , VEHICLE MAINTENANCE FACILITY
GALENA, ALASKA
10-14-93

Vehicle Maintenance Facility
Galena, Alaska

DDT TEMPORARY STOCKPILE

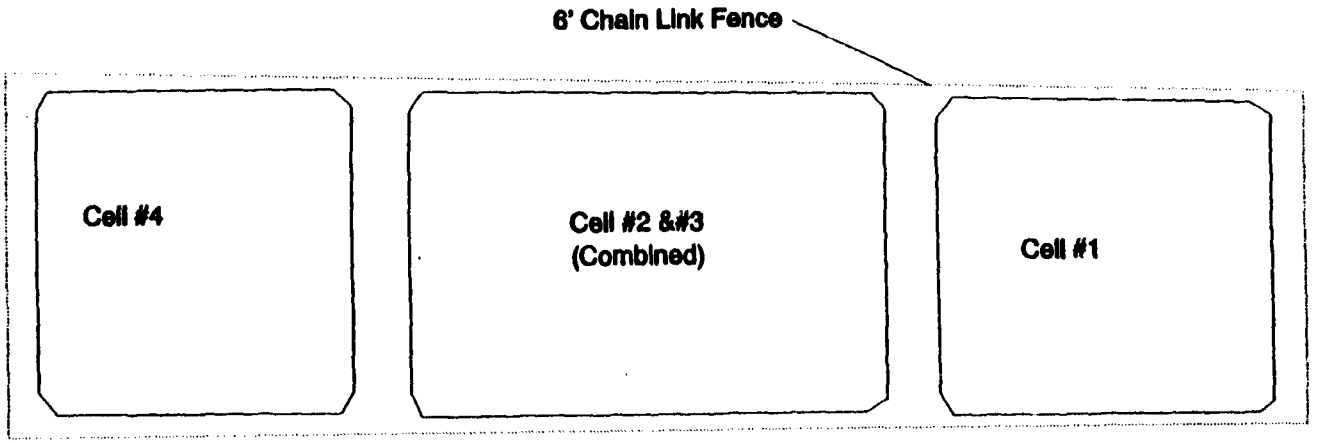
Y-5259 Nov 1

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Fig. 7

Reference: Drawing is a reproduction of plan included in original stockpile plan

Fig. 7



Estimated Total Volume Stockpiled= 7613 Cubic Yards
(Based on Survey)

APPROXIMATE SCALE: 1" = 60'

0 15 30 60 120 180

(feet)

Reference: Plan is based on an as-built supplied by HCC

Vehicle Maintenance Facility
Galena, Alaska

CONTAMINATED SOIL
LONG TERM STORAGE STOCKPILES

Y-5259 Nov 1993

SHANNON&WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Fig. 6

Fig. 6

TABLE 4 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

Parameter	Method*	Sample Number (See Table 3 & Appendix A)					
		Y5259-1016-154	Y-5259-1016-156	Y5259-1016-157	Y5259-1017-158	Y5259-1017-159	Y5259-1019-160
PID Headspace Reading - ppm	PID	480	110	637	1236	508	384
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	0.2	0.1	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	0.03	0.1	0.2	0.04	ND
Total Xylenes - ppm	EPA 8020	ND	ND	3	5.8	0.9	ND
Total BTEX - ppm	EPA 8020	ND	0.03	3.3	6.1	0.94	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	150	5	120	200	53	47
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	12,000	60	160	240	92	70
Organochlorine Pesticides	EPA 8080	-	-	-	-	-	-
DDD - ppm	EPA 8080	-	-	-	-	-	-
DDT - ppm	EPA 8080	-	-	-	-	-	-
DDE - ppm	EPA 8080	-	-	-	-	-	-

Parameter	Method*	Sample Number (See Table 3 & Appendix A)
		Y5259-1020-161
PID Headspace Reading - ppm	PID	274
Aromatic Volatile Organics (BTEX)	EPA 8020	
Benzene - ppm	EPA 8020	ND
Toluene - ppm	EPA 8020	ND
Ethylbenzene - ppm	EPA 8020	0.5
Total Xylenes - ppm	EPA 8020	0.3
Total BTEX - ppm	EPA 8020	0.8
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	28
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	160
Organochlorine Pesticides	EPA 8080	-
DDD - ppm	EPA 8080	-
DDT - ppm	EPA 8080	-
DDE - ppm	EPA 8080	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 4 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-1013-144	Y5259-1013-145	Y5259-1013-147	Y5259-1013-148	Y5259-1014-149	Y5259-1015-150
PID Headspace Reading - ppm	PID	459	459	980	416	758	-
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	-
Toluene - ppm	EPA 8020	ND	ND	ND	ND	0.2	-
Ethylbenzene - ppm	EPA 8020	0.74	0.65	2	0.24	0.3	-
Total Xylenes - ppm	EPA 8020	4.8	4.5	7.8	0.75	2	-
Total BTEX - ppm	EPA 8020	5.54	5.15	9.8	0.99	2.5	-
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	99	110	410	18	160	-
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	270	220	410	50	2,400	-
Organochlorine Pesticides	EPA 8080		-		-	-	
DDD - ppm	EPA 8080	0.25	-	0.14	-	-	0.2
DDT - ppm	EPA 8080	0.015	-	0.01	-	-	0.15
DDE - ppm	EPA 8080	0.01	-	0.05	-	-	0.006

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-1015-151	Y5259-1015-152	Y5259-1015-524	Y5259-1015-525	Y5259-1015-526	Y5259-1016-153
PID Headspace Reading - ppm	PID	1100	384	3	0	1.7	480
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	4.5	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	5.3	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	7	ND	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	16.8	ND	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	370	140	4	2	ND	140
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	4,500	1600	ND	ND	ND	13,000
Organochlorine Pesticides	EPA 8080	-	-	-	-	-	-
DDD - ppm	EPA 8080	-	-	-	-	-	-
DDT - ppm	EPA 8080	-	-	-	-	-	-
DDE - ppm	EPA 8080	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 4 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1012-134	Y5259-1012-135	Y5259-1012-136	Y5259-1012-137	Y5259-1012-138	Y5259-1012-139
PID Headspace Reading - ppm	PID	2500+	1015	2500+	1775	2230	1745
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	2.9	0.07	1.3	0.13	ND	0.06
Toluene - ppm	EPA 8020	19	0.29	2.3	0.3	0.16	0.16
Ethylbenzene - ppm	EPA 8020	17	0.29	11	1.1	0.14	0.33
Total Xylenes - ppm	EPA 8020	71	1.9	34	3.1	1.2	2.3
Total BTEX - ppm	EPA 8020	109.9	2.55	48.6	4.63	1.5	2.85
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	1,100	73	790	95	75	91
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	1,900	550	1,100	700	2,200	280
Organochlorine Pesticides	EPA 8080						-
DDD - ppm	EPA 8080	0.240	1.10	1.10	1.10	1.10	-
DDT - ppm	EPA 8080	0.025	0.80	0.42	1.70	2.00	-
DDE - ppm	EPA 8080	0.040	0.10	0.11	0.22	0.32	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1012-140	Y5259-1012-521	Y5259-1012-522	Y5259-1013-141	Y5259-1013-142	Y5259-1013-143
PID Headspace Reading - ppm	PID	2600+	297	297	-	-	-
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	0.12	ND	0.05	-	-	-
Toluene - ppm	EPA 8020	1.4	0.16	0.28	-	-	-
Ethylbenzene - ppm	EPA 8020	1.5	0.66	0.58	-	-	-
Total Xylenes - ppm	EPA 8020	13	0.56	0.81	-	-	-
Total BTEX - ppm	EPA 8020	16.02	1.38	1.72	-	-	-
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	250	27	23	-	-	-
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	200	100	80	-	-	-
Organochlorine Pesticides	EPA 8080	-	-	-			
DDD - ppm	EPA 8080	-	-	-	>1.4	ND	ND
DDT - ppm	EPA 8080	-	-	-	ND	ND	ND
DDE - ppm	EPA 8080	-	-	-	0.37	ND	ND

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 4 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-108-509	Y5259-108-510	Y5259-108-511	Y5259-108-513	Y5259-108-514	Y5259-108-515
PID Headspace Reading - ppm	PID	17	14	14	43	17	15
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	ND	ND	ND	ND	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	ND	ND	ND	ND	ND
Organochlorine Pesticides	EPA 8080	-	-	-	-	-	-
DDD - ppm	EPA 8080	-	-	-	-	-	-
DDT - ppm	EPA 8080	-	-	-	-	-	-
DDE - ppm	EPA 8080	-	-	-	-	-	-

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-108-516	Y5259-109-131	Y5259-109-519	Y5259-1010-132	Y5259-1010-520	Y5259-1011-133
PID Headspace Reading - ppm	PID	18	214	90	2500+	40	333
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	0.05
Toluene - ppm	EPA 8020	ND	ND	0.04	ND	ND	0.26
Ethylbenzene - ppm	EPA 8020	ND	0.3	ND	3	0.4	0.27
Total Xylenes - ppm	EPA 8020	ND	0.2	0.14	12	2	0.56
Total BTEX - ppm	EPA 8020	ND	0.5	0.18	15	2.4	1.14
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	12	3	210	25	10
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	130	100	250	100	100
Organochlorine Pesticides	EPA 8080	-	-	-	-	-	-
DDD - ppm	EPA 8080	-	-	-	-	-	-
DDT - ppm	EPA 8080	-	-	-	-	-	-
DDE - ppm	EPA 8080	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 4 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-929-502	Y5259-101-503	Y5259-101-504	Y5259-103-506	Y5259-104-122	Y5259-105-123
PID Headspace Reading - ppm	PID	17	28	28	12.7	2500+	434
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	0.02	1.4	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	0.05	3.7	4
Total Xylenes - ppm	EPA 8020	ND	ND	ND	ND	11	2
Total BTEX - ppm	EPA 8020	ND	ND	ND	0.07	16.1	6
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	ND	ND	ND	600	130
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	50	30	30	ND	830	2,400
Organochlorine Pesticides	EPA 8080	-	-	-	-	-	-
DDD - ppm	EPA 8080	-	-	-	-	-	-
DDT - ppm	EPA 8080	-	-	-	-	-	-
DDE - ppm	EPA 8080	-	-	-	-	-	-

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-105-124	Y5259-106-126	Y5259-107-127	Y5259-107-507	Y5259-107-508	Y5259-108-128
PID Headspace Reading - ppm	PID	434	287	138	87	42	1215
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	4	ND	ND	ND	ND	0.6
Total Xylenes - ppm	EPA 8020	2	5	0.1	ND	ND	0.9
Total BTEX - ppm	EPA 8020	6	5	0.1	ND	ND	1.5
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	110	13	ND	7	ND	20
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	3,500	570	140	ND	ND	400
Organochlorine Pesticides	EPA 8080	-	-	-	-	-	-
DDD - ppm	EPA 8080	-	-	-	-	-	-
DDT - ppm	EPA 8080	-	-	-	-	-	-
DDE - ppm	EPA 8080	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 4 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-924-110	Y5259-924-111	Y5259-924-113	Y5259-925-114	Y5259-925-115	Y5259-925-116
PID Headspace Reading - ppm	PID	370	370	220	2500+	70	604
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	5.2	6.6	10	7.7	ND	0.2
Ethylbenzene - ppm	EPA 8020	18	18	8.6	15	ND	0.4
Total Xylenes - ppm	EPA 8020	18	44	51	75	0.4	0.4
Total BTEX - ppm	EPA 8020	41.2	68.6	69.6	97.7	0.4	1
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	1,600	1,800	1,400	2,100	29	54
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	2,500	3,500	2100	940	180	25
Organochlorine Pesticides	EPA 8080						
DDD - ppm	EPA 8080	4.2	5.4	4.8	3.8	4.0	0.4
DDT - ppm	EPA 8080	1.0	1.5	3.3	2.0	0.5	1.6
DDE - ppm	EPA 8080	0.6	0.8	0.7	0.5	0.2	ND

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-925-117	Y5259-926-118	Y5259-926-119	Y5259-926-120	Y5259-926-121	Y5259-929-501
PID Headspace Reading - ppm	PID	300	1518	1600	2270	2500+	18
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	0.2	0.72	0.8	1.6	10	ND
Ethylbenzene - ppm	EPA 8020	0.2	2.8	1.1	0.92	12	ND
Total Xylenes - ppm	EPA 8020	ND	13	7.7	5.4	62	ND
Total BTEX - ppm	EPA 8020	0.4	16.52	9.6	7.92	84	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	50	390	260	170	1,300	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	130	80	210	330	1,900	40
Organochlorine Pesticides	EPA 8080						
DDD - ppm	EPA 8080	1.7	1.0	1.4	1.0	3.0	-
DDT - ppm	EPA 8080	1	0.9	1.2	0.5	1.9	-
DDE - ppm	EPA 8080	0.1	0.1	0.08	0.1	0.4	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 4 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-922-101	Y5259-922-102	Y5259-922-103	Y5259-923-104	Y5259-923-201	Y5259-923-202
PID Headspace Reading - ppm	PID	208	416	1195	1010	37	31
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	8.5	ND	ND
Ethylbenzene - ppm	EPA 8020	0.06	0.13	1.2	0.9	ND	ND
Total Xylenes - ppm	EPA 8020	0.45	0.98	6.5	11	ND	ND
Total BTEX - ppm	EPA 8020	0.51	1.12	7.7	20.4	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	17	66	440	880	2	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	1,600	1,700	350	160	20	ND
Organochlorine Pesticides	EPA 8080						
DDD - ppm	EPA 8080	2.8	6.4	7.5	5.0	0.4	0.7
DDT - ppm	EPA 8080	1.9	1.9	29.0	17	1.3	0.6
DDE - ppm	EPA 8080	0.2	0.5	1.0	0.6	0.3	0.1

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-923-203	Y5259-924-105	Y5259-924-106	Y5259-924-107	Y5259-924-108	Y5259-924-109
PID Headspace Reading - ppm	PID	16	1501	2500+	164	166	1812
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	2	ND	ND	ND
Toluene - ppm	EPA 8020	ND	21	44	ND	ND	0.78
Ethylbenzene - ppm	EPA 8020	ND	5.9	16	0.3	ND	2.3
Total Xylenes - ppm	EPA 8020	ND	15	72	0.5	ND	4.3
Total BTEX - ppm	EPA 8020	ND	41.9	134	0.8	ND	7.38
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	1,000	2,800	48	14	230
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	420	1500	1,000	120	130
Organochlorine Pesticides	EPA 8080						
DDD - ppm	EPA 8080	1.6	2.8	3.0	5.6	1.9	1.0
DDT - ppm	EPA 8080	7.0	0.2	2.2	16	4.6	1.3
DDE - ppm	EPA 8080	0.9	0.3	0.6	0.4	0.1	0.1

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-109-129	Y5259-109-130	Y5259-109-517	Y5259-109-518	Y5259-1013-701	Y5259-1013-702
PID Headspace Reading - ppm	PID	300	24	0	0	30	17
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	0.4	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	2	ND	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	2.4	ND	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	47	ND	ND	ND	ND	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	1300	ND	ND	ND	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1013-703	Y5259-1013-704	Y5259-1013-705	Y5259-1013-706	Y5259-1013-707	Y5259-1013-708
PID Headspace Reading - ppm	PID	43	21	30	20	19	20
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	ND	2	ND	ND	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	ND	ND	ND	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	ND	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1013-709	Y5259-1013-710	Y5259-1013-711	Y5259-1013-712	Y5259-1013-713	Y5259-1013-714
PID Headspace Reading - ppm	PID	19	152	142	92	81	18
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	0.021	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	0.077	ND	ND	ND
Total BTEX - ppm	EPA 8020	ND	ND	0.098	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	2	6	ND	ND	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	100	550	630	100	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	ND	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1013-715	Y5259-1013-716	Y5259-1013-717	Y5259-1014-719	Y5259-1014-720	Y5259-1014-721
PID Headspace Reading - ppm	PID	18	130	130	32	27	25
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	ND	2	2	ND	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	80	140	40	ND	20
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	ND	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1014-722	Y5259-1014-723	Y5259-1014-725	Y5259-1014-726	Y5259-1014-727	Y5259-1014-728
PID Headspace Reading - ppm	PID	111	111	296	148	32	28
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	20	20	40	20	4	2
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	540	340	1,500	640	40	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	ND	-	-	-
Volatile Organic Compounds	EPA 8260		-	-	-	-	-
Ethylbenzene - ppm	EPA 8260	0.038	-	-	-	-	-
Total Xylenes - ppm	EPA 8260	0.18	-	-	-	-	-
Remaining Analytes	EPA 8260	ND	-	-	-	-	-

		Sample Number (See Table 1 & Appendix A)					
Parameter	**Method***	Y5259-1014-729	Y5259-1014-730	Y5259-1014-731	Y5259-1014-732	Y5259-1014-733	Y5259-1014-734
PID Headspace Reading - ppm	PID	33	27	33	38	36	29
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	0.04	ND	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	0.04	ND	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	ND	ND	ND	ND	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	20	ND	15	14	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	ND	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	Method*	Y5259-1014-735	Y5259-1014-737	Y5259-1014-738	Y5259-1014-739	Y5259-1014-740	Y5259-1014-741
PID Headspace Reading - ppm	PID	29	25	460	27	37	38
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	1.8	ND	ND	ND
Total BTEX - ppm	EPA 8020	ND	ND	1.8	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	ND	120	3	ND	1
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	16	7300	30	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	ND	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	Method*	Y5259-1014-742	Y5259-1014-743	Y5259-1014-744	Y5259-1014-745	Y5259-1014-746	Y5259-1014-747
PID Headspace Reading - ppm	PID	42	40	40	34	35	35
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	ND	ND	0.7	0.7
Total BTEX - ppm	EPA 8020	ND	ND	ND	ND	0.7	0.7
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	3	ND	ND	2	23	17
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	ND	ND	30	170	110
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	ND	-	-	-	ND	ND
Volatile Organic Compounds	EPA 8260	-	-	-	-		-
Benzene	EPA 8260	-	-	-	-	0.0014	-
Ethylbenzene - ppm	EPA 8260	-	-	-	-	0.0079	-
Total Xylenes - ppm	EPA 8260	-	-	-	-	0.014	-
Remaining Analytes	EPA 8260	-	-	-	-	ND	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-1014-749	Y5259-1014-750	Y5259-1014-751	Y5259-1014-752	Y5259-1014-753	Y5259-1014-754
PID Headspace Reading - ppm	PID	230	150	48	63	33	40
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	0.07	0.7	ND	0.34	ND	ND
Total BTEX - ppm	EPA 8020	0.07	0.7	ND	0.34	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	10	84	ND	15	ND	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	630	240	14	40	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	ND	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

Parameter	Method*	Sample Number (See Table 1 & Appendix A) Y5259-1014-755	Y5259-1014-756	Y5259-1014-757	Y5259-1014-758	Y5259-1014-759	Y5259-1014-761
PID Headspace Reading - ppm	PID	16	34	78	160	160	73
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	0.03
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	0.68	5.7	0.75	ND
Total BTEX - ppm	EPA 8020	ND	ND	0.68	5.7	0.75	0.03
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	1	ND	20	130	23	5
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	ND	190	1,200	780	20
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	ND	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-1014-762	Y5259-1014-763	Y5259-1014-764	Y5259-1014-765	Y5259-1014-766	Y5259-1014-767
PID Headspace Reading - ppm	PID	900	155	83	50	165	54
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	4	2.1	0.72	0.06	ND	ND
Total BTEX - ppm	EPA 8020	4	2.1	0.72	0.06	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	125	63	18	5	2	3
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	9,700	770	20	ND	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	ND	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

Parameter	Method*	Sample Number (See Table 3 & Appendix A) Y5259-1014-768	Y5259-1014-769	Y5259-1014-770	Y5259-1014-771	Y5259-1014-774	Y5259-1014-775
PID Headspace Reading - ppm	PID	60	31	600	600	311	290
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	0.12	ND	ND	ND	ND	0.4
Total Xylenes - ppm	EPA 8020	1.5	ND	3.1	2.9	0.4	0.4
Total BTEX - ppm	EPA 8020	1.62	ND	3.1	2.9	0.4	0.8
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	13	2	97	130	17	64
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	370	ND	1000	530	610	300
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	ND	ND	-	-
Volatile Organic Compounds	EPA 8260	-	-			-	-
Acetone - ppm	EPA 8260	-	-	ND	0.055	-	-
Toluene - ppm	EPA 8260	-	-	0.088	0.82	-	-
Ethylbenzene - ppm	EPA 8260	-	-	0.042	0.34	-	-
Total Xylenes - ppm	EPA 8260	-	-	1.4	2.8	-	-
1,1,2-Trichlorotriflouroethane - ppm	EPA 8260	-	-	0.019	ND	-	-
Remaining Analytes	EPA 8260	-	-	ND	ND	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1014-776	Y5259-1015-777	Y5259-1015-778	Y5259-1015-779	Y5259-1015-780	Y5259-1015-781
PID Headspace Reading - ppm	PID	320	115	15	72	1131	197
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	0.03	0.03	ND	0.05	0.08
Toluene - ppm	EPA 8020	0.1	0.1	0.07	0.05	1	0.6
Ethylbenzene - ppm	EPA 8020	0.1	ND	0.1	ND	1	ND
Total Xylenes - ppm	EPA 8020	1	0.6	0.2	0.1	10	3
Total BTEX - ppm	EPA 8020	1.2	0.73	0.4	4	12.05	3.68
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	61	2.6	10	4	120	60
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	1000	690	ND	ND	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	ND	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 1 & Appendix A)					
Parameter	**Method***	Y5259-1015-782	Y5259-1015-783	Y5259-1015-784	Y5259-1015-786	Y5259-1015-787	Y5259-1015-788
PID Headspace Reading - ppm	PID	290	425	425	87	49	140
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	0.03	0.05	ND	ND	0.1
Toluene - ppm	EPA 8020	0.1	0.1	0.2	0.08	0.1	0.08
Ethylbenzene - ppm	EPA 8020	0.5	ND	ND	0.1	ND	0.2
Total Xylenes - ppm	EPA 8020	0.6	0.4	0.8	0.3	0.9	0.5
Total BTEX - ppm	EPA 8020	1.2	0.53	1.05	0.48	1	0.88
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	40	20	20	8	30	21
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	620	130	60	ND	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	ND	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1015-789	Y5259-1015-790	Y5259-1015-791	Y5259-1015-792	Y5259-1015-793	Y5259-1015-794
PID Headspace Reading - ppm	PID	82	100	390	80	59	298
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	0.8	0.5	0.7	0.3	ND	0.4
Toluene - ppm	EPA 8020	0.1	0.08	0.3	0.04	ND	0.1
Ethylbenzene - ppm	EPA 8020	0.4	1	ND	0.04	ND	0.6
Total Xylenes - ppm	EPA 8020	0.4	0.3	1.4	0.2	ND	0.5
Total BTEX - ppm	EPA 8020	1.7	1.88	2.4	0.58	ND	1.6
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	24	12	57	9	1	32
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	ND	ND	ND	ND	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	ND	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1015-795	Y5259-1015-796	Y5259-1015-798	Y5259-1015-799	Y5259-1015-800	Y5259-1015-801
PID Headspace Reading - ppm	PID	74	74	414	136	2000	77
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	0.03	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	0.05	0.02	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	0.05	0.02	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	0.3	0.08	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	0.43	0.12	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	7	3	220	45	90	11
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	ND	70	ND	530	53
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	-	ND
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
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TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1015-802	Y5259-1015-803	Y5259-1015-804	Y5259-1018-805	Y5259-1018-806	Y5259-1018-807
PID Headspace Reading - ppm	PID	120	839	2500+	396	8.5	559
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	1.2
Ethylbenzene - ppm	EPA 8020	ND	ND	1.1	0.03	ND	2.7
Total Xylenes - ppm	EPA 8020	ND	ND	130	0.2	ND	4.7
Total BTEX - ppm	EPA 8020	ND	ND	131.1	0.23	ND	8.6
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	2.7	65	900	6.7	1.7	220
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	130	490	40	1,900	4,700
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	ND	-
Volatile Organic Compounds	EPA 8260		-	-	-	-	-
All Analytes	EPA 8260	ND	-	-	-	-	-

		Sample Number (See Table 1 & Appendix A)					
Parameter	**Method***	Y5259-1018-808	Y5259-1018-810	Y5259-1018-811	Y5259-1018-812	Y5259-1018-813	Y5259-1018-814
PID Headspace Reading - ppm	PID	559	282	512	580	618	361
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	1.5	0.02	0.7	3.9	0.4	0.6
Ethylbenzene - ppm	EPA 8020	4.2	0.1	ND	0.7	0.5	0.4
Total Xylenes - ppm	EPA 8020	4.9	0.3	1.6	15	1.1	0.7
Total BTEX - ppm	EPA 8020	10.6	0.42	2.3	19.6	2	1.7
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	260	10	71	550	46	54
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	10,000	930	3,800	3,300	1,800	4,600
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1018-815	Y5259-1018-816	Y5259-1018-817	Y5259-1018-818	Y5259-1018-819	Y5259-1018-820
PID Headspace Reading - ppm	PID	715	806	621	585	290	290
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	2.3	3.7	1.3	1.2	ND	ND
Ethylbenzene - ppm	EPA 8020	2.1	2	1.7	1.6	ND	ND
Total Xylenes - ppm	EPA 8020	5.8	3.1	3.6	3.2	ND	ND
Total BTEX - ppm	EPA 8020	8.12	8.8	6.6	6	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	180	150	120	110	ND	1
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	5,600	8,000	7,300	7,600	40	20
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	ND	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1018-822	Y5259-1018-823	Y5259-1018-824	Y5259-1018-825	Y5259-1018-826	Y5259-1018-827
PID Headspace Reading - ppm	PID	28	75	343	640	556	624
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	0.08	ND	ND	15	0.6	ND
Ethylbenzene - ppm	EPA 8020	0.3	ND	0.02	26	0.5	ND
Total Xylenes - ppm	EPA 8020	0.6	ND	0.07	35	0.6	5
Total BTEX - ppm	EPA 8020	0.98	ND	0.09	76	1.7	5
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	11	ND	4.2	440	30	230
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	550	10	60	5,000	3,100	5,800
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
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TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1018-828	Y5259-1018-829	Y5259-1018-830	Y5259-1018-831	Y5259-1018-832	Y5259-1018-834
PID Headspace Reading - ppm	PID	190	417	64	190	190	428
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	0.03
Toluene - ppm	EPA 8020	ND	ND	ND	ND	ND	0.2
Ethylbenzene - ppm	EPA 8020	ND	ND	ND	0.06	ND	ND
Total Xylenes - ppm	EPA 8020	ND	ND	ND	0.2	ND	3
Total BTEX - ppm	EPA 8020	ND	ND	ND	0.26	ND	3.23
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	24	2	ND	6	ND	32
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	1,300	20	ND	60	ND	220
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1018-835	Y5259-1018-836	Y5259-1018-837	Y5259-1018-838	Y5259-1018-839	Y5259-1018-840
PID Headspace Reading - ppm	PID	108	193	1039	954	773	522
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	0.06	ND	ND	ND
Toluene - ppm	EPA 8020	ND	13	0.3	0.4	0.1	ND
Ethylbenzene - ppm	EPA 8020	ND	9	0.06	ND	ND	ND
Total Xylenes - ppm	EPA 8020	0.08	82	0.5	3	0.4	ND
Total BTEX - ppm	EPA 8020	0.08	104	0.86	3.4	0.5	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	2	740	10	67	18	ND
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	970	ND	1,000	50	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	ND	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 5 - ANALYTICAL RESULTS SUMMARY - EXCAVATION CHARACTERIZATION SAMPLES

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1018-841	Y5259-1018-842	Y5259-1018-843	Y5259-1018-844	Y5259-1018-846	Y5259-1018-847
PID Headspace Reading - ppm	PID	317	970	1149	1149	2500+	867
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	0.2	0.[illegible]	50	ND
Toluene - ppm	EPA 8020	ND	ND	6	14	250	ND
Ethylbenzene - ppm	EPA 8020	ND	ND	6	12	69	ND
Total Xylenes - ppm	EPA 8020	ND	16	25	51	420	ND
Total BTEX - ppm	EPA 8020	ND	16	37.2	77.7	789	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	ND	300	160	620	4,100	3
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	2,300	110	230	7,500	ND
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

		Sample Number (See Table 3 & Appendix A)					
Parameter	**Method***	Y5259-1018-848	Y5259-1018-849	Y5259-1018-850	Y5259-1018-851	Y5259-1018-852	
PID Headspace Reading - ppm	PID	147	2020	146	224	887	
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	ND	ND	ND	ND	
Toluene - ppm	EPA 8020	ND	8.1	0.02	0.02	ND	
Ethylbenzene - ppm	EPA 8020	ND	9	ND	ND	ND	
Total Xylenes - ppm	EPA 8020	ND	25	ND	ND	ND	
Total BTEX - ppm	EPA 8020	ND	42.1	0.02	0.02	ND	
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	2	440	ND	1.8	1.1	
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	ND	5,700	10	ND	ND	
Polybiphenol Chlorides (PCBs)	1254 by GC/EDC	-	-	-	-	-	-
Volatile Organic Compounds	EPA 8260	-	-	-	-	-	-

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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July 25, 1994

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Hoffman Construction
3201 C Street, Suite 610
Anchorage, Alaska 99503

Attn: Mr. Thomas Peterson

RE: DRAFT ADDENDUM #1 TO FINAL FIELD REPORT, CONTAMINATED STOCKPILE CONFIRMATION SAMPLING, VEHICLE MAINTENANCE FACILITY, GALENA, ALASKA

This letter presents the results of our confirmation sampling of the contaminated soil stockpiles placed during the excavation of petroleum, oil, and lubricant (POL) contaminated soils for the Galena Vehicle Maintenance Facility in Galena, Alaska. The purpose of this stockpile sampling program was to confirm the presence of POL contaminated soils in the stockpiles at concentrations above the Alaska Department of Environmental Conservation (ADEC) Level A soil cleanup guidelines. Our work was performed in accordance with our project work plan dated April 20, 1994, and our approved quality assurance program plan (QAPP) on file with ADEC. This letter is a draft pending the addition of the results of the Corps' quality assurance report (QAR) and incorporation of any review comments made by the Corps. The final version of this letter should be inserted as Addendum #1 into our field report entitled "Final Field Report, Excavation of POL Contaminated Soil, Vehicle Maintenance Facility, Galena Airport, Galena, Alaska", dated June, 1994.

Background

The excavation of POL contaminated soils for the Galena Vehicle Maintenance Facility project was conducted in the fall of 1993 by Hoffman Construction Company (HCC) of Anchorage, Alaska. Excavation monitoring and soil sampling was performed by Mr. David Dinkuhn, an engineer with Shannon & Wilson, Inc. of Fairbanks, Alaska.

During excavation, POL contaminated soils were segregated based on the results of field screening with a photoionization detector (PID). The segregated contaminated soils were placed in four stockpiles located at Campion Air Field. Based on a survey conducted by HCC, a total of 7613 cubic yards of soil were placed in the four stockpiles. The stockpiled contaminated soils were sampled by our field engineer on a minimum basis of one sample per day of placement. The stockpile field samples and quality control (QC) duplicates were submitted to Friedman and Bruya, Inc. (FBI) of Seattle, Washington for chemical analysis. Quality Assurance (QA)

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samples were submitted to the Corps laboratory in Troutdale Oregon. The stockpile samples were analyzed for diesel range organics (DRO) by EPA 8100 modified, gasoline range organics (GRO) by EPA 8015 modified, and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA 8020. A total of 44 contaminated stockpile characterization samples (including QC and QA duplicates) were collected and analyzed. Based on the test results, all of the samples contained POLs at levels above the ADEC Level A cleanup guidelines with the exception of one sample. Because, FBI is not a Corps accredited laboratory, the Corps requested resampling to confirm the presence of POL contamination. The stockpiles were resampled during this work and the samples were analyzed by Analytical Technologies, Inc (ATI), a Corps-accredited laboratory.

Field Work

Field sampling activities were conducted on June 13, 1994, by Mr. David Dinkuhn. A backhoe and laborers were supplied by HCC. Prior to sampling, the plastic covers were removed from the stockpiles. Fourteen representative sample location were selected by our field engineer and a test pit was excavated at each sample location to depths of 6 to 8 feet. Soil samples were collected at three different depths in each test pit for headspace screening with a PID. Field samples were collected at the location with the highest headspace reading. For quality control/quality assurance (QC/QA) purposes, triplicate samples were collected from two of the sampling locations. After sampling, the stockpile covers were replaced to their original positions. The locations of the test pits are shown in Figure 1.

The field samples were placed into iced coolers after collection. Prior to shipment to Fairbanks, they were stored in refrigerators maintained below 4°C. On the day following sampling, the samples were packed into iced coolers and flown to Fairbanks with our field engineer. The samples were stored overnight at our laboratory in Fairbanks in refrigerators maintained at approximately 4°C. Recording thermometers placed in the coolers indicated that the samples arrived in Fairbanks at temperatures of about 1°C. The next day, the samples were repacked into iced coolers and Goldstreaked to the project laboratory, ATI of Anchorage. ATI reported that they received the samples at 1.5°C to 2.8°C. These temperatures were measured in temperature blanks provided in each cooler. Recording thermometers placed in each cooler reported a temperature range of -20°C to 4°C. The minimum temperature of -20°C reflects that the thermometers were stored in a freezer prior to being placed in the coolers. ATI then repacked the samples and shipped them via Goldstreak to their Renton, Washington laboratory. ATI reported that recording thermometers placed with the samples reported a temperature range of -5.2°C to 5.2°C during shipment. The same day the field samples were shipped to ATI, the

QA samples were placed into an iced cooler with a recording thermometer and shipped via DHL to the Corps laboratory in Troutdale, Oregon. Ms. Pam Hertzberg of the Troutdale laboratory was contacted following the QA sample arrival. Ms. Hertzberg reported that the samples arrived in good condition and at temperatures of less than 4°C.

Sample Analyses

Soil samples (including blind QC duplicates) and field blanks collected during excavation and stockpile sampling were submitted to ATI of Renton, Washington for analysis. ATI is a Corps-validated laboratory. The samples were analyzed for gasoline range organics (GRO) by EPA method 8015 modified, benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA method 8020, diesel range organics (DRO) by EPA method 8100 modified, and organochlorine pesticides by EPA method 8080. QA duplicates were sent to the government lab in Troutdale, Oregon. The soil samples were also analyzed for headspace volatile organics using a PID at the time of collection. Trip blanks submitted with each sample cooler were analyzed for BTEX by EPA method 602.

Analytical Results

Based on the project laboratory analytical data, analyte concentrations ranged from 93 to 2,100 ppm GRO, about 1 to 37 ppm total BTEX, 150 to 11,000 ppm DRO, 0.15 to 6.1 ppm DDD, non detectible to 0.095 ppm DDE, and nondetectible to 1.7 ppm DDT. The results of the trip blank samples were non detectible for BTEX compounds.

Sample locations and analytical results are included in Tables 1 and 2. Table 2 also includes PID readings for each sample. A copy of the analytical laboratory report is included in Appendix A. Analytical results for the QA samples submitted to the Corps are not available at this time. When they are received, they will be incorporated into, and submitted with the final version of this report. We understand that the Corp's schedule is such that they will submit a QAR within sixty days of receipt of the project laboratory's data report.

Quality Control

For QC purposes, blind duplicates of 10 percent of the soil samples were submitted to the project laboratory. In addition, QA duplicates of 10 percent of the soil samples (collected at the same time as the QC samples) were submitted to the North Pacific Division Materials Laboratory (CENPD-PE-GT-L) at 1491 NW Graham Avenue, Troutdale, Oregon 97060-9503. The government lab was notified in advance of the sample shipment. All QA/QC samples were labelled with unique sample numbers. In addition, travel blanks were placed in each sample

cooler during shipment. The travel blanks were prepared by pouring organic-free water into laboratory-supplied 40 ml vials.

Quality Assurance (QA) and Quality Control (QC) procedures were used to assess whether sampling, documentation, and laboratory data were effective and whether or not they detracted from the quality or reliability of the results. The quantitative data quality objectives for this project are precision, accuracy, and completeness. Precision examines the spread of data about their mean as measured by relative percent difference (RPD). Accuracy measures the systematic error of an analytical method. Completeness establishes whether a sufficient amount of valid data measurements were obtained. The quality control procedures performed by the project laboratory include: method blank, surrogate spike, duplicate laboratory control, and surrogate control analyses. The project precision, accuracy, and completeness for soil BTEX, GRO, DRO and PCB/Pesticides analyses and the data quality objectives (DQO) for this project are as follows:

	Precision		Accuracy		Completeness	
Parameter	Result	(DQO)%	Result	(DQO)%	Result	(DQO)%
BTEX	+/- 24	(+/- 40)	89-175	(60-130)	100	(95)
GRO	+/- 7	(+/- 40)	85-99	(60-130)	100	(95)
DRO	+/- 17	(+/- 40)	99-135	(60-130)	100	(95)
PCBs/Pesticides	+/- 5	(+/- 20)	26-108	(60-130)	100	(95)

In 15 of 20 cases for the BTEX analyses, the surrogate recovery reported was outside of the project DQO of 50% to 150%. In nine of these cases, the surrogate recovery was within the laboratory DQO of 60%-175%. In the remaining cases, the surrogate recoveries fell outside of the laboratory DQO. In each case, the laboratory identified the cause as matrix interference. The accuracy range given above for GRO reflects the recoveries for the surrogate trifluorotoluene, which was used to spike every sample. The second surrogate used in every sample, bromofluorobenzene, reported recoveries of 0% to 180% with the majority falling outside of the project DQO. In each case where the bromofluorobenzene recoveries were outside of the project DQO, the laboratory reported matrix interference as the cause. For samples 3 and 15, surrogate recoveries reported for the DRO analysis fell outside of the project DQO. In both cases, the recovery values (132% and 135%) fell within the project laboratory's

cooler during shipment. The travel blanks were prepared by pouring organic-free water into laboratory-supplied 40 ml vials.

Quality Assurance (QA) and Quality Control (QC) procedures were used to assess whether sampling, documentation, and laboratory data were effective and whether or not they detracted from the quality or reliability of the results. The quantitative data quality objectives for this project are precision, accuracy, and completeness. Precision examines the spread of data about their mean as measured by relative percent difference (RPD). Accuracy measures the systematic error of an analytical method. Completeness establishes whether a sufficient amount of valid data measurements were obtained. The quality control procedures performed by the project laboratory include: method blank, surrogate spike, duplicate laboratory control, and surrogate control analyses. The project precision, accuracy, and completeness for soil BTEX, GRO, DRO and PCB/Pesticides analyses and the data quality objectives (DQO) for this project are as follows:

	Precision		Accuracy		Completeness	
Parameter	Result	(DQO)%	Result	(DQO)%	Result	(DQO)%
BTEX	+/- 24	(+/- 40)	89-175	(60-130)	100	(95)
GRO	+/- 7	(+/- 40)	85-99	(60-130)	100	(95)
DRO	+/- 17	(+/- 40)	99-135	(60-130)	100	(95)
PCBs/Pesticides	+/- 5	(+/- 20)	26-108	(60-130)	100	(95)

In 15 of 20 cases for the BTEX analyses, the surrogate recovery reported was outside of the project DQO of 50% to 150%. In nine of these cases, the surrogate recovery was within the laboratory DQO of 60%-175%. In the remaining cases, the surrogate recoveries fell outside of the laboratory DQO. In each case, the laboratory identified the cause as matrix interference. The accuracy range given above for GRO reflects the recoveries for the surrogate trifluorotoluene, which was used to spike every sample. The second surrogate used in every sample, bromofluorobenzene, reported recoveries of 0% to 180% with the majority falling outside of the project DQO. In each case where the bromofluorobenzene recoveries were outside of the project DQO, the laboratory reported matrix interference as the cause. For samples 3 and 15, surrogate recoveries reported for the DRO analysis fell outside of the project DQO. In both cases, the recovery values (132% and 135%) fell within the project laboratory's

DQO of 50% to 150% and are considered acceptable. For sample 1, the surrogate recoveries reported for the pesticides analysis fell outside of the project DQO. The surrogate recovery for the first surrogate, dibutylchlorendate, was reported at 26%. This value falls marginally outside of the project laboratory's DQO of 27% to 149%. The surrogate recovery for the second surrogate, decachlorobiphenyl, was reported at 36%. This value falls within the laboratory DQO of 36% to 137%. The pesticides data for sample 1 is considered valid based on the acceptable surrogate recovery for the second surrogate.

Discussion

The ADEC soil cleanup criteria adopted for this project are 100 ppm DRO, 50 ppm GRO, 0.1 ppm benzene, and 10 ppm total BTEX. The analytical results for the soil samples collected during this work reported contaminant levels substantially above the cleanup criteria in every sample submitted. This data confirms the presence of contaminated soil in the Campion stockpiles at concentrations above the adopted Level A cleanup levels.

Limitations

Our sampling was intended to confirm the presence or absence of hydrocarbon contamination at the locations selected. It is possible that our sampling program did not represent the highest levels of contamination. It was also not the intent of our exploration to detect contamination other than by those compounds for which the laboratory analyses were run. No conclusions can be drawn on the presence or absence of other contaminants.

The observed levels of hydrocarbon contamination may be dependent on the general passage of time, particularly if contaminants are migrating. The data presented in this report should be considered representative of the time that the data was collected.

This report was prepared for the exclusive use of our client in the study of potential contamination in accordance with the scope of work. If it is made available to others, it should be for information on factual data only and not as a warranty of subsurface conditions.

Shannon & Wilson, Inc. has prepared the attached "Important Information About Your Geotechnical Engineering/Subsurface Waste Management (Remediation) Report" to aid you and others in understanding the limitations of our reports.

We hope that this information is sufficient for your current needs. If we can be of any further assistance on this project, or if you have any questions, please do not hesitate to call.

Sincerely,

SHANNON & WILSON, INC.

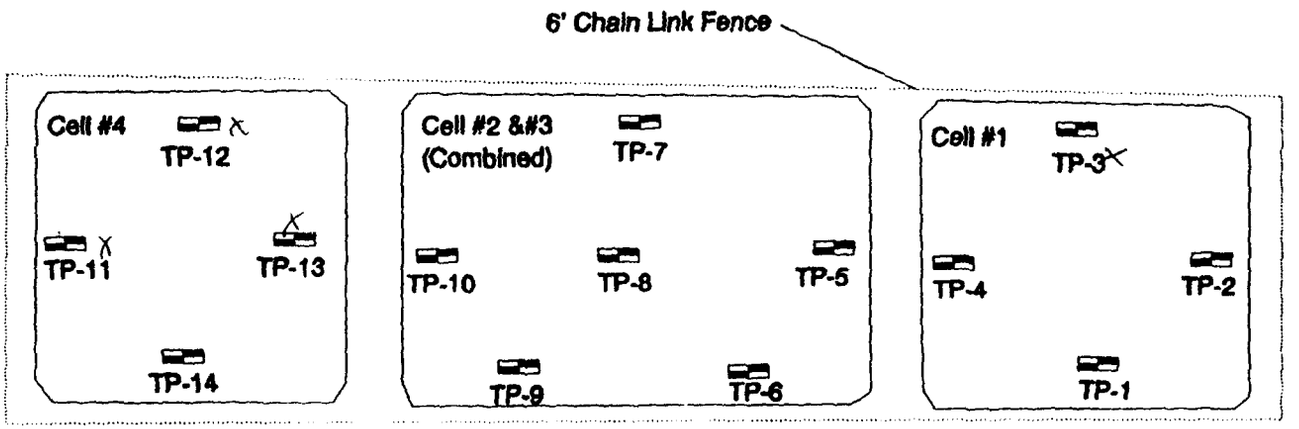
By _____
David Dinkuhn
Engineer

Reviewed By _____
David McDowell
Associate

DD:DMD/pjk

Enclosures:

	Figure 1	Test Pit Location Plan
	Table 1	Sample Locations and Descriptions
	Table 2	Analytical Results Summary
	Appendix A	Laboratory Report
	Appendix B	Important Information About Your Geotechnical Engineering/Subsurface Waste Management (Remediation) Report



Estimated Total Volume Stockpiled= 7613 Cubic Yards
(Based on Survey)

APPROXIMATE SCALE: 1 inch = 60 feet

0 15 30 60 120

(feet)

LEGEND:

TP-1 Number and Approximate Location of Test Pit

Vehicle Maintenance Facility
Galena, Alaska

CONTAMINATED SOIL STOCKPILES
TEST PIT LOCATION PLAN

July 1994 Y-5259

SHANNON&WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

Fig. 1

TABLE 1 - SAMPLE LOCATIONS AND DESCRIPTIONS

Stockpile Soil Samples

Sample Number	Date	Time	Sample Location (See Fig. 1)	Depth (Ft.)	Sample Classification
5259-613-01	6/13/94	14:10	TP-1	2	Gray, silty SAND
5259-613-02	6/13/94	14:25	TP-2	3	Gray, silty SAND
5259-613-03	6/13/94	14:40	TP-3	6	Gray, silty, sandy GRAVEL
5259-613-04	6/13/94	15:15	TP-4	6	Gray, sandy, gravelly SILT
5259-613-05	6/13/94	15:16	QC Duplicate of Sample No. 04	6	Gray, sandy, gravelly SILT
5259-613-06	6/13/94	15:17	QA Duplicate of Sample No. 04	6	Gray, sandy, gravelly SILT
5259-613-07	6/13/94	16:00	TP-5	2	Gray, sandy SILT
5259-613-08	6/13/94	16:30	TP-6	8	Gray, sandy SILT
5259-613-09	6/13/94	17:15	TP-7	2	Gray, sandy SILT
5259-613-10	6/13/94	17:30	TP-8	2	Gray, sandy, gravelly SILT
5259-613-11	6/13/94	18:00	TP-9	8	Gray, sandy, gravelly SILT
5259-613-12	6/13/94	18:30	TP-10	8	Gray, silty, gravelly SAND
5259-613-13	6/13/94	18:31	QC Duplicate of Sample No. 12	8	Gray, silty, gravelly SAND
5259-613-14	6/13/94	18:32	QA Duplicate of Sample No. 12	8	Gray, silty, gravelly SAND
5259-613-15	6/13/94	19:25	TP-11	6	Gray, silty SAND
5259-613-16	6/13/94	19:40	TP-12	4	Gray, silty SAND
5259-613-17	6/13/94	20:00	TP-13	2	Gray, silty SAND
5259-613-18	6/13/94	20:20	TP-14	2	Gray, silty SAND

TABLE 2 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

		Sample Number (See Table 1 & Appendix A)					
Parameter	Method*	5259-613-01	5259-613-02	5259-613-03	5259-613-04	5259-613-05*	5259-613-06**
Headspace Reading - ppm	PID	2500+	2500+	2500+	953	953	953
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	ND	0.75	ND	0.073	ND	Not Avail.
Toluene - ppm	EPA 8020	0.08	0.86	0.35	0.16	0.11	"
Ethylbenzene - ppm	EPA 8020	0.66	2.8	0.75	1.1	0.3	"
Total Xylenes - ppm	EPA 8020	0.97	8.2	2	0.6	0.94	"
Total BTEX - ppm	EPA 8020	1.71	12.61	3.1	1.933	1.35	"
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	670	2,100	740	190	240	"
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	2,600	150	9,500	1,100	1,000	"
Organochlorine Pesticides	EPA 8080						
DDD - ppm	EPA 8080	0.28	0.21	2.5	0.51	0.52	"
DDE - ppm	EPA 8080	0.0089	0.012	0.095	0.022	0.023	"
DDT - ppm	EPA 8080	0.13	0.11	1.7	0.15	0.15	"
Remaining Analytes	EPA 8080	ND	ND	ND	ND	ND	"

		Sample Number (See Table 1 & Appendix A)					
Parameter	Method*	5259-613-07	5259-613-08	5259-613-09	5259-613-10	5259-613-11	5259-613-12
Headspace Reading - ppm	PID	2500+	1362	385	611	689	962
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	0.038	0.47	ND	ND	ND	0.13
Toluene - ppm	EPA 8020	0.5	0.15	0.099	0.066	0.16	0.49
Ethylbenzene - ppm	EPA 8020	1.2	0.55	0.13	0.57	0.81	2.1
Total Xylenes - ppm	EPA 8020	8.7	1.3	0.41	0.83	1.40	3.3
Total BTEX - ppm	EPA 8020	10.438	2.47	0.639	1.466	2.37	6.02
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	560	210	93	100	420	650
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	530	650	600	900	1,300	2,900
Organochlorine Pesticides	EPA 8080						
DDD - ppm	EPA 8080	0.18	0.61	0.16	0.55	4.4	5.3
DDE - ppm	EPA 8080	0.0067	0.018	0.0084	0.014	0.06	0.067
DDT - ppm	EPA 8080	0.015	0.077	0.047	0.039	0.076	0.032
Remaining Analytes	EPA 8080	ND	ND	ND	ND	ND	ND

KEY	DESCRIPTION
ND	BELOW DETECTION LIMITS (See Analytical Report For Detection Limits)
*	QC DUPLICATE
**	QA DUPLICATE

TABLE 2 - ANALYTICAL RESULTS SUMMARY - STOCKPILE SAMPLES

		Sample Number (See Table 1 & Appendix A)					
Parameter	**Method***	5259-613-13*	5259-613-14**	5259-613-15	5259-613-16	5259-613-17	5259-613-18
Headspace Reading - ppm	PID	962	962	1127	1436	1094	1426
Aromatic Volatile Organics (BTEX)	EPA 8020						
Benzene - ppm	EPA 8020	0.11	Not Avail.	0.55	ND	ND	ND
Toluene - ppm	EPA 8020	0.31	"	3.3	0.47	2.1	0.65
Ethylbenzene - ppm	EPA 8020	1.6	"	0.81	1.6	0.23	0.84
Total Xylenes - ppm	EPA 8020	4.5	"	4.3	2.1	1.1	4.9
Total BTEX - ppm	EPA 8020	6.52	"	8.96	4.17	3.43	6.4
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	970	"	770	780	520	1,500
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	2,900	"	11,000	2,600	7,200	2,300
Organochlorine Pesticides	EPA 8080						
DDD - ppm	EPA 8080	6.1	"	0.46	0.93	0.29	0.15
DDE - ppm	EPA 8080	0.074	"	0.019	0.024	0.012	ND
DDT - ppm	EPA 8080	0.028	"	0.093	0.1	0.042	0.033
Remaining Analytes	EPA 8080	ND	"	ND	ND	ND	ND

KEY	DESCRIPTION
ND	BELOW DETECTION LIMITS (See Analytical Report For Detection Limits)
*	QC DUPLICATE
**	QA DUPLICATE

Analytical Technologies, Inc
560 Naches Avenue, S.W., Suite 101, Renton, WA 98055 (206) 228-8335
Karen L. Mixon, Laboratory Manager

ATI I.D. # 9406-198

July 20, 1994

Shannon & Wilson, Inc.
5430 Fairbanks Street
Suite 3
Anchorage AK 99518

Attention : Tim Terry

Project Number : Y-5259

Project Name : Galena VMF

Dear Mr. Terry:

On June 16, 1994, Analytical Technologies, Inc. (ATI), received 20 samples for analysis. The samples were analyzed with EPA methodology or equivalent methods as specified in the attached analytical schedule. The results, sample cross reference, and quality control data are enclosed.

Sincerely,

Diana Spence

Diana Spence
Project Manager

DS/hal/mrj/elf

Enclosure

Analytical**Technologies,** Inc. 560 Naches Avenue, S.W. Suite 101, Renton, WA 98055 (206) 228-8335

LETTER OF TRANSMITTAL

From: Diana Spence
ATI
560 Naches SW, Suite 101
Renton, WA 98055

Accession #: 9406-198

To: David Dinkuhn
Shannon & Wilson, Inc.
5430 Fairbanks Street
Anchorage, AK 99518

Project ID: Galena VMF

A copy of the ATI report for the above accession number was sent to:

Pam Hertzberg Telephone: (503) 665-4166
US Army Corp of Engineers
1491 NW Graham Ave.
Troutdale, OR 97060-9503

This report was sent by: UPS

On this date: ~~7/19/94~~ 22 DS 7/21/94

The following was also sent with the report: (Raw Data Package)

DELIVERABLES:

ATI Support: _____.
Alaska DEC : Level III

Remarks: _____.

_____.

_____.

_____.

Diana Spence
Signature of responsible party

ATI I.D. # 9406-198

CASE NARRATIVE

CLIENT : Shannon & Wilson, Inc.
PROJECT # : Y-5259
PROJECT NAME : Galena VMF

CASE NARRATIVE: GASOLINE RANGE ORGANICS/BTEX ANALYSIS

Twenty samples (20) samples were received by ATI on June 16, 1994 for the analysis of Gasoline Range Organics (GRO) by EPA method 8015 Modified and for the analysis of volatile aromatics by EPA method 8020.

Two different departments within the ATI Renton laboratory analyzed for the BTEX compounds. The ATI fuels department analyzed the sample for GRO/BTEX. The GC department performed the analysis for the volatile aromatic compounds by EPA method 8020, which includes the same BTEX compounds reported by method GRO/BTEX. When the BTEX results from the different departments were compared, it was discovered that the results for the same sample were not similar. It was decided to re-analyze two samples for GRO/BTEX and also for the 8020 compounds. Samples 5259-613-01 (9406-198-1) and 5259-613-02 (9406-198-2) were re-analyzed on 7/20/94 and 7/21/94, past the recommended hold time for both analyses. The second analysis for GRO/BTEX yielded results which were much lower (by at least a factor of ten) than the first results obtained for that analysis. This was true for both samples. The 8020 results, however, differed very little from the first and second analysis, for both samples. The BTEX results from the different departments were similar for the second analysis. See the following page for a comparison of results.

Six jars of soil for each sample were submitted. Considering that different jars were designated for GRO/BTEX and 8020, (for the same sample) it is possible likely that the sample was not homogenous from one jar to the next. For the second set of analyses, aliquots were taken from the same jar per sample for both the GRO/BTEX and 8020 analysis. This may explain why there was better agreement between the two departments for the second analysis. The possibility of labelling errors in the lab was explored. However, laboratory IDs were consistent with the client IDs for all jars.

COMPARISON OF BTEX RESULTS

	1st Analysis	2nd Analysis
GRO/BTEX	9406-198-1 (mg/Kg)	9406-198-1 (mg/Kg)
Benzene	0.48	<0.03
Ethylbenzene	0.93	<0.03
Toluene	1.4	0.071
Total Xylenes	11	0.76
8020		
Benzene	<0.030	<0.030
Ethylbenzene	0.66	0.66
Toluene	0.080	0.094
Total Xylenes	0.97	0.60

GRO/BTEX	9406-198-2 (mg/Kg)	9406-198-2 (mg/Kg)
Benzene	0.75	0.034
Ethylbenzene	11	0.44
Toluene	2.8	0.097
Total Xylenes	22	2.3
8020		
Benzene	0.075	0.092
Ethylbenzene	2.8	3.6
Toluene	0.86	0.53
Total Xylenes	8.2	7.1

Analytical Technologies, Inc.

ATI I.D. # 9406-198

SAMPLE CROSS REFERENCE SHEET

CLIENT : SHANNON & WILSON, INC.
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9406-198-1	5259-613-01	06/13/94	SOIL
9406-198-2	5259-613-02	06/13/94	SOIL
9406-198-3	5259-613-03	06/13/94	SOIL
9406-198-4	5259-613-04	06/13/94	SOIL
9406-198-5	5259-615-BLANK2	06/14/94	WATER
9406-198-6	5259-613-10	06/13/94	SOIL
9406-198-7	5259-613-11	06/13/94	SOIL
9406-198-8	5259-613-12	06/13/94	SOIL
9406-198-9	5259-613-13	06/13/94	SOIL
9406-198-10	5259-615-BLANK4	06/15/94	WATER
9406-198-11	5259-613-15	06/13/94	SOIL
9406-198-12	5259-613-16	06/13/94	SOIL
9406-198-13	5259-613-17	06/13/94	SOIL
9406-198-14	5259-613-18	06/13/94	SOIL
9406-198-15	5259-615-BLANK5	06/15/94	WATER
9406-198-16	5259-613-05	06/13/94	SOIL
9406-198-17	5259-613-07	06/13/94	SOIL
9406-198-18	5259-613-08	06/13/94	SOIL
9406-198-19	5259-613-09	06/13/94	SOIL
9406-198-20	5259-615-BLANK3	06/15/94	WATER

----- TOTALS -----

MATRIX	# SAMPLES
SOIL	16
WATER	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc

ATI I.D. # 9406-196

ANALYTICAL SCHEDULE

CLIENT : SHANNON & WILSON, INC.
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF

ANALYSIS	TECHNIQUE	REFERENCE	LAB
PURGEABLE AROMATICS	GC/PID	EPA 8020	R
ORGANOCHLORINE PESTICIDES	GC/ECD	EPA 8080	R
GASOLINE RANGE ORGANICS	GC/FID	AK DEC GRO	R
DIESEL RANGE ORGANICS	GC/FID	AK DEC DRO	R
MOISTURE	GRAVIMETRIC	CLP SOW ILM01.0	R

R = ATI - Renton
SD = ATI - San Diego
PHX = ATI - Phoenix
PTL = ATI - Portland
ANC = ATI - Anchorage
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc

QUALITY ASSURANCE
DATA REVIEW

Date: 07/15/94

ATI Workorder: 9406-198 Analysis: EPA 8020

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Karen L. Mixon
Laboratory Manager

CERTIFICATION

Analytical Technologies, Inc., certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc

ATI I.D. # 9406-198

CASE NARRATIVE

CLIENT : SHANNON & WILSON, INC.
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF

CASE NARRATIVE: VOLATILE ORGANICS ANALYSIS

Sixteen (16) soil samples and four (4) water samples were received by ATI on June 16, 1994, for the following analysis: EPA method 8020.

All quality assurance and quality control associated with the water sample results defined as matrix spike/matrix spike duplicate (MS/MSD), blank spike (BS), method blank and surrogate recoveries were within the established control limits.

The soil samples had several surrogate results that were outside of the current ATI control limits due to the severe matrix interferences present in these samples. These surrogate results were flagged with an "F" and noted on the analytical data pages.

Sample 9406-198-12 (5259-613-16) had a retention time shift that caused the internal standard fluorobenzene (FB_P*) to be shifted down field about 0.2 minutes. The identity of the internal standard and its retention time was confirmed on the ELCD detector. The ELCD detector was used to verify the identity and the retention time of the surrogate bromofluorobenzene (BFB_P*) on several of the samples. The severe matrix interferences made the interpretation of these samples very difficult.

All quality assurance and quality control associated with the soil sample results defined as matrix spike/matrix spike duplicate (MS/MSD), blank spike (BS) and method blank recoveries were within the established control limits.

Analytical Technologies, Inc

ATI I.D. # 9406-198

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: N/A
PROJECT #	: Y-5259	DATE RECEIVED	: N/A
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: N/A
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 06/24/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.5
CHLOROBENZENE	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	93	76 - 136

Analytical Technologies, Inc.

ATI I.D. # 9406-198-5

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/14/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: N/A
CLIENT I.D.	: 5259-615-BLANK2	DATE ANALYZED	: 06/24/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.5
CHLOROBENZENE	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	97	76 - 136

Analytical Technologies, Inc

ATI I.D. # 9406-198-10

VOLATILE ORGANICS ANALYSIS
DATA S'MMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/15/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: N/A
CLIENT I.D.	: 5259-615-BLANK4	DATE ANALYZED	: 06/24/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.5
CHLOROBENZENE	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	97	76 - 136

Analytical Technologies, Inc

ATI I.D. # 9406-198-15

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/15/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: N/A
CLIENT I.D.	: 5259-615-BLANK5	DATE ANALYZED	: 06/24/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.5
CHLOROBENZENE	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	<0.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	96	76 - 136

Analytical Technologies, Inc.

ATI I.D. # 9406-198 20

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/15/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: N/A
CLIENT I.D.	: 5259-615-BLANK3	DATE ANALYZED	: 06/24/94
SAMPLE MATRIX	: WATER	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.5
CHLOROBENZENE	<0.5
1,2-DICHLOROBENZENE	<0.5
1,3-DICHLOROBENZENE	<0.5
1,4-DICHLOROBENZENE	<0.5
ETHYLBENZENE	<0.5
TOLUENE	<0.5
TOTAL XYLENES	0.6

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	94	76 - 136

Analytical Technologies, Inc.

ATI I.D. # 9406-198

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: Y-5259	DATE EXTRACTED	: N/A
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/24/94
SAMPLE MATRIX	: WATER	UNITS	: ug/L
EPA METHOD	: 8020		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.500	8.00	8.27	103	N/A	N/A	N/A
CHLOROBENZENE	<0.500	8.00	6.51	81	N/A	N/A	N/A
TOLUENE	<0.500	8.00	7.81	98	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
BENZENE	73 - 134	20
CHLOROBENZENE	79 - 141	33
TOLUENE	83 - 136	29

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	89	N/A	76 - 136

Analytical Technologies, Inc.

ATI I.D. # 9406-198

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT : SHANNON & WILSON, INC.
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF
SAMPLE MATRIX : WATER
EPA METHOD : 8020

SAMPLE I.D. # : 9406-172-1
DATE EXTRACTED : N/A
DATE ANALYZED : 06/24/94
UNITS : ug/L

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.500	8.00	8.34	104	9.30	116	11
CHLOROBENZENE	<0.500	8.00	6.05	76	6.88	86	13
TOLUENE	<0.500	8.00	8.02	100	9.07	113	12

CONTROL LIMITS	% REC.	RPD
BENZENE	55 - 148	20
CHLOROBENZENE	61 - 160	33
TOLUENE	60 - 158	29

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	92	91	76 - 136

Analytical Technologies, Inc.

ATI I.D. # 9406-198

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: N/A
PROJECT #	: Y-5259	DATE RECEIVED	: N/A
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
BENZENE	<0.025
CHLOROBENZENE	<0.025
1,2-DICHLOROBENZENE	<0.025
1,3-DICHLOROBENZENE	<0.025
1,4-DICHLOROBENZENE	<0.025
ETHYLBENZENE	<0.025
TOLUENE	<0.025
TOTAL XYLENES	<0.025

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	90	60 - 175

Analytical Technologies, Inc

ATI I.D. # 9406-198-1

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-01	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
BENZENE	<0.030
CHLOROBENZENE	<0.030
1,2-DICHLOROBENZENE	<0.030
1,3-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.030
ETHYLBENZENE	0.66
TOLUENE	0.080
TOTAL XYLENES	0.97

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	168	60 - 175

Analytical Technologies, Inc.

ATI I.D. # 9406-198-2

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-02	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 21

COMPOUNDS	RESULTS
BENZENE	0.075
CHLOROBENZENE	<0.032
1,2-DICHLOROBENZENE	<0.032
1,3-DICHLOROBENZENE	<0.032
1,4-DICHLOROBENZENE	<0.032
ETHYLBENZENE	2.8
TOLUENE	0.86
TOTAL XYLENES	8.?

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	175	60 - 175

Analytical Technologies, Inc

ATI I.D. # 9406-198-3

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-03	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS
BENZENE	<0.029
CHLOROBENZENE	<0.029
1,2-DICHLOROBENZENE	<0.029
1,3-DICHLOROBENZENE	<0.029
1,4-DICHLOROBENZENE	<0.029
ETHYLBENZENE	0.75
TOLUENE	0.35
TOTAL XYLENES	2.0

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	138	60 - 175

Analytical Technologies, Inc

ATI I.D. # 9406-198-4

VOLATILE ORG[illegible]CS ANALYSIS
DATA [illegible]ARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-04	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
BENZENE	[illegible].073
CHLOROBENZENE	[illegible]
1,2-DICHLOROBENZENE	<[illegible]
1,3-DICHLOROBENZENE	<0.[illegible]30
1,4-DICHLOROBENZENE	<0.030
ETHYLBENZENE	1.1
TOLUENE	0.16
TOTAL XYLENES	0.60

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	166	60 - 175

Analytical Technologies, Inc.

ATI I.D. # 9406-198-6

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-10	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
BENZENE	<0.030
CHLOROBENZENE	<0.030
1,2-DICHLOROBENZENE	<0.030
1,3-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.030
ETHYLBENZENE	0.57
TOLUENE	0.066
TOTAL XYLENES	0.83

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	158	60 - 175

Analytical Technologies, Inc.

ATI I.D. # 9406-198-7

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-11	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
BENZENE	<0.029
CHLOROBENZENE	<0.029
1,2-DICHLOROBENZENE	<0.029
1,3-DICHLOROBENZENE	<0.029
1,4-DICHLOROBENZENE	<0.029
ETHYLBENZENE	0.81
TOLUENE	0.16
TOTAL XYLENES	1.4

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	174	60 - 175

Analytical Technologies, Inc

ATI I.D. # 9406-198-8

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-12	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 12

COMPOUNDS	RESULTS
BENZENE	0.13
CHLOROBENZENE	<0.028
1,2-DICHLOROBENZENE	<0.028
1,3-DICHLOROBENZENE	<0.028
1,4-DICHLOROBENZENE	<0.028
ETHYLBENZENE	1.3
TOLUENE	0.49
TOTAL XYLENES	3.3

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	F	60 - 175

Analytical Technologies, Inc

ATI I.D. # 9406-198-9

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-13	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 13

COMPOUNDS	RESULTS
BENZENE	0.11
CHLOROBENZENE	<0.029
1,2-DICHLOROBENZENE	<0.029
1,3-DICHLOROBENZENE	<0.029
1,4-DICHLOROBENZENE	<0.029
ETHYLBENZENE	1.6
TOLUENE	0.31
TOTAL XYLENES	4.5

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	F	60 - 175

F = Out of limits due to matrix interference.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-11

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-15	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 22

COMPOUNDS	RESULTS
BENZENE	0.55
CHLOROBENZENE	<0.032
1,2-DICHLOROBENZENE	<0.032
1,3-DICHLOROBENZENE	<0.032
1,4-DICHLOROBENZENE	<0.032
ETHYLBENZENE	0.81
TOLUENE	3.3
TOTAL XYLENES	4.3

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	F	60 - 175

F = Out of limits due to matrix interference.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-12

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-16	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 18

COMPOUNDS	RESULTS
BENZENE	<0.030
CHLOROBENZENE	<0.030
1,2-DICHLOROBENZENE	<0.030
1,3-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.030
ETHYLBENZENE	1.6
TOLUENE	0.47
TOTAL XYLENES	2.1

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	F	60 - 175

F = Out of limits due to matrix interference.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-13

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-17	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
BENZENE	<0.029
CHLOROBENZENE	<0.029
1,2-DICHLOROBENZENE	<0.029
1,3-DICHLOROBENZENE	<0.029
1,4-DICHLOROBENZENE	<0.029
ETHYLBENZENE	0.23
TOLUENE	2.1
TOTAL XYLENES	1.1

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	179 F	60 - 175

F = Out of limits due to matrix interference.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-14

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-18	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS
BENZENE	<0.029
CHLOROBENZENE	<0.029
1,2-DICHLOROBENZENE	<0.029
1,3-DICHLOROBENZENE	<0.029
1,4-DICHLOROBENZENE	<0.029
ETHYLBENZENE	0.84
TOLUENE	0.65
TOTAL XYLENES	4.9

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	124	60 - 175

Analytical Technologies, Inc

ATI I.D. # 9406-198-16

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-05	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
BENZENE	<0.029
CHLOROBENZENE	<0.029
1,2-DICHLOROBENZENE	<0.029
1,3-DICHLOROBENZENE	<0.029
1,4-DICHLOROBENZENE	<0.029
ETHYLBENZENE	0.30
TOLUENE	0.11
TOTAL XYLENES	0.94

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	F	60 - 175

F = Out of limits due to matrix interference.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-17

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-07	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
BENZENE	0.038
CHLOROBENZENE	<0.030
1,2-DICHLOROBENZENE	<0.030
1,3-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.030
ETHYLBENZENE	1.2
TOLUENE	0.50
TOTAL XYLENES	8.7

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	162	60 - 175

Analytical Technologies, Inc.

ATI I.D. # 9406-198-18

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-08	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
BENZENE	0.47
CHLOROBENZENE	<0.030
1,2-DICHLOROBENZENE	<0.030
1,3-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.030
ETHYLBENZENE	0.55
TOLUENE	0.15
TOTAL XYLENES	1.3

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	140	60 - 175

Analytical Technologies, Inc

ATI I.D. # 9406-198-19

VOLATILE ORGANICS ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
CLIENT I.D.	: 5259-613-09	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
BENZENE	<0.030
CHLOROBENZENE	<0.030
1,2-DICHLOROBENZENE	<0.030
1,3-DICHLOROBENZENE	<0.030
1,4-DICHLOROBENZENE	<0.030
ETHYLBENZENE	0.13
TOLUENE	0.099
TOTAL XYLENES	0.410

SURROGATE PERCENT RECOVERY		LIMITS
BROMOFLUOROBENZENE	137	60 - 175

Analytical Technologies, Inc.

ATI I.D. # 9406-198

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/27/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8020		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.0250	0.400	0.413	103	N/A	N/A	N/A
CHLOROBENZENE	<0.0250	0.400	0.416	104	N/A	N/A	N/A
TOLUENE	<0.0250	0.400	0.402	100	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
BENZENE	57 - 144	20
CHLOROBENZENE	71 - 163	20
TOLUENE	65 - 155	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	92	N/A	60 - 175

Analytical Technologies, Inc.

ATI I.D. # 9406-198

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-198-12
PROJECT #	: Y-5259	CLIENT I.D. #	: 5259-613-16
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
SAMPLE MATRIX	: SOIL	DATE ANALYZED	: 06/27/94
EPA METHOD	: 8020	UNITS	: mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.0250	0.400	J.363	91	0.384	96	6
CHLOROBENZENE	<0.0250	0.400	0.427	107	0.381	95	11
TOLUENE	0.382	0.400	0.638	64	0.810	107	24H

CONTROL LIMITS	% REC.	RPD
BENZENE	50 - 130	20
CHLOROBENZENE	55 - 166	20
TOLUENE	62 - 134	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	F	F	60 - 175

F = Out of limits due to matrix interference.
H = Out of limits.

Analytical Technologies, Inc.

ATI I.D. # 9406-198

VOLATILE ORGANICS ANALYSIS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-198-19
PROJECT #	: Y-5259	CLIENT I.D. #	: 5259-613-09
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/27/94
SAMPLE MATRIX	: SOIL	DATE ANALYZED	: 06/27/94
EPA METHOD	: 8020	UNITS	: mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
BENZENE	<0.0250	0.400	0.338	85	0.374	94	10
CHLOROBENZENE	<0.0250	0.400	0.390	98	0.432	108	10
TOLUENE	0.0824	0.400	0.367	71	0.398	79	8

CONTROL LIMITS	% REC.	RPD
BENZENE	50 - 130	20
CHLOROBENZENE	55 - 166	20
TOLUENE	62 - 134	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
BROMOFLUOROBENZENE	176F	182F	60 - 175

F = Out of limits due to matrix interference.

Analytical Technologies, Inc.

QUALITY ASSURANCE
DATA REVIEW

Date: 07/15/94

ATI Workorder: 9406-198 Analysis: EPA 8080

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Karen L. Mixon
Laboratory Manager

CERTIFICATION

Analytical Technologies, Inc., certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc

ATI I.D. # 9406-198

CASE NARRATIVE

CLIENT : SHANNON & WILSON, INC.
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF

CASE NARRATIVE: ORGANOCHLORINE PESTICIDES ANALYSIS

Sixteen (16) soil samples were received by ATI on June 16, 1994, for the analysis of organochlorine pesticides.

Sample 9406-198-1 (5259-613-01) had a surrogate recovery for dibutylchlorendate that was below the current ATI control limits. The percent recovery was 1% below the control limit. The sample was not reextracted.

All other corresponding quality assurance and quality control results defined as matrix spike/matrix spike duplicate (MS/MSD), blank spike (BS), method blank, and the remaining surrogate recoveries were within the established control limits.

AnalyticalTechnologies, Inc

ATI I.D. # 9406-198

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: N/A
PROJECT #	: Y-5259	DATE RECEIVED	: N/A
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIEN[illegible] I.D.	: METHOD BLANK	DATE ANALYZED	: 06/25/94
SAMPI [illegible]ATRIX	: SOIL	UNITS	: mg/Kg
EPA M [illegible]D	: 8080	DILUTION FACTOR	: 1

RESUl [illegible]E CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
ALDRIN	<0.0050
ALPHA-BHC	<0.0050
BETA-BHC	<0.0050
GAMMA-BHC (LINDANE)	<0.0050
DELTA-BHC	<0.0050
CHLORDANE (TOTAL)	<0.050
P,P'-DDD	<0.010
P,P'-DDE	<0.010
P,P'-DDT	<0.010
DIELDRIN	<0.010
ENDOSULFAN I	<0.0050
ENDOSULFAN II	<0.010
ENDOSULFAN SULFATE	<0.010
ENDRIN	<0.010
ENDRIN ALDEHYDE	<0.010
ENDRIN KETONE	<0.010
HEPTACHLOR	<0.0050
HEPTACHLOR EPOXIDE	<0.0050
METHOXYCHLOR	<0.050
TOXAPHENE	<0.10

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	112	36 - 137
DIBUTYLCHLORENDATE	97	27 - 149

Analytical Technologies, Inc

ATI I.D. # 9406-198-1

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-01	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
ALDRIN	<0.0060
ALPHA-BHC	<0.0060
BETA-BHC	<0.0060
GAMMA-BHC (LINDANE)	<0.0060
DELTA-BHC	<0.0060
CHLORDANE (TOTAL)	<0.060
P,P'-DDD	0.28
P,P'-DDE	0.0089 J
P,P'-DDT	0.13
DIELDRIN	<0.012
ENDOSULFAN I	<0.0060
ENDOSULFAN II	<0.012
ENDOSULFAN SULFATE	<0.012
ENDRIN	<0.012
ENDRIN ALDEHYDE	<0.012
ENDRIN KETONE	<0.012
HEPTACHLOR	<0.0060
HEPTACHLOR EPOXIDE	<0.0060
METHOXYCHLOR	<0.060
TOXAPHENE	<0.12

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	36 H	36 - 137
DIBUTYLCHLORENDATE	26 H	27 - 149

H = Out of limits.
J = Estimated value.

AnalyticalTechnologies, Inc

ATI I.D. # 9406-198-2

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-02	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 21

COMPOUNDS	RESULTS
ALDRIN	<0.0063
ALPHA-BHC	<0.0063
BETA-BHC	<0.0063
GAMMA-BHC (LINDANE)	<0.0063
DELTA-BHC	<0.0063
CHLORDANE (TOTAL)	<0.063
P,P'-DDD	0.21
P,P'-DDE	0.012 J
P,P'-DDT	0.11
DIELDRIN	<0.013
ENDOSULFAN I	<0.0063
ENDOSULFAN II	<0.013
ENDOSULFAN SULFATE	<0.013
ENDRIN	<0.013
ENDRIN ALDEHYDE	<0.013
ENDRIN KETONE	<0.013
HEPTACHLOR	<0.0063
HEPTACHLOR EPOXIDE	<0.0063
METHOXYCHLOR	<0.063
TOXAPHENE	<0.13

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	108	36 - 137
DIBUTYLCHLORENDATE	89	27 - 149

J = Estimated value.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-3

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-03	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS	
ALDRIN	<0.0058	
ALPHA-BHC	<0.0058	
BETA-BHC	<0.0058	
GAMMA-BHC (LINDANE)	<0.0058	
DELTA-BHC	<0.0058	
CHLORDANE (TOTAL)	<0.058	
P,P'-DDD	2.5	D6
P,P'-DDE	0.095	
P,P'-DDT	1.7	D6
DIELDRIN	<0.012	
ENDOSULFAN I	<0.0058	
ENDOSULFAN II	<0.012	
ENDOSULFAN SULFATE	<0.012	
ENDRIN	<0.012	
ENDRIN ALDEHYDE	<0.012	
ENDRIN KETONE	<0.012	
HEPTACHLOR	<0.0058	
HEPTACHLOR EPOXIDE	<0.0058	
METHOXYCHLOR	<0.058	
TOXAPHENE	<0.12	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	100	36 - 137
DIBUTYLCHLORENDATE	82	27 - 149

D6 = Value from a 50 fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-4

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-04	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS	
ALDRIN	<0.0060	
ALPHA-BHC	<0.0060	
BETA-BHC	<0.0060	
GAMMA-BHC (LINDANE)	<0.0060	
DELTA-BHC	<0.0060	
CHLORDANE (TOTAL)	<0.060	
P,P'-DDD	0.51	D3
P,P'-DDE	0.022	
P,P'-DDT	0.15	
DIELDRIN	<0.012	
ENDOSULFAN I	<0.0060	
ENDOSULFAN II	<0.012	
ENDOSULFAN SULFATE	<0.012	
ENDRIN	<0.012	
ENDRIN ALDEHYDE	<0.012	
ENDRIN KETONE	<0.012	
HEPTACHLOR	<0.0060	
HEPTACHLOR EPOXIDE	<0.0060	
METHOXYCHLOR	<0.060	
TOXAPHENE	<0.12	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	103	36 - 137
DIBUTYLCHLORENDATE	85	27 - 149

D3 = Value from a five fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-6

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-10	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS	
ALDRIN	<0.0060	
ALPHA-BHC	<0.0060	
BETA-BHC	<0.0060	
GAMMA-BHC (LINDANE)	<0.0060	
DELTA-BHC	<0.0060	
CHLORDANE (TOTAL)	<0.060	
P,P'-DDD	0.55	D3
P,P'-DDE	0.014	
P,P'-DDT	0.039	
DIELDRIN	<0.012	
ENDOSULFAN I	<0.0060	
ENDOSULFAN II	<0.012	
ENDOSULFAN SULFATE	<0.012	
ENDRIN	<0.012	
ENDRIN ALDEHYDE	<0.012	
ENDRIN KETONE	<0.012	
HEPTACHLOR	<0.0060	
HEPTACHLOR EPOXIDE	<0.0060	
METHOXYCHLOR	<0.060	
TOXAPHENE	<0.12	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	102	36 - 137
DIBUTYLCHLORENDATE	85	27 - 149

D3 = Value from a five fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-7

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-11	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS	
ALDRIN	<0.0059	
ALPHA-BHC	<0.0059	
BETA-BHC	<0.0059	
GAMMA-BHC (LINDANE)	<0.0059	
DELTA-BHC	<0.0059	
CHLORDANE (TOTAL)	<0.059	
P,P'-DDD	4.4	D6
P,P'-DDE	0.060	
P,P'-DDT	0.076	
DIELDRIN	<0.012	
ENDOSULFAN I	<0.0059	
ENDOSULFAN II	<0.012	
ENDOSULFAN SULFATE	<0.012	
ENDRIN	<0.012	
ENDRIN ALDEHYDE	<0.012	
ENDRIN KETONE	<0.012	
HEPTACHLOR	<0.0059	
HEPTACHLOR EPOXIDE	<0.0059	
METHOXYCHLOR	<0.059	
TOXAPHENE	<0.12	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	98	36 - 137
DIBUTYLCHLORENDATE	83	27 - 149

D6 = Value from a 50 fold diluted analysis.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-8

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-12	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 12

COMPOUNDS	RESULTS	
ALDRIN	<0.0057	
ALPHA-BHC	<0.0057	
BETA-BHC	<0.0057	
GAMMA-BHC (LINDANE)	<0.0057	
DELTA-BHC	<0.0057	
CHLORDANE (TOTAL)	<0.057	
P,P'-DDD	5.3	D6
P,P'-DDE	0.067	
P,P'-DDT	0.032	
DIELDRIN	<0.011	
ENDOSULFAN I	<0.0057	
ENDOSULFAN II	<0.011	
ENDOSULFAN SULFATE	<0.011	
ENDRIN	<0.011	
ENDRIN ALDEHYDE	<0.011	
ENDRIN KETONE	<0.011	
HEPTACHLOR	<0.0057	
HEPTACHLOR EPOXIDE	<0.0057	
METHOXYCHLOR	<0.057	
TOXAPHENE	<0.11	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	98	36 - 137
DIBUTYLCHLORENDATE	82	27 - 149

D6 = Value from a 50 fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-9

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-13	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 13

COMPOUNDS	RESULTS	
ALDRIN	<0.0057	
ALPHA-BHC	<0.0057	
BETA-BHC	<0.0057	
GAMMA-BHC (LINDANE)	<0.0057	
DELTA-BHC	<0.0057	
CHLORDANE (TOTAL)	<0.057	
P,P'-DDD	6.1	D6
P,P'-DDE	0.074	
P,P'-DDT	0.028	
DIELDRIN	<0.011	
ENDOSULFAN I	<0.0057	
ENDOSULFAN II	<0.011	
ENDOSULFAN SULFATE	<0.011	
ENDRIN	<0.011	
ENDRIN ALDEHYDE	<0.011	
ENDRIN KETONE	<0.011	
HEPTACHLOR	<0.0057	
HEPTACHLOR EPOXIDE	<0.0057	
METHOXYCHLOR	<0.057	
TOXAPHENE	<0.11	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	98	36 - 137
DIBUTYLCHLORENDATE	83	27 - 149

D6 = Value from a 50 fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-11

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-15	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 22

COMPOUNDS	RESULTS	
ALDRIN	<0.0064	
ALPHA-BHC	<0.0064	
BETA-BHC	<0.0064	
GAMMA-BHC (LINDANE)	<0.0064	
DELTA-BHC	<0.0064	
CHLORDANE (TOTAL)	<0.064	
P,P'-DDD	0.46	D3
P,P'-DDE	0.019	
P,P'-DDT	0.093	
DIELDRIN	<0.013	
ENDOSULFAN I	<0.0064	
ENDOSULFAN II	<0.013	
ENDOSULFAN SULFATE	<0.013	
ENDRIN	<0.013	
ENDRIN ALDEHYDE	<0.013	
ENDRIN KETONE	<0.013	
HEPTACHLOR	<0.0064	
HEPTACHLOR EPOXIDE	<0.0064	
METHOXYCHLOR	<0.064	
TOXAPHENE	<0.13	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	97	36 - 137
DIBUTYLCHLORENDATE	83	27 - 149

D3 = Value from a five fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-12

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-16	DATE ANALYZED	: 06/28/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 18

COMPOUNDS	RESULTS	
ALDRIN	<0.0061	
ALPHA-BHC	<0.0061	
BETA-BHC	<0.0061	
GAMMA-BHC (LINDANE)	<0.0061	
DELTA-BHC	<0.0061	
CHLORDANE (TOTAL)	<0.061	
P,P'-DDD	0.93	D3
P,P'-DDE	0.024	
P,P'-DDT	0.10	
DIELDRIN	<0.012	
ENDOSULFAN I	<0.0061	
ENDOSULFAN II	<0.012	
ENDOSULFAN SULFATE	<0.012	
ENDRIN	<0.012	
ENDRIN ALDEHYDE	<0.012	
ENDRIN KETONE	<0.012	
HEPTACHLOR	<0.0061	
HEPTACHLOR EPOXIDE	<0.0061	
METHOXYCHLOR	<0.061	
TOXAPHENE	<0.12	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	97	36 - 137
DIBUTYLCHLORENDATE	84	27 - 149

D3 = Value from a five fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-13

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-17	DATE ANALYZED	: 06/29/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
ALDRIN	<0.0059
ALPHA-BHC	<0.0059
BETA-BHC	<0.0059
GAMMA-BHC (LINDANE)	<0.0059
DELTA-BHC	<0.0059
CHLORDANE (TOTAL)	<0.059
P,P'-DDD	0.29
P,P'-DDE	0.012 J
P,P'-DDT	0.042
DIELDRIN	<0.012
ENDOSULFAN I	<0.0059
ENDOSULFAN II	<0.012
ENDOSULFAN SULFATE	<0.012
ENDRIN	<0.012
ENDRIN ALDEHYDE	<0.012
ENDRIN KETONE	<0.012
HEPTACHLOR	<0.0059
HEPTACHLOR EPOXIDE	<0.0059
METHOXYCHLOR	<0.059
TOXAPHENE	<0.12

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	97	36 - 137
DIBUTYLCHLORENDATE	83	27 - 149

J = Estimated value.

Analytical Technologies, Inc

ATI I.D. # 9406-198-14

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-18	DATE ANALYZED	: 06/25/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS
ALDRIN	<0.0058
ALPHA-BHC	<0.0058
BETA-BHC	<0.0058
GAMMA-BHC (LINDANE)	<0.0058
DELTA-BHC	<0.0058
CHLORDANE (TOTAL)	<0.058
P,P'-DDD	0.15
P,P'-DDE	<0.012
P,P'-DDT	0.033
DIELDRIN	<0.012
ENDOSULFAN I	<0.0058
ENDOSULFAN II	<0.012
ENDOSULFAN SULFATE	<0.012
ENDRIN	<0.012
ENDRIN ALDEHYDE	<0.012
ENDRIN KETONE	<0.012
HEPTACHLOR	<0.0058
HEPTACHLOR EPOXIDE	<0.0058
METHOXYCHLOR	<0.058
TOXAPHENE	<0.12

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	95	36 - 137
DIBUTYLCHLORENDATE	95	27 - 149

Analytical Technologies, Inc

ATI I.D. # 9406-198-16

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-05	DATE ANALYZED	: 06/29/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS	
ALDRIN	<0.0059	
ALPHA-BHC	<0.0059	
BETA-BHC	<0.0059	
GAMMA-BHC (LINDANE)	<0.0059	
DELTA-BHC	<0.0059	
CHLORDANE (TOTAL)	<0.059	
P,P'-DDD	0.52	D3
P,P'-DDE	0.023	
P,P'-DDT	0.15	
DIELDRIN	<0.012	
ENDOSULFAN I	<0.0059	
ENDOSULFAN II	<0.012	
ENDOSULFAN SULFATE	<0.012	
ENDRIN	<0.012	
ENDRIN ALDEHYDE	<0.012	
ENDRIN KETONE	<0.012	
HEPTACHLOR	<0.0059	
HEPTACHLOR EPOXIDE	<0.0059	
METHOXYCHLOR	<0.059	
TOXAPHENE	<0.12	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	96	36 - 137
DIBUTYLCHLORENDATE	81	27 - 149

D3 = Value from a five fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-17

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-07	DATE ANALYZED	: 06/29/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
ALDRIN	<0.0060
ALPHA-BHC	<0.0060
BETA-BHC	<0.0060
GAMMA-BHC (LINDANE)	<0.0060
DELTA-BHC	<0.0060
CHLORDANE (TOTAL)	<0.060
P,P'-DDD	0.18
P,P'-DDE	0.0067 J
P,P'-DDT	0.015
DIELDRIN	<0.012
ENDOSULFAN I	<0.0060
ENDOSULFAN II	<0.012
ENDOSULFAN SULFATE	<0.012
ENDRIN	<0.012
ENDRIN ALDEHYDE	<0.012
ENDRIN KETONE	<0.012
HEPTACHLOR	<0.0060
HEPTACHLOR EPOXIDE	<0.0060
METHOXYCHLOR	<0.060
TOXAPHENE	<0.12

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	95	36 - 137
DIBUTYLCHLORENDATE	81	27 - 149

J = Estimated value.

Analytical Technologies, Inc.

ATI I.D. # 9406-198-18

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-08	DATE ANALYZED	: 06/29/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS	
ALDRIN	<0.0060	
ALPHA-BHC	<0.0060	
BETA-BHC	<0.0060	
GAMMA-BHC (LINDANE)	<0.0060	
DELTA-BHC	<0.0060	
CHLORDANE (TOTAL)	<0.060	
P,P'-DDD	0.61	D3
P,P'-DDE	0.018	
P,P'-DDT	0.077	
DIELDRIN	<0.012	
ENDOSULFAN I	<0.0060	
ENDOSULFAN II	<0.012	
ENDOSULFAN SULFATE	<0.012	
ENDRIN	<0.012	
ENDRIN ALDEHYDE	<0.012	
ENDRIN KETONE	<0.012	
HEPTACHLOR	<0.0060	
HEPTACHLOR EPOXIDE	<0.0060	
METHOXYCHLOR	<0.060	
TOXAPHENE	<0.12	

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	99	36 - 137
DIBUTYLCHLORENDATE	85	27 - 149

D3 = Value from a five fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-19

ORGANOCHLORINE PESTICIDES ANALYSIS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
CLIENT I.D.	: 5259-613-09	DATE ANALYZED	: 06/29/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
ALDRIN	<0.0060
ALPHA-BHC	<0.0060
BETA-BHC	<0.0060
GAMMA-BHC (LINDANE)	<0.0060
DELTA-BHC	<0.0060
CHLORDANE (TOTAL)	<0.060
P,P'-DDD	0.16
P,P'-DDE	0.0084 J
P,P'-DDT	0.047
DIELDRIN	<0.012
ENDOSULFAN I	<0.0060
ENDOSULFAN II	<0.012
ENDOSULFAN SULFATE	<0.012
ENDRIN	<0.012
ENDRIN ALDEHYDE	<0.012
ENDRIN KETONE	<0.012
HEPTACHLOR	<0.0060
HEPTACHLOR EPOXIDE	<0.0060
METHOXYCHLOR	<0.060
TOXAPHENE	<0.12

SURROGATE PERCENT RECOVERY		LIMITS
DECACHLOROBIPHENYL	98	36 - 137
DIBUTYLCHLORENDATE	80	27 - 149

J = Estimated value.

Analytical Technologies, Inc

ATI I.D. # 9406-198

ORGANOCHLORINE PESTICIDES ANALYSIS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/21/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/25/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
EPA METHOD	: 8080		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
ALDRIN	<0.00500	0.0333	0.0270	81	N/A	N/A	N/A
GAMMA-BHC (LINDANE)	<0.00500	0.0333	0.0294	88	N/A	N/A	N/A
P,P'-DDT	<0.0100	0.0667	0.0625	94	N/A	N/A	N/A
DIELDRIN	<0.0100	0.0667	0.0653	98	N/A	N/A	N/A
ENDRIN	<0.0100	0.0667	0.0650	97	N/A	N/A	N/A
HEPTACHLOR	<0.00500	0.0333	0.0297	89	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
ALDRIN	53 - 110	25
GAMMA-BHC (LINDANE)	44 - 102	25
P,P'-DDT	50 - 130	28
DIELDRIN	58 - 127	24
ENDRIN	59 - 137	21
HEPTACHLOR	39 - 117	25

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DECACHLOROBIPHENYL	114	N/A	36 - 137
DIBUTYLCHLORENDATE	97	N/A	27 - 149

Analytical Technologies, Inc

ATI I.D. # 9406-198

ORGANOCHLORINE PESTICIDES ANALYSIS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-198-14
PROJECT #	: Y-5259	CLIENT I.D. #	: 5259-613-18
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/21/94
SAMPLE MATRIX	: SOIL	DATE ANALYZED	: 06/25/94
EPA METHOD	: 8080	UNITS	: mg/Kg

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
ALDRIN	<0.00500	0.0333	0.0230	69	0.0232	70	1
GAMMA-BHC (LINDANE)	<0.00500	0.0333	0.0236	71	0.0240	72	2
P,P'-DDT	0.0286	0.0667	0.0934	97	0.0890	91	5
DIELDRIN	<0.0100	0.0667	0.0591	89	0.0608	91	3
ENDRIN	<0.0100	0.0667	0.0612	92	0.0626	94	2
HEPTACHLOR	<0.00500	0.0333	0.0256	77	0.0259	78	1

CONTROL LIMITS	% REC.	RPD
ALDRIN	47 - 110	25
GAMMA-BHC (LINDANE)	40 - 101	25
P,P'-DDT	44 - 140	28
DIELDRIN	41 - 131	24
ENDRIN	39 - 142	21
HEPTACHLOR	39 - 117	25

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
DECACHLOROBIPHENYL	93	107	36 - 137
DIBUTYLCHLORENDATE	92	94	27 - 149

Analytical Technologies, Inc

QUALITY ASSURANCE
DATA REVIEW

Date: 07/15/94

ATI Workorder: 9406-198 Analysis: AK DEC GRO

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Karen L. Mixon
Laboratory Manager

CERTIFICATION

Analytical Technologies, Inc., certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: N/A
PROJECT #	: Y-5259	DATE RECEIVED	: N/A
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 06/19/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	99	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: N/A
PROJECT #	: Y-5259	DATE RECEIVED	: N/A
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<5
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	88	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-1

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-01	DATE ANALYZED	: 06/20/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	670
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	85	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-2

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 52[illegible]13-02	DATE ANALYZED	: 06/23/94
SAMPLE MATRIX	: S[illegible]	UNITS	: mg/Kg
METHOD	: AK [illegible]EC GRO	DILUTION FACTOR	: 20
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 21

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	2100
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	94	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-3

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-03	DATE ANALYZED	: 06/20/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	740
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	88	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-4

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-04	DATE ANALYZED	: 06/20/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	190
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	82	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-6

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-10	DATE ANALYZED	: 06/20/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	100
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	77	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-7

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-11	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	420 D3
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	83 D3	50 - 150

D3 = Value from a five fold diluted analysis.

Analytical Technologies, Inc

ATI I.D. # 9406-198-8

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-12	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 12

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	660
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	80	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-9

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-13	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 13

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	970
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	81	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 9406-198-11

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-15	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 22

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	770
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	81	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-12

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-16	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 18

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	780
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	81	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-13

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-17	DATE ANALYZFD	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 10
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	520
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	83	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-14

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-18	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	1500
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	80	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-16

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-05	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	240
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	77	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-17

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/17/94
CLIENT I.D.	: 5259-613-07	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	560
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	82	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-18

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-08	DATE ANALYZED	: 06/22/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	210
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	91	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-19

GASOLINE RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-09	DATE ANALYZED	: 06/22/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	93
HYDROCARBON RANGE	2-MP TO 1,2,4-TMB
HYDROCARBON QUANTITATION USING	GASOLINE

SURROGATE PERCENT RECOVERY		LIMITS
TRIFLUOROTOLUENE	82	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/17/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/19/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GASOLINE	<5.00	50.0	44.6	89	44.9	90	1

CONTROL LIMITS	% REC.	RPD
GASOLINE	60 - 131	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
TRIFLUOROTOLUENE	97	98	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/20/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
GASOLINE	<5.00	50.0	48.8	98	45.9	92	6

CONTROL LIMITS	% REC.	RPD
GASOLINE	60 - 131	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
TRIFLUOROTOLUENE	94	96	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-210-5
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/17/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/18/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO		

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
GASOLINE	<5.00	<5.00	NC	N/A	N/A	N/A	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
GASOLINE	N/A	20

SURROGATE RECOVERIES	SAMPLE	SAMPLE DUP.	LIMITS
TRIFLUOROTOLUENE	84	85	50 - 150

NC = Not calculable.

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-242-2
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/20/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO		

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
GASOLINE	<5.00	<5.00	NC	N/A	N/A	N/A	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
GASOLINE	N/A	20

SURROGATE RECOVERIES	SAMPLE	SAMPLE DUP.	LIMITS
TRIFLUOROTOLUENE	82	81	50 - 150

NC = Not calculable.

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-210-4
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/17/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/19/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO		

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
GASOLINE	<5.00	<5.00	NC	50.0	40.9	82	38.2	76	7

CONTROL LIMITS	% REC.	RPD
GASOLINE	32 - 114	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
TRIFLUOROTOLUENE	89	85	50 - 150

NC = Not calculable.

Analytical Technologies, Inc

ATI I.D. # 9406-198

GASOLINE RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-242-3
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/20/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/21/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC GRO		

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
GASOLINE	<5.00	<5.00	NC	50.0	46.9	94	44.7	89	5

CONTROL LIMITS	% REC.	RPD
GASOLINE	32 - 114	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
TRIFLUOROTOLUENE	86	84	50 - 150

NC = Not calculable.

Analytical Technologies, Inc

QUALITY ASSURANCE
DATA REVIEW

Date: 07/15/94

ATI Workorder: 9406-198 Analysis: AK DEC DRO

The data contained in the following report have been reviewed and approved by the appropriate supervisory personnel listed below:

Karen L. Mixon
Laboratory Manager

CERTIFICATION

Analytical Technologies, Inc., certifies that the analyses reported herein are true, complete, and correct within the limits of the methods employed.

Analytical Technologies, Inc

ATI I.D. # 9406-198

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: N/A
PROJECT #	: Y-5259	DATE RECEIVED	: N/A
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: METHOD BLANK	DATE ANALYZED	: 06/26/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 1

RESULTS ARE CORRECTED FOR MOISTURE CONTENT

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	<10
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	101	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-1

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-01	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 10
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	2600
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	117	50 - 150

AnalyticalTechnologies, Inc

ATI I.D. # 9406-198-2

DIESEL RANGE ORGANICS
DATA SUMMARY

C.	ENT : SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PF	JECT # : Y-5259	DATE RECEIVED	: 06/16/94
P	JECT NAME : GALENA VMF	DATE EXTRACTED	: 06/20/94
C	ENT I.D. : 5259-613-02	DATE ANALYZED	: 06/27/94
S	PLE MATRIX : SOIL	UNITS	: mg/Kg
M	HOD : AK DEC DRO	DILUTION FACTOR	: 1
R	ULTS ARE CORRECTED FOR MOISTURE CONTENT	% MOISTURE	: 21

POUNDS	RESULTS
L HYDROCARBONS	150
ROCARBON RANGE	C10 - C28
ROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
ERPHENYL	106	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-3

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-03	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 20
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	9500
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	132	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-4

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-04	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		%	: 16

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	1100
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	110	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-6

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-10	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	900
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	103	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-7

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-11	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 10
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	1300
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	114	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-8

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-12	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 10
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 12

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	2900
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	116	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-9

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-13	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 10
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 13

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	2900
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	115	50 - 150

Analytical Technologies, Inc.

ATI I.D. # 9406-198-11

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-15	DATE ANALYZED	: 06/26/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 20
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 22

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	11000
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	135	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-12

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-16	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 18

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	2600
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	117	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-13

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-17	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 20
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	7200
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	112	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-14

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-18	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 5
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 14

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	2300
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	122	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-16

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-05	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 2
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 15

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	1000
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	116	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-17

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-07	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	530
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	102	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198-18

DIESEL RANGE ORGANICS
DATA SUMMARY

CLIENT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PROJECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CLIENT I.D.	: 5259-613-08	DATE ANALYZED	: 06/27/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO	DILUTION FACTOR	: 1
RESULTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 16

COMPOUNDS	RESULTS
FUEL HYDROCARBONS	650
HYDROCARBON RANGE	C10 - C28
HYDROCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
O-TERPHENYL	99	50 - 150

AnalyticalTechnologies, Inc

ATI I.D. # 9406-198-19

DIESEL RANGE ORGANICS
DATA SUMMARY

CL NT	: SHANNON & WILSON, INC.	DATE SAMPLED	: 06/13/94
PR ECT #	: Y-5259	DATE RECEIVED	: 06/16/94
PR ECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
CL NT I.D.	: 5259-613-09	DATE ANALYZED	: 06/26/94
SA LE MATRIX	: SOIL	UNITS	: mg/Kg
ME OD	: AK DEC DRO	DILUTION FACTOR	: 1
RE LTS ARE CORRECTED FOR MOISTURE CONTENT		% MOISTURE	: 17

OUNDS	RESULTS
HYDROCARBONS	600
OCARBON RANGE	C10 - C28
OCARBON QUANTITATION USING	DIESEL

SURROGATE PERCENT RECOVERY		LIMITS
RPHENYL	105	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198

DIESEL RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: BLANK
PROJECT #	: Y-5259	DATE EXTRACTED	: 06/20/94
PROJECT NAME	: GALENA VMF	DATE ANALYZED	: 06/26/94
SAMPLE MATRIX	: SOIL	UNITS	: mg/Kg
METHOD	: AK DEC DRO		

COMPOUNDS	SAMPLE RESULT	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED SAMPLE	DUP. % REC.	RPD
DIESEL	<10.0	200	211	106	205	102	3

CONTROL LIMITS	% REC.	RPD
DIESEL	66 - 118	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
O-TERPHENYL	101	102	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198

DIESEL RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-198-19
PROJECT #	: Y-5259	CLIENT I.D. #	: 5259-613-09
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
SAMPLE MATRIX	: SOIL	DATE ANALYZED	: 06/26/94
METHOD	: AK DEC DRO	UNITS	: mg/Kg

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
DIESEL	499	552	10	N/A	N/A	N/A	N/A	N/A	N/A

CONTROL LIMITS	% REC.	RPD
DIESEL	N/A	20

SURROGATE RECOVERIES	SAMPLE	SAMPLE DUP.	LIMITS
O-TERPHENYL	105	106	50 - 150

Analytical Technologies, Inc

ATI I.D. # 9406-198

DIESEL RANGE ORGANICS
QUALITY CONTROL DATA

CLIENT	: SHANNON & WILSON, INC.	SAMPLE I.D. #	: 9406-198-11
PROJECT #	: Y-5259	CLIENT I.D. #	: 5259-613-15
PROJECT NAME	: GALENA VMF	DATE EXTRACTED	: 06/20/94
SAMPLE MATRIX	: SOIL	DATE ANALYZED	: 06/26/94
METHOD	: AK DEC DRO	UNITS	: mg/Kg

COMPOUND	SAMPLE RESULT	SAMPLE DUP. RESULT	RPD	SPIKE ADDED	SPIKED RESULT	% REC.	DUP. SPIKED RESULT	DUP. % REC.	RPD
DIESEL	8370	8530	2	200	8390	G	7080	G	17

CONTROL LIMITS	% REC.	RPD
DIESEL	60 - 130	20

SURROGATE RECOVERIES	SPIKE	DUP. SPIKE	LIMITS
O-TERPHENYL	134	129	50 - 150

G = Out of limits due to high level of target analytes in sample.

Analytical Technologies, Inc

ATI I.D. # 9406-198

GENERAL CHEMISTRY ANALYSIS

CLIENT : SHANNON & WILSON, INC. MATRIX : SOIL
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF
METHOD : CLP SOW ILM01.0

PARAMETER	DATE ANALYZED
MOISTURE	06/17/94

Analytical Technologies, Inc

ATI I.D. # 9406-198

GENERAL CHEMISTRY ANALYSIS
DATA SUMMARY

CLIENT : SHANNON & WILSON, INC. MATRIX : SOIL
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF UNITS : %
METHOD : CLP SOW ILM01.0

ATI I.D. #	CLIENT I.D.	MOISTURE
9406-198-1	5259-613-01	17
9406-198-2	5259-613-02	21
9406-198-3	5259-613-03	14
9406-198-4	5259-613-04	16
9406-198-6	5259-613-10	16
9406-198-7	5259-613-11	15
9406-198-8	5259-613-12	12
9406-198-9	5259-613-13	13
9406-198-11	5259-613-15	22
9406-198-12	5259-613-16	18
9406-198-13	5259-613-17	15
9406-198-14	5259-613-18	14
9406-198-16	5259-613-05	15
9406-198-17	5259-613-07	17
9406-198-18	5259-613-08	16
9406-198-19	5259-613-09	17

Analytical Technologies, Inc

ATI I.D. # 9406-198

GENERAL CHEMISTRY ANALYSIS
QUALITY CONTROL DATA

CLIENT : SHANNON & WILSON, INC. MATRIX : SOIL
PROJECT # : Y-5259
PROJECT NAME : GALENA VMF UNITS : %
METHOD : CLP SOW ILM01.0

PARAMETER	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
MOISTURE	9406-198-11	22	20	10	N/A	N/A	N/A
MOISTURE	9406-198-13	15	15	0	N/A	N/A	N/A

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{|(\text{Sample Result} - \text{Duplicate Result})|}{\text{Average Result}} \times 100$$

COOLER 1/4

Chain of Custody Record

Shannon & Wilson, Inc.

400 N. 34th Street, Suite 100, Seattle, WA 98103, (206) 632-8020
11500 Olive Blvd., Suite 276, St. Louis, MO 63141, (314) 872-8170
2086 Hill Road, Fairbanks, AK 99707, (907) 479-0600
5430 Fairbanks Street, Suite 3, Anchorage, AK 99518, (907) 561-2120

Page 1 of 1
Laboratory
Attn:

9406-198

Analysis Parameters/Sample Container Description (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	8260	8015M	BTEX 8021/8020	DRO	8080 PESTICIDES	BTEX 8021/8020	Total Number of Containers	Remarks/Matrix
5259-613-01	1		6/13/94		✓	X	X	X	X			6	SOIL
5259-613-02	2		"		✓	X	X	X	X			"	"
5259-613-03	3		"		✓	X	X	X	X			"	"
5259-613-04	4		"		✓	X	X	X	X			"	"
5259-[redacted]-BLANK2	5		6/14/94		✓					X		2	WATER
615	6 PA 6.16.94												

Project Information	Sample Receipt
Project Number: Y-5259	Total Number of Containers: 26
Project Name: GALENA VOE	COC Seals/Intact? Y/N/NA: cooler Y
Contact: DAVID DINKUHN	Received Good Cond./Cold: Y
Ongoing Project? Yes ☒ No ☐	Delivery Method: CLIENT
Sampler: DD	(attach shipping bill, if any)

Instructions
Requested Turn Around Time: STD
Special Instructions: MIN/MAX THERMOMETER 0°C, -20°C, TEMP BLANK INCLUDED →1.5°C ★ COE PROJECT - (RECORD BOTH)

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature:	Signature: KIMSCOTT	Signature:
Time: 1100	Time: 15:45	Time:
Printed Name: DAVID DINKUHN	Printed Name: KIMSCOTT	Printed Name:
Date: 6/15/94	Date: 6/15/94	Date:
Company: SHANNON & WILSON	Company: ATTAK	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: KIMSCOTT	Signature:	Signature:
Time: 15:45	Time: 11:17	Time:
Printed Name: KIMSCOTT	Printed Name: BOB ARIS	Printed Name:
Date: 6/15/94	Date: 6.16.94	Date:
Company: ATTAK	Company: ATI	Company:

F-18-91/UR

ATI COOLER #4-9/13

COOLER 3/4

Shannon & Wilson, Inc.

400 N. 34th Street, Suite 100, Seattle, WA 98103, (206) 632-8020
11500 Olive Blvd., Suite 276, St. Louis, MO 63141, (314) 872-8170
2055 Hill Road, Fairbanks, AK 99707, (907) 479-0600
5430 Fairbanks Street, Suite 3, Anchorage, AK 99518, (907) 561-2120

Chain of Custody Record

Page 1 of 1
Laboratory
Attn:

9406-198

Analysis Parameters/Sample Container Description (include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO 8015M	BTEX 8020	DRO 8100 M	PESTICIDES 8080	~~BTEX~~ GRO 8020		Total Number of Containers	Remarks/Matrix
5259-613-10	6		6/13/94		✓	X	X	X	X			6	SOIL
5259-613-11	7		↓		✓	X	X	X	X			↓	↓
5259-613-12	8		↓		✓	X	X	X	X			↓	↓
5259-613-13	9		↓		✓	X	X	X	X			↓	↓
5259-615-BLANK	10		6/15/94		✓					X		2	WATER

Project Information

Project Number: Y-5259
Project Name: GALENA VMF
Contact: DAVID DINKUHN
Ongoing Project? Yes ☒ No ☐
Sampler: DD

Sample Receipt

Total Number of Containers: 26
COC Seals/Intact? Y/N/NA: COOLER Y
Received Good Cond./Cold: Y
Delivery Method: CLIENT (attach shipping bill, if any)

Instructions

Requested Turn Around Time: STD
Special Instructions: MIN/MAX THERMOMETER & COE PROJECT TEMP BLANK INCLUDED → 2.8°C (RECORD BOTH)

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: [signature] Time: 1130	Signature: KIMSCOTT Time: 11:30	Signature: Time:
Printed Name: DAVID DINKUHN Date: 6/15/94	Printed Name: KIMSCOTT Date: 6/15/94	Printed Name: Date:
Company: SHANNON & WILSON	Company: ATI-AK	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: KIMSCOTT Time: 15:45	Signature: [signature] Time: 1112	Signature: Time:
Printed Name: KIMSCOTT Date: 6/15/94	Printed Name: BOB ARIS Date: 6/16/94	Printed Name: Date:
Company: ATI-AK	Company: ATI	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

ATI COOLER #106

COOLER 4/4

Shannon & Wilson, Inc.

Chain of Custody Record

Page ___ of ___
Laboratory ___
Attn: ___

400 N. 34th Street, Suite 100, Seattle, WA 98103, (206) 632-8020
11600 Olive Blvd., Suite 276, St. Louis, MO 63141, (314) 872-8170
2085 Hill Road, Fairbanks, AK 99707, (907) 479-0600
5430 Fairbanks Street, Suite 3, Anchorage, AK 99518, (907) 561-2120

9406-198

Analysis Parameters/Sample Container Description
(Include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO	8015 M	~~BTEX~~ GRO/BTEX 8020	DRO 8100M	PESTICIDES 8080	~~BTEX~~ GRO/BTEX ~~8020~~ DRO	Total Number of Containers	Remarks/Matrix
5259-613-15	11		6/13/94		✓	X	X	X	X			6	SOIL
5259-613-16	12				✓	X	X	X	X				
5259-613-17	13				✓	X	X	X	X				
5259-613-18	14				✓	X	X	X	X				
5259-615-BLANK	15		6/15/94		✓					X		2	WATER

Project Information	Sample Receipt	Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Project Number: Y-5259	Total Number of Containers: 26	Signature:	Signature:	Signature:
Project Name: GALENA VMF	COC Seals/Intact? Y/N/NA: COOLER	Time: 1145	Time: 17:30	Time:
Contact: DAVID DINKUHN	Received Good Cond./Cold: Y	Printed Name: DAVID DINKUHN	Printed Name: KIM SCOTT	Printed Name:
Ongoing Project? Yes ☑ No ☐	Delivery Method: CLIENT	Date: 6/15/94	Date: 6/15/94	Date:
Sampler: DD	(attach shipping bill, if any)	Company: SHANNON & WILSON	Company: ATT-AK	Company:

Instructions	Received By: 1.	Received By: 2.	Received By: 3.
Requested Turn Around Time: STD → 2.0°C, -17°C	Signature:	Signature:	Signature:
Special Instructions: MIN/MAX THERMOMETER & TEMP BLANK INCLUDED (RECORD BOTH) 2.1°C	Time: 15:45	Time: 11:12	Time:
* COE PROJECT	Printed Name: KIM SCOTT	Printed Name: BILL ARIS	Printed Name:
	Date: 6/15/94	Date: 6-16-94	Date:
	Company: ATT-AK	Company: ATT	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

ATT cooler #4-9115

COOLER 2/4

Chain of Custody Record

Shannon & Wilson, Inc.

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

11800 Olive Blvd., Suite 276
St. Louis, MO 63141
(314) 872-8170

2056 Hill Road
Fairbanks, AK 99707
(907) 479-0600

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

Page 1 of 1
Laboratory
Attn:

9406-198

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO 8015M	BTEX 8020	DRO 8100M	PESTICIDES 8080	[illegible]	[illegible]	Total Number of Containers	Remarks/Matrix
5259-613-05	16		6/13/94		✓	X	X	X	X			6	SOIL
5259-613-07	17				✓	X	X	X	X				
5259-613-08	18				✓	X	X	X	X				
5259-613-09	19				✓	X	X	X	X				
5259-615-BLANK3	20		6/15/94		✓					X		2	WATER

Project Information		Sample Receipt	
Project Number:	Y-5259	Total Number of Containers	26
Project Name:	GALENA VAF	COC Seals/Intact? Y/N/NA	2 coolers Y
Contact:	DAVID DINKUHN	Received Good Cond./Cold	Y
Ongoing Project?	Yes ☑ No ☐	Delivery Method:	CLIENT
Sampler:	DD	(attach shipping bill, if any)	

Instructions

Requested Turn Around Time: STD

Special Instructions: MIN/MAX THERMOMETER ✓ TEMP BLANK INCLUDED (RECORD BOTH) -21.0°C, 4.0°C.
COE 15°C
PROJECT

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature:	Signature: KIM SCOTT	Signature:
Time: 1115	Time: 15:45	Time:
Printed Name: DAVID DINKUHN	Printed Name: KIM SCOTT	Printed Name:
Date: 6/15/94	Date: 6/15/94	Date:
Company: SHANNON & WILSON	Company: ATI-AK	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: KIM SCOTT	Signature:	Signature:
Time: 15:45	Time: 11:12	Time:
Printed Name: KIM SCOTT	Printed Name: BOB ARIS	Printed Name:
Date: 6/15/94	Date: 6-16-94	Date:
Company: ATI-AK	Company: ATI	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Dated: July 25, 1994

To: Tom Peterson
Hoffman Construction

Important Information About Your Geotechnical Engineering/ Subsurface Waste Management (Remediation) Report

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS.

Consulting geotechnical engineers prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer/geoscientist.

AN ENGINEERING REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical engineering/subsurface waste management (remediation) report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, have the consulting engineer(s)/scientist(s) evaluate how any factors which change subsequent to the date of the report, may affect the recommendations. Unless your consulting geotechnical/ civil engineer and/or scientist indicates otherwise, your report should not be used: 1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); 2) when the size, elevation, or configuration of the proposed project is altered; 3) when the location or orientation of the proposed project is modified; 4) when there is a change of ownership; or 5) for application to an adjacent site. Geotechnical/civil engineers and/or scientists cannot accept responsibility for problems which may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural changes or human influence. Because a geotechnical/waste management engineering report is based on conditions which existed at the time of subsurface exploration, construction decisions should not be based on an engineering report whose adequacy may have been affected by time. Ask the geotechnical/waste management consultant to advise if additional tests are desirable before construction starts. For example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/waste management report. The geotechnical/civil engineer and/or scientist should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST GEOTECHNICAL RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help minimize their impact. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your geotechnical engineer's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Because actual

subsurface conditions can be discerned only during earthwork, you should retain your geotechnical engineer to observe actual conditions and to finalize conclusions. Only the geotechnical engineer who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The geotechnical engineer who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE GEOTECHNICAL ENGINEERING/SUBSURFACE WASTE MANAGEMENT (REMEDIATION) REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical engineering/subsurface management (remediation) report. To help avoid these problems, the geotechnical/civil engineer and/or scientist should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological and waste management findings and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE ENGINEERING/WASTE MANAGEMENT REPORT.

Final boring logs developed by the geotechnical/civil engineer and/or scientist are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical engineering/waste management reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To minimize the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/waste management report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes which aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical engineering/subsurface waste management (remediation) is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against geotechnical/waste management consultants. To help prevent this problem, geotechnical/civil engineers and/or scientists have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the engineer's or scientist's liabilities to other parties; rather, they are definitive clauses which identify where the engineer's or scientist's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your engineer/scientist will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

MINUTES
95% REVIEW CONFERENCE
UNDERGROUND FUEL STORAGE TANKS
GALENA AIRPORT, ALASKA
DACA85-93-C-0005

1. The 95% Design Review conference was held on July 22, 1993, in the offices of the U.S. Army Engineer District, Alaska, on Elmendorf Air Force Base. The following individuals attended:

NAME	OFFICE	PHONE
Clarke Hemphill	CENPA-EN-TE-DM	753-5638
Ed Granger	11 CEOS / DEEA	552-2218
Brent Stuart	CENPA-PM-M	753-5783
Joe Williams, Jr.	CENPA-CO-QA	753-5516
Bob Welch	CENPA-RE-AQ	753-2854
Thomas Lubeck	CENPA-EN-TE-CS	753-5720
Roy Camero	CENPA-EN-TE-ST	753-5750
Jerry Raychel	CENPA-EN-G-SC	753-2685
Bill Smith	Tryck Nyman Hayes	279-0543
Dave Coolidge	Tryck Nyman Hayes	279-0543
Mark Brewer	Tryck Nyman Hayes	279-0543
Tim Terry	Shannon & Wilson	561-2120
Bill Burgess	Shannon & Wilson	561-2120
Tom Arnot	Coffman Engineers	276-6664
Don Iverson	Coffman Engineers	276-6664
Dave Williams	Coffman Engineers	276-6664
Will Veelman	Coffman Engineers	276-6664

The conference commenced at 0900 and ended at 1200 hours.

2. Project information made available at the conference included:

90% Review Comment Package from HQ PACAF, dated July 19, 1993

95% Review Comment Package from various (Hemphill, et al), dated July 21, 1993

95% Review Comment Package from Lubeck, dated July 22, 1993

95% Review Comment Package from Raychel, dated July 22, 1993

3. The review comments were acted on individually, with A/E responses to be provided at the ~~95%~~ Design complete CIH submittal. Discussions were held on some key issues as discussed below.

4. Discussion about project siting. Elements of the project encroach on property owned by the State of Alaska. These elements include the southern portion of the tank dike, a portion of the chain link fence, the pump house, the fuel piping from the dike the the valve pit, the dike drain, and a new fire hydrant. The existing facilities also encroach on the State owned land, including the existing dikes, pump house, fence, and underground fuel piping. Discussion included comparing the schedule and effort for moving the new facilities to be entirely located on Air Force owned property verses obtaining approval from the State to construct a facility that encroaches on their land.

The facilities could be moved to be located entirely on Air Force property, except for the fuel line to valve pit #2. This change would be a major impact on the site layout, grading, and utility plans. The structural, mechanical, and electrical systems would require minor modifications. Changing the site would likely result in the existing road to the northeast of the site being eliminated, possibly requiring the relocation of three existing isopropyl tanks.

Mr. Welch indicated he would present the proposed site plan to the State to see if encroachment on their property is a problem. He will report back to Mr. Hemphill within two weeks with a reading of the State's position. The A/E will be prepared to quickly prepare a proposal to relocate the facilities on Air Force property if the State disapproves the proposed siting.

5. Discussion about demolition of existing tanks. The Air Force will remove and dispose of all the saddle tanks in the project site. They will provide direction as to schedule and extent of demolition (ie. tank foundations and extent of piping).

6. Discussion of contaminated soil. The Air Force will construct a portion of the dikes with contaminated soils. A meeting will be held within the next week with the A/E and Air Force to determine extent of Air Force construction.

7. Discussion of asbestos in existing pump house. Air Force will check to see if the pump house was included in any previous asbestos surveys.

8. Discussion of sole source products. Claval valves do not have a waiver to be sole source. The Petrex floating pan does have the waiver and will be specified sole source. (Note from 35% - is the level monitoring system sole source?)

9. Discussion of fuel pumping system. The pumps are designed to pump from the new tank to the tanks on the 'hill'. The pumps may not be sized to be used as fueling pumps per Nakata comment #15. Air Force to advise on required use of pumps.

10. Discussion of groundwater level. A/E will show groundwater range on soil boring log sheet with note Contractor shall verify water table prior to any excavation. Specs will indicate Contractor has option to schedule excavation work when water table is below limits of excavation or provide design and obtain permits for installing a groundwater remediation system to clean all water resulting from dewatering.

11. Discussion of ESD system. Air Force will provide location(s) for emergency shutdown of new pumps and if interface is required for existing pumps.

AIR FORCE ACTION ITEMS

1. Please provide the following information:
   a. Extent and schedule for existing saddle tank demolition.
   b. Extent and schedule for new dike construction.
   c. Waivers for sole source items.
   d. ESD requirements.
   e. Existing pump house asbestos survey results.

CORPS OF ENGINEERS ACTION ITEMS

1. Please provide the following information:
   a. Correct drawing title block on disc.

Prepared by:

COFFMAN ENGINEERS

Will Veelman
A/E Team Project Manager

July 23, 1993

MINUTES
ENVIRONMENTAL COORDINATION CONFERENCE
UNDERGROUND FUEL STORAGE TANKS
GALENA AIRPORT, ALASKA
DACA85-93-C-0005

1. An Environmental Coordination conference was held on July 26, 1993, in the offices of the U.S. Army Engineer District, Alaska, on Elmendorf Air Force Base. The following individuals attended:

NAME	OFFICE	PHONE
Clarke Hemphill	CENPA-EN-TE-DM	753-5638 1623
Ed Granger	11 CEOS	552-4011
Wes Lannen	11 CEOS	552-4532
Dave Coolidge	Tryck Nyman Hayes	279-0543
Tim Terry	Shannon & Wilson	561-2120
Bill Burgess	Shannon & Wilson	561-2120
Will Veelman	Coffman Engineers	276-6664

The conference commenced at 0900 and ended at 1200 hours.

1. Discussion of ESD system. Air Force provided direction for locations for emergency shutdown of new pumps.

2. Discussion about extent of Air Force demolition of existing saddle tanks. The Air Force will remove the existing saddle tanks, tank supports, and piping within the proposed project area. A/E will provide a sketch indicating desired limits of piping removal and removal of pumphouse #1820. The Air Force is not removing or moving any soil as part of their demolition.

3. Existing monitoring wells in the diked area will be removed by the Air Force so penetrations through the liner are not required.

4. Discussion of soil excavation as part of this project. Intent is to excavate only the silts in an area under the tank foundation and under the new pumphouse foundation. The excavation will not encompass all of the existing contaminated soil at the site, nor will the depth of the excavation extend into clean soil. The volume of excavated material is estimated at about 3500 to 4000 cubic yards.

The excavated soil will be used in the construction of the tank dike. Due to the requirement for the tank dike to be compacted, vapor recovery or sparging of the dike is not an option for remediation. Therefore, the soil will be remediated prior to placement in the dike, either by stabilization or incineration.

After dynamic compaction of the tank foundation, clean structural fill will be imported for the foundation. A liner will be installed between the top of the compacted surface and the bottom of the fill to separate the clean fill from the contaminated insitu material. Some fill may be placed in the excavation prior to compaction to stay above the water table which will become contaminated during the compaction process.

5. Discussion of construction responsibility, in approximate chronological order.

Removal of existing tanks and piping	Air Force
Remove monitoring wells	Air Force
Excavate tank foundation	Contractor
Stockpile excavated material adjacent to site	Contractor
Remediate excavated materials	Air Force
Compact foundation	Contractor
Place separation liner	Contractor
Backfill foundation	Contractor
Build tank	Contractor
Build dikes from remediated materials	Contractor

The separation liner will be identified by the Contractor as a separate bid item. An expected time frame required for the Air Force to remediate the excavated materials will be determined and stated in the bid documents.

Prepared by:

COFFMAN ENGINEERS

Will Veelman
A/E Team Project Manager

July 26, 1993

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

SEATTLE
RICHLAND
FAIRBANKS
ANCHORAGE
HOUSTON
SAINT LOUIS

September 22, 1993

Hoffman Construction Company
3201 C Street, Suite 610
Anchorage, Alaska 99503

Attn: Wade Chriswell/Tom Peterson

RE: GALENA MAINTENANCE FACILITY

Attached to this letter, please find the draft addendum to the site specific health and safety plan for working with the DDT, DDD and DDE contamination out at the site which includes a summary of the test pit explorations. The addendum is being finalized in accordance with our certified industrial hygienist in Seattle and should be available today. The addendum to the Quality Assurance Project Plan to analyze soils for DDT, DDD and DDE contamination out at the site is also being finalized.

If you have any questions, please call the undersigned.

Sincerely,

SHANNON & WILSON, INC.

Timothy M. Terry
Senior Associate

TMT/mac

Encl: Draft Addendum to Site Specific Health and Safety Plan

Post-it™ brand fax transmittal memo 7671	# of pages ▸ 21
To Wade	From Tim Terry
Co. Hoffman	Co. S&W
Dept. Galena	Phone #
Fax # 656-1771	Fax #

5430 FAIRBANKS STREET • SUITE 3
ANCHORAGE, ALASKA 99518
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SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

SEATTLE
RICHLAND
FAIRBANKS
ANCHORAGE
SAINT LOUIS
BOSTON

September 20, 1993

Hoffman Construction Company
3201 "C" Street, Suite 610
Anchorage, Alaska 99503

Attn: Mr. Wade Chriswell
Project Manager

RE: ADDENDUM 01, HEALTH & SAFETY PLAN FOR GALENA AIRPORT EXCAVATION ACTIVITIES CONCERNING DDT

This transmittal will serve as Addendum 01 to Shannon & Wilson, Inc.'s (S&W's) Health & Safety Plan for the Galena Airport project in Alaska. The purpose of this transmittal is to provide guidance for working conditions/precautions due to the presence of DDD, DDT, and DDE, which have been documented to be present in site soil.

EXCAVATION ACTIVITIES

Prior to and during excavation activities at the site, wind direction and speed should be ascertained in order to limit the amount of exposure to the referenced compounds that may be present as airborne particulate matter. Dermal protocol already outlined for petroleum hydrocarbon soil handling will suffice for worker protection, with a possible up-grade of glove protection.

The obvious route of exposure will be through airborne particulate matter that may contain these compounds. Excavation and observation of excavation activities should be conducted upwind, and suppressant of dry soil should be accomplished with light applications of potable water.

CONTAINERIZATION OF MATERIAL

Methods employed for containerization of these materials should be structured and conducted to lessen worker risk associated with exposure. Roll-off containers, which can be directly loaded without assistance from on-the-ground workers, should be employed if quantities of waste are excessive. If containerization of this material is to be in 55-gallon barrels, a system of handling

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SEATTLE, WASHINGTON 98103
206-632-8020 FAX 206-633-6777

may consist of a machine-suspended funnel, which will direct, at a safe distance, the flow of materials into the barrel(s). Suppressant of dust is crucial and may be controlled as mentioned above.

PROTECTION UP-GRADE

Operations associated with containerization of these materials should be conducted in Level C dress with Neoprene outer gloves and an inner glove. At any detectable concentration of DDT, NIOSH recommends the following breathing apparatus to be employed:

- Any self-contained breathing apparatus that has a full-facepiece and is operated in a pressure-demand or other positive-pressure mode, or
- Any supplied-air respirator that has a full-facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

EXPOSURE LIMIT

Recent literature suggests that of the compounds present, only DDT has an OSHA exposure limit (TWA) of 1 mg/m^3.

MONITORING REQUIREMENTS

The analyte DDT will be monitored at this location by methods proscribed to by standard industrial hygiene protocol. Air samples will be collected on a regular basis, two per 8-hour day, in order to analyze particulate matter for the presence of the indicator compound DDT. At the discretion of on-site personnel, a duplicate sample will be obtained each day during periods of high activity. As an appendix to this addendum, Method S274 is attached for guidance for collection, shipping, and analysis of these samples.

In support of this laboratory analytical method, on-site analysis will include the use of a total dust monitor; the threshold value will be the OSHA limit of 10 mg/m^3. Concentrations of total

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dust in excess of this concentration will initiate procedures for dust suppressant controls, as outlined earlier in this addendum.

ANALYTICAL LABORATORY

All samples collected at this site for analysis will be shipped to the project laboratory (Analytical Technologies, Inc.) in Seattle, Washington. Results will be verbally transmitted within five working days, with a hard copy of results forwarded within seven days of receipt of samples.

CLOSURE

This addendum has been prepared for the Hoffman Construction Co. at their project located in Galena, Alaska.

If we may of further assistance on this matter, please contact us at our office in Anchorage, Alaska.

Respectfully,

SHANNON & WILSON, INC.

Robert Colombo
Associate

RC/rc

Enclosure: Appendix - Analytical Methods

Y5259-02.LTR/Y5259-lk4/lk4

SHANNON & WILSON, INC.

APPENDIX

ANALYTICAL METHODS

DDT

2,2-bis (p-chlorophenyl)-1,1,1-trichloroethane

Analyte:	DDT	Method No.:	S274
Matrix:	Air	Range:	0.49-2.60 mg/cu m
OSHA Standard:	1.0 mg/cu m - skin	Precision ($\overline{CV}_T$):	0.061
Procedure:	Filter collection, iso-octane extraction, GC	Validation Date:	2/27/76

1. Principle of the Method

1.1 A known volume of air is drawn through a glass fiber filter to collect particulate matter.

1.2 The filter is transferred to a screw cap bottle within one hour after sampling and stored for analysis.

1.3 The analyte is extracted from the filter with iso-octane. An aliquot of the extract is analyzed by gas chromatography.

1.4 The area of the resulting peak is determined and compared with the areas for standards.

2. Range and Sensitivity

2.1 This method was validated over the range of 0.494-2.60 mg/cu m at an atmospheric temperature and pressure of 26°C and 760 mm Hg, using a 90-liter sample. The probable useful range of this method is 0.10-0.30 mg/cu m for 90-liter samples.

2.2 The upper limit of the range of the method is dependent on the capacity of the glass fiber filter. If higher concentrations than those tested are to be sampled, smaller sample volumes should be used.

3. Interferences

3.1 When interfering compounds are known or suspected to be present in the air, such information, including their suspected identities, should be transmitted with the sample.

3.2 It must be emphasized that any compound which has the same retention time as the analyte at the operating conditions described in this method is an interference.

4. Precision and Accuracy

4.1 The Coefficient of Variation ($\overline{CV}_T$) for the total analytical and sampling method in the range of 0.494-2.60 mg/cu m was 0.061. This value corresponds to a standard deviation of 0.06 mg/cu m at the OSHA standard level. Statistical information and details of the validation and experimental test procedures can be found in Reference 11.1.

4.2 A collection efficiency of 1.00 was determined for the collection medium, thus, no bias was introduced in the sample collection step, and no correction for collection efficiency is necessary. There was also no bias in the sampling and analytical method, since analytical method recovery corrections were made. Thus, $\overline{CV}_T$ is a satisfactory measure of both accuracy and precision of the sampling and analytical method.

5. Advantages and Disadvantages of the Method

The sampling device is small, portable, and involves no liquids. Samples collected on filters are analyzed by means of a quick, instrumental method.

6. Apparatus

6.1 The sampling unit for the collection of personal air samples for the determination of organic aerosol has the following components:

6.1.1 The filter unit consisting of the filter media (Section 6.2) and a polystyrene 37-mm two-piece cassette filter holder. Do not use Tenite filter holders.

6.1.2 Personal Sampling Pump: A calibrated personal sampling pump whose flow can be determined to an accuracy of ±5% (Reference 11.1) at the recommended flow rate. The pump must be calibrated with a representative filter holder and filter in the line.

6.1.3 Manometer.

6.1.4 Thermometer.

6.1.5 Stopwatch.

6.2 Glass fiber filter, similar to Gelman Type AE with a 37-mm diameter. The filter must be free of organic binders. The filter is held in the two-piece filter holder supported by a backup pad. The glass fiber filter should be at least 99.7% efficient against particles as small as 0.3 microns.

6.3 Screw cap bottles. Within 1 hour after sample has been collected, the filter is transferred to a clean screw cap bottle (a 49-mm tissue sample holder is satisfactory) for shipping. The bottle caps should be lined with Teflon for proper seal.

6.4 Gas chromatograph equipped with an electrolytic conductivity detector (Tracor or equivalent). The system includes an in-line vent between the exhaust end of the GC column and the reduction furnace, a quartz furnace operated in the reductive mode, an electrolytic conductivity cell, and a conductivity bridge.

6.5 Column (4-ft long X 1/2-in O.D. glass) packed with 5% SE-30 on 80/100 mesh, acid washed DMCS Chromosorb W.

6.6 An electronic integrator or some other suitable method for measuring peak areas.

6.7 Microliter syringes: 10-microliter and other convenient sizes for making standard solutions, and 25-microliter for making GC injections.

6.8 Volumetric flasks: Convenient sizes for preparing standard solutions.

6.9 Pipets of convenient sizes.

6.10 Tweezers.

7. Reagents

7.1 DDT, reagent grade.

7.2 Iso-octane, nanograde.

7.3 Benzene, reagent grade.

7.4 Purified nitrogen.

7.5 Prepurified hydrogen.

8. Procedure

8.1 Cleaning of Equipment. All glassware used for the laboratory analysis as well as the screw cap bottles should be detergent washed and thoroughly rinsed with tap water and distilled water, and dried.

8.2 Calibration of Personal Sampling Pumps. Each personal sampling pump must be calibrated with a representative filter cassette in the line. This will minimize errors associated with uncertainties in the sample volume collected.

8.3 Collection and Shipping of Samples

8.3.1 Assemble the filter in the two-piece filter cassette holder and close firmly. The filter is held in place by a backup pad.

8.3.2 Remove the cassette plugs and attach to the personal sampling pump tubing. Clip the cassette to the worker's lapel.

8.3.3 Air being sampled should not pass through any hose or tubing before entering the filter cassette.

8.3.4 A sample size of 90 liters is recommended. Sample at a flow rate of 1.5 liters per minute. The flow rate should be known with an accuracy of ±5%.

8.3.5 Turn the pump on and begin sample collection. Since it is possible for a filter to become plugged by heavy particulate loading or by the presence of oil mists or other liquids in the air, the pump rotameter should be observed frequently, and the sampling should be terminated at any evidence of a problem.

8.3.6 Terminate sampling at the predetermined time and note sample flow rate, collection time and ambient temperature and pressure. If pressure reading is not available, record the elevation.

8.3.7 The glass fiber filter should be removed from the cassette filter holder within 1 hour of sampling and placed in a clean screw cap bottle. Care must be taken to handle the filter only with clean tweezers.

8.3.8 Carefully record the sample identity and all relevant sampling data.

8.3.9 With each batch of ten samples, submit one filter from the same lot of filters which was used for sample collection and which is subjected to exactly the same handling as for the samples except that no air is drawn through it. Label this as a blank.

8.3.10 The screw cap bottles in which the samples are stored should be shipped in a suitable container, designed to prevent damage in transit.

8.4 Analysis of Samples

8.4.1 Each sample is analysed separately.

8.4.2 Pipet 15 ml of iso-octane into each screw cap bottle.

8.4.3 Swirl the contents in each bottle occasionally for one hour.

8.4.4 Appropriate filter blanks must be analyzed at the same time as the samples.

8.4.5 GC Conditions. The typical operating conditions for the gas chromatograph are:

1. 115 ml/min nitrogen carrier gas flow
2. 35 ml/min hydrogen gas flow to furnace
3. 790°C furnace temperature
4. 225°C transfer temperature
5. 260°C vent temperature
6. 190°C column temperature

8.4.6 Injection. The first step in the analysis is the injection of an aliquot of the sample into the gas chromatograph. To eliminate difficulties arising from blow back or evaporation of solvent within the syringe needle, one should employ the solvent flush injection technique. The 25-microliter syringe is first flushed with solvent several times to wet the barrel and plunger. Three microliters of solvent are drawn into the syringe to increase the accuracy and reproducibility of the injected sample volume. The needle is removed from the solvent, and the plunger is pulled back about 1.0 microliter to separate the solvent flush from the sample with a pocket of air to be used as a marker. The needle is then immersed in the sample, and a 15-microliter aliquot is withdrawn, taking into consideration the volume of the needle, since the sample in the needle will be completely injected. After the needle is removed from the sample and prior to injection, the plunger is pulled back 1.0 microliter to minimize evaporation of the sample from the tip of the needle. Observe that the sample occupies 14.9-15.0 microliters in the barrel of the syringe. The gas chromatograph is equipped with a valve to vent the solvent peak after it passes through the GC column, but before it enters a reduction furnace. Since a 15-microliter aliquot is likely to cause malfunction of the conductivity cell, the valve should be opened when injection is made and should be closed after the solvent (iso-octane) has been vented and before the analyte is eluted. Under the conditions above (Section 8.4.5), it was found that 20 seconds was adequate to elute the solvent. Duplicate injections of each sample and standard should be made. No more than a 3% difference in area is to be expected.

8.4.7 Measurement of area. The area of the sample peak is measured by an electronic integrator or some other suitable form of area measurement, and preliminary results are read from a standard curve prepared as discussed in Section 9.

8.5 Determination of Analytical Method Recovery

8.5.1 Need for Determination. To eliminate any bias in the analytical method, it is necessary to determine the recovery of the analyte. The analytical method recovery should be determined over the concentration range of interest.

8.5.2 Procedure for determining analytical method recovery. Six filters are spiked at each of the three levels (0.5X, 1X, and 2X the OSHA standard) using a stock solution of 225 mg of DDT in 2 ml of benzene and diluting to 10 ml with iso-octane. Three sets of six filters are spiked with appropriate volumes of the stock solution to correspond to the amount of DDT which would be collected in a 90-liter sample at the 0.5X, 1X, and 2X the OSHA standard level. Allow the filters to dry and place each filter in a cassette filter holder and allow to stand overnight. The filters are extracted and analyzed as described in Section 8.4. A parallel blank filter is also treated in the same manner except that no sample is added to it.

Analytical Method Recovery (A.M.R.) equals the weight in mg found divided by the weight in mg added to the filter, or,

$$\text{A.M.R.} = \frac{\text{mg found}}{\text{mg added}}$$

9. Calibration and Standards

It is convenient to express concentration of standards in terms of mg/15 ml iso-octane, because samples are extracted in this amount of iso-octane. A series of standards, varying in concentration over the range of interest, are prepared from the above stock solution. Dilute standards are prepared by diluting measured volumes of stock solution to known volumes with iso-octane. The standards are analyzed under the same GC conditions and during the same time period as the unknown samples. Curves are established by plotting concentration in mg/15 ml versus peak area. Note: Since no internal standard is used in the method, standard solutions must be analyzed at the same time that the sample analysis is done. This will minimize the effect of day-to-day variations and variations during the same day of the electrolytic conductivity detector response.

10. Calculations

10.1 Read the weight, in mg, corresponding to each peak area from the standard curve. No volume correction is needed, because the standard curve is based on mg/15 ml of iso-octane and the volume of sample injected is identical to the volume of the standards injected.

10.2 A correction for the blank must be made for each sample.

$$mg = mg\ sample - mg\ blank$$

where:

mg sample = mg found in sample filter
mg blank = mg found in blank filter

10.3 Divide the total weight by the analytical method recovery (A.M.R.) to obtain corrected mg/sample.

$$\text{Corrected mg/sample} = \frac{\text{mg found (Section 10.2)}}{\text{A.M.R.}}$$

10.4 The concentration of the analyte in the air sample can be expressed in mg/cu m.

$$\text{mg/cu m} = \frac{\text{mg (Section 10.3) X 1000 (liter/cu m)}}{\text{Air Volume Sampled (liter)}}$$

11. Reference

11.1 Documentation of NIOSH Validation Tests, NIOSH Contract No. CDC-99-74-45.

TABLE 2 - HEADSPACE SCREENING AND ANALYTICAL RESULTS

		Sample Number (See Table 1 and Figure 1)											
Parameter Tested	Method*	TP1S2	TP1S3	TP2S1	TP2S2	TP3S1	TP3S2	TP4S2	TP4S3	TP5S1	TP5S3	TP6S1	TP6S2
PID Headspace Reading - ppm	OVM 580B	146	23	2	2	1.0	81	0.3	0.3	0.0	0.3	59	13

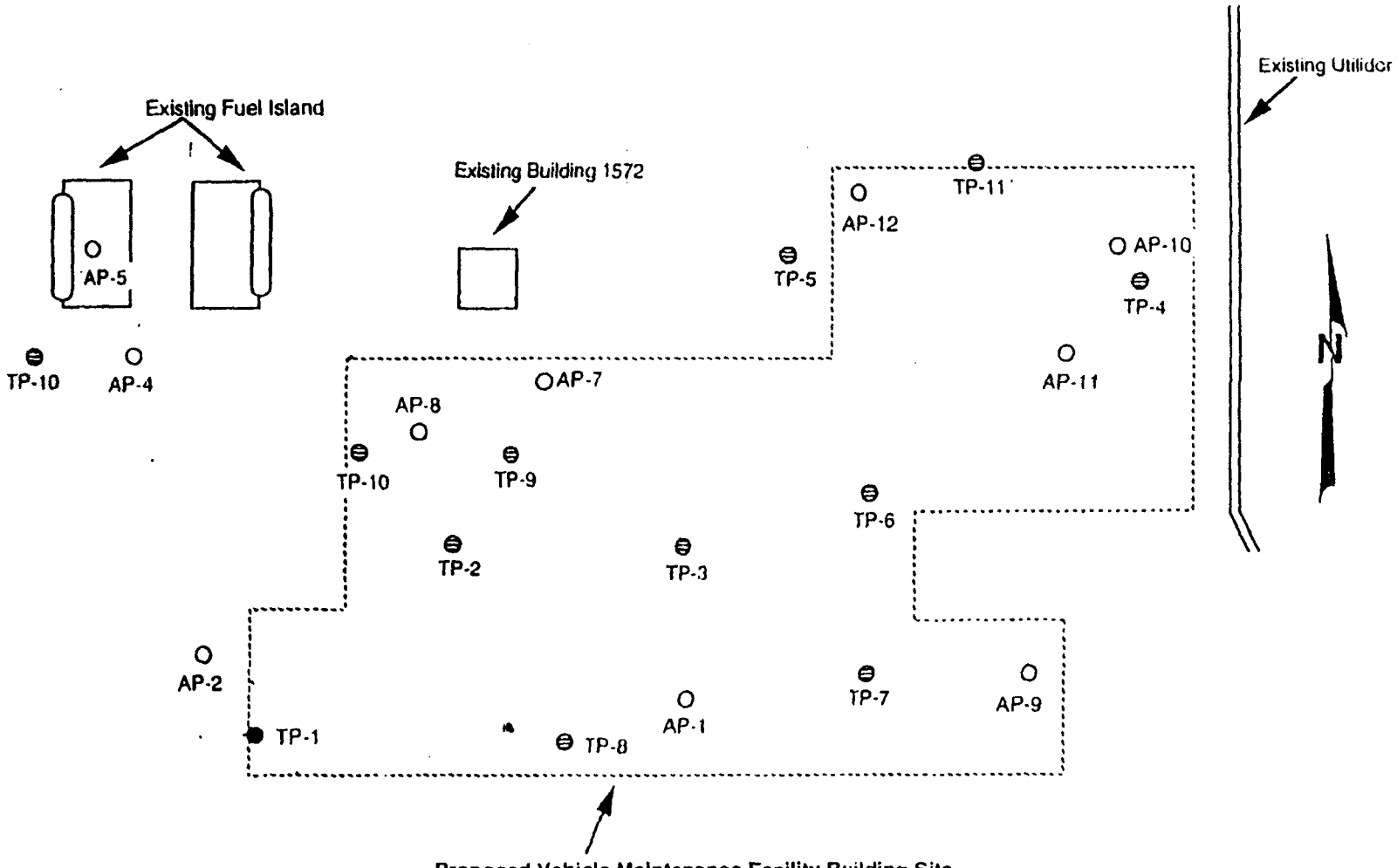
		Sample Number (See Table 1 and Figure 1)											
Parameter Tested	Method*	TP7S1	TP7S3	TP8S2	TP8S3	TP9S2	TP9S3	TP10S2	TP10S3	TP11S1	TP11S2		
PID Headspace Reading - ppm	OVM 580B	5.3	2.0	130	47	0.3	0.3	1.0	1.0	0.3	0.0		

		Sample Number (See Table 1 & Appendix A)											
Parameter	Method*	TP1S1	TP2S3	TP3S3	TP4S1	TP5S2	TP6S3	TP7S2	TP8S1	TP9S1	TP10S1	TP11S3	TP11S3dup
PID Headspace Reading - ppm	OVM 580B	607	29	542	1.0	0.3	169	18	194	1.0	1.0	0.3	0.3
Aromatic Volatile Organics (BTEX)	EPA 8020												
Benzene - ppm	EPA 8020	ND	ND	1.9	ND	ND	0.043	ND	ND	ND	ND	ND	ND
Toluene - ppm	EPA 8020	0.60	ND	30	ND	ND	0.071	ND	ND	ND	ND	ND	ND
Ethylbenzene - ppm	EPA 8020	0.93	ND	7.6	ND	ND	0.39	ND	ND	ND	ND	ND	ND
Total Xylenes - ppm	EPA 8020	18	ND	68	ND	ND	1.2	ND	2.5	ND	ND	ND	ND
Total BTEX - ppm	EPA 8020	19.53	ND	107.5	ND	ND	1.707	ND	2.5	ND	ND	ND	ND
Gasoline Range Organics (GRO) - ppm	EPA 5030/8015	280	ND	2700	ND	ND	120	ND	170	ND	ND	ND	
Diesel Range Organics (DRO) - ppm	EPA 3550/8100	3300	ND	2900	52	17	5200	88	5700	35	ND	ND	
Organochlorine Pesticides	EPA 8080	*											
DDD - ppm	EPA 8080	220					0.082		0.13				
DDT - ppm	EPA 8080	1.3					ND		0.018				
DDE - ppm	EPA 8080	1.7					ND		ND				
PCBs - ppm	EPA 8080	ND					ND		ND				

KEY	DESCRIPTION
-	SAMPLE NOT ANALYZED FOR THIS PARAMETER
ND	BELOW DETECTION LIMITS
*	SEE APPENDIX A FOR LIMITS OF DETECTION

TABLE 1 - SOIL SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Time	Sample Location (See Figs. 1 and Table 2)	Depth (Ft.)	Sample Classification
TP1S1	8/24/93	7:40	Test Pit No. 1, Sample No. 1, south side of test pit	2.0	Brown to gray, silty, gravelly, SAND to sandy GRAVEL [FILL]
TP1S2	8/24/93	7:45	Test Pit No. 1, Sample No. 2, south side of test pit	3.9	Brown to gray SILT w/ trace of gravel
TP1S3	8/24/93	7:50	Test Pit No. 1, Sample No. 3, south side of test pit	6.5	Brown, silty SAND; dry
TP2S1	8/24/93	8:10	Test Pit No. 2, Sample No. 1, west side of test pit	2.0	Brown, slightly silty, sandy GRAVEL [FILL] to gravelly SAND
TP2S2	8/24/93	8:15	Test Pit No. 2, Sample No. 2, west side of test pit	4.0	Brown, slightly sandy SILT; damp
TP2S3	8/24/93	8:20	Test Pit No. 2, Sample No. 3, west side of test pit	8.6	Brown, clean SAND; damp
TP3S1	8/24/93	8:45	Test Pit No. 3, Sample No. 1, west side of test pit	1.0	Brown, silty gravelly SAND; [FILL]
TP3S2	8/24/93	8:50	Test Pit No.3 , Sample No. 2, west side of test pit	3.5	Brown to gray, slightly silty SAND to slighily gravelly, sandy SILT; damp
TP3S3	8/24/93	8:55	Test Pit No. 3, Sample No. 3, west side of test pit	7.0	Gray, silty SAND
TP4S1	8/24/93	9:10	Test Pit No. 4, Sample No. 1, south side of test pit	2.0	Brown to gray, silty, gravelly SAND [FILL]
TP4S2	8/24/93	9:15	Test Pit No. 4, Sample No. 2, south side of test pit	4.5	Brown, sandy SILT, w/ trace of gravel
TP4S3	8/24/93	9:20	Test Pit No. 4, Sample No. 3, south side of test pit	7.2	Brown, slightly silty to clean SAND
TP5S1	8/24/93	9:40	Test Pit No. 5, Sample No. 1, south side of test pit	2.0	Brown, gravelly SAND [FILL]
TP5S2	8/24/93	9:45	Test Pit No. 5, Sample No. 2, south side of test pit	4.0	Brown, silty SAND to sandy SILT
TP5S3	8/24/93	9:50	Test Pit No. 5, Sample No. 3, south side of test pit	6.2	Brown, sandy SILT
TP6S1	8/24/93	10:20	Test Pit No. 6, Sample No. 1, west side of test pit	1.8	Brown, sandy GRAVEL. [FILL]
TP6S2	8/24/93	10:25	Test Pit No. 6, Sample No. 2, west side of test pit	4.2	Brown, slightly gravelly, silty SAND to gravelly, sandy SILT, damp
TP6S3	8/24/93	10:30	Test Pit No. 6, Sample No. 3, west side of test pit	6.7	Brown to gray, silty SAND
TP7S1	8/24/93	11:00	Test Pit No. 7, Sample No. 1, west side of test pit	2.0	Brown, sandy GRAVEL to gravelly SAND [FILL]
TP7S2	8/24/93	11:10	Test Pit No. 7, Sample No. 2, west side of test pit	4.3	Brown, sandy GRAVEL to gravelly SAND [FILL]
TP7S3	8/24/93	11:15	Test Pit No. 7, Sample No. 3, west side of test pit	6.4	Brown to gray, sandy silt to silty SAND
TP8S1	8/24/93	11:45	Test Pit No. 8, Sample No. 1, north side of test pit	2.0	Brown to gray, sandy GRAVEL to gravelly SAND [FILL]
TP8S2	8/24/93	11:50	Test Pit No. 8, Sample No. 2, north side of test pit	4.6	Brown to gray, gravelly, silty SAND
TP8S3	8/24/93	11:55	Test Pit No. 8, Sample No. 3, north side of test pit	8.0	Brown to gray, silty SAND to sandy SILT; moist
TP9S1	8/24/93	12:50	Test Pit No. 9, Sample No. 1, south side of test pit	2.0	Brown, sandy SILT to silty SAND
TP9S2	8/24/93	12:58	Test Pit No. 9, Sample No. 2, south side of test pit	4.0	Brown, sandy SILT to silty SAND
TP9S3	8/24/93	13:00	Test Pit No. 9, Sample No. 3, south side of test pit	6.0	Brown, silty SAND (fine sand)
TP10S1	8/24/93	13:20	Test Pit No. 10, Sample No. 1, north side of test pit	2.0	Brown, slightly silty, gravelly SAND [FILL]
TP10S2	8/24/93	13:25	Test Pit No. 10, Sample No. 2, north side of test pit	4.0	Brown, slightly silty, gravelly SAND [FILL]
TP10S3	8/24/93	13:30	Test Pit No. 10, Sample No. 3, north side of test pit	5.9	Brown to gray, sandy SILT to silty SAND (fine)
TP11S1	8/24/93	14:10	Test Pit No. 11, Sample No. 1, south side of test pit	2.0	Brown, slightly silty, gravelly SAND [FILL]
TP11S2	8/24/93	14:15	Test Pit No. 11, Sample No. 2, south side of test pit	4.2	Brown silty SAND to sandy SILT
TP11S3	8/24/93	14:20	Test Pit No. 11, Sample No. 3, south side of test pit	6.0	Brown, silty SAND



0 20 40 80

Approximate Scale in Feet

LEGEND

⊖ TP-1 Test Pit TP-1 excavated by Shannon & Wilson, August 24, 1993

O AP-2 Previously existing Boring AP-2

Galena Vehicle Maintenance Facility Galena, Alaska	
SITE PLAN	
September, 1993	Y-5253
SHANNON & WILSON, INC.	

STATE OF ALASKA

WALTER J. HICKEL, GOVERN

Telephone: (907) 451-23
Fax: (907) 451-21

DEPT. OF ENVIRONMENTAL CONSERVATION

Northern Regional Office
1001 Noble Street, Suite 350, Fairbanks, AK 99701-4980

NRO File: 860.38.0

October 19, 1993

Ed Granger, Project Manager
11th CEOS/CEOR
21885 2nd Street
Elmendorf AFB 99506-4420

Mr. Ken Larsen
Resident Engineer
Alaska District Corps of Engineers
Fairbanks Resident Office
P.O. Box 35066
Fort Wainwright, Alaska 99703-0066

Dear Messrs. Granger and Larsen:

Re: **Stockpile Plan for DDT Contaminated Soils at Galena Vehicle Maintenance Facility**

The Department of Environmental Conservation has completed its review of the **DDT Temporary Stockpile Plan for Galena Maintenance Facility** dated October 12, 1993 and received October 12, 1993, (Amendment #1 received October 14, 1993) from Shannon and Wilson.

During the course of excavating for a new Vehicle Maintenance Building, high levels of DDT, DDE, and DDD (1154 mg/kg total DDT) have been detected in the southwest corner of the excavation. The DDT contaminated soils will be excavated to three feet below ground surface and placed in a temporary stockpile on-site. DDT-Total has been detected in the groundwater west of the site (28.1 ug/L) and several drinking water wells are located in the general area. DDT-Total is very soluble in ethyl ether, acetone, benzene, and other organic solvents. Several of these cosolvents are present in the soils and groundwater of the area and may facilitate contaminant migration.

The stockpile plan is required by the Department pursuant to 18 AAC 75.327. 18 AAC 75.327 states: **Immediately upon becoming aware of a discharge of a hazardous substance to land or waters of the state, any person responsible for that discharge shall contain, clean up, and dispose of the material collected, using methods for which approval has been given by the Department. The discharge must be cleaned up to the Department's satisfaction.** It is the responsibility of the owner and operator of the site to ensure that all Federal and State Regulations pertaining to the excavation and storage of DDT-Total contaminated soils have been identified and addressed.

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
P.O. BOX 898
ANCHORAGE, ALASKA 99506-0898

REPLY TO
ATTENTION OF:

Quality Assurance Branch

SUBJECT: Galena Vehicle Maintenance Facility Soil Excavation

Ms. Laura Noland
Alaska Department of Environmental Conservation
Northern Region Office
1001 Noble Street, Suite 350
Fairbanks, Alaska 997010

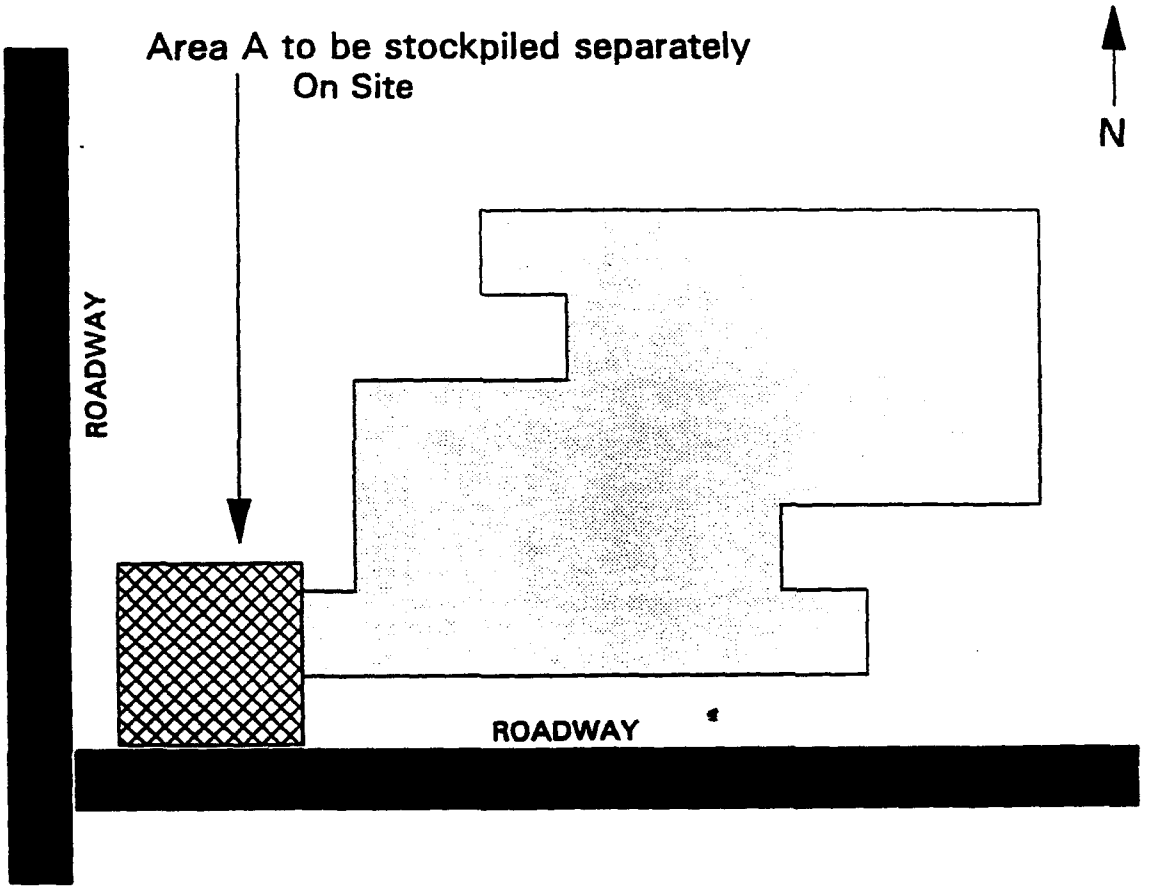
Ms. Noland:

The Alaska District Army Corps of Engineers would like to propose area A on attachment 1 be excavated to three feet in depth and stockpiled in accordance with our current approved stockpiling plan. The stockpiled soil will be covered on a reinforced liner inside a bermed and fenced area next to the construction site. Excavation and separation of DDT contaminated soil will occur in the southwest corner of the building north to the ditch of standing water.

Sincerely,

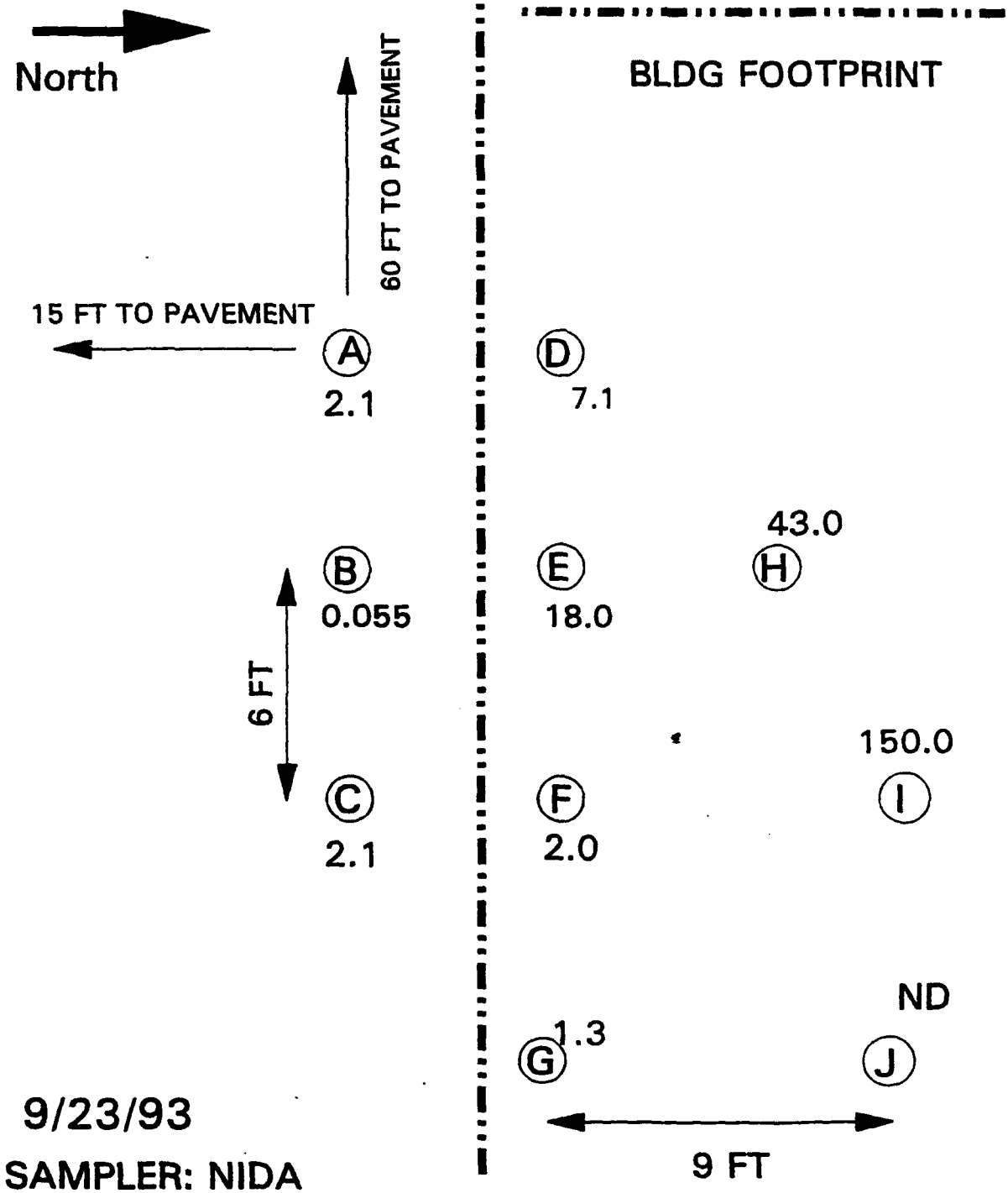
George J. Zeiler
Chief, Construction/Operation
Division

Atch



Attachment 1

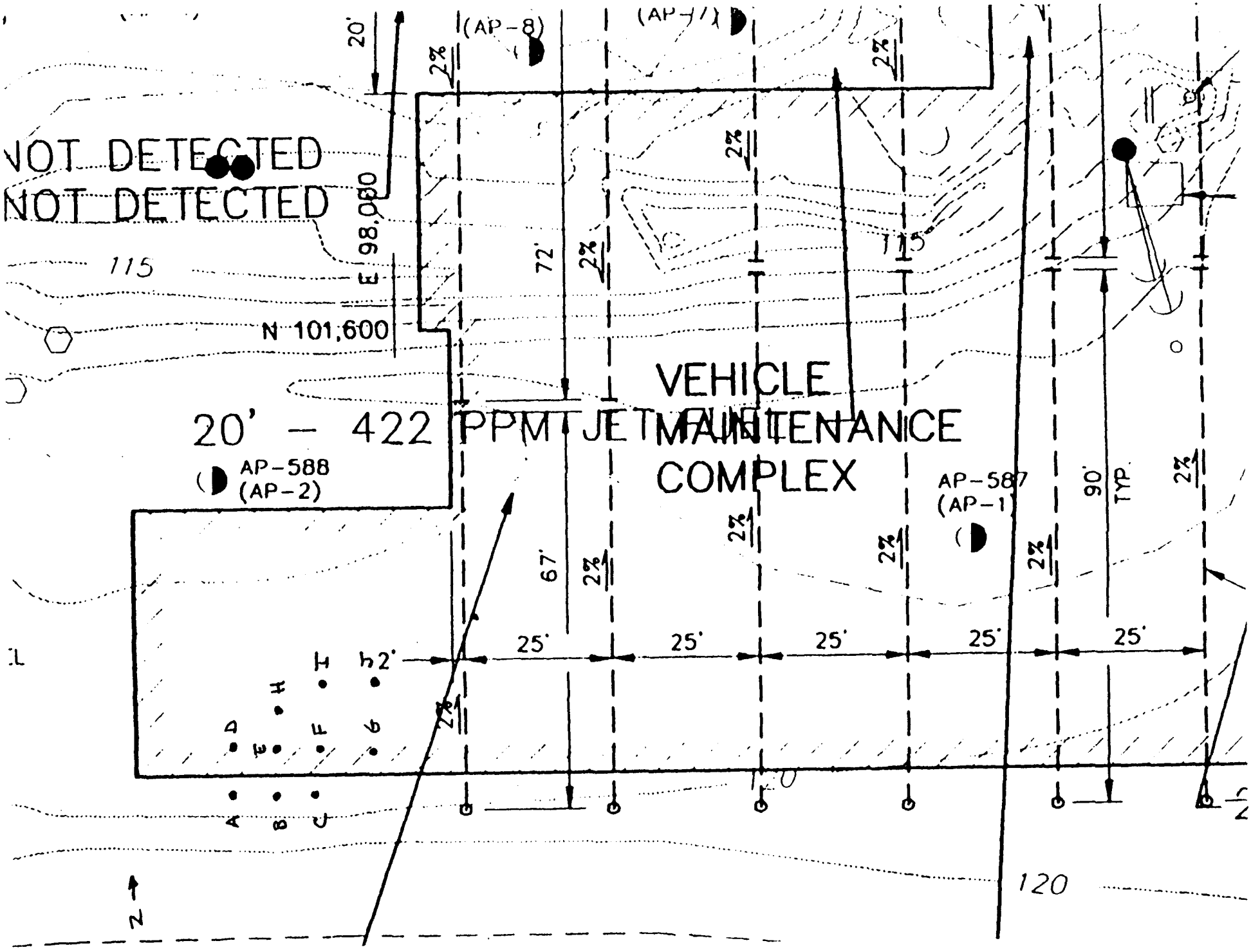
DDT SAMPLING AT GALENA
VEHICLE MAINTENANCE FACILITY
SW CORNER OF BLDG FOOTPRINT

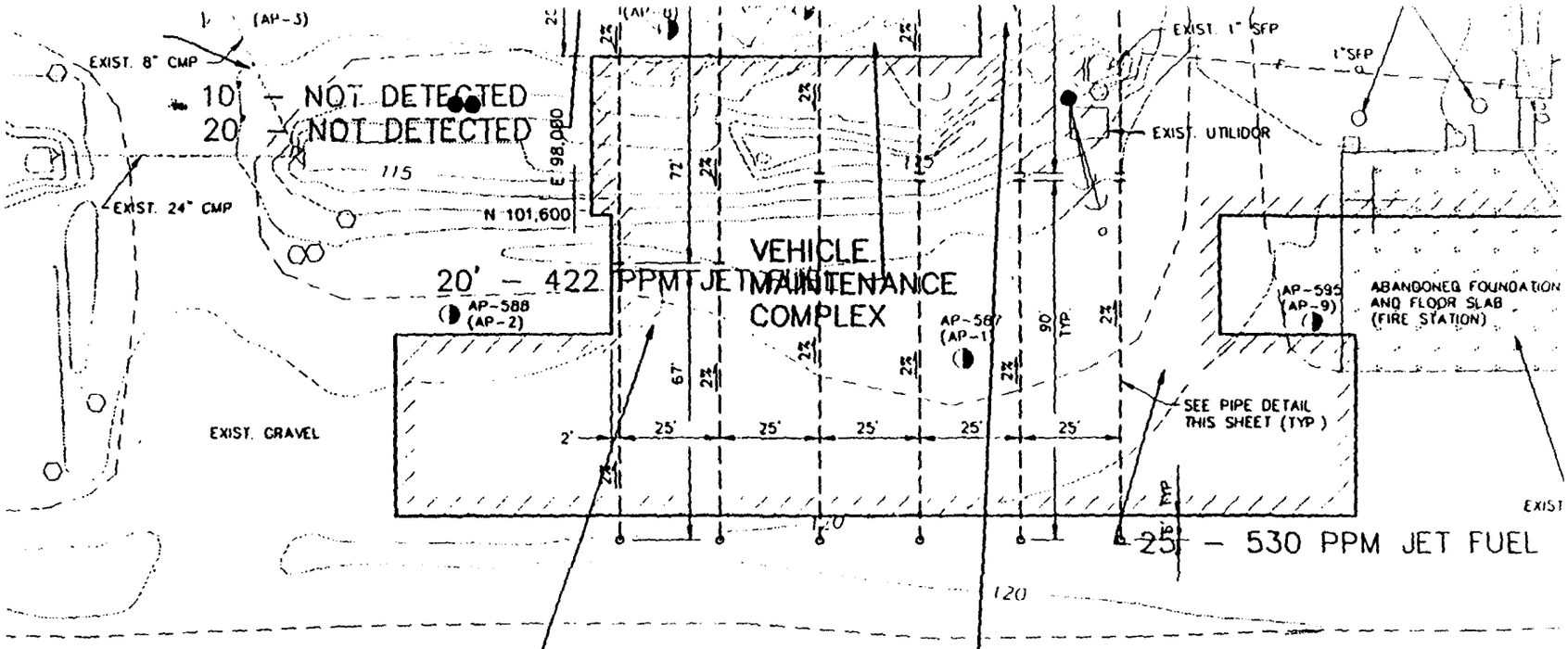


9/23/93

SAMPLER: NIDA

Numbers are DDT in ppm


NOT DETECTED
NOT DETECTED
20' — 422 PPM JET FUEL
VEHICLE MAINTENANCE COMPLEX
(AP-8)
AP-588
(AP-2)
AP-587
E 98,080
N 101,600
115
120
72'
67'
90' TYP.
25'
2%
A
B
C
D
E
F
G
H
N



SUR – 16400 PPM JET FUEL
13.1 PPM BTEX's
10' – NOT DETECTED

PLAN
SCALE 1"=20'

5' – .009 PPM BTEX's
10' – 500 PPM JET FUEL
10' – 504 PPM JET FUEL*
10' – 620 PPM JET FUEL*
15' – .907 PPM BTEX's
20' – 115 PPM JET FUEL
25' – 20.9 PPM BTEX's

U.S. Army Corps of Engineers

Facsimile Header Sheet

Alaska District

SEND TO FAX # DO.

From (Name)	Office Symbol	Telephone No.
Gus Olson	FRO	3537855
To (Name)	**Office Symbol**	**Telephone No.**
Randy Nida	QA	
Releaser's Signature	**# Pages** / **Precedence** / **DTG**	
	6	

Subject:
TEST RESULTS FROM GALENA
DACA85-93-C-0029
PLEASE ADVISE.

NPA Form 7
OCT 90

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: October 21, 1993
Date Received: October 15, 1993
Project: Y5259, Galena VMF

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR CHLORINATED PESTICIDES BY GC/ECD

Results Reported as µg/kg (ppb)

Sample ID	5259-1013-141	5259-1013-142	5259-1013-143
Analyte:			
BHC - Alpha	<10	<10	<10
BHC - Beta	<10	<10	<10
BHC - Gamma	<10	<10	<10
BHC - Delta	<10	<10	<10
Heptachlor	<10	<10	<10
Aldrin	<10	<10	<10
Heptachlor epoxide	<10	<10	<10
Endosulfan I (ESI)	<10	<10	<10
DDE	370	<10	<10
Dieldrin	<10	<10	<10
Endrin	<10	<10	<10
Endosulfan II (ESII)	<10	<10	<10
DDD	>1,400[or]	<10	<10
Endrin aldehyde	<10	<10	<10

[or] Over range on ECD.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: October 21, 1993
Date Received: October 15, 1993
Project: Y5259, Galena VMF

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR CHLORINATED PESTICIDES BY GC/ECD

Results Reported as µg/kg (ppb)

Sample ID	5259-1013-141	5259-1013-142	5259-1013-143
Analyte:			
DDT	<10	<10	<10
Endosulfan sulfate	<10	<10	<10
Endrin ketone	<10	<10	<10
Methoxychlor	<10	<10	<10
Chlordane	<10	<10	<10
Toxaphene	<50	<50	<50
Dibutyl chlorendate (surrogate)	128%	122%	122%

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: November 2, 1993
Date Received: October 19, 1993
Project: Y5258, Galena VMF
Date Extracted: November 2, 1993

RESULTS FROM THE ANALYSIS OF SOIL SAMPLE FOR CHLORINATED PESTICIDES BY GC/ECD

Results Reported as µg/Kg (ppb)

Sample ID	5259-1016-150
Analyte:	
2,4,5,6-Tetrachlora *m*-xylene (surrogate)	98%
BHC-Alpha	<5
BHC-Beta	<5
BHC-Gamma	<5
BHC-Delta	<5
Heptachlor	<5
Aldrin	<5
Heptachlor Epoxide	<5
Endosulfan I (ESI)	<5
DDE	6
Dieldrin	<5
Endrin	<5
Endosulfan II (ESII)	<5
DDD	200
Endrin aldehyde	<5
DDT	150
Endosulfan sulfate	<5

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: November 2, 1993
Date Received: October 19, 1993
Project: Y5259, Galena VMF
Date Extracted: November 2, 1993

RESULTS FROM THE ANALYSIS OF SOIL SAMPLE FOR CHLORINATED PESTICIDES BY GC/ECD

Results Reported as µg/Kg (ppb)

Sample ID	5259-1015-150
Analyte:	
Endrin ketone	<5
Methoxychlor	<5
Chlordane	<50
Toxaphene	<50
Dibutyl chlorendate (surrogate)	103%

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: November 16, 1993
Date Received: October 29, 1993
Project: Y-5259, Galena VMF
Date Samples Extracted: October 28, 1993
Date Extracts Analyzed: October 28, 1993

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR DDE, DDD AND DDT BY GC/ECD

Results Reported as µg/kg (ppb)

Analyte	DDE	DDD	DDT	Internal Standard (% Recovery)
Sample ID:				
5259-1012-134	40	240	25	105%
5259-1012-135	100	1,100[ve]	800[ve]	108%
5259-1012-136	110	1,100[ve]	420	108%
5259-1012-137	220	1,100[ve]	1,700[ve]	110%
5259-1012-138	320	1,100[ve]	2,000[ve]	108%
5259-1013-144	10	250	15	105%
5259-1013-147	5	140	10	104%
Quality Assurance				
Blank	<5	<5	<5	100%
5259-1013-147 (Duplicate)	6	160	13	104%
5259-1013-147 (Matrix Spike) % Recovery	na	115%	94%	105%
5259-1013-147 (Matrix Spike Duplicate) % Recovery	na	125%	95%	104%
Spike Blank % Recovery	na	98%	92%	102%
Spike Level	na	200	100	

[ve] The value reported exceeded the calibration range established for the sample.
[na] The analyte indicated was not added to the matrix spike sample.

S. 7 Mar

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

21 Feb 94

MEMORANDUM FOR ARMY CORPS OF ENGINEERS
ATTENTION: MR. THOMAS JOHNSON

FROM: 11th Air Control Wing
21885 2nd St
Elmendorf AFB AK 99506-4420

SUBJECT: Certificates of Installation for Underground Tanks - ACTION MEMORANDUM

The Underground Storage Tank (UST) regulations under 40,CFR,280 and 18,AAC,78 require that an installation certificate be filed for each regulated UST installed since 22 Dec 88. Request your office provide installation certificates for the USTs listed on Atch 1. This documentation is required before Alaska Department of Environmental Conservation performs a compliance inspection of USTs April 1994. Point of contact in this matter is Ms. Susan Randlett, 11 CEOS/CEVC, 552-4532.

Rodney L. Hunt

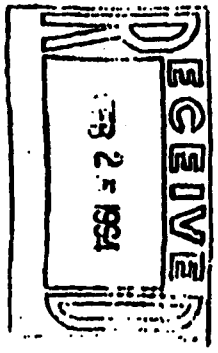
RODNEY L. HUNT, Lt Col, USAF
Civil Engineer

Attachment:
USTs Requiring Installation Certificate

RECEIVED
FEB 2 - 1994

REQUEST FOR UST CERTIFICATION
FOR TANKS INSTALLED LATER THAN DEC 1988.

TANK ID	CONTRACTOR	Volume	Year	Project ID #s
614	CONSOLIDATED ENTERPRISES	2,000	1989	DACA85-89-B-0001;C-0003
150-1	ROCKFORD CORP:	3,000	1988	DACA87-87-B-0050
3049-13	SWS CONSTRUCTION	10,000	1988	DACA85-86-B-0015;C-0072
3049-1	SWS CONSTRUCTION	20,000	1988	DACA85-86-B-0015;C-0072
3049-2	SWS CONSTRUCTION	20,000	1988	DACA85-86-B-0015;C-0072
490-4	WALSKY CONSTRUCTION	550	1989	DACA85-89-B-0002;C-0004
76201-1	SHENYA CONSTRUCTORS	5,000	1988	DACA85-84-B-0002;C-0041
76201-2	SHENYA CONSTRUCTORS	5,000	1988	DACA85-84-B-0002;C-0041
3051-9	SWS CONSTRUCTION	3,000	1988	DACA85-86-B-0015;C-0072
749-1	WESTERN ALASKA??	1,000	1989	DACA85-86-B-0015;C-0071,72
4014-3	ALASKA MECHANICAL INC	4,000	1990	DACA85-88-B-0015;C-0031
753-3	HOFFMAN CONSTRUCTION	10,000	1990	DACA85-88-C-0041;B-0028
753-4	HOFFMAN CONSTRUCTION	1,000	1990	DACA85-88-C-0041;B-0028
729-10	ALASKA MECHANICAL INC	1,500	1991	DACA85-90-C-0033;B-0008
729-3	ALASKA MECHANICAL INC	300	1991	DACA85-90-C-0033;B-0008
729-4	ALASKA MECHANICAL INC	300	1991	DACA85-90-C-0033;B-0008
729-5	ALASKA MECHANICAL INC	300	1991	DACA85-90-C-0033;B-0008
729-6	ALASKA MECHANICAL INC	300	1991	DACA85-90-C-0033;B-0008
729-7	ALASKA MECHANICAL INC	300	1991	DACA85-90-C-0033;B-0008
729-8	ALASKA MECHANICAL INC	5,000	1991	DACA85-90-C-0033;B-0008
729-9	ALASKA MECHANICAL INC	5,000	1991	DACA85-90-C-0033;B-0008



ATCH 1

WALTER J. HICKEL, GOVERNOR

Telephone: (907) 451-2360
Fax: (907) 451-2187

DEPT. OF ENVIRONMENTAL CONSERVATION

Northern Regional Office
610 University Avenue, Fairbanks, AK 99709-3643

NRO File: 860.38.001

January 6, 1994

Lt. Colonel Hunt
11th CEOS/CEOR
21885 2nd Street
Elmendorf AFB 99506-4420

Colonel Pierce
Resident Engineer
Alaska District Corps of Engineers
Fairbanks Resident Office
P.O. Box 35066
Fort Wainwright, Alaska 99703-0066

Re: **Galena AFS Vehicle Maintenance Facility Construction Project**

Dear Messrs. :

The Department of Environmental Conservation has determined that several unresolved issues remain concerning the construction of the Vehicle Maintenance Facility on a contaminated site located at Galena Air Force Station. The Department requests that the following issues be addressed in a timely manner:

1) **DDT Contaminated Soils Stockpiles**

The Department granted approval for the stockpiling of petroleum contaminated soils at Campion (letter dated September 29, 1993) and the stockpiling of DDT contaminated soils near the construction site for the new Vehicle Maintenance Building (October 19, 1993). **The Corps of Engineers requested verbal approval from the Department during the course of the project in order to avoid construction delays. Accordingly the Department granted verbal approval for the excavation of DDT contaminated soils at the southwest corner of the building footprint.**

High levels of DDT, DDE, and DDD (1154 mg/kg total DDT) were detected in the southwest corner of the excavation. DDT-Total has been detected in the groundwater west of the site (28.1 ug/L) and several drinking water wells are located in the general area. DDT-Total is very soluble in ethyl ether, acetone, benzene, and other organic solvents. Several of these cosolvents are present in the soils and groundwater of the area and may facilitate contaminant migration. The Department judged that these conditions warranted a prudent and careful approach to the characterization and excavation of the DDT contaminated soils.

It was the Department's understanding that once the soils in the DDT contaminated area were excavated to 3 feet below ground surface four samples would be collected in the four corners of the excavation. The Department had determined the general boundaries of the lateral limits of contamination based on sampling conducted by Radian, Inc. and the Corps of Engineers. Since DDT groundwater contamination in the area indicated that DDT contamination was present in the vadoze zone it was critical that the depth of contamination be carefully determined. Therefore, approval of the DDT contaminated soils excavation plan specifically stated: **Depending upon the results of those samples, additional sampling and excavation may be required at this site before further construction activities take place.**

It is the Department's understanding that the excavation of soils continued past the 3 feet level before the soil sample results were available. At this time it is not clear whether all the DDT contaminated soils were removed. Additionally, the soils excavated from below the 3 feet level were taken to the stockpile at Campion and mixed with the petroleum contaminated soils. **It appears that the Corps has now mixed petroleum contaminated soils with DDT contaminated soils and is in violation of the plan approval dated September 29, 1993 which stated: The stockpile area will be used for petroleum contaminated soils only excavated from the Galena Vehicle Maintenance Facility.**

2) Quality Assurance Project Plan (QAPP), Health and Safety Plan, Tank Cleaning and Disposal Plan, and Soil Stockpile Plan

The Department has not received a response to the following questions and/or comments contained in a letter dated October 5, 1993 regarding the workplan for this project:

1) Is the waste oil tank (to be removed 1994) a registered tank?

2) Meetings between the Corps and the Department in 1992 identified the water well located on the project site as a source of concern. The Department requested more data concerning the depth of the well, well usage, results of water testing and types of analysis used (Meeting Minutes, March 17, 1992).

3) Please provide the Department with a copy of the Corps Spec. part 2 - Section 4 which apparently determined the type of soil and water analysis selected.

4) Page 11. Soils contaminated by a release of waste oil must be analyzed for total petroleum hydrocarbons, volatile chlorinated solvents, PCBs, and leachable metals according to 18 AAC 78.315(g). Leachable metal analysis has not been included in the sampling plan for the waste oil tank excavation site.

5) The Health and Safety Plan should include DDT as a contaminant of concern **based on the DDT sampling results received to date (1154 mg/kg total DDT).** Was DDT added to the Health and Safety Plan?

At this time this project does not have an approved workplan for the 1994 field season. The Department must be given 30 days to review any proposed work plan. In 1993 the Department was not informed of construction plans until two weeks before work was scheduled to begin. The excavation and stockpiling of contaminated soils took place at the site without Department review or approval.

During the course of this project the Department was willing to grant verbal approval to workplans, but due to the apparent misunderstandings and disregard for Department comments and requirements the Department will no longer grant verbal approval for any work associated with this project.

The Department requests a response be provided to the Department which addresses the outstanding issues identified in this letter by February 15, 1994. Contact Laura Noland at 451-2139, or Rielle Markey at 451-2117 if you have any questions regarding this letter.

Sincerely,

Laura Noland,
Environmental Specialist

LN/rg (h:\eq\laura\vmb.d21)

cc: Mark Ader, EPA/Seattle
Dan Breedan, ADOT/Galena
Colette Foster, ADOT/Fairbanks
Ed Granger, Project Manager/Elmendorf
Wes Lannen, Galena IRP Project Manager/Elmendorf AFB
Rielle Markey, ADEC/Fairbanks
Pete McGee, ADEC/Fairbanks
Tim Wingerter, ADEC/Fairbanks

DEPARTMENT OF THE AIR FORCE
PACIFIC AIR FORCES

25 May 94

MEMORANDUM FOR DEPT OF ENVIRONMENTAL CONSERVATION
ATTENTION: MS. LAURA NOLAND

FROM: 11 CEOS/CECP
21885 2nd St
Elmendorf AFB AK 99506-4420

SUBJECT: FY93 MILCON: Storage Tank, Galena Aprt AK, PN HPZW933000; (Your 13 May 94 letter) - REPLY MEMORANDUM

1. The following responses are keyed to the points in your 13 May 94 letter:

a. RCRA waste: We will instruct the CoE to contact the Region 10 EPA Office as you have suggested. At this time, we are not certain we will encounter RCRA regulated waste. In any event your comments will be incorporated in a final draft project Work Plan. The revised Work Plan will also address investigation derived wastes, as you requested.

b) Long term management plan/stockpile location: The long term management plan for stockpiles generated as a result of this project will be drafted by 11 CEOS/CEV; this plan will be available in draft form by 1 Nov 94. A copy of this draft will be provided to your office for review and comment at that time. Final disposition of the stockpiled material from this project, as well as for the Galena Vehicle Maintenance Facility project, will be addressed in this plan.

We have asked the Corps to ensure the stockpile locations are shown in the contractor's Work Plan as you have requested.

c) Soils testing: Your comments concerning the need for a better distribution of sample locations is noted. We will ensure the contractor's Work Plan is modified accordingly.

2. We are requesting the CoE to advise you when the revised Work Plan is expected to be ready for review and to provide you with a copy when it is completed.

3. Our environmental point of contact for this project is Wes Lannen, 552-4532; our MILCON contract project manager is Ed Granger, 552-4011.

CHARLES O. SEMMLER, P.E.
Chief, Project Management Section

cc:
HQ PACAF/CECA
HQ 11AF/LGSF
11 CEOS/CEV
CENPA-PM-M
CENPA-CO-FR
CENPA-EN-MB-AF (Ty:11)

APPENDIX B

Statement of Work

STATEMENT OF WORK
for
PRELIMINARY ASSESSMENT/SITE INSPECTION
AT KALAKAKET CREEK RADIO RELAY STATION (RRS), AK
and
REMEDIAL INVESTIGATION/FEASIBILITY STUDY AT
GALENA AIRPORT & CAMPION AFS, AK
Date: 18 JULY 1994

I. INTRODUCTION

1.0 PURPOSE

The purpose of this Statement of Work (SOW) is to provide services, technical man-hours and materials for toxic and hazardous contamination studies; water and wastewater treatment plant investigations, geological, geophysical and geotechnical investigations; hydrogeological studies; bioassay and relative potency determinations; limnological studies; jar testing, drum testing and pilot plant investigations; laboratory testing and/or field evaluations of environmental equipment and landfill leachate monitoring and landfill siting investigations; of environmental waste sites. In addition, this SOW is to provide services for the collection, testing, analysis and reporting of contaminants present in soil, water and wastewater samples in support of Air Force Hazardous and Toxic Waste Programs.

1.1 SCOPE

1.1.1 In carrying out any work assignment issued, the Contractor shall furnish the necessary personnel, services, equipment, materials, facilities and otherwise do everything necessary for or incidental to, the performance of work set forth herein.

1.1.2 Primary services shall include, but not be limited to: Services to perform Preliminary Assessment/Site Inspection (PA/SI) at Kalakaket RRS, Alaska and Remedial Investigation/Feasibility Studies (RI/FS) for Galena Airport and Campion AFS, Alaska.

1.1.3 Secondary services incidental to these services include but are not limited to technical requirements found in Annex A of the Basic SOW. They include but are not limited to topographical and geophysical surveys, sampling of soil, tank, drum and pipeline contents; treatability studies, bench scale and/or pilot studies necessary to obtain data to establish/verify the extent and parameters of remediation activities.

II. GUIDANCE DOCUMENTS

2.0 Handbook. The Handbook to Support the Installation Restoration Program (IRP) Statements of Work, dated May 1991, referred to in this SOW as "The Handbook," is provided under separate cover as general guidance only. Any reference within the Handbook language regarding compliance and/or formats for reports as a requirement of this Delivery Order shall be considered deleted. If a conflict is identified between this general guidance and any OSWER, U.S. Environmental Protection Agency (EPA), or other regulatory guidance or requirements, the Handbook shall be disregarded. Also, references to requirements for approval for deviations throughout the Handbook shall be considered invalid. Finally, the Method Detection Limits (MDLs) identified in the Handbook are a consolidation of numerous CFR documents which incorporate current EPA requirements. However, the Contractor shall be responsible for any updates in the CFR.

2.1 Background Guidance: The following are guidance documents which provide direction for, or otherwise outline, the scope of Air Force major environmental quality activities. These assessments, studies, design activities, and additional related technical activities, as may be required, shall be performed in accordance with rules and regulations set forth by the U.S. Environmental Protection Agency (US EPA), Occupational Safety and Health Administration (OSHA), Nuclear Regulatory Commission (NRC), Food and Drug Administration (FDA), other federal agencies, individual state regulatory agencies, foreign regulations, international laws, treaties and agreements, as well as applicable requirements of other guidance documents including, but not limited to, the most current versions of the applicable portions of the documents cited below:

a) Occupational Safety and Health Administration (OSHA) regulations.
b) Department of Transportation regulations.
c) National Environmental Policy Act (NEPA).
d) Clean Water Act (CWA).
e) Clean Air Act (CAA).
f) Endangered Species Act (ESA).
g) Toxic Substances Control Act (TSCA).
h) Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments.
i) Comprehensive Environmental Response Compensation and Liabilities Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA).
j) National Oil & Hazardous Substances Contingency Plan (NCP) 40 CFR 300
k) Air Force Engineering Technical Letters (AF ETLs).
l) Guidance for Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, Interim Final U.S. Environmental Protection Agency (EPA)/540/G-90/001; EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9355.5-01, 4/90.
m) Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (OSWER Directive 9335.3-01), 1988.
n) Risk Assessment Guidance and Superfund, Volume 1, Human Health Evaluation Manual (Part A), Interim Final (EPA/540/1-89/002), 1989.
o) Risk Assessment Guidance and Superfund, Volume 2, Environmental Evaluation Manual, Interim Final (EPA/540/1-89/001), 1989.
p) Test Methods for Evaluating Solid Waste (SW-846), Third Edition (1986), and 1987 updates.
q) Guidance on Remedial Action for Contaminated Groundwater at Superfund Sites (OSWER Directive 9283.1-2), 1988.
r) A Compendium of Superfund Field Operation Methods, (EPA/540/P-87/001; OSWER Directive 9335.0-14), Dec 1987.
s) National Fire Protection Association Standards
t) AFM 88-29, Engineering Weather Data, 1 Jul 1978.
u) National Standard Plumbing Code
v) HQ AFCEE Handbook for the Installation Restoration Program (IRP) Remedial Investigations and Feasibility Studies (RI/FS), dated Sept 1993, referred to as "The Handbook".
w) Project-specific Quality Program Plans (QPP) prepared by the Contractor. Includes Sampling and Analysis Plans (SAP), Health and Safety Plans (HSP), and Quality Assurance Project Plans (QAPP).
x) OSWER 9345.0-01, Section 2.0 - Guidance for Conducting New Preliminary Assessments
y) American Petroleum Institute
aa) Section 1447(a) of the Safe Drinking Water Act, Public Law 93-523, et. seq.
ab) Executive Order (EO) 12088, Federal Compliance with Pollution Control Standards, 13 October 78

ac) Code 40 of Federal Regulations (CFR), Chapter I and V, Protection of Environment.

ad Air Force Regulations (AFR) 19-1, "Pollution Abatement and Environmental Quality," 9 Jan 78.

ae) AFR 19-2, "Environmental Impact Analysis Process (EIAP)," 23 Sep 81.

af) AFR 19-6, "Air Pollution Control Systems for Boilers and Incinerators," Mar 88.

ag) AFR 19-7, "Environmental Pollution Monitoring," 19 Apr 85.

ah) AFR 19-8, "Environmental Protection Committees and Environmental Reporting," Aug 88.

ai) AFR 19-9, "Interagency and Intergovernmental Coordination of Land, Facility and Environmental Plans, Programs and Projects," 14 Feb 86.

aj) AFR 19-10, "Planning in the Noise Environment," 15 Jun 78.

ak) AFR 19-11, "Hazardous Waste Management and Minimization," Jul 89

al) AFR 19-14, "Management of Recoverable and Unusable Liquid Petroleum Products," Aug 90

am) AFR 91-8, "Solid Waste Management" Mar 90

an) AFR 161-17, "USAF Occupational and Environmental Health Laboratory (OEHL) Services," 3 Aug 81.

ao) AFR 161-44, "Management of the Drinking Water Surveillance Program," 29 May 79.

ap) "Defense Environmental Quality Program Policy Memorandum

aq) E.O. 12316, "Response to Environmental Damage," 14 August 1981.

III. GENERAL REQUIREMENTS

3.0 MEETINGS, CONFERENCES, SITE VISITS

3.0.1 Post Award Meeting. After the issuance of a delivery order, the Contractor shall attend a post award meeting at the base, or other location specified by the Contracting Officer's Representative (AFCEE COR). The purpose of the meeting shall be to familiarize the Contractor with the work and/or hazardous waste sites addressed under the delivery order.

3.0.2 Progress Meetings. The Contractor shall attend progress meetings with the base and AFCEE as specified by the AFCEE COR. The Contractor shall be responsible for preparing minutes from each of the meetings. The contractor shall deliver the minutes to AFCEE ten (10) working days after the completion of the meeting.

3.0.3 Design Integration Meetings. Not Applicable

3.1 SPECIAL NOTIFICATION

3.1.1 Health Risks. The contractor shall immediately report to the AFCEE COR, and the Base POC, via telephone, any data or results generated during investigations pursuant to delivery orders which may indicate any potential imminent health risk to contracted or federal personnel, or the public at large. Following this telephone notification, a written notice with supporting documentation shall be prepared and delivered within three (3) working days. Upon request of the Air Force, the contractor shall provide pertinent raw laboratory data (i.e. chromatograms) within three (3) weeks of the telephone notification.

3.1.2 Change of Contractor Personnel. An organizational chart displaying key personnel involved in the effort and their respective labor categories shall be submitted with the first monthly Status Report. The Contractor shall notify the AFCEE COR of all professional personnel to work on specific tasks under the delivery order. The Contractor shall notify the AFCEE COR of any significant changes in project personnel along with the steps that the Contractor is taking to ensure there are no impacts to the schedule or individual tasks.

3.2 LABORATORIES

3.2.1 General: The Contractor shall submit laboratory reporting limits and the methods by which they were derived to the Contracting Officer (CO) and the AFCEE COR concurrently along with a laboratory QAPP prior to usage of a laboratory. All laboratories shall be capable of meeting Data Quality Objectives (DQOs) specified in the project-specific Sampling and Analysis Plan (SAP). All laboratories shall screen for analytes and perform Quality Assurance/Quality Control (QA/QC) requirements as specified in the project/site specific SAP. All analyses shall be reported on a dry weight basis to facilitate comparison with the off-site laboratory data. The analytical capabilities of the all laboratories shall be sufficient for the methods specified in the SAP, and all laboratories shall have sufficient through-put capacity to handle the necessary analytical load during all field activities.

3.2.2 On Site Laboratories: Not Applicable

3.3 WORKSITE REQUIREMENTS

3.3.1 Safety Requirements. The contractor shall provide for protecting the lives and health of employees and other persons; preventing damage to property, materials, supplies, and equipment; and avoiding work interruptions. For these purposes, the contractor shall comply with OSHA Safety and health regulations and Pertinent provisions of the Air Force Occupational Safety and Health Standard (AFOSH).

3.3.2 Work-site Maintenance. The work-site shall be maintained in accordance with the requirements of Section 2.1 of the Handbook so as to: 1) prevent the spread of contamination, 2) provide for the integrity of the samples obtained, and 3) provide for the safety of federal workers, contracted personnel, and/or other individuals in the vicinity of the project areas.

The work site shall be well marked to prevent inadvertent entry into all work areas. Access to work areas shall be monitored and thoroughly controlled. Standard work zones and access points for hazardous waste operations shall be established and maintained as the site conditions warrant. The contractor shall, at all times, keep the work area free from accumulation of waste materials. The contractor shall remove non-essential equipment from the work site when not in use. The work-site shall be maintained to present an orderly appearance and to maximize work efficiency.

Before completing the work at each sampling site, the contractor shall remove, from the work premises, any rubbish, tools, equipment, and materials that are not property of the Government. Upon completing the work, the contractor shall leave the area clean, neat, orderly, and return work sites to the original condition. The contractor shall also ensure compliance with any federal and state regulations for decontaminating tools, equipment, or other materials, as required.

3.3.3 Operations Impact Minimization. The contractor shall mark the field locations of all points of ground penetration during the planning/mobilization phase of the field investigation. The base POC shall be consulted to properly position sampling locations (wells, borings, soil gas probes, etc.) with respect to site locations, to minimize the disruption of base activities, and to avoid penetrating underground utilities. Additionally, the contractor may be required to coordinate with other base personnel to attain these objectives. If specified in the DO, the contractor shall provide for the detection of underground utilities independent of base Civil Engineering services utilizing geophysical or other techniques. All necessary permits shall be obtained, and necessary coordination shall be completed, prior to commencement of individual sampling operations. Frequent communication and coordination with base personnel shall be necessary to accomplish these goals.

3.3.4 Storage. The contractor shall be responsible for the security of his equipment. Contractor's equipment or materials used in the work, requiring storage on base, shall be placed at sites as designated by the Base POC. The contractor shall be responsible for security and weather proofing of any stored material and equipment. Missing or damaged material shall be replaced at no additional cost to the Government. At the completion of the work, all temporary fences and structures (the contractor used to protect materials and equipment) shall be removed from the base. The contractor shall clean the storage area of all debris and material and perform all repairs as required to return the site to its original condition.

3.3.5 Security. The contractor is responsible for obtaining and monitoring contractor security badges for all areas for the duration of this contract. All security badges or passes shall be returned to the Base POC upon expiration of the badge, upon completion of the project, or when possession of the badge is no longer necessary (e.g., upon removal of contracted personnel from specific projects). Photography of any kind must be coordinated through the Base POC or Base Disposal Agency representative.

3.4 WORK BREAKDOWN STRUCTURE In response to Requests for Proposals (RFPs) for individual Delivery Orders (DOs), the contractor shall prepare proposals, project schedules, and monthly financial reports organized according to the following work breakdown structure (WBS):

5 PRELIMINARY ASSESSMENT/SITE INVESTIGATION

- 5.01 PA/SI Scoping
- 5.02 Site Assessment
- 5.03 Soil Borings
- 5.04 Groundwater Monitoring Wells
- 5.05 Sampling and Analysis
- 5.06 Recommendations

10 REMEDIAL INVESTIGATION/FEASIBILITY STUDY

- 10.01 RI/FS Scoping
- 10.02 Development of Alternatives
- 10.03 Site Characterization
- 10.04 Screening of Alternatives
- 10.05 Treatability Investigation
- 10.06 Analysis of Remedial Alternatives
- 10.07 Remedy Selection
- 10.08 Groundwater Monitoring Wells
- 10.09 Sampling and Analysis
- 10.10 Site-work and Utilities

IV. WORK TASKS: All work performed pursuant to any paragraph of Section IV of this SOW shall comply with the technical requirements of Annex A of the Basic SOW. The work shall be accomplished at Kalakaket RRS, Galena Airport and Campion AFS, AK. The work shall include but not be limited to:

4.0 PLAN DEVELOPMENT: The Contractor shall prepare for approval by the AFCEE COR a Quality Assurance Project Plan (QAPP) for this work. In addition, the Contractor shall prepare project specific schedules, Work Plans (WPs), Management Action Plan (MAP), Sampling and Analysis Plan (SAP), Field Sampling Plan (FSP), Community Relations Plans (CRPs), and discretely prioritized cost estimates. The CO, the AFCEE COR and the Base POC shall be notified in writing prior to any modification to, or deviation from, any activity described in these documents.

4.1 DELIVERY ORDER SCOPING

4.1.1 Pre-survey. Not Applicable

4.1.2 Pre-mobilization Survey. Not Applicable

4.2 PRELIMINARY ASSESSMENT/SITE INSPECTION (PA/SI). The Contractor shall conduct (PA/SI) to define the environmental setting of Kalakaket RRS and to identify preliminary sites which may potentially be contaminated, and to develop a preliminary assessment of the potential sources of contamination. The Contractor shall make all preliminary studies of monitoring or sampling locations and accessibility, number of sampling locations, number and type of personnel required, number and type of tests or samples desired, special or modified sampling equipment and procedures required, personnel protective equipment required, and type of analytical protocol or procedures to assure that activities shall comply with US EPA or state NPDES regulations or other laws, regulations or standards which are applicable. Meetings with USAF, US EPA and/or state regulatory agency officials may be required to discuss tentative test plans.

4.2.1 Preliminary Assessment (PA). The Contractor shall conduct a literature search to define the installation environmental setting and to identify potentially contaminated sites and potential sources of contaminants. The goals of the PA are to: 1) identify potentially contaminated sites or Areas of Concern (AOC); 2) document the need for no further investigation at sites where CERCLA remedial action is not required; 3) identify sites that require emergency response; 4) compile information necessary to develop preliminary projected Hazard Ranking Scoring; 5) set priorities for SIs; and 6) to develop a preliminary conceptual model for each AOC presenting hypotheses regarding the contaminants present, their potential migration pathways, and their potential impact on sensitive receptors. Sources of information include federal, state, and local agencies, base personnel and former employees, aerial photographs, academic institutions, and reports of previous investigations. Document the findings in a PA report using the guidance in OSWER 9345.0.01. All references, personal communications, etc., shall be cited in an appendix to the report.

4.2.2 Site Inspection (SI). The Contractor shall visit the AOCs to ensure a complete understanding of site conditions. Coordinate this visit with the AFCEE COR. The Contractor shall visit and inspect all AOCs identified as requiring further investigation in the PA Report. The Contractor shall look for evidence of contamination at each AOC visited (e.g., leaking drums, vegetative stress, leachate seeps, etc.). The Contractor shall observe the physical setting of each site visited to formulate specific recommendations concerning well and boring placement, use of geophysical techniques, and other aspects of the proposed field investigation. The Contractor shall perform field screening and limited sampling at each of the AOCs. Document the findings in a SI Report. Using the information from the PA/SI, the Contractor shall perform Hazard Ranking Scoring (HRS) for each of the AOCs. The findings of the PA/SI shall be used to prepare the Work Plan and Sampling and Analysis Plan required for the follow-up effort, if needed.

4.3 REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)

4.3.1 Remedial Investigation (RI): The Contractor shall conduct a remedial investigation (RI) to characterize environmental conditions, define the nature and extent of contamination, and quantitatively estimate the risk to human health and the environment at AOCs through the collection of geologic, geophysical, hydrogeological, ecological, chemical, physical, and hydrologic data, and environmental samples; the laboratory analysis of those samples for potential contaminants; the evaluation of the analytical results and field measurements with respect to quality control data; and the interpretation and analysis of validated data. The purpose of data collection, sample collection and laboratory analysis is to determine whether any contaminants generated from installation activities have entered the environment and pose a risk to human health or the environment.

The field investigation is used to determine the source of any identified contaminants, and the magnitude of contamination relative to Applicable or Relevant and Appropriate Requirements (ARARs) and any naturally occurring or background concentrations for specific compounds. The remedial investigation shall comply with the specifications, procedures, and methodologies presented in project-specific SAPs.

4.3.2 Feasibility Study (FS): The FS is performed concurrently with the RI. As much of the FS as possible shall be performed early on in the RI/FS process and refined as additional RI data are obtained. Use the information from the RI and the baseline risk assessment to develop and evaluate remedial action alternatives for each site where a threat to human health or the environment exists. Follow the procedures specified in USEPA OSHA Directive 9355.3-01, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA." Employ streamlining methods wherever possible. Develop and evaluate the minimum number of alternatives needed to provide a range of promising treatment, and containment actions. Eliminate impracticable alternatives from further consideration early in the FS process. The scope and level of detail shall be consistent with the nature and complexity of site problems.

After determination of magnitude, extent and rate of movement of pollutants, the Air Force may request that the Contractor develop a Remedial Design (RD) for the site or group of sites.

4.4 REMEDIAL DESIGN (RD): Not applicable.

4.5 TREATABILITY STUDIES, PILOT TESTS, BENCH SCALE TESTS: The Contractor shall conduct treatability studies, pilot tests, and/or bench-scale tests to determine optimum methods of contaminant delineation and/or removal of contaminants from soils, ground and surface waters, and the degree of treatment anticipated using various processes. Pilot plant studies shall also be conducted to permit the Air Force to determine the feasibility of the implementation of various environmental processes at selected Air Force facilities. This shall include the development and utilization of innovative site investigation and/or remedial technologies, and cost estimates.

4.6 SUBTASKS: Sub-tasks, shall include but not be limited to the following:

4.6.1 Conceptual Site Model. For each site, use validated data supported by acceptable QA/QC results (as measured against QAPP requirements) and site characterization information to develop or refine, based on newly collected data, the conceptual site model. The model shall define the nature and extent of contamination, the hydrogeologic regime, and the transport and fate of those contaminants. The conceptual site model may be prepared using the minimum requirements given in Section 2 of the Handbook as guidance. The complexity and detail of the site model shall be consistent with the nature of the site and site problems, and the amount of data available. Use the conceptual site model in the baseline risk assessment.

4.6.2 Ecological/Baseline Risk Assessment. For each site, use validated data supported by acceptable QA/QC results (as measured against QAPP requirements) and the conceptual site model to estimate numerically the risk posed by site contaminants to public health and the environment. The methodology in Section 2 of the Handbook may be used as guidance. Identify all Applicable or Relevant and Appropriate Requirements (ARARs) that were not identified in previous reports for those contaminants detected in environmental samples at each site. Provide the results of the baseline and/or ecological risk assessment in the Risk Assessment Technical Memorandum. The formats in the Handbook may be used as guidance.

The Contractor shall Identify those sites posing minimal or no threat to human health, welfare, or the environment and for which no further action is appropriate. Use the results of the risk assessment in establishing remedial action objectives and developing remedial alternatives in the Feasibility Study.

4.6.3 Alternatives Development. NOT APPLICABLE

4.6.4 Alternatives Analysis. Conduct a detailed analysis of each alternative selected and identified in par. 2.3.15, and approved by the AFCEE COR. Using the methodology in OSWER Directive 9355.3-01, evaluate each alternative against US EPA's nine criteria for conducting Feasibility Studies. Focus the analysis on sub-factors and criteria most pertinent to each site and the scope and complexity of the proposed action. Select a recommended alternative for each site or operable unit. Provide a summary of the detailed analysis of alternatives following task completion. Include summary tables of the individual analysis that shall be used in the Remedial Investigation Report. For those sites or zones where sites are grouped together, where a preferred alternative is identified, prepare a decision document after the receipt of Air Force review comments on the Remedial Investigation Report to support the selection process. The format specified in Section 3 of the Handbook may be used as guidance.

4.6.5 Evaluation of Remedial Systems and Environmental Equipment. The Contractor shall conduct an independent evaluation of remediation systems to determine their effectiveness. This includes the collection of data needed to assess the ability of the remediation system to remediate the site.

The Contractor shall perform laboratory and field tests of environmental monitoring and testing equipment, to include validation of manual/instrumental methods, continuous monitors, analytical support and mathematical models using US EPA, ASTM, NRC, and/or equivalent procedures specified by the Air Force.

4.6.6 Administrative Record. Not Applicable

4.7 OTHER ENVIRONMENTAL ACTIVITIES The Contractor shall conduct other investigations, studies, assessments, and/or designs related to environmental issues at Kalakaket RRS, Galena Airport and Campion AFS not described in the PA/SI/RI/FS/RD process described in the sections above. This shall include, but not be limited to, RFAs, RFIs, COFAs, the analysis, development and/or utilization of emerging processes and other environmental studies, investigations/, and/or analyses. All work undertaken in accordance with this paragraph shall comply with the technical requirements of Annex A of the Basic SOW.

4.7.1 Not Applicable

4.7.2 Miscellaneous Analyses:

4.7.3 Environmental Monitoring: Includes but is not limited to continuous and/or discrete measuring, sampling and analysis of groundwater, surface water, effluent, air emissions, soils and any other environmental media .

4.7.4 Sampling for Remedial Action: The Contractor shall prepare and implement approved work plans for the geophysical sampling required as part of remedial action contracts. This includes sampling needed to determine the type and quantity of contamination. Sampling shall be conducted on the site being remediated prior to excavation/remediation, as well as on material following excavation/remediation, such as stockpiled materials excavated as part of tank removals. This information is needed to determine remediation required, as well as suitability of stockpiled material for use as backfill.

4.8 DELIVERABLES

4.8.1.1 Monthly Financial and Management Reports. The Contractor shall submit financial and management reports utilizing the standardized Work Breakdown Structure per paragraph 3.4 of this SOW to describe the status of expenditure of funds correlated with the progress of the work completed. Reports shall provide current status and projected requirements of funds, man-hours, and work completion; indicate the progress of work and the status of the program and assigned tasks; and inform of existing or potential problem areas. (A001, A002, A003)

4.8.1.2 Health and Safety Plan. The Contractor shall prepare and deliver a Health and Safety Plan to comply with USAF, Occupational Safety and Health Administration (OSHA), US EPA, state, and local health and safety regulations regarding the proposed work effort at Kalakaket RRS. The Contractor shall utilize to the fullest extent possible existing corporate Health and Safety Plans, tailoring them to the current effort. Use US EPA guidelines for designating the appropriate levels of protection needed at the study sites. Coordinate the Health and Safety Plan directly with applicable regulatory agencies prior to submittal to AFCEE. Provide the AFCEE COR with evidence of Health and Safety Plan coordination prior to the start of field work. The Contractor shall certify to AFCEE that it has reviewed the approved Health and Safety Plan with each employee and subcontractor's employees prior to the time each employee engages in field activities. (A004)

4.8.1.3 Management Action Plan: In accordance with paragraph 4.0, the Contractor shall deliver a Management Action Plan to describe the overall approach, major tasks and scope, time sequencing of events, and major decision points to complete all IRP efforts to ensure consistency with the NCP. This Plan is intended as a planning document and management tool to track the progress of IRP efforts. (A005)

4.8.1.4 Community Relations Plan: In accordance with paragraph 4.0, the contractor shall finalize the Community Relations Plan (CRP) for Galena Airport and Campion AFS, provided under a separate cover, outlining the specific public communication and involvement techniques to be used in coordination with remedial site activities. Follow the guidance contained in OSWER Directive 9230.0-3b, "Community Relations in Superfund, A Handbook." Propose a detailed format for the CRP consistent with this guidance for AF and AFCEE approval prior to preparing the plan. The CRP shall include a description of the site and the community, an overview of the community involvement to date, key community concerns regarding the site and AF site activities. A list of elected officials, agency representatives, and interested groups and individuals shall be included. Contractor activities to develop the CRP shall include conducting a review of site information provided by the base. (A005)

4.8.1.5 Cost Estimates: In accordance with paragraphs 3.4, the contractor shall deliver Cost Estimates for Galena Airport and Campion AFS and Kalakaket RRS. (A004)

4.8.1.6.1 PA/SI, RI/FS Work Plans: In accordance with paragraphs 3.4 and 4.0 the Contractor shall deliver an RI/FS Work Plan. The Handbook may be used as guidance. (A005)

4.8.1.6.2 Remedial Design Work Plan. Not applicable.

4.8.1.7 Quality Assurance Project Plans (QAPPs): The Contractor shall deliver one QAPP addendum for Galena Airport, Campion AFS, and Kalakaket for all phases of work. As a component of the Sampling and Analysis Plan described in Section 4.8.1.9, the Contractor shall deliver a project/site specific addendum to the QAPP in accordance with paragraph 4.0 of this SOW. The Handbook may be used as guidance. (A007)
(A007)

4.8.1.7.1 General QAPP. Not applicable.

4.8.1.7.2 RI/FS Project/Site Specific Addendum to QAPP: NOT APPLICABLE

4.8.1.8 RD Title II Associate Contractor Agreement and Plan Evaluation Report: Not applicable.

4.8.1.9 Sampling and Analysis Plan (SAP). The Contractor shall deliver and comply with the SAP per paragraph 4.0 of this SOW. The Handbook may be used as guidance. The contractor shall deliver one SAP for Galena Airport, Campion AFS, and Kalakaket Creek. (A007)

4.8.1.10 Field Sampling Plan (FSP): As a component of the SAP described in Section 4.8.1.9 of this SOW, the Contractor shall deliver and comply with a FSP in accordance with Section 4.0 of this SOW. The Handbook may be used as guidance. The FSP shall be considered as an evolving document by which the Contractor provides recommendations and then incorporates Air Force acceptance for field sampling and analysis. The Contractor shall submit an annotated outline of each section of the FSP for approval by the AFCEE COR prior to preparation of the report. The Contractor shall prepare the report as specified in the accepted annotated outline. All sampling and analysis recommendations shall include the Contractor's supporting rationale. Upon Air Force acceptance of sampling and analysis recommendations a phased FSP shall be compiled. The FSP shall include sufficient data to support recommendations and a description of the work to be conducted. FSP shall be updated by site as phase recommendations are accepted by AFCEE. A prime objective shall be to incorporate AFCEE comments in an on-going manner and thereby minimize the volume of comments on the working copy and final submittals. The Contractor shall cite the Base-specific QAPP as a reference document, but completely describe any modifications or additions to the content of these

documents. Specific plans shall be developed to conduct sampling as part of remedial actions in accordance with paragraph 4.7.4 of this SOW. The contractor shall deliver two separate FSPs, one for Galena Airport and Campion AFS, and the other for Kalakaket RRS. (A007)

4.8.1.11 Long Term Groundwater Sampling Plan: Not applicable.

4.8.1.12 Test Plans (TPs). Not applicable.

4.8.1.13 Schedules:

4.8.1.13.1 PA/SI &RI/FS Project Schedule. In accordance with paragraph 4.0 of this SOW, the Contractor shall deliver a computer generated network analysis which is a detailed task plan for all WBS tasks for approval by the AFCEE COR. The Network Analysis (e.g., GANTT, PERT, CPM) shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the performance period of this SOW. The Network Analysis shall show both serial and parallel sub-tasks leading to a deliverable product/report. Show early and late start and completion date with float. (A013)

4.8.1.13.2 Remedial Design Project Schedule. Not applicable.

4.8.1.13.3 Remedial Action Project Schedule. Not applicable.

4.8.2 Primary Documents: All primary documents shall be prepared and submitted in draft, and final form. Provide microfiche copies of each final primary document at the direction of the AFCEE COR. Draft and final written responses to comments received on draft primary documents shall be provided. The contractor shall deliver advanced drafts to the AFCEE COR for approval. The following primary documents shall be provided:

4.8.2.1 Technical Reports:

4.8.2.1.1 Preliminary Assessment/Site Inspection (PA/SI Report): In accordance with paragraph 4.2 the contractor shall deliver a report documenting the results of the Preliminary Assessment and/or Site Inspection for Kalakaket RRS. This report shall include the results of the literature search, describing the environmental setting of the base and identifying potential sources of contamination. The report shall also document the results of all site investigations conducted. (A005)

4.8.2.1.2 Remedial Investigation (RI) Technical Memorandum. In accordance with paragraph 4.3.1 the Contractor shall update Remedial Investigation Technical Memoranda, provided under a separate cover, in accordance with OSWER 9355.3-01, "Guidance for Conducting Remedial Investigation and Feasibility Studies under CERCLA," October 1988. (A005)

4.8.2.1.3 Feasibility Study (FS) Technical Memorandum: In accordance with paragraph 4.3.2 a Feasibility Study Technical Memorandum shall be prepared in accordance with OSWER 9355.3-01, "Guidance for Conducting Remedial Investigation and Feasibility Studies under CERCLA," October 1988. The Report shall include the detailed analysis of alternatives and reflect regulatory agency comments to the corresponding Screening of Alternatives Technical Report. The FS Technical Memorandum shall be a separate report from the RI Technical Memoranda. (A005)

4.8.2.3 Decision Documents (DD). The contractor shall deliver separate DDs for each site, according to OSWER 9355.3-02. DDs shall be prepared using a format approved by the AFCEE/COR. (A005)

4.8.2.4 Engineering Evaluation/Cost Analysis (EE/CA). Not Applicable

4.8.2.5 Administrative Record Index. Not Applicable

4.8.2.6 Title I Design Documents: Not Applicable

4.8.2.7 Remedial Design Title II Documents: Not Applicable

4.8.3 Secondary Documents: Secondary documents are used as input to subsequent primary documents. Draft secondary documents shall be prepared and submitted for review and comment. Following receipt of comments to draft secondary documents, a draft written response to each comment shall be provided for Air Force review. The draft written responses shall be revised based on Air Force input, and final responses shall be provided. The following secondary documents shall be provided:

4.8.3.1 Informal Technical Information Reports (ITIRs):

4.8.3.1.1 Analytical Data ITIR: Submit all analytical data, including QC results and cross reference tables, in a hard and/or electronic copy ITIR. The format in Section 3 of the Handbook may be used as guidance. (A004)

4.8.3.1.2 Accelerated Remediation Project Definition ITIR. Not applicable.

4.8.3.1.3 Conceptual Site Model ITIR: Not applicable.

4.8.3.1.4 Site Characterization Summary - (SCS-ITIR). Not applicable.

4.8.3.1.5 Ecological and Baseline Risk Assessment ITIR: The Contractor shall submit in accordance with paragraph 4.6.2. (A004)

4.8.3.1.6 Remedial Systems and Environmental Equipment ITIR: Not applicable.

4.8.3.2 Initial Screening of Alternatives (ISA) Report: Not applicable.

4.8.3.3 Detailed Analyses of Alternatives (DAA) Report: Not applicable.

4.8.3.4 Installation Restoration Program Information Management System (IRPIMS) Data Management. The Contractor shall meet the data deliverable requirements of the Installation Restoration Program Information Management System (IRPIMS). The Contractor shall be responsible for recording field and laboratory data into a computerized format as required by the most current version of the IRPIMS Data Loading Handbook (mailed under separate cover). In order to perform this task, the Contractor shall use the latest version of the IRPIMS Quality Control Tool (QC Tool), a PC software utility (mailed under separate cover with software manual), to quality check ASCII data files and to check all data files for compliance with requirements in the IRPIMS Data Loading Handbook. Upon request, the IRPIMS Contractor Data Loading Tool (CDLT) is available. This PC software is designed to assist the Contractor in preparing the various ASCII data files.

Individual IRPIMS data files (e. g. analytical results, groundwater level data, etc.), including resubmissions, shall be delivered with a transmittal letter by the Contractor to the Air Force

Center for Environmental Excellence (AFCEE) IN SEQUENCE according to a controlled time schedule as identified in the current version of the IRPIMS Data Loading Handbook. The Contractor shall include a copy of the Quality Control Tool error report, i.e. output from the QC tool, for each IRPIMS file submission. The error report shall be submitted as hard copy with the transmittal letter.

All Contractor data deliverables shall be sent to:

AFCEE/MSC
ENVIRONMENTAL DATA MANAGEMENT DIVISION
ATTN: IRPIMS Data Management
8106 Chenault Rd (BLDG 1161)
Brooks AFB TX 78235-5318

In addition, the Contractor shall provide a copy of the transmittal letter to the CO, HSC/PKV (8005 9th St, Brooks AFB, TX 78235-5353). This letter shall identify the files included or otherwise omitted (with an appropriate explanation), the government contract and delivery order number and the Air Force point of contact that is responsible for monitoring the government contract.

The Contractor shall be responsible for the accuracy and completeness of all data submitted. All data entered into the IRPIMS data files and submitted by the Contractor shall correspond exactly with the data contained in the original laboratory reports and other documents associated with sampling and laboratory contractual tasks.

Each file delivered by the Contractor will be electronically evaluated by AFCEE/MSC for format compliance and data integrity in order to verify acceptance. All files delivered by the Contractor are required to be ERROR-FREE and in compliance with the IRPIMS Data Loading Handbook. Any errors identified by AFCEE/MSC in the submission shall be corrected by the Contractor.

4.8.3.5 Letter Reports.

4.8.3.5.1 General: The Contractor shall deliver letter reports. The purpose of the letter reports is to provide data and the Contractors' evaluation of the data to enable the AFCEE COR and Base POC to be involved in the decisions based on that data. The letter report shall briefly describe the task performed, the Contractor's evaluation of the data collected, and recommendations for subsequent tasks. All data collected as part of this task shall be provided as an attachment to the letter report. (A004)

4.8.3.5.2 Health Risk: In accordance with paragraph 3.1.1, the Contractor shall deliver letter reports concerning imminent health risks encountered (A015)

4.8.3.6 Environmental Report. The Contractor shall deliver reports, photographs, data, drawings, designs, documentation as required by each DO, documenting the results of various environmental investigations, studies, assessments, designs, and/or analyses conducted under section 4.7 above. (A004, A005, A008, A009, A011)

4.8.3.7 Presentation Materials. The Contractor shall prepare and present briefing packages at meetings coordinated by the Air Force. As part of the presentation materials, the Contractor shall deliver electronic and paper copies of all slides, analytical data Graphical Interface System material, and overheads as specified in each DO. (A010)

4.8.3.8 Photo Documentation. The Contractor shall prepare and deliver a Photo Notebook with descriptive captions at Kalakaket RRS. Include photos of sites under investigation, field activities and sample locations. (A011)

4.8.3.9 Community Relations Newsletters/Fact Sheets. Not Applicable

4.8.3.10 Meeting Minutes. The Contractor shall be responsible for generating meeting minutes, documenting all items discussed at the meetings and shall include a list of meeting attendees. (A012)

4.8.3.11 Contractor personnel chart: Per paragraph 3.1.2 the Contractor shall deliver Contractor personnel charts to the AFCEE COR. (A003)

4.8.3.12 Treatability Study Technical Report: The Contractor shall finalize the draft report, provided under a separate cover. (A004)

4.8.3.13 Aquifer Test Technical Report. The Contractor shall incorporate all AFCEE and 11 CEOS/CEVR comments and finalize the Draft Aquifer Test Technical Report, provided under a separate cover. (A004)

V. DATA

5.0 DATA MANAGEMENT. The Contractor shall collect, prepare, publish, and distribute the data in the quantities and types designated on the Contract Data Requirements List (CDRL). The Contractor shall designate a focal point who shall integrate the total data management effort and manage changes, additions or deletions of data items. In addition, the Contractor shall identify items to be added, recommend revisions or deletion of items already listed on the CDRL as appropriate and maintain the status of all data deliverables.

5.1 DATA DELIVERABLES. Deliverables shall be in accordance with the CDRLs as listed below:

Sequence	Para. No.	(Freq) Block 10	(As of) Block 11	(First Subm.) Block 12	(Subseq. Subm.) Block 13	(Copies/ Notes) Block 14
A001 (P&C Reports)	4.8.1.1	MTHLY	EOM	21 DOM	MTHLY	A
A002 (Man-hour Expenditure	4.8.1.1	MTHLY	EOM	21 DOM	MTHLY	A
A003 (Status Report)	4.8.1.1	MTHLY	EOM	21 DOM	MTHLY	A
A004 (HSP)	4.8.1.2	ONE/R	N/A	60 DAC	30 DARC	
A005 (PA/SI Work Plan)	4.8.1.6.1	ONE/2R	N/A	60 DAC	30 DARC	A
A005 (PA/SI Report)	4.8.2.1.1	ONE/2R	N/A	90 DAVD	30 DARC	
A007 (FSP)	4.8.1.10	ONE/2R	N/A	60 DAC	30 DARC	
A007 (SAP)	4.8.1.9	ONE/2R	N/A	60 DAC	30 DARC	
A007 (QAPP Addendum)	4.8.1.7.2	ONE/2R	N/A	30 DAC	30 DARC	
A005 (RI Technical Memo)	4.8.2.1.2	ONE/R	N/A	45 DAC	30 DARC	
A005 (FS Technical Memo)	4.8.2.1.3	ONE/2R	N/A	120DARIC	30 DARC	
A004 (Eco.&BRA ITIR)	4.8.3.1.5	OTIME	N/A			
A013 (Project Schedule)	4.8.1.13.1	QTRLY	EOQ	15 DAQ	QTRLY	B
A004 (Analytical ITIR)	4.8.3.1.1	OTIME	N/A	30 DAVD	N/A	
A004 (Treat. Study Tech Report)	4.8.3.12	ONE/R	5 DAC	30 DAC		E
A004 (Letter Report)	4.8.3.5.1	ASREQ	N/A	ASREQ	N/A	B
A015 (Health Risk)	4.8.3.5.2	ASREQ	N/A	ASREQ	N/A	B
A010 (Presentation Materials)	4.8.3.7	ASREQ	N/A	5 DPTM	N/A	
A011 (Photo Notebook)	4.8.3.8	ONE/R	N/A	D	N/A	
A012 (Meeting Minutes)	4.8.3.10	ASREQ	N/A	5 DAM	N/A	B
A003 (Personnel Chart)	4.8.3.11	ASREQ	N/A	ASREQ	N/A	B
A005 (MAP)	4.8.1.3	ONE/2R	N/A			
A005 (RI/FS Work Plan)	4.8.1.6.1	ONE/2R	N/A			
A005 (CRP)	4.8.1.4	ONE/R	N/A			
(IRPIMS Data Mgmt.)	4.8.3.4	OTIME	N/A	90 DAVD	N/A	C
A005 (Decision Document/ROD)	4.8.2.3	ASREQ	N/A			
A004 (Aquifer Test Tech Report)	4.8.3.13	ONE/R	N/A	30DAC	45DAC	E

Legend:

DAC - Days after contract
DARC - Days after receipt of comments
EOM - End of month
(X) DOM - On the (X) calendar day of the month
EOQ - End of calendar year quarter
(X) DAQ - On the (X) calendar day after the end of the quarter
(X) DPTM - (X) calendar days prior to meeting
(X) DAM - On the (X) calendar day after meeting
(X) DAVD - On the (X) calendar day after receipt of validated data
(X) DACF - On the (X) calendar day after completion of field effort
N/A - Not applicable
(X) DARIC -On the (x) calendar day after completion of RI technical memorandum

Notes:

A - Distribute in accordance with basic contract.
B - 1 copy to AFCEE/AFCEE COR, 1 copy to Base POC
C - 1 copy to AFCEE/MSC IRPIMS Data Management
D - Submit Photo Notebook Thirty Days after the completion of field investigation
E - Submit advanced final and a final draft

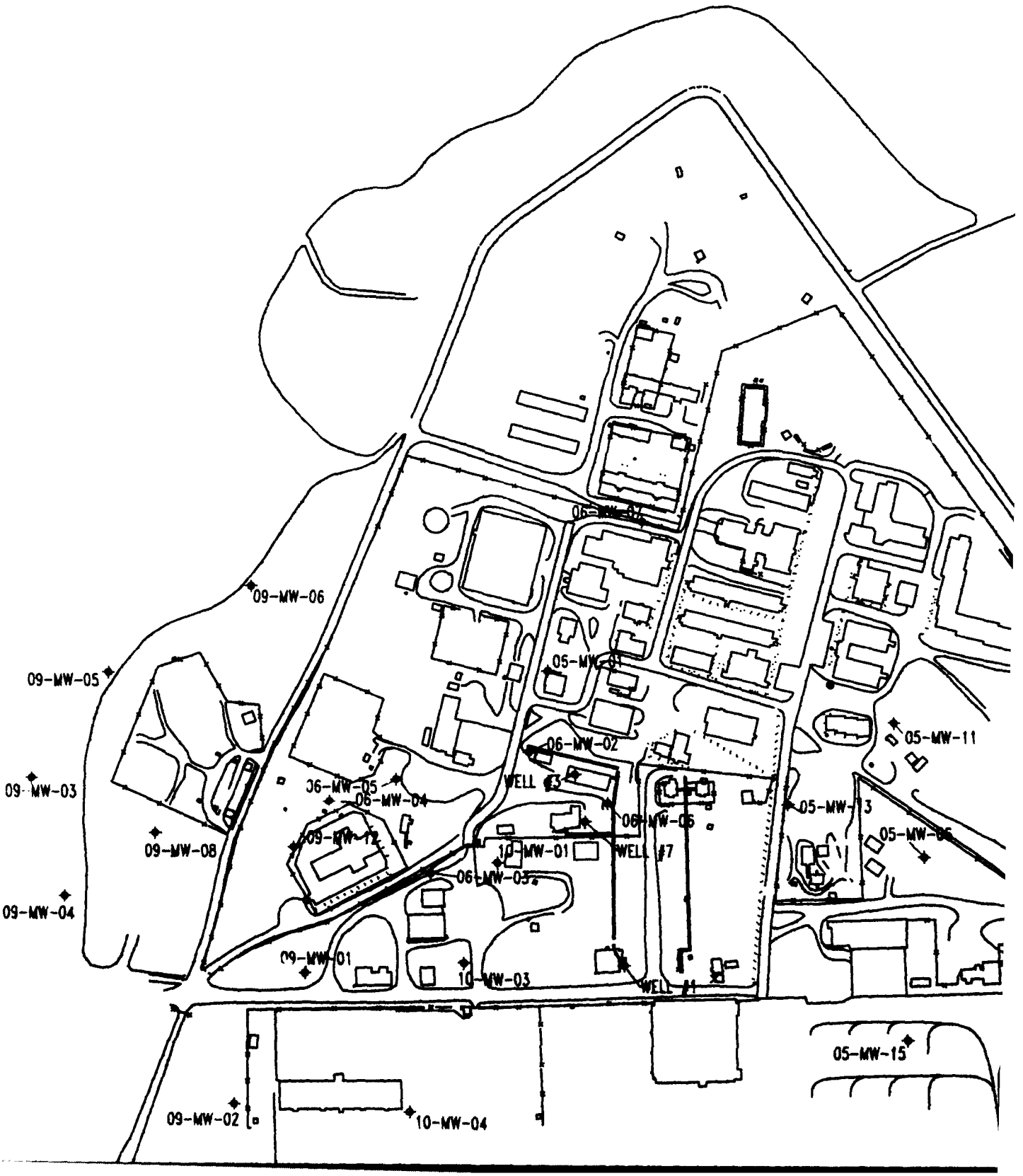
VI. GOVERNMENT FURNISHED PROPERTY:

6.1 The Handbook to Support the Installation Restoration Program Statements of Work (SOW), Volume I. The latest version of the Handbook is dated September, 1993.

6.2 Upon request to AFCEE/MSC, Atten: IRPIMS Data Management, at the address in Section 4.8.3.2, the IRPIMS Contractor Data Loading Tool (CDLT), the IRPIMS Quality Control Tool (QC Tool), and the respective software manuals will be provided.

6.3 The following draft reports will be provided: Galena Airport and Campion AFS Draft RI Technical Memorandum, Draft Treatability Study Technical Report, Preliminary Risk Assessment Technical Memorandum,, Preliminary Feasibility Study Technical Notes, Draft Aquifer Test Report, Draft Community Relations Plan; Kalakaket RRS Site Assessment Report.

VII. GOVERNMENT POINTS OF CONTACT: Government points of contact shall be specified by separate letter from the CO.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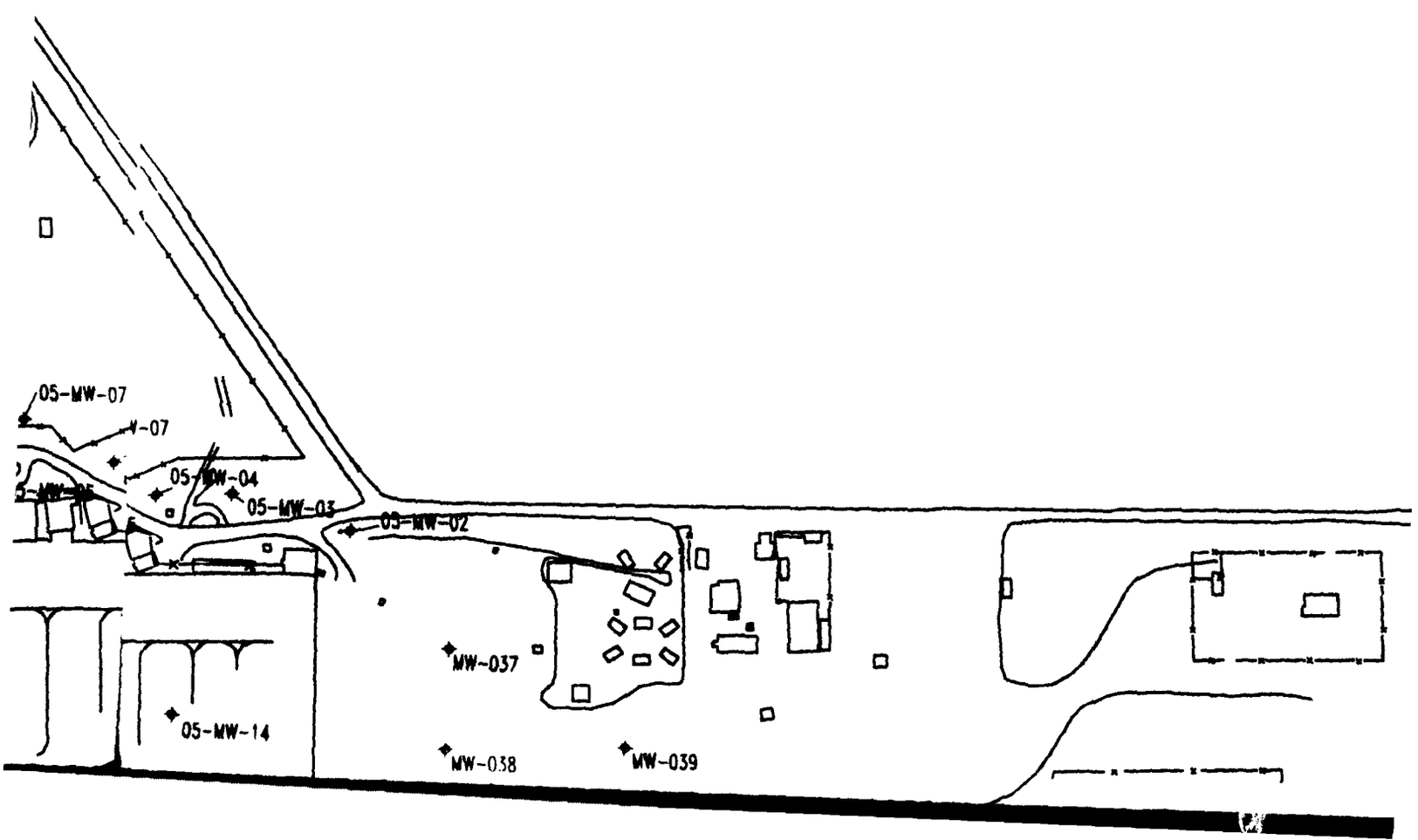
WELL #1

GALENA AIR



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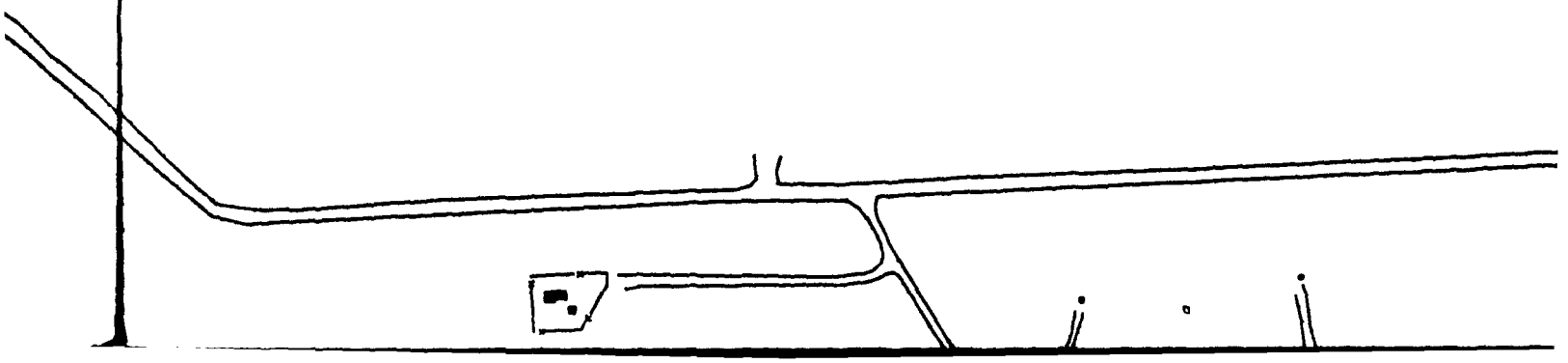

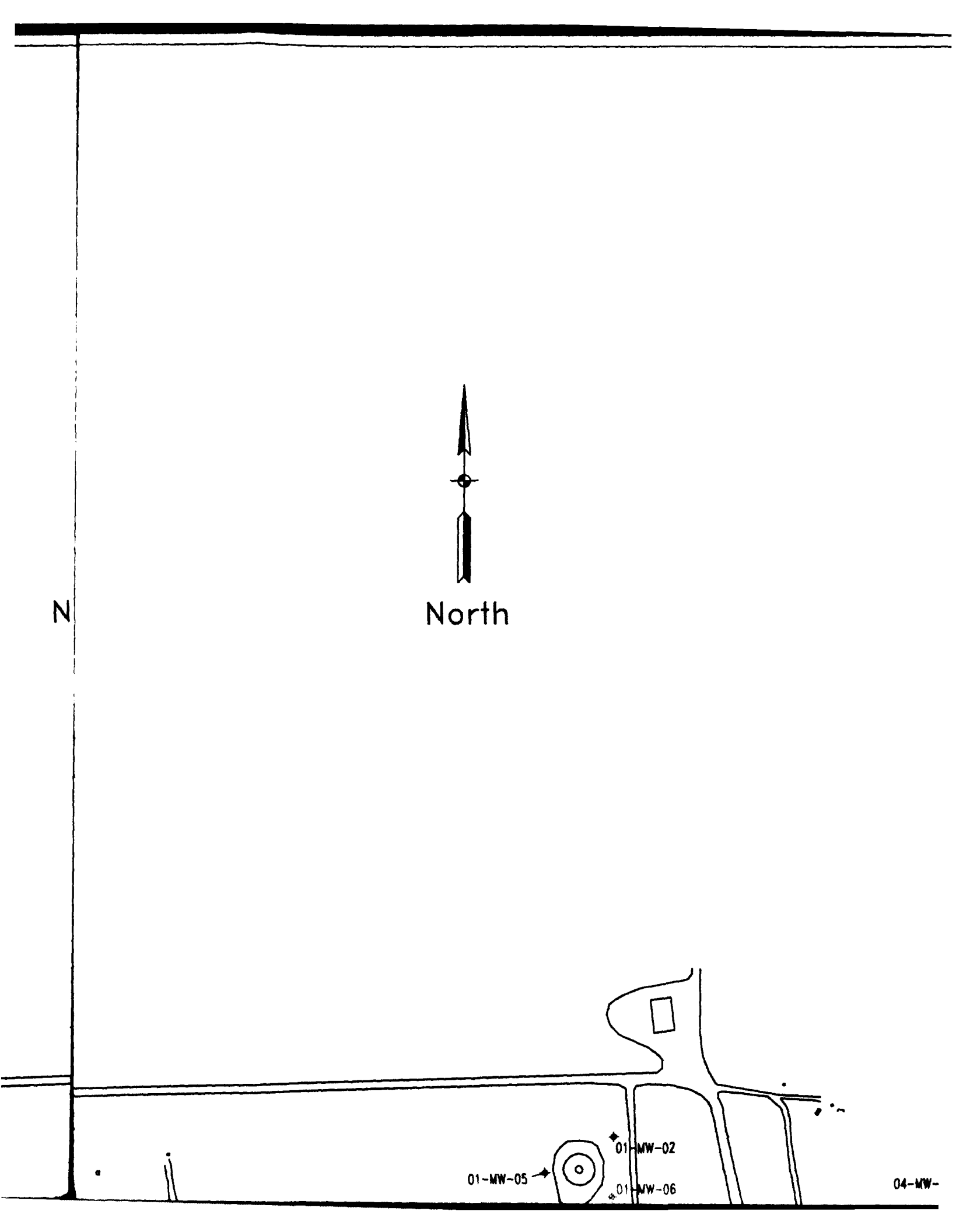
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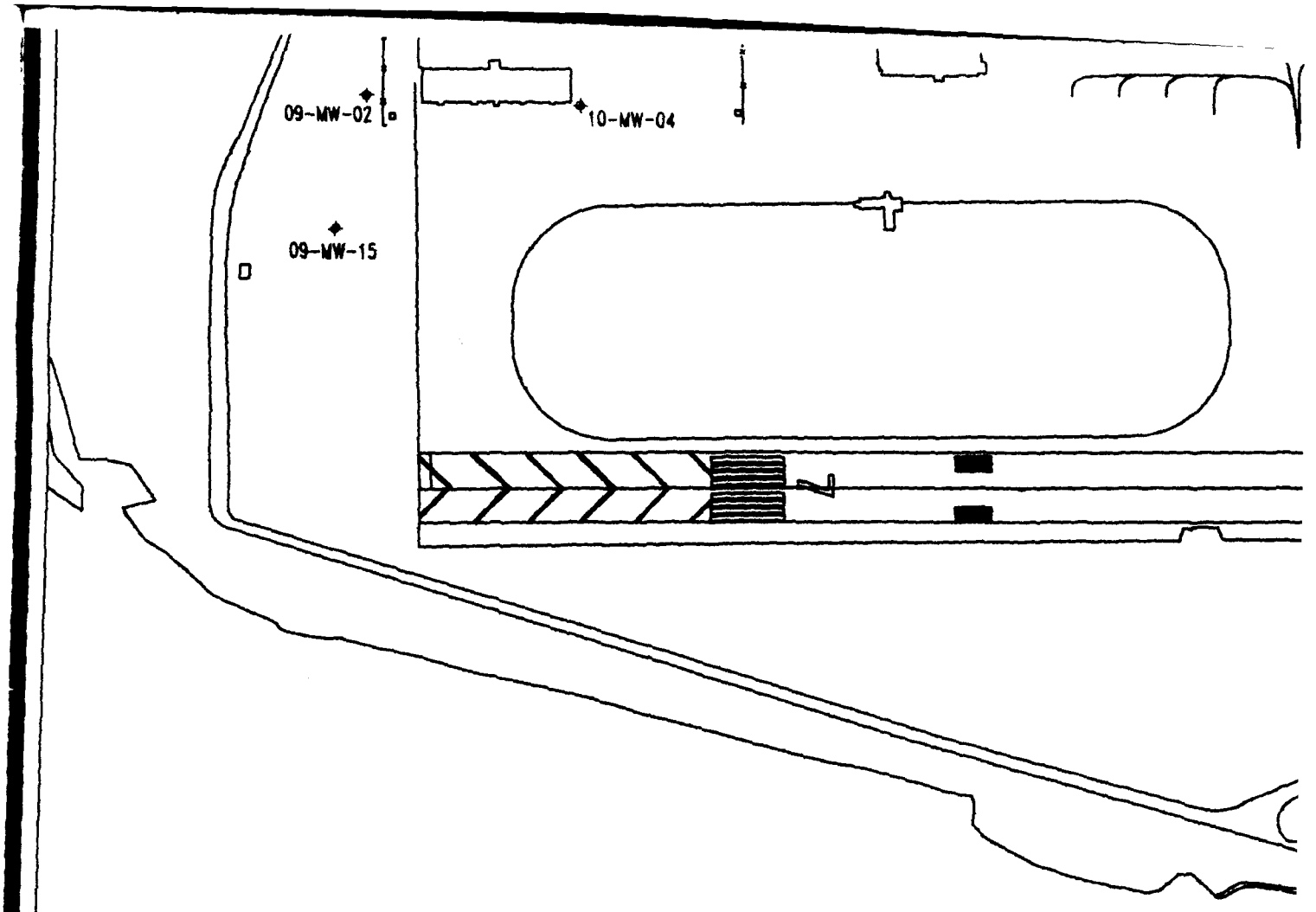
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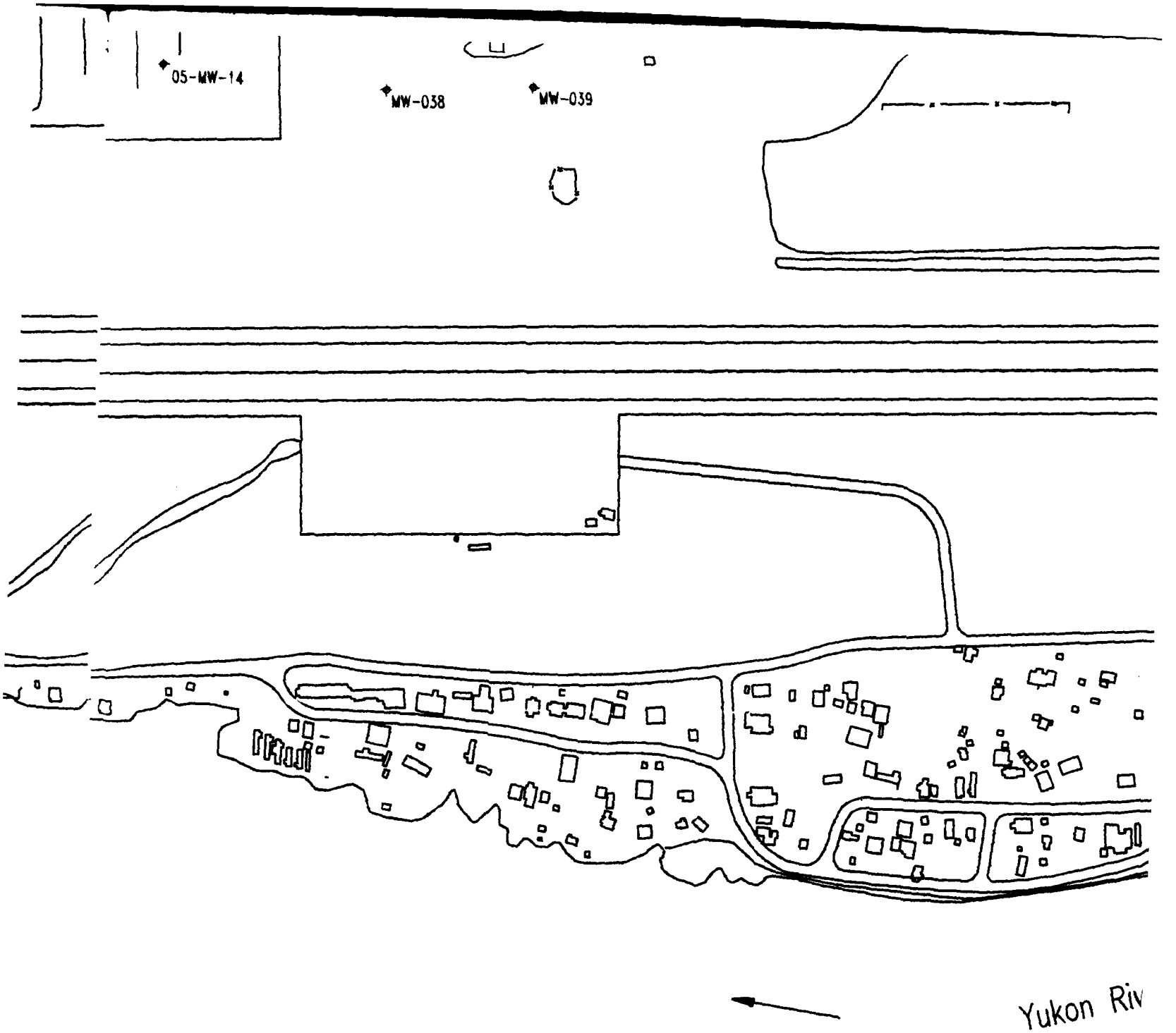
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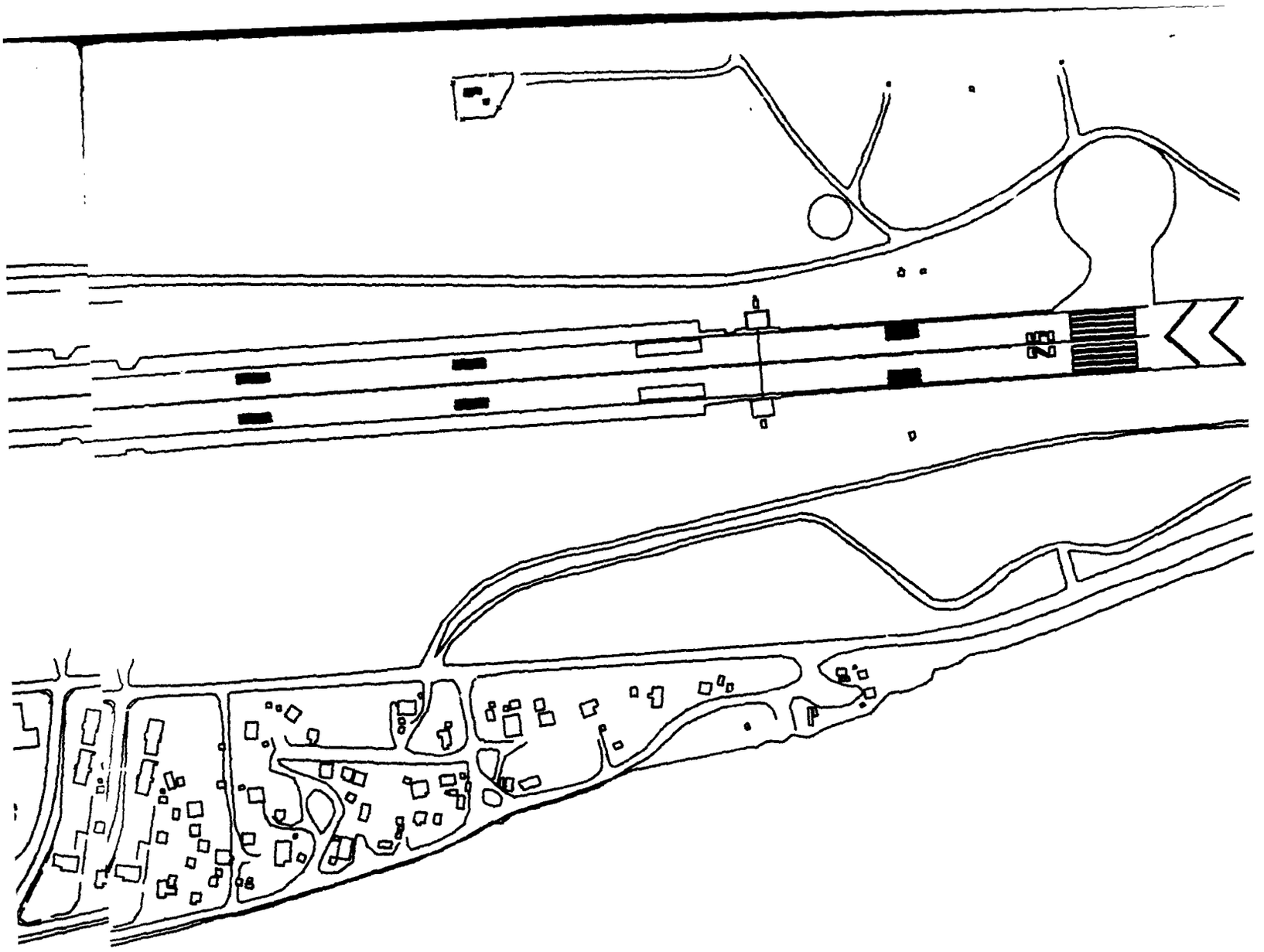


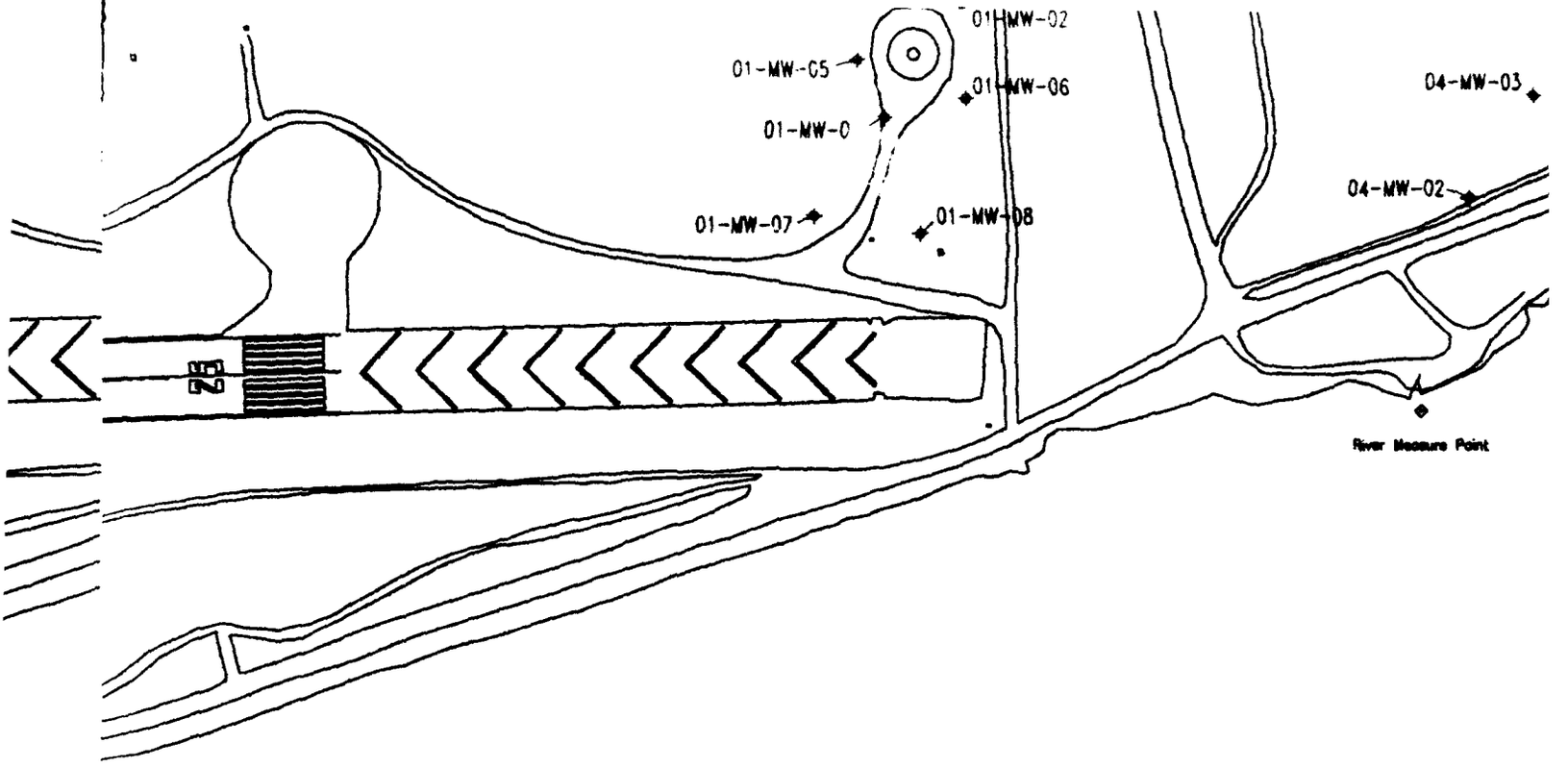
LEGEND

✦ MW-039 Monitoring Well Location

✦ WELL #7 Water Well Locations

0 200 400 600 800 1000 1200

Approximate Scale in Feet



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DATE: 9/12/94	RADIAN CORPORATION
RADIAN CONTRACT NO:	
DRAWN BY: M. ALSUP	
REVIEWED BY: B. COLE	PLATE A
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SCALE: AS SHOWN	