Closure Report for the Eastern Lagoon of SWMU 8 Radford Army Ammunition Plant

Prepared by:

ALLIANT TECHSYSTEMS INC.

Radford, VA

ALLIANTTECHSYSTEMS

Alliant Techsystems Inc.
Radford Army Ammunition Plant
Route 114
P.O. Box 1
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December 14, 1998

98-815-235

Robert G. Thomson
U. S. Environmental Protection Agency, Region III
Hazardous Site Cleanup Division
3HS50
1650 Arch Street
Philadelphia, PA 19109-2029

Re: Closure Report for the Eastern Lagoon of SWMU 8
Radford Army Ammunition Plant, Radford VA
EPA ID# VA1 210020730

Dear Mr. Thomson:

Enclosed is copy of the *Closure Report for the Eastern Lagoon of SWMU 8* for Radford Army Ammunition Plant. Mr. Fish's certified copy and your five additional copies will be provided under separate cover.

Please coordinate with and provide any questions or comments to myself at (540) 639-8266, Jerry Redder of my staff at (540) 639-7536, or Rob Davie, ACO staff at (540) 639-7612.

Sincerely:

C. A. Jake, Supervisor
Environmental Affairs

27e

Enclosures, under separate cover:

c: Russell Fish
U. S. Environmental Protection Agency, Region III
Hazardous Site Cleanup Division
3HS50
1650 Arch Street
Philadelphia, PA 19109-2029

Leslie Romanchik
Virginia Department of Environmental Quality
Waste Division
P. O. Box 10009
Richmond, VA 23240-0009

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Richmond, VA 23240-0009

Coordination: J. J. McKenna M. L. Griffith

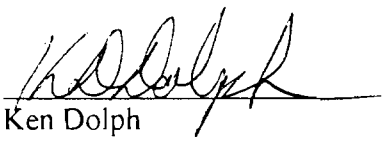
bc: Administrative File
R. Davie-ACO Staff
S. J. Barker-ACO Staff
C. A. Jake
J. J. Redder
D. W. Shead
Env. File

Concerning the following Document submitted December 14, 1998:

Closure Report for the Eastern Lagoon of SWMU 8 dated October 1998

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

SIGNATURE: 
PRINTED NAME: Armando Lopez
TITLE: LTC, CM, Commanding
Radford AAP

SIGNATURE: 
PRINTED NAME: Ken Dolph
TITLE: Resident Manager
Alliant Techsystems Inc.

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1.0 Introduction

An Interim Remedial Action was undertaken at SWMU 8 in support of a project to install a concrete settling tank to replace the earthen lagoon that was the Eastern Lagoon of SWMU 8. The purpose of the Interim Remedial Action was to remove any contaminated material from the lagoon and determine that levels of contamination in the remaining soils were below regulatory levels. This Closure Report will summarize the activities undertaken during the Interim Remedial Action at SWMU 8 Eastern Basin and present the results of these activities in support of final closure of the Eastern Basin of SWMU 8. The report details investigation activities, the nature and extent of contamination at the site, and the process used to derive investigation conclusions. Site photographs and maps are included to depict current site condition.

2.0 Site Description

2.1 Facility Description

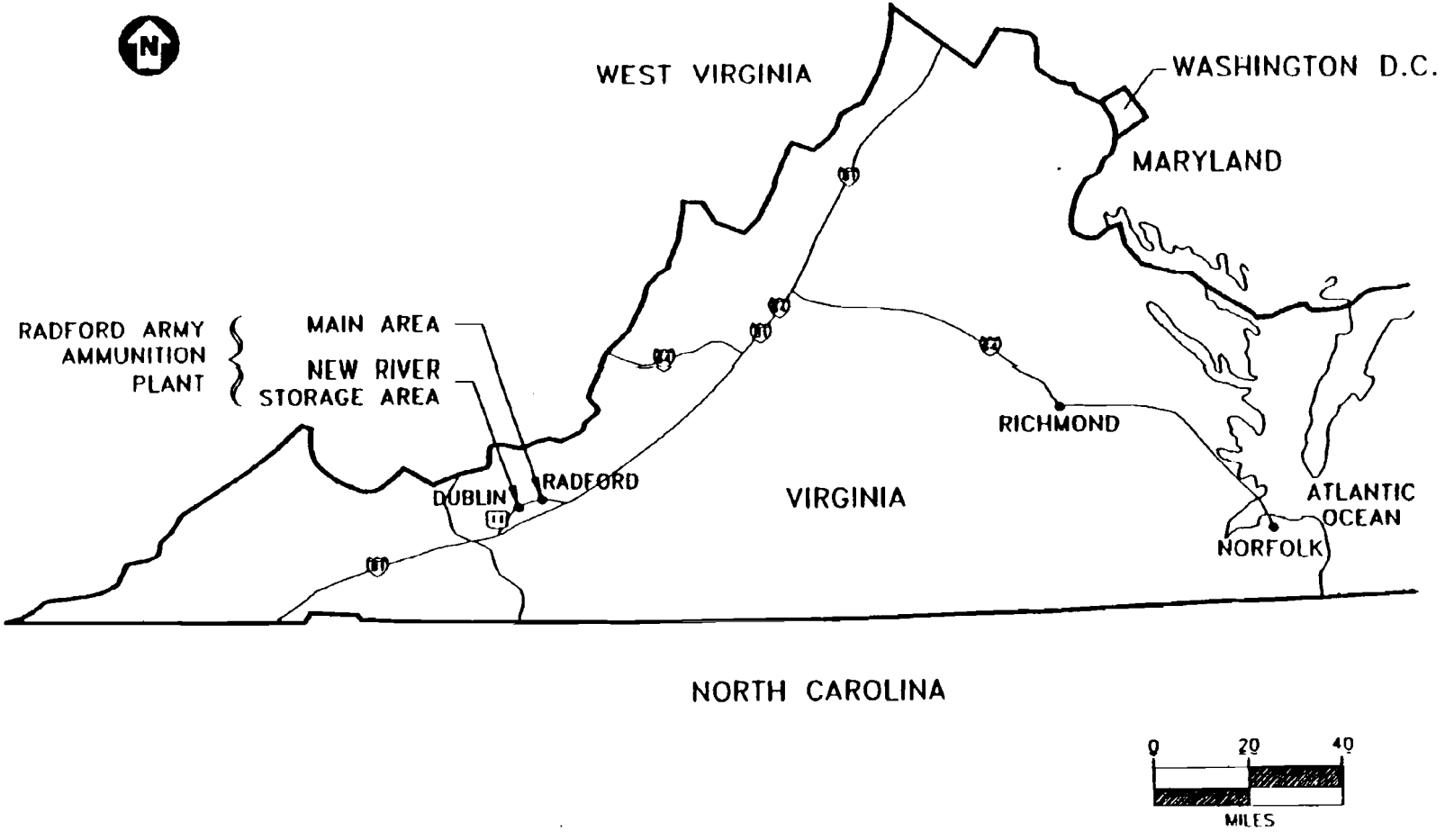
RFAAP is a government-owned, contractor operated (GOCO) industrial complex located in Radford, Virginia. RFAAP is owned by the U.S. Department of the Army and was operated under contract with Hercules, Inc. from 1941 until 1995 when Alliant Techsystems, Inc. became the operation contractor. The facility contains approximately 1969 buildings and occupies 6900 acres. Facility activities include the manufacturing of solid propellants used in small arms, anti-aircraft and anti-tank weapons, rockets, torpedoes, missile systems, ignitors, gas generators, and related items.

2.2 Location

RFAAP is located in the mountains of southwest Virginia in Pulaski and Montgomery Counties. The Main Section is located approximately 10 miles west of Blacksburg and 47 miles southwest of Roanoke, Virginia. RFAAP lies in a series of narrow valleys typical of the Valley and Ridge Province of the Appalachian Mountains. Oriented in a northeast-southwest direction, the valley is approximately 25 miles long with a width of 8 miles at the southwest end, narrowing to 2 miles at its northeast end. The plant lies along the New River in the relatively narrow northeast corner of the valley.

The New River divides RFAAP into two areas; the Main Manufacturing and Horseshoe Areas. The Horseshoe Area is situated with a meander of the New River (Figure 2-1). Located in the Horseshoe Area are the Nitroglycerin (NG) No., 2, Cast Propellant, and Continuos Solvent Propellant Areas. Many of the former landfills at RFAAP are located in this area, as are the currently active Industrial and Construction Debris Landfills, the Waste Propellant Incinerator and the Waste Propellant Burning Ground. The Main Manufacturing Area is located south of the New River and includes the following areas: Finishing, Trinitrotoluene, Nitroglycerin No. 1, Nitrocellulose, Acid, Automated Solventless Propellant and Administration.

Figure 2.1: Location of Radford Army Ammunition Plant, VA



SOURCE: USAEHA. 1980, AS CITED IN DAMES & MOORE. 1992

2.3 Site Description

Solid Waste Management Unit (SWMU) 8 Calcium Sulfate Settling Lagoons (A+B Line Acidic Wastewater), consists of two unlined, below grade earthen lagoons located in the northeast section of the Main Manufacturing Area along the south bank of the New River (Figure 2-2) this report focuses on the Eastern most lagoon. Each rectangular lagoon is approximately 200 feet long, 150 feet wide, and 10 feet deep. It is estimated that these currently active lagoons began operation in the early 1950's during the Korean War (USACE, 1981). The lagoons are operated on an alternating basis to accommodate maintenance and dredging. The adjacent sludge drying beds are SWMU 35 and 36.

SWMU 8 manages neutralized, formerly acidic wastewater from the A+B Line Acidic Wastewater Treatment Plant. The neutralization process that takes place at the treatment plant is as follows:

$Ca(OH)_2$	+	H_2SO_4	→	$CaSO_4$	+	$2H_2O$
(Hydrated lime)		(Sulfuric acid)		(Calcium Sulfate)		(Water)

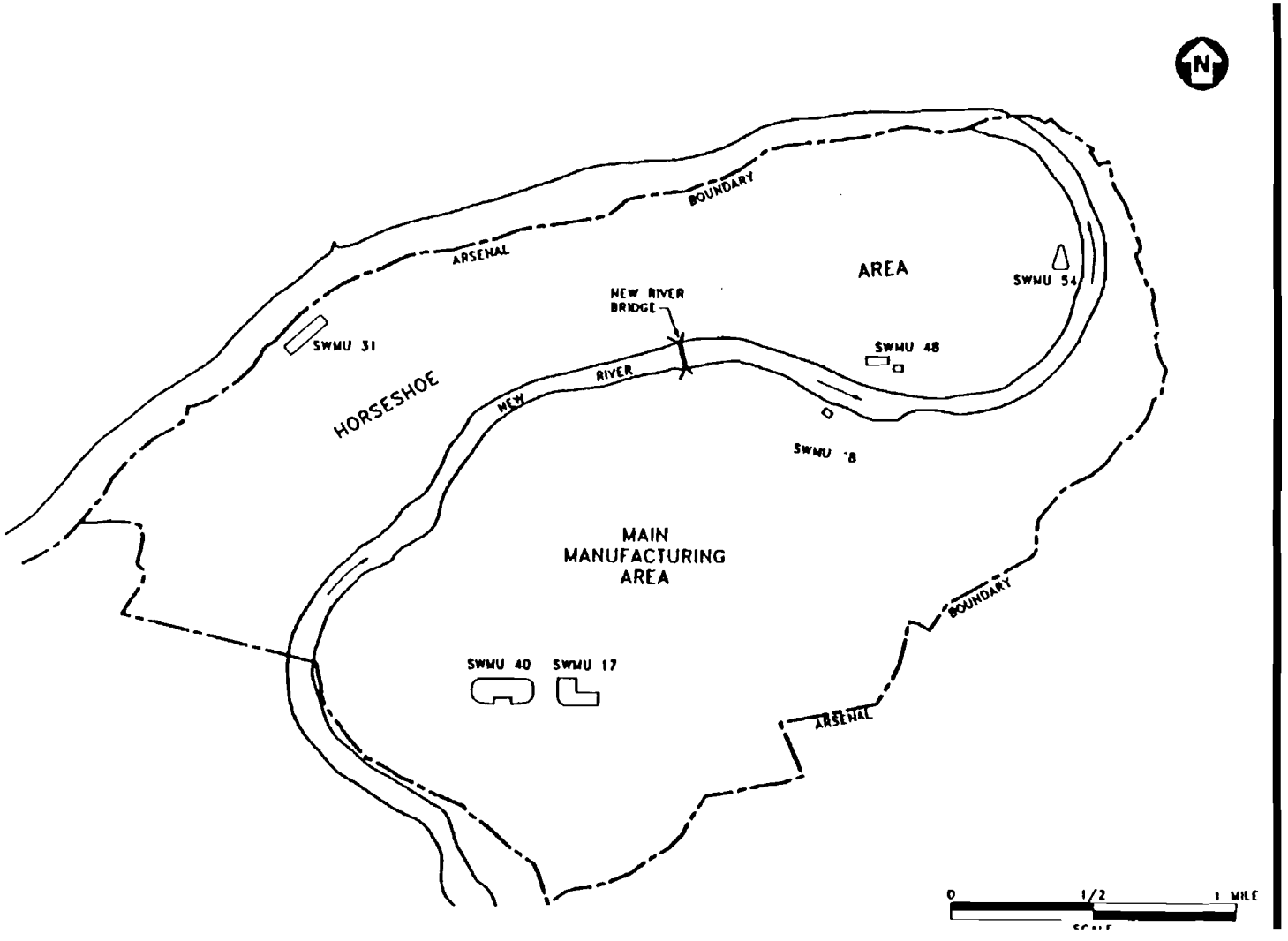
The wastewater containing the calcium sulfate flows through a series of baffles in the lagoons, allowing the calcium sulfate to precipitate out and settle to the bottom of the lagoons. The supernatant is discharged to the New River via Virginia Pollutant Discharge Elimination System (VaPDES) Outfall 007 (Permit No. VA 0000248). The calcium sulfate is dredged from the lagoon on a periodic basis (approximately once every 5 to 7 Months) and placed in adjacent drying beds (SWMU 36).

2.4 Environmental Setting

Soil and rock borings completed in the vicinity of SWMU 8 as part of a hydrogeologic investigation (USACE, 1981) indicated the presence of two major lithologic units, unconsolidated sand with some gravel and clay lenses overlying limestone/dolostone bedrock. The unconsolidated deposits consist primarily of fine to coarse grained, yellowish-brown sand varying in thickness between 14 and 30 feet. The thickness of these deposits increases with respect to distance form the river. Zones of large cobbles (river jacks) are present, but are more commonly found in other areas of RFAAP. Silty brown clay lenses found at the land surface may represent recent deposition during flood events.

Underlying the sand unit is the gray limestone/dolostone of the Elbrook Formation. At SWMU 8, the gray limestone/dolostone is highly argillaceous. The limestone/dolostone itself is highly fractured and fragmented. A total of 29 field and laboratory permeability tests were performed during a previous hydrogeologic investigation (USACE, 1981). The

Figure 2.2 – Location of SWMU 8
Radford Army Ammunition Plant



BASE MAP SOURCE USATHAMA 1976. AS CITED IN DAMES & MOORE. 1992

reported permeability of the unconsolidated material ranges from less than 3.28×10^{-6} centimeters per second (cm/sec) to 1.37×10^{-2}cm/sec. The clay and silt lenses have the lowest permeabilities, the highest permeabilities are found in the gravel. Seven in situ permeability tests were conducted on material of the Elbrook Formation. The average permeability of the limestone/dolostone is 8.42×10^{-3} cm/sec with a range from 1.73×10^{-4} to 2.08×10^{-2} cm/sec. These data support the observation that the formation is highly fractured, and it is likely that groundwater flow through these channels with virtually no restriction.

The water table at this unit is found at a depth ranging from 10 to 23 feet below ground surface. Groundwater flow is essentially toward the New River. The available data indicate that the water table may also slope toward Stroubles Creek on the east side of SWMU 36. Eight monitoring wells were installed in the vicinity of SWMU 8 as part of the 1980 hydrogeologic evaluation. Well locations are shown in Figure 2-3.

2.5 Previous Studies

Two studies have been preformed at SWMU 8. The first of which was the 1987 RCRA Facility Assessment, USEPA, included a preliminary data review, evaluation, and visual site inspection. The second was the 1992 Verification Investigation, Dames & Moore, included the collection of one sludge sample from each of the two lagoons.

One sample was collected from the edge of each of the two lagoons, within the top foot of calcium sulfate. Parameters analyzed included VOCs, SVOCs and TCLP metals. Chloroform and 1,1,1-tricloroethane were the only VOCs detected in either calcium sulfate samples. Reported concentrations were significantly lower than the corresponding HBN. No SVOCs were detected in either sample. Barium, chromium and silver were reported at detectable concentrations in the TCLP extract, which indicated that leachable levels of these metals were available from lagoon sludge. However, results were reported less the regulatory levels specified in 40 CFR 2061.24.

3.0 Interim Remedial Action

As a portion of the project to replace the eastern most earthen lagoon at SWMU 8 with a concrete tank, an Interim Remedial Action (IRA) was designed for the Eastern Lagoon of SWMU 8. The IRA was scheduled to occur during December and January of 1997-98. However, delays during the IRA prevented completion until July of 1998.

The interim remedial action was divided into two distinct work efforts: demolition and removal activities and sampling and analysis activities. Demolition and removal activities were contracted and performed in December 1997 and January 1998. These activities included the removal of all calcium sulfate, structures that would not be associated with the new tanks, and approximately 24 inches of the earthen material lining the lagoons. The sampling and analysis of the remaining sub-soil occurred June of 1998,

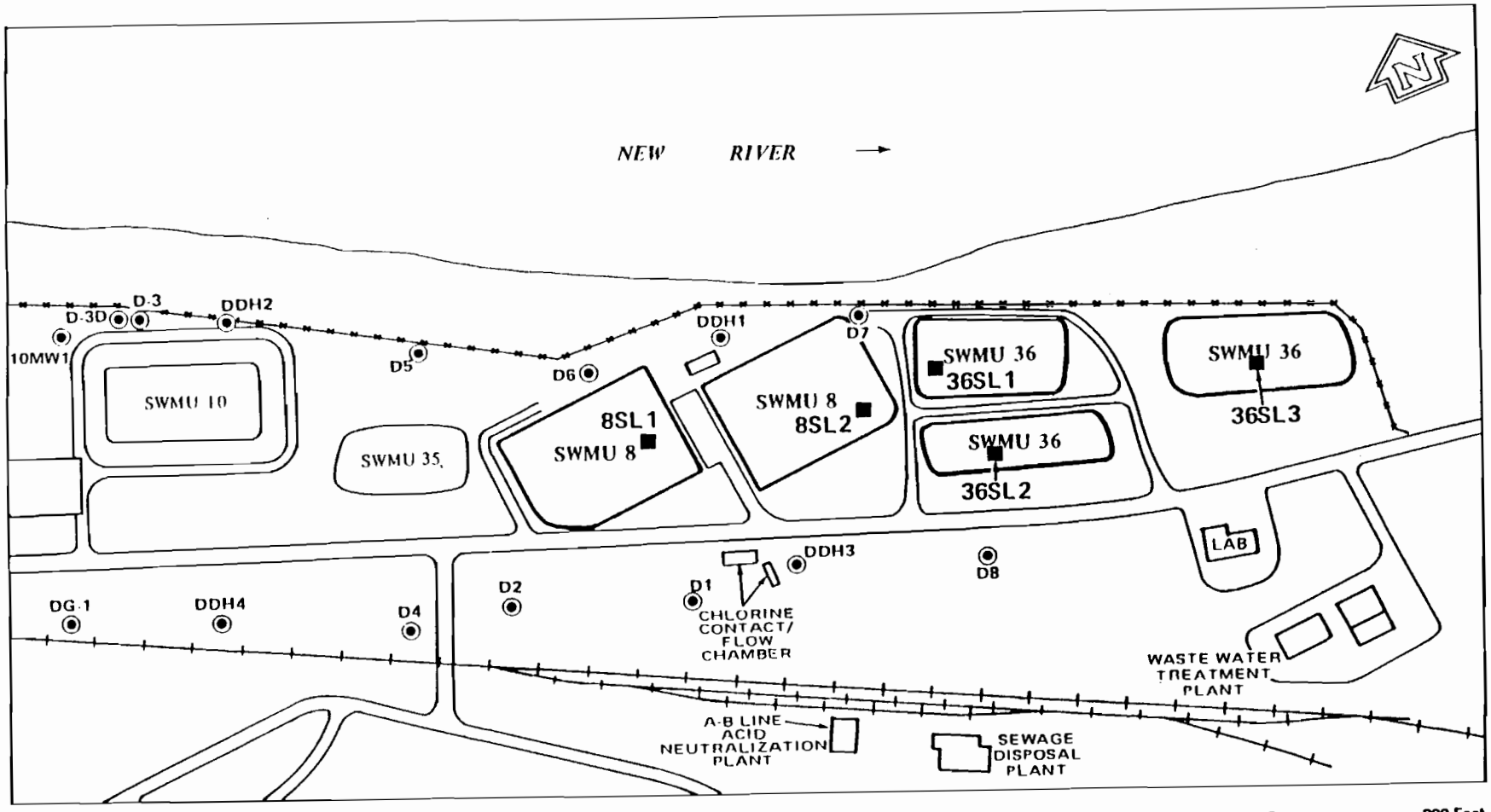


Figure 2.3: Well Locations for SWMU 8
Radford Army Ammunition Plant, VA

at that time 7 randomly distributed samples were collected from the surface of the excavated lagoon.

3.1 Demolition and Removal Activities

The Demolition and Removal Activities were organized in two distinct work efforts. The first phase of the project consisted of removing the accumulated calcium sulfate in the settling lagoon. The second phase was the removal of unwanted structures and the subsoil to a depth of 24 inches from the nominal bottom. Alliant Techsystems performed the removal of the sludge. The removal of unwanted structures and subsoil was performed by a sub-contractor under the direction of Alliant Techsystems, Environmental Engineering.

Alliant Techsystems personnel took the Eastern Lagoon of SWMU 8 out of service and began preparations for the removal of the calcium sulfate from the basin in October 1997. To transfer the calcium sulfate from the eastern lagoon of SWMU 8 to the drying beds, Alliant Techsystems Roads and Grounds staff slurried the calcium sulfate with water and pumped the material to the drying beds. All of the calcium sulfate that could reasonably be removed using this technique was removed and the site was prepared for construction activities.

A subcontractor removed the wood and concrete structures that formed the baffles in the Easter Lagoon of SWMU 8 and removed the sub soil to a depth of twenty-four (24) inches from the nominal surface. The specifications for the remedial activity are located in Appendix A.

The subcontract began demolition activities December 15, 1997. Standing rainwater was pumped to the nearest drying bed. This rainwater collected in the lagoon during the two months between Alliant Techsystems preparation of the lagoon for construction and the time the subcontract began. The standing water and excessively moist soil were the result of clay lenses creating perched water tables that were exposed in the lagoon. Wooden structures, which formed the baffles, were cut down leaving concrete footers in the soil. Concrete footers and foundations were removed and taken to a permitted debris landfill, Bandy Landfill, located in Roanoke Co., VA.

When the demolition of unwanted structures was completed, the sub-contractor began the soil removal portion of their contract. The sub-contractor removed the subsoil from the lagoon to a depth of 24 inches below the nominal bottom. The removed soil was placed in dump trucks and taken to the eastern most drying bed of SWMU 36. Any soil that had exceeded its liquid limit was removed by vacuum truck and excavator and placed in the eastern most drying bed of SWMU 36 with the rest of the soil.

Physical work at the site was completed January 8, 1998. There were several structures remaining at the site: The influent and effluent concrete structures remain, and a concrete pad was found at the base of the western half of the south wall. The concrete

pad is approximately 60 feet long, 8 feet wide, and 2 feet thick. This structure was later removed during construction of the basins. In all cases, as much soil as possible was removed from around these structures. The soil around these structures was removed to a depth of 24 inches below the nominal bottom. All side slopes were stabilized using a 3:1 slope; to date, all slopes have maintained stability.

3.2 Sampling and Analysis

Soil samples were collected from the surface of the excavation. REIC Laboratories and Consultants of Beaver, West Virginia performed the sampling and analysis. The results were compared to the Health Based Numbers in the Corrective Actions Permit, Risk Based Criteria, and the Background values determined by Parson Engineering Science.

To show that a soil unit is statistically clean, a testing program is required which carefully and adequately assures quality while minimizing field and lab errors. Inadequate sampling and analysis could lead to incorrect conclusions about a unit. These sampling and analyses were performed in a manner to draw appropriate conclusions about the state of the sub-soils. The Sampling and Analysis Plan (SAP)(Appendix B) details the necessary sampling procedures and analysis methods that were employed to verify clean closure of the soils.

On June 15, 1998, REI Consultants, Inc., collected soil core samples from SWMU 8. Seven monitoring points and one duplicate were obtained by means of random selection from the sampling grid and location relative to GPS reference points provided by Alliant Techsystems. Eighteen core subsamples were collected for each selected grid utilizing a stainless steel sample probe. The subsamples were composited into one sample core taken from 0 inches to 12 inches. A total of seven grids were sampled and analyzed. Additionally, field quality control samples field (duplicate, field blank, equipment blank, and trip blank) were taken and submitted for analysis.

The samples were received in-house for laboratory analysis June 15, 1998 and were subsequently analyzed for the chemical constituents of concern. The laboratory received all samples in good condition and on ice.

4.0 Results

This section describes the specific assessment protocols to be utilized to determine if closure could be achieved for the West Lagoon of SWMU 8. The methodology presented below is based on meeting the data requirements outlined in the SAP.

The SAP described below was developed in accordance with sound standard statistical methods. All data were reviewed, summarized, and analyzed according to the methods described in this section. The initial random sampling was conducted to determine if clean closure can be achieved and whether soil removal was adequate to

achieve closure clean-up goals. The sub-soils were evaluated by collecting seven soil borings, randomly distributed across the grid nodes. Samples were collected at the surface of the newly excavated lagoon, 24 inches nominal below the original lagoon bottom. The samples were analyzed for the established Hazardous Constituents of Concern (HCOC) outlined in Appendix B Section TP-06-01. A sufficient number and volume of samples were analyzed to statistically confirm closure. Data values reported as less than the Practical Quantitation Limit (PQL) will be treated as one half (1/2) of the (PQL). Sample values were compared to the critical value. Table 4.1 is a summary of all detected constituents and their maximum values, Appendix C contains a complete data table.

The analytical results were determined to be below the clean-up goals of the Corrective Actions Permit, the unit is considered closed, and no additional sampling and analysis will be performed.

5.0 Conclusions

Based on the results of this investigation, no further action is recommended for this site. Subsurface results were determined to be below the levels of concern. The potential sources of contamination have been removed and disposed of. A concrete tank will replace the lagoon and prevent the infiltration of surface water. Site conditions at SWMU 8 eastern basin do not pose a threat to human health or the surrounding environment.

Table 4.1 - Detected Constitiuent and Maximum Values

Hazardous Constituent of Concern	Regulatory Value	8-1-0-12-01	8-4-0-12-01	8-7-0-12-01	1-13-0-12-01	8-5-0-12-01	8-15-0-12-01	8-9-0-12-01	Maximum Value
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
bis(2-ethylhexyl)phthalate	50	0.7	1.3	0.4	0.4	0.5	0.5	0.3	1.3
Fluoranthene	500	ND	ND	ND	0.4	ND	ND	ND	0.4
n-nitrosodiphenylamine	100	ND	ND	0.3	0.6	0.5	ND	ND	0.6
anthracene	40	ND	0.3	ND	ND	ND	ND	ND	0.3
benzo[a]anthracene	0.2	ND	0.027	ND	ND	0.01	ND	ND	0.027
benzo[b]fluoranthene	0.4	ND	0.05	ND	ND	0.03	ND	ND	0.05
benzo[a]pyrene	0.06	ND	0.04	ND	ND	0.04	ND	ND	0.04
chrysene	4	0.02	0.06	ND	ND	0.04	ND	ND	0.06
aluminum	230000	20500	10300	10100	10000	13800	9940	10500	20500
arsenic	9	2.72	3.4	2.55	3.15	3	ND	ND	3.4
barium	1000	48.3	49.8	40.4	38.8	44.5	90.1	110	110
beryllium	1.1	0.4	0.42	0.42	0.5	0.42	0.7	0.68	0.7
cadmium	40	0.062	0.1	0.125	0.142	0.11	0.145	0.09	0.145
calcium	109994	12700	23500	13200	11400	20800	3750	2550	23500
chromium	400	25.2	32.2	32.1	41.8	35.7	20.9	19	41.8
cobalt	27.9	4.22	2.08	3.52	5.2	4.78	7.72	7.3	7.72
copper	29.69	12.7	15.4	21.2	23	17.9	11.2	8.02	23
iron	39707	24200	18500	15700	14900	19400	17700	19300	24200
lead	282.84	18.4	28.1	32.3	29.3	40.6	19.5	11.8	40.6
magnesium	45931	3530	5490	4270	4140	2660	2510	2500	5490
manganese	8000	246	284	262	222	276	421	398	421
mercury	20	ND	ND	ND	0.12	0.14	ND	ND	0.14
nickel	1000	10.8	16.2	15.2	15.9	12	12.8	12.8	16.2
potassium	3864	793	822	754	846	521	651	647	846
sodium	313.2	81.1	97.6	72.7	74.2	95.9	59.8	80.6	97.6
vanadium	500	32.4	21.5	21.4	19.9	21.3	22.1	23.5	32.4
zinc	1000	34.5	38.5	41.2	52.8	49.4	60	50.5	60
chloride	N/A	23.9	23	18.6	20.2	37	10.9	10.6	37
nitrate	N/A	9.24	9.81	12.5	7.28	3.67	1.29	2.84	12.5
total kjeldahl nitorgen	N/A	424	389	458	428	536	497	402	536
phosphorus	N/A	ND	0.54	0.56	0.54	ND	1.18	1.29	1.29
sulfate	N/A	4790	7530	3480	4600	12600	296	221	12600
Total phenolic material	40000	0.24	0.325	ND	ND	ND	ND	ND	0.325

Appendix A

PROPOSAL

DATE:_____

To: Alliant Techsystems Incorporated
Radford Army Ammunition Plant
Caller Service 1
Radford, Virginia 24141-0299

Gentlemen:

Having carefully and fully examined the specifications and drawings for the subcontract entitled "Removing, Transporting, Treating And Disposing Of Wastes From The Calcium Sulfate Settling Lagoon, At Radford Army Ammunition Plant, Radford, Virginia", and having visited the work site and examined all visible conditions affecting the work, the undersigned proposes to furnish all labor, tools, equipment, appliances, materials, and to perform all work in accordance with the drawings and specifications for the lump sum of:_____(_____)

The above sum is broken down by units as follows:

Item No.	Description	Total Cost
1.	Initial Mobilization	_____
2.	Removal, Transportation, and Disposal of: Wood and Concrete as solid waste.	_____
3.	Removal and Placement of at least 24" of subsoil	_____
4.	Removal and Disposal of Decontamination and Staging Materials	_____
5.	Demobilization	_____
	SUBTOTAL	_____

The undersigned further proposes to perform such extra services as may be required or directed by Alliant at the following unit prices:

Extra Services:

Item No.	Description	Estimated Quantity	Unit Price	Total
1.	Removal, Transportation, and Disposal of: Wood and Concrete as Hazardous Waste	70 tons	_____	_____
2.	Suspension and remobilization of activities	1 LS	_____	_____
		Extra Services Subtotal		_____

TOTAL LUMP SUM BID _____

The undersigned understands and agrees that the quantities shown above (Extra Services, Item 1) is estimated and is subject to increase or decrease as determined by Alliant Techsystems. Bidder hereby agrees to furnish more or less of the estimated quantity as directed by Alliant at the unit price shown. Subcontractor shall not exceed the estimated quantity without the approval of Alliant Engineering. To do so without such approval will be at the Subcontractor's risk.

The undersigned further agrees and understands that each element of work (Total Cost Items and Extra Service Items) is to reasonably reflect the cost associated with performance of said elements. Alliant at its option may elect to award a subcontract or alter a subcontract for any combination of elements as deemed necessary by Alliant.

Respectfully submitted,

_____
(Subcontractor's Firm Name)

_____
(Address)

By:_____

Title:_____

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Part II	TECHNICAL PROVISIONS
Part III	SPECIAL PROVISIONS

REMOVING, TRANSPORTING, TREATING AND DISPOSING OF WASTES FROM THE CALCIUM SULFATE SETTLING LAGOON AT RADFORD ARMY AMMUNITION PLANT RADFORD, VIRGINIA

SPECIFICATIONS

PART I

STATEMENT OF WORK

SW-01 . SCOPE OF WORK: The work consists of furnishing all labor, equipment, appliances and materials and performing all operations in connection with removing, transporting, and disposing of wastes from the Calcium Sulfate Settling Lagoon at Radford Army Ammunition Plant, Radford, Virginia. These specifications are based on the RCRA Corrective Action Permit from EPA Region III and general remediation guidance from the Virginia Department of Environmental Quality (DEQ).

SW-02. WORK TO BE PERFORMED AND PRINCIPAL FEATURES: In general, the work to be performed and principal features include but are not limited to the following:

A. Pre-Demolition Activities
   1. Construction of decontamination area
   2. Clean all large equipment prior to its use on site
   3. Establish runoff controls
   4. Establish dust control measures

B. Structure Removal
   1. Disposal of Wood and Concrete Structures in Permitted Landfill

C. Removal of Sub-Soil
   1. Remove sub-soil to a minimum depth of 24 inches below the existing nominal surface
   2. Disposal of sub-soil in the eastern-most SWMU 36

D. Post Construction Activities
   1. Decontaminate all equipment used during the removal effort
   2. Dispose of all decontamination liquids
   3. Removal of decontamination area
   4. Return all RFAAP equipment and materials to original condition

SW-03 LIMITATION OF PRINCIPAL FEATURES: The principal features shall in no way be interpreted to limit the subcontractor's responsibility in performing a complete job according to these specifications and drawings which are a part thereof.

STATEMENT OF WORK

SW-04 DRAWINGS AND EXHIBITS: The work shall conform to the following drawings and exhibits which are a part of these specifications:

DWG NO	Title
04555	Subcontractor's Job Site and Orientation Map
52465	Site Map - Site Plan for Pipe Modifications at Outfall 007

SW-05 REFERENCE DRAWINGS AND DOCUMENTS.

A. Reference Drawings. These drawings depict SWMU 8 and SWMU 36 and it's appurtenances at time of construction. Minor modifications may have occurred.

DWG NO	Title
	Topographic Map - Grid 16
	Topographic Map - Grid 17
HRP-37-14938	Nitrocellulose Lagoons Plan & Details
HRP-37-2949	Nitrocellulose Lagoons Plans, A,B,C Lines

B. Reference Documents . The reference documents are:

1. 40 CFR Parts 260-299.
2. Virginia Solid Waste Management Regulations.(VSWMR)
3. Virginia Hazardous Waste Management Regulations.(VHWMR)

SW-06 PREAWARD REQUIREMENTS. The subcontractor shall submit with the bids the name, address, and phone number of the disposal facilities that are going to be used for this effort. Alliant reserves the right to inspect these facilities prior to awarding the subcontract.

PART II

TECHNICAL PROVISIONS

Removing, Transporting, . and Disposing
of Wastes from the Calcium Sulfate Settling Lagoon

TP-01-01. SCOPE: The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances and material, and performing all operations in connection with removal, disposition and repair of existing structures, complete, in strict accordance with this section of the specifications and applicable drawings.

TP-02 PRE-DEMOLITION ACTIVITIES

TP-02-01 LABORATORIES. The subcontractor shall retain a laboratory(s) to perform required testing on all samples herein. An overview of the laboratory's QA/QC program shall be provided to and approved by Alliant Techsystems prior to the commencement of demolition efforts. Sampling methods, chain of custody and shipping procedures will be inspected by Alliant Techsystems. All data must be of known accuracy and precision and be legally defensible. All sample data must be supplied to Alliant Techsystems upon receipt by the subcontractor.

TP-02-02 CONSTRUCTION OF DECONTAMINATION AREA. The decontamination of the large equipment shall occur in a temporary constructed decontamination area. Located in the open area to the northwest of the western-most SWMU 8. A decontamination area large enough to decontaminate the largest piece of equipment used in the demolition activities shall be graded with at least a 2% slope towards one corner of the area. The area shall be lined with an appropriate plastic liner to prevent infiltration of decontamination water into the soils. The area shall drain into a polyethylene container. Rinsate and other wastes generated during decontamination shall be placed into 55 gallon drums. This proposed decontamination area must be designed so as not to meet the definition of a surface impoundment (40 CFR Pat 260.10). The design and materials of construction shall be submitted to Alliant Techsystems Environmental affairs for review and approval.

TP-02-03 CLEANING ALL LARGE EQUIPMENT PRIOR TO ITS USE ON SITE. Large equipment shall be decontaminated using steam cleaning followed by a potable water rinse. All cleaning shall be done in the Decontamination Area.

TP-02-04 ESTABLISH RUNOFF CONTROL. Runoff controls shall be established to prevent the migration of sediment from the job site. Sediment control design and materials shall be submitted to Alliant Techsystems for review and approval.

TP-02-05 ESTABLISH DUST CONTROL. Fugitive dust emissions shall be controlled by the subcontractor to the extent practicable by wetting down dry soil surfaces.

TP-03 DEMOLITION, TRANSPORT AND DISPOSE OF THE STRUCTURE MATERIAL. The wood and concrete structural material shall be removed. The structural materials shall be tested for hazardous characteristics in accordance with VHWMR. A sample of the wood material will be collected by the subcontractor and submitted to Alliant Techsystems for internal testing. If the structural materials test negative for hazardous characteristics, then the wood shall be disposed at a site no more than five (5) miles in one direction and the concrete material shall be disposed of in an off-site permitted debris landfill. If the structural materials test positive for a hazardous characteristic, then the structural material shall be transported by a permitted hazardous waste transportor to a RCRA approved hazardous waste treatment, storage, or disposal facility. The subcontractor shall comply with all appropriate sections of VHWMR. . The removed materials will be staged in a consolidation area. The consolidation area will be located south and/or west of the eastern-most SWMU 36. The unit will be lined with an appropriate plastic liner (minimum 6 mils thickness) to prevent contamination onto or into the surrounding soils. At the end of each day, the consolidation pile shall be covered with plastic to prevent precipitation, run on runoff from coming in contact with the pile. The design and materials of construction shall be submitted to Alliant for approval.

TP-04 REMOVAL OF SUB-SOIL

TP-04-01 REMOVAL, TRANSPORTATION AND DISPOSAL OF SUB-SOIL
Upon removal of the bedding material the sub-soil will be tested by Alliant Techsystems. The subcontractor shall not operate any equipment in or near the excavation site while the samples are being obtained. The results of the preliminary testing will be available prior to the start of construction activities. In the event that the preliminary testing indicates absence of hazardous constituents, Alliant Techsystems may conduct additional sampling. The results of this sampling will not be available for at least 5 working days after the samples are taken. If the preliminary or secondary sampling indicate the presence of hazardous constituents, excavation shall continue. The sub-soil shall be excavated to 24 inches below nominal grade and thereafter in six inch increments. Each increment shall be deposited in the eastern-most SWMU 36 After the first six inch increment of soil has been removed Alliant Techsystems may test the next increment. This process shall be repeated until background contaminant levels are reached or until Alliant Techsystems directs the subcontractor to suspend or cease operations.

TP-04-02 CESSTION OF OPERATIONS.. In the event that the sub-soil continues to test above background Alliant Techsystems reserves the right to cease operations. If Alliant Techsystems exercises this option the subcontractor shall protect the excavation from precipitation, run-on, and runoff.

TP-04-03 SUSPENSION OF OPERATIONS. In the event Alliant Techsystems elects to proceed using a Risked-Based Closure due to inability to demonstrate clean closure in a reasonable period of time, this subcontract shall be suspended until such time as a risk closure plan is completed.

TP-05 POST CONSTRUCTION ACTIVITIES

TP-05-01 DECONTAMINATE ALL EQUIPMENT USED DURING THE REMOVAL EFFORT. All equipment shall be decontaminated using steam cleaning followed by a potable water rinse.

TP-05-02 DISPOSAL OF ALL DECONTAMINATION LIQUIDS. All decontamination liquids shall be tested by the subcontractor for hazardous characteristics in accordance with VHWMR. If the decontamination liquids test positive for a hazardous characteristic, then the decontamination liquids shall be transported by a permitted hazardous waste transported to a RCRA approved hazardous waste treatment, storage, or disposal facility within three (3) working days of positive analytical results. The subcontractor shall comply with all appropriate sections of VHWMR. . If the decontamination liquid sample tests negative for hazardous characteristics and is acceptable for on site treatment as determined by Alliant Techsystems, then the decontamination liquid may be deposed of on site. Otherwise, the material shall be disposed off site at a permitted Publicly Owned Treatment Works facility.

TP-05-03 REMOVAL OF DECONTAMINATION AREA. The decontamination area's synthetic liner shall be disposed of in accord with the VHWMR and the VSWMR. If the synthetic liner test positive for a hazardous characteristic, then the synthetic liner shall be transported by a permitted hazardous waste transportor to a RCRA approved hazardous waste treatment, storage, or disposal facility. The subcontractor shall comply with all appropriate sections of VHWMR. If the synthetic liner decontamination liquid sample tests negative for hazardous characteristics, then the synthetic liner shall be disposed of in a debris landfill.

TP-05-04 RETURN ALL RFAAP EQUIPMENT AND MATERIALS TO ORIGINAL CONDITION. All RFAAP equipment structures and materials shall be returned to their original condition prior to the completion of the sub-contract excluding all modifications herein.

PART III

SPECIAL PROVISIONS

SP-01. GENERAL RESPONSIBILITIES: The Subcontractor shall furnish adequate protection for all existing facilities. Any damage to building, equipment, facilities or utilities shall be repaired or replaced by the Subcontractor to the satisfaction of and at no additional cost to Alliant .

A. Subcontractor shall keep areas around work sites in a clean and orderly condition. At completion of work, all grounds shall be left in an orderly condition compatible with surrounding surfaces and acceptable to Alliant .

B. In the event of encountering any unknown obstructions or conditions that might interfere with the performance of this Subcontract, the Subcontractor shall notify the Alliant Techsystems Engineer in ample time to prevent unnecessary delay.

C. Subcontractor shall obey Alliant Techsystems traffic regulations at all times and shall not block roadways with equipment, material, or debris unless written permission is given by the Engineer.

D. The Subcontractor shall not operate mobile equipment, which has tracks or cleats, on paved road surfaces unless adequate protection is afforded the pavement. All precautions shall be to the satisfaction of the Engineer.

SP-02. INTERRUPTION OF UTILITIES: Alliant Techsystems will energize and de-energize all utilities and process piping. Subcontractor shall notify the Alliant Techsystems Engineer in writing at least fourteen (14) days prior to proposed shutdown. Alliant Techsystems Engineer will schedule shutdown of services in coordination with operating department.

SP-03. UTILITIES AND SANITARY FACILITIES:

A. The Subcontractor shall provide and maintain adequate electrical service.

B. The Subcontractor's employees shall observe normal sanitary practices during the performance of this Subcontract. Subcontractor shall locate and maintain portable chemical toilets near the job site as approved by the Engineer.

C. Water is available for use as approved by the Engineer. The Subcontractor shall furnish, install, and remove all adapters and hoses needed to use existing utilities.

D. Connections to fire hydrants shall be approved by Alliant Techsystems Fire Department.

E. Alliant Techsystems will not supply steam for this subcontract.

SP-04. SAFETY: The Subcontractor shall train all personnel to be on site in the requirements of this section.

A. General Information:

1. Explosives: These facilities have been used in the manufacture of various propellants. Propellants are sensitive to heat, spark and open flame. Any residual material may present a fire hazard when exposed to heat, spark or open flame. Alliant Techsystems does not in any way warrant that the areas or buildings are entirely free of all propellant contamination and no representation of any kind whatsoever is made that all hazardous materials have been removed, nor shall Alliant Techsystems be liable for any damage to persons or property should any damage be occasioned as a result of any hazardous materials that may not have been removed. The Subcontractor shall be held responsible for making these facts known to all personnel on site during the performance of this work. In the event suspect material is found, stop work in that area immediately and notify the Alliant Techsystems Engineer assigned.

2. Ammonia: Located in the Acid Area of the plant are large quantities of anhydrous ammonia. Ammonia is a colorless gas which in large quantities is extremely toxic and can be lethal. In the event of an ammonia spill, a warning of repeated 3 short blasts will be sounded on the Powerhouse whistle. If this alert is sounded, take note of your location in relation to the Acid Area and the wind direction. (Wind direction can be determined by observing the wind sock atop the AOP Tower in the Acid Area.) Staying upwind of the Acid Area proceed to your designated assembly location and account for all employees and visitors. Remaining up wind and away from the Acid Area, proceed to the nearest exit from the plant. Before exiting the plant, inform Security and the assigned Alliant Techsystems Engineer of your situation. This is necessary for an accounting of all personnel on plant. The MSDS for ammonia will be discussed at the prework meeting and included in the safety information presented to the Subcontractor.

3. Nitric Oxides, Nitrogen Oxides (NO,NO_2): The Acid Area produces and stores large quantities of nitric acid. In abnormal circumstances these operations can discharge nitric and nitrogen oxides which are hazardous materials. In the event a yellowish or orange discharge of fumes is observed emanating from the Acid Area and traveling in the direction of your work site, take note of the wind direction. (Wind direction can be determined by observing the wind sock atop the AOP tower in the Acid Area). Staying upwind of the Acid Area and fume cloud proceed to your designated assembly location or designated alternate assembly location and account for all employees and visitors. Remaining upwind and away from the Acid Area and fume cloud, proceed to the nearest exit from the plant. Some effects

of over exposure can be delayed. Therefore, any exposure shall be reported. Before exiting plant property, inform Security and the assigned Engineer of your personnel situation and location. This is necessary for safety and an accounting of all personnel on plant. The MSDS for nitric and nitrogen oxides will be discussed at the prework meeting and included in the safety information presented to the Subcontractor.

4. Assembly Location: Prior to start of work, an assembly location shall be established. In the event of an incident, all Subcontractor personnel shall immediately proceed to the assigned assembly location. Subcontractor's supervision shall account for all personnel. Any problems or questions shall be presented to the Alliant Techsystems Engineer. If the incident doesn't involve the general area of the work site, and there are no problems, work may resume. If the incident does involve the general area of the work site, the Subcontractor shall report to Security and the Alliant Techsystems Engineer and leave the plant.

B. Reporting Requirements:

1. Subcontractor shall report all injuries incurred on plant within 24 hours of this occurrence.

2. Subcontractor shall provide monthly a copy of the OSHA 200 Log which includes all injuries requiring such reporting.

C. Safety Precautions: The subcontractor shall adhere strictly to the following safety precautions. In addition, the Subcontractor shall assure compliance by all lower-tier subcontractors and visitors on the job site.

1. Subcontractor shall, while on plant site, observe all Alliant Techsystems safety regulations as noted in the booklet "Safety Rules for Contractors and Subcontractors" and all applicable OSHA requirements.

2. Monthly safety meetings shall be conducted for all workers on site. Copies of the minutes and attendance sheets shall be submitted to the Alliant Techsystems Engineer the first week of each month.

3. The Subcontractor will not be permitted to operate any internal combustion engine within, nor permit his employees to work within, fifty feet (50 ft.) of any explosive operating building.

4. The Subcontractor shall exercise necessary safety precautions to provide safe working conditions for his employees, including providing and requiring the use of protective helmets, steel-toed safety shoes, and safety glasses with side shields

5. Under no circumstances shall the Subcontractor allow his employees to enter a building unless the Alliant Techsystems Engineer has given specific permission to do so.

6. No work shall be performed from or with aerial man lifts or other cranes or lifting devices in the vicinity of energized electrical circuits. The Subcontractor shall have Alliant Techsystems de-energize all power circuits in the vicinity as necessary, prior to commencing work.

7. The Subcontractor shall furnish and be responsible for the structural soundness and safe condition of all scaffolding and ladders which might be necessary and are used during the performance of this Subcontract.

8. The Subcontractor will not be allowed to support ladders and scaffolding upon or against any machinery, equipment, or pipes nor upon or against any unsafe or unstable object.

9. An approved safety harness and lifeline shall be used by individuals when performing work on elevated surfaces. Lifeline shall be attached to a fixed object. In lieu of lifelines, other approved OSHA Standards such as scaffolding, ladders, or aerial lifts will be acceptable.

10. Subcontractor personnel shall be HAZWOPER trained in accordance with OSHA. The subcontractor shall submit a health and safety plan at the pre work meeting.

SP-05 INSPECTIONS:

A. Alliant Techsystems reserves the right to have representatives on the job site at all times. It is clearly understood and agreed by the Subcontractor that the presence of the Alliant Techsystems Representatives will in no way relieve the Subcontractor of his responsibility which he assumes by entering into his Subcontract, nor will the presence of such Representatives impose any liability whatsoever on the part of Alliant Techsystems.

B. All work performed shall be subject to inspection by the Alliant Techsystems Facilities Engineering's Representatives. All work not conforming to these specifications and applicable drawings and deemed so by the Alliant Techsystems Engineer shall be removed and replaced by the Subcontractor at no additional cost to Alliant Techsystems.

SP-06. SCHEDULING: The Alliant Techsystems engineer will coordinate work schedule with the operating department and subcontractor's representative. Subcontractor shall provide sufficient men and materials to satisfactorily complete all work within the allotted time.

SP-07. SUBCONTRACTOR SUBMITTALS: Prior to commencing work the Subcontractor shall submit certifications from disposal facilities agreeing to accept the wastes from the project. These certifications may be contingent upon laboratory analysis. Alliant reserves the right to inspect these facilities. The subcontractor shall make all submittals required in these specifications in duplicate to Alliant Techsystems Environmental Affairs. Alliant Techsystems will respond to the submittals with 10 days of receipt of the submittal.

A. Proposed deviation, departures from Subcontract documents, and substitution of cleaning methods shall be submitted in detail to Alliant Techsystems for approval prior to proceeding with work.

B. Subcontractor shall submit Material Safety Data Sheets (MSDS) for all chemicals proposed for use for review and approval prior to start of work.

SP-08. COMPLETENESS OF WORK: The intent of this specification is to secure a first-class, workmanlike job in all respects. Any detail item(s) which may be absent here from but which are essential to the workmanlike construction and completeness are to be considered as essential parts of this Subcontract. The Subcontractor shall be held responsible for materials, labor, equipment, and minor details which may be necessary or required to satisfactorily complete all of the portions of the work contemplated under this Subcontract. None of such items of work or material shall constitute an extra charge against the Government or Alliant Techsystems except as specifically otherwise provided.

SP-9. PREWORK CONFERENCE: The Subcontractor and all the lower tier subcontractors involved in this project shall attend a prework conference to be scheduled by Alliant Techsystems prior to commencing work.

SP-10. TIME OF PERFORMANCE: The Subcontractor shall begin work within seven (5) days of notification to proceed, and complete all work stipulated herein in its entirety within thirty (15) days of starting.

SP-11. SUBCONTRACT LIABILITY: The Subcontractor is liable for any expense incurred by Alliant Techsystems as a result of his failure to abide by the terms of the Subcontract., including leaving the site in a satisfactory condition. The Subcontractor shall be liable for the full amount of damages determined by Alliant Techsystems to have been reassessed by his failure to comply with the provisions of this Subcontract, whether or not such damages are secured by performance security.

Appendix B

PROPOSAL

DATE:_____

To: Alliant Techsystems Incorporated
Radford Army Ammunition Plant
Caller Service 1
Radford, Virginia 24141-0299

Gentlemen:

Having carefully and fully examined the specifications and drawings for the subcontract entitled " Soil Sample Collection, Handling/Custody, Quality Control/Quality Assurance, Transportation, and Analysis", and having visited the work site and examined all visible conditions affecting the work, the undersigned proposes to furnish all labor, tools, equipment, appliances, materials, and to perform all work in accordance with the drawings and specifications for the lump sum of:

_____(____)

The above sum is broken down by units as follows:

Item No.	Description	Total Cost
1.	Initial Mobilization	____
2.	Sub-Soil Sampling	____
3.	Analytical Costs ($_____/ sample)	____
4.	Demobilization	_____
	TOTAL LUMP SUM BID	____

Bidder hereby agrees to furnish more or less of the estimated quantity as directed by Alliant at the unit price shown. Subcontractor shall not exceed the estimated quantity without the approval of Alliant Engineering. To do so without such approval shall be at the Subcontractor's risk.

The undersigned further agrees and understands that each element of work (Total Cost Items) is to reasonably reflect the cost associated with performance of said elements. Alliant at it's option may elect to award a subcontract or alter a subcontract for any combination of elements as deemed necessary by Alliant.

Respectfully submitted.

_____

(Subcontractor's Firm Name)

_____

(Address)

By:_____

Title:_____

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Part I	STATEMENT OF WORK
Part II	TECHNICAL PROVISIONS
Part III	SPECIAL PROVISIONS

SOIL SAMPLE COLLECTION, HANDLING/CUSTODY, QUALITY CONTROL/QUALITY ASSURANCE, TRANSPORTATION, AND ANALYSIS

SPECIFICATIONS

PART I

STATEMENT OF WORK

SW-01 SCOPE OF WORK: The work consists of furnishing all labor, equipment, appliances and materials and performing all operations in connection with Soil Sample Collection, Handling/Custody, Quality Control/Quality Assurance, Transportation, and Analysis for the Soil Characterization of the East Lagoon of Solid Waste Management Unit 8.

SW-02 WORK TO BE PERFORMED AND PRINCIPAL FEATURES: In general, the work to be performed and principal features include but are not limited to the following:

- Random Sampling
  - Sampling Methodology
- Field Quality Control
  - Sample Preservation and Maximum Holding Times
  - Blanks
  - Sampling Equipment Decontamination
  - Sample Handing
    - Sample Custody
    - Sample ID
- Sample Transportation
- Sample Analysis
  - Parameters for Analysis
- Data Validation
- Disposition of Investigation Derived Wastes
- Data Reporting

SW-03 LIMITATION OF PRINCIPAL FEATURES: The principal features shall in no way be interpreted to limit the subcontractor's responsibility in performing a complete job according to these specifications and drawings which are a part thereof.

SW-04 DRAWINGS AND EXHIBITS: The work shall conform to the following drawings and exhibits which are a part of these specifications:

DWG NO	Title
04555	Subcontractor's Job Site and Orientation Map
52465	Site Map - A and B Waste Acid Treatment Facility Settling Lagoons.

SW—05 REFERENCE DOCUMENTS . The reference documents are:

1. Virginia Solid Waste Management Regulations.(VSWMR)
2. Virginia Hazardous Waste Management Regulations.(VHWMR)
3. "Radford Army Ammunition Plant Corrective Action and Incinerator Operation Permit."
4. Master Work Plan, Quality Assurance Plan, Health and Safety Plan; Draft Document, May 1997.
5. Analytical Result Background Soil Samples, Bioplant Equalization Basin Closure Site Investigation/Evaluation Radford Army Ammunition Plant Radford, Virginia.

Items No. 3, 4, and 5 are available for review in Building 220, Radford AAP, at a time established during the pre-bid meeting.

SW-06 PREWARD REQUIREMENTS. The subcontractor shall submit with the bids the name, address, and phone number of the Laboratory, Transportation, and Disposal Facilities that are going to be used for this effort. Alliant reserves the right to inspect these facilities prior to awarding the subcontract.

PART II

TECHNICAL PROVISIONS

Soil Sample Collection. Handling/Custody. Quality Control/Quality Assurance. Transportation. and Analysis

TP-01 SCOPE. The work covered by this section of the specifications consists of furnishing all labor. equipment. appliances and material. and performing all operations in connection with. soil sample collection. handling/custody. Quality Control/Quality Assurance. transportation. and analysis in strict accordance with this section of the specifications and applicable drawings and documents and subject to the terms and conditions of the Subcontract.

TP-02 INTRODUCTION. To show that a waste unit is statistically clean. a testing program is required which carefully and adequately assures quality while minimizing field and lab errors. Inadequate sampling and analysis can lead to incorrect conclusions about a unit. sampling and analyses shall be performed in a methodical and efficient manner to draw appropriate conclusions about the state of the subsoils. The following specifications details the necessary sampling producers and analysis methods that shall be employed to verify clean closure of the soils.

TP-03 RANDOM SAMPLING. The sample grid shall be assembled by field personnel prior to sampling as detailed in figure TP-03.01. wooden stakes or other suitable material shall be used to mark all points along the sampling grid. A minimum of seven soil borings, distributed randomly across the 15 grid nodes shall be advanced to a depth of 24 inches. The seven nodes selected for sampling shall be determined via use of the random number generator. A random approach as describe in SW-846 shall be used to select sampling locations within the grid nodes selected. All seven samples taken shall be analyzed for each of the hazardous constituent of concern specified herein.

The surface samples shall be collected using stainless steel hand corers or direct push corers. The sampling instrument shall be forced down into the soil and then withdrawn. Soil sampling shall be performed in accordance with the representative sampling methods contained in (ASTM Standard D1452-65).

TP-04 SAMPLING METHODOLOGY. Soil boring or Direct Push Methods of obtaining soil samples shall be used to collect soil samples. All sampling activities shall be documented by the appropriate personnel in a field logbook as detailed herein. Drilling activities will be performed by a qualified drilling contractor under the direct supervision of the project manager. Drill cuttings will be visually inspected and screened with all applicable monitoring equipment. Drill cuttings will be containerized in drums and labeled with waterproof markings, date, location, and appropriate depth range of contents. When collecting samples from boreholes, the sample and all sampling equipment are to be placed on polyethylene plastic sheeting to prevent possible cross-contamination from contact with the ground. When the sampler is opened or is extruded onto a clean surface, soil shall immediately screened for VOCs using either a photoinoizaton detector (PID) or flame ionization detector (FIC), as appropriate. The area of highest possible concentration shall be determined and the sample shall be collected from this area with a stainless steel trowel or knife. The remaining sample will be placed in a stainless steel bowl or pan, homogenized with a stainless steel spoon or trowel, then placed in the appropriate sampling containers. The sample shall then be sealed, labeled, documented and persevered as detailed herein. Sampling and down-hole equipment shall be decontaminated between samples as described herein.

TP-04 FIELD QUALITY CONTROL. To ensure the collection of representative samples, the following field quality control procedures shall be utilized during the sampling efforts.

TP-04-01 SAMPLE PRESERVATION AND MAXIMUM HOLDING TIMES. Table TP-04-01.1 provides the maximum holding times for certain inorganic and organic analyses. Although these criteria were specifically designed and tested for water samples, they are also applicable for soil sampling studies (Barth and Mason, 1984).

Table TP-04-01.1 Required Containers and Maximum Holding Times for Soil Samples

Name	Container	Maximum Holding Time
Inorganic Tests: Acidity	P,G	14 days
Alkalinity	P,G	14 days
Ammonia	P,G	28 days
Chemical Oxygen Demand	P	28 days
Cyanide, total and amenable to chlorination	P,G	14 days
Metals: Chromium VI	P,G	24 hours
Mercury	P,G	28 days
Metals, except chromium VI and Mercury	P,G	6 months
Nitrate	P,G	48 hours
Nitrate-nitrite	P,G	28 days
Nitrite	P,G	48 hours
Oil and grease	G	28 days
Organic Carbon	P,G	48 hours
Orthophosphate	P,G	28 days
Phenols	G only	28 days
Phosphorus (elemental	P,G	48 hours
phosphorus, totals	P,G	28 days
Sulfate	P,G	28 days
Sulfide	P,G	7 days
Sulfite	P,G	Analyze immediately
Organic Tests: Volatile Organics	4 ounce, (120 ml) wide mouth glass with Teflon liner	14 days
Semivolatile Organics/ Organochlorine Pesticides/PCBs	8 ounce, wide mouth glass with Teflon Liner	Samples must be extracted within 14 days and extract analyzed

TP-04-02 BLANKS. Table TP-04-02.01 presents a breakdown of the field QA/QC procedures for soil sampling.

Table TP-04-02.01 Field QA/QC Procedures for Soil Samples

Procedure	Comments
Field Blank	Field blanks are metal and or organic free water aliquots that contact sampling equipment under field conditions and are analyzed to detect any contamination from sampling equipment, cross-contamination from previously collected samples, or contamination from conditions during sampling (i.e. airborne contaminates that are not from the waste being sampled). One sample of site tap water shall be collected every day in which tap water is used for decontamination purposes
Duplicate Samples	Field duplicates are employed to document precision. The precision in sample duplicates is a function of the variance of waste composition, the variance of the sampling technique, and the variance of the analytical technique. Duplicate samples should be collected in the field by aliquotting a sample into separate containers. One duplicate sample shall be collected for every twenty samples.
Trip Blanks	Trip blanks are used to detect any contamination or cross-contamination during handling and transportation. Trip blanks should accompany sample container to and from the field. The appropriate trip blank containers should be filled with analyte-free media similar tot he media being sampled. Preservations and additives shall be added as required for each parameter group. Trip blanks should be sealed and stored in an ice chest where real samples shall be stored and transported. A pair of trip blanks shall accompany each cooler containing empty or filled volatile sample containers.
Equipment Blanks	An equipment blank should be prepared for each parameter group sampled where a particular piece of sampling equipment is employed for sample collection and subsequently decontaminated in the field for use in additional sampling. The equipment blank should be composed in the field by collecting, in the appropriate container for the parameter group, a blank water rinse from the equipment (auger, pump tubing, etc.) after execution of the last step of the proper field decontamination protocol. Preservatives or additives must be added to the equipment blank where appropriate for each parameter group. One Equipment Blank shall be taken per day per type of sampling equiment.

TP-04-03 SAMPLING EQUIPMENT DECONTAMINATION. All non-disposable sampling equipment shall be decontaminated between each sample. Those sampling implements which cannot be decontaminated effectively shall be containerized and properly disposed of based on sample analytical results.

The decontamination of sampling equipment (hand auger, scooplula, trowel, etc.) shall be performed as follows and follow the decontamination procedures for sampling equipment.

1. Clean with tap water and a soap solution (A phosphate-free laboratory detergent such as Alconox, Aliquinox, Liquinox shall be used for cleaning) using a brush if necessary to remove particulate and surface films.
2. Rinse thoroughly with Radford's potable water
3. Rinse thoroughly with dinoized water
4. Rinse thoroughly with organic-free water and allow to air dry as long as possible. If organic-free water is not available, allow equipment to air dry as long as possible. Do not rinse with distilled or deionized water.

Large equipment shall be cleaned prior to its use on site. The decontamination of the large sampling equipment shall occur in a temporary constructed decontamination area. A 20-ft X 30 ft area shall be graded with at least a 2% slope towards one corner of the area the area shall be lined with an appropriate plastic liner to prevent infiltration of decontamination water into the soil. The area shall drain into a polyethylene container. Rinsate and other wastes generated during decontamination shall be placed into 55 gallon drums. This proposed decontamination area has been designed so as not to meet the definition of a surface impoundment. Following closure, the large sampling equipment shall be decontaminated using steam cleaning followed by a potable water rinse.

TP-04-04 SAMPLE HANDLING. Each sample jar should be clearly label with an identifying number, the point of sampling as documented on a diagram of the area, the time and date of sample collection, the name of the individual responsible for sample collection, and the parameters for analysis. The sample label shall be covered with clear tape that completely encircles the container. When the sample jars are shipped to the laboratory, a seal shall be placed on the shipping container in such a way that the containers cannot be opened in transport without breaking the seal.

A chain-of-custody record shall be maintained to document the responsibility for sample possession from the time of collection until the analysis is completed. A limit of one chain-of-custody per sample cooler shall be observed at all times.

A field log book shall be maintained. The sample location, the time, date, parameters for analysis, and approximate volume of each sample shall be recorded. The appearance of the sample, the conditions at the time of sampling and any other relevant field observations shall be recorded.

TP-04-04-01 SAMPLE CUSTODY. Sample identification and chain-of-custody establishes the documentation and control required to identify and trace a sample from collection to completion of analysis. Sample identification and chain-of-custody shall be maintained during all sampling activities conducted at Radford Army Ammunition Plant through the following chain-of-custody procedures and documentation:

- Sample labels, which prevent misidentification of samples;
- Custody seals to preserve the integrity of the sample from the time it is collected until it is opened in the laboratory
- Field logbook and picture to record information about sampling activities and sample collection;
- Chain-of-custody record to establish the documentation necessary to trace sample possession from the time of collection to laboratory analysis; and
- Sample analysis request sheet to inform the laboratory of pertinent information noted in the field logbook.

The purpose of these procedures is to ensure that the quality of the sample is maintained during its collection, transportation, storage and analysis. A sample is in custody if is (1) in someone's physical possession or view, (2) locked up, or (3) kept in a secure area that is restricted to authorized personnel. As few persons as possible should handle samples in the field. The sample collector is personally responsible for the care and custody of samples collected until they are transferred to another person.

TP-04-04-02 SAMPLE ID. Identification sample labels shall be attached to the field sample containers. Gummed paper label or tags shall be used. The tags shall contain the following information:

1. Name of collector
2. Date and time of sample collection
3. RAAP-#08-XX-YY-ZZ

   where: RAAP = Site Name
   #08 = Unit Number
   XX = Grid Location Number

YY = Sample Depth (As depth below datum)

ZZ = Specific Code as follows:

01 - Normal Sample

02 - Duplicate Sample

03 - Field Blank

04 - Trip Blank

05 - Equipment Blank

4. Type of sample with brief description (i.e. grab, composite, background, soil, liquid, concrete, bedding material; random, "hot spot', decontamination test, etc.)

Sample information shall be printed on the label in a legible manner using waterproof ink. The identification on the label must be sufficient to enable cross reference with the laboratory logbook. Sample labels shall be affixed to the sample containers prior to the time of sampling. The labels shall be filled out at the time of collection after the label is filled out at placed on the sample container the label shall be covered with clear tape so that the tape completely encircles the sampling container. Custody seals are reprinted adhesive-backed seals with security slots designed to brake if the seals are disturbed. Seals are place on the cap of the individual sample bottle and in as may places as possible on the shipping containers. The seals shall be affixed to the sample bottles and shipping containers before the samples and containers leave the custody of the sampling personnel. The custody seals shall at a minimum contain the following information:

- Sample number
- Name of collector
- Date and time of sampling
- Place of collection

Field logbooks are necessary to provide sufficient data to enable field participants to reconstruct events that occurred during the sampling activities. All pertinent sampling and field survey information shall be recorded in a logbook. All logs shall be kept in a waterproof bound notebook with numbered pages. All entries shall be printed in waterproof ink. No pages shall be removed and corrections shall be made to the side of the error. Entries in the logbook should contain at a minimum the following information:

- Location of sampling point (and location code XX-YY-ZZ as shown above)
- Name and address of field contact

- Type of waste (i.e. soil, sludge, waste water)
- Suspected waste composition, including concentration (i.e. D008)
- Number and volume of samples taken
- Purpose of sampling (i.e. contract number, sampling activity)
- Description of sampling point and sampling methodology
- Data and time collection
- Collector's sample identification number
- Sample distribution and how transported (i.e. name of laboratory, UPS, Fedex)
- Field observations
- Any field measurements made (i.e. pH, conductivity)
- Signature of personnel responsible for observations

A chain-of-custody record shall accompany every sample a limit of one chain-of-custody per shipping container shall be observed. The record should contain the following information:

- Sample number
- Signature of collector
- Date and time of collection
- Place and address of collection
- Waste type
- Signature of persons involved in the chain of possession
- Inclusive dates of possession

A sample analysis request sheet shall accompany the sample on delivery to the laboratory. The person who collects the sample shall complete the field portion of the form. All pertinent information recorded in the field logbook shall also be included on the sample analysis request sheet. The laboratory portions of the form shall be completed by laboratory personnel. The following minimal information shall be recorded:

- Name of person receiving the sample
- Laboratory sample number
- Date and time of sample receipt

- sample allocation Analyses to be performed

All samples shall be delivered to the laboratory as soon as practicable (usually within 1 or 2 days after sampling and samples must always be kept at 4°C). The sample shall be accompanied by a chain-of-custody record and also by a sample analysis request sheet. The sample shall be delivered to the laboratory personnel who is authorized to receive samples.

Samples locations at the Lagoon shall be marked with stakes and surveyed to determine the coordinate and elevation where possible. Once the stake is marked and in place, the area shall be photographed. The stake shall be marked with the appropriate station and/or sample number.

TP-05 SAMPLE TRANSPORTATION. All samples shall either be shipped directly by the sub-contractor or lower-tier laboratory or by overnight delivery service on the same day the samples are collected. Over night delivery service tracking numbers shall be recorded in the field log book. The sub-contractor shall comply with the U.S. Postal Service Regulations, Department of Transportation Regulations and/or the Virginia Regulations Governing Transportation of Hazardous Materials.

TP-06 SAMPLE ANALYSIS. If the sub- contractor bids out part of this contract to lower-tier laboratories, they must submit the name of the company as well as the work to be performed with the bid package for approval. Approval will be at the discretion of Environmental Affairs, Alliant Techsystems.

The laboratory and any lower-tier laboratory shall follow USEPA SW-846 (as updated) analysis guidelines and submit any certification they have received from Federal or State Agencies, including the EPA Contract Lab Program. No bids containing changes to method or detection limit will be accepted. Any changes to method or detection limit by the sub-contractor after award of contract will result in termination of contract, unless approved by Environmental Affairs, Alliant Techsystems.

TP-06-01 PARAMETERS FOR ANALYSIS Each soil sample shall be analyzed in according with Table TP-06-01.01. Analyses shall be performed in accordance with the SW-846 methods and units specified in the attached tables. No Detention Limits greater then the specified Estimated Quanitation Limit (EQL's) will be allowed. Alternate methods may be offered in the bid provided that the EQL's are attained.

Table TP-06-01.01 Required Analysis

	SUGGESTED	REQUIRED EQL

PARAMETER	METHOD	(PPM\)
Acetone	8240	0.1
Acenapthene	8270	.660
Acenaphthylene	8270	.660
Acrolein	8240	0.005
Acrylonitrile	8240	0.005
Anthracene	8310	0.1
Benzene	8240/8260	0.005
Benzo[a]anthracene	8310	0.009
Benzo[b]fluoranthene	8310	0.02
Benzo[k]fluoranthene	8310	0.02
Benzo[a]pyrene	8310	0.02
Bis(2-chloroethoxy)methane	8270	0.3
Bis(2-chloroethyl)ether	8270	0.3
Bis(2-chloroisopropyl)ether	8270	0.3
Bis(2-ethylhexyl)phthalate	8270	0.3
Bromodichloromethane	8240/8260	0.005
Bromoform	8240/8260	0.005
4-Bromophenyl phenyl ether	8270	0.3
Butylbenzylphthalate	8270	0.3
Carbon disulfide	8240	0.005
Carbon tetrachloride	8240	0.005
p-Chloroaniline	8270	0.3
Chlorobenzene	8260/8240	0.005
p-Chloro-m-cresol	8270	0.3
Chloroethane	8240	0.01
Chloroform	8260	0.005
2-Chloronaphthalene	8270	0.3
2-Chlorophenol	8270	0.3
Chrysene	8310	0.02
m-Cresol	8270	0.3
o-Cresol	8270	0.3
p-Cresol	8270	0.3
Dibenz[a,h]anthracene	8310	0.02
Dibenzofuran	8280A	Variable
Di-n-butylphthalate	8270	0.3
o-Dichlorobenzene	8260/8270	0.01
m-Dichlorobenzene	8260/8270	0.005
p-Dichlorobenzene	8260/8270	0.005
3,3'-Dichlorobenzidine	8270	1
Dichlorodifluoromethane	8240/8260	0.005
1,1-Dichloroethane	8240/8260	0.005
1,2-Dichloroethane	8240/8260	0.005
1,1-Dichloroethylene	8240/8260	0.005
trans-1,2-Dichloroethylene	8240/8260	0.005
2,4-Dichlorophenol	8270	0.3
1,2-Dichloropropane	8240/8260	0.005

cis-1,3-Dichloropropane	8240	0.01
trans-1,3-Dichloropropane	8240	0.01
Diethylphthalate	8270	0.3
2,4-Dimethylphenol	8270	0.3
Dimethylphthalate	8270	0.3
4,6-Dinitro-o-cresol	8270	5
2,4-Dinitrophenol	8270	2
Di-n-octylphthalate	8270	0.3
Ethylbenzene	8240/8260	0.005
Fluorene	8270	.660
Fluoranthene	8270	0.3
Hexachlorobenzene	8120	0.03
Hexachlorobutadiene	8120/8260	0.005
Hexachlorocyclopentadiene	8270	0.3
Hexachloroethane	8270	0.3
Indeno[1,2,3-cd]pyrene	8310	0.03
Bromomethane	8240/8260	0.01
Chloromethane	8240/8260	0.01
Methylene chloride	8240	0.005
Methyl ethyl ketone	8240	0.1
Methyl isobutyl ketone	8240	0.1
2-Methylnaphthalene	8270	.660
Naphthalene	8260	0.005
p-Nitroaniline	8270	1
Nitrobenzene	8270	0.3
p-Nitrophenol	8270	3
N-Nitrosodiphenylamine	8270	0.3
N-Nitrosodi-n-propylamine	8270	0.3
Pentachlorophenol	8270	2
Phenanthrene	8310	0.5
Phenol	8270	0.3
Phenolics	9065	.005*
Pyrene	8270	0.3
1,1,1,2-Tetrachloroethane	8240/8260	0.005
1,1,2,2-Tetrachloroethane	8310	0.0001
Tetrachloroethylene	8240/8260	0.005
Toluene	8240/8260	0.005
1,2,4-Trichlorobenzene	8270	0.01
1,1,1-Trichloroethane	8240/8260	0.005
1,1,2-Trichloroethane	8240/8260	0.005
Trichloroethylene	8240/8260	0.005
Trichlorofluoromethane	8240/8260	0.005
2,4,5-Trichlorophenol	8270	2
2,4,6-Trichlorophenol	8270	0.6
Vinyl Chloride	8240	0.01
Xylene (total)	8240/8260	0.005
Total Petroleum Hydrocarbon		

INORGANICS		
Aluminum	6010B	.030
Antimony	6020/7041	20
Arsenic	6020/7060	30
Barium	6020	1
Beryllium	6020	0.2
Cadmium	6020/7131	2
Calcium	6010B	.0067
Chloride	9056	.015*
Chromium	6020/7191	4
Cobalt	6020	.8
Copper	6010B	.0036
Iron	6010B	.0041
Lead	6020/7421	2
Magnesium	6010B	.020
Manganese	6010B	.00093
Mercury	7470	0.1
Nickel	6020	3
Nitrate	9056	.004*
Nitrite	9056	.004*
Nitrogen**		
Phosphate	9056	.061*
Potassium	6010B	1.0
Selenium	6020/7740	40
Silver	6020/7761	4
Sodium	6010B	.019
Sulfate	9056	.206*
Thallium	6020/7870	20
Vanadium	6010B	.05
Zinc	6010B	.02
EXPLOSIVES		
1,3,5 Trinitrobenzene	8330	.25
1,3, Dinitrobenzene	8330	.25
2,4,6 Trinitrotoluene	8330	.25
2,6 Dinitrotoluene	8330	.26
2,4 Dinitrotoluene	8330	.25
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	8330	2.2
Hexahydro-1,3,5-trinitro-1,3,5-triazine	8330	1.0
Methyl-2,4,6-trinitrophenylnitramine	8330	.65
2-Nirtoaniline		

Values are Method Detection Limits in Reagent Water and are for comparison purposes only the bidder will not be expected to achieve these limits in soil samples.

***** Nitrogen is not listed in EPA SW-846 however it is a required Constituent Of Concern. Please suggest a method and Detection Limit. Provide laboratory studies proving that the method is appropriate and the Detection Limit is valid and has been approved by E.P.A.***

TP-07 DATA VALIDATION. An independent review of the data shall be performed by the sub-contractor. Data packages shall be validated to ensure compliance with specified analytical, QA, and data reduction procedres; data reporting requirements; and required accuracy, precision and completeness through the evaluation of the following elements:

- Sample holding times
- GC/MS or GC/ECD Instrument Performance Check
- Initial Calibration
- Continuing Calibration
- Blanks
- Matrix spike and duplicate recoveries
- Surrogate spike recoveries
- Internal standards
- Qualitative Evaluation.

The data validation will be performed in accordance with EPA Region III guidance documents.

TP-08 DEPOSITION OF INVESTIGATION DERIVED WASTES. All wastes generated during the investigation activities shall be managed in accordance with Virginia Department of Environmental Quality Guidance. All soil cuttings additional unused sample, decontamination wastes and Personal Protective Equipment shall be containerized and tested using the Toxicity Characteristic Leachate Procedure (TCLP) to determine weather the waste is a hazardous or solid waste. Since there is a possibility that no further action will be required at SWMU 8 replacement of soil and sediment IDW into the area of contamination from which it is generates is not permissible. If any waste is characterized as a hazardous waste the waste must be handled in accordance with VHWMR. The waste must be transported to a permitted Transport, Storage, and Disposal Facility (TSDF) by a permitted Hazardous Waste Transporter. If the waste is not characterized as a hazardous waste the material musts be transported to a debris landfill for disposal. Any liquid wastes that are not characterized as hazardous maybe disposed of in the Radford Army Ammunitions Plant Industrial Sewer System.

TP-09 DATA REPORTING. Upon completion of the soil assessment sampling, the data shall be tabulated. This report shall included copies of all field log records, all laboratory QA/QC, and Data Validation. The results shall be submitted to Alliant for review.

PART III

SPECIAL PROVISIONS

SP-01. GENERAL RESPONSIBILITIES: The Subcontractor shall furnish adequate protection for all existing facilities. Any damage to building, equipment, facilities or utilities shall be repaired or replaced by the Subcontractor to the satisfaction of and at no additional cost to Alliant .

A. Subcontractor shall keep areas around work sites in a clean and orderly condition. At completion of work, all grounds shall be left in an orderly condition compatible with surrounding surfaces and acceptable to Alliant .

B. In the event of encountering any unknown obstructions or conditions that might interfere with the performance of this Subcontract, the Subcontractor shall notify the Alliant Techsystems Engineer in ample time to prevent unnecessary delay.

C. Subcontractor shall obey Alliant Techsystems traffic regulations at all times and shall not block roadways with equipment, material, or debris unless written permission is given by the Engineer.

D. The Subcontractor shall not operate mobile equipment, which has tracks or cleats, on paved road surfaces unless adequate protection is afforded the pavement. All precautions shall be to the satisfaction of the Engineer.

SP-02. INTERRUPTION OF UTILITIES: Alliant Techsystems shall energize and de-energize all utilities and process piping. Subcontractor shall notify the Alliant Techsystems Engineer in writing at least fourteen (14) days prior to proposed shutdown. Alliant Techsystems Engineer shall schedule shutdown of services in coordination with operating department.

SP-03. UTILITIES AND SANITARY FACILITIES:

A. The Subcontractor shall provide and maintain adequate electrical service.

B. The Subcontractor's employees shall observe normal sanitary practices during the performance of this Subcontract. Subcontractor shall locate and maintain portable chemical toilets near the job site as approved by the Engineer.

C. Water is available for use as approved by the Engineer. The Subcontractor shall furnish, install, and remove all adapters and hoses needed to use existing utilities.

D. Connections to fire hydrants shall be approved by Alliant Techsystems Fire Department.

E. Alliant Techsystems shall not supply steam for this subcontract.

SP-04. SAFETY: The Subcontractor shall train all personnel to be on site in the requirements of this section.

A. General Information:

1. Explosives: These facilities have been used in the manufacture of various propellants. Propellants are sensitive to heat, spark and open flame. Any residual material may present a fire hazard when exposed to heat, spark or open flame. Alliant Techsystems does not in any way warrant that the areas or buildings are entirely free of all propellant contamination and no representation of any kind whatsoever is made that all hazardous materials have been removed, nor shall Alliant Techsystems be liable for any damage to persons or property should any damage be occasioned as a result of any hazardous materials that may not have been removed. The Subcontractor shall be held responsible for making these facts known to all personnel on site during the performance of this work. In the event suspect material is found, stop work in that area immediately and notify the Alliant Techsystems Engineer assigned.

2. Ammonia: Located in the Acid Area of the plant are large quantities of anhydrous ammonia. Ammonia is a colorless gas which in large quantities is extremely toxic and can be lethal. In the event of an ammonia spill, a warning of repeated 3 short blasts shall be sounded on the Powerhouse whistle. If this alert is sounded, take note of your location in relation to the Acid Area and the wind direction. (Wind direction can be determined by observing the wind sock atop the AOP Tower in the Acid Area.) Staying upwind of the Acid Area proceed to your designated assembly location and account for all employees and visitors. Remaining up wind and away from the Acid Area, proceed to the nearest exit from the plant. Before exiting the plant, inform Security and the assigned Alliant Techsystems Engineer of your situation. This is necessary for an accounting of all personnel on plant. The MSDS for ammonia shall be discussed at the prework meeting and included in the safety information presented to the Subcontractor.

3. Nitric Oxides, Nitrogen Oxides (NO,NO_2): The Acid Area produces and stores large quantities of nitric acid. In abnormal circumstances these operations can discharge nitric and nitrogen oxides which are hazardous materials. In the event a yellowish or orange discharge of fumes is observed emanating from the Acid Area and traveling in the direction of your work site, take note of the wind direction. (Wind direction can be determined by observing the wind sock atop the AOP tower in the Acid Area). Staying upwind of the Acid Area and fume cloud proceed to your designated assembly location or designated alternate assembly location and account for all employees and visitors. Remaining upwind and away from the Acid Area and fume cloud, proceed to the nearest exit from the plant. Some effects of over exposure can be delayed. Therefore, any exposure shall be reported. Before exiting plant property, inform Security and the assigned Engineer of your personnel situation and location. This is necessary for safety and an accounting of all personnel on plant. The MSDS for nitric and nitrogen oxides shall be discussed at the prework meeting and included in the safety information presented to the Subcontractor.

4. Assembly Location: Prior to start of work, an assembly location shall be established. In the event of an incident, all Subcontractor personnel shall immediately proceed to the assigned assembly location. Subcontractor's supervision shall account for all personnel. Any problems or questions shall be presented to the Alliant Techsystems Engineer. If the incident doesn't involve the general area of the work site, and there are no problems, work may resume. If the incident does involve the general area of the work site, the Subcontractor shall report to Security and the Alliant Techsystems Engineer and leave the plant.

B. Reporting Requirements:

1. Subcontractor shall report all injuries incurred on plant within 24 hours of this occurrence.

2. Subcontractor shall provide monthly a copy of the OSHA 200 Log which includes all injuries requiring such reporting.

C. Safety Precautions: The subcontractor shall adhere strictly to the following safety precautions. In addition, the Subcontractor shall assure compliance by all lower-tier subcontractors and visitors on the job site.

1. Subcontractor shall, while on plant site, observe all Alliant Techsystems safety regulations as noted in the booklet "Safety Rules for Contractors and Subcontractors" and all applicable OSHA requirements.

2. Monthly safety meetings shall be conducted for all workers on site. Copies of the minutes and attendance sheets shall be submitted to the Alliant Techsystems Engineer the first week of each month.

3. The Subcontractor shall not be permitted to operate any internal combustion engine within, nor permit his employees to work within, fifty feet (50 ft.) of any explosive operating building.

4. The Subcontractor shall exercise necessary safety precautions to provide safe working conditions for his employees, including providing and requiring the use of protective helmets, steel-toed safety shoes, safety glasses with side shields, and flame retardant protective coveralls. In addition, rubber overshoes may be necessary during the washing process.

5. Under no circumstances shall the Subcontractor allow his employees to enter a building unless the Alliant Techsystems Engineer has given specific permission to do so.

6. No work shall be performed from or with aerial man lifts or other cranes or lifting devices in the vicinity of energized electrical circuits. The Subcontractor shall have Alliant Techsystems de-energize all power circuits in the vicinity as necessary, prior to commencing work.

7. The Subcontractor shall furnish and be responsible for the structural soundness and safe condition of all scaffolding and ladders which might be necessary and are used during the performance of this Subcontract.

8. The Subcontractor shall not be allowed to support ladders and scaffolding upon or against any machinery, equipment, or pipes nor upon or against any unsafe or unstable object.

9. An approved safety harness and lifeline shall be used by individuals when performing work on elevated surfaces. Lifeline shall be attached to a fixed object. In lieu of lifelines,

other approved OSHA Standards such as scaffolding, ladders, or aerial lifts shall be acceptable.

10. Subcontractor personnel shall be HAZWOPER trained in accordance with OSHA. The subcontractor shall submit a health and safety plan at the pre work meeting.

SP-05 INSPECTIONS:

A. Alliant Techsystems reserves the right to have representatives on the job site at all times. It is clearly understood and agreed by the Subcontractor that the presence of the Alliant Techsystems Representatives shall in no way relieve the Subcontractor of his responsibility which he assumes by entering into his Subcontract, nor shall the presence of such Representatives impose any liability whatsoever on the part of Alliant Techsystems.

B. All work performed shall be subject to inspection by the Alliant Techsystems Facilities Engineering's Representatives. All work not conforming to these specifications and applicable drawings and deemed so by the Alliant Techsystems Engineer shall be removed and replaced by the Subcontractor at no additional cost to Alliant Techsystems.

SP-06. SCHEDULING: The Alliant Techsystems engineer shall coordinate work schedule with the operating department and subcontractor's representative. Subcontractor shall provide sufficient men and materials to satisfactorily complete all work within the allotted time.

SP-07. SUBCONTRACTOR SUBMITTALS: Prior to commencing work the Subcontractor shall submit certifications from disposal facilities agreeing to accept the wastes from the project. These certifications may be contingent upon laboratory analysis. Alliant reserves the right to inspect these facilities. The subcontractor shall make all submittals required in these specifications in duplicate to Alliant Techsystems Environmental Affairs. Alliant Techsystems shall respond to the submittals with 10 days of receipt of the submittal.

A. Proposed deviation, departures from Subcontract documents, and substitution of cleaning methods shall be submitted in detail to Alliant Techsystems for approval prior to proceeding with work.

B. Subcontractor shall submit Material Safety Data Sheets (MSDS) for all chemicals proposed for use for review and approval prior to start of work.

SP-08. COMPLETENESS OF WORK: The intent of this specification is to secure a first-class, workmanlike job in all respects. Any detail item(s) which may be absent here from but which are essential to the workmanlike construction and completeness are to be considered as essential parts of this Subcontract. The Subcontractor shall be held responsible for materials, labor, equipment, and minor details which may be necessary or required to satisfactorily complete all of the portions of the work contemplated under this Subcontract. None of such items of work or material shall constitute an extra charge against the Government or Alliant Techsystems except as specifically otherwise provided.

SP-10. PREWORK CONFERENCE: The Subcontractor and all the lower tier subcontractors involved in this project shall attend a prework conference to be scheduled by Alliant Techsystems prior to commencing work.

SP-11. TIME OF PERFORMANCE: The Subcontractor shall begin work within thirty (30) days of notification to proceed, and complete all work stipulated herein in its entirety within sixty (60) days of starting.

SP-12. SUBCONTRACT LIABILITY: The Subcontractor is liable for any expense incurred by Alliant Techsystems as a result of his failure to abide by the terms of the Subcontract.. including leaving the site in a satisfactory condition. The Subcontractor shall be liable for the full amount of damages determined by Alliant Techsystems to have been reassessed by his failure to comply with the provisions of this Subcontract, whether or not such damages are secured by performance security.

Appendix C

56

Mr. Arne Olsen

ALLIANT TECHSYSTEMS

-Volume 1 of 6-

Project ID: DAAA09-94-G-0012

Site ID: Radford VA
August 25, 1998

REI Consultants
PO Box 286
Beaver WV 25813
Phone: 1-800-999-0105/FAX: 304-255-2500

Quality Environmental Services

REI Consultants Inc.

Research, Environmental & Industrial Consultants, Inc.

P. O. Box 286 • Beaver, West Virginia 25813 • 1-304-255-2500
1-800-999-0105
FAX 1-304-255-2572

August 25, 1998

Mr. Arne Olsen
Alliant Techsystems
PO Box 1
Radford VA 24141

RE: DAAA09-94-G-0012

Dear Mr. Olsen:

Please find enclosed a Level IV Quality Control Data Package for Alliant Techsystems' Site ID: ***West Settling Lagoon SWMU 8***, of the Radford Army Ammunition Plant located in Radford, Virginia. The soil core samples were collected by REIC's Field Sampling Team on June 15, 1998. Copies of field logs, analytical data, and supporting information are enclosed.

We believe the report is self explanatory with respect to the results, however should you have any questions or need further information please contact me.

Sincerely,

Angela M. Leef
Quality Control Officer/CE

Level IV Enclosure

ALLIANT TECHSYSTEMS

LEVEL IV
QUALITY CONTROL

SITE ID: DAAA09-94-G-0012

Project ID: Radford VA

REIC Job ID: **L61950**

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Case Narrative

Case Narrative:

Alliant Techsystems: DAAA09-94-G-0012

Sampling Procedures/Techniques:

On June 15, 1998, REI Consultants, Inc., collected soil core samples from Alliant Techsystems Site ID: ***West Settling Lagoon SWMU 8*** located at the Radford Army Ammunition Plant, Radford, VA. Seven (7) monitoring points and one (1) duplicate were obtained by means of random selection from the sampling grid and locations relative to GPS (Global Positioning Satellite) reference points provided by Alliant Techsystems (***Figure 1***). Eighteen (18) core subsamples were collected for each selected grid utilizing a stainless steel sample probe and composited into one sample core taken from 0" to 12". A total of seven (7) grids were sampled were collected to be analyzed. Additionally, field quality control samples (field duplicate, field blank, equipment blank, and trip blank) were taken and submitted for analysis.

The samples were received in-house for laboratory analysis June 15, 1998 and subsequently analyzed for the chemical constituents outlined in the list provided by Alliant Techsystems (***Attachment 1***). These samples are identified by ***REIC Job ID: 0698-61950*** and REIC Chain-of-Custody (COC) ID: 63566. A hard copy of the laboratory analyses results was sent to Mr. Olsen of Alliant Techsystems via UPS overnight courier service on July 3, 1998. A copy of these results is provided within the enclosed ***Level IV Quality Control Data Package.***

Sample Receipt:

All samples were received by the Laboratory in good condition and on ice. The

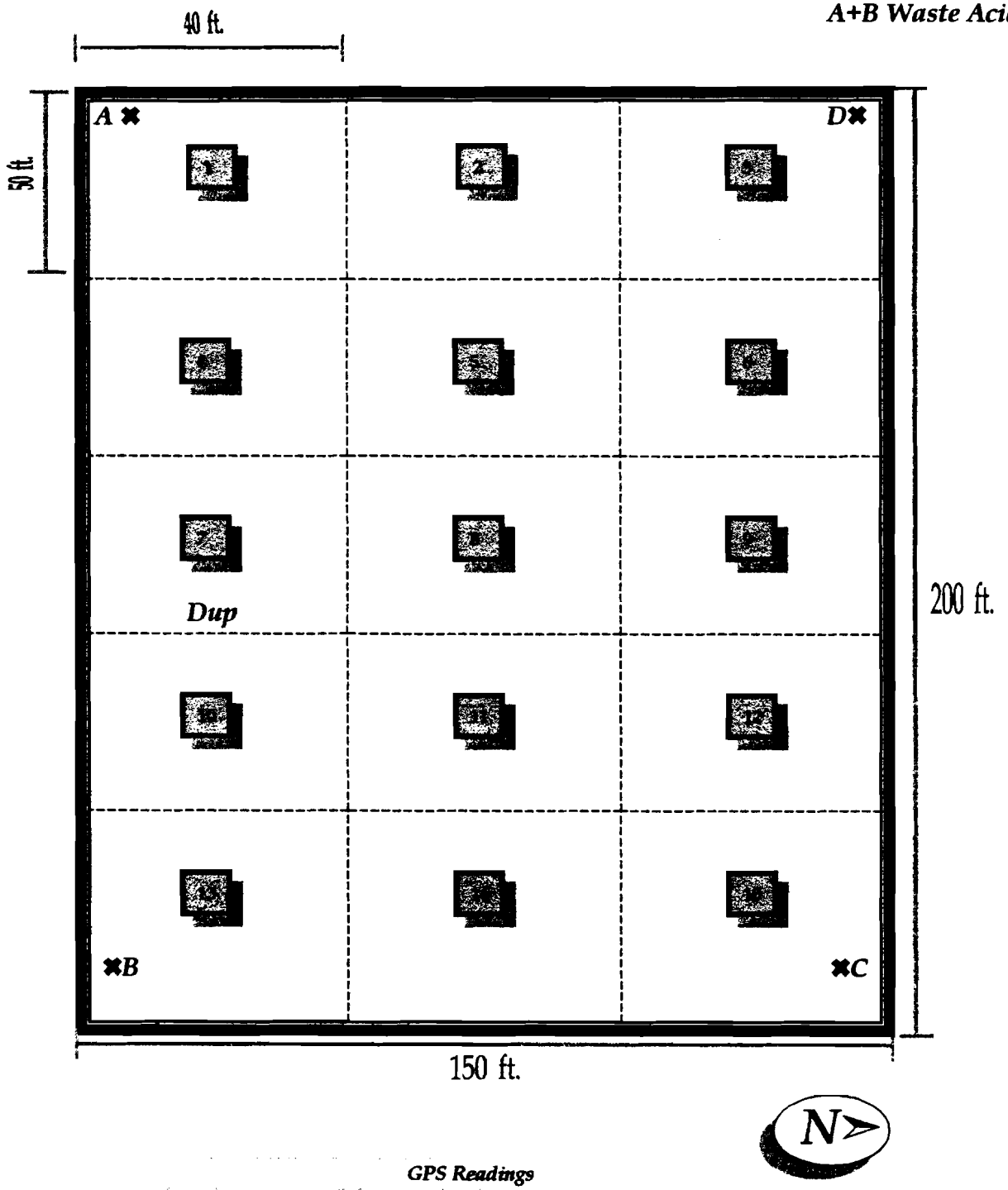
Team (copies of the field logs are enclosed within this data package):

Table 1. Alliant Techsystems Sampling Information	
Sample Designation	**Alliant Sampling Grid**
RAAP - #8 -#1 - 0" - 12" - 01	Grid #1
RAAP - #8 -#4 - 0" - 12" - 01	Grid #4
RAAP - #8 -#7 - 0" - 12" - 01	Grid #7
RAAP - #8 -#7 - 0" - 12" - 02	Grid #7Dup
RAAP - #8 -#13 - 0" - 12" - 01	Grid #13
RAAP - #8 -#5 - 0" - 12" - 01	Grid #5
RAAP - #8 -#15 - 0" - 12" - 01	Grid #15
RAAP - #8 -#9 - 0" - 12" - 01	Grid #9
RAAP - #8 - 03	Field Blank
RAAP - #8 - 05	Equipment Blank
RAAP - #8 - 04	Trip Blank

Figure 1. Alliant Techsystems Sampling Diagram

[4]West Settling Lagoon SWMU 8

A+B Waste Acid



GPS Readings

A=	*N* 37° 11.450'	*W* 80° 31.871'
B=	*N* 37° 11.446'	*W* 80° 31.835'
C=	*N* 37° 11.470'	*W* 80° 31.842'
D=	*N* 37° 11.465'	*W* 80° 31.880'

[1]Basin Dimensions = 200x150feet; 15-grid Dimensions= 50x40feet.

Analytical (Laboratory) Procedures:

The Alliant Techsystems sample cores were analyzed using EPA approved methodologies (SW-846) which are outlined in ***Attachment I.*** All laboratory analyses were reported utilizing the estimated quantitation limits (EQLs) and minimum quantifying limits (MQLs) provided by Alliant Techsystems. The following is a brief description of each method utilized and any problems or anomalies noted during analyses:

1. *Volatile Analyses*

a. **Volatiles by 8260A:** SW846's - ***"Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)"***, was utilized for the analysis eight (8) solid samples and three (3) liquids with no problems or anomalies noted. All results and supporting information are provided within the enclosed ***Level IV Data Package.***

b. **Volatiles TPH-GRO by 8015B:** SW846's- ***"Nonhalogenated Organics Using GC/FID"***, was utilized for the Gasoline Range determinations of Total Petroleum Hydrocarbons (TPH-GRO). Eight (8) solid samples and (2) liquids were analyzed with no problems or anomalies noted.

2. *Semivolatile Analyses*

a. **Semivolatiles TPH-DRO by 8015B:** SW846's- ***"Nonhalogenated Organics Using GC/FID"***, was utilized for the Diesel Range determinations of Total Petroleum Hydrocarbons (TPH-DRO).

Eight (8) solid samples and (2) liquids were analyzed with no problems or anomalies noted.

b. **Semivolatiles by 8330:** SW846's- ***"Nitroaromatics and nitramines by High Performance Liquid Chromatography (HPLC)"***, was utilized for the analyses of eight (8) solid samples and (2) liquids. No problems or anomalies noted.

c. **Semivolatiles by 8120/8121:** SW846's - ***"Chlorinated Hydrocarbons by Gas Chromatography: Capillary Column Technique"***, was utilized for the analysis of eight (8) solid samples and (2) liquids with no problems or anomalies noted.

d. **Semivolatiles by 8270B:** SW846's - ***"Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)"***, was utilized for the analysis of eight (8) solid samples and (2) liquids with no problems or anomalies noted.

e. **Semivolatiles by 8310:** SW846's- ***"Polynuclear Aromatic Hydrocarbons"***, was utilized for the analysis of eight (8) solid samples and (2) liquids with no problems or anomalies noted.

3. *Inorganic Metals Analyses*

The metals analyses were performed utilizing the 6000 and 7000 series

methods as follows:

Metal	Method	Metal	Method
Aluminum	*6010B*	Magnesium	*6010B*
Antimony	*7041*	Manganese	*6010B*
Arsenic	*7060A*	Mercury	*7470A*
Barium	*6010B*	Nickel	*6010B*
Beryllium	*6010B*	Potassium	*6010B*
Cadmium	*7131A*	Selenium	*7740*
Calcium	*6010B*	Silver	*6010B*
Chromium	*6010B*	Sodium	*6010B*
Cobalt	*6010B*	Thallium	*7841*
Copper	*6010B*	Vanadium	*6010B*
Iron	*6010B*	Zinc	*6010B*
Lead	*7420*		

No problems or anomalies were noted during the analysis of these parameters. It should be noted, however, that low level concentrations of zinc were detected in the field and equipment blanks (0.110 and 0.069 mg/L, respectively). The reporting limit for zinc was 0.050 mg/L.

4. *Inorganic Classical Chemistry Analyses*

The classical chemistry analyses performed included the following:

Metal	Method
Chloride	*300*
Nitrite	*300*
Nitrite/Nitrate	*300*
Total Kjeldahl Nitrogen	*351.3*
Phosphorus	*4500-P B_5 & E*
Sulfate	*9056*
Total Phenolic Materials	*9065*

These analyses were performed on eight (8) solid samples and two (2)

liquid samples. No problems or anomalies were noted during analysis and all laboratory QC met the required method/REIC acceptance criteria.

Quality Control (QA/QC) Procedures:

Field quality control *(QC)* included a sample duplicate, equipment blank, field blank, and trip blank. The sample (Alliant Techsystems ID: RAAP-#8-#7-0"-12"-01) and its duplicate (Alliant Techsystems ID: RAAP-#8-#7-0"-12"-02) yielded comparable results during analysis with < 30% RPD (Relative Percent Difference) reported for all analyses. It should be noted that low level concentrations of zinc were detected in the field and equipment blanks (0.110 and 0.069 mg/L, respectively) with a reporting limit for zinc of 0.050 mg/L. The trip blank yielded no volatile organic detections.

Laboratory QC included all method specific Reagent blanks, Calibrations and Calibration Verifications, Duplicates, and Sample Matrix Spikes/Spike Duplicates. The enclosed ***Level IV Data Package*** provides detailed information including all analytical results and supporting documentation. All laboratory QC met the required method/REIC acceptance criteria for this project and was approved for final report generation.

Date: 8-25-98

Angela M. Leef
Quality Control Officer/CE

Attachment I

Alliant Techsystems Requested Analyses

Table TP-06-01.01 Required Analysis

PARAMETER	SUGGESTED METHOD	REQUIRED EQL (PPM\)
Acetone	8240/8260	0.1
Acenapthene	8270	.660
Acenaphthylene	8270	.660
Acrolein	8240/8260	~~0.005~~ x0.020
Acrylonitrile	8240/8260	~~0.005~~ 0.020
Anthracene	8310	0.1
Benzene	8240/8260	0.005
Benzo[a]anthracene	8310	0.009
Benzo[b]fluoranthene	8310	0.02
Benzo[k]fluoranthene	8310	0.02
Benzo[a]pyrene	8310	0.02
Bis(2-chloroethoxy)methane	8270	0.3
Bis(2-chloroethyl)ether	8270	0.3
Bis(2-chloroisopropyl)ether	8270	0.3
Bis(2-ethylhexyl)phthalate	8270	0.3
Bromodichloromethane	8240/8260	0.005
Bromoform	8240/8260	0.005
4-Bromophenyl phenyl ether	8270	0.3
Butylbenzylphthalate	8270	0.3
Carbon disulfide	8240/8260	0.005
Carbon tetrachloride	8240/8260	0.005
p-Chloroaniline	8270	0.3
Chlorobenzene	8260/8240	0.005
p-Chloro-m-cresol	8270	0.3
Chloroethane	8240/8260	0.01
Chloroform	8260	0.005
2-Chloronaphthalene	8270	0.3
2-Chlorophenol	8270	0.3
Chrysene	8310	0.02
m-Cresol	8270	0.3
o-Cresol	8270	0.3
p-Cresol	8270	0.3
Dibenz[a,h]anthracene	8310	0.02
Dibenzofuran we perfer	~~8280~~x8270	~~Variable~~x0.3
Di-n-butylphthalate	8270	0.3
o-Dichlorobenzene	8260/~~8270~~x	0.01
m-Dichlorobenzene	8260/~~8270~~x	0.005
p-Dichlorobenzene	8260/~~8270~~x	0.005
3,3'-Dichlorobenzidine	8270	1
Dichlorodifluoromethane	8240/8260	0.005
1,1-Dichloroethane	8240/8260	0.005
1,2-Dichloroethane	8240/8260	0.005
1,1-Dichloroethylene	8240/8260	0.005

619550

trans-1,2-Dichloroethylene	8240/8260	0.005
2,4-Dichlorophenol	8270	0.3
1,2-Dichloropropane	8240/8260	0.005
cis-1,3-Dichloropropane	8240/8260	0.01
trans-1,3-Dichloropropane	8240/8260	0.01
Diethylphthalate	8270	0.3
2,4-Dimethylphenol	8270	0.3
Dimethylphthalate	8270	0.3
4,6-Dinitro-o-cresol	8270	5
2,4-Dinitrophenol	8270	2
Di-n-octylphthalate	8270	0.3
Ethylbenzene	8240/8260	0.005
Fluorene	8270	.660
Fluoranthene	8270	0.3
Hexachlorobenzene	8120	0.03
Hexachlorobutadiene	8120/8260	0.005
Hexachlorocyclopentadiene	8270	0.3
Hexachloroethane	8270	0.3
Indeno[1,2,3-cd]pyrene	8310	0.03
Bromomethane	8240/8260	0.01
Chloromethane	8240/8260	0.01
Methylene chloride	8240/8260	0.005
Methyl ethyl ketone	8240/8260	0.1
Methyl isobutyl ketone	8240/8260	0.1
2-Methylnaphthalene	8270	.660
Naphthalene	8260	0.005
p-Nitroaniline	8270	1
Nitrobenzene	8270	0.3
p-Nitrophenol	8270	3
N-Nitrosodiphenylamine	8270	0.3
N-Nitrosodi-n-propylamine	8270	0.3
Pentachlorophenol	8270	2
Phenanthrene	8310x 8270	0.5x 0.3
Phenol	8270	0.3
Phenolics	9065	.005*
Pyrene	8270	0.3
1,1,1,2-Tetrachloroethane	8240/8260	0.005
1,1,2,2-Tetrachloroethane	8310 8260	0.0001x 0.005
Tetrachloroethylene	8240/8260	0.005
Toluene	8240/8260	0.005
1,2,4-Trichlorobenzene	8270 8260	0.01
1,1,1-Trichloroethane	8240/8260	0.005
1,1,2-Trichloroethane	8240/8260	0.005
Trichloroethylene	8240/8260	0.005
Trichlorofluoromethane	8240/8260	0.005
2,4,5-Trichlorophenol	8270	2
2,4,6-Trichlorophenol	8270	0.6
Vinyl Chloride	8240/8270	0.01

Xylene (total)	8240/8260	0.005
Total Petroleum Hydrocarbon	*8015B GRO/DRO	GRO 0.5/DRO 0.1
INORGANICS		
Aluminum	6010B	.030
Antimony	6020/7041	20
Arsenic	6020/7060	30
Barium	6020	1
Beryllium	6020	0.2
Cadmium	6020/7131	2
Calcium	6010B	.0067
Chloride	9056	.015*
Chromium	6020/7191	4
Cobalt	6020	.8
Copper	6010B	.0036
Iron	6010B	.0041
Lead	6020/7421	2
Magnesium	6010B	.020
Manganese	6010B	.00093
Mercury	7470	0.1
Nickel	6020	3
Nitrate	9056	.004*
Nitrite	9056	.004*
Nitrogen**		
Phosphate	9056	.061*
Potassium	6010B	1.0
Selenium	6020/7740	40
Silver	6020/7761	4
Sodium	6010B	.019
Sulfate	9056	.206*
Thallium	6020/7870	20
Vanadium	6010B	.05
Zinc	6010B	.02
EXPLOSIVES		
1,3,5 Trinitrobenzene	8330	.25
1,3, Dinitrobenzene	8330	.25
2,4,6 Trinitrotoluene	8330	.25
2,6 Dinitrotoluene	8330	.26
2,4 Dinitrotoluene	8330	.25
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	8330	2.2
Hexahydro-1,3,5-trinitro-1,3,5-triazine	8330	1.0
Methyl-2,4,6-trinitrophenylnitramine	8330	.65
2-Nirtoaniline (2-Nitroaniline	8270	0.3

**Values are Method Detection Limits in Reagent Water and are for comparison purposes only the bidder will not be expected to achieve these limits in soil samples.*

Analytical Results

Quality Environmental Services

REI Consultants Inc.

Research, Environmental & Industrial Consultants, Inc.

P. O. Box 286 • Beaver, West Virginia 25813 • 1-304-255-2500
1-800-999-0105
FAX 1-304-255-2572

July 1, 1998

Mr. Arne Olson
Alliant Techsystems
P O Box 1
Radford VA 24141

RE: REIC Job #: 0698-61950

Dear Mr. Olson:

Please find enclosed your analysis report for the samples submitted to our laboratory on June 15, 1998. Please note that the samples are identified as follows:

Site ID:	Radford VA
Project ID:	DAAA09-94-G-0012
Custody No.:	63566

Please do not hesitate to call if you have any questions.

Thank you.

Sincerely,

Ray Erickson

Ray Erickson
Vice President
REI Consultants, Inc.

enclosure
RE/kl

1

ALLIANT TECHSYSTEMS
P O BOX 1
RADFORD VA 24141

REIC JOB #: 0698-61950
SITE ID: RADFORD VA
PROJECT ID: DAAA09-94-G-0012
CUSTODY NO.: 63566

Prepared By:
REI Consultants, Inc.
P O Box 286
Beaver WV 25813

Phone: 304-255-2500
800-999-0105
Fax: 304-255-2572

ALLIANT SAMPLE #: RAAP-#8-#1-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-1 **MATRIX:** SOLID
MOISTURE: 31%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-21-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-21-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-21-98/TC
benzene	ND	mg/kg	8260A	0.005	06-21-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-21-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-21-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-21-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-21-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#1-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-1 **MATRIX:** SOLID
MOISTURE: 31%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-21-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-21-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
toluene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-21-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	104
toluene-d8	97
4-bromofluorobenzene	88

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#1-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-1 **MATRIX:** SOLID
MOISTURE: 31%

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	36
phenol-d6	105
2,4,6-tribromophenol	61

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#1-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-1 **MATRIX:** SOLID
MOISTURE: 31%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	0.7	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#1-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-1**	**MATRIX:**	**SOLID**
		MOISTURE:	**31%**

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	ND	mg/kg	8270B	0.3	06-[illegible]98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	49
2-fluorobiphenyl	58
p-terphenyl-d14	53

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#1-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-1**	**MATRIX:**	**SOLID**
		MOISTURE:	**31%**

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/kg	8310	0.02	06-30-98/WP
chrysene	0.02	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#1-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-1**	**MATRIX:**	**SOLID**
		MOISTURE:	**31%**

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	76

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#1-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-1**	**MATRIX:**	**SOLID**
		MOISTURE:	**31%**

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	70

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#1-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-1 **MATRIX:** SOLID
MOISTURE: 31%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	20500	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	2.72	mg/kg	7060A	2.50	06-23-98/MY
barium	48.3	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.40	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.062	mg/kg	7131A	0.050	06-18-98/MY
calcium	12700	mg/kg	6010B	2.50	06-29-98/KC
chromium	25.2	mg/kg	6010B	2.50	06-24-98/KC
cobalt	4.22	mg/kg	6010B	2.50	06-25-98/KC
copper	12.7	mg/kg	6010B	2.50	06-25-98/KC
iron	24200	mg/kg	6010B	2.50	06-24-98/KC
lead	18.4	mg/kg	7420	5.00	06-26-98/KC
magnesium	3530	mg/kg	6010B	2.50	06-29-98/KC
manganese	246	mg/kg	6010B	1.25	06-25-98/KC
mercury	ND	mg/kg	7470A	0.10	06-18-98/MY
nickel	10.8	mg/kg	6010B	2.50	06-25-98/KC
potassium	793	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	81.1	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	32.4	mg/kg	6010B	1.25	06-26-98/KC
zinc	34.5	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#1-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-1 **MATRIX:** SOLID
MOISTURE: 31%

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	23.9	mg/kg	9056	10.0	06-26-98/DM
nitrate	9.24	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	424	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	ND	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	4790	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	0.240	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-21-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-21-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-21-98/TC
benzene	ND	mg/kg	8260A	0.005	06-21-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-21-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-21-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-21-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-21-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-21-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-21-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
toluene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-21-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	103
toluene-d8	99
4-bromofluorobenzene	93

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	34
phenol-d6	103
2,4,6-tribromophenol	67

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	1.3	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	46
2-fluorobiphenyl	55
p-terphenyl-d14	64

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	0.3	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	0.027	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	0.05	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	0.04	mg/kg	8310	0.02	06-30-98/WP
chrysene	0.06	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	72

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	62

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	10300	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	3.40	mg/kg	7060A	2.50	06-23-98/MY
barium	49.8	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.42	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.100	mg/kg	7131A	0.050	06-18-98/MY
calcium	23500	mg/kg	6010B	2.50	06-29-98/KC
chromium	32.2	mg/kg	6010B	2.50	06-24-98/KC
cobalt	5.08	mg/kg	6010B	2.50	06-25-98/KC
copper	15.4	mg/kg	6010B	2.50	06-25-98/KC
iron	18500	mg/kg	6010B	2.50	06-24-98/KC
lead	28.1	mg/kg	7420	5.00	06-26-98/KC
magnesium	5490	mg/kg	6010B	2.50	06-29-98/KC
manganese	284	mg/kg	6010B	1.25	06-25-98/KC
mercury	ND	mg/kg	7470A	0.10	06-18-98/MY
nickel	16.2	mg/kg	6010B	2.50	06-25-98/KC
potassium	822	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	97.6	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	21.5	mg/kg	6010B	1.25	06-26-98/KC
zinc	38.5	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#4-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-2 **MATRIX:** SOLID
MOISTURE: 37%

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	23.0	mg/kg	9056	10.0	06-26-98/DM
nitrate	9.81	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	389	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	0.54	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	7530	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	0.325	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-23-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-23-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-23-98/TC
benzene	ND	mg/kg	8260A	0.005	06-23-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-23-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-23-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-23-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-23-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-23-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-23-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-23-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-23-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-23-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-23-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-23-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-23-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-23-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-23-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-23-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
toluene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-23-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-23-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	104
toluene-d8	97
4-bromofluorobenzene	88

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	30
phenol-d6	96
2,4,6-tribromophenol	83

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	0.4	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	0.3	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	43
2-fluorobiphenyl	54
p-terphenyl-d14	65

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#7-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-3**	**MATRIX:**	**SOLID**
		MOISTURE:	**46%**

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/kg	8310	0.02	06-30-98/WP
chrysene	ND	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#7-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-3**	**MATRIX:**	**SOLID**
		MOISTURE:	**46%**

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	68

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	73

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	10100	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	2.55	mg/kg	7060A	2.50	06-23-98/MY
barium	40.4	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.42	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.125	mg/kg	7131A	0.050	06-18-98/MY
calcium	13200	mg/kg	6010B	2.50	06-29-98/KC
chromium	32.1	mg/kg	6010B	2.50	06-24-98/KC
cobalt	6.52	mg/kg	6010B	2.50	06-25-98/KC
copper	21.2	mg/kg	6010B	2.50	06-25-98/KC
iron	15700	mg/kg	6010B	2.50	06-24-98/KC
lead	32.3	mg/kg	7420	5.00	06-26-98/KC
magnesium	4270	mg/kg	6010B	2.50	06-29-98/KC
manganese	262	mg/kg	6010B	1.25	06-25-98/KC
mercury	ND	mg/kg	7470A	0.10	06-18-98/MY
nickel	15.2	mg/kg	6010B	2.50	06-25-98/KC
potassium	754	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	72.7	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	21.4	mg/kg	6010B	1.25	06-26-98/KC
zinc	41.2	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-3 **MATRIX:** SOLID
MOISTURE: 46%

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	18.6	mg/kg	9056	10.0	06-26-98/DM
nitrate	12.5	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	458	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	0.56	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	3480	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	ND	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-21-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-21-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-21-98/TC
benzene	ND	mg/kg	8260A	0.005	06-21-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-21-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-21-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-21-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-21-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-21-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-21-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
toluene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-21-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	101
toluene-d8	98
4-bromofluorobenzene	90

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	29
phenol-d6	94
2,4,6-tribromophenol	82

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	0.5	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#7-0"-12"02**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-4**	**MATRIX:**	**SOLID**
		MOISTURE:	**45%**

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	0.6	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	40
2-fluorobiphenyl	49
p-terphenyl-d14	58

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/kg	8310	0.02	06-30-98/WP
chrysene	ND	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	85

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	69

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	9850	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	2.88	mg/kg	7060A	2.50	06-23-98/MY
barium	38.3	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.45	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.125	mg/kg	7131A	0.050	06-18-98/MY
calcium	15100	mg/kg	6010B	2.50	06-29-98/KC
chromium	32.4	mg/kg	6010B	2.50	06-24-98/KC
cobalt	6.40	mg/kg	6010B	2.50	06-25-98/KC
copper	18.6	mg/kg	6010B	2.50	06-25-98/KC
iron	17000	mg/kg	6010B	2.50	06-24-98/KC
lead	32.9	mg/kg	7420	5.00	06-26-98/KC
magnesium	3960	mg/kg	6010B	2.50	06-29-98/KC
manganese	264	mg/kg	6010B	1.25	06-25-98/KC
mercury	ND	mg/kg	7470A	0.10	06-18-98/MY
nickel	14.4	mg/kg	6010B	2.50	06-25-98/KC
potassium	817	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	82.0	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	23.0	mg/kg	6010B	1.25	06-26-98/KC
zinc	43.8	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#7-0"-12"02 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-4 **MATRIX:** SOLID
MOISTURE: 45%

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	17.7	mg/kg	9056	10.0	06-26-98/DM
nitrate	12.2	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	447	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	0.51	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	2600	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	ND	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#13-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-5 **MATRIX:** SOLID
MOISTURE: 50%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-23-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-23-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-23-98/TC
benzene	ND	mg/kg	8260A	0.005	06-23-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-23-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-23-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-23-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-23-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-23-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-23-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-23-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-23-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-23-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-23-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#13-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-5 **MATRIX:** SOLID
MOISTURE: 50%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-23-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-23-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-23-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-23-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-23-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
toluene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-23-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-23-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	96
toluene-d8	93
4-bromofluorobenzene	*78

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
* - Surrogate recovery exceeds REIC control limits limits due to sample matrix interference.

ALLIANT SAMPLE #: RAAP-#8-#13-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-5 **MATRIX:** SOLID
MOISTURE: 50%

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	42
phenol-d6	105
2,4,6-tribromophenol	88

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#13-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-5 **MATRIX:** SOLID
MOISTURE: 50%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	0.4	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	0.4	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#13-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-5**	**MATRIX:**	**SOLID**
		MOISTURE:	**50%**

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	0.6	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	53
2-fluorobiphenyl	58
p-terphenyl-d14	63

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#13-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-5 **MATRIX:** SOLID
MOISTURE: 50%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/kg	8310	0.02	06-30-98/WP
chrysene	ND	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#13-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-5**	**MATRIX:**	**SOLID**
		MOISTURE:	**50%**

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	80

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#13-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-5 **MATRIX:** SOLID
MOISTURE: 50%

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	72

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#13-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-5 **MATRIX:** SOLID
MOISTURE: 50%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	10000	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	3.15	mg/kg	7060A	2.50	06-23-98/MY
barium	38.8	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.50	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.142	mg/kg	7131A	0.050	06-18-98/MY
calcium	11400	mg/kg	6010B	2.50	06-29-98/KC
chromium	41.8	mg/kg	6010B	2.50	06-24-98/KC
cobalt	5.20	mg/kg	6010B	2.50	06-25-98/KC
copper	23.0	mg/kg	6010B	2.50	06-25-98/KC
iron	14900	mg/kg	6010B	2.50	06-24-98/KC
lead	29.3	mg/kg	7420	5.00	06-26-98/KC
magnesium	4140	mg/kg	6010B	2.50	06-29-98/KC
manganese	222	mg/kg	6010B	1.25	06-25-98/KC
mercury	0.12	mg/kg	7470A	0.10	06-18-98/MY
nickel	15.9	mg/kg	6010B	2.50	06-25-98/KC
potassium	846	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	74.2	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	19.9	mg/kg	6010B	1.25	06-26-98/KC
zinc	52.8	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #:	**RAAP-#8-#13-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-5**	**MATRIX:**	**SOLID**
		MOISTURE:	**50%**

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	20.2	mg/kg	9056	10.0	06-26-98/DM
nitrate	7.28	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	428	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	0.54	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	4600	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	ND	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#5-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-6 **MATRIX:** SOLID
MOISTURE: 40%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-23-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-23-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-23-98/TC
benzene	ND	mg/kg	8260A	0.005	06-23-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-23-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-23-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-23-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-23-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-23-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-23-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-23-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-23-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-23-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-23-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-23-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#5-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-6 **MATRIX:** SOLID
MOISTURE: 40%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-23-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-23-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-23-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-23-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-23-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
toluene	ND	mg/kg	8260A	0.005	06-23-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-23-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-23-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-23-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-23-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-23-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	109
toluene-d8	94
4-bromofluorobenzene	84

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#5-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-6**	**MATRIX:**	**SOLID**
		MOISTURE:	**40%**

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	46
phenol-d6	110
2,4,6-tribromophenol	95

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#5-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-6 **MATRIX:** SOLID
MOISTURE: 40%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	0.5	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#5-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-6 **MATRIX:** SOLID
MOISTURE: 40%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	0.5	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	62
2-fluorobiphenyl	64
p-terphenyl-d14	68

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#5-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-6 **MATRIX:** SOLID
MOISTURE: 40%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	0.010	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	0.03	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	0.04	mg/kg	8310	0.02	06-30-98/WP
chrysene	0.04	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#5-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-6 **MATRIX:** SOLID
MOISTURE: 40%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	66

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#5-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-6**	**MATRIX:**	**SOLID**
		MOISTURE:	**40%**

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	63

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#5-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-6 **MATRIX:** SOLID
MOISTURE: 40%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	13800	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	3.00	mg/kg	7060A	2.50	06-23-98/MY
barium	44.5	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.42	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.110	mg/kg	7131A	0.050	06-18-98/MY
calcium	20800	mg/kg	6010B	2.50	06-29-98/KC
chromium	35.7	mg/kg	6010B	2.50	06-24-98/KC
cobalt	4.78	mg/kg	6010B	2.50	06-25-98/KC
copper	17.9	mg/kg	6010B	2.50	06-25-98/KC
iron	19400	mg/kg	6010B	2.50	06-24-98/KC
lead	40.6	mg/kg	7420	5.00	06-26-98/KC
magnesium	2660	mg/kg	6010B	2.50	06-29-98/KC
manganese	276	mg/kg	6010B	1.25	06-25-98/KC
mercury	0.14	mg/kg	7470A	0.10	06-18-98/MY
nickel	12.0	mg/kg	6010B	2.50	06-25-98/KC
potassium	521	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	95.9	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	21.3	mg/kg	6010B	1.25	06-26-98/KC
zinc	49.4	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #:	**RAAP-#8-#5-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-6**	**MATRIX:**	**SOLID**
		MOISTURE:	**40%**

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	37.0	mg/kg	9056	10.0	06-26-98/DM
nitrate	3.67	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	536	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	ND	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	12600	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	ND	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-21-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-21-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-21-98/TC
benzene	ND	mg/kg	8260A	0.005	06-21-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-21-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-21-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-21-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-21-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-21-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-21-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
toluene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-21-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	108
toluene-d8	99
4-bromofluorobenzene	94

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#15-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-7**	**MATRIX:**	**SOLID**
		MOISTURE:	**33%**

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	49
phenol-d6	104
2,4,6-tribromophenol	96

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	0.5	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	57
2-fluorobiphenyl	61
p-terphenyl-d14	70

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/kg	8310	0.02	06-30-98/WP
chrysene	ND	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#15-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-7**	**MATRIX:**	**SOLID**
		MOISTURE:	**33%**

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	54

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	73

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	9940	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	ND	mg/kg	7060A	2.50	06-23-98/MY
barium	90.1	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.70	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.145	mg/kg	7131A	0.050	06-18-98/MY
calcium	3750	mg/kg	6010B	2.50	06-29-98/KC
chromium	20.9	mg/kg	6010B	2.50	06-24-98/KC
cobalt	7.72	mg/kg	6010B	2.50	06-25-98/KC
copper	11.2	mg/kg	6010B	2.50	06-25-98/KC
iron	17700	mg/kg	6010B	2.50	06-24-98/KC
lead	19.5	mg/kg	7420	5.00	06-26-98/KC
magnesium	2510	mg/kg	6010B	2.50	06-29-98/KC
manganese	421	mg/kg	6010B	1.25	06-25-98/KC
mercury	ND	mg/kg	7470A	0.10	06-18-98/MY
nickel	12.8	mg/kg	6010B	2.50	06-25-98/KC
potassium	651	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	59.8	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	22.1	mg/kg	6010B	1.25	06-26-98/KC
zinc	60.0	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#15-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-7 **MATRIX:** SOLID
MOISTURE: 33%

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	10.9	mg/kg	9056	10.0	06-26-98/DM
nitrate	1.29	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	497	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	1.18	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	296	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	ND	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/kg	8260A	0.1	06-21-98/TC
acrolein	ND	mg/kg	8260A	0.020	06-21-98/TC
acrylonitrile	ND	mg/kg	8260A	0.020	06-21-98/TC
benzene	ND	mg/kg	8260A	0.005	06-21-98/TC
bromodichloromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
bromoform	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon disulfide	ND	mg/kg	8260A	0.005	06-21-98/TC
carbon tetrachloride	ND	mg/kg	8260A	0.005	06-21-98/TC
chlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
chloroethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloroform	ND	mg/kg	8260A	0.005	06-21-98/TC
o-dichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
m-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
p-dichlorobenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
dichlorodifluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trans-1,2-dichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2-dichloropropane	ND	mg/kg	8260A	0.005	06-21-98/TC
cis-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
trans-1,3-dichloropropane	ND	mg/kg	8260A	0.01	06-21-98/TC
ethylbenzene	ND	mg/kg	8260A	0.005	06-21-98/TC
hexachlorobutadiene	ND	mg/kg	8260A	0.005	06-21-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/kg	8260A	0.01	06-21-98/TC
chloromethane	ND	mg/kg	8260A	0.01	06-21-98/TC
methylene chloride	ND	mg/kg	8260A	0.005	06-21-98/TC
methyl ethyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
methyl isobutyl ketone	ND	mg/kg	8260A	0.1	06-21-98/TC
naphthalene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,1,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2,2-tetrachloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
tetrachloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
toluene	ND	mg/kg	8260A	0.005	06-21-98/TC
1,2,4-trichlorobenzene	ND	mg/kg	8260A	0.01	06-21-98/TC
1,1,1-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
1,1,2-trichloroethane	ND	mg/kg	8260A	0.005	06-21-98/TC
trichloroethylene	ND	mg/kg	8260A	0.005	06-21-98/TC
trichlorofluoromethane	ND	mg/kg	8260A	0.005	06-21-98/TC
xylene (total)	ND	mg/kg	8260A	0.005	06-21-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	102
toluene-d8	99
4-bromofluorobenzene	94

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/kg	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/kg	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/kg	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
phenol	ND	mg/kg	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/kg	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/kg	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	37
phenol-d6	109
2,4,6-tribromophenol	93

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/kg	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/kg	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/kg	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	0.3	mg/kg	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/kg	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/kg	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/kg	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/kg	8270B	0.3	06-29-98/WP
fluorene	ND	mg/kg	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/kg	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/kg	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/kg	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/kg	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/kg	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/kg	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/kg	8270B	0.3	06-29-98/WP
pyrene	ND	mg/kg	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/kg	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	47
2-fluorobiphenyl	54
p-terphenyl-d14	69

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/kg	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/kg	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/kg	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/kg	8310	0.02	06-30-98/WP
chrysene	ND	mg/kg	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/kg	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/kg	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#9-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-8**	**MATRIX:**	**SOLID**
		MOISTURE:	**28%**

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/kg	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/kg	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/kg	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/kg	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/kg	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/kg	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	mg/kg	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	62

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #:	**RAAP-#8-#9-0"-12"01**	**DATE SAMPLED:**	**06-15-98**
REIC SAMPLE #:	**61950-8**	**MATRIX:**	**SOLID**
		MOISTURE:	**28%**

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/kg	8015B-DRO	4.0	06-26-98/JR

Surrogate	% Recovery
o-terphenyl	71

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	10500	mg/kg	6010B	2.50	06-24-98/KC
antimony	ND	mg/kg	7041	0.50	06-25-98/MY
arsenic	ND	mg/kg	7060A	2.50	06-23-98/MY
barium	110	mg/kg	6010B	2.50	06-24-98/KC
beryllium	0.68	mg/kg	6010B	0.20	06-25-98/KC
cadmium	0.090	mg/kg	7131A	0.050	06-18-98/MY
calcium	2550	mg/kg	6010B	2.50	06-29-98/KC
chromium	19.0	mg/kg	6010B	2.50	06-24-98/KC
cobalt	7.30	mg/kg	6010B	2.50	06-25-98/KC
copper	8.02	mg/kg	6010B	2.50	06-25-98/KC
iron	19300	mg/kg	6010B	2.50	06-24-98/KC
lead	11.8	mg/kg	7420	5.00	06-26-98/KC
magnesium	2500	mg/kg	6010B	2.50	06-29-98/KC
manganese	398	mg/kg	6010B	1.25	06-25-98/KC
mercury	ND	mg/kg	7470A	0.10	06-18-98/MY
nickel	12.8	mg/kg	6010B	2.50	06-25-98/KC
potassium	647	mg/kg	6010A	2.50	06-29-98/KC
selenium	ND	mg/kg	7740	5.00	06-24-98/MY
silver	ND	mg/kg	6010B	1.25	06-24-98/KC
sodium	80.6	mg/kg	6010B	2.50	06-29-98/KC
thallium	ND	mg/kg	7841	0.50	06-24-98/MY
vanadium	23.5	mg/kg	6010B	1.25	06-26-98/KC
zinc	50.5	mg/kg	6010B	1.25	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-#9-0"-12"01 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-8 **MATRIX:** SOLID
MOISTURE: 28%

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	10.6	mg/kg	9056	10.0	06-26-98/DM
nitrate	2.84	mg/kg	9056	1.00	06-26-98/DM
nitrite	ND	mg/kg	9056	5.00	06-26-98/DM
total kjeldahl nitrogen	402	mg/kg	351.3	10.0	06-24-98/KM
phosphorus	1.29	mg/kg	4500-P B_5&E	0.50	06-29-98/DM
sulfate	221	mg/kg	9056	50.0	06-26-98/DM
total phenolic material	ND	mg/kg	9065	0.050	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/l	8260A	0.1	06-19-98/TC
acrolein	ND	mg/l	8260A	0.020	06-19-98/TC
acrylonitrile	ND	mg/l	8260A	0.020	06-19-98/TC
benzene	ND	mg/l	8260A	0.005	06-19-98/TC
bromodichloromethane	ND	mg/l	8260A	0.005	06-19-98/TC
bromoform	ND	mg/l	8260A	0.005	06-19-98/TC
carbon disulfide	ND	mg/l	8260A	0.005	06-19-98/TC
carbon tetrachloride	ND	mg/l	8260A	0.005	06-19-98/TC
chlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
chloroethane	ND	mg/l	8260A	0.01	06-19-98/TC
chloroform	ND	mg/l	8260A	0.005	06-19-98/TC
o-dichlorobenzene	ND	mg/l	8260A	0.01	06-19-98/TC
m-dichlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
p-dichlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
dichlorodifluoromethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1-dichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,2-dichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1-dichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
trans-1,2-dichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
1,2-dichloropropane	ND	mg/l	8260A	0.005	06-19-98/TC
cis-1,3-dichloropropane	ND	mg/l	8260A	0.01	06-19-98/TC
trans-1,3-dichloropropane	ND	mg/l	8260A	0.01	06-19-98/TC
ethylbenzene	ND	mg/l	8260A	0.005	06-19-98/TC
hexachlorobutadiene	ND	mg/l	8260A	0.005	06-19-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/l	8260A	0.01	06-19-98/TC
chloromethane	ND	mg/l	8260A	0.01	06-19-98/TC
methylene chloride	ND	mg/l	8260A	0.005	06-19-98/TC
methyl ethyl ketone	ND	mg/l	8260A	0.1	06-19-98/TC
methyl isobutyl ketone	ND	mg/l	8260A	0.1	06-19-98/TC
naphthalene	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,1,2-tetrachloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,2,2-tetrachloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
tetrachloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
toluene	ND	mg/l	8260A	0.005	06-19-98/TC
1,2,4-trichlorobenzene	ND	mg/l	8260A	0.01	06-19-98/TC
1,1,1-trichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,2-trichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
trichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
trichlorofluoromethane	ND	mg/l	8260A	0.005	06-19-98/TC
xylene (total)	ND	mg/l	8260A	0.005	06-19-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	88
toluene-d8	96
4-bromofluorobenzene	93

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/l	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/l	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/l	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/l	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/l	8270B	2	06-29-98/WP
phenol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/l	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/l	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	27
phenol-d6	50
2,4,6-tribromophenol	90

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/l	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/l	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/l	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/l	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/l	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	ND	mg/l	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/l	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/l	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/l	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/l	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/l	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
fluorene	ND	mg/l	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/l	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/l	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/l	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/l	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/l	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/l	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/l	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	ND	mg/l	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/l	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/l	8270B	0.3	06-29-98/WP
pyrene	ND	mg/l	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/l	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	67
2-fluorobiphenyl	75
p-terphenyl-d14	93

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/l	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/l	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/l	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/l	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/l	8310	0.02	06-30-98/WP
chrysene	ND	mg/l	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/l	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/l	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/l	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/l	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/l	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/l	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/l	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/l	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/l	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/l	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	ug/l	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	58

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/l	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/l	8015B-DRO	4.0	06-23-98/JR

Surrogate	% Recovery
o-terphenyl	82

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	ND	mg/l	6010B	0.10	06-24-98/KC
antimony	ND	mg/l	7041	0.010	06-25-98/MY
arsenic	ND	mg/l	7060A	0.010	06-23-98/MY
barium	ND	mg/l	6010B	0.10	06-24-98/KC
beryllium	ND	mg/l	6010B	0.004	06-25-98/KC
cadmium	ND	mg/l	7131A	0.001	06-18-98/KC
calcium	ND	mg/l	6010B	0.10	06-29-98/KC
chromium	ND	mg/l	7191	0.010	06-17-98/MY
cobalt	ND	mg/l	6010B	0.10	06-25-98/KC
copper	ND	mg/l	6010B	0.10	06-25-98/KC
iron	ND	mg/l	6010B	0.10	06-24-98/KC
lead	ND	mg/l	7420	0.010	06-26-98/KC
magnesium	ND	mg/l	6010B	0.10	06-29-98/KC
manganese	ND	mg/l	6010B	0.050	06-25-98/KC
mercury	ND	mg/l	7470A	0.001	06-18-98/MY
nickel	ND	mg/l	6010B	0.10	06-25-98/KC
potassium	ND	mg/l	7610	0.10	06-24-98/NH
selenium	ND	mg/l	7740	0.010	06-24-98/MY
silver	ND	mg/l	6010B	0.050	06-24-98/KC
sodium	ND	mg/l	6010B	0.10	06-29-98/KC
thallium	ND	mg/l	7841	0.005	06-24-98/KC
vanadium	ND	mg/l	6010B	0.050	06-26-98/KC
zinc	0.110	mg/l	6010B	0.050	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-03 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-9 **MATRIX:** LIQUID

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	ND	mg/l	9056	1.0	06-26-98/DM
nitrate	ND	mg/l	9056	0.10	06-26-98/DM
nitrite	ND	mg/l	9056	0.50	06-26-98/DM
total kjeldahl nitrogen	ND	mg/l	351.3	1.0	06-24-98/KM
phosphorus	ND	mg/l	4500-P B_5&E	0.05	06-26-98/DM
sulfate	ND	mg/l	9056	5.0	06-26-98/DM
total phenolic material	ND	mg/l	9065	0.005	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/l	8260A	0.1	06-19-98/TC
acrolein	ND	mg/l	8260A	0.020	06-19-98/TC
acrylonitrile	ND	mg/l	8260A	0.020	06-19-98/TC
benzene	ND	mg/l	8260A	0.005	06-19-98/TC
bromodichloromethane	ND	mg/l	8260A	0.005	06-19-98/TC
bromoform	ND	mg/l	8260A	0.005	06-19-98/TC
carbon disulfide	ND	mg/l	8260A	0.005	06-19-98/TC
carbon tetrachloride	ND	mg/l	8260A	0.005	06-19-98/TC
chlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
chloroethane	ND	mg/l	8260A	0.01	06-19-98/TC
chloroform	ND	mg/l	8260A	0.005	06-19-98/TC
o-dichlorobenzene	ND	mg/l	8260A	0.01	06-19-98/TC
m-dichlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
p-dichlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
dichlorodifluoromethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1-dichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,2-dichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1-dichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
trans-1,2-dichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
1,2-dichloropropane	ND	mg/l	8260A	0.005	06-19-98/TC
cis-1,3-dichloropropane	ND	mg/l	8260A	0.01	06-19-98/TC
trans-1,3-dichloropropane	ND	mg/l	8260A	0.01	06-19-98/TC
ethylbenzene	ND	mg/l	8260A	0.005	06-19-98/TC
hexachlorobutadiene	ND	mg/l	8260A	0.005	06-19-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/l	8260A	0.01	06-19-98/TC
chloromethane	ND	mg/l	8260A	0.01	06-19-98/TC
methylene chloride	ND	mg/l	8260A	0.005	06-19-98/TC
methyl ethyl ketone	ND	mg/l	8260A	0.1	06-19-98/TC
methyl isobutyl ketone	ND	mg/l	8260A	0.1	06-19-98/TC
naphthalene	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,1,2-tetrachloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,2,2-tetrachloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
tetrachloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
toluene	ND	mg/l	8260A	0.005	06-19-98/TC
1,2,4-trichlorobenzene	ND	mg/l	8260A	0.01	06-19-98/TC
1,1,1-trichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,2-trichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
trichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
trichlorofluoromethane	ND	mg/l	8260A	0.005	06-19-98/TC
xylene (total)	ND	mg/l	8260A	0.005	06-19-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	91
toluene-d8	96
4-bromofluorobenzene	94

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS
ACID EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
p-chloro-m-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
2-chlorophenol	ND	mg/l	8270B	0.3	06-29-98/WP
m-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
o-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
p-cresol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4-dichlorophenol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4-dimethylphenol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4-dinitro-o-cresol	ND	mg/l	8270B	5	06-29-98/WP
2,4-dinitrophenol	ND	mg/l	8270B	2	06-29-98/WP
p-nitrophenol	ND	mg/l	8270B	3	06-29-98/WP
pentachlorophenol	ND	mg/l	8270B	2	06-29-98/WP
phenol	ND	mg/l	8270B	0.3	06-29-98/WP
2,4,5-trichlorophenol	ND	mg/l	8270B	2	06-29-98/WP
2,4,6-trichlorophenol	ND	mg/l	8270B	0.6	06-29-98/WP

Surrogates	% Recovery
2-fluorophenol	26
phenol-d6	47
2,4,6-tribromophenol	122

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acenaphthene	ND	mg/l	8270B	0.660	06-29-98/WP
acenaphthylene	ND	mg/l	8270B	0.660	06-29-98/WP
bis(2-chloroethoxy) methane	ND	mg/l	8270B	0.3	06-29-98/WP
bis(2-chloroethyl)ether	ND	mg/l	8270B	0.3	06-29-98/WP
bis(2-chloroisopropyl)ether	ND	mg/l	8270B	0.3	06-29-98/WP
bis(2-ethylhexyl)phthalate	ND	mg/l	8270B	0.3	06-29-98/WP
4-bromophenyl phenyl ether	ND	mg/l	8270B	0.3	06-29-98/WP
butylbenzylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
p-chloroaniline	ND	mg/l	8270B	0.3	06-29-98/WP
2-chloronaphthalene	ND	mg/l	8270B	0.3	06-29-98/WP
dibenzofuran	ND	mg/l	8270B	0.3	06-29-98/WP
di-n-butylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
3,3'-dichlorobenzidine	ND	mg/l	8270B	1	06-29-98/WP
diethylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
dimethylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
di-n-octylphthalate	ND	mg/l	8270B	0.3	06-29-98/WP
fluorene	ND	mg/l	8270B	0.660	06-29-98/WP
fluoranthene	ND	mg/l	8270B	0.3	06-29-98/WP
hexachlorocyclopentadiene	ND	mg/l	8270B	0.3	06-29-98/WP
hexachloroethane	ND	mg/l	8270B	0.3	06-29-98/WP
2-methylnaphthalene	ND	mg/l	8270B	0.660	06-29-98/WP
p-nitroaniline	ND	mg/l	8270B	1	06-29-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS
BASE NEUTRAL EXTRACTABLES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
2-nitroaniline	ND	mg/l	8270B	0.3	06-29-98/WP
nitrobenzene	ND	mg/l	8270B	0.3	06-29-98/WP
n-nitrosodiphenylamine	ND	mg/l	8270B	0.3	06-29-98/WP
n-nitrosodi-n-propylamine	ND	mg/l	8270B	0.3	06-29-98/WP
phenanthrene	ND	mg/l	8270B	0.3	06-29-98/WP
pyrene	ND	mg/l	8270B	0.3	06-29-98/WP
vinyl chloride	ND	mg/l	8270B	0.01	06-29-98/WP

Surrogates	% Recovery
nitrobenzene-d5	73
2-fluorobiphenyl	81
p-terphenyl-d14	95

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
anthracene	ND	mg/l	8310	0.1	06-30-98/WP
benzo[a]anthracene	ND	mg/l	8310	0.009	06-30-98/WP
benzo[b]fluoranthene	ND	mg/l	8310	0.02	06-30-98/WP
benzo[k]fluoranthene	ND	mg/l	8310	0.02	06-30-98/WP
benzo[a]pyrene	ND	mg/l	8310	0.02	06-30-98/WP
chrysene	ND	mg/l	8310	0.02	06-30-98/WP
dibenz[a,h]anthracene	ND	mg/l	8310	0.02	06-30-98/WP
indeno[1,2,3-cd]pyrene	ND	mg/l	8310	0.03	06-30-98/WP

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
1,3,5-trinitrobenzene	ND	mg/l	8330	0.25	06-30-98/WP
1,3-dinitrobenzene	ND	mg/l	8330	0.25	06-30-98/WP
2,4,6-trinitrotoluene	ND	mg/l	8330	0.25	06-30-98/WP
2,6-dinitrotoluene	ND	mg/l	8330	0.26	06-30-98/WP
2,4-dinitrotoluene	ND	mg/l	8330	0.25	06-30-98/WP
octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine	ND	mg/l	8330	2.2	06-30-98/WP
hexahydro-1,3,5-trinitro-1,3,5-triazine	ND	mg/l	8330	1.0	06-30-98/WP
methyl-2,4,6-trinitrophenylnitramine	ND	mg/l	8330	0.65	06-30-98/WP

PESTICIDES

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
hexachlorobenzene	ND	ug/l	8120	0.03	06-24-98/TC

Surrogates	% Recovery
tetrachloro-m-xylene	84

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/l	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/l	8015B-DRO	4.0	06-23-98/JR

Surrogate	% Recovery
o-terphenyl	78

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics
DRO - Diesel Range Organics

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

TOTAL METALS

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
aluminum	ND	mg/l	6010B	0.10	06-24-98/KC
antimony	ND	mg/l	7041	0.010	06-25-98/MY
arsenic	ND	mg/l	7060A	0.010	06-23-98/MY
barium	ND	mg/l	6010B	0.10	06-24-98/KC
beryllium	ND	mg/l	6010B	0.004	06-25-98/KC
cadmium	ND	mg/l	7131A	0.001	06-18-98/KC
calcium	ND	mg/l	6010B	0.10	06-29-98/KC
chromium	ND	mg/l	7191	0.010	06-17-98/MY
cobalt	ND	mg/l	6010B	0.10	06-25-98/KC
copper	ND	mg/l	6010B	0.10	06-25-98/KC
iron	ND	mg/l	6010B	0.10	06-24-98/KC
lead	ND	mg/l	7420	0.010	06-26-98/KC
magnesium	ND	mg/l	6010B	0.10	06-29-98/KC
manganese	ND	mg/l	6010B	0.050	06-25-98/KC
mercury	ND	mg/l	7470A	0.001	06-18-98/MY
nickel	ND	mg/l	6010B	0.10	06-25-98/KC
potassium	ND	mg/l	7610	0.10	06-24-98/NH
selenium	ND	mg/l	7740	0.010	06-24-98/MY
silver	ND	mg/l	6010B	0.050	06-24-98/KC
sodium	ND	mg/l	6010B	0.10	06-29-98/KC
thallium	ND	mg/l	7841	0.005	06-24-98/KC
vanadium	ND	mg/l	6010B	0.050	06-26-98/KC
zinc	0.069	mg/l	6010B	0.050	06-25-98/KC

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-05 **DATE SAMPLED:** 06-15-98
REIC SAMPLE #: 61950-10 **MATRIX:** LIQUID

GENERAL CHEMISTRY

PARAMETER	RESULT	UNIT	METHOD	MQL	ANALYZED/BY
chloride	ND	mg/l	9056	1.0	06-26-98/DM
nitrate	ND	mg/l	9056	0.10	06-26-98/DM
nitrite	ND	mg/l	9056	0.50	06-26-98/DM
total kjeldahl nitrogen	ND	mg/l	351.3	1.0	06-24-98/KM
phosphorus	ND	mg/l	4500-P B_5&E	0.05	06-26-98/DM
sulfate	ND	mg/l	9056	5.0	06-26-98/DM
total phenolic material	ND	mg/l	9065	0.005	06-26-98/LK

ND - None Detected at MQL
MQL - Minimum Quantifying Level

ALLIANT SAMPLE #: RAAP-#8-04 TRIP BLANK **MATRIX:** LIQUID
REIC SAMPLE #: 61950-11

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
acetone	ND	mg/l	8260A	0.1	06-19-98/TC
acrolein	ND	mg/l	8260A	0.020	06-19-98/TC
acrylonitrile	ND	mg/l	8260A	0.020	06-19-98/TC
benzene	ND	mg/l	8260A	0.005	06-19-98/TC
bromodichloromethane	ND	mg/l	8260A	0.005	06-19-98/TC
bromoform	ND	mg/l	8260A	0.005	06-19-98/TC
carbon disulfide	ND	mg/l	8260A	0.005	06-19-98/TC
carbon tetrachloride	ND	mg/l	8260A	0.005	06-19-98/TC
chlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
chloroethane	ND	mg/l	8260A	0.01	06-19-98/TC
chloroform	ND	mg/l	8260A	0.005	06-19-98/TC
o-dichlorobenzene	ND	mg/l	8260A	0.01	06-19-98/TC
m-dichlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
p-dichlorobenzene	ND	mg/l	8260A	0.005	06-19-98/TC
dichlorodifluoromethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1-dichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,2-dichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1-dichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
trans-1,2-dichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
1,2-dichloropropane	ND	mg/l	8260A	0.005	06-19-98/TC
cis-1,3-dichloropropane	ND	mg/l	8260A	0.01	06-19-98/TC
trans-1,3-dichloropropane	ND	mg/l	8260A	0.01	06-19-98/TC
ethylbenzene	ND	mg/l	8260A	0.005	06-19-98/TC
hexachlorobutadiene	ND	mg/l	8260A	0.005	06-19-98/TC

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-04 TRIP BLANK **MATRIX:** LIQUID
REIC SAMPLE #: 61950-11

VOLATILE ORGANIC COMPOUNDS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
bromomethane	ND	mg/l	8260A	0.01	06-19-98/TC
chloromethane	ND	mg/l	8260A	0.01	06-19-98/TC
methylene chloride	ND	mg/l	8260A	0.005	06-19-98/TC
methyl ethyl ketone	ND	mg/l	8260A	0.1	06-19-98/TC
methyl isobutyl ketone	ND	mg/l	8260A	0.1	06-19-98/TC
naphthalene	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,1,2-tetrachloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,2,2-tetrachloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
tetrachloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
toluene	ND	mg/l	8260A	0.005	06-19-98/TC
1,2,4-trichlorobenzene	ND	mg/l	8260A	0.01	06-19-98/TC
1,1,1-trichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
1,1,2-trichloroethane	ND	mg/l	8260A	0.005	06-19-98/TC
trichloroethylene	ND	mg/l	8260A	0.005	06-19-98/TC
trichlorofluoromethane	ND	mg/l	8260A	0.005	06-19-98/TC
xylene (total)	ND	mg/l	8260A	0.005	06-19-98/TC

Surrogates	% Recovery
1,2-dichloroethane-d4	95
toluene-d8	95
4-bromofluorobenzene	94

ND - None Detected at EQL
EQL - Estimated Quantitation Limit

ALLIANT SAMPLE #: RAAP-#8-04 TRIP BLANK **MATRIX:** LIQUID
REIC SAMPLE #: 61950-11

TOTAL PETROLEUM HYDROCARBONS

PARAMETER	RESULT	UNIT	METHOD	EQL	ANALYZED/BY
TPH	ND	mg/l	8015B-GRO	5.0	06-24-98/TL

Surrogate	% Recovery
1,1,1-trifluorotoluene	84

ND - None Detected at EQL
EQL - Estimated Quantitation Limit
GRO - Gasoline Range Organics

DATE 7-2-98

APPROVED Joseph Robertson
for Janet M. Satterfield
Ivan W. Leef
Ivan W. Leef

CHAIN OF CUSTODY RECORD NO. 63[illegible]

REI Consultants, Inc.
225 Industrial Park Rd.
P.O. Box 286, Beaver, WV 25813
Phone: 304-255-2500 or 800-999-0105
FAX: 304-255-2572

CLIENT: Alliant Techsystems RFAAP
ADDRESS: P.O. Box 1
CITY/STATE/ZIP: Radford VA 24141
BILL TO: Same
CITY/STATE/ZIP:

CONTACT PERSON: Arne Olsen
TELEPHONE/FAX: 540-639-8220
SITE ID & STATE: Radford VA
PROJECT ID: DAAA09-94-G-0012
SAMPLER: RFarley / AMcBride / JCastrac[illegible]

SAMPLE LOG AND ANALYSIS REQUEST

TURNAROUND TIME REQUIREMENTS
REGULAR: 10 Day
*RUSH: ___ 5-Day ___ 3-Day ___ 2-Day ___ 1-Day
*Rush work needs prior Laboratory approval and will include surcharges

PRESERVATIVES
0 No Preservative
1 Hydrochloric Acid
2 Nitric Acid
3 Sulfuric Acid
4 Sodium Thiosulfate
5 Sodium Hydroxide
6 Zinc Acetate
7 EDTA

PRESERVATIVE CODES — NOTE PRESERVATIVES →

ANALYSIS REQUESTED & METHOD: See Attached List

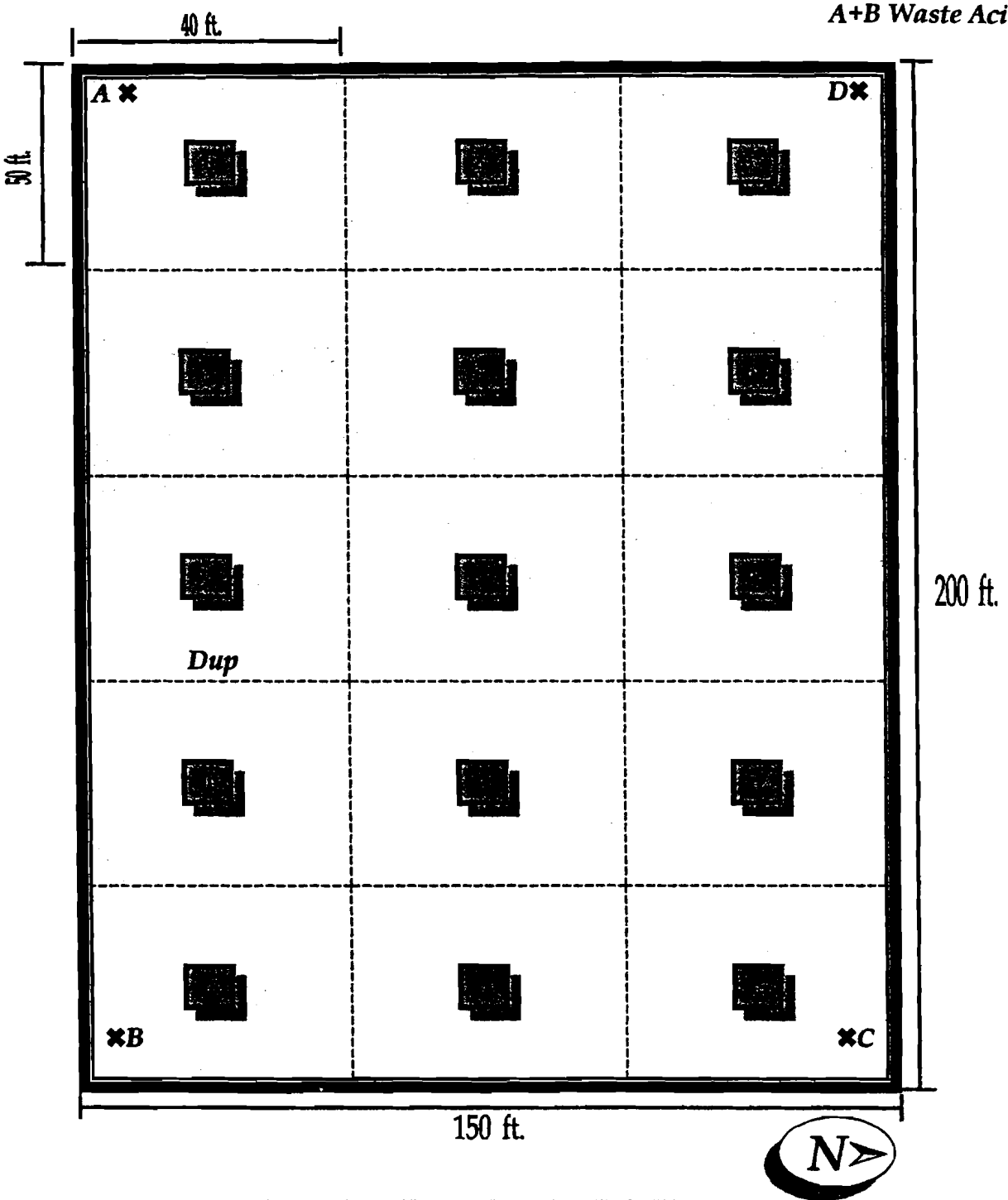
SAMPLE ID	NO. & TYPE OF CONTAINERS	SAMPLING DATE / TIME	MATRIX	SAMPLE COMP / GRAB	COMMENTS
RAAP-#8-#1-0"-12"-01	2-40z 2-90z	6-15-98 1345	Solid	Comp	Level 4 QC
RAAP #8-#4-0"-12"-01		1420			per Jim Herr
RAAP #8-#7-0"-12"-01		1435			
RAAP #8 #7-0"-12"-02		1450			
RAAP #8-#13-0"-12"-01		1510			
RAAP #8-#5 0"-12"-01		1530			
RAAP #8-15-0"-12"-01		1620			
RAAP #8-#9-0"-12"-01		1635			
RAAP-#8-03	7-liters 4-VOA	1335	H_2O	Grab	
RAAP #8-05		1600			

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
R Farley	6-15-98 1930						

Special Requests: RAAP #8-04 Trip Blank 4-VOA
Sample Condition: Good? Y N
Temperature Upon Arrival °C

Shipment: Hand-Del: Courier: RF UPS: FedEx:
Shipment Date: 6-15-98 FAX Results: Y N

[1]*West Settling Lagoon SWMU 8*
A+B Waste Acid



GPS Readings		
A=	N 37° 11.450'	W 80° 31.871'
B=	N 37° 11.446'	W 80° 31.835'
C=	N 37° 11.470'	W 80° 31.842'
D=	N 37° 11.465'	W 80° 31.880'

[1]*Basin Dimensions = 200x150feet; 15-grid Dimensions= 50x40feet.*

REI Consultants, Inc.

Field Log

Client: *Alliant Techsystems, Inc.*	**Sampling Date(s):** *06-15-98*
Sampling Site: *West Settling Lagoon SWMU 8; A+B Waste Acid*	
Field Sampling Personnel: *R. Farley, A. McBride, and J. Castanon*	

Sample Descriptions/Designations

Sample Designation	Alliant Sampling Grid	PID[1] Reading(ppm)
RAAP - #8 -#1 - 0" - 12" - 01	Grid #1	11.81
RAAP - #8 -#4 - 0" - 12" - 01	Grid #4	13.66
RAAP - #8 -#7 - 0" - 12" - 01	Grid #7	5.28
RAAP - #8 -#7 - 0" - 12" - 02	Grid #7Dup	6.88
RAAP - #8 -#13 - 0" - 12" - 01	Grid #13	1.29
RAAP - #8 -#5 - 0" - 12" - 01	Grid #5	7.32
RAAP - #8 -#15 - 0" - 12" - 01	Grid #15	1.35
RAAP - #8 -#9 - 0" - 12" - 01	Grid #9	3.01
RAAP - #8 - 03	Field Blank	NA[2]
RAAP - #8 - 05	Equipment Blank	NA[2]
RAAP - #8 - 04	Trip Blank	NA[2]

Weather Conditions: Cloudy and 75°F.

Special Notes/Comments: Eighteen (18) cores were taken per grid and composited into one sample core taken from 0" - 12". Water was running into the pit and being pumped out while sampling.

Date Approved: 7-2-98

Approved by: Ray Erickson
Ray Erickson
Vice President

[1]*PID - Photo Ionization Detector*

[2]*NA - Not Applicable.*