

30-045-29187

October 28, 2004, Revised December 6, 2004
Project No: 5914942
Ms. Jo Becksted
Lance Oil & Gas
P.O. Box 70
Kirtland, New Mexico 87417

iiná bá

10/9/04 shown
by Jo Becksted

**RE: PRODUCED WATER SPILL AT LANCE OIL & GAS NORTH WEST CHA CHA UNIT
WELL # 26**

Introduction:

On October 11, 2004, *iiná bá* was contacted by Mr. Doug Zentz of Lance Oil & Gas (LO&G) to respond to a produced water spill reported at LO&G Northwest Cha Cha Unit Well # 26, located at NE ¼ SE ¼ Section 22 T29N R14W, Navajo Nation, San Juan County, New Mexico. See Figure 1, Vicinity Map for site location. The spill was reported to be from a faulty valve in a Lance Oil & Gas injection well located at the top of the mesa. An unknown amount of produced water and paraffin spilled from the injection well and flowed over the mesa into an ephemeral wash. The spill flowed north along the wash, and pooled in the vicinity of Mr. Ray Jim's, Sr. residence approximately one mile to the north. On October 10, 2004, Mrs. Jim reported the presence of flowing produced water in the wash near her home at approximately 1630. New Mexico State Police Sergeant Albert Montoya responded as the Emergency Response Officer (ERO). LO&G also responded and shut off the flow of water to the broken valve. The initial event appeared to have occurred at approximately 0700 on October 10, 2004. Other involved agencies were contacted on Monday, October 11, 2004.

Summary of Field Activities:

On Tuesday, October 12, 2004, *iiná bá* personnel, Mr. Duane Aspaas, Project Manager, and Ms. Cindy Gray, Senior Scientist, met Mr. Zentz of LO&G at the site to assess the spill. Soil staining and a strong petroleum odor were observed through out the wash. One five-point composite soil sample was collected from the wash at different locations, at approximately three inches below ground surface (bgs) to begin the analyses required for disposal. The soil sample was placed in three 4 ounce jars with Teflon lids, kept on ice and delivered to *iiná bá* laboratory for analysis by US EPA Methods 8015 DRO/GRO, 8021 BTEX, Oil & Grease, and pH. At that time, the site and the spill appeared to be stable and mobilization for cleanup was scheduled for the next day.

On Wednesday, October 13, 2004, *iiná bá* personnel returned to the site to place SphagSorb® booms in the northern section of the wash to prevent further down gradient migration of the contaminants in anticipation of an impending rainstorm. Twelve double layered SphagSorb® booms were installed in the wash with wooden stakes approximately 30 feet apart. See Appendix A, Site Photography. At that time, it was determined that excavation of the contaminated areas would be needed to remove the stained soil and mitigate the odor.

On Thursday, October 14th, 2004, *iiná bá* personnel returned to the site to oversee excavation activities performed by Lansing Construction Company of Montezuma Creek, Utah. A backhoe, BobCat®, and hand shovels were used to excavate the contaminated soil in the northern section of the wash, working from the vicinity of the Jim's property south toward the source. Approximately six to eight inches of contaminated soil were excavated from the bottom and sides of the wash. Heavy machinery transported the contaminated soil on existing roads or through the wash in order to minimize damage to Mr. Ray Jim's property. The contaminated

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soil was stockpiled on a 100 foot long by 20 foot wide 10-mil polyethylene liner to be covered at the end of the day.

On Friday, October 15th, 2004, *iiná bá* personnel returned to the site to oversee the completion of excavation activities on the southern section of the wash. Approximately six to eight inches of contaminated soil was also excavated from the bottom and sides of this section of the wash. An additional polyethylene liner was placed farther south in order to minimize travel to the stockpile. Excavation of contaminated soil was continued to the point at which the wash became inaccessible with the heavy equipment.

At the bottom of the mesa, *iiná bá* personnel applied SphagSorb® in the areas that could not be excavated. After the SphagSorb® was applied, it was raked into the soil allowing it to absorb any residual produced water and paraffin. An area of the wash located approximately at the center of the spill, with a length of approximately 30 yards, was also inaccessible with heavy equipment and personnel due to confined space and safety hazards that could result from cave-ins. SphagSorb® was applied in the central inaccessible area.

To verify completion of excavation activities, two 5-point composite soil samples were collected. One soil sample was collected from the southern section of the wash and one from the northern section of the wash. The composite soil samples were collected from five different locations within the excavated areas from each section of the wash (south section and north section), approximately three to four inches below ground surface (bgs). Each composite soil sample was placed in a 1-quart plastic bag, and then thoroughly mixed to obtain a representative profile. The soil was then placed in a 4 ounce jar with a Teflon lid, kept on ice and delivered to *iiná bá* laboratory for analysis by US EPA Methods 8015 DRO/GRO, 8021 BTEX, Oil & Grease, and pH.

As requested by Mr. Steve Austin, Navajo Nation Environmental Protection Agency, Chief Hydrogeologist, two discrete soil samples were collected from the areas that were inaccessible for excavation. The first discrete soil sample was collected from the southern end of wash at the bottom of the mesa. The second discrete soil sample was collected from the section of the wash located in approximate center of the spill. See Figure 2, Site Map for soil sample locations and Table 1, for Summary of Laboratory Analysis. Laboratory analyses are included in Appendix B.

After all remediation activities were performed, the stockpiles of contaminated soil were covered with polyethylene sheeting and secured. The sheeting was secured with clean backfill and boulders found on site. A six-inch wide by six-inch high berm was constructed around each stockpile to contain the contaminated soil and potential runoff. The stockpiles were left on site for later transport and disposal at Industrial Ecosystems, Inc. Bills of Lading are included in Appendix C.

Response Actions Taken:

The following response actions were performed based on site observations and *iiná bá* past experience on similar sites.

- The extent of the soil staining was determined by a visual survey.
- SphagSorb® booms were placed in the wash to prevent down gradient migration of the contaminants in the event of rain.
- 110 cubic yards of contaminated soil were removed from the wash and transported to Industrial Ecosystems Landfarm.

- There was no fire hazard associated with the spill, as determined by the Farmington Fire Department.
- Contaminated soils were removed for proper disposal.
- Sphagsorb® was applied to the areas that were inaccessible or hazardous to personnel to absorb the hydrocarbons and aid the natural attenuation of the residual produced water and paraffin.

Conclusions and Recommendations:

Based on the laboratory analytical results, none to the soil samples collected exceeded Navajo Nation Environmental Protection Agency (NN EPA) soil standards of 100 parts per million (ppm) Total Petroleum Hydrocarbons (TPH). In addition, all other constituents analyzed did not exceed laboratory detection limits. *iiná bá* recommends that no further action be required.

Closure and Limitations:

The scope of our services consisted of the performance of a preliminary spill assessment and stabilization; clean up operations, disposal arrangements, project management, and preparation of this summary. All work has been performed in accordance with generally accepted hazardous material management professional practices.

This document has been prepared by *iiná bá* for the exclusive use Lance Oil & Gas, as it pertains to the referenced location. However, a copy should be sent to Mr. Steve Austin, Navajo Nation EPA in Shiprock as well as Mr. Denny Foust of New Mexico Oil Conservation Division. If there are any questions regarding this report, please contact either Cynthia Gray or Thomas Long (505) 327-1072

Respectfully submitted,

Thomas J. Long
Staff Scientist

Reviewed by,

Cynthia A. Gray, CHMM
Environmental Project Manager

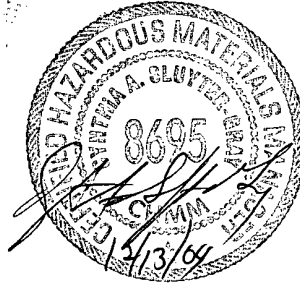
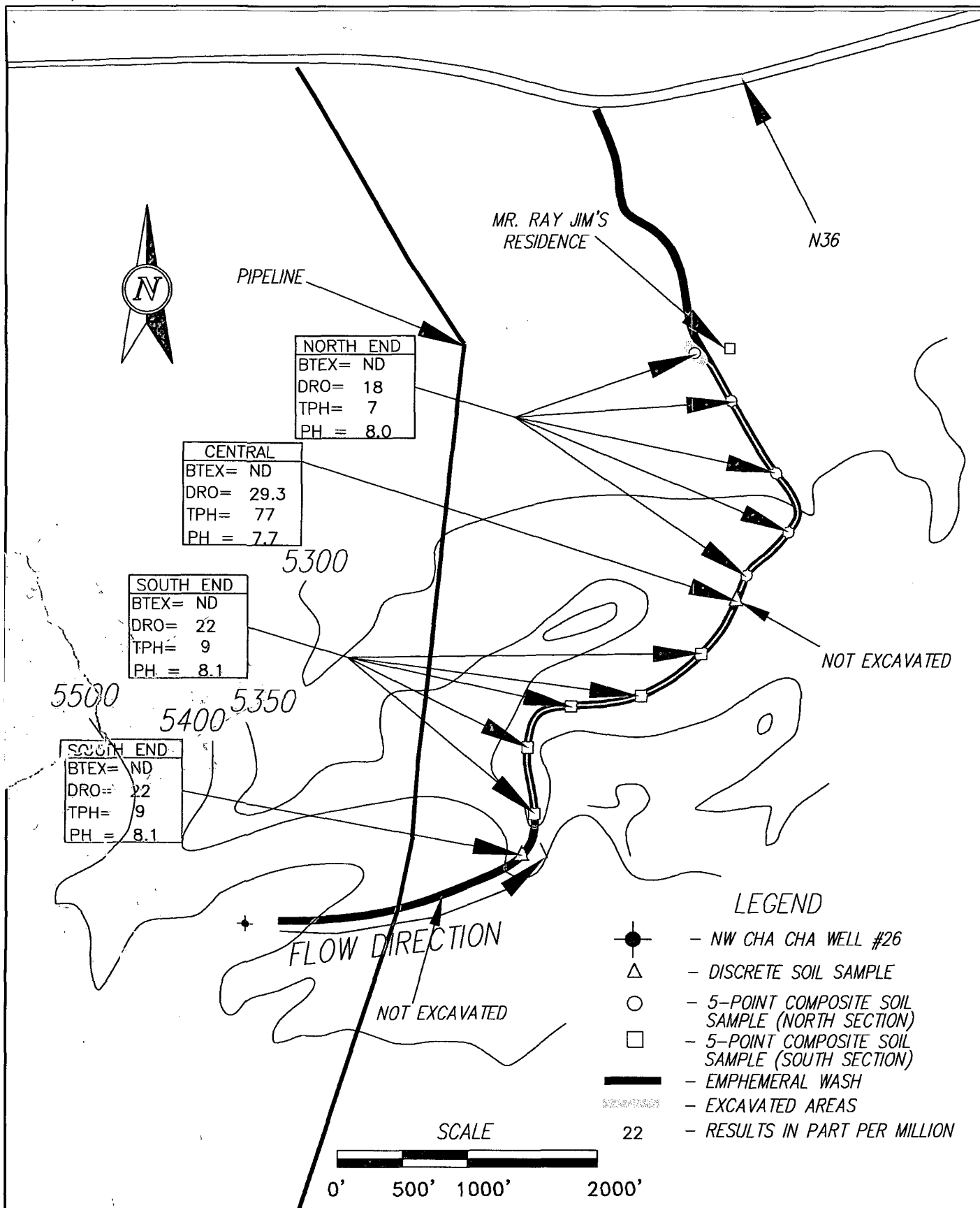


Table 1: Summary of Laboratory Analysis

Figures: 1: Vicinity Map
2: Site Map

Appendices:

A: Site Photography
B: Laboratory Analysis
C: Bills of Lading



iiná bá

612 E. MURRAY DR.
FARMINGTON, NM 87401

PH. (505) 327-1072
FAX (505) 327-1496

APPROVED: CAG

DATE: 11/8/04

DRAWN BY: TLONG

DATE: 11/4/04

CHK'D BY: CAG

DATE: 11/8/04

PROJECT # 5914942

FIGURE : 2

SITE MAP
LANCE OIL & GAS
NW CHA CHA UNIT WELL #26
SAN JUAN COUNTY, NEW MEXICO

5914942NWCHCHA/DWG/SITEMAP



ANALYTICAL REPORT

Date: 09-Nov-04

CLIENT: iina' ba' Inc.

Work Order: 0410028

Project: NW ChaCha Spill, Project # 1914942

Lab ID: 0410028-001A

Client Sample Info: NW ChaCha Spill

Client Sample ID: #1 South End of Spill @ 3in

Collection Date: 10/15/2004 1:00:00 PM

Matrix: SOIL

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS		SW8015B		Analyst: JEM		
T/R Hydrocarbons: C10-C28	46.2	25.0		mg/Kg	1	10/23/2004
Surr: o-Terphenyl	101	57-136		%REC	1	10/23/2004
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: JEM		
Benzene	ND	25		µg/Kg	25	10/27/2004
Ethylbenzene	ND	25		µg/Kg	25	10/27/2004
m,p-Xylene	ND	50		µg/Kg	25	10/27/2004
o-Xylene	ND	25		µg/Kg	25	10/27/2004
Toluene	ND	50		µg/Kg	25	10/27/2004
Surr: 1,4-Difluorobenzene	85.6	75-110		%REC	25	10/27/2004
Surr: 4-Bromochlorobenzene	117	40-135		%REC	25	10/27/2004
Surr: Fluorobenzene	82.1	69-110		%REC	25	10/27/2004
TPH, T/R SOIL		E418.1 (E418.1)		Analyst: JEM		
Petroleum Hydrocarbons, T/R	ND	25		mg/Kg	1	11/4/2004
SOIL AND WASTE PH		SW9045C		Analyst: VDB		
pH	7.8	0.1	H	pH Units	1	11/5/2004
Temperature	24	0	H	Deg C	1	11/5/2004

Qualifiers:

ND - Not Detected at the Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

H - Parameter exceeded Maximum Allowable Holding Time

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted precision limits

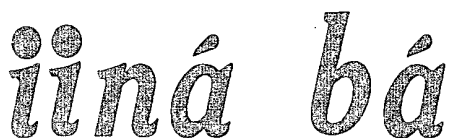
E - Value above Upper Quantitation Limit - UQL

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MAINTAINING HARMONY BETWEEN MAN AND HIS ENVIRONMENT

612 E. Murray Drive
Farmington, NM 87499

Off: (505) 327-1072
FAX: (505) 327-1496



P.O. Box 3788
Shiprock, NM 87420

Off: (505) 368-4065

ANALYTICAL REPORT

Date: 09-Nov-04

CLIENT: iina' ba' Inc.

Client Sample Info: NW ChaCha Spill

Work Order: 0410028

Client Sample ID: #2- 5 point composite - South En

Project: NW ChaCha Spill, Project # 1914942

Collection Date: 10/15/2004 1:15:00 PM

Lab ID: 0410028-002A

Matrix: SOIL

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS		SW8015B		Analyst: JEM		
T/R Hydrocarbons: C10-C28	22	25.0	J	mg/Kg	1	10/23/2004
Surr: o-Terphenyl	82.3	57-136		%REC	1	10/23/2004
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: JEM		
Benzene	ND	25		µg/Kg	25	10/27/2004
Ethylbenzene	ND	25		µg/Kg	25	10/27/2004
m,p-Xylene	ND	50		µg/Kg	25	10/27/2004
o-Xylene	ND	25		µg/Kg	25	10/27/2004
Toluene	ND	50		µg/Kg	25	10/27/2004
Surr: 1,4-Difluorobenzene	85.5	75-110		%REC	25	10/27/2004
Surr: 4-Bromochlorobenzene	112	40-135		%REC	25	10/27/2004
Surr: Fluorobenzene	82.3	69-110		%REC	25	10/27/2004
TPH, T/R SOIL		E418.1 (E418.1)		Analyst: JEM		
Petroleum Hydrocarbons, T/R	9	25	J	mg/Kg	1	11/4/2004
SOIL AND WASTE PH		SW9045C		Analyst: VDB		
pH	8.1	0.1	H	pH Units	1	11/5/2004
Temperature	24	0	H	Deg C	1	11/5/2004

Qualifiers:

ND - Not Detected at the Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

R - RPD outside accepted precision limits

B - Analyte detected in the associated Method Blank

E - Value above Upper Quantitation Limit - UQL

H - Parameter exceeded Maximum Allowable Holding Time

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ANALYTICAL REPORT

Date: 09-Nov-04

CLIENT: iina' ba' Inc.
Work Order: 0410028
Project: NW ChaCha Spill, Project # 1914942
Lab ID: 0410028-003A

Client Sample Info: NW ChaCha Spill
Client Sample ID: #3 Central Ditch @ 4in
Collection Date: 10/15/2004 3:30:00 PM
Matrix: SOIL

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS		SW8015B		Analyst: JEM		
T/R Hydrocarbons: C10-C28	29.3	25.0		mg/Kg	1	10/23/2004
Surr: o-Terphenyl	60.9	57-136		%REC	1	10/23/2004
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: JEM		
Benzene	ND	25		µg/Kg	25	10/27/2004
Ethylbenzene	ND	25		µg/Kg	25	10/27/2004
m,p-Xylene	ND	50		µg/Kg	25	10/27/2004
o-Xylene	ND	25		µg/Kg	25	10/27/2004
Toluene	ND	50		µg/Kg	25	10/27/2004
Surr: 1,4-Difluorobenzene	85.1	75-110		%REC	25	10/27/2004
Surr: 4-Bromochlorobenzene	114	40-135		%REC	25	10/27/2004
Surr: Fluorobenzene	82.4	69-110		%REC	25	10/27/2004
TPH, T/R SOIL		E418.1 (E418.1)		Analyst: JEM		
Petroleum Hydrocarbons, T/R	77	25		mg/Kg	1	11/4/2004
SOIL AND WASTE PH		SW9045C		Analyst: VDB		
pH	7.7	0.1	H	pH Units	1	11/5/2004
Temperature	24	0	H	Deg C	1	11/5/2004

Qualifiers:

ND - Not Detected at the Practical Quantitation Limit

J - Analyte detected below Practical Quantitation Limit

B - Analyte detected in the associated Method Blank

H - Parameter exceeded Maximum Allowable Holding Time

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted precision limits

E - Value above Upper Quantitation Limit - UQL

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ANALYTICAL REPORT

Date: 09-Nov-04

CLIENT: iina' ba' Inc.

Client Sample Info: NW ChaCha Spill

Work Order: 0410028

Client Sample ID: #4- 5 point composite - North En

Project: NW ChaCha Spill, Project # 1914942

Collection Date: 10/15/2004 3:45:00 PM

Lab ID: 0410028-004A

Matrix: SOIL

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS		SW8015B		Analyst: JEM		
T/R Hydrocarbons: C10-C28	18	25.0	J	mg/Kg	1	10/23/2004
Surr: o-Terphenyl	93.4	57-136		%REC	1	10/23/2004
AROMATIC VOLATILES BY GC/PID		SW8021B		Analyst: JEM		
Benzene	ND	25		µg/Kg	25	10/27/2004
Ethylbenzene	ND	25		µg/Kg	25	10/27/2004
m,p-Xylene	ND	50		µg/Kg	25	10/27/2004
o-Xylene	ND	25		µg/Kg	25	10/27/2004
Toluene	ND	50		µg/Kg	25	10/27/2004
Surr: 1,4-Difluorobenzene	85.7	75-110		%REC	25	10/27/2004
Surr: 4-Bromochlorobenzene	115	40-135		%REC	25	10/27/2004
Surr: Fluorobenzene	82.5	69-110		%REC	25	10/27/2004
TPH, T/R SOIL		E418.1 (E418.1)		Analyst: JEM		
Petroleum Hydrocarbons, T/R	7	25	J	mg/Kg	1	11/4/2004
SOIL AND WASTE PH		SW9045C		Analyst: VDB		
pH	8.0	0.1	H	pH Units	1	11/5/2004
Temperature	23	0	H	Deg C	1	11/5/2004

Qualifiers: ND - Not Detected at the Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

J - Analyte detected below Practical Quantitation Limit

R - RPD outside accepted precision limits

B - Analyte detected in the associated Method Blank

E - Value above Upper Quantitation Limit - UQL

H - Parameter exceeded Maximum Allowable Holding Time

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ANALYTICAL REPORT

Date: 09-Nov-04

CLIENT: iina' ba' Inc.

Client Sample Info: NW ChaCha Spill

Work Order: 0410028

Client Sample ID: #5 Stock Pile composite

Project: NW ChaCha Spill, Project # 1914942

Collection Date: 10/15/2004 4:00:00 PM

Lab ID: 0410028-005A

Matrix: SOIL

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
DIESEL RANGE ORGANICS						
		SW8015B				Analyst: JEM
T/R Hydrocarbons: C10-C28	15	25.0	J	mg/Kg	1	10/23/2004
Surr: o-Terphenyl	94.6	57-136		%REC	1	10/23/2004
AROMATIC VOLATILES BY GC/PID						
		SW8021B				Analyst: JEM
Benzene	ND	25		µg/Kg	25	10/27/2004
Ethylbenzene	ND	25		µg/Kg	25	10/27/2004
m,p-Xylene	ND	50		µg/Kg	25	10/27/2004
o-Xylene	ND	25		µg/Kg	25	10/27/2004
Toluene	ND	50		µg/Kg	25	10/27/2004
Surr: 1,4-Difluorobenzene	85.6	75-110		%REC	25	10/27/2004
Surr: 4-Bromochlorobenzene	120	40-135		%REC	25	10/27/2004
Surr: Fluorobenzene	82.9	69-110		%REC	25	10/27/2004
TPH, T/R SOIL						
		E418.1		(E418.1)		Analyst: JEM
Petroleum Hydrocarbons, T/R	68	25		mg/Kg	1	11/4/2004
SOIL AND WASTE PH						
		SW9045C				Analyst: VDB
pH	8.3	0.1	H	pH Units	1	11/5/2004
Temperature	23	0	H	Deg C	1	11/5/2004

Qualifiers: ND - Not Detected at the Practical Quantitation Limit S - Spike Recovery outside accepted recovery limits
J - Analyte detected below Practical Quantitation Limit R - RPD outside accepted precision limits
B - Analyte detected in the associated Method Blank E - Value above Upper Quantitation Limit - UQL
H - Parameter exceeded Maximum Allowable Holding Time

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