



January 5, 2010

Mr. Ed Riege
Environmental Superintendent
Western Refining – Gallup Refinery
Route 3 Box 7
Gallup, NM 87301

RE: Land Treatment Unit Soil Sampling Report, Western Refining, Gallup Refinery, Gallup,
New Mexico

Dear Mr. Riege:

Trihydro Corporation (Trihydro) was selected to conduct Resource Conservation and Recovery Act (RCRA) required soil sampling at Gallup Refinery's (Gallup) Land Treatment Unit (LTU). The LTU soil sampling was conducted during the week of December 7, 2009. This report is being submitted to Gallup to document the LTU soil sampling activities.

Trihydro was provided with Section 5 of Gallup's LTU Post-Closure Monitoring Plan dated May 2000 to guide the LTU soil sampling. With the exceptions noted below, LTU sampling was conducted in accordance with this document.

Pre Sampling Activities

Per the Post-Closure Monitoring Plan, the LTU cells were divided into 6 foot by 6 foot grids. A total of 6 of the 8,625 grids were selected for sampling utilizing a random integer generator provided by Random.Org. Documentation of the random integer selection is provided as Attachment 1. The Post-Closure Monitoring Plan requires that a minimum of one sample location be located within each of the two LTU cells. However, there are currently three LTU cells. Therefore, sets of random integers were generated until at least one sample location was located within each of the three LTU cells. A map illustrating the sample locations is provided as Attachment 2.

Trihydro personnel arrived on site on December 8, 2009. Sample locations were located by Trihydro personnel utilizing a measuring tape and the corners of the berms dividing the LTU cells as reference points. Sample locations were staked and photographed. Photographs of the sample locations are included as photos 1 through 6 of the photo documentation provided as Attachment 3.

According to the Post-Closure Monitoring Plan, LTU soil samples were to be collected utilizing a hollow-stem auger drill rig equipped with a 5-foot, 2.5-inch diameter split core barrel advanced with the lead auger. However, upon arrival, Trihydro was informed by Gallup that accessing the soil sampling



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locations with a hollow-stem auger drill rig would not be possible due to muddy conditions caused by recent precipitation events. Hope Monzeglio of the New Mexico Environment Department (NMED) was contacted by Grant Price of Trihydro on December 8, 2009 to discuss possible alternative sampling procedures. Ms. Monzeglio confirmed that collecting samples utilizing a hand auger equipped with stainless steel sleeves or a manual slide-hammer sampling probe would be acceptable.

LTU Soil Sampling

Zone of Incorporation (ZOI) samples were collected at five of the six sample locations utilizing the hand auger on December 8 and 9, 2009. At location 7544, the hand auger was not able to be advanced deep enough to collect the ZOI sample due to the presence of gravel. This sample was collected using a direct push drill rig as described below. A photograph of the hand auger and stainless steel sleeves is provided as photo 7 in Attachment 3. The auger and the sleeves were decontaminated between each sample interval and location. A photograph of the decontamination station is provided as photo 8 of Attachment 3.

In accordance with the Post-Closure Monitoring Plan, ZOI samples were to be collected from approximately 1 foot beneath the topsoil-ZOI surface (interface). The topsoil-ZOI interface was identified at depths ranging from 8 to 12 inches below ground surface (bgs). Therefore, ZOI samples were collected from approximately 2 feet bgs. The hand auger was advanced to the desired sample interval and samples were extracted onto clean plastic sheeting to allow for sample collection as illustrated in photos 9 through 11 in Attachment 3. Exact sample depths varied from location to location due to the varying depth of the topsoil-ZOI interface. Sample depths are documented on the Field Boring Logs provided as Attachment 4.

The Treatment Zone (TZ) is identified by the Post-Closure Permit as the top 5 feet of soil. Section 5 of the Post-Closure Permit does not specify the depth within the TZ from which to collect the TZ samples. Therefore, based on conversations with Gallup, it was determined that TZ samples should be collected from the bottom of the TZ. Accordingly, TZ samples were collected from approximately 5 feet bgs. Exact sample depths are documented on the Field Boring Logs provided as Attachment 4.

Trihydro personnel attempted to collect TZ samples utilizing a manual slide-hammer sampling probe. However, the subsurface proved to be too hard and the sampling probe could not be advanced deep enough to collect the TZ samples. Plans were made with Enviro-Drill of Albuquerque, New Mexico to conduct the soil sampling utilizing a pickup truck mounted direct push rig. This type of rig is capable of accessing locations that the larger hollow-stem auger drill rig cannot. Samples were collected on December 11, 2009 utilizing 2-foot split core barrels advanced with the direct push drill rig. Split core barrels were decontaminated between each sample interval and location. Both 2.5-inch and 1.5-inch core barrels were utilized. The 2.5-inch core barrel was preferred as it is able to collect a larger volume of soil.



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However, at some locations, refusal was met with the 2.5-inch core barrel before the desired sample interval was encountered. At these locations, the 1.5-inch core barrel was used. Photographs of the core barrels are provided as photos 12 and 13 in Attachment 3. The ZOI sample at location 7544, which could not be collected with the hand auger, was also collected using the direct push drill rig.

QAQC and Laboratory Analysis

Quality Assurance/Quality Control (QAQC) samples were collected in accordance with the Section 4 of the Post-Closure Permit. QAQC samples included a blind duplicate, a matrix spike and matrix spike duplicate (MS/MSD), a field blank, an equipment blank, and a trip blank per each ice chest. As noted on the Field Boring Logs provided as Attachment 4, the blind duplicate was collected from the ZOI interval at location 4129 and the MS/MSD was collected from the ZOI interval at location 8334. The equipment blank was collected by pouring distilled water through one of the stainless steel hand auger sleeves. Trip blanks and the field blank were also collected with distilled water.

Per the Post-Closure Permit, samples are to be analyzed for the analytes and reporting limits listed in the LTU Modified Skinner List. This list was attached to the Chain-of-Custodies (COCs) submitted to the lab. A copy of the COCs and attached LTU Modified Skinner List is provided as Attachment 5. The samples were shipped to Hall Environmental of Albuquerque, New Mexico for analyses. The samples were shipped in two sets in order to meet holding times. As noted in the "Relinquished by" sections of the COCs, the first set was shipped by Trihydro, and the second set was shipped by Gallup.

As per the LTU Soil Sampling Proposal and Cost Estimate dated November 16, 2009, this report does not include an evaluation of the laboratory data or the data itself. If you have any questions or comments, please do not hesitate to call us at (307) 745-7474.

Sincerely
Trihydro Corporation

Grant Price
Project Geologist

Regina Mitchell
Project Manager

697-038-001

Attachments

ATTACHMENT 1

RANDOM INTEGER GENERATOR DOCUMENTATION

Internet Explorer - Windows Internet Explorer provided by Intel...
http://www.random.org/integers/

File Edit View Favorites Tools Help

MSN.com

Home Introduction Statistics Numbers Drawings Testimonials FAQ Contact Login What's New?

RANDOM.ORG

Search RANDOM.ORG
True Random Number Service

Random Integer Generator

This form allows you to generate random integers. The randomness comes from atmospheric noise, which for many purposes is better than the pseudo-random number algorithms typically used in computer programs.

Part 1: The Integers

Generate: random integers (maximum 10,000).

Each integer should have a value between and (both inclusive; limits $\pm 1,000,000,000$).

Format in: column(s).

Part 2: Go!

Be patient! It may take a little while to generate your numbers...

Note: The numbers generated with this form will be picked independently of each other (like rolls of a die) and may therefore contain duplicates. There is also the Sequence Generator, which generates randomized sequences (like raffle tickets drawn from a hat) and where each number can only occur once.

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Valid XHTML 1.0 Transitional | Valid CSS
Web Design by TSDA

Internet Explorer - Windows Internet Explorer provided by Intel...
http://www.random.org/integers/?min=6&max=8625&col=1&base=10&format=html&rnd=new

File Edit View Favorites Tools Help

MSN.com

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RANDOM.ORG

Search RANDOM.ORG
True Random Number Service

Random Integer Generator

Here are your random numbers:

4139
7544
8334
371
2521
3414

Timestamp: 2009-12-02 21:56:03 UTC

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Valid XHTML 1.0 Transitional | Valid CSS
Web Design by TSDA

ATTACHMENT 2
LTU SAMPLE LOCATIONS

**TO VIEW THE MAP AND/OR
MAPS WITH THIS DOCUMENT,
PLEASE CALL THE
HAZARDOUS WASTE BUREAU
AT 505-476-6000 TO MAKE AN
APPOINTMENT**

ATTACHMENT 3
PHOTO DOCUMENTATION



Photo 1. Sample Location 371 (stake).



Photo 2. Sample Location 3414 (stake).



Photo 3. Sample Location 4139 (stake with tape measure for visibility).



Photo 4. Sample Location 2521 (stake).



Photo 5. Sample Location 7544 (stake).



Photo 6. Sample Location 8334 (stake).



Photo 7. Stainless steel auger with sleeves used to collect ZOI samples.



Photo 8. Decon station, one wash with simple green, two rinse (distilled water).



Photo 9. Cuttings from auger at sample location 2521, shallow on left, deep on right.

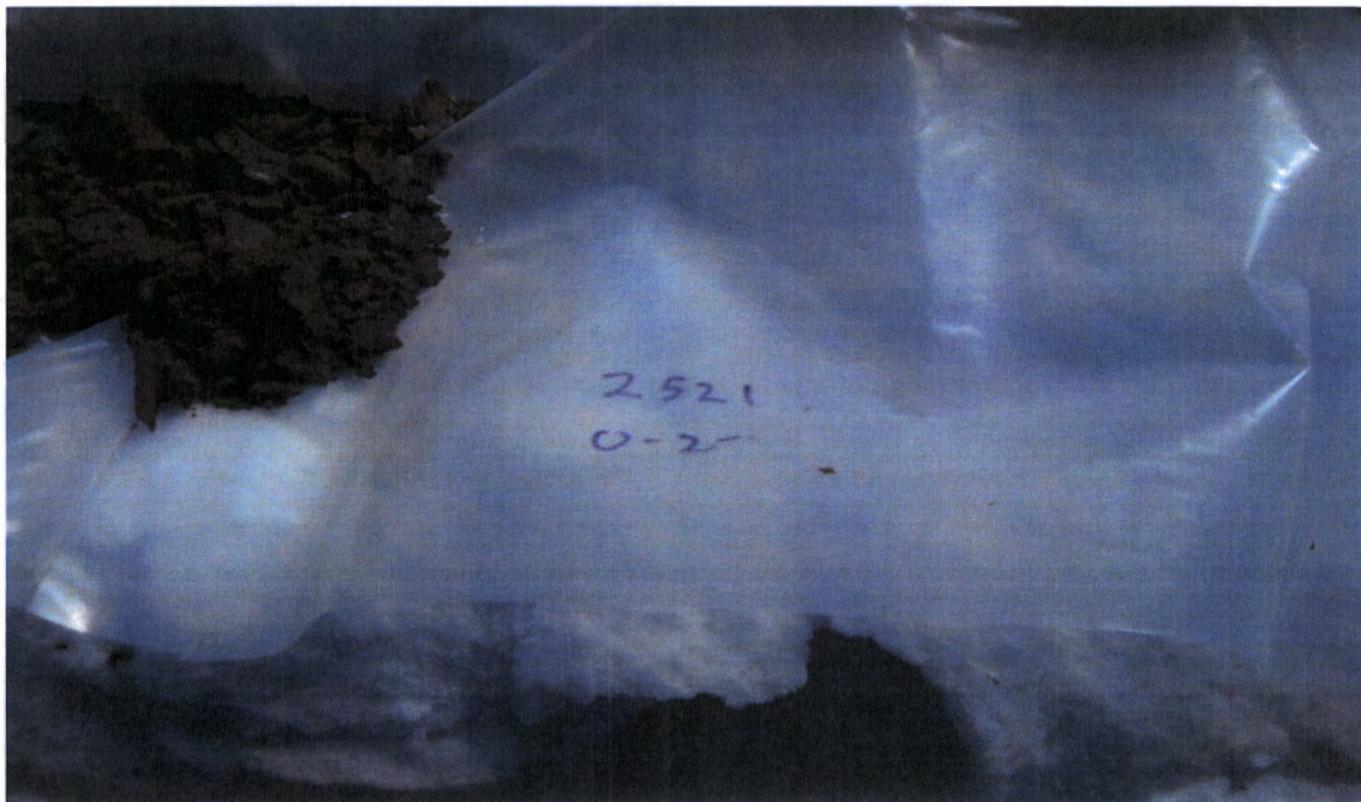


Photo 10. Close up of cuttings from 2521.



Photo 11. Auger in borehole at 2 ft bgs at sample location 2521.

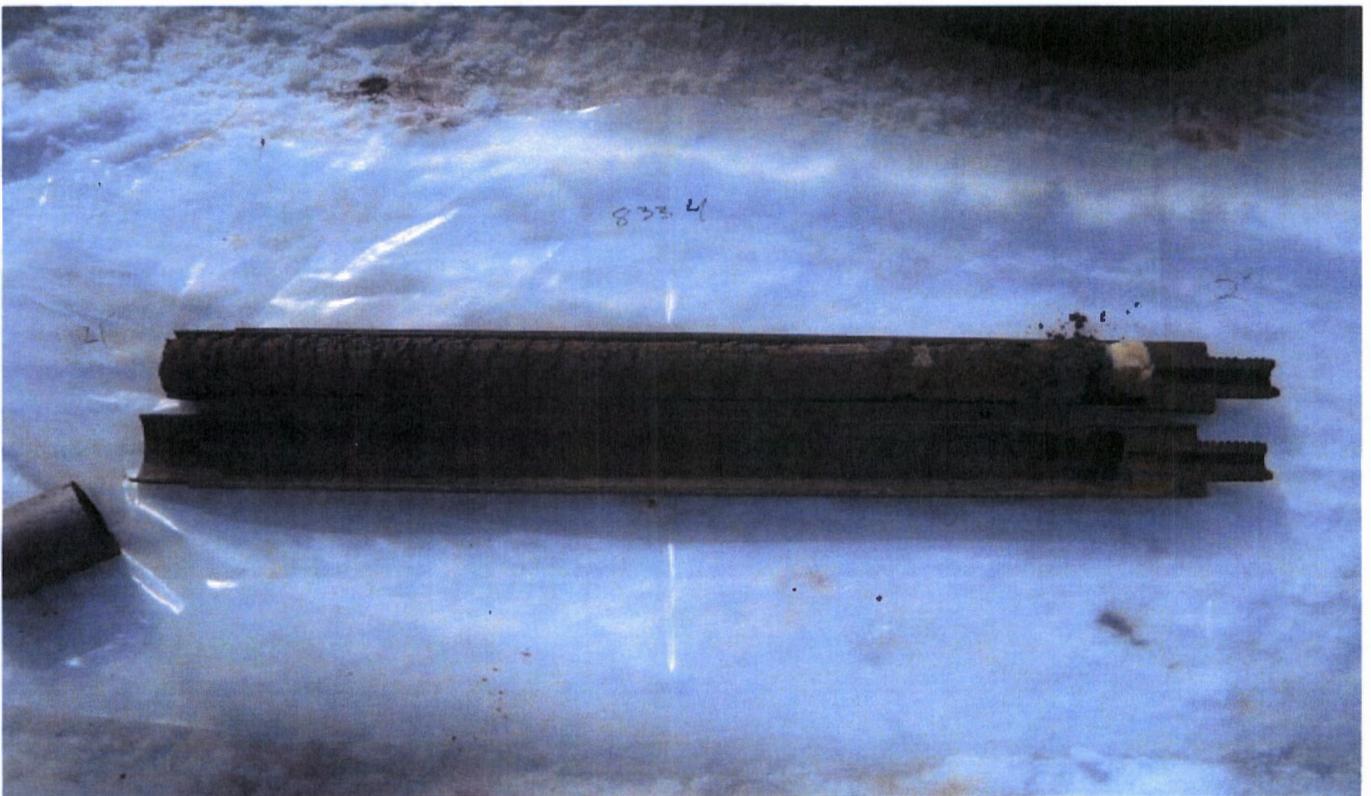


Photo 12. 2.5" sampler with cuttings from 2 to 4 ft bgs at sample location 8334.

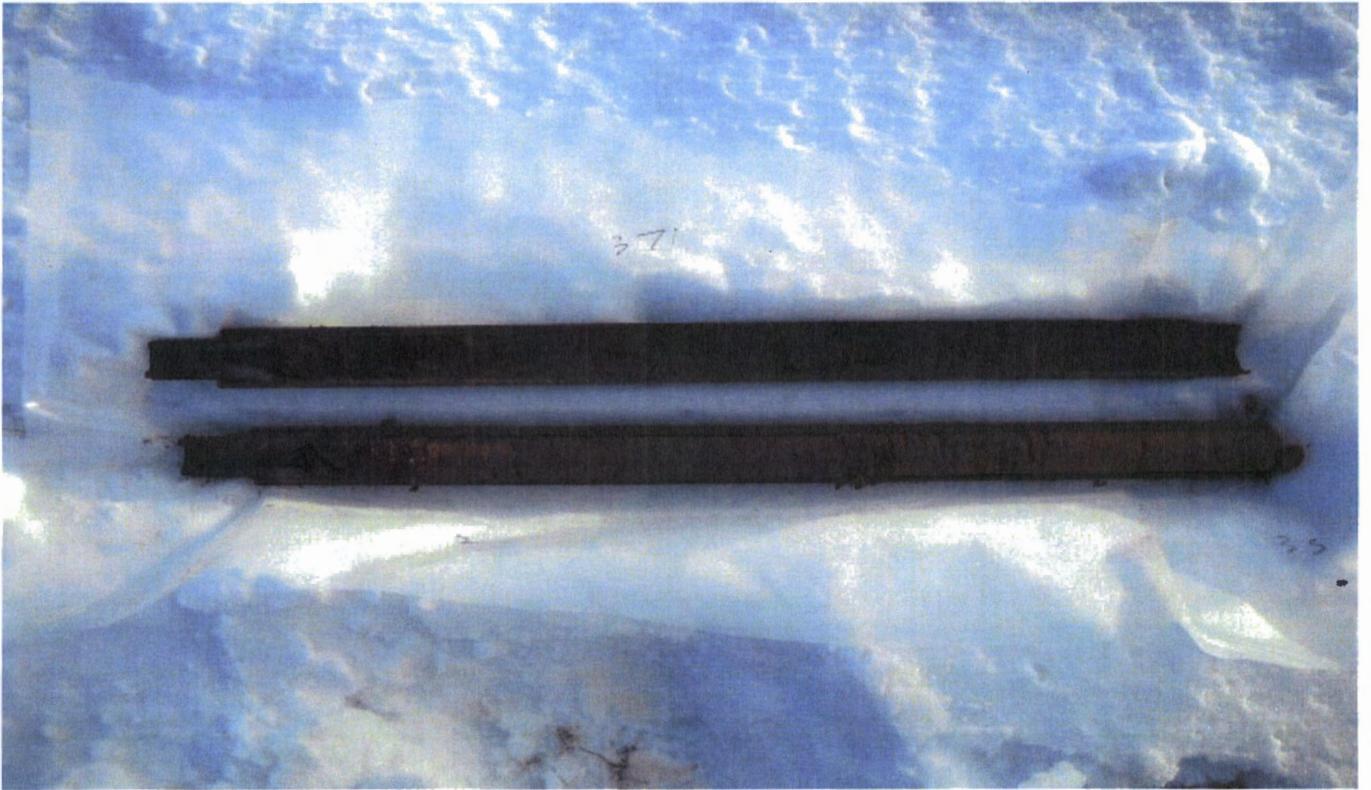


Photo 13. 1.5" sampler with cuttings from 2 to 3.5 ft bgs at sample location 371.

ATTACHMENT 4

FIELD BORING LOGS

TRIHYDRO CORPORATION
FIELD BORING LOG

Sheet 1 of 1 Sheets

Project & Project Number: Western Refining 697-038-001	Date: 12/8/2009 - 12/11/2009
Project Location/Address: Gallup Refinery	Drilling Company: Enviro-Drill
Client: Western Refining	Driller: Brad Dennisson
Weather: Cold - 32 degrees, wind out of west	Rig Type / Method: GeoProbe Hurricane
Logged by: Grant Price	Sample Method: Hand auger and direct push with split spoon
Logger's Signature:	Surface Elevation: NA Casing Elevation: NA GE Elevation: NA
	Equipment List: GeoProbe Hurricane and stainless steel hand auger

BORING ID: 371

Boring Location: LTU Cell 1

Interval	Texture - Grain Size		Color			Plasticity	Consistency	Moisture	Odor	PID Interval/Reading (ppm)	Additional Comments (Odor descriptor, sheen, nodules, structure, vegetation, etc.)
	Major	Minor	Major	Modifier							
0 - 4"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Gray Rust Yellow Other	Brown Green Yellow	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		Sand is fine grained.
4" - 10"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Gray Rust Yellow Other	Brown Green Yellow	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		Loose material. No obvious distinction between topsoil and ZOI.
10" - 24"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Gray Rust Yellow Other	Brown Green Yellow	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted	1/0.0	Surfaces in dry, brittle chunks.
24" - 36"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Gray Rust Yellow Other	Brown Green Yellow	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted	3/0.5	Some silt. Only slightly sandy. Sand is fine grained. Very hard drilling.
36" - 6'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Gray Rust Yellow Other	Brown Green Yellow	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted	5/0.4	Same as above, drilling even harder. TD = 6'
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Gray Rust Yellow Other	Brown Green Yellow	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Gray Rust Yellow Other	Brown Green Yellow	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		

Sample Collected: yes, 2

Number/Size of Containers: Three 4 oz. jars for each sample

Sample ID: ZOI-1-371-120809 / TZ-1-371-121109

Analysis to be Performed: Modified Skinner List (VOCs 8260, SVOCs 8270, GRO/DRO 8015, Metals 6010, Hg 7470/7471, Cyanide 353.3/9010, 9014)

Date: 12-08-2009 / 12-11-2009

Duplicate Collected: No

Time: 16:00 / 16:25

Notes: Refusal with GeoProbe @ 2.5', side-stepped ~ 8' to the south to collect TZ sample.

Depth: 20" - 24" / 4.25' - 5.75'

0 - 24" with hand auger, 24" - 6' with GeoProbe.

TRIHYRO CORPORATION
FIELD BORING LOG

Sheet 1 of 1 Sheets

Project & Project Number: Western Refining 697-038-001	Date: 12/9/2009 - 12/11/2009
Project Location/Address: Gallup Refinery	Drilling Company: Enviro-Drill
Client: Western Refining	Driller: Brad Dennisson
Weather: Cold, ~ 25 degrees, wind out of west	Rig Type / Method: GeoProbe Hurricane
Logged by: Grant Price	Sample Method: Hand auger and direct push with split spoon
Logger's Signature:	Surface Elevation: NA Casing Elevation: NA GE Elevation: NA
	Equipment List: GeoProbe Hurricane and stainless steel hand auger

BORING ID: 2521

Boring Location: LTU Cell 1

Interval	Texture - Grain Size		Color			Plasticity	Consistency	Moisture	Odor	PID Interval/ty Reading(ppm)	Additional Comments (Odor descriptor, sheen, nodules, structure, vegetation, etc.)
	Major	Minor	Major	Modifier							
0 - 10"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted			Sand silt mixture (~50%/50%). Material is loose. Roots in upper 4" - 10" is likely topsoil/ZOI interface
10" - 24"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted	1/2.2		Some silt. Becomes harder with depth.
24" - 6'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted	3/0.4 5/0.6		Trace of silt and sand. Sand is fine grained. TD = 6'.
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted			
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted			
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted			

Sample Collected: yes, 2

Number/Size of Containers: Three 4 oz. jars for each sample

Sample ID: ZOI-1-2521-120909 / TZ-1-2521-121109

Analysis to be Performed: Modified Skinner List (VOCs 8280, SVOCs 8270, GRO/DRO 8015, Metals 6010, Hg 7470/7471, Cyanide 353.3/8010,9014)

Date: 12-09-2009 / 12-11-2009

Duplicate Collected: No.

Time: 13:40 / 15:20

Notes: 0 - 24" with hand auger, 24" - 6' with GeoProbe.

Depth: 20" - 24" / 4.5' - 5.75'

TRIHYDRO CORPORATION
FIELD BORING LOG

Sheet 1 of 1 Sheets

Project & Project Number: Western Refining 697-038-001	Date: 12/9/2009 - 12/11/2009
Project Location/Address: Gallup Refinery	Drilling Company: Enviro-Drill
Client: Western Refining	Driller: Brad Dennison
Weather: Cold, ~ 25 degrees, wind out of west	Rig Type / Method: GeoProbe Hurricane
Logged by: Grant Price	Sample Method: Hand auger and direct push with split spoon
Logger's Signature:	Surface Elevation: NA Casing Elevation: NA GE Elevation: NA
	Equipment List: GeoProbe Hurricane and stainless steel hand auger

BORING ID: 3414

Boring Location: LTU Cell 3

Interval	Texture - Grain Size		Color		Plasticity	Consistency	Moisture	Odor	PID Interval(%) Reading(ppm)	Additional Comments (Odor descriptor, sheen, nodules, structure, vegetation, etc.)
	Major	Minor	Major	Modifier						
0 - 10"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		Some sand, fine grained. Only a trace of clay. Material is loose. 10" bgs presumed to be topsoil/ZOI interface.
10" - 20"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted	1/0.6	Gravel is fine grained. Some sand, fine grained. Material is loose.
20" - 24"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		Some clay. Some sand, fine grained. Material is loose/soft.
24" - 3.25'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted	3/0.6	Sand is fine grained.
3.25' - 5.5'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted	5/0.8	Some silt. Silt content decreases with depth. Moist at 4.5' bgs. Refusal at 5.5' bgs.
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Bm - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		

Sample Collected: yes, 2

Number/Size of Containers: Three 4 oz. jars for each sample

Sample ID: ZOI-3-3414-120909 / TZ-3-3414-121109

Analysis to be Performed: Modified Skinner List (VOCs 8260, SVOCs 8270, GRODRO 8015, Metals 6010, Hg 7470/7471, Cyanide 353.3/9010, 9014)

Date: 12-09-2009 / 12-11-2009

Duplicate Collected: No.

Time: 11:50 / 12:35

Notes: 0 - 24" with hand auger, 24" - 6' with GeoProbe.

Depth: 20" - 24" / 4.5' - 5.5'

TRIHYRO CORPORATION
FIELD BORING LOG

Sheet 1 of 1 Sheets

Project & Project Number: Western Refining 697-038-001	Date: 12/9/2009 - 12/11/2009
Project Location/Address: Gallup Refinery	Drilling Company: Enviro-Drill
Client: Western Refining	Driller: Brad Dennisson
Weather: Cold, ~ 25 degrees, wind out of west	Rig Type / Method: GeoProbe Hurricane
Logged by: Grant Price	Sample Method: Hand auger and direct push with split spoon
Logger's Signature:	Surface Elevation: NA Casing Elevation: NA GE Elevation: NA
	Equipment List: GeoProbe Hurricane and stainless steel hand auger

BORING ID: 4139

Boring Location: LTU Cell 2

Interval	Texture - Grain Size		Color		Plasticity	Consistency	Moisture	Odor	PID interval/ Reading(ppm)	Additional Comments (Odor descriptor, sheen, nodules, structure, vegetation, etc.)
	Major	Minor	Major	Modifier						
0 - 6"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non --	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		Sand is fine grained, some clay.
6" - 12"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non --	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted	1/1.7	Sand is fine grained. Material is loose. 12" bgs believed to be topsoil/ZOI interface.
12" - 25"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non --	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		Some silt. Only a trace of sand, fine grained. Slight HC odor.
25" - 4'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non --	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted	3/0.9	Some silt. Only a trace of sand, fine grained. Slight HC odor.
4' - 6'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non --	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted	5/1.0	Only a trace of silt and sand. Sand is fine grained. TD = 6'
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non --	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		
	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non --	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated --	Strong Moderate Slight None Noted		

Sample Collected: yes, 2

Number/Size of Containers: Three 4 oz. jars for each sample

Sample ID: ZOI-2-4139-120909 / TZ-2-4139-121109

Analysis to be Performed: Modified Skinner List (VOCs 8260, SVOCs 8270, GRO/DRO 8015, Metals 6010, Hg 7470/7471, Cyanide 353.3/6010, 6014)

Date: 12-09-2009 / 12-11-2009

Duplicate Collected: Yes, BD120909 collected from ZOI interval.

Time: 10:30 / 13:05

Notes: 0 - 25" with hand auger, 25" - 6' with GeoProbe.

Depth: 21" - 25" / 4.5' - 5.5'

TRIHYRO CORPORATION
FIELD BORING LOG

Sheet 1 of 1 Sheets

Project & Project Number: Western Refining 697-038-001	Date: 12/9/2009 - 12/11/2009
Project Location/Address: Gallup Refinery	Drilling Company: Enviro-Drill
Client: Western Refining	Driller: Brad Dennisson
Weather: Cold, ~ 25 degrees, wind out of west	Rig Type / Method: GeoProbe Hurricane
Logged by: Grant Price	Sample Method: Direct push with split spoon
Logger's Signature:	Surface Elevation: NA Casing Elevation: NA GE Elevation: NA
	Equipment List: GeoProbe Hurricane

BORING ID: 7544

Boring Location: LTU Cell 3

Interval	Texture - Grain Size		Color			Plasticity	Consistency	Moisture	Odor	PID Intervally Reading(ppm)	Additional Comments (Odor descriptor, sheen, nodules, structure, vegetation, etc.)
	Major	Minor	Major	Modifier							
0 - 8"	GVL - F M C Sand - F M C Silt Clay	Grvily Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Gray Rust Other	Brown Green Yellow %	High Moderate Low Non -	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted		Topsoil/ZOI interface presumed to be 8" bgs
8" - 24"	GVL - F M C Sand - F M C Silt Clay	Grvily Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Gray Rust Other	Brown Green Yellow %	High Moderate Low Non -	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted	1/0.1	1" thick layer of white/yellow powdery substance at 1' bgs, possibly sulfur. Some gravel, up to 1.5" in longest deminon. Only a trace of sand, fine grained. Some dark brown staining.
24" - 3.5'	GVL - F M C Sand - F M C Silt Clay	Grvily Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Gray Rust Other	Brown Green Yellow %	High Moderate Low Non -	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted	3/0.3	Only a trace of sand, fine grained.
3.5' - 5'	GVL - F M C Sand - F M C Silt Clay	Grvily Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Gray Rust Other	Brown Green Yellow %	High Moderate Low Non -	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted		50% recovery. Only a trace of sand, fine grained.
5' - 6'	GVL - F M C Sand - F M C Silt Clay	Grvily Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Gray Rust Other	Brown Green Yellow %	High Moderate Low Non -	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted	5/0.4	Slightly sandy, fine grained. TD = 6'
	GVL - F M C Sand - F M C Silt Clay	Grvily Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Gray Rust Other	Brown Green Yellow %	High Moderate Low Non -	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted		
	GVL - F M C Sand - F M C Silt Clay	Grvily Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Gray Rust Other	Brown Green Yellow %	High Moderate Low Non -	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated -	Strong Moderate Slight None Noted		

Sample Collected: yes, 2

Number/Size of Containers: Three 4 oz. jars for each sample

Sample ID: ZOI-3-7544-121109 / TZ-3-7544-121109

Analysis to be Performed: Modified Skinner List (VOCs 8260, SVOCs 8270, GRO/DRO 8015, Metals 6010, Hg 7470/7471, Cyanide 353.3/9010, 9014)

Date: 12-11-2009 / 12-11-2009

Duplicate Collected: No

Time: 14:00 / 14:30

Notes: Entire location sampled with GeoProbe, refusal with hand auger at ~ 1 ft bgs.

Depth: 20" - 30" / 4.5' - 5.75'

TRIHYDRO CORPORATION
FIELD BORING LOG

Project & Project Number: Western Refining 697-038-001	Date: 12/9/2009 - 12/11/2009
Project Location/Address: Gallup Refinery	Drilling Company: Enviro-Drill
Client: Western Refining	Driller: Brad Dennisson
Weather: Cold, ~ 25 degrees, wind out of west	Rig Type / Method: GeoProbe Hurricane
Logged by: Grant Price	Sample Method: Hand auger and direct push with split spoon
Logger's Signature:	Surface Elevation: NA Casing Elevation: NA GE Elevation: NA
	Equipment List: GeoProbe Hurricane and stainless steel hand auger

BORING ID: 8334

Boring Location: LTU Cell 2

Interval	Texture - Grain Size		Color		Plasticity	Consistency	Moisture	Odor	PID Interval/ Reading(ppm)	Additional Comments (Odor descriptor, sheen, nodules, structure, vegetation, etc.)
	Major	Minor	Major	Modifier						
0 - 4"	GVL - F M C Sandy Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		Some roots. Only a trace of clay. Medium dense material
4" - 12"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted	1/1.3	Sand is fine grained. Material is loose.
12" - 16"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		Sand is fine grained. 25% light greyish green chalky/powdery substance. Material is loose. 12" is likely the topsoil-ZOI surface.
16" - 19"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		
19" - 25"	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		Some sand, fine grained.
25" - 5.5'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted	3/0.8 5/1.2	Only a trace of sand, fine grained.
5.5' - 6'	GVL - F M C Sand - F M C Silt Clay	Grvly Sandy Silty Clayey	Black Gray - L M D Brn - L M D Red - L M D Other	Red Brown Gray Green Rust Yellow Other	High Moderate Low Non	Very Soft Soft Firm Hard Very Hard	Dry Moist Saturated	Strong Moderate Slight None Noted		Some sand, fine grained. Slight HC odor. TD = 6'

Sample Collected: yes, 2

Number/Size of Containers: Three 4 oz. jars for each sample

Sample ID: ZOI-2-8334-120909 / TZ-2-8334-121109

Analysis to be Performed: Modified Skinner List (VOCs 8260, SVOCs 8270, GRO/DRO 8015, Metals 6010, Hg 7470/7471, Cyanide 353.3/6010, 9014)

Date: 12-09-2009 / 12-11-2009

Duplicate Collected: Yes, MS/MSD from ZOI sample.

Time: 9:15 / 13:30

Notes: 0 - 25" with hand auger, 25" - 6' with GeoProbe.

Depth: 21" - 25" / 4.5' - 5.75'

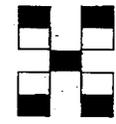
ATTACHMENT 5

CHAIN OF CUSTODY FORMS AND LTU MODIFIED SKINNER LIST

Chain-of-Custody Record

Client: Gallup Refinery
Western Refining
Mailing Address: Route 5 Box 7
Gallup, NM 87301
Phone #: 505-722-3833
email or Fax#: 505-722-0210
QA/QC Package:
 Standard Level 4 (Full Validation)
Accreditation
 NELAP Other _____
 EDD (Type) _____

Turn-Around Time:
 Standard Rush 1 week
Project Name: LTV RCRA soil sampling
Project #: LTV sampling
Project Manager: Cheryl Johnson
Sampler: Grant Price
On Ice: Yes No
Sample Temperature: _____



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	See attached Modified Worksheet for LTV	Air Bubbles (Y or N)	
12/8/09	16:00	Soil	ZOI-1-371-120609	3x 4oz	none															
12/1/09	9:15	Soil	ZOI-2-8334-120909	3x 4oz	none															
2/9/09	10:30	Soil	ZOI-2-4139-120909	3x 4oz	none															
2/9/09	11:50	Soil	ZOI-3-3414-120909	3x 4oz	none															
2/9/09	13:40	Soil	ZOI-1-2521-120909	3x 4oz	none															
2/9/09		Soil	BD120909	3x 4oz	none															
2/9/09	9:15	Soil	MS/MSD	6x 4oz	none															
		Water	Trip Blank	3 VOA	HCL											X				

Date: 2/10/09 Time: 10:00 Relinquished by: Grant Price
Received by: UPS Date: 12/10/09 Time: 10:00
Date: _____ Time: _____ Relinquished by: _____
Received by: _____ Date: _____ Time: _____

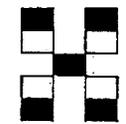
Remarks: MS/MSD collected from ZOI-2-8334-120909

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly noted on the analytical report.

Chain-of-Custody Record

Client: Gallup Refinery
Western Refining
 Mailing Address: Route 3 Box 7
Gallup, NM 87301
 Phone #: 505-722-3833
 email or Fax#: 505-722-0210
 QA/QC Package:
 Standard Level 4 (Full Validation)
 Accreditation
 NELAP Other _____
 EDD (Type) _____

Turn-Around Time:
 Standard Rush 1 week
 Project Name: LTU RCRA Soil Sampling
 Project #: LTU sampling
 Project Manager: Cheryl Johnson
 Sampler: Grant Price
 On Ice: Yes No
 Sample Temperature: _____



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com
 4901 Hawkins NE - Albuquerque, NM 87109
 Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	See attached modified L.S. for LTU	Air Bubbles (Y or N)	
12/11/09	16:25	soil	TZ-1-371-121109	3 x 4-oz	None															
12/11/09	15:20	soil	TZ-1-251-121109	↓	↓															
12/11/09	13:05	soil	TZ-2-4139-121109	↓	↓															
12/11/09	13:30	soil	TZ-2-8334-121109	↓	↓															
12/11/09	12:35	soil	TZ-3-3414-121109	↓	↓															
2/11/09	14:00	soil	ZO2-3-7544-121109	↓	↓															
2/11/09	14:30	soil	TZ-3-7544-121109	↓	↓															
12/11/09	9:10	water	FB121109	3 VOA	HCL															
2/11/09	9:30	water	FB121109	3 VOA	HCL															
/	/	water	Trip Blank	3 VOA	HCL															

Date: 2/11/09 Time: 17:00 Relinquished by: D-R
 Received by: Cheryl Johnson Date: 12/11/09 Time: 17:00
 Relinquished by: _____ Received by: _____ Date: _____ Time: _____

Remarks: TZ-3-7544-121109, not -- -- 12/11/09
only 2 jars for TZ-1-371-121109

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Table E-1A. Modified Skinner List 8260 Volatile Organics and PHCs*

Parameter	EPA Method SW-846	Description	Containers	Preservative	Holding Time/Days	Liquid Reporting ^c Limit (µg/L)	Soil Reporting ^c Limit (mg/kg)
Benzene	8260	GC/MS	G	4°C	14	5	0.67
2-Butanone (MEK)	8260	GC/MS	G	4°C	14	1900	7000
Carbon Disulfide	8260	GC/MS	G	4°C	14	1000	350
Chlorobenzene	8260	GC/MS	G	4°C	14	39	54
Chloroform	8260	GC/MS	G	4°C	14	0.16	0.24
Chloromethane	8260	GC/MS	G	4°C	14	1.5	1.2
1,1 Dichloroethane	8260	GC/MS	G	4°C	14	25	580
1,2 Dichloroethane	8260	GC/MS	G	4°C	14	5	0.34
1,1 Dichloroethene	8260	GC/MS	G	4°C	14	5.0	0.053
trans-1,2-Dichloroethene	8260	GC/MS	G	4°C	14	100	63
1,4-Dioxane	8260	GC/MS	G	4°C	14	6.1	44
Ethylbenzene ^a	8260	GC/MS	G	4°C	14	700	230
Methylene Chloride	8260	GC/MS	G	4°C	14	4.3	8.6
Styrene	8260	GC/MS	G	4°C	14	100	1700
1,1,2,2-Tetrachloroethane ^b	8260	GC/MS	G	4°C	14	0.055	0.37
Tetrachloroethene ^b	8260	GC/MS	G	4°C	14	5	4.9
Toluene	8260	GC/MS	G	4°C	14	1000	1000
1,1,1-Trichloroethane	8260	GC/MS	G	4°C	14	60	200
Trichloroethene	8260	GC/MS	G	4°C	14	5	2.7
Total Xylene ^{a,d}	8260	GC/MS	G	4°C	14	10,000	860
Ethylene Dibromide ^b	8260	GC/MS	G	4°C	14	0.1	0.005
Acetone	8260	GC/MS	G	4°C	14	610	1500

*Principal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.

^bAdditional constituents.

^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels (1999) and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.

^dRegulatory limits for individual isomers combined into a "total" limit for these compounds.

mg/kg = milligrams per kilogram

µg/L = microgram per liter

G = glass with Teflon-lined lid

GC/MS = gas chromatography/mass spectrometry

Table E-1B. Modified Skinner List 8270 Semivolatile Organics Including TPH and PHCs^a

Parameter	EPA	Description	Container	Preservative	Holding Time/Days	Liquid	Soil
	Method SW-846					Reporting Limit (µg/L) ^c	Reporting Limit (mg/kg) ^c
Anthracene	8270	GC/MS	G	4°C	14	1800	16000
Acenaphthene	8270	GC/MS	G	4°C	14	370	2800
Benzo(a)Anthracene	8270	GC/MS	G	4°C	14	0.09	0.62
Benzo(b)Fluoranthene	8270	GC/MS	G	4°C	14	0.09	0.62
Benzo(k)Fluoranthene	8270	GC/MS	G	4°C	14	0.9	6.2
Benzo(a)Pyrene ^a	8270	GC/MS	G	4°C	14	0.0007	0.062
Butyl Benzyl Phthalate	8270	GC/MS	G	4°C	14	7300	240
Chrysene ^a	8270	GC/MS	G	4°C	14	9.2	62
Diethyl Phthalate	8270	GC/MS	G	4°C	14	29000	49000
7,12-Dimethylbenz(a)-Anthracene	8270	GC/MS	G	4°C	14	•	•
Dimethyl Phthalate	8270	GC/MS	G	4°C	14	370000	100000
Di-n-Octyl Phthalate	8270	GC/MS	G	4°C	14	730	1200
Fluoranthene	8270	GC/MS	G	4°C	14	1500	2300
Fluorene	8270	GC/MS	G	4°C	14	240	2000
Indeno(1,2,3-cd)Pyrene	8270	GC/MS	G	4°C	14	0.09	0.62
2-Methylnaphthalene ^a	8270	GC/MS	G	4°C	14	30	660
2-Methylphenol (Cresol)	8270	GC/MS	G	4°C	14	1800	3000
3/4-Methylphenol (Cresol)	8270	GC/MS	G	4°C	14	1980	3300
Naphthalene ^b	8270	GC/MS	G	4°C	14	30	55
Nitrobenzene	8270	GC/MS	G	4°C	14	3.4	17
4-Nitrophenol	8270	GC/MS	G	4°C	14	2300	3800
Phenanthrene ^a	8270	GC/MS	G	4°C	14	•	•
Pyrene ^a	8270	GC/MS	G	4°C	14	180	1700
Pyridine	8270	GC/MS	G	4°C	14	37	61
Quinoline	8270	GC/MS	G	4°C	14	0.0056	0.04
Benzenethiolo	8270	GC/MS	G	4°C	14	•	•
Phenol	8270	GC/MS	G	4°C	14	5	36000
Bis(2-Ethylhexyl)phthalate ^b	8270	GC/MS	G	4°C	14	6.0	35
Dibenz(a,j)acridine ^b	8270	GC/MS	G	4°C	14	•	•
Dibenz(a,h)-anthracene	8270	GC/MS	G	4°C	14	0.0092	0.062
Dichlorobenzene ^{b, c}	8270	GC/MS	G	4°C	14	675	410
Methyl Naphthalene	8270	GC/MS	G	4°C	14	30	•
2,4-Dimethylphenol	8270	GC/MS	G	4°C	14	730	1200
2,4-Dinitrotoluene	8270	GC/MS	G	4°C	14	73	120

Table E-1B. Modified Skinner List 8270 Semivolatile Organics Including TPH and PHCs² (Continued)

Parameter	EPA	Description	Container	Preservative	Holding Time/Days	Liquid	Soil
	Method SW-846					Reporting Limit ($\mu\text{g/L}$) ^e	Reporting Limit (mg/kg) ^f
2,4-Dinitrophenol ^b	8270	GC/MS	G	4°C	14	73	120
Benzo(j)Fluoranthene	8270	GC/MS	G	4°C	14	°	°
2-Chlorophenol	8270	GC/MS	G	4°C	14	30	61
2,4,6-Trichlorophenol	8270	GC/MS	G	4°C	14	6.1	44
Di-n-Butyl Phthalate	8270	GC/MS	G	4°C	14	3700	6100
Benzyl Alcohol ^b	8270	GC/MS	G	4°C	14	11000	18000
Methyl Chrysene	8270	GC/MS	G	4°C	14	°	°
Total Cresol ^{g, f}	8270	GC/MS	G	4°C	14	3780	6300
TPH ^b	8015m	GS	G	4°C	7	—	1000

²Principal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.

^bAdditional constituents.

^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels (1999) and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.

^dNo regulatory limit provided. Laboratory detection limit will be used.

^eRegulatory limits for individual isomers combined into a 'total' limit for these compounds.

^fTotal naphthalene plus monomethylnaphthalenes regulatory limit is < 30 $\mu\text{g/L}$ for aqueous samples.

^gTotal Petroleum Hydrocarbon as Gasoline Range Organics and Diesel Range Organics

$\mu\text{g/l}$ = microgram per liter

mg/kg = milligram per kilogram

G = glass with Teflon-lined lid

GC/MS = gas chromatography/mass spectrometry

GC = gas chromatography

Table E-1C. Modified Skinner List Metals and PHCs^a

Parameter	EPA Method SW-846	Description	Container	Preservative ^b	Holding Time/Days	Aqueous Reporting Limit (µg/L) ^c	Soil Reporting Limit (mg/kg) ^c
Antimony	7060(aq), 6010	GFAA/ICP	P or G	4°C	180	6.0	31
Arsenic	6010	ICP-AES	P or G	4°C	180	50	22
Barium	6010	ICP-AES	P or G	4°C	180	2000	5400
Beryllium	6010	ICP-AES	P or G	4°C	180	4.0	150
Cadmium	6010	ICP-AES	P or G	4°C	180	5.0	39
Chromium ^a	6010	ICP-AES	P or G	4°C	180	50	210
Cobalt	6010	ICP-AES	P or G	4°C	180	50	3400
Lead ^a	6010	ICP-AES	P or G	4°C	180	15	400
Nickel	6010	ICP-AES	P or G	4°C	180	100	1600
Selenium	6010	ICP-AES	P or G	4°C	180	50	390
Silver	6010	ICP-AES	P or G	4°C	180	50	390
Vanadium	6010	ICP-AES	P or G	4°C	180	260	550
Zinc	6010	ICP-AES	P or G	4°C	180	10000	23000

^aPrincipal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.

^bAqueous samples are field acidified to pH < 2 with HNO₃ and must not be refrigerated. Non-aqueous samples are cooled to 4°C.

^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels (1999) and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.

µg/l = microgram per liter
 mg/kg = milligram per kilogram
 ICP-AES = Inductively Coupled Plasma - Atomic Emission Spectroscopy
 G = glass
 P = linear polyethylene, polypropylene, or Teflon

Table E-1D. Mercury* and Cyanide

Parameter	EPA Method SW-846	Description	Container	Preservative	Holding Time/Days	Aqueous Reporting Limit ($\mu\text{g/L}$) ^c	Soil Reporting Limit (mg/kg) ^c
Mercury ^a	7470/7471	CVAA	P or G	4°C ^b	28	2.0	23
Cyanide	335.3/ 9010, 9014	Colorimetry	P or G	4°C ^d	14	200	1200

^aPrincipal hazardous constituent identified in Ciniza Hazardous Waste Facility Permit.

^bAqueous samples are field acidified to $\text{pH} < 2$ with HNO_3 and must not be refrigerated. Non-aqueous samples are cooled to 4°C.

^cBased on EPA Region 6, Human Health Medium-Specific Screening Levels and NM WQCC Regulations (1996). Analytical detection limits are required to be lower than reporting limits.

^dAqueous samples are field adjusted to $\text{pH} > 12$ with NaOH and refrigerated. Non-aqueous samples are cooled to 4°C.

$\mu\text{g/l}$ = microgram per liter
 mg/kg = milligram per kilogram
 CVAA = cold vapor atomic absorption
 G = glass
 P = linear polyethylene, polypropylene, or Teflon