GIANT
REFINING CO.

Route 3, Box 7
Gallup, New Mexico
87301

505.
722.3833

May 14, 1997

Mr. Patricio Sanchez
Petroleum Engineer
Oil Conservation District
2040 S. Pacheco
Santa Fe, New Mexico 87505

RE: Update On Tank 569 / SWMU 6 Investigation

Dear Mr. Sanchez:

As part of Giant's investigation of contamination in the vicinity of Tank 569, five (5) soil borings were completed on 3/22/97 and 3/23/97. These borings were completed on Mr. Jon Myer's property, directly east of the Refinery.

Enclosed please find the following documents:

Boring Logs for borings 0651 through 0655
Analytical Data from groundwater sampled from Borings 0651, 0652, and 0653
A map showing the locations of borings 0651 through 0655

The following Table lists corresponding identifications to help match data to boring.

Boring	Analytical ID	Sample Type	Notes
0651	RFI-06-1-X-Date	Water	X - depth of sample in ft.
0652	RFI-06-2-X-Date	Water	
0653	RFI-06-3-Date	Water	Depth to Water = 40 ft.
0654	No sample taken	--	Dry Hole, PID of soil = 0
0655	No sample taken	--	Dry Hole, PID of soil = 0

The samples were analyzed for BTEX and MTBE using Method 8020. Results were either "Not Detected" or below the Standards for Ground Water as listed in 20 NMAC 6.2 Subpart III, Section 3103.

If you have questions or comments regarding this report, please feel free to call me at (505) 722-0227.

Sincerely,

Dorinda Mancini
Environmental Manager, Ciniza Refinery

cc: w/attachments
Robert S. Dinwiddie, NMED
Stephen Pullen, NMED
Denny Foust, NMOCD - Farmington
Steve Morris, Environmental Specialist

w/o attachments
Dick Platt, Refinery Manager
Dave Pavlich, HSE Manager

PRECISION ENGINEERING, INC.

LOG OF TEST BORINGS

LOCATION: SEE SITE PLAN

FILE #: 97-032
ELEVATION: 6923.04
TOTAL DEPTH: 47.5'
LOGGED BY: WHK
DATE: 3-22-97
STATIC WATER: 38.0'@30 MIN
BORING ID: 0651
PAGE: 1

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
0.0-2.2	///***///		C	CLAY, SANDY, WET, SOFT, RED BROWN	ALL SAMPLES 0
	///***///		C		
	///***///		C		
2.2	///***///		C		
2.2-3.5	***---***		C	SAND, FINE, SILTY, LOOSE, DRY, RED BROWN, SOME ROOT MATTER	
	---		C		
3.5	***---***		C		
3.5-9.3	///---///		C	CLAY, SILTY, FIRM, RED BROWN, DAMP-MOIST	
	///---///		C		
	///---///	5.0	C		
	///---///		C		
	///---///		C	VERY STIFF, SOME ROOT MATTER GREATER THAN 6.0 FEET	
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
9.3	///---///		C		
9.3-10.2	*********	10	C	SAND, FINE, DRY, LOOSE, RED BROWN, LIGHT COLOR	
10.2-10.9	---------		C	SILT, DRY, LIGHT RED BROWN, FIRM	
10.9	---------		C		
10.9-14.5	///---///		C	CLAY, SILTY, SOME ROOT MATTER, RED BROWN, FIRM, CHARCOAL	
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
14.5	///---///		C		
14.5-15.5	///***///	15	C	CLAY, SANDY, RED BROWN, STIFF, MOIST, CHARCOAL	
15.5	///***///		C		
15.5-17.5	***///***		C	SAND, CLAYEY, DAMP, LOOSE, RED BROWN	
	///		C		
	///		C		
17.5	***///***		C		
17.5-20.0	///***///		C	CLAY, VERY FINE, SANDY, RED BROWN, STIFF, DAMP-MOIST, SAND STREAKS AND SOME LAMINAR	
	///***///		C	BANDING ESPECIALLY IN SANDIER ZONES	
	///***///		C		
	///***///		C		
20.0	///***///	20	C		
20.0-22.0	*********		C	SAND, FINE, VERY MOIST-WET, NOT WATER BEARING, LOOSE, RED BROWN	
	*********		C		
	*********		C		
22.0	*********		C		
22.0-23.5	///****//		C	CLAY, VERY SANDY, WET, FIRM, RED BROWN	
	///****//		C		

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOCATION: SEE SITE PLAN

LOG OF TEST BORINGS

FILE #: 97-032
ELEVATION: 6923.04
TOTAL DEPTH: 47.5'
LOGGED BY: WHK
DATE: 3-22-97
STATIC WATER: 38.0'@30 MIN
BORING ID: 0651
PAGE: 2

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
23.5	///****//		C	CLAY, VERY SANDY, WET FIRM, RED BROWN	
23.5-25.0	***///***		C	SAND, CLAYEY, SOME PURE ZONES APPROXIMATELY 3" THICK, LAMINAR BANDED, WET, NOT	ALL SAMPLES
	///		C	WATER BEARING, RED BROWN	0
25.0	***///***	25	C		
25.0-28.5	//////////		C	CLAY, SOFT, WET, NOT WATER BEARING, RED BROWN	
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
28.5	//////////		C		
28.5-30.4	///**////		C	CLAY, SIGHTLY SANDY, SOME CARBONATE NODULES, RED BROWN, HARD, MOIST-DAMP	
	///**////		C	HARD TO DRILL	
	///**////	30	C		
30.4	///**////		C		
30.4-34.0	//////////		C	CLAY, DENSE, RED BROWN TO DARK BROWN, MOIST, HARD	
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
34.0	//////////		C		
34.0-34.3	///***//		C	CLAY, SANDY, BROWN, MOIST, STIFF	
34.3-36.0	//////////	35	C	CLAY, HARD, DARK BROWN, MOIST	
	//////////		C	SOFT	
36.0	//////////		C		
36.0-37.8	///00*//		C	CLAY, SOME SCATTERED GRAVEL TO 1" IN SIZE, SOFT, WET, NOT WATER BEARING, DARK BROWN	
	///00*//		C	SOME COARSE SAND	
	///00*//		C		
37.8	///00*//		C		
37.8-39.5	***////**		C	SAND, VERY CLAYEY, MORE SAND AT 39.0 FEET, LOOSE, SATURATED, MAY BE VERY WEAKLY	
	***////**		C	WATER BEARING, RED BROWN	
39.5	***////**		C		
39.5-41.0	//////////	40	C	CLAY, BROWN, STIFF, WET, NOT WATER BEARING	
	//////////		C		
41.0	//////////		C		
41.0-44.6	**********		C	SAND GRADING TO GRAVEL, SANDSTONE AND CHERT, SOME PETRIFIED WOOD, WATER BEARING	
	00**0		C	DENSE, RED BROWN, SLIGHTLY CLAYEY	
	*0*0*0*0*		C		
	*00*00*00		C		
	*00*00*00		C		
	*0S*0S*0S		C		
44.6	*0S/*0S/*		C		
44.6-47.5	=========	45	C	CHINLE FORMATION	
	=========		C	SHALE, RED BROWN, DENSE, DAMP, NO WATER, FISSLE	
	=========		C		

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOG OF TEST BORINGS

LOCATION: SEE SITE PLAN

FILE #:	97-032
ELEVATION:	6923.04
TOTAL DEPTH:	47.5'
LOGGED BY:	WHK
DATE:	3-22-97
STATIC WATER:	38.0'@30 MIN
BORING ID:	0651
PAGE:	3

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
	==========		C	SHALE, RED BROWN, DENSE, DAMP, NO WATER, FISSLE	ALL SAMPLES
	==========		C		0
47.5	==========		C		
TOTAL DEPTH					
		50			

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOCATION: SEE SITE PLAN

LOG OF TEST BORINGS

FILE #: 97-032
ELEVATION: 6929.56
TOTAL DEPTH: 45.0'
LOGGED BY: WHK
DATE: 3-22-97
STATIC WATER: 27.0'@30 MIN.
BORING ID: 0652
PAGE: 1

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
0.0-5.5	///---///		C	CLAY, SILTY, SOFT, RED BROWN, WET, NOT WATER BEARING, SOME ROOT MATTER	0.0-26.0
	///---///		C		0
	///---///		C		
	///---///		C		
	///---///		C		
	////*////		C	CLAY, STIFF, MOIST, SOME SANDY STRINGERS, RED BROWN	
	////*////		C		
	////*////		C		
	////*////		C		
	////*////	5.0	C		
5.5	////*////		C		
5.5-8.0	///***///		C	CLAY, FINE, SANDY, RED BROWN, MOIST-DAMP, STIFF	
	///***///		C		
	///***///		C		
	///***///		C		
8.0	///***///		C		
8.0-9.6	///***///		C	CLAY, SANDY, SOME SAND STRINGERS, FINE, GRADES SANDIER DESCENDING, RED BROWN, STIFF	
	///***///		C		
9.6	///***///		C		
9.6-10.8	*********	10	C	SAND, LOOSE, RED BROWN, DAMP, FINE-MEDIUM	
	*********		C		
10.8	*********		C		
10.8-12.5	///***///		C	CLAY, HARD, SANDY, SOME SLICKENSIDED SURFACES FORM JOINTS, RED BROWN, MOIST-DAMP	
	///***///		C		
12.5	///***///		C		
12.5-12.8	*********		C	SAND, FINE, DRY, LOOSE, RED BROWN	
12.8-13.9	///***///		C	CLAY, SANDY, MOIST-DAMP, RED BROWN, HARD	
13.9	///***///		C		
13.9-17.5	///---///		C	CLAY, SILTY, SILT IN LAMINATIONS, SOME CHARCOAL, DAMP, HARD, RED BROWN	
	///---///	15	C	SOME SANDY ZONES GREATER THAN 16.0 FEET	
	///---///		C		
	///---///		C		
	///--**//		C		
	///--**//		C		
17.5	///--**//		C		
17.5-18.1	***///***		C	SAND, CLAYEY, DENSE, DAMP, RED BROWN	
18.1-19.5	///---///		C	CLAY, SILTY, SOME SILT IN LAMINATIONS, DAMP-MOIST, BROWN-RED BROWN, HARD	
	///---///		C		
19.5	///---///		C		
19.5-25.0	/////////	20	C	CLAY, MOIST-WET, SOME ROOT MATTER, BROWN-RED BROWN, HARD, FEW FINE ROOT MATTER,	
	/////////		C	SOME FINE BLOCKY FRACTURING (FORMER SHRINKAGE) BUT NO INFILLING WITH SAND	
	/////////		C	WET, NOT WATER BEARING GREATER THAN 23.5 FEET, SOME CHARCOAL OBSERVED, GRADING	
	/////////		C	SANDY AT 24.8 FEET	
	/////////		C		
	/////////		C		
	/////////		C		

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOG OF TEST BORINGS

LOCATION: SEE SITE PLAN

FILE #:	97-032
ELEVATION:	6929.56
TOTAL DEPTH:	45.0'
LOGGED BY:	WHK
DATE:	3-22-97
STATIC WATER:	27.0'@30 MIN
BORING ID:	0652
PAGE:	2

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
	///////////		C	CLAY, MOIST-WET, SOME ROOT MATTER, BROWN-RED BROWN, HARD, FEW FINE ROOT MATTER,	0.0-26.0
	///////////		C	SOME FINE BLOCKY FRACTURING (FORMER SHRINKAGE) BUT NO INFILLING WITH SAND	0
	///////////		C	WET, NOT WATER BEARING GREATER THAN 23.5 FEET, SOME CHARCOAL OBSERVED, GRADING	
25.0	///////////	25	C	SANDY AT 24.8 FEET	
25.0-32.0	///*--/////		C	CLAY, VERY SLIGHTLY SANDY, SILTY, SOME CHARCOAL, WET, NOT WATER BEARING, SOFT-FIRM	
	///*--/////		C	RED BROWN	
	///*--/////		C		150
	///*--/////		C		
	///*--/////		C		
	///*--/////		C		
	///*--/////		C		20
	///*--/////		C		
	///*--/////		C		
	///*--/////	30	C		
	///*--/////		C		10
	///*--/////		C		
	///*--/////		C		
32.0	///*--/////		C		
32.0-34.0	***///***		C	SAND, CLAYEY, PURE SAND IN 2" SEAMS, WATER BEARING BUT WEAK, LOOSE, BROWN	32.0-45.0
	///		C		0
	///		C		
34.0	***///***		C		
34.0-37.1	///---/////		C	CLAY, SILTY, BROWN, SOFT, WET, NOT WATER BEARING	
	///---/////	35	C		
	///---/////		C		
	///---/////		C		
	///---/////		C		
37.1	///---/////		C		
37.1-39.5	***000***		C	SAND, VERY GRAVELLY, SANDSTONE, CHERT, PETRIFIED WOOD, PEBBLES/GRAVEL TO 3" IN SIZE	
	000		C	WATER BEARING, MULTICOLORED	
	000		C		
	000		C		
39.5	***000***		C		
39.5-40.0	///---/////	40	C	CLAY, SILTY, LIGHT RED BROWN, SOFT, WET, NOT WATER BEARING	
40.0-42.0	***000***		C	SAND, VERY GRAVELLY, SANDSTONE, CHERT, WATER BEARING, DENSE	
	000		C		
	000		C		
42.0	***000***		C		
42.0-45.0	===***===		C	CHINLE FORMATION	
	===***===		C	SHALE, VERY SANDY, DAMP, NOT WATER BEARING, GREEN GREY	
	===***===		C		
	===***===		C		
	===***===		C		
45.0	===***===	45	C		
TOTAL DEPTH					

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOCATION: SEE SITE PLAN

LOG OF TEST BORINGS

FILE #: 97-032
ELEVATION: 6931.12
TOTAL DEPTH: 40.0'
LOGGED BY: WHK
DATE: 3-22-97
STATIC WATER: 30.0'@30 MIN
BORING ID: 0653
PAGE: 1

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
0.0-1.0	///***///		C	CLAY, SANDY, FINE, WET, ROOT MATTER, SOFT, RED BROWN	ALL SAMPLES
1.0	///***///		C		0
1.0-3.0	///--*///		C	CLAY, SILTY, SLIGHTLY SANDY, RED BROWN, FIRM, MOIST	
	///--*///		C		
	///--*///		C		
3.0	///--*///		C		
3.0-6.1	///---///		C	CLAY, SILTY, SLIGHTLY BLOCKY, STIFF, MOIST, RED BROWN	
	///---///		C		
	///---///		C		
	///---///	5.0	C		
	///---///		C		
6.1	///---///		C		
6.1-7.0	///***///		C	CLAY, SANDY, HARD, DAMP-MOIST, RED BROWN	
7.0	///***///		C		
7.0-12.5	///---///		C	CLAY, SILTY, HARD, DAMP-MOIST, RED BROWN, ROOT MATTER, SOME LAMINATION	
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
	///---///	10	C		
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C	CHARCOAL AT 11.0 FEET	
12.5	///---///		C		
12.5-12.7	****/****		C	SAND, FINE-MEDIUM, DRY, RED BROWN, LOOSE, SLIGHTLY CLAYEY	
12.7-15.0	///--///		C	CLAY, SOME SILT, ROOT MATTER, SLIGHTLY BLOCKY, RED BROWN, HARD	
	///--////		C		
	///--///		C		
15.0	///--////	15	C		
15.0-17.5	///***///		C	CLAY, SANDY, GRADES TO SILT, SILTY IN THIN LAMINAR BANDS, MOIST, HARD, CHARCOAL	
	///**-///		C	AT 17.0 FEET, RED BROWN	
	///*--///		C		
	///*--///		C		
17.5	///*--///		C		
17.5-17.9	///***///		C	CLAY, SANDY, LAMINAR, HARD, MOIST, RED BROWN	
17.9-20.0	///---*//		C	CLAY, VERY SILTY, SANDY, LAMINAR, HARD, RED BROWN, MOIST-DAMP, SOME ROOT MATTER	
	///---*//		C		
	///---*//		C		
20.0	///---*//	20	C		
20.0-21.0	***---***		C	SAND, VERY FINE, SILTY, DRY LOOSE, BROWN, SOME ROOT MATTER	
21.0	***---***		C		
21.0-22.1	///---///		C	CLAY, SILTY, SHRINKAGE CRACKS, CLAY INFILLED, DRY-DAMP, BROWN, HARD	
22.1	///---///		C		
22.1-26.5	*********		C	SAND, VERY FINE, LIGHT BROWN, DRY, MODERATELY DENSE, CLAY LENSED AT 25.5 FEET	
	*********		C		

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOCATION: SEE SITE PLAN

LOG OF TEST BORINGS

FILE #:	97-032
ELEVATION:	6931.12
TOTAL DEPTH:	40.0'
LOGGED BY:	WHK
DATE:	3-22-97
STATIC WATER:	30.0'@30 MIN
BORING ID:	0653
PAGE:	2

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
	*********			SAND, VERY FINE, LIGHT BROWN, DRY, MODERATELY DENSE, CLAY LENSED AT 25.5 FEET	ALL SAMPLES 0
	*********				
	*********				
	*********	25			
	*********				
	*********				
26.5	*********				
26.5-29.5	/////////			CLAY, HARD, WET, NOT WATER BEARING, BROWN, SOFT AT 29.0 FEET	
	/////////				
	/////////				
	/////////				
	/////////				
29.5	/////////				
29.5-30.0	///***///	30		CLAY, VERY SANDY, WET, NOT WATER BEARING, BROWN, SOFT	
30.0-30.5	***///***			SAND, CLAYEY, BROWN, VERY LOOSE-SOFT, VERY WEAKLY WATER BEARING	
30.5-36.0	///--*///			CLAY, SILTY, SLIGHTLY SANDY, WET, NOT WATER BEARING, SOFT	
	///--*///				
	///--*///				
	///--*///				
	///--*///				
	///--*///				
	///--*///				
	///--*///				
	///--*///	35			
	///--*///				
36.0	///--*///				
36.0-38.5	***000***			SAND, VERY GRAVELLY, SANDSTONE, CHERT, PETRIFIED WOOD, WATER BEARING, MULTICOLORED	
	000				
	000				
	000				
38.5	***000***				
38.5-40.0	===***===			CHINLE FORMATION	
	===***===			SHALE, SANDY, MOIST-WET, NOT WATER BEARING, HARD, RED BROWN-GREY	
40.0	===***===	40			
TOTAL DEPTH					

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOCATION: SEE SITE PLAN

LOG OF TEST BORINGS

FILE #: 97-032
ELEVATION: 6938.33
TOTAL DEPTH: 25.0'
LOGGED BY: WHK
DATE: 3-23-97
STATIC WATER: NOT FOUND
BORING ID: 0654
PAGE: 1

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
0.0-1.5	///---///		C	CLAY, WET, SILTY, SOFT, SOME ROOT MATTER, RED BROWN	ALL SAMPLES
	///---///		C		0
1.5	///---///		C		
1.5-1.7	---------		C	SILT, DRY, LOOSE, LAMINAR, BROWN	
1.7-4.5	*********		C	SAND, FINE, ROOT MATTER, DRY, RED BROWN-LIGHT BROWN, LOOSE	
	*********		C		
	*********		C		
	*********		C		
4.5	*********		C		
4.5-4.8	---------	5.0	C	SILT, LAMINAR, DRY, LOOSE, LIGHT BROWN	
4.8-9.8	*********		C	SAND, FINE, DRY, MODERATELY DENSE, LIGHT BROWN	
	*********		C		
	*********		C		
	*********		C		
	*********		C		
	*********		C		
	*********		C		
	*********		C		
	*********		C		
9.8	*********	10	C		
9.8-10.8	***00+***		C	SAND, COARSE, SOME FINE GRAVEL, SLIGHT CEMENTED CARBONATE INDURATION, DRY, LT. RED	
10.8	***00+***		C		
10.8-11.3	---///---		C	SILT, CLAYEY, LAMINAR, MOIST, STIFF, ROOT MATTER, RED BROWN	
11.3-12.0	***00****		C	SAND, FINE-MEDIUM, SOME FINE GRAVEL, RED BROWN, DENSE	
12.0-20.6	//////////		C	CLAY, RED BROWN, HARD, SLICKENSIDED JOINTS, MOIST, FINE ROOT MATTER, SOME CHARCOAL,	
	//////////		C	SOME SLIGHTLY SANDY ZONES WITHIN THE CLAY MASS, STUCTURELESS AND SANDIER GREATER	
	//////////		C	THAN 16.0 FEET	
	//////////		C		
	//////////		C		
	//////////	15	C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////	20	C		
20.6	//////////		C		
20.6-25.0	=========		C	CHINLE FORMATION	
	=========		C	SHALE, FINE, BLOCKY, DRY, RED BROWN, HARD, INTERBEDDED WITH THIN, GREY, FINE	
	=========		C	SANDSTONE, SOME REDUCTION SPOTS IN SHALE, LAMINAR BANDING IN SANDSTONE	
	=========		C		
	=========		C		

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOG OF TEST BORINGS

LOCATION: SEE SITE PLAN

FILE #:	97-032
ELEVATION:	6938.33
TOTAL DEPTH:	25.0'
LOGGED BY:	WHK
DATE:	3-23-97
STATIC WATER:	NOT FOUND
BORING ID:	0654
PAGE:	2

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
			C	CHINLE FORMATION	ALL SAMPLES
			C	SHALE, FINE, BLOCKY, DRY, RED BROWN, HARD, INTERBEDDED WITH THIN, GREY, FINE	0
			C	SANDSTONE, SOME REDUCTION SPOTS IN SHALE, LAMINAR BANDING IN SANDSTONE	
25.0		25	C		
TOTAL DEPTH					

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOG OF TEST BORINGS

LOCATION: SEE SITE PLAN

FILE #: 97-032
ELEVATION: 6943.62
TOTAL DEPTH: 34.0'
LOGGED BY: WHK
DATE: 3-23-97
STATIC WATER: NOT FOUND
BORING ID: 0655
PAGE: 1

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
0.0-2.0	///**////		C	CLAY, SLIGHTLY SANDY, WET, RED BROWN, SOFT, ROOT MATTER	ALL SAMPLES 0
	///**////		C		
	///**////		C		
2.0	///**////		C		
2.0-2.5	*********		C	SAND, FINE, LIGHT BROWN, DRY, LOOSE	
2.5-3.5	***///***		C	SAND, CLAYEY, DRY, RED BROWN, LOOSE	
3.5	***///***		C		
3.5-8.0	///---///		C	CLAY, SILTY, DAMP-MOIST, RED BROWN, FIRM, SOME SANDY ZONES	
	///---///		C		
	///---///	5.0	C		
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
	///---///		C		
8.0	///---///		C		
8.0-10.8	***//****		C	SAND, SLIGHTLY CLAYEY, GRADING CLEANER FURTHER DOWN, LIGHT RED BROWN, DAMP, APPEARS	
	//*		C	EOLIAN, MEDIUM DENSE	
	//*		C		
	//*	10	C		
	//*		C		
10.8	***//****		C		
10.8-14.8	//////////		C	CLAY, HARD, DAMP, DARK BROWN, SOME SLICKESIDED JOINTS, SOME CARBONATE NODULES IN	
	//////////		C	SANDY ZONES (RARE), OCCATIONAL PEBBLE-WELL ROUNDED, CHERTY	
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
	//////////		C		
14.8	//////////	15	C		
14.8-15.3	*********		C	SAND, FINE, RED BROWN-BROWN, LOOSE-MODERATELY DENSE, DRY	
15.3-31.4	///***///		C	CLAY-VERY SANDY, FINE, HARD, DAMP, DARK BROWN, SOME CARBONATE NODULES, SOME LAMINAR	
	///***///		C	BANDING OTHERWISE STRUCTURELESS, SOME ROOT MATTER, FILIMENTED CARBONATE STRANDS	
	///***///		C	ABOVE 16.0 FEET, SOME PSOLOMOLENE, NO JOINTS, FINE BLOCKY GREATER THAN 25.0 FEET,	
	///***///		C	WET (NOT WATER BEARING) WITHIN 4" OF CHINLE FORMATION, PEBBLES ON CHINLE SURFACE	
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///	20	C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

PRECISION ENGINEERING, INC.

LOCATION: SEE SITE PLAN

LOG OF TEST BORINGS

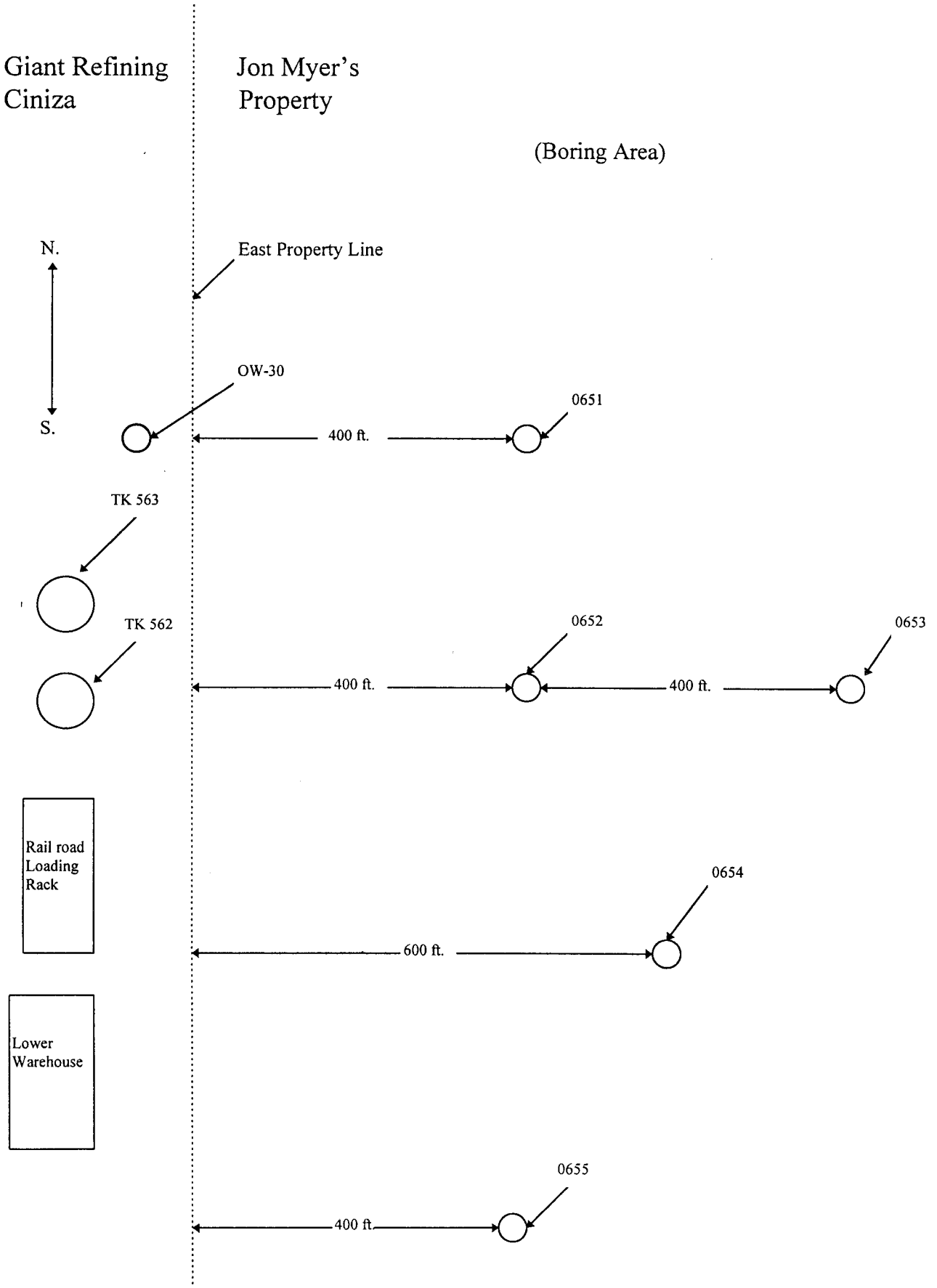
FILE #:	97-032
ELEVATION:	6943.62
TOTAL DEPTH:	34.0'
LOGGED BY:	WHK
DATE:	3-23-97
STATIC WATER:	NOT FOUND
BORING ID:	0655
PAGE:	2

DEPTH	PLOT	SCALE	SAMPLE	MATERIAL CHARACTERISTICS (MOISTURE, CONDITION, COLOR, GRAINSIZE, ETC.)	PID (ppm)
	///***///		C	CLAY-VERY SANDY, FINE, HARD, DAMP, DARK BROWN, SOME CARBONATE NODULES, SOME LAMINAR	ALL SAMPLES
	///***///		C	BANDING OTHERWISE STRUCTURELESS, SOME ROOT MATTER, FILIMENTED CARBONATE STRANDS	0
	///***///		C	ABOVE 16.0 FEET, SOME PSOLOMOLENE, NO JOINTS, FINE BLOCKY GREATER THAN 25.0 FEET,	
	///***///	25	C	WET (NOT WATER BEARING) WITHIN 4" OF CHINLE FORMATION, PEBBLES ON CHINLE SURFACE	
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///		C		
	///***///	30	C		
	///***///		C		
	///***///		C		
31.4	///***///		C		
31.4-34.0	SSSSSSSSS		C	SANDSTONE, WHITE-GREY, HARD, FINE GRAINED, MOIST	
	SSSSSSSSS		C		
	SSSSSSSSS		C		
	SSSSSSSSS		C		
34.0	SSSSSSSSS		C		
TOTAL DEPTH					

LOGGED BY: WHK

SIZE AND TYPE OF BORING: 4 1/4" ID CONTINUOUS FLIGHT HSA

SWMU 6 INVESTIGATION



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Inter-Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

4 April 1997

Dorinda Mancini
Giant Refining Company
Rt. 3, Box 7
Gallup, NM 87301

Ms. Mancini:

Enclosed please find the corrected reports for the samples received by our laboratory for analysis on March 26, 1997.

If you have any questions about the results of these analyses, please don't hesitate to call at your convenience.

Sincerely,

Sharon Williams
Organic Analyst/IML-Farmington

Enclosure

xc: File

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Giant Refining Co.

Case Narrative

On March 26, 1997, three water samples were submitted to Inter-Mountain Laboratories - Farmington for analysis. The sample was received intact. Analyses for Benzene-Toluene-Ethylbenzene-Xylenes (BTEX) and MTBE were performed on the samples as per the accompanying Chain of Custody document #44947.

BTEX and MTBE analysis on the samples were performed by EPA Method 5030, Purge and Trap, and EPA Method 8020, Aromatic Volatile Hydrocarbons, using an OI Analytical 4560 Purge and Trap and a Hewlett-Packard 5890 Gas Chromatograph, equipped with a photoionization detector. Detectable levels of BTEX and MTBE analytes were found in two of the samples as indicated in the enclosed reports.

It is the policy of this laboratory to employ, whenever possible, preparatory and analytical methods which have been approved by regulatory agencies. The methods used in the analyses of the samples reported herein are found in Test Methods for Evaluation of Solid Waste, SW-846', USEPA, 1986 and Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, USEPA, 1983.

Quality control reports appear at the end of the analytical packages and may be identified by title. If there are any questions regarding the information presented in this package, please feel free to call at your convenience.

Sincerely,

Sharon Williams
Organic Analyst

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Company

Project ID:	SWMU-6	Report Date:	04/04/97
Sample ID:	RFI-06-1-45-32297	Date Sampled:	03/22/97
Lab ID:	0397G00424	Date Received:	03/26/97
Sample Matrix:	water	Date Extracted:	NA
Condition:	Cool/Intact	Date Analyzed:	03/27/97

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
MTBE	1.1	1.0
Benzene	ND	1.0
Toluene	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	ND	1.0
o-Xylene	ND	1.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	88%	70%-130%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Company

Project ID:	SWMU-6	Report Date:	04/04/97
Sample ID:	RFI-06-2-44-32297	Date Sampled:	03/22/97
Lab ID:	0397G00425	Date Received:	03/26/97
Sample Matrix:	water	Date Extracted:	NA
Condition:	Cool/Intact	Date Analyzed:	03/27/97

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
MTBE	ND	1.0
Benzene	ND	1.0
Toluene	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	2.8	1.0
o-Xylene	ND	1.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	93%	70%-130%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Giant Refining Company

Project ID:	SWMU-6	Report Date:	04/04/97
Sample ID:	RFI-06-3-32297	Date Sampled:	03/22/97
Lab ID:	0397G00426	Date Received:	03/26/97
Sample Matrix:	water	Date Extracted:	NA
Condition:	Cool/Intact	Date Analyzed:	03/27/97

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
MTBE	ND	1.0
Benzene	ND	1.0
Toluene	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	ND	1.0
o-Xylene	ND	1.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	94%	70%-130%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Duplicate Analysis

Lab ID: 0397G00426
Sample Matrix: water
Condition: Cool/Intact

Report Date: 04/04/97
Date Analyzed: 03/27/97

Target Analyte	Duplicate Concentration (ppb)	Original Concentration (ppb)	% Difference
MTBE	ND	ND	NA
Benzene	ND	ND	NA
Toluene	ND	ND	NA
Ethylbenzene	ND	ND	NA
m,p-Xylenes	ND	ND	NA
o-Xylene	ND	ND	NA

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	86%	70 -130%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Matrix Spike Analysis

Lab ID: MB
Sample Matrix: water
Condition: Cool/Intact

Report Date: 04/04/97
Date Analyzed: 03/27/97

Target Analyte	Spiked Sample Result in ng	Sample result in ng	Spike Added (ng)	% Recovery	Acceptance Limits (%)
MTBE	19.36	0.00	20.00	97%	70-130
Benzene	19.85	0.25	20.0	98%	70-130
Toluene	19.96	0.12	20.0	99%	70-130
Ethylbenzene	20.00	0.08	20.0	100%	70-130
m,p-Xylenes	40.23	0.18	40.0	100%	70-130
o-Xylene	20.05	0.00	20.0	100%	70-130

ND - Analyte not detected at the stated detection limit.
NA - Not applicable or not calculated.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	99%	70 -130%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Method Blank Analysis

Sample Matrix: Water
Lab ID: Method Blank

Report Date: 04/04/97
Date Analyzed: 03/27/97

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
MTBE	ND	1.0
Benzene	ND	1.0
Toluene	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	ND	1.0
o-Xylene	ND	1.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	92%	70-130%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS
QUALITY CONTROL REPORT

Trip Blank Analysis

Sample Matrix: Water
Lab ID: Trip Blank

Report Date: 04/04/97
Date Analyzed 03/27/97

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
MTBE	ND	1.0
Benzene	ND	1.0
Toluene	ND	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	ND	1.0
o-Xylene	ND	1.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	97%	70- 130%

Reference: Method 5030, Purge and Trap; Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

Quality Control / Quality Assurance

Known Analysis
BTEX

Client: **Giant Refining Company**
Project: Ciniza refinery

Date Reported: 04/04/97
Date Analyzed: 03/27/97

Known Analysis

Parameter	Found Concentration (ppb)	Known Concentration (ppb)	Percent Recovery	Acceptance Limits
MTBE	3.8	4.0	96%	70-130%
Benzene	3.7	4.0	94%	70-130%
Toluene	3.7	4.0	93%	70-130%
Ethylbenzene	3.7	4.0	92%	70-130%
m+p-Xylene	7.4	8.0	93%	70-130%
o-Xylene	3.7	4.0	92%	70-130%

Quality Control:	Surrogate	Percent Recovery	Acceptance Limits
	Bromofluorobenzene	94%	75-125%

Reference: Method 5030, Purge and Trap: Method 8020, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, September 1986.

Comments:

Analyst _____

Reviewed by _____

imL
Inter- Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name: GIANT/SWMU-6

Project Location: GINIZA

Sampler: (Signature)

Chain of Custody Tape No.

ANALYSES / PARAMETERS

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	BTEX-8020 + MTBE				Remarks
RFI-06-1-45-32297	3-22-97	0950		H_2O	2	✓				
RFI-06-2-44-32297	3-22-97	1245		H_2O	2	✓				
RFI-06-3-32297	3-22-97	1700		H_2O	2	✓				
										Cool + intact

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	3/25/97	1030	Chris Raymer	3-26-97	0859
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by laboratory: (Signature)	Date	Time

Inter-Mountain Laboratories, Inc.

☐ 1633 Terra Avenue, Sheridan, Wyoming 82801, Telephone (307) 672-8945

☐ 1701 Phillips Circle, Gillette, Wyoming 82718, Telephone (307) 682-8945

☒ 2506 West Main Street, Farmington, NM 87401, Telephone (505) 326-4737

☐ 1160 Research Dr., Bozeman, Montana 59715, Telephone (406) 586-8450

☐ 11183 SH 30, College Station, TX 77845, Telephone (409) 776-8945

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