STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

June 18, 1999

CERTIFIED MAIL
RETURN RECEIPT NO. Z-274-520-675

Mr. Ronnie Benson
Keystone Energy
P.O. Box 962
Farmington, NM 87499

RE: SPILL CLOSURE REPORT

Dear Mr. Benson:

The New Mexico Oil Conservation Division (OCD) has reviewed Keystone Energy's (Keystone) March 1, 1999 "PIT REMEDIATION AND CLOSURE REPORT". This document contains the results of remedial actions for a spill at Keystones Kirtland 18-1 well site located in Unit A, Section 18, Township 29 North, Range 14 West, NMPM, San Juan County, New Mexico.

The spill remediation activities as contained in the above referenced document **are approved**. Please be advised that OCD approval does not relieve Keystone of liability if remaining contaminants are found to pose a future threat to surface water, ground water, human health or the environment. In addition, OCD approval does not relieve Keystone of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrologist
Environmental Bureau

xc: OCD Aztec District Office

Denny G. Foust

DEPUTY OIL & GAS INSPECTOR

JUL 0 6 1999

Olson reviewing as groundwater impact

District I
P.O. Box 1980, Hobbs, NM
District II
P.O. Drawer DD, Artesia, NM 88211
District III
1000 Rio Brazos Rd, Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
P.O. Box 2088
Santa Fe, New Mexico 87504-2088

SUBMIT 1 COPY TO APPROPRIATE DISTRICT OFFICE AND 1 COPY TO SANTA FE OFFICE

Approved

PIT REMEDIATION AND CLOSURE REPORT

RECEIVED
MAR - 1 1999
OIL CON. DIV.
DIST. 3

Operator: Keystone Energy Telephone: (505) 324-8335

Address: P.O. Box 962 Farmington, NM 87499

Facility Or Well Name: Kirtland 18-1

Location: Unit or Qtr/Qtr Sec A Sec ~~32~~ 18 T 29N R 14W County San Juan

Pit Type: Separator ______ Dehydrator ______ Other Spill

Land Type: BLM ______, State ______, Fee X, Other ______

Pit Location: (Attach diagram)

Pit dimensions: Length 25 ft, width 25 ft, depth 12 ft

Reference: wellhead X other ______

Footage from reference: 60 ft

Direction from reference: 80 Degrees X East North ____ of ____ West South X

Depth to Ground Water: 10 feet (vertical distance from contaminants to seasonal highwater elevation of ground water)	X	Less than 50 feet	(20 points)	
		50 ft to 99 feet	(10 points)	
		Greater than 100 feet	(0 points)	20
Wellhead Protection Area: (less than 200 feet from a private domestic water source, or: less than 1000 feet from all other water sources).	X	Yes	(20 points)	
		No	(0 points)	20
Distance to Surface Water: (Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches.)	X	Less than 200 feet	(20 points)	
		200 feet to 1000 feet	(10 points)	
		Greater than 1000 feet	(0 points)	20

P:\pits\PrrC@.WK3

RANKING SCORE (TOTAL POINTS): 60

Date Remediation Started: 9/11/98 Date Completed: 9/11/98

Excavation _____ Approx. cubic yards 280

Landfarmed X Insitu Bioremediation _____

Other _____

Remediation Method: Onsite X Offsite _____

(Check all appropriate sections)

General Description of Remedial Action : On 9/11/98 the spill was excavated to a depth of 12 feet. Ground water was encountered approximately 10 feet below surface. A water sample was obtained from the excavated area utilizing U.S.E.P.A. protocol and evaluated for Benzene, Toluene, Ethylbenzene, and Xlynes (BTEX). Test holes west and south of the empacted areas were excavated to groundwater levels. Groundwater samples from each test hole were analyzed using the above protocol. Results of each sample are within regulatory guidelines. Excavated soils were transported to Keystones Energys yard and land farmed. On 2/11/99 the landfarm was tested and provided concentrations below NMOCD and BLM guide lines.

Ground Water Encountered: No _____ Yes X Depth 10 feet

Final Pit:
Closure Sampling:
(if multiple samples, attach sample results and diagram of sample locations and depths)

Sample location Center Bottom

Sample depth 12 feet

Sample date 9/11/98 Sample time 15:17

Sample Results

Benzene(ppm) ND

Total BTEX (PPM) ND

Field Headspace (ppm) 3

TPH < 5.0

Ground Water Sample: Yes X No _____ (if yes, attach sample results)

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETED TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE 3/1/99 PRINTED NAME Ronnie Benson

SIGNATURE Ronnie Benson and TITLE Environmental Specialist

Client : Keystone Resources

Date Started : September 11, 1998 Date Completed : September 11, 1998

Location : Kirtland 18-1

Quad : Section :

Range : Township:

Spill
Reference : 60 feet S 80 degrees E of wellhead
Initial Size :
Final Size : 25' x 25' x 12' deep
Yds. Excavated : 280 cy
Depth to Groundwater: <50'
Nearest Water Source: <1000'
Nearest Surface Water: <100'

Ranking Score: 60
TPH Closure Standard: 100

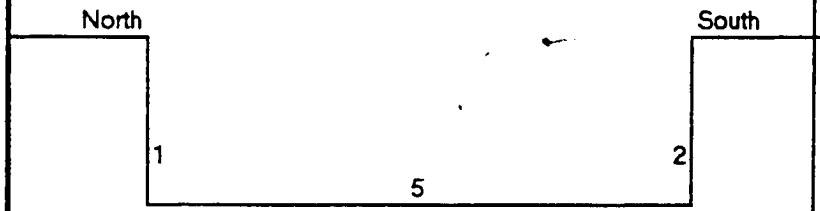
Sample #	Location	OVM
1	N. Wall @ 9'	6
2	S. Wall @ 9'	4
3	E. Wall @ 9'	9
4	W. Wall @ 9'	3
5	C.Btm.@ 12'	3
6		
7		
8		
9		
10		
11		
12		

Comments : Top soil - 12' Soil is moist, brown, light brown sandy - loam with cobble (6" + in diameter) with black and gray staining.
A sample from the center bottom at 12' and east wall @ 9' sent to IML for GRO/DRO analysis.

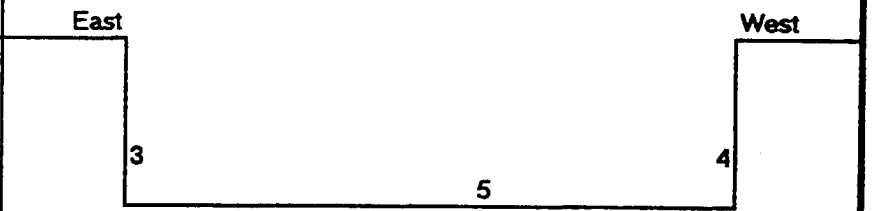
Overview of Location and Sampling :

(see attached diagram)

Pit Profile : North to South :



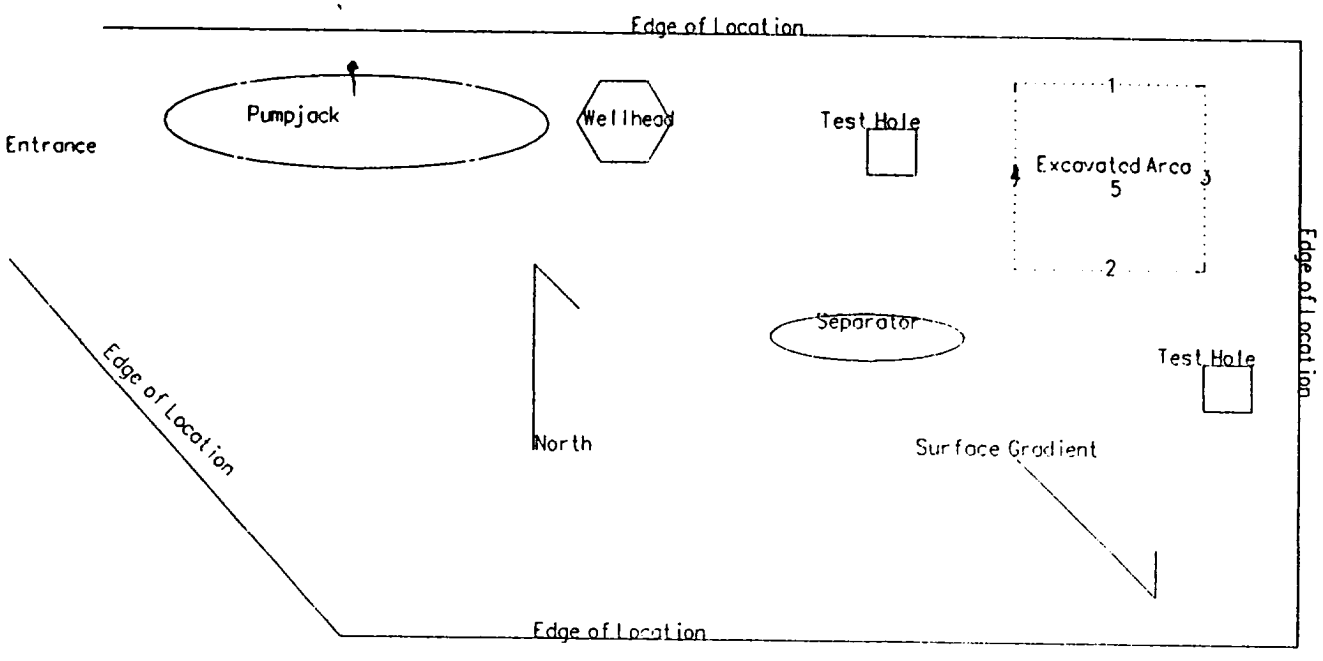
Pit Profile : East to West :



Environmental Specialist : FM

Cimarron Oilfield Services

Keystone Resources
Kirtland 18-1



Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

GASOLINE RANGE ORGANICS - GRO

KEYSTONE

Project ID:	Kirtland 18-1	Report Date:	10/01/98
Sample ID:	Bottom @ 12'	Date Sampled:	09/11/98
Lab ID:	0398G05350	Date Received:	09/14/98
Sample Matrix:	Soil	Date Analyzed:	09/18/98
Condition:	Cool/Intact		

TPH GAS-RANGE (MOD EPA 8015)	RESULT	DETECTION LIMIT
Gasoline-Range Petroleum Hydrocarbons	<5.0	5.0 mg/kg

ND - Analyte not detected at the stated detection limit.

Reference:

Comments:

Reported By:

Reviewed By:

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

DIESEL RANGE ORGANICS - DRO

KEYSTONE

Project ID:	Kirtland 18-1	Report Date:	10/01/98
Sample ID:	Bottom @ 12'	Date Sampled:	09/11/98
Lab ID:	0398G05350	Date Received:	09/14/98
Sample Matrix:	Soil	Date Analyzed:	09/18/98
Condition:	Cool/Intact		

TPH DIESEL-RANGE (MOD EPA 8015)	RESULT	DETECTION LIMIT
Diesel-Range Petroleum Hydrocarbons	<5.0	5.0 mg/kg

ND - Analyte not detected at the stated detection limit.

Reference:

Comments:

Reported By:

Reviewed By:

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

GASOLINE RANGE ORGANICS - GRO

KEYSTONE

Project ID:	Kirtland 18-1	Report Date:	10/01/98
Sample ID:	E. Wall @ 9'	Date Sampled:	09/11/98
Lab ID:	0398G05351	Date Received:	09/14/98
Sample Matrix:	Soil	Date Analyzed:	09/18/98
Condition:	Cool/Intact		

TPH GAS-RANGE (MOD EPA 8015)	RESULT	DETECTION LIMIT
Gasoline-Range Petroleum Hydrocarbons	<5.0	5.0 mg/kg

ND - Analyte not detected at the stated detection limit.

Reference:

Comments:

Reported By:

Reviewed By:

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

DIESEL RANGE ORGANICS - DRO

KEYSTONE

Project ID:	Kirtland 18-1	Report Date:	10/01/98
Sample ID:	E. Wall @ 9'	Date Sampled:	09/11/98
Lab ID:	0398G05351	Date Received:	09/14/98
Sample Matrix:	Soil	Date Analyzed:	09/18/98
Condition:	Cool/Intact		

TPH DIESEL-RANGE (MOD EPA 8015)	RESULT	DETECTION LIMIT
Diesel-Range Petroleum Hydrocarbons	<5.0	5.0 mg/kg

ND - Analyte not detected at the stated detection limit.

Reference:

Comments:

Reported By:

Reviewed By:

imi
Inter-Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES / PARAMETERS
KEYSTONE	Kirtland 18-1	
Sampler: (Signature)	**Chain of Custody Tape No.**	

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers						Remarks
Bottom @ 12'	9/11/98	3:17 pm		Soil	1	X					9-15-98 @ 1015 mm
E Wall @ 9 ft	9/11/98	1521		Soil	1	X					Frank McDonald
											Called - requested
											~~BTEX~~ TPH instead of BTEX
											Mike D. -
											9-15-98
											Frank Called
											@ 1010 McDonald
											cc GKO/DRO
											instead of BTEX
											or TPH EW

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	9/14/98	1517		9/14/98	1517
Relinquished by: (Signature)	**Date**	**Time**	**Received by: (Signature)**	**Date**	**Time**
	9/14/98	1525			
Relinquished by: (Signature)	**Date**	**Time**	**Received by laboratory: (Signature)**	**Date**	**Time**
				9/11/98	15:25

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 Drive, Bozeman, Montana 59718, Telephone (406) 586-8450

☐ 11183 State Hwy. 30, College Station, TX 77845, Telephone (409) 776-8945

54132

Inter-Mountain Laboratories, Inc.

2508 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Keystone

Project ID:	Kirtland 18-1	Report Date:	09/21/98
Sample ID:	South Test Hole	Date Sampled:	09/01/98
Lab ID:	0398G05077	Time Sampled:	1:52pm
Sample Matrix:	Water	Date Received:	09/03/98
Condition:	Cool/Intact	Date Extracted:	NA
		Date Analyzed:	09/17/98

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	0.2	0.2
Toluene	3.0	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 8021B, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Revision 2, December , 1996.

Comments:

COPY

Analyst

Reviev

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Keystone

Project ID:	Kirtland 18-1	Report Date:	09/21/98
Sample ID:	West Test Hole	Date Sampled:	09/01/98
Lab ID:	0398G05075	Time Sampled:	1:45pm
Sample Matrix:	Water	Date Received:	09/03/98
Condition:	Cool/Intact	Date Extracted:	NA
		Date Analyzed:	09/17/98

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	ND	0.2
Toluene	14.7	1.0
Ethylbenzene	2.7	1.0
m,p-Xylenes	2.4	1.0
o-Xylene	ND	1.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	78%	70%-130%

Reference: Method 5030, Purge and Trap; Method 8021B, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Revis on 2, December , 1996.

Comments:

Analyst

Review

Inter-Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

VOLATILE AROMATIC HYDROCARBONS

Keystone

Project ID:	Kirtland 18-1	Report Date:	09/21/98
Sample ID:	Mid Pit	Date Sampled:	09/01/98
Lab ID:	0398G05076	Time Sampled:	2:00pm
Sample Matrix:	Water	Date Received:	09/03/98
Condition:	Cool/Intact	Date Extracted:	NA
		Date Analyzed:	09/17/98

Target Analyte	Concentration (ppb)	Detection Limit (ppb)
Benzene	0.3	0.2
Toluene	1.8	1.0
Ethylbenzene	ND	1.0
m,p-Xylenes	3	1.0
o-Xylene	3.7	1.0

ND - Analyte not detected at the stated detection limit.

Quality Control:

Surrogate	Percent Recovery	Acceptance Limits
Bromofluorobenzene	77%	70%-130%

Reference: Method 5030, Purge and Trap; Method 8021B, Aromatic Volatile Organics; Test Methods for Evaluating Solid Wastes, SW-846, United States Environmental Protection Agency, Revision 2, December , 1996.

Comments:

Analyst

Review

Inter·Mountain Laboratories, Inc.

2506 W. Main Street
Farmington, New Mexico 87401

QUALITY CONTROL / QUALITY ASSURANCE

Inter-Mountain Laboratories

2506 W. Main Street
Farmington, New Mexico 87401

QUALITY CONTROL/QUALITY ASSURANCE

VOLATILE AROMATIC HYDROCARBONS

KNOWN ANALYSIS

Client: Keystone
Project: Kirtland 18-1

Date Reported: 09/18/98
Date Analyzed: 09/17/98

Parameter	Found Result (ppb)	Known Result (ppb)	Percent Recovery	Acceptance Limits
Benzene	21.2	20.0	106%	70 - 130%
Toluene	21.6	20.0	108%	70 - 130%
Ethylbenzene	18.9	20.0	95%	70 - 130%
m+p - Xylene	42.0	40.0	105%	70 - 130%
o - Xylene	21.7	20.0	108%	70 - 130%

Quality Control:	Surrogate	Percent Recovery	Acceptance Limits
	Bromofluorobenzene	89%	75-125%

Reference: Method 5030, Purge and Trap; Method 8021B, Aromatic Volatile Organics; Test Methods for Evaluating Waste and Solid Wastes,USEPA, Revision 2, December, 1996.

Comments:

COPY

Analyst _____

Reviewed by _____

iml Inter-Mountain Laboratories, Inc.

CHAIN OF CUSTODY RECORD

Client/Project Name	Project Location	ANALYSES / PARAMETERS
Keystone	Kirtland 18-1	

Sampler: (Signature)	Chain of Custody Tape No.
[illegible signature]	

Sample No./ Identification	Date	Time	Lab Number	Matrix	No. of Containers	BTEX				Remarks
West Test Hole	2/2/98	1225		Water	2	✓				HCl Added as Preservative
Blow Pit	2/2/98	1240		"	2	✓				"
South Test Hole	2/2/98	1250		"	2	✓				"
										[illegible]
										[illegible]
						CR				

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[illegible signature]	2/2/98	7:58	[illegible signature]	[illegible]	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[illegible signature]	[illegible]	0715			

Relinquished by: (Signature)	Date	Time	Received by laboratory: (Signature)	Date	Time
			[illegible signature]	2-3-98	0715

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 Drive, Bozeman, Montana 59718, Telephone (406) 586-8450
- ☐ 11183 State Hwy. 30, College Station, TX 77845, Telephone (409) 776-8945

54125

Client : Keystone Energy

Date Started : 9/1198 Date Completed : 9/11/98

Location : Kirtland 18-1 Landfarm

Quad : A Section : 32

Range : 14W Township: 29N

		Sample #	Location	OVM
Reference :		1	1	ND
		2	2	ND
Initial Size :		3	3	ND
Final Size : 70' x 140'		4		
Yrds. Excavated 363		5		
Depth to Groundwater:	>100'	6		
Nearest Water Source:	>1000'	7		
Nearest Surface Water:	>1000'	8		
Nearest Ephemeral Stream:	>1000'	9		
EPO Ranking Score:	0	10		
TPH Closure Standard:	5000	11		
		12		

Comments : Soil moist. no staining and no odor
A sample # 2 was sent to IML for GRO/DRO analysis.

Overview of Location and Sampling :

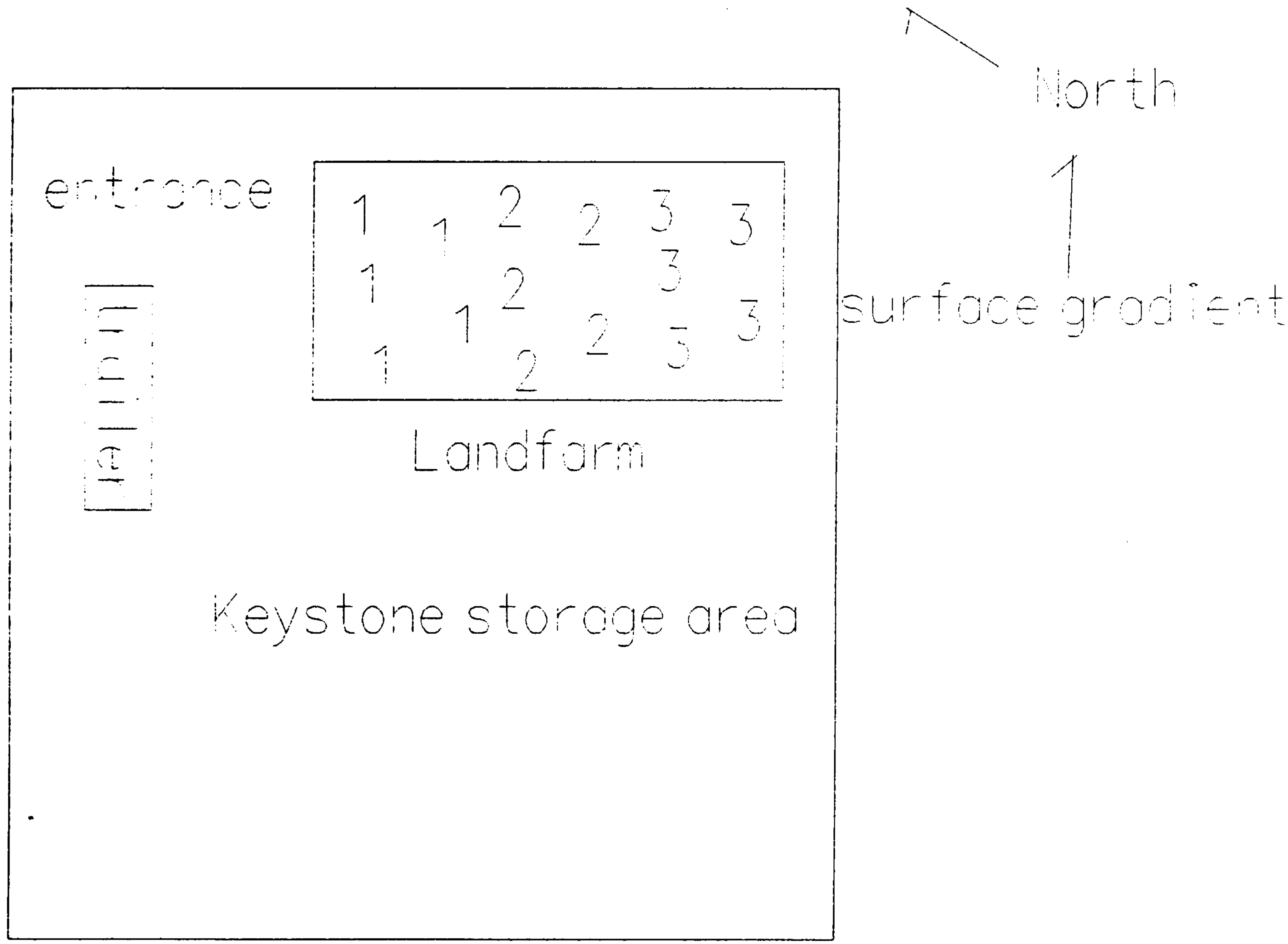
see attached diagram

Pit Profile : North to South :

Pit Profile : East to West :

Environmental Specialist : RB

Cimarron Oilfield Services


North
entrance
surface gradient
Landform
Keystone storage area

imL Inter-Mountain Laboratories, Inc.
Phone (505) 326-4737 Fax (505) 325-4182
2506 West Main Street, Farmington, NM 87401

Client: Keystone
Project: Kirtland 18-1 Landfarm
Sample ID: Kirtland 18-1
Lab ID: 0399W00888
Matrix: Soil
Condition: Cool/Intact

Date Reported: 02/23/99
Date Sampled: 02/11/99
Date Received: 02/11/99
Date Analyzed: 02/17/99

Parameter	Analytical Result	PQL	Units
Diesel Range Organics	<5	5	mg/Kg
Diesel Range Organics as Diesel	<5	5	mg/Kg

Quality Control - Surrogate Recovery	%	QC Limits
o-Terphenyl(SUR-8015)	77	70 - 130

GRO - METHOD 8015

Gasoline Range Organics	<5	5	mg/Kg
Gasoline Range Organics as Gasoline	<5	5	mg/Kg

Quality Control - Surrogate Recovery	%	QC Limits
a,a,a-Trifluorotoluene(SUR-8015)	105	70 - 130

Reference: DRO - USEPA Method for Determination of Diesel Range Organics. Revision 2, February 1992.

WTPH-D Total Petroleum Hydrocarbons Analytical Methods for Soil, Washington State Department of Ecology, Revision 3, October 1991.

Reviewed By: Sharon Williams

Sharon Willams, Organic Lab Supervisor