30-025-07551

HOBBS OCD

JUL 26 2011

RECEIVED

LIMITED SITE INVESTIGATION

Trucker's #2 Brine Station
West Broadway Place
Hobbs NM

Terracon Project No. A4117046
June 22, 2011

Prepared for:

Key Energy Services Inc.
6 Desta Drive, Ste 4300
Midland TX 79705

Prepared by:

TERRACON
Midland Texas

30 025 07551

Terracon

June 22, 2011

Key Energy Services Inc.
6 Desta Drive, Ste. 4300
Midland TX 79705
Attn: Daniel Gibson

Telephone: (432) 571-7536
Fax: (432) 571-7173

HOBBS OCD

JUL 26 2011

RECEIVED

Re: Limited Site Investigation
Trucker's #2 Brine Station
West Broadway Place, Hobbs NM
Terracon Project No. A4117046

Dear Daniel Gibson:

Terracon is pleased to submit three copies of the Limited Site Investigation (LSI) report for the above referenced site. This investigation was performed in accordance with Terracon's Proposal Number PA4110073 dated May 5, 2011.

The investigation-derived waste materials are currently staged on-site. Upon your request, Terracon will provide a proposal for characterization and disposal of these materials.

We appreciate the opportunity to perform these services for Key Energy Services, Inc. Please contact either of the undersigned at (432) 684-9600 if you have questions regarding the information provided in the report.

Sincerely,
Terracon

Prepared by:

Wesley Ty Burrow
Staff Geologist

Reviewed by:

Barrett W. Bole
Senior Associate

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Terracon

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LIST OF APPENDICES

LIMITED SITE INVESTIGATION

Trucker's #2 Brine Station
West Broadway Place
Hobbs NM

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Terracon Project No. A4117046
June 22, 2011

1.0 INTRODUCTION

1.1 Site Description

Site Name	Trucker's #2 Brine Station
Site Location/Address	West Broadway Place, Hobbs NM
General Site Description	Former brine station facility

A topographic map is included as Figure 1, and a site plan is included as Figure 2 of Appendix A.

1.2 Scope of Work

Terracon conducted a Limited Site Investigation (LSI) at the Trucker's #2 Brine Station, West Broadway Place, Hobbs NM. At your request, Terracon installed one- 2-inch monitoring well and advanced three soil borings (completed as temporary groundwater sampling points). Upon completion of drilling operations, soil and groundwater samples were submitted for analysis.

The objective of the LSI was to evaluate the presence of chlorides in the on-site soils and groundwater (above relevant laboratory reporting limits) as a result of potential release from on-site brine sales activities. Terracon's LSI was conducted in accordance with Terracon's proposal dated May 11, 2011 as authorized by Daniel Gibson P.G., Corporate Environmental Director, Key Energy Services, Inc. on May 20, 2011.

1.3 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. Terracon makes no warranties, either express or implied, regarding the findings, conclusions or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory

agencies or other third parties supplying information used in the preparation of the report. These LSI services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-97.

1.4 Additional Scope Limitations

Findings, conclusions and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable or not present during these services, and we cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this LSI. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations or exploratory services; the data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

2.0 FIELD ACTIVITIES

2.1 Borings and Monitoring Wells

Terracon's field activities were conducted from June 8, 2011 to June 10, 2011 by Wesley Ty Burrow, a Terracon Staff Geologist. As part of the approved scope of work, one permanent groundwater monitoring well (MW-3) and three soil borings completed as temporary groundwater sampling points (TMW-1, TMW-2, TMW-3) were advanced on site. MW-3 was installed to the northeast of the former brine pit. TMW-1 was advanced to the west of the former brine pit, TMW-2 was installed in the center of the former brine pit. TMW-3 was installed to the southeast of the former brine pit.

Figure 1 presents the general boundaries and topography of the site on portions of the USGS topographic quadrangle map of Hobbs NM (Appendix A). Figure 2 is a site plan that indicates the approximate locations of the soil borings and monitoring wells in relation to the pertinent structures and general site boundaries (Appendix A).

Drilling services were performed by Straub Drilling using a truck-mounted air rotary drilling rig (Versa-Drill) under the supervision of a Terracon Staff Geologist. Soil samples were collected using core barrel sampler. Drilling equipment was decontaminated using a high pressure washer prior to beginning the project and between each soil boring. Sampling equipment was cleaned using an

Alconox® wash and potable water prior to the beginning of the project and before collecting each soil sample.

Soil samples were collected continuously in the upper 10 feet and at 10- foot increments thereafter, while observed to document soil lithology, color, moisture content and sensory evidence of impairment.

The general soil lithology encountered during sample collection consisted of the following:

- Calcareous fine-grained silty sand - 0 to 50-60 feet bgs.
- Fine-grained silty sand - 50-60 feet bgs to terminus of borings at depths of 65 to 80 feet bgs.

Detailed lithologic descriptions are presented on the soil boring logs included in Appendix B.

Groundwater was encountered during installation of temporary groundwater sampling points TMW-1, TMW-2, TMW-3, and monitoring well MW-3 at depths of approximately 68.0 feet bgs, 58.0 feet bgs, 67.0 feet bgs, and 68.0 feet bgs, respectively.

Subsequent to advancement, temporary groundwater sampling points TMW-1, TMW-2, TMW-3 were completed as temporary monitoring wells. MW-3 was completed as flush-mounted groundwater monitoring well. The monitoring well and the temporary monitoring wells were completed using the following methodology:

- Installation of 20 feet of 2-inch diameter, 0.010-inch machine slotted PVC well screen with a threaded bottom cap;
- Installation of 58 feet of 2-inch diameter, threaded, flush joint PVC riser pipe to the surface;
- Addition of a pre-sieved [20/40-grade annular silica sand pack] from the bottom of the boring to approximately 2 feet above the top of the well screen;
- Addition of hydrated bentonite seal above the sand pack filter zone;
- Addition of a Portland cement to the near surface;
- Installation of an 8-inch diameter, circular, bolt-down, steel, monitoring well cover with locking well cap inset in a flush-mount, concrete well pad (permanent monitoring well only).

Monitoring well construction details are presented on the soil boring logs for these monitoring wells and are included in Appendix B.

The monitoring wells were developed by surging and removing groundwater with a ProActiv submersible pump until the groundwater was relatively free of fine-grained sediment. The submersible pump was decontaminated with Alconox® wash and potable water before/after each well was purged. Approximately 5 gallons of groundwater were removed from each of the temporary groundwater sampling points TMW-1, TMW-2, and TMW-3. Approximately 8 gallons of groundwater was removed from monitoring well MW-3 during development activities. Following sampling, TMW-1, TMW-2, TMW-3 were removed and backfilled with hydrated bentonite pellets and Portland cement to near surface grade.

Soil generated during drilling was stored on site with existing stockpiles, as instructed by client. Groundwater and equipment cleaning water generated during the field activities were placed in Department of Transportation (DOT) approved, 55-gallon steel drums, closed and appropriately labeled with project-specific information and initial accumulation date. A total of two 55-gallon drums containing groundwater/ and decontamination water were generated during these field services and were left onsite for subsequent characterization and disposal.

2.2 Soil and Groundwater Sampling

Terracon's soil sampling program involved submitting up to 12 soil samples from each soil boring for laboratory analysis. Soil samples were collected continuously in upper 10 feet and at 10 foot intervals thereafter. Soil sample intervals for each boring are presented with the soil sample analytical results (Table 1) and are provided on the lithologic boring logs included in Appendix B.

One groundwater sample was collected and analyzed from each of two existing monitoring wells MW-1 and MW-2, newly installed monitoring well MW-3, and from temporary groundwater sampling points TMW-1, TMW-2, and TMW-3. Prior to sample collection, each monitoring well was purged of a minimum of three well casing volumes of groundwater. Subsequent to sufficient recharge, one groundwater sample was collected from each monitoring well utilizing a new ProActiv submersible pump. The submersible pump was decontaminated with Alconox® wash and potable water before/after each sample was collected.

Soil and groundwater samples were collected and placed in laboratory prepared glassware, sealed with custody tape and placed on ice in a cooler which was secured with a custody seal. The sample coolers and completed chain-of-custody forms were relinquished to Xenco analytical laboratory in Odessa, Texas for standard turnaround analysis.

3.0 LABORATORY ANALYTICAL METHODS

The soil and/ or groundwater samples collected from existing monitoring wells MW-1 and MW-2, temporary groundwater sampling points TMW-1, TMW-2, TMW-3, and newly installed monitoring well MW-3 were analyzed for chlorides using EPA method 300.1.

Laboratory results are summarized in the tables included in Appendix C. The executed chain-of-custody form and laboratory data sheets are provided in Appendix D.

4.0 DATA EVALUATION

4.1 Soil Samples

The soil samples collected from the soil borings converted to MW-3 and temporary groundwater sampling points TMW-1, TMW-2, and TMW-3 displayed elevated chloride readings in shallow soils with decreasing concentrations with depth. Chloride concentrations decreased below 300 milligrams per kilogram (mg/Kg) between 22 and 30 fbgs (TMW-1), between 10 and 20 fbgs (TMW-2, TMW-3), and between 32 and 40 fbgs (MW-3).

4.2 Groundwater Samples

The groundwater samples yielded chloride concentrations ranging from 194 milligrams per liter (mg/L) to 1,790 mg/L. The groundwater sample with the most elevated concentration of 1,790 mg/L was collected from TMW-3. The groundwater sample from MW-1 (within 30 feet SE of TMW-3) exhibited a chloride concentration of 194 mg/L. Based on results from MW-1, it is likely that shallow soils with elevated chloride concentrations may have fallen from the boring sidewall during installation of the temporary monitoring well. This impacted soil would cause the elevated concentration. With the exception of TMW-3, the most elevated chloride concentration in groundwater collected was 919 mg/L from MW-2, which is hydraulically up gradient of the former brine pit on the northwest corner of the site. Remaining concentrations were 422 mg/L (MW-3), 452 mg/L (TMW-1), and 733 mg/L (TMW-2).

5.0 FINDINGS AND RECOMMENDATIONS

- Based on the analytical results, the on-site shallow soils in the vicinity of newly installed MW-3 and temporary groundwater sampling points TMW-1, TMW-2, and TMW-3 displayed elevated chloride readings. However, chloride concentrations in soil decreased with depth.

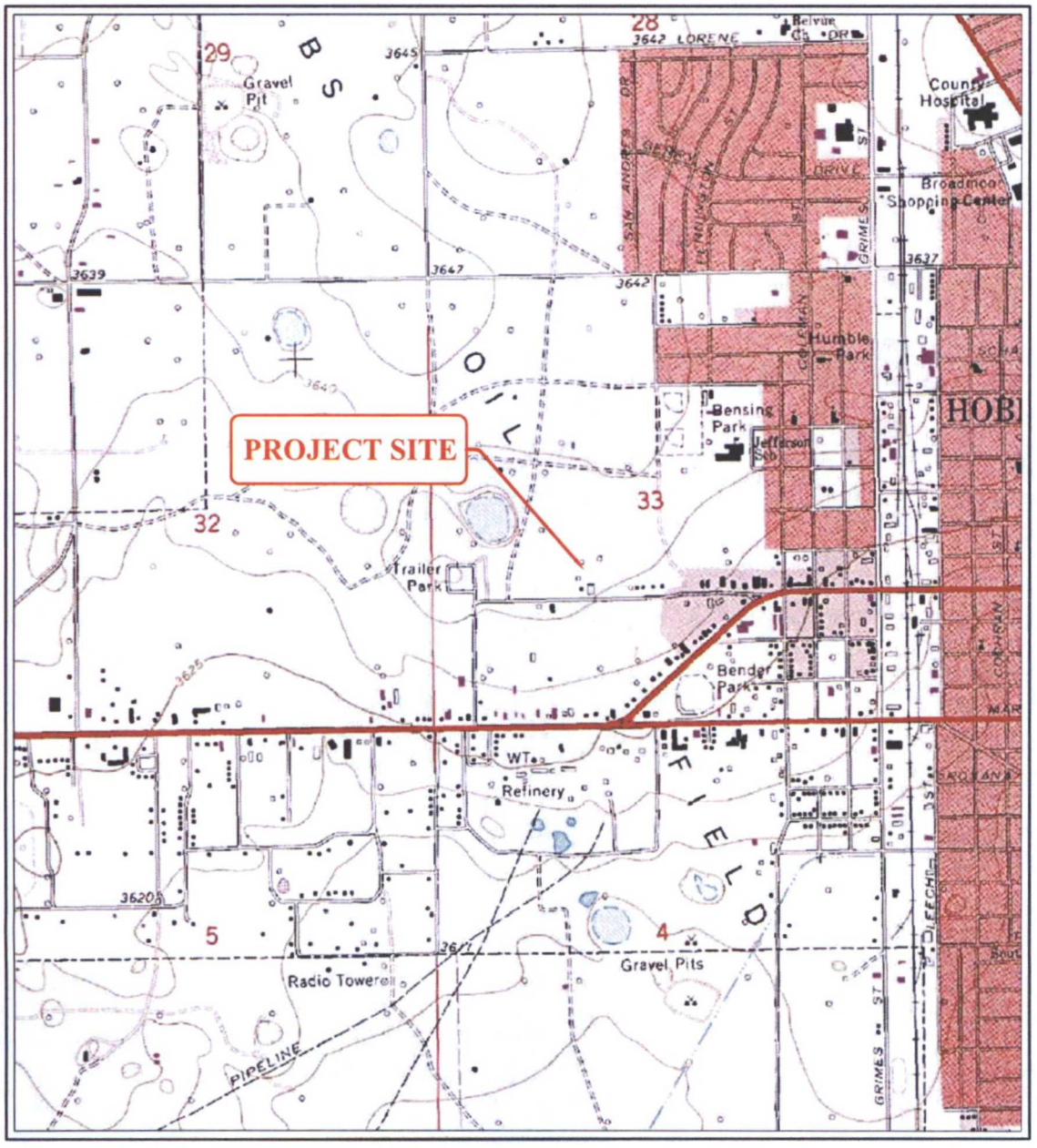
- Based on the analytical results, the on-site groundwater displayed elevated chloride readings, ranging from 194 mg/L to 919 mg/L (excluding data from TMW-3).

- The most elevated chloride concentration was identified in groundwater sampled from MW-2, up gradient of former site operations.

APPENDIX A

Figure 1 – Topographic Map
Figure 2 – Site Plan
Figure 3 – Groundwater Gradient Map for June 10, 2011

UNITED STATES – DEPARTMENT OF THE INTERIOR – GEOLOGICAL SURVEY



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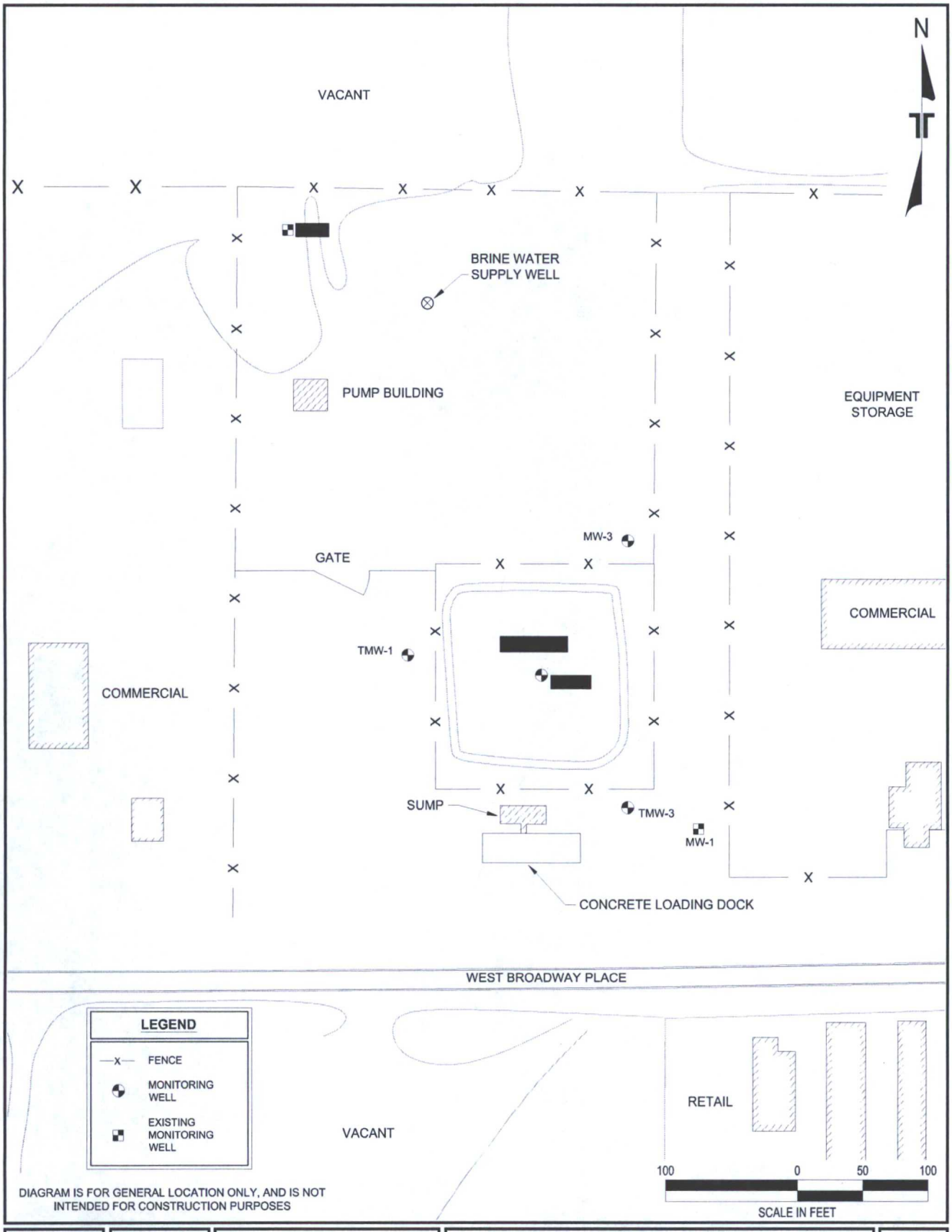
KILOMETERS 1 .5 0 1 2
METERS 1000 0 1000 2000
MILES 1 .5 0 1
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

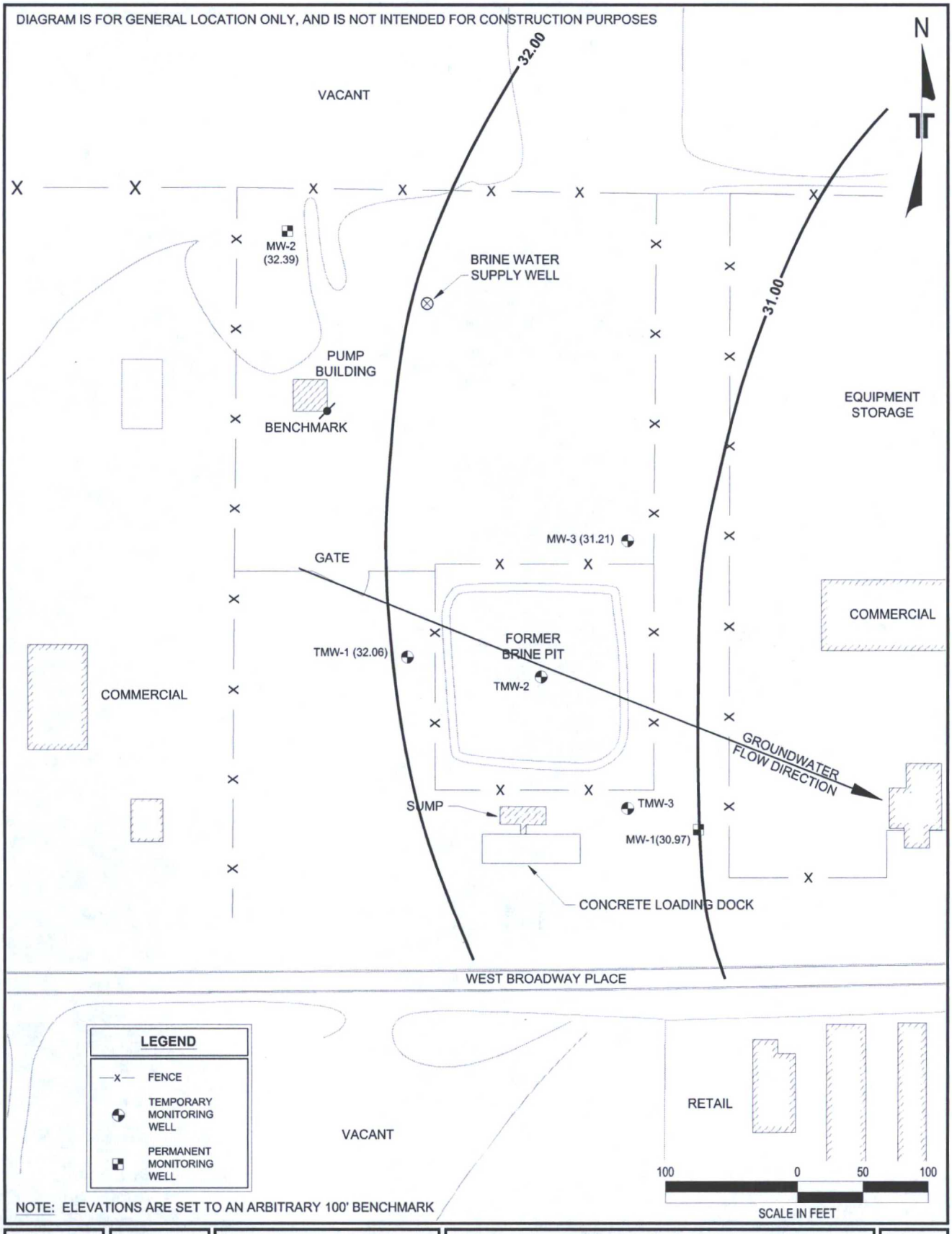
CONTOUR INTERVAL FEET FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

HOBBS WEST, N. MEX.
PHOTOREVISED 1979
7.5 MINUTE SERIES (TOPOGRAPHIC)

Project Mngr: WB	Project No. A4117046	Terracon Consulting Engineers and Scientists	**TOPOGRAPHIC QUADRANGLE MAP**	FIG. No.
Drawn By: RF	Scale: AS SHOWN	1211 WEST FLORIDA MIDLAND, TEXAS	TRUCKER'S # 2 BRINE STATION WEST BROADWAY PLACE HOBBS, LEE COUNTY, NEW MEXICO	1
Checked By: WB	File No. A4117046	PH. (432) 684-9600 FAX. (432) 684-9608		
Approved By: BB	Date: 06/21/2011			



Project Manager: WB	Project No. A4117046	Terracon Consulting Engineers & Scientists	SITE DIAGRAM	Figure
Drawn by: RF	Scale: AS SHOWN		TRUCKER'S # 2 BRINE STATION WEST BROADWAY PLACE HOBBS, LEE COUNTY, NEW MEXICO	2
Checked by: WB	File Name: A4117046			
Approved by: BB	Date: 06/20/2011	1211 W Florida Street Midland, Texas 79701 PH. (432) 684 9600 FAX. (432) 684 9606		



Project Manager: WB	Project No. A4117046	Terracon Consulting Engineers & Scientists	GROUNDWATER GRADIENT MAP FOR 6-10-2011
Drawn by: RF	Scale: AS SHOWN	1211 W Florida Street Midland, Texas 79701	TRUCKER'S # 2 BRINE STATION
Checked by: WB	File Name: A4117046	PH. (432) 684 9600 FAX. (432) 684 9608	WEST BROADWAY PLACE
Approved by: BB	Date: 06/20/2011		HOBBS, LEE COUNTY, NEW MEXICO
			Figure 3

APPENDIX B

Boring Logs

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: MW-3
TOTAL DEPTH: 80.0'
TOP OF CASING: 3649
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 20' Slot Size 0.010"
CASING: Diam. 2" Length 58' Type PVC
DATE DRILLED: 6-9-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
0					0.0		CALCAREOUS SILTY SAND, tan, fine, dry, medium dense, weakly cemented	0
					2.0			
					4.0			
5					6.0			5
					8.0			
10					10.0			10
15								15
20					20.0			20
					22.0			
25								25
30					30.0			30
					32.0			
35								35
40					40.0			40

REMARKS:
32.70162, -103.15545

THIS LOG SHOULD NOT BE USED SEPARATELY FROM THE ORIGINAL REPORT.

Terracon

MWL40 A4117046.GPJ 7/14/11

a

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: MW-3
TOTAL DEPTH: 80.0'
TOP OF CASING: 3649
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 20' Slot Size 0.010"
CASING: Diam. 2" Length 58' Type PVC
DATE DRILLED: 6-9-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
40					42.0			40
45								45
50					50.0 52.0			50
55						59.0		55
60					60.0 62.0		SILTY SAND, tan-brown, fine, slightly moist, dense, moderately cemented	60
65								65
70					70.0 72.0			70
75								75
80						80.0	BOTTOM OF BORING at 80.0 FEET	80

REMARKS:
32.70162, -103.15545

THIS LOG SHOULD NOT BE USED SEPARATELY FROM THE ORIGINAL REPORT.

Terracon

MWL40 A4117046.GPJ 7/14/11

b

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: TMW-1
TOTAL DEPTH: 75.0'
TOP OF CASING: 3643
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 15' Slot Size 0.010"
CASING: Diam. 2" Length 60' Type PVC
DATE DRILLED: 6-8-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
0					0.0		CALCAREOUS SILTY SAND, tan, fine, dry, medium dense, weakly cemented	0
5					5.0			5
					7.0			
					8.0			
10					10.0			10
15								15
20					20.0			20
					22.0			
25								25
30					30.0			30
					32.0			
35								35
40					40.0			40

REMARKS:
32.70139, -103.13556

Terracon

THIS LOG SHOULD NOT BE USED SEPARATELY FROM THE ORIGINAL REPORT.

MWL40 A4117046.GPJ 7/14/11

a

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: TMW-1
TOTAL DEPTH: 75.0'
TOP OF CASING: 3643
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 15' Slot Size 0.010"
CASING: Diam. 2" Length 60' Type PVC
DATE DRILLED: 6-8-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
40					42.0			40
45								45
50					50.0 52.0			50
55								55
60					60.0 62.0			60
65						65.0		65
70					70.0 72.0		SILTY SAND, tan-brown, fine, slightly moist, dense, moderately cemented	70
75						75.0		75
80							BOTTOM OF BORING at 75.0 FEET	80

REMARKS:
32.70139, -103.13556

THIS LOG SHOULD NOT BE USED SEPARATELY FROM THE ORIGINAL REPORT.

Terracon

MWL40 A4117046.GPJ 7/14/11

b

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: TMW-2
TOTAL DEPTH: 65.0'
TOP OF CASING: 3628
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 15' Slot Size 0.010"
CASING: Diam. 2" Length 50' Type PVC
DATE DRILLED: 6-8-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
0					0.0		CALCAREOUS SILTY SAND, tan, fine, dry, medium dense, moderately cemented	0
					2.0			
					4.0			
5					6.0			5
					8.0			
10					10.0			10
15								15
20					20.0			20
					22.0			
25								25
30					30.0			30
					32.0			
35								35
40					40.0	40.0		40

REMARKS:
32.70135, -103.15537

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Terracon

MWL40 A4117046.GPJ 7/14/11

a

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: TMW-2
TOTAL DEPTH: 65.0'
TOP OF CASING: 3628
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 15' Slot Size 0.010"
CASING: Diam. 2" Length 50' Type PVC
DATE DRILLED: 6-8-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
40					42.0		SILTY SAND, tan-brown, fine, slightly moist, dense, moderately cemented	40
45								45
50					50.0 52.0			50
55								55
60					60.0 62.0			60
65						65.0	BOTTOM OF BORING at 65.0 FEET	65
70								70
75								75
80								80

REMARKS:
32.70135, -103.15537

THIS LOG SHOULD NOT BE USED SEPARATELY FROM THE ORIGINAL REPORT.

Terracon

MWL40 A4117046.GPJ 7/14/11

b

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: TMW-3
TOTAL DEPTH: 75.0'
TOP OF CASING: 3650
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 15' Slot Size 0.010"
CASING: Diam. 2" Length 60' Type PVC
DATE DRILLED: 6-9-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
0					0.0		CALCAREOUS SILTY SAND, tan, fine, dry, medium dense, weakly cemented	0
					2.0			
					4.0			
5					6.0			5
					8.0			
10					10.0			10
15								15
20					20.0			20
					22.0			
25								25
30					30.0			30
					32.0			
35								35
40					40.0			40

REMARKS:
32.70101, -103.15524

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Terracon

MWL40 A4117046.GPJ 7/14/11

a

SOIL BORING / MONITORING WELL LOG

PROJECT: TRUCKERS #2 BRINE STATION
PROJECT NUMBER: A4117046
CLIENT: Key Energy Services, Inc.
BORING / WELL NUMBER: TMW-3
TOTAL DEPTH: 75.0'
TOP OF CASING: 3650
FIELD PERSONNEL: W. Burrow

DRILLING COMPANY: Straub
DRILLER: E. Bryan
DRILLING METHOD: Air Rotray
BORE HOLE DIAMETER: 6"
SCREEN: Diam. 2" Length 15' Slot Size 0.010"
CASING: Diam. 2" Length 60' Type PVC
DATE DRILLED: 6-9-11

DEPTH (FT)	SOIL SYMBOL	WELL CONSTRUCTION	PID	SAMPLES	SAMPLE INTERVAL	DESCRIPTION INTERVAL	DESCRIPTION OF STRATUM	DEPTH (FT)
40					42.0			40
45								45
50					50.0			50
					52.0			
55						56.0		55
							SILTY SAND, tan-brown, fine, slightly moist, dense, moderately cemented	
60					60.0			60
					62.0			
65								65
	▽							
70					70.0			70
					72.0			
75						75.0		75
							BOTTOM OF BORING at 75.0 FEET	
80								80

REMARKS:
32.70101, -103.15524

THIS LOG SHOULD NOT BE USED SEPARATELY FROM THE ORIGINAL REPORT.

Terracon

MWL40 A4117046.GPJ 7/14/11

b

APPENDIX C

Tables

Table 1

CONCENTRATIONS OF CHLORIDES IN SOIL

Key Energy Services, Inc.
Trucker's #2 Brine Station
Lea County, NM
Terracon Project Number A4117046

All concentrations are in mg/ kg

SAMPLE LOCATION	SAMPLE DATE	SAMPLE INTERVAL	EPA Method 300.1
			Total Chlorides
TMW-1	06/08/11	0-5 fbgs	2,770
TMW-1	06/08/11	5-7 fbgs	2,110
TMW-1	06/08/11	8-10 fbgs	1,650
TMW-1	06/08/11	20-22 fbgs	541
TMW-1	06/08/11	30-32 fbgs	194
TMW-1	06/08/11	40-42 fbgs	83.5
TMW-1	06/08/11	50-52 fbgs	67.1
TMW-1	06/08/11	60-62 fbgs	18.0
TMW-2	06/08/11	0-2 fbgs	5,130
TMW-2	06/08/11	2-4 fbgs	6,180
TMW-2	06/08/11	4-6 fbgs	4,780
TMW-2	06/08/11	6-8 fbgs	5,580
TMW-2	06/08/11	8-10 fbgs	3,340
TMW-2	06/08/11	20-22 fbgs	27.7
TMW-2	06/08/11	30-32 fbgs	50.5
TMW-2	06/08/11	40-42 fbgs	72.1
TMW-2	06/08/11	50-52 fbgs	36.3
TMW-3	06/09/11	0-2 fbgs	3,170
TMW-3	06/09/11	2-4 fbgs	3,370
TMW-3	06/09/11	4-6 fbgs	2,710
TMW-3	06/09/11	6-8 fbgs	1,890
TMW-3	06/09/11	8-10 fbgs	1,250
TMW-3	06/09/11	20-22 fbgs	127
TMW-3	06/09/11	30-32 fbgs	146
TMW-3	06/09/11	40-42 fbgs	64.5
TMW-3	06/09/11	50-52 fbgs	45.9
TMW-3	06/09/11	60-62 fbgs	72.3
MW-3	06/09/11	0-2 fbgs	555
MW-3	06/09/11	2-4 fbgs	1,530
MW-3	06/09/11	4-6 fbgs	1,610
MW-3	06/09/11	6-8 fbgs	1,200
MW-3	06/09/11	8-10 fbgs	847
MW-3	06/09/11	20-22 fbgs	811
MW-3	06/09/11	30-32 fbgs	645
MW-3	06/09/11	40-42 fbgs	145
MW-3	06/09/11	50-52 fbgs	130
MW-3	06/09/11	60-62 fbgs	40.7

NOTES:
fbgs = feet below ground surface
TMW-2 was advanced beginning 10 fbgs, making the sample interval effectively 10 feet deeper than documented on laboratory identification information.

Table 2

CONCENTRATIONS OF CHLORIDES IN GROUNDWATER

Key Energy Services, Inc.
Trucker's #2 Brine Station
Lea County, NM
Terracon Project Number A4117046

All concentrations are in mg/ L

SAMPLE LOCATION	SAMPLE DATE	Top of Casing Elevation *	GROUNDWATER DEPTH (in feet below top-of-casing)	Groundwater Elevation	EPA Method 300.1
					Total Chlorides
MW-1	06/10/11	97.71	66.74	30.97	194
MW-2	06/10/11	99.09	66.70	32.39	919
MW-3	06/10/11	97.86	66.65	31.21	422
TMW-1	06/10/11	99.52	67.46	32.06	452
TMW-2	06/10/11	not measured	57.35	not measured	733
TMW-3	06/10/11	not measured	66.92	not measured	1,790

NOTES:
fbgs = feet below ground surface
* locations surveyed in relation to an onsite benchmark with an assigne d elevation of 100.00 feet

APPENDIX D

Laboratory Data Sheets

Analytical Report 419675

for

Terracon Consultants, Inc.- Midland

Project Manager: Barrett Bole

Hobbs SWD- Key

A4117046

14-JUN-11

Collected By: Client

Celebrating 20 Years of commitment to excellence in Environmental Testing Services

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-10-6-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)
Xenco-Boca Raton (EPA Lab Code: FL01273):
Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

Xenco Phoenix (EPA Lab Code: AZ00901):
Arizona(AZ0757), Texas(104704435-10-2), Nevada(NAC-445A), DoD(65816)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

XENCO Laboratories

14-JUN-11

Project Manager: **Barrett Bole**
Terracon Consultants, Inc.- Midland
1211 W. Florida Avenue
Midland, TX 79701

Reference: XENCO Report No: **419675**
Hobbs SWD- Key
Project Address:

Barrett Bole:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 419675. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 419675 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II
Odessa Laboratory Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY
Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America

XENCO Laboratories

Sample Cross Reference 419675

Terracon Consultants, Inc.- Midland, Midland, TX

Hobbs SWD- Key

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW3	W	Jun-10-11 09:30		419675-001
MW2	W	Jun-10-11 10:00		419675-002
MW1	W	Jun-10-11 10:30		419675-003
TMW3	W	Jun-10-11 11:00		419675-004
TMW1	W	Jun-10-11 11:30		419675-005
TMW2	W	Jun-10-11 12:00		419675-006

CASE NARRATIVE

XENCO Laboratories

Client Name: Terracon Consultants, Inc.- Midland
Project Name: Hobbs SWD- Key

Project ID:	*A4117046*	*Report Date:*	*14-JUN-11*
Work Order Number:	*419675*	*Date Received:*	*06/13/2011*

Sample receipt non conformances and comments:
None

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 419675

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 14-JUN-11
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	419675-001		419675-002		419675-003		419675-004		419675-005		419675-006	
	Field Id:	MW3		MW2		MW1		TMW3		TMW1		TMW2	
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	Sampled:	Jun-10-11 09:30		Jun-10-11 10:00		Jun-10-11 10:30		Jun-10-11 11:00		Jun-10-11 11:30		Jun-10-11 12:00	
Anions by E300	***Extracted:***												
	Analyzed:	Jun-13-11 14:06		Jun-13-11 14:28		Jun-13-11 14:50		Jun-13-11 15:12		Jun-13-11 15:34		Jun-13-11 15:56	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Chloride		422	12.5	919	25.0	194	10.0	1790	100	452	25.0	733	25.0

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use.
The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories.
XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented.
Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Brent Barron, II
Odessa Laboratory Manager

XENCO Laboratories

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the MQL and above the SQL.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit

PQL Practical Quantitation Limit

LOD Limit of Detection

LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ Outside XENCO's scope of NELAC Accreditation.

XENCO Laboratories

BS / BSD Recoveries

Project Name: Hobbs SWD- Key

Work Order #: 419675
Analyst: LATCOR
Lab Batch ID: 859870
Sample: 859870-1-BKS
Units: mg/L

Date Prepared: 06/13/2011
Batch #: 1

Project ID: A4117046
Date Analyzed: 06/13/2011
Matrix: Water

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.500	10.0	9.80	98	10.0	9.75	98	1	80-120	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

XENCO Laboratories

Form 3 - MS Recoveries

Project Name: Hobbs SWD- Key

Work Order #: 419675
Lab Batch #: 859870
Date Analyzed: 06/13/2011
QC- Sample ID: 419517-001 S
Reporting Units: mg/L

Project ID: A4117046
Date Prepared: 06/13/2011
Analyst: LATCOR
Batch #: 1
Matrix: Water

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	<25.0	500	533	107	80-120	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Final 1.000

XENCO Laboratories

Sample Duplicate Recovery

Project Name: Hobbs SWD- Key

Work Order #: 419675

Lab Batch #: 859870 **Project ID:** A4117046

Date Analyzed: 06/13/2011 11:10 **Date Prepared:** 06/13/2011 **Analyst:** LATCOR

QC- Sample ID: 419517-001 D **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Anions by E300 **Analyte**	**Parent Sample Result [A]**	**Sample Duplicate Result [B]**	**RPD**	**Control Limits %RPD**	**Flag**
Chloride	<25.0	<25.0	0	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

ENVIRONMENTAL, GEOTECHNICAL AND CONSTRUCTION MATERIALS SERVICES

CHAIN OF CUSTODY RECORD

Terracon
Consulting Engineers & Scientists

Office Location: Midland TX

Project Manager: Barrett Bole

Laboratory: Xenco

Address:

Contact:

Phone:

PO/SO #:

Sampler's Name: Wesley Ty Barrow

Sampler's Signature:

Proj. No.: A4117046

Project Name: Hobbs SWD - Key

No./Type of Containers: 6 - plastic

ANALYSIS REQUESTED: Chlorides (EPA 300.1)

Lab use only
Due Date:

Temp. of coolers when received (C°): 5.6

1 | 2 | 3 | 4 | 5

Page 1 of 1

41675
Lab Sample ID (Lab Use Only)

	Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	P/O	Chlorides
001	W	6-10-11	0930		X	MW3						1	X
002	W	6-10-11	1000		X	MW2						1	X
003	W	6-10-11	1030		X	MW1						1	X
004	W	6-10-11	1100		X	TMW3						1	X
005	W	6-10-11	1130		X	TMW1						1	X
006	W	6-10-11	1200		X	TMW2						1	X

Turn around time: ~~Normal~~ ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	6-13-11	1130			
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date: 6/13	Time: 11:30

NOTES: please email analytical results to Barrett Bole w/ Terracon

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

Houston Office
11555 Clay Road, Suite 100
Houston, Texas 77043
(713) 690-8989 Fax (713) 690-8787

Dallas Office
8901 Carpenter Freeway, Suite 100
Dallas, Texas 75247
(214) 630-1010 Fax (214) 630-7070

Fort Worth Office
2601 Gravel Drive
Fort Worth, Texas 76118
(817) 268-8600 Fax (817) 268-8602

Austin Office
5307 Industrial Oaks Blvd. # 160
Austin, Texas 78735
(512) 442-1122 Fax (512) 442-1181

Midland Office
24 Smith Rd., # 261
Midland, Texas 79705
(432) 684-9600 Fax (432) 684-9608

XENCO Laboratories

XENCO Laboratories
Atlanta, Boca Raton, Corpus Christi, Dallas
Houston, Miami, Odessa, Philadelphia
Phoenix, San Antonio, Tampa

Document Title: Sample Receipt Checklist
Document No.: SYS-SRC
Revision/Date: No. 01, 5/27/2010
Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client: Jacobs
Date/Time: 6/13/11 11:30
Lab ID #: 419675
Initials: AH

Sample Receipt Checklist

1. Samples on ice?	Blue	(Water)	No	
2. Shipping container in good condition?	(Yes)	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	(N/A)	
4. Chain of Custody present?	(Yes)	No		
5. Sample instructions complete on chain of custody?	(Yes)	No		
6. Any missing / extra samples?	Yes	(No)		
7. Chain of custody signed when relinquished / received?	(Yes)	No		
8. Chain of custody agrees with sample label(s)?	(Yes)	No		
9. Container labels legible and intact?	(Yes)	No		
10. Sample matrix / properties agree with chain of custody?	(Yes)	No		
11. Samples in proper container / bottle?	(Yes)	No		
12. Samples properly preserved?	(Yes)	No	N/A	
13. Sample container intact?	(Yes)	No		
14. Sufficient sample amount for indicated test(s)?	(Yes)	No		
15. All samples received within sufficient hold time?	(Yes)	No		
16. Subcontract of sample(s)?	Yes	No	(N/A)	
17. VOC sample have zero head space?	Yes	No	(N/A)	

18. Cooler 1 No.	Cooler 2 No.	Cooler 3 No.	Cooler 4 No.	Cooler 5 No.
lbs 5.6 °C	lbs °C	lbs °C	lbs °C	lbs °C

Nonconformance Documentation

Contact:_____ Contacted by:_____ Date/Time:_____

Regarding: _____

Corrective Action Taken: _____

Check all that apply:
- ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
- ☐ Initial and Backup Temperature confirm out of temperature conditions
- ☐ Client understands and would like to proceed with analysis

Analytical Report 419668

for

Terracon Consultants, Inc.- Midland

Project Manager: Barrett Bole

Hobbs SWD- Key

A4117046

15-JUN-11

Collected By: Client

Celebrating 20 Years of commitment to excellence in Environmental Testing Services

12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-10-6-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):
Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)
Xenco-Boca Raton (EPA Lab Code: FL01273):
Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

Xenco Phoenix (EPA Lab Code: AZ00901):
Arizona(AZ0757), Texas(104704435-10-2), Nevada(NAC-445A), DoD(65816)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

XENCO Laboratories

15-JUN-11

Project Manager: **Barrett Bole**
Terracon Consultants, Inc.- Midland
1211 W. Florida Avenue
Midland, TX 79701

Reference: XENCO Report No: **419668**
Hobbs SWD- Key
Project Address:

Barrett Bole:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 419668. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 419668 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II
Odessa Laboratory Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.
Certified and approved by numerous States and Agencies.
A Small Business and Minority Status Company that delivers SERVICE and QUALITY
Houston - Dallas - San Antonio - Austin - Tampa - Miami - Atlanta - Corpus Christi - Latin America

XENCO Laboratories

Sample Cross Reference 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Hobbs SWD- Key

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
TMW1 0-5	S	Jun-08-11 12:00	0 - 5	419668-001
TMW1 5-7	S	Jun-08-11 12:00	5 - 7	419668-002
TMW1 8-10	S	Jun-08-11 12:00	8 - 10	419668-003
TMW1 20-22	S	Jun-08-11 12:00	20 - 22	419668-004
TMW1 30-32	S	Jun-08-11 12:00	30 - 32	419668-005
TMW1 40-42	S	Jun-08-11 12:00	40 - 42	419668-006
TMW1 50-52	S	Jun-08-11 12:00	50 - 52	419668-007
TMW1 60-62	S	Jun-08-11 12:00	60 - 62	419668-008
TMW2 0-2	S	Jun-08-11 16:00	0 - 2	419668-009
TMW2 2-4	S	Jun-08-11 16:00	2 - 4	419668-010
TMW2 4-6	S	Jun-08-11 16:00	4 - 6	419668-011
TMW2 6-8	S	Jun-08-11 16:00	6 - 8	419668-012
TMW2 8-10	S	Jun-08-11 16:00	8 - 10	419668-013
TMW2 20-22	S	Jun-08-11 16:00	20 - 22	419668-014
TMW2 30-32	S	Jun-08-11 16:00	30 - 32	419668-015
TMW2 40-42	S	Jun-08-11 16:00	40 - 42	419668-016
TMW2 50-52	S	Jun-08-11 16:00	50 - 52	419668-017
TMW3 0-2	S	Jun-09-11 11:30	0 - 2	419668-018
TMW3 2-4	S	Jun-09-11 11:30	2 - 4	419668-019
TMW3 4-6	S	Jun-09-11 11:30	4 - 6	419668-020
TMW3 6-8	S	Jun-09-11 11:30	6 - 8	419668-021
TMW3 8-10	S	Jun-09-11 11:30	8 - 10	419668-022
TMW3 20-22	S	Jun-09-11 11:30	20 - 22	419668-023
TMW3 30-32	S	Jun-09-11 11:30	30 - 32	419668-024
TMW3 40-42	S	Jun-09-11 11:30	40 - 42	419668-025
TMW3 50-52	S	Jun-09-11 11:30	50 - 52	419668-026
TMW3 60-62	S	Jun-09-11 11:30	60 - 62	419668-027
MW3 0-2	S	Jun-09-11 16:00	0 - 2	419668-028
MW3 2-4	S	Jun-09-11 16:00	2 - 4	419668-029
MW3 4-6	S	Jun-09-11 16:00	4 - 6	419668-030
MW3 6-8	S	Jun-09-11 16:00	6 - 8	419668-031
MW3 8-10	S	Jun-09-11 16:00	8 - 10	419668-032
MW3 20-22	S	Jun-09-11 16:00	20 - 22	419668-033
MW3 30-32	S	Jun-09-11 16:00	30 - 32	419668-034
MW3 40-42	S	Jun-09-11 16:00	40 - 42	419668-035
MW3 50-52	S	Jun-09-11 16:00	50 - 52	419668-036
MW3 60-62	S	Jun-09-11 16:00	60 - 62	419668-037

CASE NARRATIVE

XENCO Laboratories

Client Name: Terracon Consultants, Inc.- Midland
Project Name: Hobbs SWD- Key

Project ID:	*A4117046*	*Report Date:*	*15-JUN-11*
Work Order Number:	*419668*	*Date Received:*	*06/13/2011*

Sample receipt non conformances and comments:
None

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 15-JUN-11
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	419668-001		419668-002		419668-003		419668-004		419668-005		419668-006	
	Field Id:	TMW1 0-5		TMW1 5-7		TMW1 8-10		TMW1 20-22		TMW1 30-32		TMW1 40-42	
	Depth:	0-5		5-7		8-10		20-22		30-32		40-42	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-08-11 12:00		Jun-08-11 12:00		Jun-08-11 12:00		Jun-08-11 12:00		Jun-08-11 12:00		Jun-08-11 12:00	
Anions by E300	*Extracted:*												
	Analyzed:	Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		2770	46.8	2110	50.3	1650	49.0	541	9.27	194	9.09	83.5	4.48
Percent Moisture	*Extracted:*												
	Analyzed:	Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		10.3	1.00	16.5	1.00	14.2	1.00	9.41	1.00	7.57	1.00	6.19	1.00

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Brent Barron, II
Odessa Laboratory Manager

Final 1.000

Certificate of Analysis Summary 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 15-JUN-11
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	419668-007		419668-008		419668-009		419668-010		419668-011		419668-012	
	Field Id:	TMW1 50-52		TMW1 60-62		TMW2 0-2		TMW2 2-4		TMW2 4-6		TMW2 6-8	
	Depth:	50-52		60-62		0-2		2-4		4-6		6-8	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-08-11 12:00		Jun-08-11 12:00		Jun-08-11 16:00		Jun-08-11 16:00		Jun-08-11 16:00		Jun-08-11 16:00	
Anions by E300	*Extracted:*												
	Analyzed:	Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		67.1	4.43	18.0	4.35	5130	184	6180	185	4780	181	5580	183
Percent Moisture	*Extracted:*												
	Analyzed:	Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		5.25	1.00	3.48	1.00	8.93	1.00	9.04	1.00	7.25	1.00	7.95	1.00

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Brent Barron, II
Odessa Laboratory Manager

Final 1.000

Certificate of Analysis Summary 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 15-JUN-11
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	419668-013		419668-014		419668-015		419668-016		419668-017		419668-018	
	Field Id:	TMW2 8-10		TMW2 20-22		TMW2 30-32		TMW2 40-42		TMW2 50-52		TMW3 0-2	
	Depth:	8-10		20-22		30-32		40-42		50-52		0-2	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-08-11 16:00		Jun-08-11 16:00		Jun-08-11 16:00		Jun-08-11 16:00		Jun-08-11 16:00		Jun-09-11 11:30	
Anions by E300	*Extracted:*												
	Analyzed:	Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-13-11 18:53		Jun-14-11 06:52		Jun-14-11 06:52	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3340	89.5	27.7	8.71	50.5	4.40	72.1	4.44	36.3	4.38	3170	90.6
Percent Moisture	*Extracted:*												
	Analyzed:	Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		6.11	1.00	3.53	1.00	4.50	1.00	5.37	1.00	4.09	1.00	7.28	1.00

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Brent Barron, II
Odessa Laboratory Manager

Final 1.000

Certificate of Analysis Summary 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 15-JUN-11
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	419668-019		419668-020		419668-021		419668-022		419668-023		419668-024	
	Field Id:	TMW3 2-4		TMW3 4-6		TMW3 6-8		TMW3 8-10		TMW3 20-22		TMW3 30-32	
	Depth:	2-4		4-6		6-8		8-10		20-22		30-32	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-09-11 11:30		Jun-09-11 11:30		Jun-09-11 11:30		Jun-09-11 11:30		Jun-09-11 11:30		Jun-09-11 11:30	
Anions by E300	*Extracted:*												
	Analyzed:	Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		3370	90.4	2710	48.1	1890	48.2	1250	49.2	127	8.93	146	9.09
Percent Moisture	*Extracted:*												
	Analyzed:	Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		7.05	1.00	12.7	1.00	12.9	1.00	14.6	1.00	5.90	1.00	7.61	1.00

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Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Brent Barron, II
Odessa Laboratory Manager

Final 1.000

Certificate of Analysis Summary 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 15-JUN-11
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	419668-025		419668-026		419668-027		419668-028		419668-029		419668-030	
	Field Id:	TMW3 40-42		TMW3 50-52		TMW3 60-62		MW3 0-2		MW3 2-4		MW3 4-6	
	Depth:	40-42		50-52		60-62		0-2		2-4		4-6	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-09-11 11:30		Jun-09-11 11:30		Jun-09-11 11:30		Jun-09-11 16:00		Jun-09-11 16:00		Jun-09-11 16:00	
Anions by E300	***Extracted:***												
	Analyzed:	Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		64.5	4.34	45.9	4.40	72.3	4.39	555	17.7	1530	47.2	1610	47.5
Percent Moisture	***Extracted:***												
	Analyzed:	Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		3.23	1.00	4.64	1.00	4.23	1.00	5.04	1.00	11.1	1.00	11.5	1.00

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Brent Barron, II
Odessa Laboratory Manager

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Certificate of Analysis Summary 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 15-JUN-11
Project Manager: Brent Barron, II

Analysis Requested													
	Lab Id:	419668-031		419668-032		419668-033		419668-034		419668-035		419668-036	
	Field Id:	MW3 6-8		MW3 8-10		MW3 20-22		MW3 30-32		MW3 40-42		MW3 50-52	
	Depth:	6-8		8-10		20-22		30-32		40-42		50-52	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jun-09-11 16:00		Jun-09-11 16:00		Jun-09-11 16:00		Jun-09-11 16:00		Jun-09-11 16:00		Jun-09-11 16:00	
Anions by E300	*Extracted:*												
	Analyzed:	Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52		Jun-14-11 06:52	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		1200	50.1	847	23.4	811	22.1	645	18.1	145	9.00	130	8.78
Percent Moisture	*Extracted:*												
	Analyzed:	Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00		Jun-13-11 17:00	
	Units/RL:	%	RL	%	RL	%	RL	%	RL	%	RL	%	RL
Percent Moisture		16.1	1.00	10.2	1.00	5.08	1.00	7.00	1.00	6.71	1.00	4.38	1.00

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Odessa Laboratory Manager

Final 1.000

Certificate of Analysis Summary 419668

Terracon Consultants, Inc.- Midland, Midland, TX

Project Name: Hobbs SWD- Key

Project Id: A4117046
Contact: Barrett Bole
Project Location:

Date Received in Lab: Mon Jun-13-11 11:30 am
Report Date: 15-JUN-11
Project Manager: Brent Barron, II

Analysis Requested								
	Lab Id:	419668-037						
	Field Id:	MW3 60-62						
	Depth:	60-62						
	Matrix:	SOIL						
	Sampled:	Jun-09-11 16:00						
Anions by E300	***Extracted:***							
	Analyzed:	Jun-15-11 14:27						
	Units/RL:	mg/kg	RL					
Chloride		40.7	4.33					
Percent Moisture	***Extracted:***							
	Analyzed:	Jun-13-11 17:00						
	Units/RL:	%	RL					
Percent Moisture		3.02	1.00					

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Odessa Laboratory Manager

Final 1.000

XENCO Laboratories

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the MQL and above the SQL.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit

PQL Practical Quantitation Limit

LOD Limit of Detection

LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ Outside XENCO's scope of NELAC Accreditation.

XENCO Laboratories

BS / BSD Recoveries

Project Name: Hobbs SWD- Key

Work Order #: 419668 **Project ID:** A4117046

Analyst: LATCOR **Date Prepared:** 06/13/2011 **Date Analyzed:** 06/13/2011

Lab Batch ID: 859872 **Sample:** 859872-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.420	10.0	9.66	97	10.0	10.6	106	9	75-125	20	

Analyst: LATCOR **Date Prepared:** 06/14/2011 **Date Analyzed:** 06/14/2011

Lab Batch ID: 859946 **Sample:** 859946-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.420	10.0	9.45	95	10.0	9.33	93	1	75-125	20	

Analyst: LATCOR **Date Prepared:** 06/15/2011 **Date Analyzed:** 06/15/2011

Lab Batch ID: 860049 **Sample:** 860049-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Anions by E300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.420	10.0	8.11	81	10.0	8.19	82	1	75-125	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Final 1.000

XENCO Laboratories

Form 3 - MS Recoveries

Project Name: Hobbs SWD- Key

Work Order #: 419668

Lab Batch #: 859872 **Project ID:** A4117046

Date Analyzed: 06/13/2011 **Date Prepared:** 06/13/2011 **Analyst:** LATCOR

QC- Sample ID: 419517-008 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	318	257	533	84	75-125	

Lab Batch #: 859946

Date Analyzed: 06/14/2011 **Date Prepared:** 06/14/2011 **Analyst:** LATCOR

QC- Sample ID: 419668-017 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	36.3	104	128	88	75-125	

Lab Batch #: 860049

Date Analyzed: 06/15/2011 **Date Prepared:** 06/15/2011 **Analyst:** LATCOR

QC- Sample ID: 419668-037 S **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

Inorganic Anions by EPA 300	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	40.7	103	131	88	75-125	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Final 1.000

XENCO Laboratories

Sample Duplicate Recovery

Project Name: Hobbs SWD- Key

Work Order #: 419668

Lab Batch #: 859872 **Project ID:** A4117046

Date Analyzed: 06/13/2011 18:53 **Date Prepared:** 06/13/2011 **Analyst:** LATCOR

QC- Sample ID: 419517-008 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Anions by E300 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	318	298	6	20	

Lab Batch #: 859946

Date Analyzed: 06/14/2011 06:52 **Date Prepared:** 06/14/2011 **Analyst:** LATCOR

QC- Sample ID: 419668-017 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Anions by E300 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	36.3	29.6	20	20	

Lab Batch #: 860049

Date Analyzed: 06/15/2011 14:40 **Date Prepared:** 06/15/2011 **Analyst:** LATCOR

QC- Sample ID: 419668-037 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: mg/kg

	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Anions by E300 Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Chloride	40.7	36.3	11	20	

Lab Batch #: 859845

Date Analyzed: 06/13/2011 17:00 **Date Prepared:** 06/13/2011 **Analyst:** BEV

QC- Sample ID: 419668-001 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Percent Moisture Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	10.3	10.6	3	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.
BRL - Below Reporting Limit

XENCO Laboratories

Sample Duplicate Recovery

Project Name: Hobbs SWD- Key

Work Order #: 419668

Lab Batch #: 859846 **Project ID:** A4117046

Date Analyzed: 06/13/2011 17:00 **Date Prepared:** 06/13/2011 **Analyst:** BEV

QC- Sample ID: 419668-021 D **Batch #:** 1 **Matrix:** Soil

Reporting Units: %

	SAMPLE / SAMPLE DUPLICATE RECOVERY				
Percent Moisture Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Percent Moisture	12.9	13.3	3	20	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

ENVIRONMENTAL, GEOTECHNICAL AND CONSTRUCTION MATERIALS SERVICES

CHAIN OF CUSTODY RECORD

Terracon
Consulting Engineers & Scientists

Office Location: Midland TX

Project Manager: Barrett Bole

Laboratory: Xenco

Address:

Contact:

Phone:

PO/SO #:

Lab use only
Due Date:

Temp. of coolers when received (C°): .1

1	2	3	4	5

Page 1 of 4

Sampler's Name: Wesley Ty Burron

Sampler's Signature:

Proj. No.: A4117046

Project Name: Hobbs SWD - Key

No/Type of Containers: 10 - 4oz

4oz c.g.

4196668
Lab Sample ID (Lab Use Only)

ANALYSIS REQUESTED: Chlorides (EPA 300.)

	Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	P/O 4oz		
001	S	6-8-11	1200		X	TMW1 0-5						1	X	
002	S	6-8-11	1200		X	TMW1 5-7						1	X	
003	S	6-8-11	1200		X	TMW1 8-10						1	X	
004	S	6-8-11	1200		X	TMW1 20-22						1	X	
005	S	6-8-11	1200		X	TMW1 30-32						1	X	
006	S	6-8-11	1200		X	TMW1 40-42						1	X	
007	S	6-8-11	1200		X	TMW1 50-52						1	X	
008	S	6-8-11	1200		X	TMW1 60-62						1	X	
009	S	6-8-11	1600		X	TMW2 0-2						1	X	
010	S	6-8-11	1600		X	TMW2 2-4						1	X	

Turn around time: ~~Normal~~ ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	6-13-11	1130			
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature) Stormy K Hernandez	Date: 6/13	Time: 11:30

NOTES: Please email analytical results to Barrett Bole w/ Terracon.

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Clear 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

Houston Office
11555 Clay Road, Suite 100
Houston, Texas 77043
(713) 690-8989 Fax (713) 690-8787

Dallas Office
8901 Carpenter Freeway, Suite 100
Dallas, Texas 75247
(214) 630-1010 Fax (214) 630-7070

Fort Worth Office
2601 Gravel Drive
Fort Worth, Texas 76118
(817) 268-8600 Fax (817) 268-8602

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(512) 442-1122 Fax (512) 442-1181

Midland Office
24 Smith Rd., # 261
Midland, Texas 79705
(432) 684-9600 Fax (432) 684-9608

ENVIRONMENTAL, GEOTECHNICAL AND CONSTRUCTION MATERIALS SERVICES

CHAIN OF CUSTODY RECORD

Terracon
Consulting Engineers & Scientists

Office Location: Midland TX

Project Manager: Barrett Bole

Laboratory: Xenco

Address:

Contact:

Phone:

PO/SO #:

Sampler's Name: Wesley Ty Burrow

Sampler's Signature:

Proj. No.: A41170/6

Project Name: Hobbs Six D - Key

No/Type of Containers: 10 - 4oz

ANALYSIS REQUESTED: Chlorides (EPA 300.1)

Lab use only
Due Date:

Temp. of coolers when received (C°): .1

1 | 2 | 3 | 4 | 5

Page 2 of 4

Lab Sample ID (Lab Use Only): 419668

	Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	P/O 4oz	Chlorides (EPA 300.1)
011	S	6-8-11	1600		X	TMW2 4-6						1	X
012	S	6-8-11	1600		X	TMW2 6-8						1	X
013	S	6-8-11	1600		X	TMW2 8-10						1	X
014	S	6-8-11	1600		X	TMW2 20-22						1	X
015	S	6-8-11	1600		X	TMW2 30-32						1	X
016	S	6-8-11	1600		X	TMW2 40-42						1	X
017	S	6-8-11	1600		X	TMW2 50-52						1	X
018	S	6-9-11	1130		X	TMW3 0-2						1	X
019	S	6-9-11	1130		X	TMW3 2-4						1	X
020	S	6-9-11	1130		X	TMW3 4-6						1	X

Turn around time: ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	6-13-11	1130			
Relinquished by (Signature)					
Relinquished by (Signature)					
Relinquished by (Signature)			Received by: (Signature)	6/13	11:30

NOTES: please email analytical results to Barrett Bole w/ Terracon

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Clear Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

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ENVIRONMENTAL, GEOTECHNICAL AND CONSTRUCTION MATERIALS SERVICES

CHAIN OF CUSTODY RECORD

Terracon
Consulting Engineers & Scientists

Office Location: Midland TX
Project Manager: Barrett Bole

Laboratory: Xenco
Address:
Contact:
Phone:
PO/SO #:

Lab use only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Page 3 of 4

Sampler's Name: Wesley Ty Burrow
Sampler's Signature:
Proj. No.: A4117046
Project Name: Hobbs SWD - Key
No/Type of Containers: 10-4oz

ANALYSIS REQUESTED: Chlorides (EPA 300.1)

419668
Lab Sample ID (Lab Use Only)

	Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	P/O 4oz	
021	S	6-9-11	1130		X	TMW3 6-8						1	X
022	S	6-9-11	1130		X	TMW3 8-10						1	X
023	S	6-9-11	1130		X	TMW3 20-22						1	X
024	S	6-9-11	1130		X	TMW3 30-32						1	X
025	S	6-9-11	1130		X	TMW3 40-42						1	X
026	S	6-9-11	1130		X	TMW3 50-52						1	X
027	S	6-9-11	1130		X	TMW3 60-62						1	X
028	S	6-9-11	1600		X	MW3 0-2						1	X
029	S	6-9-11	1600		X	MW3 2-4						1	X
030	S	6-9-11	1600		X	MW3 4-6						1	X

Turn around time: ☑ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	6-13-11	1130			
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	Date:	Time:	Received by: (Signature) A. Hernandez	Date: 6/13	Time: 11:30

NOTES: please email analytical results to Barrett Bole w/ Terracon

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

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ENVIRONMENTAL, GEOTECHNICAL AND CONSTRUCTION MATERIALS SERVICES

CHAIN OF CUSTODY RECORD

Terracon
Consulting Engineers & Scientists

Office Location: Midland TX
Project Manager: Barrett Bole

Laboratory: Xenco
Address:
Contact:
Phone:
PO/SO #:

Lab use only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Page 4 of 4

Sampler's Name: Wesley Ty Burrow
Sampler's Signature:

Proj. No.
Project Name: Hobbs SWD - Key
No/Type of Containers: 7 - 4oz

ANALYSIS REQUESTED: Chlorides (EPA 300.1)

Lab Sample ID (Lab Use Only): 419668

	Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	Start Depth	End Depth	VOA	A/G 1 Lt.	250 ml	P/O 4oz	Chlorides (EPA 300.1)
031	S	6-9-11	1600		X	MW3 6-8						1	X
032	S	6-9-11	1600		X	MW3 8-10						1	X
033	S	6-9-11	1600		X	MW3 20-22						1	X
034	S	6-9-11	1600		X	MW3 30-32						1	X
035	S	6-9-11	1600		X	MW3 40-42						1	X
036	S	6-9-11	1600		X	MW3 50-52						1	X
037	S	6-9-11	1600		X	MW3 60-62						1	X

Turn around time: ☒ Normal ☐ 25% Rush ☐ 50% Rush ☐ 100% Rush

	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by (Signature)	6-13-11	1130			
Relinquished by (Signature)					
Relinquished by (Signature)					
Relinquished by (Signature)			Received by: (Signature) S/ Hernandez	6/13/11	11:30

NOTES: Please email analytical results to Barrett Bole w/ Terracon

Matrix: WW - Wastewater; W - Water; S - Soil; SD - Solid; L - Liquid; A - Air Bag; C - Charcoal tube; SL - sludge; O - Oil
Container: VOA - 40 ml vial; A/G - Amber / Or Glass 1 Liter; 250 ml - Glass wide mouth; P/O - Plastic or other

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XENCO Laboratories

XENCO Laboratories
Atlanta, Boca Raton, Corpus Christi, Dallas
Houston, Miami, Odessa, Philadelphia
Phoenix, San Antonio, Tampa

Document Title: Sample Receipt Checklist
Document No.: SYS-SRC
Revision/Date: No. 01, 5/27/2010
Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client: Xenco
Date/Time: 6/13/11 11:30
Lab ID #: 419668
Initials: TH

Sample Receipt Checklist

1. Samples on ice?	Blue	(Water)	No	
2. Shipping container in good condition?	(Yes)	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	(N/A)	
4. Chain of Custody present?	(Yes)	No		
5. Sample instructions complete on chain of custody?	(Yes)	No		
6. Any missing / extra samples?	Yes	(No)		
7. Chain of custody signed when relinquished / received?	(Yes)	No		
8. Chain of custody agrees with sample label(s)?	(Yes)	No		
9. Container labels legible and intact?	(Yes)	No		
10. Sample matrix / properties agree with chain of custody?	(Yes)	No		
11. Samples in proper container / bottle?	(Yes)	No		
12. Samples property preserved?	(Yes)	No	N/A	
13. Sample container intact?	(Yes)	No		
14. Sufficient sample amount for indicated test(s)?	(Yes)	No		
15. All samples received within sufficient hold time?	(Yes)	No		
16. Subcontract of sample(s)?	Yes	No	(N/A)	
17. VOC sample have zero head space?	Yes	No	(N/A)	

18. Cooler 1 No.	Cooler 2 No.	Cooler 3 No.	Cooler 4 No.	Cooler 5 No.
lbs 0.1 °C	lbs °C	lbs °C	lbs °C	lbs °C

Nonconformance Documentation

Contact:_____ Contacted by:_____ Date/Time:_____

Regarding: _____

Corrective Action Taken: _____

Check all that apply:
- ☐ Cooling process has begun shortly after sampling event and out of temperature condition acceptable by NELAC 5.5.8.3.1.a.1.
- ☐ Initial and Backup Temperature confirm out of temperature conditions
- ☐ Client understands and would like to proceed with analysis