Stalely State-Williams Federal Remediation Plan



View south-southwest from Williams A Federal #5 production pad to stockpiled, chloride-impacted soil at release site.

Prepared For: LRE Operating LLC.

Prepared by R.T. Hicks Consultants, Ltd. Albuquerque, New Mexico

Description of Release

The release occurred on the Federal lease associated with the Williams A Federal wells #5 and #10. On May 5, 2015 a 10-inch transfer line moving treated waters from the NW State 19 Recycling Containment to the Staley State No.20 well ruptured and released about 65 barrels of treated produced water. Plate 1 shows the release area relative to nearby wells and Plate 2 shows the topography of this same area. The pad of the Williams A Federal wells is less than 100 feet north of the release location. The release area is located in Unit M Sec. 29, T17S-R28E. Appendix A is the initial notification report (C-141).

Service work was being performed on the Staley State #20 at the time of the release, located south of the release site. A valve on the transfer line vibrated shut, maximum operating pressure for the 10-inch line was exceeded, and the line ruptured. As Blue Water Transfer Personnel were at the site monitoring the water transfer; the transfer line was immediately shut-in, a vacuum truck was brought to the location, standing water in the transfer line was



Figure 1: Cross hatched area is the release area. North is up the page.

removed, and free fluids were recovered from the impacted area.

Of the release volume (65 bbls) and estimated 5-10 bbls was recovered. Produced water pumped from the NW State 19 Recycling Containment had been treated to remove hydrocarbons and consisted only of brine water. The impacted area was pasture land next to the transfer line. The impacted area measures 195 feet by 108 feet. Figure 1 shows the area of impact. The southwest corner of the Williams A #5 production pad is in the northeast corner of the image.

Characterization of Impacted Area

On May 15, 2015, Hicks Consultants collected soil samples from the release area. Locations are

shown on Figure 2. The area was divided into six grid sections with each having dimensions of about 65 feet by 36 feet. Utilizing a backhoe, soil samples were collected from trenches configured in a five (5) spot pattern within each grid section. The samples were collected from the surface to 4-feet below ground surface (bgs). Soil samples were transported to Cardinal Laboratories located in Hobbs, New Mexico for analysis.

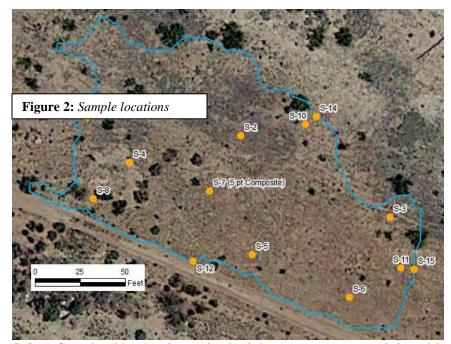


Table 1 presents Lab results for samples collected on May 15, 2015. Analytical results demonstrate that the chloride impact from the release to be less than 1-foot bgs in the majority of the impacted area. Greatest depth of impact was observes at sample location S-2.

Soil samples were analyzed for BTEX in sample location S-1 and

S-2 (1-foot depth). As shown in the laboratory reports and the table below, BTEX components were not detected.

Table 1: *Laboratory results from the six trench sample locations.*

	0.7.00000	J. om me	six trenen sample			1	
Sample Location and Depth	Chloride	BTEX	Sample Location and Depth	Chloride	BTEX	Sample Location and Depth	Chloride
	mg	/kg		mg	/kg		mg/kg
S-1, 0.0'	12900		S-2, 0.0'	26400		S-3, 0.0'	15200
S-1, 0.5'	4280		S-2, 0.5'	4960		S-3, 0.5'	2200
S-1, 1.0'	496	<0.300	S-2, 1.0'	3920	< 0.300	S-3, 1.0'	736
S-1, 2.0'	960		S-2, 2.0'	144		S-3, 2.0'	160
S-1, 3.0'	128		S-2, 3.0'	144		S-3, 3.0 [']	112
S-1, 4.0'	48		S-2, 4.0'	96		S-3, 4.0'	80
S-4, 0.0'	15600		S-5, 0.0'	18800		S-6, 0.0'	16600
S-4, 0.5'	64		S-5, 0.5'	272		S-6, 0.5'	
S-4, 1.0'	112		S-5, 1.0'	672		S-6, 1.0'	160
S-4, 2.0'	80		S-5, 2.0'	48		S-6, 2.0'	128
S-4, 3.0'	64		S-5, 3.0'	80		S-6, 3.0'	112
S-4, 4.0'	48		S-5, 4.0'	80		S-6, 4.0'	128
Background	<16.0						

Table 2 presents laboratory results from five-point composite samples taken from the walls and floor of the excavated release area. After initial excavation, chloride concentrations of the samples from the west, north, and east walls of the excavated area exceeded 7000 mg/kg (results in Appendix A). The excavation footprint was extended approximately five-feet further in each of these directions. After the additional excavation, no wall concentration exceeded 225 mg/kg.

The laboratory concentration for the composite sample taken from the excavated material (stockpiled soil) was 2720 mg/kg (Table 2).

Table 2: Laboratory results from the wall and floor of the excavation and from the excavated material.

Sample Location (all samples		Chloride	in mg/kg	
are 5-point composites)	Sample Location	May 26	Sample Location	May 29
West Wall	S-9	11600	S-13	48
North Wall	S-10	7040	S-14	64
East Wall	S-11	8800	S-15	224
South wall	S-12	48		
Excavation Floor	S-8	480		
Stockpiled Material	S-7	2720		

Environmental Setting

Geology

The Staley State 20 release site is located in the Great Plains physiographic province. The Plains are considered a Cenozoic depositional feature composed of erosional materials from the eastern front of the Rocky Mountains and similarly aligned Basin and Range mountain chains further to the south. Cenozoic erosional materials (Quaternary alluvium and piedmont deposits) are unconformably deposited on top of the Permian Salado Formation (Psl on Plate 3) and the Permian Rustler Formation (Pr) near the release location (Plate 3).

Much of the Plains material that comprises the surface was deposited between 40 and 50 million years ago (ma). With some uplift of the Plains, depositional rates slowed or stopped from 30 to 40 ma. Beginning 30 ma, additional deposition spreading from the north to the south and reworking of the earlier materials resulted in the deposition of the Ogallala formation. The later formation of the Pecos Valley by headward erosion due to either uplift to the west or solution/subsidence of the valley resulted in partial stripping of material from the fronts of the mountains (Reeves, 1972). This action has left the Great Plains isolated from the mountain fronts.

The release location is between the Mescalero rim (the western edge of the Ogallala formation) and the Pecos River. The above mentioned development of the Pecos Drainage removed and reworked the remnants of the Ogallala formation between the Mescalero rim and the Pecos River. This surface is called the Mescalero Plain and is composed of relatively thin pediment deposits and alluvium of fluvial and eolian origins deposited on top of the older Triassic and Permian formations.

As shown on Plate 3, the release location is in the eastern edge of an area mapped as Salado As the Salado is not considered a potable aquifer, the location of two wells (Misc-60 and Misc-59) about 1.5 miles south of the release location suggests that bedrock in that area is probably

lower Rustler Formation. As the Salado is not considered a potable aquifer, the location of two wells (Misc-60 and Misc-59) about 1.5 miles south of the release location suggests that bedrock in that area is probably lower Rustler Formation. deposit of newer materials. To the north and northeast this alluvium overlies the Rustler Formation (Pr).

At the release site, our foot survey did not identify any exposed bedrock that would permit a determination if the mapped Older Alluvium to the east overlies the upper Salado or lower Rustler.

Hydrology

Neither the Salado nor the lower Rustler are considered potable aquifers due to the presence of abundant evaporates in these rock units. Plate 3 shows that the distribution of wells in the area does not include wells on the Salado exposure. Water supply wells are present on exposures of the middle/lower Rustler (e.g. Misc-17, USGS 1393 and probably Misc 60 and Misc 59). Exposures of the Artesia Group (Pat) to the west of the site also show water supply wells on this surface (e.g. Misc 21 and USGS 1520). We cannot verify the location of nearby wells shown on the OSE database. We were unable to find any evidence of well RA-4554 located about 3 miles northwest of the release site. Well L-1370 is a Lea County well that the database plots in the southwest corner of Plate 3.

Plate 4 shows the elevation of the top of groundwater. At the release site, the depth to groundwater is calculated as follows:

Surface Elevation – Groundwater Elevation = Depth to Groundwater

The surveyed ground surface elevation of the nearby Williams A Federal #10 is 3645 and the groundwater elevation in the area of the release is about 3350 feet asl. Thus, the depth to groundwater is about 295 feet. If the Salado Formation is close to the thickness of 575 feet described for the Loco Hills area in the New Mexico Bureau of Mines and Mineral Resources Open File Report 67¹, then any groundwater beneath the release site will probably be brine. More than likely, the thickness of the Salado is less than 575 feet due to solution and removal of the salt. Nevertheless, we believe any groundwater in the Salado would not be fresh.

With respect to surface water, Plate 5 shows the nearby intermittent streams mapped by the USGS. The nearest mapped arroyo is about 1 mile north. Our foot survey of the area identified no watercourses within several hundred feet. While we witnessed some erosion channels north of the Williams A #5 & #10 pad that appeared to be associated with oilfield activity (roads and pipelines), these features were not present downhill where the topographic gradient flattened.

Other Environmental Characteristics

• The release site location is in the southwestern quarter of Section 29 on a relatively flat area that drains to the northwest.

¹ https://geoinfo.nmt.edu/publications/openfile/downloads/0-99/67/ofr_67.pdf

- The nearest surface body of water is an intermittent "Freshwater Pond" about 1.15 miles southeast of the release location. See Plate 4. These "pond" features are playas that have developed within the alluvium overlaying the Permian Salado and Rustler Formations (see Plate 5).
- Wetlands are mapped in the area (Plate 6) but the closest wetland is a freshwater pond about 1 mile southeast
- Plate 7 is a map of karst potential for the area around the release site. The surrounding area is mapped as having either "high potential "or "medium" potential". The boundaries are generalized as is obvious from the straight line character of the contact between the two regions. Comparison with Plate 1 explains that the area of "high potential' karst is an approximation of the contact between the Permian Salado formation and the Quaternary alluvium.
- Our foot survey of the area and the trench sampling identified no evidence of unstable ground.
- We found no evidence that suggests the area is subject to a 100-year flood. FEMA mapping of the area confirms this observation (Plate.
- As Plate 1 and the site visit demonstrate that
 - o there are no residences near the release site
 - o the site does not lie within a municipal boundary. Artesia is about 10 miles west-northwest.
 - o The closest mines are caliche pits and subsurface mines are absent in this area

Remediation Plan

The first phase of the surface remedy is complete:

- Impacted material in the release area has been excavated and stockpiled.
- Sampling demonstrates that the remaining soil is less than 600 mg/kg chloride

The remediation plan is attached as Contractor Instructions. A closure report with a final C-141 form will be submitted for the Staley State 20 release after implementation of the plan to the satisfaction of BLM and OCD. Please contact me or Mike Stubblefield if further information is required.

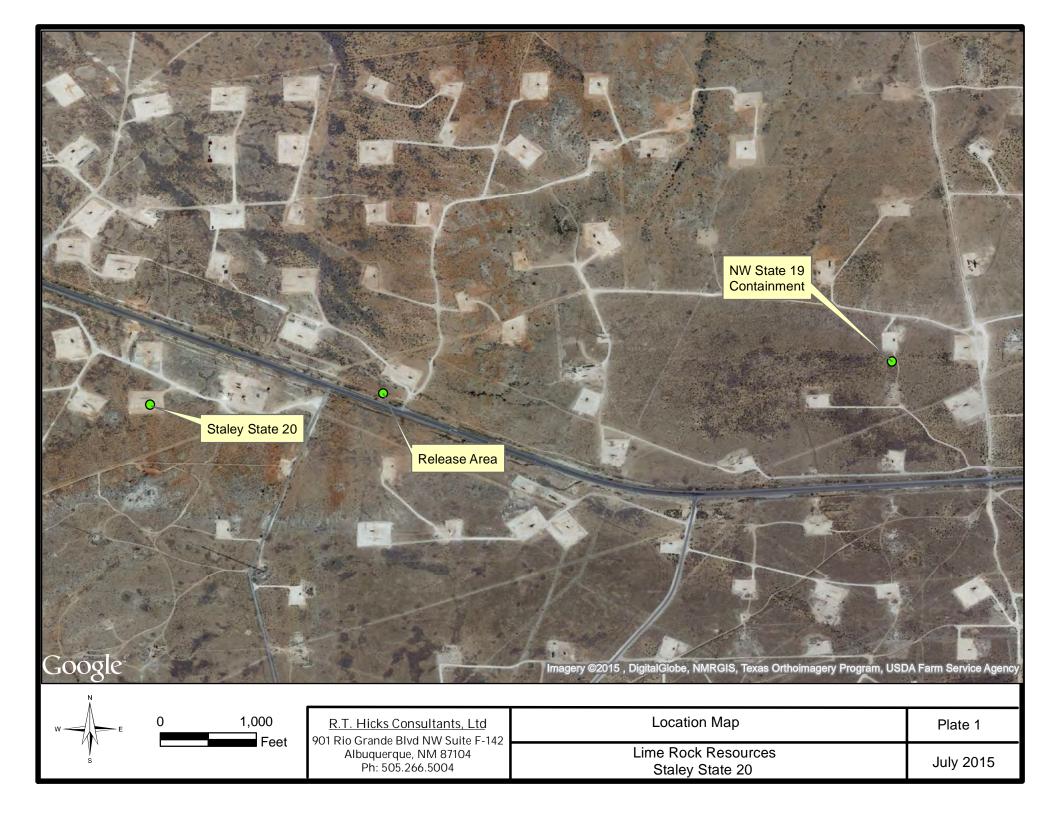
References

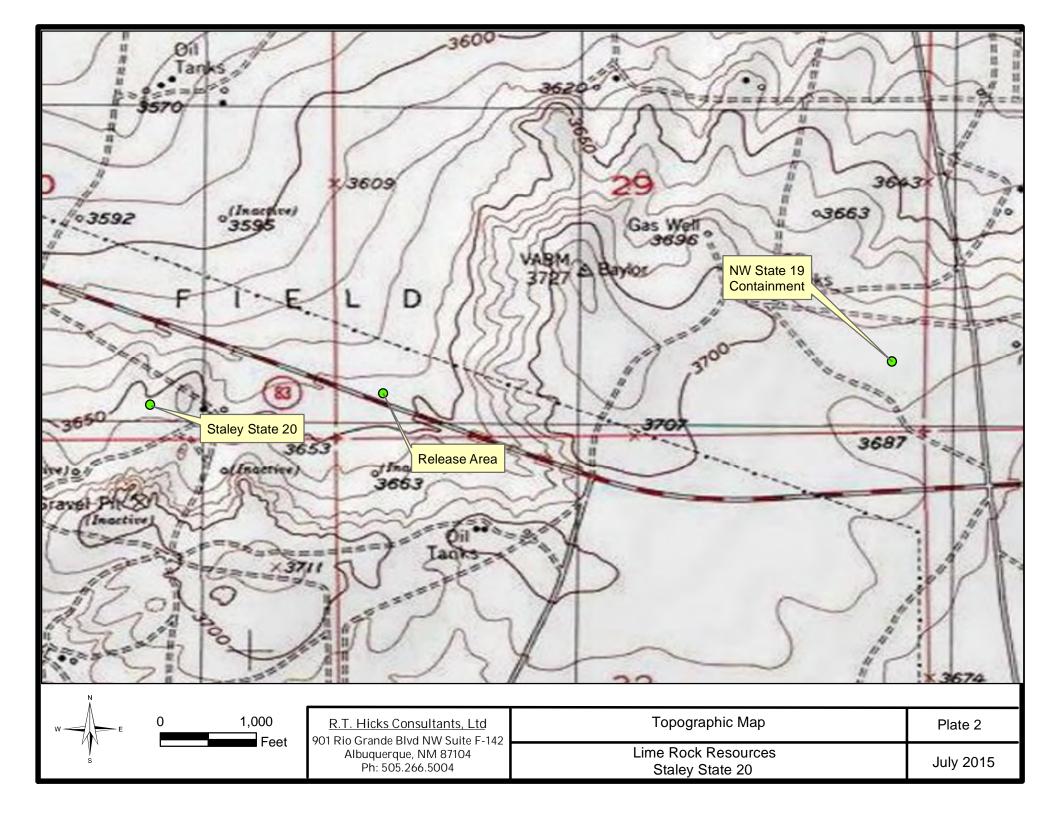
Reeves, C.C., Jr., 1972, Tertiary-Quaternary Stratigraphy and Geomorphology of West Texas and Southeastern New Mexico, In Guidebook, East-Central New Mexico, ed. V.C. Kelley and F. D. Trauger, 103-17, New Mexico Geological Society 23

Contractor Instructions - Lime Rock Staley 20 Release

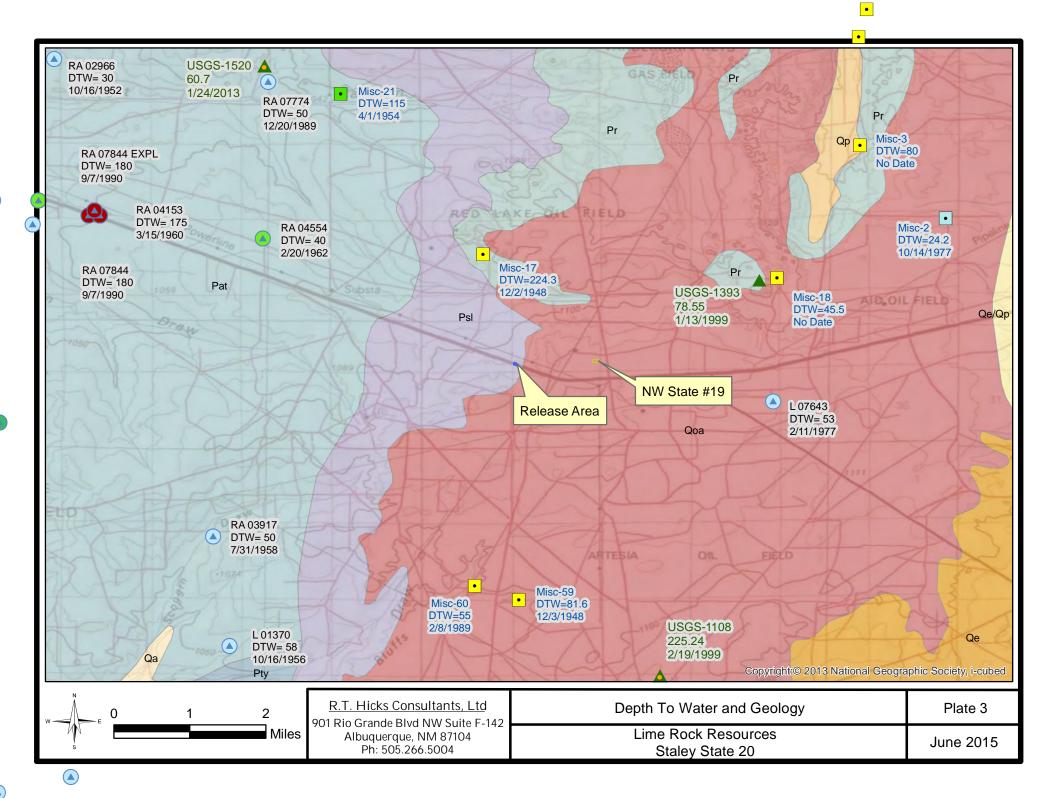
- 1. Excavate a trench with dimensions of 30 feet wide by 80 feet long by 11 feet deep on the north side of the production pad shared by the Williams A Federal #5 and Williams A Federal #10 wells (see Plate 9).. This trench area will be staked by Lime Rock or their representatives with the selected contractor on site.
- 2. Lime Rock or their representative will inspect the bottom and walls of the trench for subsidence features or evidence of instability. Any features that suggest unstable ground will be reported to BLM and, if necessary, the project will halt to enable the design and implementation of appropriate measures. A sampling trench at the nearby release showed no features of instability, solution cavities, etc.
- 3. The impacted (stockpiled) material will be placed into the trench such that all material will be at least 4-feet below ground surface
- 4. Clean fill material will be used to backfill the trench and capped by compacted caliche to restore the production pad surface. The total thickness of the soil cover will be greater than 4 feet.
- 5. The excavated area will be graded to match with the surrounding terrain.
- 6. The graded release footprint will be reseeded using the BLM approved seed mixture for the area.
- 7. The burial of the impacted soil will be noted in the BLM and OCD files by appropriate forms (e.g. C-141 for the OCD file) associated with the Williams A Federal #5 and #10 wells, which is on the same lease as the release site.
- 8. A surface marker will also identify the burial trench to allow for appropriate reclamation of the surface when the last of the two wells are plugged and abandoned.
- 9. Excess soil generated by the burial trench excavation will be added to the soil stockpile on the north side of the Williams A production pad.

Plates



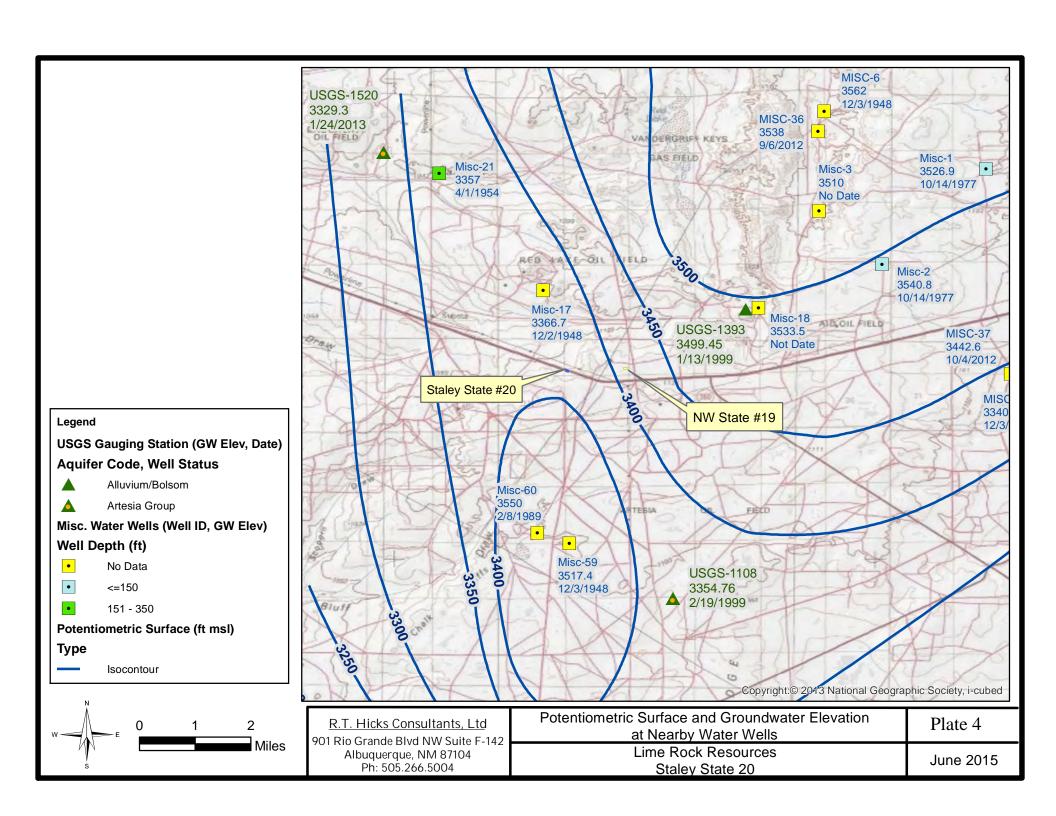


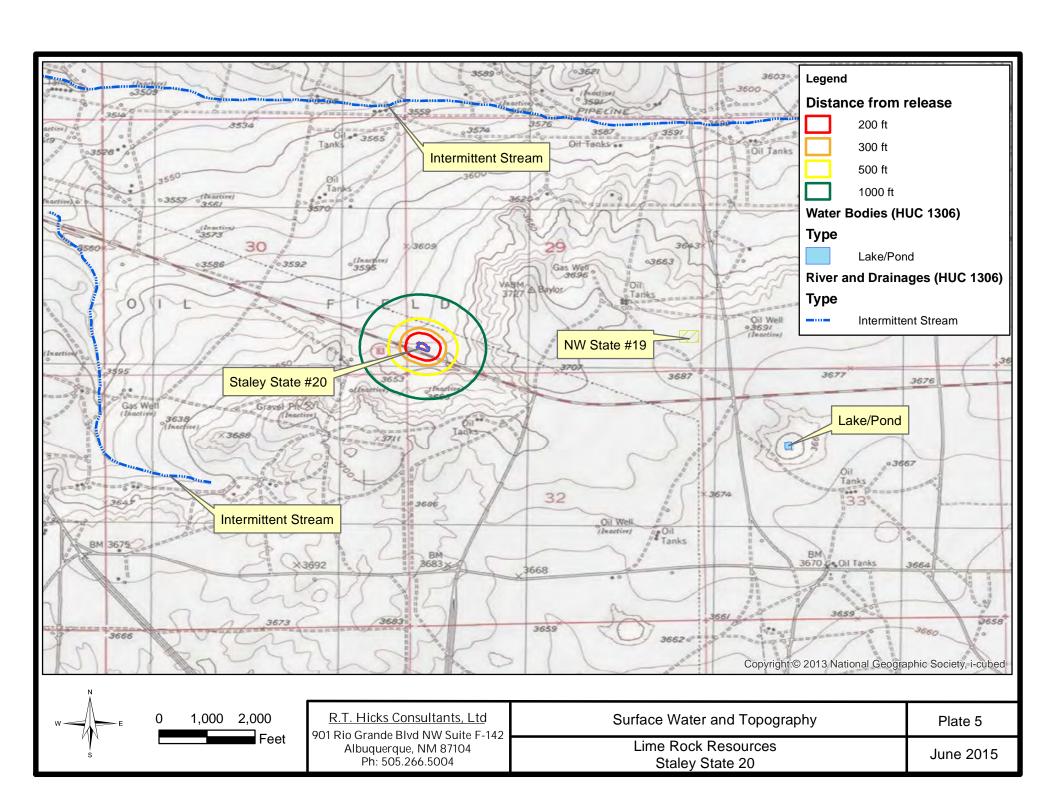


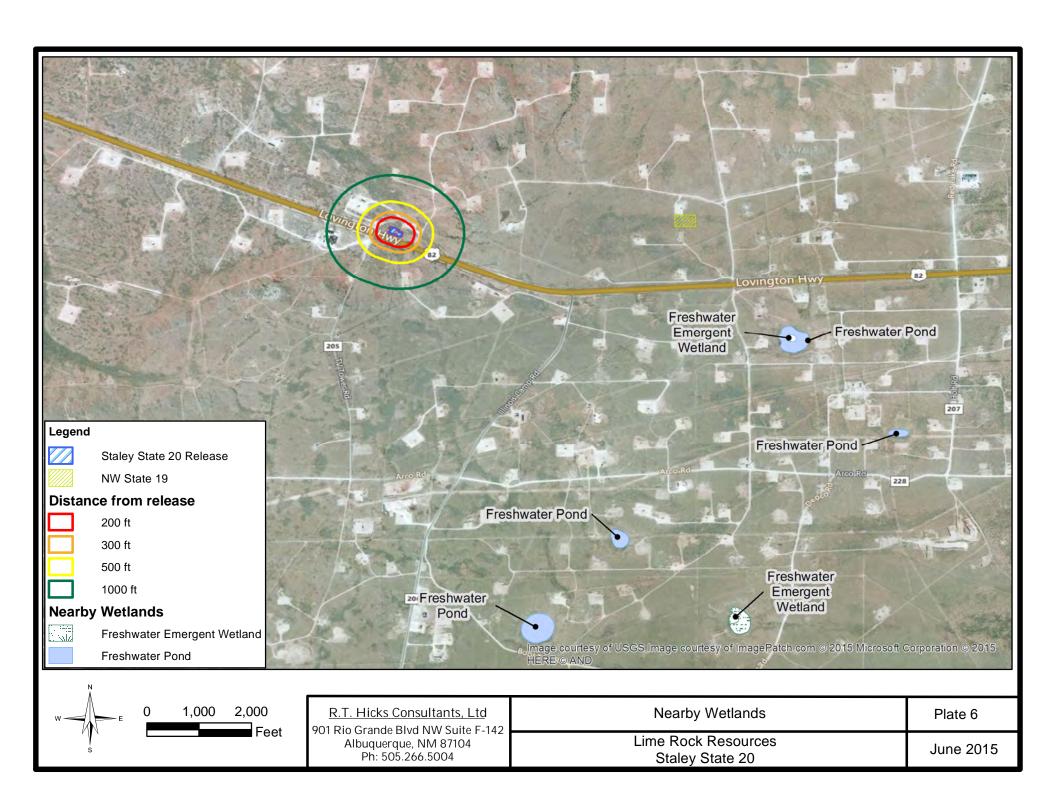


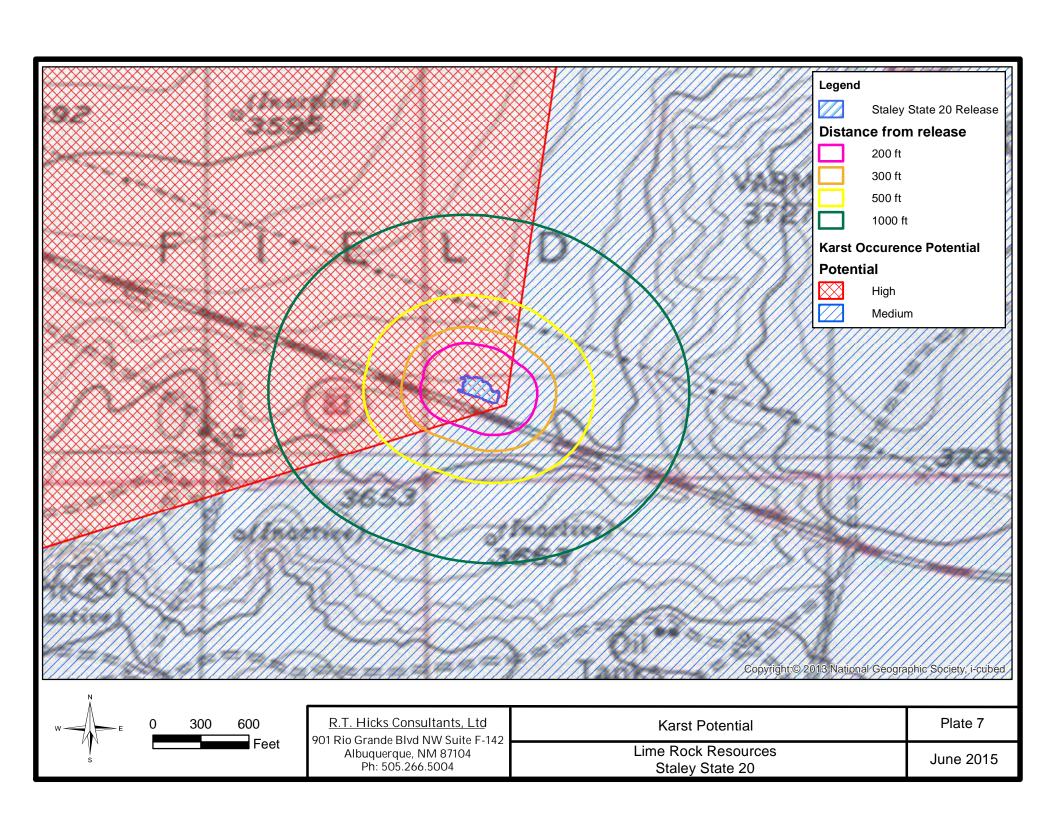
Legend **USGS Gauging Station (DTW, Date) NM Geology** Map Unit, Description **Aquifer Code, Well Status** Pat, Permian-Artesia Group; shelf facies forming south-southeast trending outcrop Alluvium/Bolsom Pr, Paleozoic-Ruster Formation; siltstone, gypsum, sandstone, and dolomite; Upper Permian Artesia Group Psl, Paleozoic-Salado Formation; evaporite sequence; Upper Permian Misc. Water Wells (Well ID, DTW) Pty, Paleozoic-Yates and Tansill Formations; sandstones, siltstones, limestone, dolomite, and anhydrite Well Depth (ft) Qa, Quaternary Alluvium No Data Qe, Quaternary-Eolian Deposits <=150 Qe/Qp, Quaternary-Eolian Piedmont Deposits 151 - 350 Qoa, Quaternary-Older Alluvial Deposits **OSE Water Wells** Qp, Quaternary-Piedmont Alluvial Deposits Well Depth (ft) <= 150 151 - 350 501 - 1000 > 1000

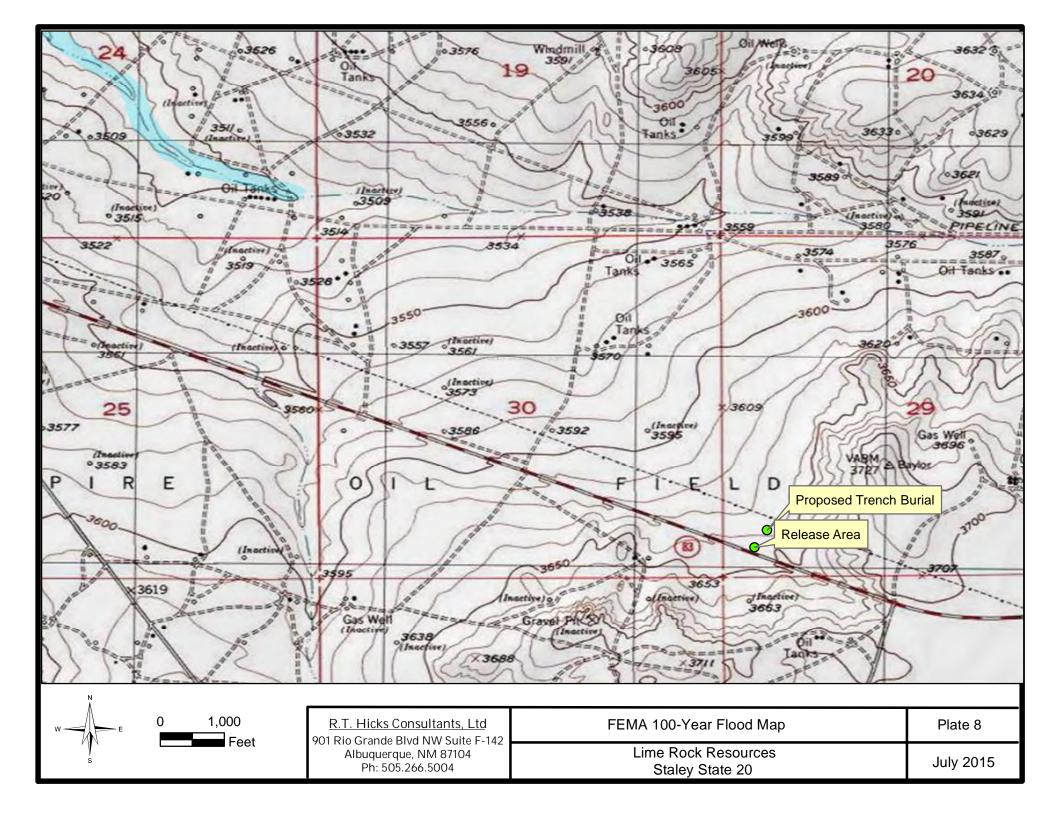
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142	Legend - Depth To Water and Geology	Plate 3 Legend
Albuquerque, NM 87104 Ph: 505.266.5004	Lime Rock Resources Stately State 20	June 2015

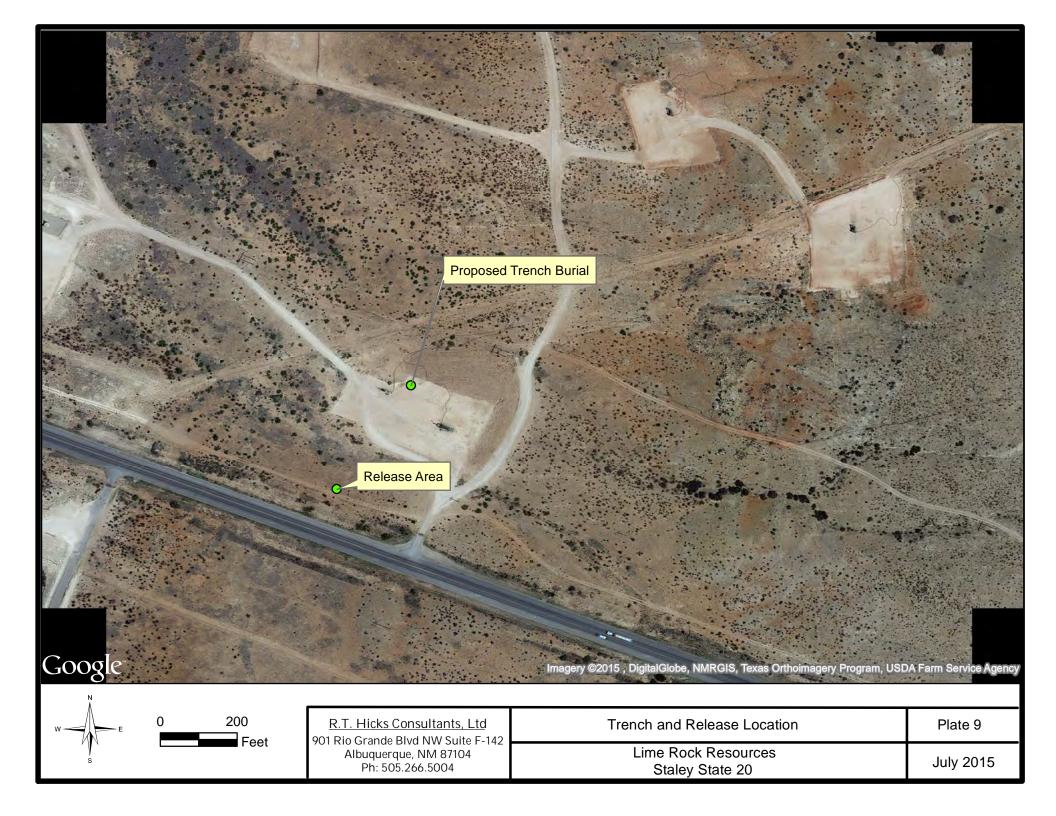












Appendix A

Appendix B

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142 Albuquerque, NM 87104



June 01, 2015

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: STALEY STATE NO. 20

Enclosed are the results of analyses for samples received by the laboratory on 05/29/15 16:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab accred certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Haloacetic Acids (HAA-5)
Method EPA 524.2 Total Trihalomethanes (TTHM)
Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



R T HICKS CONSULTANTS
MIKE STUBBLEFIELD
901 RIO GRANDE BLVD SUITE F-142
ALBUQUERQUE NM, 87104
Fax To: NONE

 Received:
 05/29/2015
 Sampling Date:
 05/29/2015

 Reported:
 06/01/2015
 Sampling Type:
 Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Celey D. Keene

Project Location: UT M SEC. 29 -T17S- R28E

Sample ID: S-13 WESTSIDE WALL (H501386-01)

Chloride, SM4500CI-B	mg	/kg	Analyze	ed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	06/01/2015	ND	416	104	400	0.00	
Sample ID: S-14 NORTHS	IDE WALL (H:	501386-02)							
Chloride, SM4500CI-B	mg	•	Analyze	ed By: CK					

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD
Chloride	64.0	16.0	06/01/2015	ND	416	104	400	0.00

Sample ID: S-15 EASTSIDE WALL (H501386-03)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	06/01/2015	ND	416	104	400	0.00	

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Celeg D. Freene

Qualifier



Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

- Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

Company Name:	R.T. Hicks Consultants		BILL TO	ANALYSIS REQUEST
Project Manager:	mike Stubble field		P.O. #:	
Address:	2411 50-12 1314 Street		Company: LRE Operating 46	
City:	Actesia State: NE	Zip: 88210	Attn: MIKC Buret	
Phone #:	55.365-103 VFax #:		Address:	
Project #: 3	30.015 46983 Project Owner: LRE Operation, 44 City:	er: LRE operation, 44	City:	
Project Name:	STALCY STATE 20	1 //	State: Zip:	
Project Location:	Project Location: UT M Sec. 29.7175-1828 E		Phone #:	
Sampler Name:	misus salling		Fax#:	irle
\neg		MATRIX	PRESERV. SAMPLING	or
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE	OTHER: ACID/BASE: ICE / COOL OTHER: DATE	Total (6)
_	S.13 West 6 Ide WALL	6	N 61:11 5/62/5	
25	· 14 Northside Wall	2	5/29/15 11:234	
38	3 5-15 eastride wall	8	5/29/15 11:31A	
PLEASE NOTE: Liability and D analyses. All dalms including the	amages. Cardinal's liability and client's exclusive remedy lose for negligence and any other cause whatsoever shall	for any claim arising whether based in contract be deemed waived unless made in writing and	PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim arising whether based in contract or fort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed valved unless made in writing and received by Cardinal within 30 days after completion of the applicable	In the special section of the sectio

Sample Condition
Cool Intact
Ves Ves
No No

CHECKED BY:

Delivered By: (Circle One)
Sampler - UPS - Bus Other:

Relinquished By:

5/29/2015 Time: 35

> Phone Result: Fax Result: REMARKS:

> > ☐ Yes ☐ No

Add'l Phone #: Add'l Fax #:

Time:

Relinquished By:



May 27, 2015

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: STALEY STATE NO. 20

Enclosed are the results of analyses for samples received by the laboratory on 05/26/15 16:20.

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Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



R T HICKS CONSULTANTS
MIKE STUBBLEFIELD
901 RIO GRANDE BLVD SUITE F-142
ALBUQUERQUE NM, 87104
Fax To: NONE

Received: 05/26/2015 Sampling Date: 05/26/2015 Reported: 05/27/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T17S- R30E

Sample ID: S-7 STOCKPILED MATERIAL (H501309-01)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2720	16.0	05/27/2015	ND	416	104	400	3.92	

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Celeg D. Freene



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Samples reported on an as received basis (wet) unless otherwise noted on report

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101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

company name: 17. Hick Consultants	75	BILL TO	ANALYSIS REQUEST
Project Manager: macc 57 35/cfield		P.O. #:	
Address: 2411 South 13th Street	rect	Company: CRE Operator LLC	
city: Artisia State: NM	Zip: 80210	Attn: Mik Bakee Til	
Phone #: 8'25-365-5034 Fax #:		Address:	
Project #: 30 · 0/5 · 40983 Project Own	Project Owner: LRE Operating the City:	City:	
Project Name: Staley State No. 20	1 1"	State: Zip:	
Project Location: Ut M sec. 39-7175 PROE	930E	Phone #:	
Σ		Fax#:	
FOR LAB USE ONLY	MATRIX	PRESERV. SAMPLING	
Lab I.D. Sample I.D.	(G)RAB OR (C)OMI # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE	OTHER: ACID/BASE: ICE/COOL OTHER: DATE TIME	
S-7 Stockfiled	\		
material			
The second secon	the deemed waived unless made in writing an	a or tore, shall be imitted to the amount paid by the client to the sention	

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-3826 Sample Condition
Cool Intact
Yes Yes
No No

23.60

Sampler - UPS - Bus - Other: Delivered By: (Circle One) mae SLOBLE A

Time:

Relinquished By:

Phone Result: Fax Result: REMARKS:

☐ Yes ☐ No Add'I Phone #:



May 20, 2015

MIKE STUBBLEFIELD

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: STALEY STATE NO. 20

Enclosed are the results of analyses for samples received by the laboratory on 05/18/15 13:03.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/ga/lab accred certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2 Haloacetic Acids (HAA-5)
Method EPA 524.2 Total Trihalomethanes (TTHM)
Method EPA 524.4 Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

Celey D. Keine

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager



R T HICKS CONSULTANTS
MIKE STUBBLEFIELD
901 RIO GRANDE BLVD SUITE F-142
ALBUQUERQUE NM, 87104
Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015
Reported: 05/20/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 1 0 ' (H501260-01)

Chloride, SM4500CI-B	mg,	'kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12900	16.0	05/20/2015	ND	400	100	400	3.92	

Sample ID: S- 1 .5 ' (H501260-02)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4280	16.0	05/20/2015	ND	400	100	400	3.92	

Sample ID: S- 1 1'(H501260-03)

BTEX 8021B	mg,	'kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/19/2015	ND	1.81	90.7	2.00	1.58	
Toluene*	<0.050	0.050	05/19/2015	ND	1.97	98.4	2.00	3.91	
Ethylbenzene*	<0.050	0.050	05/19/2015	ND	1.86	93.0	2.00	3.46	
Total Xylenes*	<0.150	0.150	05/19/2015	ND	5.54	92.3	6.00	4.12	
Total BTEX	< 0.300	0.300	05/19/2015	ND					

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	496	16.0	05/18/2015	ND	400	100	400	0.00	

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MIKE STUBBLEFIELD
901 RIO GRANDE BLVD SUITE F-142
ALBUQUERQUE NM, 87104
Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015
Reported: 05/20/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 1 2 ' (H501260-04)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	960	16.0	05/18/2015	ND	400	100	400	0.00	
Sample ID: S - 1 3 ' (H50:	1260-05)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	05/18/2015	ND	400	100	400	0.00	
Sample ID: S - 1 4'(H50:	1260-06)								
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	05/18/2015	ND	400	100	400	0.00	
Sample ID: S - 2 0 ' (H50:	L260-08)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	26400	16.0	05/20/2015	ND	400	100	400	3.92	
Sample ID: S - 2 .5 ' (H50	1260-09)								
Chloride, SM4500CI-B	•	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4960	16.0	05/20/2015	ND	400	100	400	3.92	

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MIKE STUBBLEFIELD
901 RIO GRANDE BLVD SUITE F-142
ALBUQUERQUE NM, 87104
Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015
Reported: 05/20/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 2 1' (H501260-10)

BTEX 8021B	mg,	r.y		d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/19/2015	ND	1.81	90.7	2.00	1.58	
Toluene*	<0.050	0.050	05/19/2015	ND	1.97	98.4	2.00	3.91	
Ethylbenzene*	<0.050	0.050	05/19/2015	ND	1.86	93.0	2.00	3.46	
Total Xylenes*	<0.150	0.150	05/19/2015	ND	5.54	92.3	6.00	4.12	
Total BTEX	<0.300	0.300	05/19/2015	ND					
Surrogate: 4-Bromofluorobenzene (PID	110 9	% 61-154	1						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
							T 1/1 00		Ouglifier
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Analyte Chloride	Result 3920	Reporting Limit	Analyzed 05/18/2015	Method Blank ND	8S 400	% Recovery	400	0.00	Quailler
•	3920		,			,	•		Qualifier
Chloride Sample ID: S - 2 2'(H50126	3920	16.0	05/18/2015			,	•		Quaimer
Chloride Sample ID: S - 2 2'(H50126	3920 0-11)	16.0	05/18/2015	ND		,	•		Qualifier
Chloride Sample ID: S - 2 2' (H50126 Chloride, SM4500Cl-B	3920 0-11)	16.0 /kg	05/18/2015 Analyze	ND d By: AP	400	100	400	0.00	
Chloride Sample ID: S - 2 2 ' (H50126 Chloride, SM4500Cl-B Analyte	3920 0-11) mg, Result 144	16.0 /kg Reporting Limit	05/18/2015 Analyze Analyzed	ND d By: AP Method Blank	400 BS	% Recovery	400 True Value QC	0.00	
Chloride Sample ID: S - 2 2' (H50126 Chloride, SM4500Cl-B Analyte Chloride	3920 0-11) mg, Result 144	16.0 /kg Reporting Limit 16.0	05/18/2015 Analyze Analyzed 05/18/2015	ND d By: AP Method Blank	400 BS	% Recovery	400 True Value QC	0.00	
Chloride Sample ID: S - 2 2' (H50126 Chloride, SM4500CI-B Analyte Chloride Sample ID: S - 2 3' (H50126	3920 0-11) mg/ Result 144 0-12)	16.0 /kg Reporting Limit 16.0	05/18/2015 Analyze Analyzed 05/18/2015	ND d By: AP Method Blank ND	400 BS	% Recovery	400 True Value QC	0.00	

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Celeg D. Freene

Jodi Henson

Sample Received By:



Analytical Results For:

R T HICKS CONSULTANTS MIKE STUBBLEFIELD 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104

Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015
Reported: 05/20/2015 Sampling Type: Soil

Reported: 05/20/2015 Sampling Type: Soil
Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)

Project Location: UT M SEC. 29 -T175- R30E

30-015-40983

Sample ID: S - 2 4' (H501260-13)

Project Number:

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 3 0 ' (H50	01260-14)								
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15200	16.0	05/20/2015	ND	400	100	400	3.92	
Sample ID: S - 3 .5 ' (H5	01260-15)								
Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2200	16.0	05/20/2015	ND	400	100	400	3.92	
Sample ID: S - 3 1'(H50	01260-16)								
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Analyte									
Analyte Chloride	736	16.0	05/18/2015	ND	400	100	400	3.92	
Chloride		16.0	05/18/2015	ND	400	100	400	3.92	
•				ND d By: AP	400	100	400	3.92	
Chloride Sample ID: S - 3 2 ' (H50	1260-17)				400 BS	100 % Recovery	400 True Value QC	3.92 	Qualifier

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MIKE STUBBLEFIELD
901 RIO GRANDE BLVD SUITE F-142
ALBUQUERQUE NM, 87104
Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015
Reported: 05/20/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 3 3 '(H501260-18)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	05/18/2015	ND	400	100	400	3.92	
-	4 '(H501260-19)								
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 4 Chloride, SM4500Cl-B	0 '(H501260-20)	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	15600	16.0	05/20/2015	ND	400	100	400	3.92	
Sample ID: S - 4	.5 ' (H501260-21)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	05/20/2015	ND	400	100	400	3.92	
Sample ID: S - 4	1'(H501260-22)								
Chloride, SM4500Cl-B	•	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	05/18/2015	ND	400	100	400	3.92	

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R T HICKS CONSULTANTS MIKE STUBBLEFIELD 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104

Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015
Reported: 05/20/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 4 2 ' (H501260-23)

Chloride, SM4500Cl-B	2 (11301200-23) mg	/lea	Analyza	d By: AP					
cilioride, 3M4300CI-B	ilig		Allalyze	u by. AF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 4	3'(H501260-24)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 4 Chloride, SM4500Cl-B	4 ' (H501260-25) mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 5	0 '(H501260-26)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	18800	16.0	05/20/2015	ND	400	100	400	3.92	
Sample ID: S - 5	.5' (H501260-27)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	272	16.0	05/20/2015	ND	400	100	400	3.92	

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Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015
Reported: 05/20/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 5 1 '(H501260-28)

Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	672	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 5 2'(H5	501260-29)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 5 3 ' (H5 Chloride, SM4500Cl-B	01260-30) mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 5 4 ' (H5	501260-31)								
Chloride, SM4500Cl-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	05/18/2015	ND	400	100	400	3.92	
	501260-32)								
Sample ID: S - 6 0 '(H				d Byr AD					
Sample ID: S - 6 0 '(H Chloride, SM4500Cl-B	mg	/kg	Analyze	u by. AP					
•	mg Result	/kg Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier

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R T HICKS CONSULTANTS MIKE STUBBLEFIELD 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104

Fax To: NONE

 Received:
 05/18/2015
 Sampling Date:
 05/15/2015

 Reported:
 05/20/2015
 Sampling Type:
 Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 6 1 '(H501260-33)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 6 2 ' (H50	1260-34)								
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 6 3 ' (H50 Chloride, SM4500Cl-B	-	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: S - 6 4 ' (H50	1260-36)								
Chloride, SM4500CI-B	mg	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	05/18/2015	ND	400	100	400	3.92	
Sample ID: BACKGROUND (H501260-3	7)							
Chloride, SM4500Cl-B	•	/kg	Analyze	d By: AP					
Cilioride, SM4500CI-B									
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier

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R T HICKS CONSULTANTS MIKE STUBBLEFIELD 901 RIO GRANDE BLVD SUITE F-142 ALBUQUERQUE NM, 87104

Fax To: NONE

Received: 05/18/2015 Sampling Date: 05/15/2015

Reported: 05/20/2015 Sampling Type: Soil

Project Name: STALEY STATE NO. 20 Sampling Condition: ** (See Notes)
Project Number: 30-015-40983 Sample Received By: Jodi Henson

Project Location: UT M SEC. 29 -T175- R30E

Sample ID: S - 6 .5 '(H501260-38)

Chloride, SM4500Cl-B	mg/	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1280	16.0	05/20/2015	ND	400	100	400	3.92	

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Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

** Samples not received at proper temperature of 6°C or below.

*** Insufficient time to reach temperature.

- Chloride by SM4500Cl-B does not require samples be received at or below 6°C

Samples reported on an as received basis (wet) unless otherwise noted on report

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Celeg D. Freene



575) 3	BILL TO	ANALYSIS REQUEST
	P.O.#	
project Manager: MIKC (STubble Field	company: LRE Operator, us) —
Stat	Zip: 88210 Attn: Mike Barrett	1/21
e#: 525.365.5634		<i>S7</i>
30.015.40983	RE Opplating LLC City:	
a		
on: UYM /sec. 29-7	Phone #:	
(Stub	Fax #:	
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analyses. All claims including those for negligence and any other cause whitsoever shall be a service. In no event shall Cardinal be liable for incidental or consequential damages, including service. In no event shall Cardinal be liable for incidental or consequential damages, including service.	or loss of profits incurred by client, its subsidiaries, namy of the above stated reasons or otherwise.	Yes
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Relinquished By:	Received By	
100 Sept.		CNSH!
Delivered By: (Circle One)		1080000
Sampler - UPS - Bus (Other:) 10.4 0C	TOC NO NO NO	



101 East Marland, Hobbs, NM 88240

(575) 393-2326 FAX (575) 393-2476		
Company Name: AT Hicks Consultants	T'S P.O. #:	_
Address: 2411 South 13th Stree	Company: LR	_
	\$5210 Attn: MIKE Barrell	
e #:	And all City:	
	State: Zip:	
Project Name: Staley State No. 20	Dhone #:	
on: ut m scc. 24-7195	ide	
Sampler Name: Mike Stubble tield	lor	
FOR LAB USE ONLY	2	
Lab I.D. Sample I.D.	Total	
HS01260	# G W S C C S C S	
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navayes, we use the state of the state for incidental or consequential damages, in service. In no event shall Cardinal be liable for incidental or consequential damages, in efficiency or successors arising out of ar related to the performance of services hereund Relinquished By: Relinquished By:	Relinquished By: Received By:	
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† Cardinal cannot accept verbal changes. Please fax written thanges to (575) 393-2326

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101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

1 1				
Company Name: RT HIKS CONSULTANTS	Ks Consultants		BILL 10	ANALYSIS REQUEST
Project Manager: MKC	MKOSTUBBLE Teld		P.O. #:	
Address: ZVII S	7411 South 18th Street		company: CRED monting, LLC	
city: AMCSIO	1	Zip: 88210	Attn: Millo Barrett V	
Phone #: \$28-369	578-365.5034 Fax#:		Address:	20
Project #: 30 - 0/5	30 - 015 - 40983 Project Owner:		City:	1/2
Project Name: Stalcy	Staley State No. 20		State: Zip:	5
Project Location: VT.	ut. m sec. 29. T.DS . R36E	R36E	Phone #:	
Sampler Name: Mike	mikerstubblefield		Fax #:	
FOR LAB USE ONLY		RS	TALGET V	BTE) Chlor
HS01260	Sample I.D.	(G)RAB OR (# CONTAINE GROUNDWA WASTEWAT SOIL OIL SLUDGE	OTHER: ACID/BASE: ICE / COOL OTHER: DATE	8021 Total
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1.5.4	(3)	C	5/15/15/15/15	
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2.5.6	>,	7	J 1255 8/51/5 /	
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PLEASE NOTE: Liability and Damages. Cardin	al's liability and client's exclusive remedy for any	claim arising whether based in contr	PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim arising whether based in contract or tort, shall be limited to be amount play the client's or the processing of the amount play and the processing of the amount play and the processing of the amount play.	N for the

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Sample Condition
Cool Intact
Yes Yes
No No

Delivered By: (Circle One)
Sampler - UPS - Bus - Other

Relinquished By:

Relinquished By:

Received By:

Phone Result: Fax Result: REMARKS:

□ Yes

No No

Add'I Phone # Add'I Fax #:

Page 14 of 15

4

(575) 393-2326 FAX (575) 393-2476 101 East Marland, Hobbs, NM 88240

(010) 000 -000	BILLTO	ANALYSIS REGOES!
Company Name: AT HICKE Consultants	1. BO#:	
Project Manager: Mike Stable field	T.C. #.	
Address: Zull S. Th 1314 Street	TreeT	
	State: Nm Zip: 88210 Attn: miKe 89//cil	20
#	Fax #: Address:	-/-
	Project Owner: LRE Operating, LLC City:	// s
ame: Staled S	No. 20 State: Zip:	ed
on: 64: M	Scc. 29 . TMS . R30 E Phone #:	do
	Fax#:	-
OG I DIO	MATRIX PRESERV. SAMPLING	de
Lab I.D. Sample I.D.	(G)RAB OR (C)OMP # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER: ACID/BASE: ICE / COOL OTHER;	802L BTE Total CLLOT
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d	C	hold V
	the state of the second of the	by the client for the

Sampler - UPS - Bus - Other: † Cardinal cannot accept verbal changes. Please faxwritten changes to (575) 393-2326 Sample Condition
Cool Intact
Yes Yes
No No Relinquished By:

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Relinquished By:

Received By:

Phone Result: Fax Result: REMARKS:

□ Yes

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Add'l Phone #: Add'l Fax #:

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