

NOTE: This proposal is withdrawn by
contractor as of 7/10/15 MB

June 2015

**Staley State 20 Remediation Plan
Section 29, Unit M of T17 S, R28E
Eddy County, New Mexico**

**Prepared For:
LRE Operating LLC.**

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

June 2015

Staley State 20 Remediation Plan

**Prepared For:
LRE Operating LLC.**

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

R. T. HICKS CONSULTANTS, LTD.

Midland, TX ▲ Durango, CO ▲ Carlsbad, NM ▲ Artesia, NM

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

June 29, 2015

Mr. Mike Bratcher
NMOCD
811 South 1st Street
Artesia, New Mexico 88210

RE: Staley State 20 Release Site, LRE Operating LLC
T17S R28E Section 29 Unit Letter M, Eddy County NM

Dear Mr. Bratcher:

On behalf of LRE Operating LLC, R.T. Hicks Consultants (Hicks Consultants) is pleased to present the following Remediation Plan for the Staley State No.20 release site. A set of contractor's instructions that provide step by step protocols (the remedy) is attached to this submission.

Incident History

The release, associated with the Staley State No.20 well, occurred on May 5, 2015. Plate 1 shows the release area relative to nearby wells and topography. The release area is located in Unit M Sec. 29, T17S-R28E.

The source of the release was a 10" transfer line moving treated waters from the NW State 19 Recycling containment to the Staley State No.20 well. Service work was being performed on the well at the time of the release. A valve on the transfer line vibrated shut, maximum operating pressure for the 10" line was exceeded, and the line ruptured. As Blue Water Transfer Personnel were at the site monitoring the water transfer; the line was immediately

shut-in, a vacuum truck was brought to the location, standing water in the 10" transfer line was removed, and free fluids were recovered from the impacted area.

The release volume was 65 bbls with an estimated 5-10 bbls being recovered. The release waters coming 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.

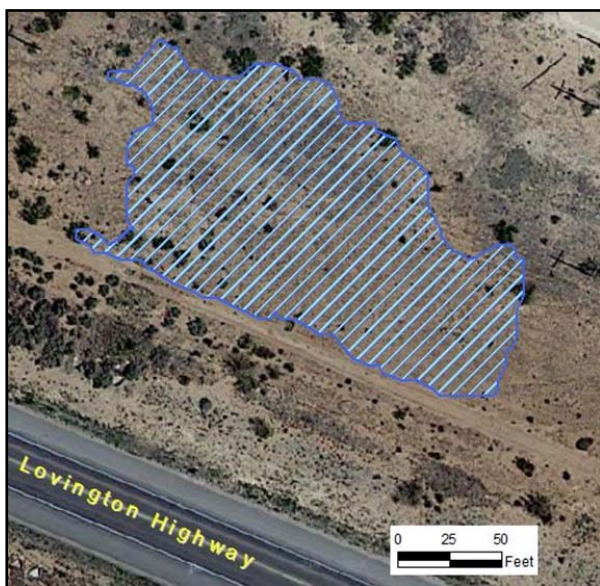
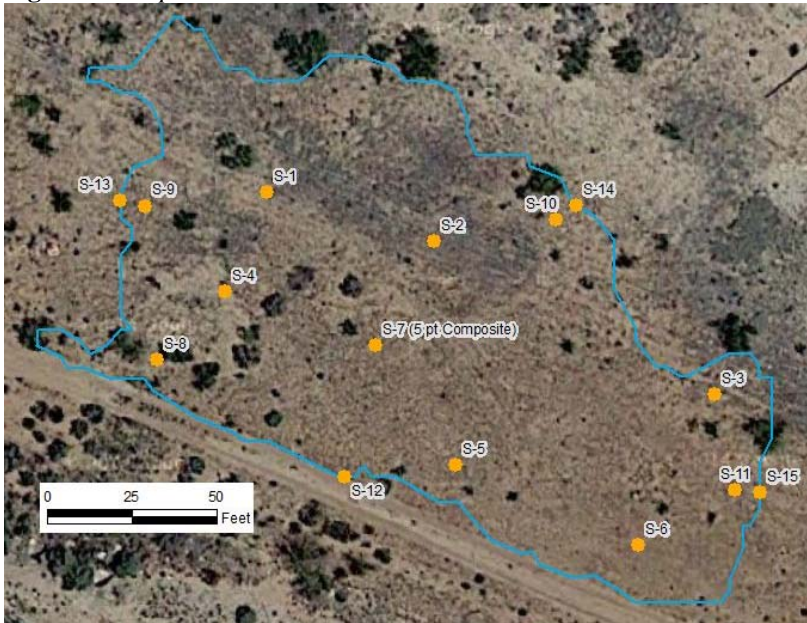


Figure 1: Cross hatched area is the release area. North is up the page.

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.

Figure 2: *Sample locations*



Laboratory Results

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 observed at sample location S-2. Soil samples were analyzed for BTEX in sample location S-1 1' and S-2 1', analytical results reported for BTEX were less than 0.300 mg/kg, the method-detection limit. Benzene was reported as ND. Appendix A has the laboratory results.

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

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 are 5-point composites)	Chloride in mg/kg			
	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		

Hydrogeologic Data

A review of the New Mexico Office of the State Engineer waters data base found no water wells located in Township 17S Range 28E. R.T. Hicks Consultants performed extensive research for ground water located in Township 17S Range 28E during the permitting for the NW 19 Fluid Containment pit. The Staley State No.20 release is approximately one mile west of the NW 19 Fluid Containment pit.

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 1) and the Permian Rustler Formation (Pr) near the release location (Plate 1).

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 1, the release location is in the eastern edge of an area mapped as Salado Formation. Immediately east is an area mapped as Older Alluvium (Qoa), a relatively thin 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. 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.

Site Characteristics

- The release site location is in the southwestern quarter of Section 29 on a relatively flat area that drains to the northwest.
- Plate 2 presents a potentiometric surface based upon USGS and Open File 95¹ well data. Surface elevation of the release site is about 3640 feet (asl). Interpolation from Plate 2 suggests a ground water elevation of about 3390 feet (asl). Hence depth to ground water is about 250 feet.
- The closest “intermittent stream” is more than 0.8 miles to the southwest. The nearest “Lake/Pond” is 1.1 miles to the east- southeast. See Plate 3.
- 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.
- Plate 5 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. As chance would have it, the release maps into a corner on the “high potential” side of the contact. 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.
- There are no water wells located within one-thousand feet of the release area (Plate 1).

Characterization Results and Remediation Plan

- Impacted material in the release area has been excavated and stockpiled.
- On May 26, 2015 a five spot composite soil sample was collected from the stockpiled material and submitted to Cardinal Laboratories. (Appendix A)
- The analytical results are that Chloride in the stockpiled material is 2720 ppm.

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.

Sincerely,
R.T. Hicks Consultants, Ltd.



Randall Hicks
Principal

Copy: Mike Barrett, Lime Rock

¹ http://geoinfo.nmt.edu/publications/openfile/downloads/0-99/95/ofr_95.pdf

June 5, 2015

Page 6

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

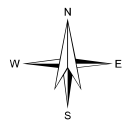
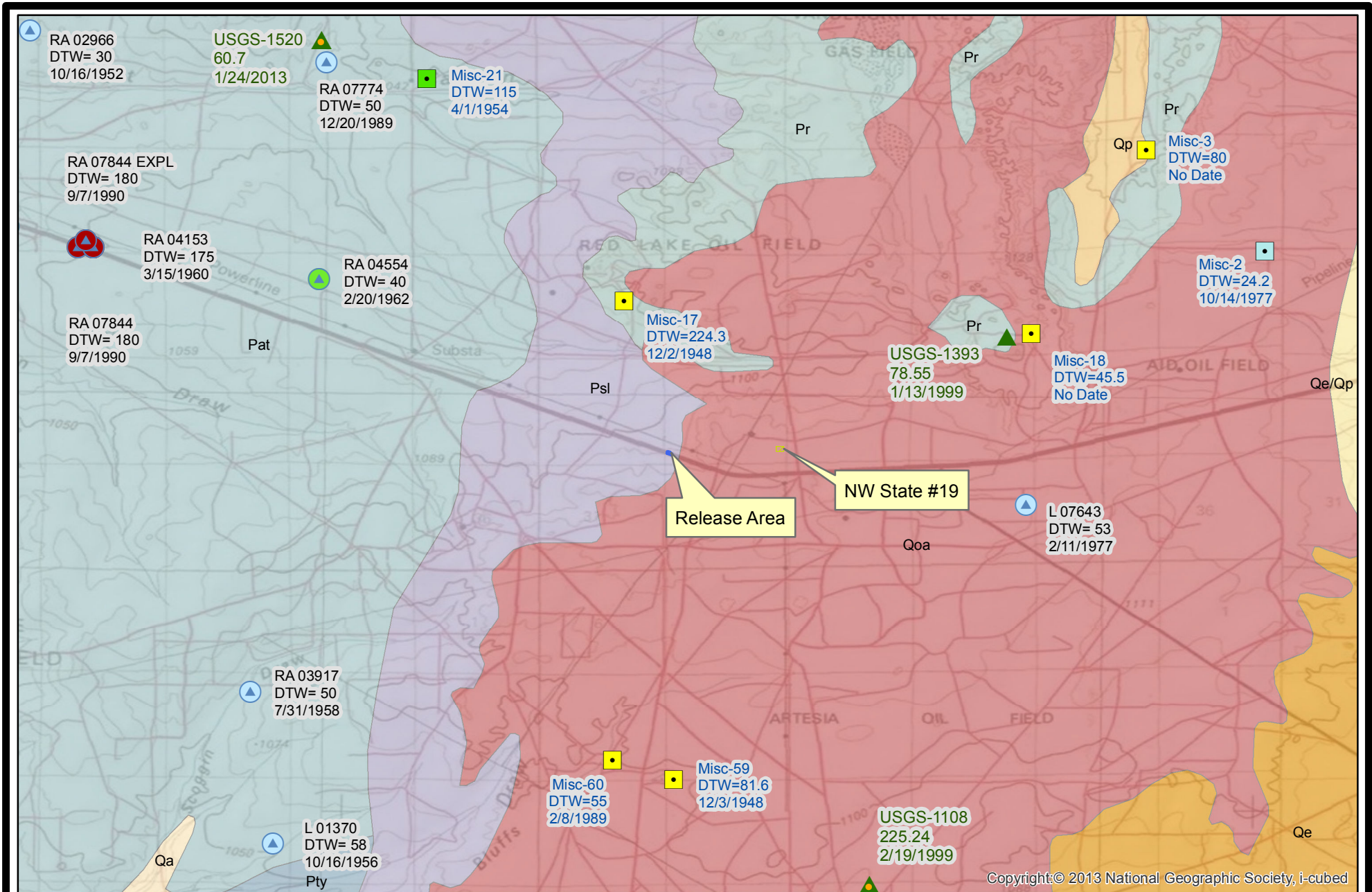
Contractor Instructions – Lime Rock Staley 20 Release

1. Excavate a trench on the northside of the impacted area with dimensions of 30 feet wide by 80 feet long by 11 feet deep. Topsoil will be reserved separately from the material at greater depth. 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.
3. The impacted (stockpiled) material will be placed into the trench such that all material will be at least 4-feet below ground surface. The materials will be shaped so as to have a slightly domed shape in order to direct downwards moving vadose zone water away from the trench footprint.
4. A 20 mil string reinforced LLDPE liner will be placed over the materials in the trench.
5. Clean fill material will be used to backfill the trench.
6. The greater of either one foot of topsoil or the original thickness will be used to complete the filling of the trench to surface, thereby creating a soil cover of at least 4-feet in thickness.
7. The excavated area will be graded to match with the surrounding terrain using clean material excavated from the trench for fill as required.
8. The impacted area will be reseeded using the BLM approved seed mixture for the area.

Plates

R.T. Hicks Consultants, Ltd.

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



0 1 2
Miles

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Albuquerque, NM 87104
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Depth To Water and Geology

Lime Rock Resources
Staley State 20




Plate 1

June 2015

Legend**USGS Gauging Station (DTW, Date)****Aquifer Code, Well Status**

-  Alluvium/Bolsom
-  Artesia Group










Misc. Water Wells (Well ID, DTW)**Well Depth (ft)**

-  No Data
-  <=150
-  151 - 350

OSE Water Wells**Well Depth (ft)**

-  <= 150
-  151 - 350
-  501 - 1000
-  > 1000

NM Geology**Map Unit, Description**

-  Pat, Permian-Artesia Group; shelf facies forming south-southeast trending outcrop
-  Pr, Paleozoic-Ruster Formation; siltstone, gypsum, sandstone, and dolomite; Upper Permian
-  Psl, Paleozoic-Salado Formation; evaporite sequence; Upper Permian
-  Pty, Paleozoic-Yates and Tansill Formations; sandstones, siltstones, limestone, dolomite, and anhydrite
-  Qa, Quaternary Alluvium
-  Qe, Quaternary-Eolian Deposits
-  Qe/Qp, Quaternary-Eolian Piedmont Deposits
-  Qoa, Quaternary-Older Alluvial Deposits
-  Qp, Quaternary-Piedmont Alluvial Deposits

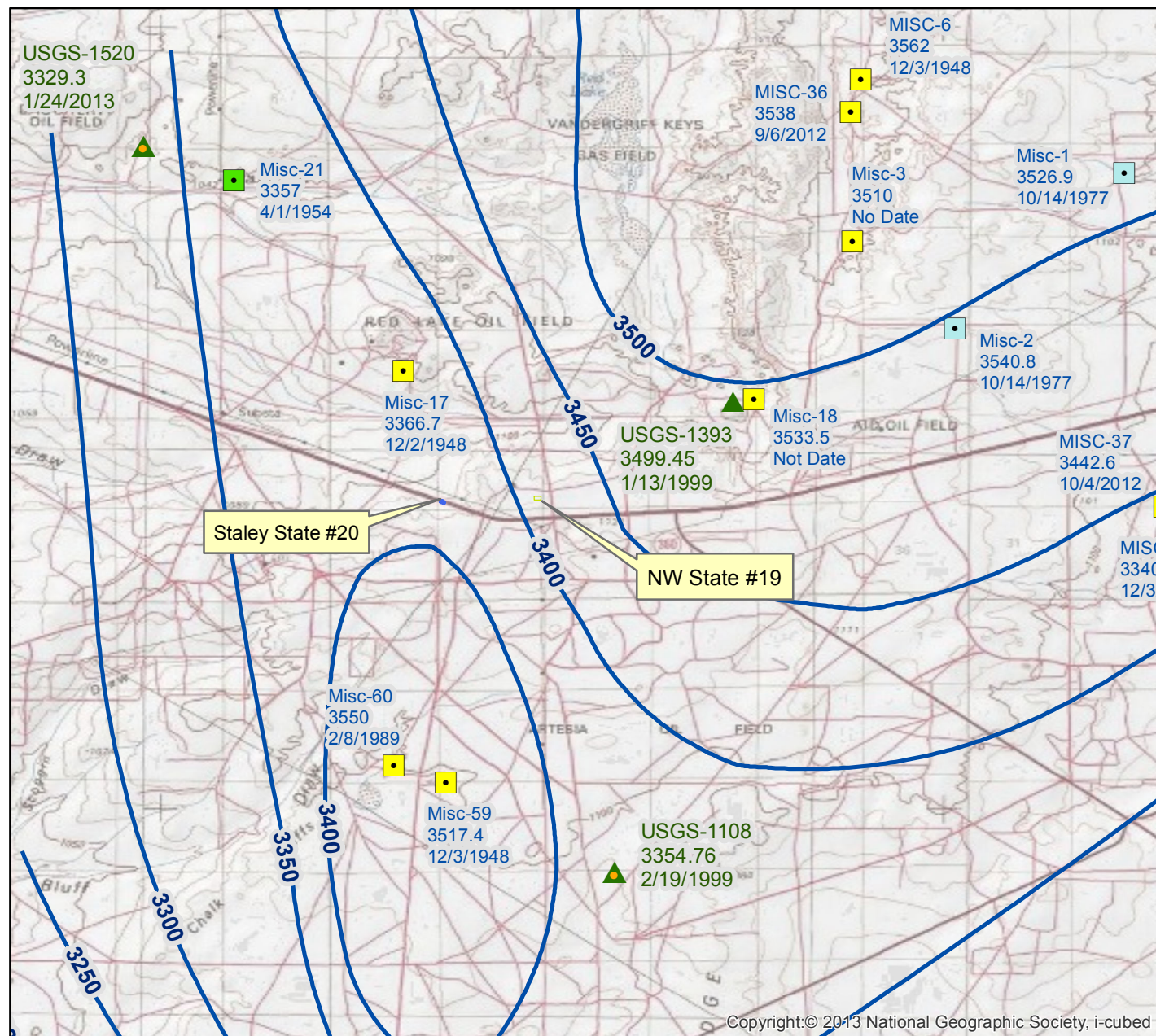
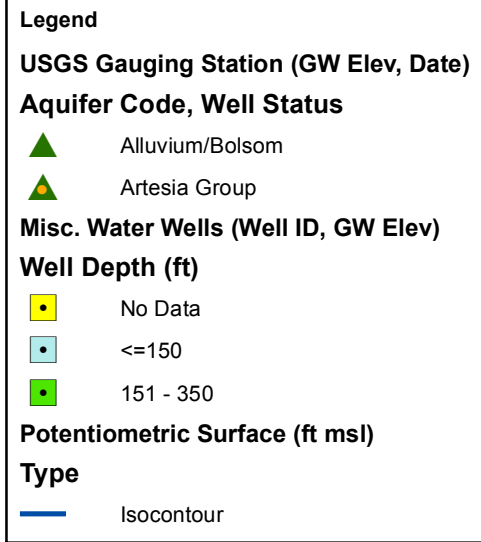
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 Albuquerque, NM 87104
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Legend - Depth To Water and Geology

Lime Rock Resources
 Stately State 20

Plate 1
 Legend

June 2015

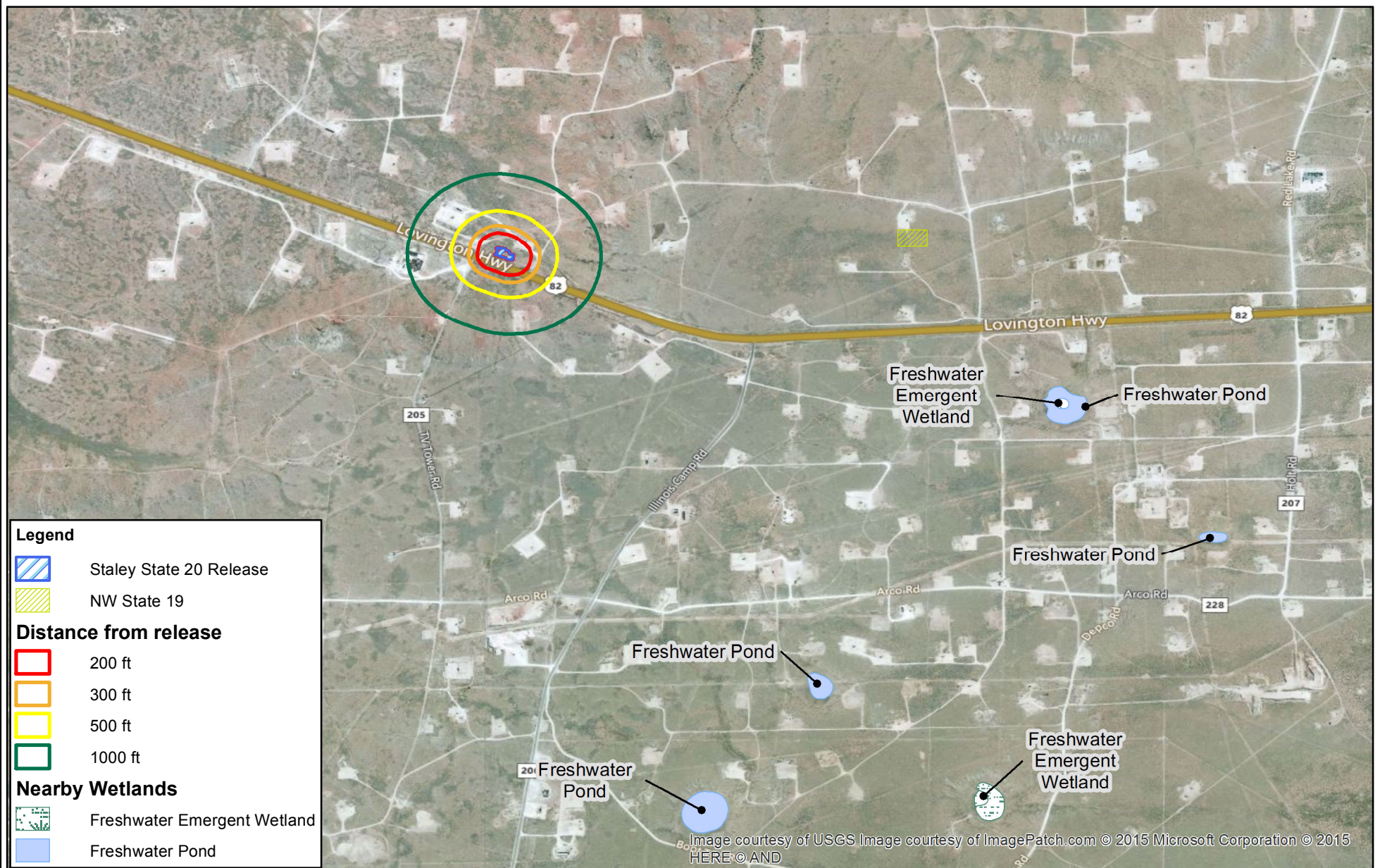


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Potentiometric Surface and Groundwater Elevation
at Nearby Water Wells
Lime Rock Resources
Staley State 20

Plate 2

June 2015

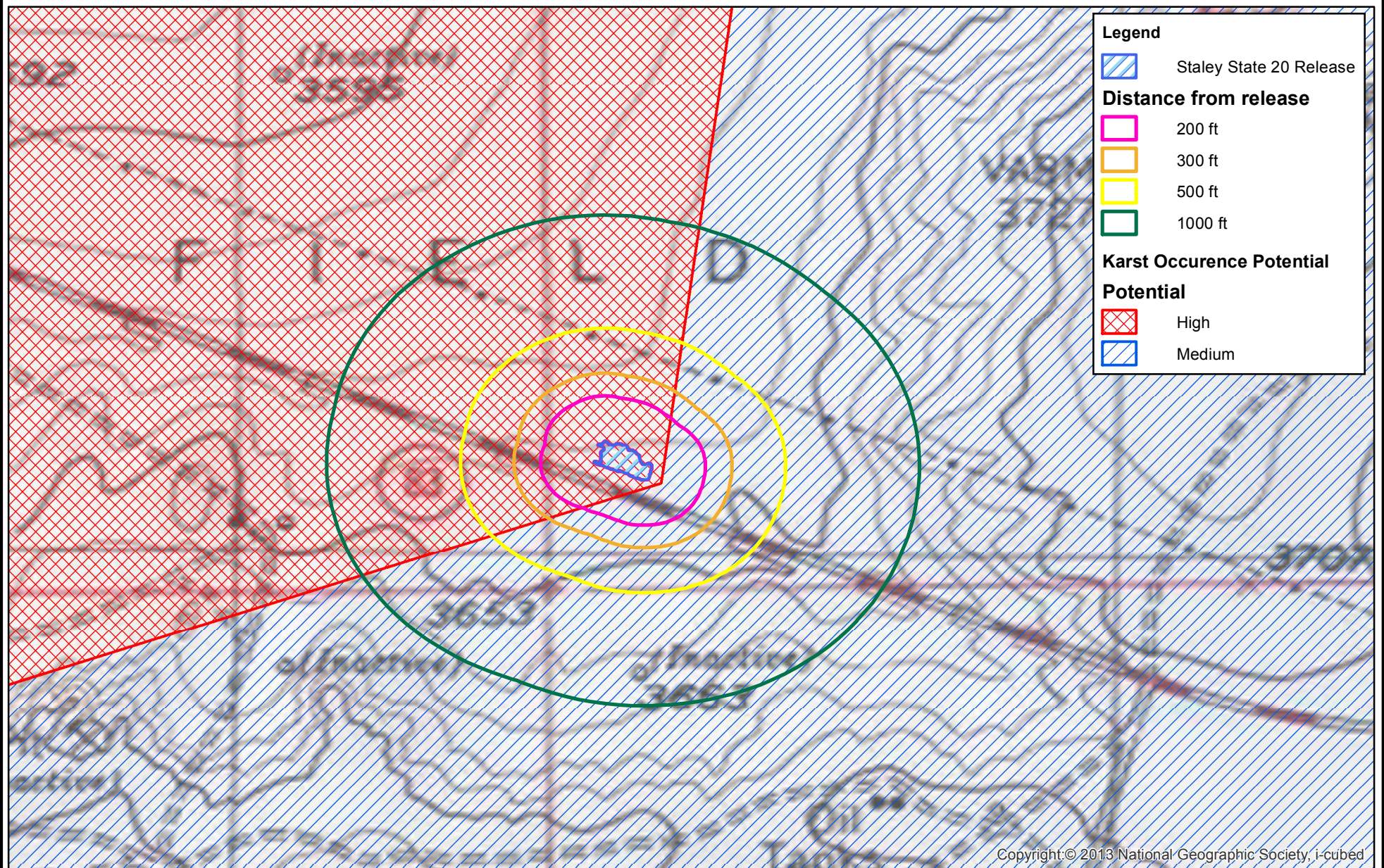


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Feet

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Nearby Wetlands
Lime Rock Resources
Staley State 20

Plate 4
June 2015



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Feet

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Karst Potential
Lime Rock Resources
Staley State 20

Plate 5
June 2015



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited 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.

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

Analytical Results For:

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

Received: 05/29/2015
Reported: 06/01/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T17S- R28E

Sampling Date: 05/29/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Celey D. Keene

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

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 NORTHSIDE WALL (H501386-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	06/01/2015	ND	416	104	400	0.00	

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

Chloride, SM4500Cl-B		mg/kg		Analyzed 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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Celey D. Keene, Lab Director/Quality Manager

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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Celey D. Keene, Lab Director/Quality Manager



Page 4 of 4

ANALYSIS REQUEST

change
#24

May 28, 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 05/27/15 16:00.

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/qa/lab_accred_certif.html.

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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

Analytical Results For:

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

Received: 05/27/2015
Reported: 05/28/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T17S- R30E

Sampling Date: 05/27/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: S-8 BOTTOM (H501329-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	480	16.0	05/28/2015	ND	416	104	400	0.00	

Sample ID: S-9 WESTSIDE WALL (H501329-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	11600	16.0	05/28/2015	ND	416	104	400	0.00	

Sample ID: S-10 NORTH SIDEWALL (H501329-03)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	7040	16.0	05/28/2015	ND	416	104	400	0.00	

Sample ID: S-11 EAST SIDEWALL (H501329-04)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8800	16.0	05/28/2015	ND	416	104	400	0.00	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received: 05/27/2015
Reported: 05/28/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T17S- R30E

Sampling Date: 05/27/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: S-12 SOUTH SIDEWALL (H501329-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	05/28/2015	ND	416	104	400	0.00		

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Celey D. Keene, Lab Director/Quality Manager

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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Celey D. Keene, Lab Director/Quality Manager



Page 5 of 5

(575) 393-2326 FAX (575) 393-2476

changes to
#524



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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.

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/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited 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.

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

Analytical Results For:

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

Received: 05/26/2015
Reported: 05/27/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T17S- R30E

Sampling Date: 05/26/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: S-7 STOCKPILED MATERIAL (H501309-01)**Chloride, SM4500Cl-B****mg/kg****Analyzed 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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Celey D. Keene, Lab Director/Quality Manager

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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Celey D. Keene, Lab Director/Quality Manager



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(575) 393-2326 FAX (575) 393-2476

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PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 19, 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/qa/lab_accred_certif.html.

Cardinal Laboratories is accredited 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.

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

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
Reported: 05/19/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T175- R30E

Sampling Date: 05/15/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

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

BTEX 8021B		mg/kg		Analyzed 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 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed 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	

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

Chloride, SM4500Cl-B		mg/kg		Analyzed 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' (H501260-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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	

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Celey D. Keene, Lab Director/Quality Manager

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
Reported: 05/19/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T175- R30E

Sampling Date: 05/15/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: S - 1 4 ' (H501260-06)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 1 ' (H501260-10)

BTEx 8021B		mg/kg		Analyzed 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 % 61-154

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3920	16.0	05/18/2015	ND	400	100	400	0.00	

Sample ID: S - 2 2 ' (H501260-11)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	05/18/2015	ND	400	100	400	0.00	

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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
Reported: 05/19/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T175- R30E

Sampling Date: 05/15/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: S - 2 3 ' (H501260-12)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	05/18/2015	ND	400	100	400	0.00	

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

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 1 ' (H501260-16)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	736	16.0	05/18/2015	ND	400	100	400	3.92	

Sample ID: S - 3 2 ' (H501260-17)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 - 3 3 ' (H501260-18)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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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Celey D. Keene, Lab Director/Quality Manager

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
Reported: 05/19/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T175- R30E

Sampling Date: 05/15/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: S - 3 4 ' (H501260-19)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 1 ' (H501260-22)

Chloride, SM4500CI-B		mg/kg		Analyzed 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 - 4 2 ' (H501260-23)

Chloride, SM4500CI-B		mg/kg		Analyzed 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 3 ' (H501260-24)

Chloride, SM4500CI-B		mg/kg		Analyzed 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 4 ' (H501260-25)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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	

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Celey D. Keene, Lab Director/Quality Manager

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
 Reported: 05/19/2015
 Project Name: STALEY STATE NO. 20
 Project Number: 30-015-40983
 Project Location: UT M SEC. 29 -T175- R30E

 Sampling Date: 05/15/2015
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Jodi Henson

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

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 ' (H501260-29)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 ' (H501260-30)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 ' (H501260-31)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 - 6 1 ' (H501260-33)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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	

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Celey D. Keene, Lab Director/Quality Manager

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
Reported: 05/19/2015
Project Name: STALEY STATE NO. 20
Project Number: 30-015-40983
Project Location: UT M SEC. 29 -T175- R30E

Sampling Date: 05/15/2015
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Jodi Henson

Sample ID: S - 6 2 ' (H501260-34)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 ' (H501260-35)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 ' (H501260-36)

Chloride, SM4500Cl-B		mg/kg		Analyzed 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 (H501260-37)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	05/18/2015	ND	400	100	400	3.92		

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Celey D. Keene, Lab Director/Quality Manager

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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Celey D. Keene, Lab Director/Quality Manager



CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: AT Hicks Consultants		BILL TO		ANALYSIS REQUEST	
Project Manager: Mike Grubbe		P.O. #:			
Address: 2411 South 13th Street		Company: IRE Operating, LLC			
City: Artesia		Attn: Mike Barnett			
State: N.M. Zip: 88210		Address:			
Phone #: 505-365-5634 Fax #:		City:			
Project #: 30-015-40983 Project Owner: IRE Operating, LLC		State:			
Project Name: Staley State No. 20		Zip:			
Project Location: UTM Sec. 29-T19S-R30E		Phone #:			
Sampler Name: Mike Grubbe		Fax #:			

FOR LAB USE ONLY

Lab I.D.

Sample I.D.

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX					DATE	TIME										
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE			OTHER :	ACID/BASE:	ICE / COOL	OTHER :						
1	5-1 0' 3219450-104, 20561	C	1						5/15/15	2:00P										
2	5-1 0.5' 3219450-104, 20561	C	1						5/15/15	2:03P										
3	5-1 1' 3219450-104, 20561	C	1						5/15/15	2:07P										
4	5-1 2' 3219450-104, 20561	C	1						5/15/15	2:15P										
5	5-1 3' 3219450-104, 20561	C	1						5/15/15	2:21P										
6	5-1 4' 3219450-104, 20561	C	1						5/15/15	2:27P										
7	5-1 10' 3219450-104, 20561	C	1						5/15/15	2:35P										
8	5-2 0' 3219450-104, 20561	C	1						5/15/15	2:36P										
9	5-2 0.5' 3219450-104, 20561	C	1						5/15/15	2:40P										
10	5-2 1' 3219450-104, 20561	C	1						5/15/15	2:44P										

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising from negligence or other shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable services. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits, incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:

Date: **5/18/15**

Received By:

Phone Result: ☐ Yes ☐ No

Add'l Phone #:

Fax Result: ☐ Yes ☐ No

Add'l Fax #:

Relinquished By:

Date: **5/18-15**

Received By:

REMARKS:

Delivered By: (Circle One)

Sample Condition

CHECKED BY:

Sampler - UPS - Bus - Other:

Cool Intact

(initials)

* Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

#54

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: R.T. Hicks Consulting		P.O. #:		BILL TO		ANALYSIS REQUEST																																																																																																																																																																																	
Project Manager: Mike Stubbelfield		Company: CRF Operating, LLC																																																																																																																																																																																					
Address: 2411 South 13th Street		Attn: Mike Barnett																																																																																																																																																																																					
City: Artesia State: NM Zip: 87010		Address:																																																																																																																																																																																					
Phone #: _____ Fax #: _____		City:																																																																																																																																																																																					
Project #: 30-015-40983 Project Owner: CRF Operating LLC		State:																																																																																																																																																																																					
Project Name: Staley State No. 20		Zip:																																																																																																																																																																																					
Project Location: UT. N. Sec. 29-T10S-R30E		Phone #:																																																																																																																																																																																					
Sampler Name: Mike Stubbelfield		Fax #:																																																																																																																																																																																					
FOR LAB USE ONLY		PRESERV		SAMPLING																																																																																																																																																																																			
Lab I.D. _____ Sample I.D. _____		DATE		TIME																																																																																																																																																																																			
<table border="1"> <tr> <th>Lab I.D.</th> <th>Sample I.D.</th> <th>(G)RAB OR (C)OMP.</th> <th># CONTAINERS</th> <th>GROUNDWATER</th> <th>WASTEWATER</th> <th>SOIL</th> <th>OIL</th> <th>SLUDGE</th> <th>OTHER :</th> <th>ACID/BASE:</th> <th>ICE / COOL</th> <th>OTHER :</th> <th>DATE</th> <th>TIME</th> <th>REMARKS</th> </tr> <tr> <td>AS01360</td> <td>11</td> <td>5.2 2'</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>2:53P</td> <td>8015 BTEX</td> </tr> <tr> <td></td> <td>12</td> <td>5.2 3'</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:03P</td> <td>Total Chlorides</td> </tr> <tr> <td></td> <td>13</td> <td>5.2 4'</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:14P</td> <td></td> </tr> <tr> <td></td> <td>14</td> <td>5.3 0 32.9493-104.20522</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:19P</td> <td></td> </tr> <tr> <td></td> <td>15</td> <td>5.3 5</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:23P</td> <td>no Cd</td> </tr> <tr> <td></td> <td>16</td> <td>5.3 1'</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:30P</td> <td></td> </tr> <tr> <td></td> <td>17</td> <td>5.3 2'</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:35P</td> <td></td> </tr> <tr> <td></td> <td>18</td> <td>5.3 3'</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:42P</td> <td></td> </tr> <tr> <td></td> <td>19</td> <td>5.3 4'</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td>3:46P</td> <td></td> </tr> <tr> <td></td> <td>20</td> <td>5.4 0 32.9493-104.20522</td> <td>C</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>5/15/15</td> <td></td> <td>no Cd</td> </tr> </table>		Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	REMARKS	AS01360	11	5.2 2'	C										5/15/15	2:53P	8015 BTEX		12	5.2 3'	C										5/15/15	3:03P	Total Chlorides		13	5.2 4'	C										5/15/15	3:14P			14	5.3 0 32.9493-104.20522	C										5/15/15	3:19P			15	5.3 5	C										5/15/15	3:23P	no Cd		16	5.3 1'	C										5/15/15	3:30P			17	5.3 2'	C										5/15/15	3:35P			18	5.3 3'	C										5/15/15	3:42P			19	5.3 4'	C										5/15/15	3:46P			20	5.4 0 32.9493-104.20522	C										5/15/15		no Cd						
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	REMARKS																																																																																																																																																																								
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Time: 10:40e																																																																																																																																																																																							
REMARKS: _____		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Phone #: _____																																																																																																																																																																																			
		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Fax #: _____																																																																																																																																																																																			



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[illegible]



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