EPWM - 010

GENERAL CORRESPONDENCE

2012 - 2015

Jones, Brad A., EMNRD

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Tuesday, April 01, 2014 9:35 AM |
| То: | Jones, Brad A., EMNRD |
| Cc: | David_Luna@xtoenergy.com |
| Subject: | XTO Energy Nash Unit 29. API #: 30-015-29434. |

Mr. Jones:

Per our phone conversation dated April 1, 2014, we will send you a complete printed amended report for your files. Last week you received only the amended pages to be inserted into the original report dated December 5, 2013.

We look forward to your final approval for closure.

Thank you.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

R. T. HICKS CONSULTANTS, LTD.

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

RECENCENCOD

2014 HAR 31 P 2: 21

March 26, 2014

٦

Mr. Brad Jones NMOCD 1220 South St. Francis Drive Santa Fe, NM 87505

RE: C-144 Closure Report for the Poseidon Modular Impoundment. Operator: XTO Energy. API #: 30-015-29434. Unit Letter J Section 13 T23S R29E.

Dear Mr. Jones:

Per our phone conversation in January 2014, attached are modifications to the closure report for the above referenced site. Per your request, we only attached the pages that require replacement.

Replace the first five pages of the closure report with the eight pages attached. We edited the section titled "C-144 Closure Sampling and C-141 Spill Release Notification & Correction Action. The edits include:

- References to the C-141 Initial and Final reports with email support documentation.
- A discussion on chloride concentration profiles observed on location and in the background off-site sample.

Replace Page 5 of 5 of Form C-144. Box 22 was changed from "Alternative Closure Method" to "Waste Excavation and Removal"

Replace Appendix C with the attached Appendix C. The attached Appendix C includes approved Initial and Final C-141 reports.

Insert Appendix E.

March 26, 2014 Page 2

٦.

•

Please contact me at 970-570-9535 if you have any questions or comments. Please contact David Hamilton at 505-266-5004 with questions regarding the chloride concentration profiles.

Sincerely, R.T. Hicks Consultants

3/26/2014 ane

Andrew Parker Durango Field Office Ph: 970-570-9535

Copy: David Luna, XTO Energy

R. T. HICKS CONSULTANTS, LTD.

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

December 5, 2013

Mr. Brad Jones NMOCD 1220 South St. Francis Drive Santa Fe, NM 87505

RE: C-144 Closure Report for the Poseidon Modular Impoundment. Operator: XTO Energy. API #: 30-015-29434. Unit Letter J Section 13 T23S R29E.

Dear Mr. Jones:

R.T. Hicks consultants is pleased to submit this Closure Report for the above referenced location on the behalf of XTO Energy. Closure activities were performed in accordance with the approved C-144 application "*Nash Draw Unit #29 modular impoundment (Atlantis system) for temporary storage of treated produced water*" dated June 13, 2012. The location of the modular impoundment is on Plate 1. Plate 2 is a plat of the location.

On June 20th, 2012, XTO Energy began sending treated water from Halliburton's CleanWave system, located at Nash Unit #53 SWD, to the Poseidon Modular Impoundment (Poseidon tank). On June 25, 2012, the first well, Nash Unit 39H, was hydraulically fractured using treated water from the Poseidon tank. On September 26th, 2012, the last well, Nash Unit 49, was fractured using treated water from the Poseidon tank. The transfer completion date, in lieu of rig release date, was October 5, 2012 as noted on Form C-105 per approved C-144 plan.

CLOSURE NOTIFICATIONS

Closure activities for the Poseidon tank began on October 15, 2012. Notification of closure activities were sent to Mr. Bratcher (NMOCD), Mr. Jones (NMOCD), and Mr. Jim Amos (BLM) via email on October 12, 2012. Closure notification to the surface owner (BLM) was sent via certified mail return receipt. A copy of the receipt is presented in Appendix A.

MODULAR IMPOUND CLOSURE On October 15, 2012 Poseidon Concepts began the disassembly of the Poseidon tank. Due to the oily nature of remaining fluid in the

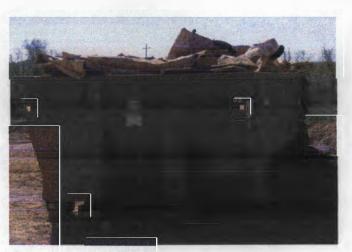


Figure 1: One of the four roll-offs containing liner material that was transported to R360.

Poseidon tank, the fluid was removed using a vacuum truck and transported to R360 (formerly CRI) in Lea County, NM. The closure plan originally stated that remaining fluid would be injected into the Nash Unit 53 SWD (API#: 3001539400) well.

Poseidon Concepts transported all reusable pipes, pumps, and tank walls to their field yard. The tank liner was deposited into four 20-cu. yrd. roll-offs (Figure 1) and transported to R360 for proper disposal.

OPERATION LOGS

Operation logs for the Poseidon tank and the CleanWave system are presented in Appendix B. As noted in Tables B-1 and B-2, on August 27th, 2012 the Poseidon tank liner seam split slightly 1-foot from the top of the tank and approximately 3 barrels of fluid escaped. Mr. Randy Green of XTO Energy mobilized water haul trucks to the site and lowered the water level to prevent further leakage. The water was transferred to Nash Draw 49 H and Nash Draw Unit # 57 H for use in well stimulation. Water levels in the tank were kept below the split and the seam was repaired to prevent further leakage. The release was reported on Form 141 and submitted to NMOCD District 2 on March 15, 2013.

C-144 CLOSURE SAMPLING AND C-141 SPILL RELEASE NOTIFICATION & CORRECTION ACTION

Submissions and Approvals

On October 12, 2012, Hicks Consultants provided a 72-hour closure notice to Mr. Bratcher of District 2 NMOCD. On November 8, 2012, Hicks Consultants provided District 2 NMOCD a 72-hour closure sampling notice. These notices were submitted via email. A copy of the emails and subsequent email correspondence is provided in Attachment E.

On November 13, 2012, Hicks Consultants collected two on-site 5-point composite soil samples (Plate 3) per the approved C-144 for the modular impoundment employed for hydraulic fracturing of five wells in 2012.

On February 11, 2013, in support of an interim reclamation ordered by the BLM-Carlsbad Office, Hicks Consultants performed soil characterization to determine whether chloride and EC concentrations would support vegetation for interim reclamation. The Trench Sample was referenced in the initial Release Notification and Corrective Action plan (discussed below) and assisted with defining the vertical and horizontal extend of chloride impacted soil.

After confirmation of a release from the Tank Composite, BG Composite, and Trench Sample, a spill "Release Notification and Corrective Action" Form C-141 was submitted to NMOCD District 2 on March 15, 2013 (see Appendix C). District 2 NMOCD approved the C-141 Initial Report on May 31, 2013. Hicks Consultants received notice of approval via email on June 5, 2013. The approval included conditions and stipulations as presented in Appendix E. Plate 4 shows the Corrective Action remediation area.

On June 24, 2013 Hicks Consultants sampled an off-site background location (Background Sample) per C-141/Part 29 approval conditions/stipulations for release event 2RP-1674.

After completion of reclamation, Hicks Consultants submitted the Final Report for the C-141 to NMOCD District 2 on December 5, 2013. The Final Report was approved by District 2 NMOCD on January 14, 2014. A copy of the Final Report is located in Appendix C.

Sampling Results

The point samples for the Tank Composite and BG Composite were collected approximately two inches below the caliche pad/soil interface at a depth of approximately 1-foot below ground surface. The Tank Composite sample exhibits a chloride concentration of 7,500 mg/kg (see Table 1); indicating production activities have impacted the western half of the caliche pad. The BG Composite sample exhibited a chloride concentration comparable to the Trench Sample (discussed below) at the 2 foot depth (3,480 mg/kg) interval.

| Sample ID | Date | Depth | Chloride | EC | Benzene | BTEX | TPH | GRO/DRO |
|-------------------------|------------|-------|-------------------|-------|---------|-------|-------|---------|
| | | (ft) | mg/kg | uS/cm | mg/kg | mg/kg | mg/kg | mg/kg |
| NMAC 19.15.17.13.B(1).b | | | 500 or background | | 0.2 | 50 | 2,500 | 500 |
| Tank Composite | 11/13/2012 | 1.0 | 7,500 | NS | <0.49 | ND | <20 | <10 |
| BG Composite | 11/13/2012 | 1.0 | 3,000 | NS | <0.49 | ND | <20 | <10 |
| Trench Sample | 2/11/2013 | 2.0 | 3,480 | 8,010 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 4.0 | 2,120 | 3,020 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 6.0 | 2,000 | 7,050 | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 1.5 | 2,960 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 3.0 | 2,440 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 4.5 | 2,920 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 6.0 | 1,880 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 7.5 | 1,380 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 8.0 | 1,500 | NS | NS | NS | NS | NS |

Table 1: Soil chemistry summary results

Notes

,

1. ND = non-detect

2 NS = not sampled

The Trench Sample consisted of discrete samples at 2, 4, and 6 foot depths. Soil chloride concentrations at the Trench Sample (collected within the area of the Tank Composite sample) show chloride concentrations are decreasing with depth, from 3,480 mg/kg at 2 feet to 2,120 mg/kg at 4 feet. At 4 feet, the concentration is less than that encountered in the Background Sample trench at comparable depths (3.0 and 4.5 feet). We conclude that the majority of chloride impairment is contained in the production pad surface. Table 2 summarizes the lithology of the Trench Sample.

| Table 2: Litho | logy of ' | Trench | Sample |
|----------------|-----------|--------|--------|
|----------------|-----------|--------|--------|

| Depth (ft) | Description |
|------------|--|
| 0-1 | Caliche pad |
| 1 - 4 | Top soil (loamy sand), dark brown, moist |
| 4-6 | Top soil, reddish brown, moist |
| 6 | Medim sand w/caliche, hard, brown, moist |

Note: native hard caliche was observed below 6 feet.

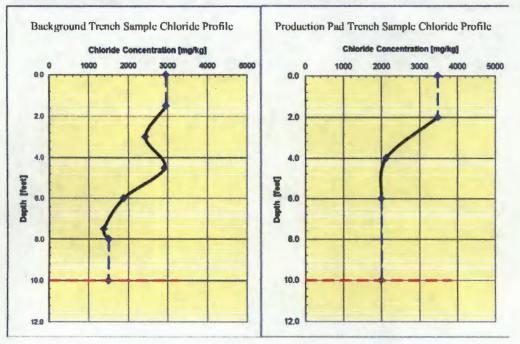
Comparing the on-site Trench Sample (Table 3) to the off-site Background Sample at depths below 2-feet bgs, the on-site chloride concentrations are either near or lower than off-site background concentrations.

| | Chloride (mg/kg) | | | | | | | | |
|--------------------|------------------|-------------------|--|--|--|--|--|--|--|
| Depth (+/- 0.5 ft) | Trench Sample | Background Sample | | | | | | | |
| 1.5 - 2 | 3,480 | 2,960 | | | | | | | |
| 4 | 2,120 | 2,920 | | | | | | | |
| 6 | 2,000 | 1,880 | | | | | | | |

Table 1: Chloride concentration comparisonbetween an on-site and off-site (background)

The Background Sample (per condition of the C-141) was located in an area not impacted by past or current production activities.

Graphic 1, below, shows the chloride concentration data from Table 1 plotted at the appropriate depth for both the Background Sample trench and the Trench Sample located on the production pad (locations shown on Plate 3). From the ground surface to the depth of 10-feet, the mass of chloride per unit area can be calculated from these chloride concentration profiles.



Graphic 1 : Concentrations for samples closest to the surface and at greatest depth are assumed as constant to both the ground surface and to a depth of 10 feet

Multiplying each sample concentration by a moist soil density and a centered depth interval for each sample depth yields a chloride mass per area for that depth interval. The calculation is shown below:

Conc(z) [mg/kg] * rho [kg/m^3] * delta z [m] = Chloride Mass [kg/m^2]

where:

Conc is the chloride concentration from a particular depth (z) rho is a moist soil density and assumed as constant from the surface to 10 feet delta z is the depth interval for which a chloride concentration is taken as constant

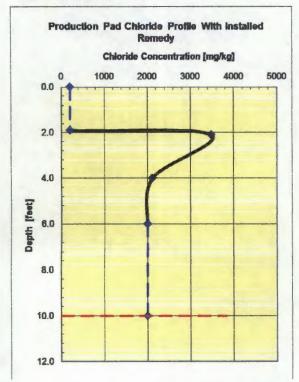
(We used a rho (moist soil density) of 1780 kg/m^3 calculated by using a porosity of 0.4 and a volumetric moisture content of 0.19 to reflect the moist conditions.)

Adding up the Chloride Mass per m² calculated for each depth interval yields a total chloride mass per m² for each profile. This sum represents the chloride mass between ground surface and a depth of 10 feet per square meter of surface area.

The Background Trench Sample Chloride Profile has a total chloride mass per m^2 of 12.09 kg/m^2. The Production Pad Trench Sample Chloride Profile has a total chloride mass/m^2 of 13.4 kg/m^2, a mass about 11% more than the Background Trench Sample Chloride Profile.

Graphic 2 presents the Production Pad Chloride Profile with the installed remedy.

Graphic 2: The uppermost 2 feet of soil have been replaced with soil having an assumed chloride | concentration of 200 mg/kg



Performing the same calculations yields a total chloride mass per m² of 9.87 kg/m², a mass about 18% less than the Background Trench Chloride Profile. Note that changing the assumed values within the calculation does not change the relative chloride mass/m² for the chloride concentration profiles. That is, while it does increase or decrease the calculated chloride mass/m² for each profile, their relative magnitudes are not changed.

The chemistry, lithology, and calculated chloride mass of the trench samples suggest that:

- soil at depths from 1 to 5 feet below surface have chloride and EC concentrations that will support vegetation. Re-vegetation of the impacted area is included in the C-141 remediation plan and also satisfies BLM's request for interim reclamation,
- the eastern portion of the location is not measurably impaired by production activities as the BG Composite sample result (3,000 mg/kg) is not different from the Background Sample at 1.5 feet below ground surface.
- The selected remedy lowered the chloride mass per m^2 in the upper 10-feet of the soil profile to less than that of the background trench location.

The removal of the upper 2-feet of soil within the remediation area as shown on Plate 2 remediated the observed higher chlorides and allowed for vegetation.

Current Status

The location is currently an active well site. To return the site to pre-existing conditions, the three "Y" shaped trenches associated with the modular impoundment were backfilled with caliche (Figure 2) and graded even with the existing production pad (Figure 3).



Figure 2: Backfilling a "Y" shaped trench with caliche.



Figure 3: Location reclaimed to pre-existing conditions graded even with the active production pad.

Please contact us at 505-266-5004 if you have any questions or comments.

Sincerely, R.T. Hicks Consultants

Andrew asker / andre

Andrew Parker ⁷ Durango Field Office Ph: 970-570-9535

Copy: David Luna, XTO Energy Mike Bratcher, District 2 NMOCD

| 19. Onerator Application Certification: I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief. | |
|--|--------------------------|
| | |
| Nume (Print): David Luna Title: Operations Engineer | |
| Signoture: Dovied Lunce Date: 06/13/2012 | |
| e-mail address: David_Luna@xtoenergy.com Telephone: 432-620-6742 | |
| 20. OCD Approval: Permit Application (including closure plan) Closure Plan (only) OCD Conditions (see attachment) OCD Representative Signature: Approval Date: 1/1/1/12 Title: Environmentation OCD Permit Number: | <u> </u> |
| 21. <u>Closure Report (required within 60 days of closure completion)</u> : Subsection K of 19.15.17.13 NMAC Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closur The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete a section of the form until an opproved closure plan has been obtained and the closure activities have been completed. | |
| Closure Completion Date: November 13, 2012 | |
| Z Clasure Method: X Waste Excavation and Removal On-Site Closure Method Alternative Closure Method Waste Excavation and Removal On-Site Closure Method Alternative Closure Method Waste Excavation and Removal On-Site Closure Method Modular impoundment closure - hauled off-site | s o'nly) |
| 23. <u>Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins On</u> Instructions: Please Indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if a two facilities were attilized. | <u>lv</u> : more than |
| Disposal Facility Name: <u>R360</u> Disposal Facility Permit Number: <u>R-9166</u> | |
| Disposal Facility Name; Disposal Facility Permit Number; | |
| Were the closed-loop system operations and associated activities performed on or in arcas that will not be used for future service and operations?. Yes (If yes, please demonstrate compliance to the items below) I No | |
| Required for impacted areas which will not be used for future service and operations: Site Reclamation (Photo Documentation) Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique | |
| ^{24.} <u>Closure Report Attachment Checklist</u> : Justructions: Each of the following items must be attached to the closure report. Please indicate, by mark in the bax, that the documents are attached. Proof of Closure Notice (surface owner and division) Proof of Deed Notice (required for on-site closure) Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (If applicable) Waste Material Sampling Analytical Results (required for on-site closure) Disposal Facility Name and Permit Number | a check |
| Soil Backfilling and Cover Installation Re-vegetation Application Rates and Sceding Technique Site Reclamation (Photo Documentation) On-site Closure Location: LutitudeLongitudeNAD: [1927] 1983 | |
| | |
| 25. <u>Operator Closure Certification</u> : 1 hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge belief. 1 also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan. | and |
| Nome (Print): David Luna Title: Operations Engineer | |
| Signature: Date: 12/05/2013 | • |
| c-mail address: David Luna@xtoenergy.com Telephone: 432-620-6742 | |
| • | |

. .

Oil Conservation Division

:

APPENDIX C

C-141 Initial and Final Reports

/

R. T. HICKS CONSULTANTS, LTD.

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

March 15, 2013

Mr. Mike Bratcher NMOCD District 2 811 South First Street Artesia, New Mexico 88210 Mr. Brad Jones NMOCD 1220 S. St. Francis Drive Santa Fe, NM

RE: Nash Draw Unit #29 modular impoundment spill report. API No: 30-015-29434

Dear Sirs:

R.T. Hicks Consultants is pleased to submit the enclosed Form C-141 Release Notification and Correction Action on the behalf of XTO Energy.

The release from the modular impoundment was brought to our attention during the submittal of the C-144 Closure Report submitted to Mr. Bratcher, via email, on December 17, 2012.

We will revise the C-144 closure report to include results of the remediation plan that is the subject of this spill report. Included in the revision, per request of Mr. Jones, will be the inclusion of the entire C-144 permit application and correction to applicable dates and signatures.

We will submit the report to Mr. Jones with a copy to Mr. Bratcher. Both submittals will be delivered via certified mail/return receipt.

If you have any questions please contact me at 970-570-9535.

Sincerely, R.T. Hicks Consultants Durango Field Office

Andrew Parker

Cc: David Luna, XTO Energy, via email Jennifer Van Curen, BLM - Carlsbad Field Office, via certified mail/return receipt

| | | | | | | | F | RECI | EIVE | D | | |
|--|---|---|---|---|---|---|---|--|---|---|--|---|
| | | | | | | | | | 2 5 2013 | . ! | - | • |
| | | | | | | | | | | | | |
| District II | nch Dr., Hobba, | | | S Energy M | tate of inerals | New Mex and Natur | cico N al Resour | MOCD | ARTE | SA | Revi | Form C- ised August 8, 2 |
| District III | SL, Artesia, NM | | • | | Conse | rvation Di | vision | | Submit I C | opy to a | propriate | District Offic |
| District IV | Tor Road Arte | | | 122 | 0 Sout | h St. Fran | cis Dr. | | | | | -p.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, |
| 1220 S. St. F | rancis Dr., Sant | a Fe, NM 8750. | | فكنكبية أبكرة بمنصاد كاعمداء معد | | e, NM 87 | | م ار و ار ان ا | | | | |
| | | | Rele | ease Notifi | catio | n and C | orrecti | ve Acti | on | | | |
| <u>nMLB1</u> | 4014.309 | 706 | . <u> </u> | | 1001 | OPERA | | ~~_ | II X | nitial Re | port | Final R |
| | Company X 200 N. Loraine | | | | 380 | Contact D | | 20-6742 | | | | |
| | Vame Nash U | | | , 10101 | | Facility Ty | | | water modu | lar Impou | indment | |
| | Wher BLM | | | Mineral | Owner | | | | API | No. 30- | 015-29434 | ; |
| | | <u></u> | | | | N OF RE | LEASE | | | | | |
| Unit Letter | Section | Township | Range | Feet from the | | South Line | Feet from | n the Ea | st/West Lin | e Cou | inty | |
| J | 13 | 235 | 29E | 1980 | s | OUTH | 2310 | | EAST | | EDDY | |
| L | | | | | <u></u> | | 1 14/ 4 00 | I | | | | |
| · · | | | Lat | titude N 32.303 | | - | ieW 103. | .93/18 | - | | | |
| Tunn of D- | lease Treated | and non in -1 | od pandure | | TURE | OF REL | | | Volum | a Recou | ered None | |
| | Release Mod | | | | | | | urrence 8/27 | | | | ery 8/27/12 |
| Was Imme | diate Notice G | | Ves X | No 🗌 Not R | emired | IF YES, To | Whom? | NA | | | | |
| By Whom? | NA NA | | | | | Date and H | Inun NA | | | | | |
| | | | | | | | idur iwi | | | | | |
| j Wasa Wak | ercourse Reac | | X | | | | | cting the W | lercourse. | | | |
| | | | Yes 🕅 | | | | | eting the W | alercourse, | | | |
| | ercourse Reaci ourse was Imp NA | | Yes 🕅 | | | If YES, Vo | | eting the W | alercourse, | | | |
| If a Waterco Describe Co On August 27 | NA NA NA Ause of Problem Wh, 2012 the mod | mand Remed | Yes X be Fully.* ial Action ant finer data | Taken.* acked from the top | | If YES, Vo NA | ilume Imps | leasing appro | ximately 3 ba | wrate of tr | | |
| If a Waterco Describe Ca On August 27 Mr. Randy Gn water was trai results and pn | ourse was Imp NA ause of Probles th, 2012 the mod sen of XTO Ener naferred to Nash toposas a remedi | m and Remed dular Impoundm rgy mabilized we Draw 49 H and lation plan. | Yes X be Fully.* ial Action ant liner dek iter haul true Nech Draw | Taken.* acked from the top cks to the site and i Unit \$ 57 H. Soil sa | owered th | If YES, Vo NA k along the wet | ilume Imps stem edge rei prevent furth | laasing appro nar leakaga ai | uimately 3 ba | vreis of tri i the liner | to the top of | the iank. The |
| If a Waterc Describe Ca On August 27 Mr. Randy Gn water was trai results and pn Describe Ar | NA NA ause of Problem 7th, 2012 the more real of XTO Energy reaferred to Nash upposes a remedit rea Affected an | m and Remed dular Impoundm rgy mabilized wa Draw 49 H and lation plen. nd Cleanup Ad | Yes [X] be Fully.* ial Action ant first data then haut true Nach Draw | Taken.* acked from the lop cks to the site and is Linit # 57 H. Soil as m.* | owered th ampling w | If YES, Vo NA k along the wet s water lavel to se conducted p | stem odge rei prevent furth er C-144 clos | laasing appro nar laakaga ai sura requirem | nd realised a standard and settled a standard a stand standard a standard a st standard a standard a st | ernela of in i the liner ached doc | to the top of | the iank. The |
| If a Waterc Describe Ca On August 27 Mr. Randy Gn water was trai results and pn Describe Ar The release | NA NA nuse of Problem fun, 2012 the more rear of XTO Energy rear of XT | m and Remed dular Impoundm rgy mobilized wa Draw 49 H and letion plen. nd Cleanup Ac nuthwest come | Yes [X] be Fully.* ial Action ant finer dela iter haut true Nach Draw ction Take ar of the pro | Taken.* acked from the top cks to the site and i Unit \$ 57 H. Soil sa | owened th ampling w jacent to | If YES, Vo NA k along the wet s water lavel to an conducted p the modular i | stem odge rei prevent furth er C-144 close | leasing appro ner leakage at sure requirem out. The are | admately 3 ba nd realtached ents. The att | ernela of in i the liner ached doc | to the top of sument pres | the tank. The ents the sample |
| If a Waterc Describe Ca On August 27 Mr. Randy Gn water was trai results and pn Describe Ar The release approximatel of the produc | NA NA NA ause of Problem th, 2012 the more than of XTO Energy markened to Nash upposas a remedit rea Affected an affected the so by 15 X15 squa cilon pad; beyo | m and Remed dular Impoundm rgy mabilized wa Draw 49 H and letion plen. Ind Cleanup Ac multiwest come ure feet. No clean of the madula | Yes [X] be Fully.* ial Action ant finer dela iter haut true Nash Draw ction Take ar of the pro- senup action ar impound | Taken.* ached from the lop clas to the site and is Unit # 57 H. Soil as n.* oduction pad, adj on was taken due iment heavy mas | iowered th ampling w jacent to a to limits iquite ves | If YES, Vo NA k along the wet s water lavel to an conducted p the modular i ad access cau jetation exists | stem edge rei prevent furth er C-144 clos impoundme ised by the 3. | leasing appro ner leakage at sure requirem ont. The are location of | admately 3 ba nd reattached ents. The att a of impact the modules | writia of tru I the liner ached doc was r impoun | to the top of sument pres dment alor | i the tank. The ents the sample ng the edge |
| If a Waterci Describe Ca On August 27 Mr. Randy Gm results and pr Describe Ar The release approximatel of the product I hereby cert regulations a | NA NA NA NA NA NA NA NA NA NA NA NA NA N | m and Remed. dular Impoundm ray mobilized we Draw 49 H and letton plen. and Cleanup Ac nuthwest come ure feet. No cle and the modular formation give re required to | Yes [X] be Fully.* ial Action ant liner deta ater haut true Nach Draw Ction Takes ar of the pro- senup action ar impound en above is report and | Taken.* ached from the top cks to the site and i Unit \$ 57 H. Soil as n.* orduction pad, adj on was taken du iment heavy mas s true and compli for file certain re | jacant to ampling w jacant to a to limits equita veg eto to the clease no | If YES, Vo NA k along the were a water lavel to an conductor i the modular i ad access cat getation exists best of my i tiffcations an | item edge rei prevent furth er C-144 cbs mpoundme rsed by the s. cnowledge i d. perform c | leasing appro ner lookage at sure requirem ont. The are location of and underst corrective a | admately 3 ba nd realisched ents. The alt as of impact the modular and that pu clions for n | errets of tri i the liner ached doc was r impoun rsvant to bleases v | dment alor NMOCD | the tank. The ents the semple ng the edge rules and endanger |
| If a Waterci Describe Co On August 27 Mr. Randy Gra results and pr Describe Ar The release a approximatel of the product I hereby cert regulations a public health | NA NA NA NA NA NA NA NA NA NA NA NA NA N | m and Remed dular Impoundm ray mobilized wa Draw 49 H and lation plen. Draw 49 K and lation plen. No ch nuthwest come wa feet. No ch and the moduli formation givi re required to nument. The s | Yes X be Fully.* ial Action ant Iner deta ater hau true Nach Draw Ction Takes ar of the pro- senup action ar Impound en above in report and cceptance | Taken.* ached from the top cks to the site and i Unit \$ 57 H. Soil so n.* orduction pad, adj on was taken duo iment heavy mas s true and compli for file certain re of a C-141 repor | jacent to ampling w jacent to e to limits iquite very eto to the sease no rt by the | If YES, Vo NA k along the were a water lavel to an conductor p the modular i ad access cat getation exists best of my 1 biffcations an NMOCD ma | item edge rei prevent furth ar C-144 clos mpoundme rsed by the s. cnowledge i d perform c rked as "Fin | leasing appro ner lockage at sure requirem int. The are location of and underst corrective a nal Report | admately 3 be nd reatisched ents. The att as of impact the modular the modular the modular the modular the modular the modular | rnets of tri the liner ached doc was r impoun rsvant to eleases v elieve the | dment alor NMOCD which may | the tank. The ents the sample ng the edge rules and endanger of liability |
| If a Waterci Describe Co On August 27 Mr. Randy Gn water was trai results and pr Describe Ar The release approximatel of the produc I hereby cert regulations a public health should their or the enviro | NA NA Ause of Problem th, 2012 the mod- teen of XTO Ener- materned to Nash oposas a remedit rea Affected an affected the so by 15 X15 square thon pad; bayo tify that the ini- all operations an b or the environ operations havo operations havo | m and Remedi dular Impoundmingy mabilized we braw 49 H and letton plan. and Cleanup Action withwest come are feet. No clean formation givi re required to mment. The e- we failed to ad- dition, NMOC | Yes [X] be Fully.* ial Action ant finer deta ater haut true Nach Draw ction Takes ar of the pro- senup action report and cceptance equately in D acceptance | Taken.* ached from the top cks to the site and i Unit \$ 57 H. Soil as n.* orduction pad, adj on was taken du iment heavy mas s true and compli for file certain re | incent to ampling w incent to to limits quite very eto to the lease no rt by the mediate | If YES, Vo NA k along the were e water lavel to as conducted p the modular i ad access call getation exists petation exists best of my h NMOCD ma contaminatio | stem edge rei prevent furth er C-144 clos impoundme is ed by the i. cnowledge i d perform c rked as "Fin n that pose | leasing appro nar leastage at sure requirem int. The are location of and undersit corrective at nal Report" a threat to | admately 3 be nd reattached ents. The att a of impact the modular tand that pu closs for m does not re ground wat | was the liner ached doc was r impoun trsuant to eleases the eleases the | dment alor NMOCD which may coperator ce water, h | the tank. The ents the sample of the edge rules and endanger of liability puman health |
| If a Waterci Describe Co On August 27 Mr. Randy Gn water was trai results and pr Describe Ar The release approximatel of the produc I hereby cert regulations a public health should their or the enviro | NA NA ause of Problem th, 2012 the modern of XTO Ener nationed to Nash oposes a remedia rea Affected an affected the so by 15 X15 squa affected the so by 15 X15 squa affected the so by 15 that the ini- all operations an b or the environ operations have | m and Remedi dular Impoundmingy mabilized we braw 49 H and letton plan. and Cleanup Action withwest come are feet. No clean formation givi re required to mment. The se- we failed to ad- dition, NMOC | Yes [X] be Fully.* ial Action ant finer deta ater haut true Nach Draw ction Takes ar of the pro- senup action report and cceptance equately in D acceptance | Taken.* acted from the top cks to the site and i Unit \$ 57 H. Soil er n.* oduction pad, adj on was taken dur iment heavy mas s true and compil /or file certain re of a C-141 report overstigate and re | incent to ampling w incent to to limits quite very eto to the lease no rt by the mediate | If YES, Vo NA k along the were e water lavel to as conducted p the modular i ad access call getation exists petation exists best of my h NMOCD ma contaminatio | stem edge rel prevent furth ar C-144 clos mpoundme rsed by the s. cnowledge i d perform c rked as "Fin n that pose the operato | leasing appro- ner leastage at sure requirem int. The are location of and underst corrective at nal Report a threat to ; or of respon | admately 3 be not reattached ents. The att the modular cand that pu clions for no does not no ground wat isibility for | was was was rimpoun arsuant to elease v elieve the er, surfa complia | to the top of aument press diment aloc which may which may to operator ce water, t nce with a | the tank. The ents the sample of the edge rules and endanger of liability puman health |
| If a Waterci Describe Ca On August 27 Mr. Randy Gru water was trai results and pr Describe Ar The release approximatel of the produc I hereby cert regulations a public health should their or the enviro federal, state | NA NA Ause of Problem th, 2012 the mod- teen of XTO Ener- materned to Nash oposas a remedit rea Affected an affected the so by 15 X15 square thon pad; bayo tify that the ini- all operations an b or the environ operations havo operations havo | m and Remedi dular Impoundmingy mabilized we braw 49 H and letton plan. and Cleanup Action withwest come are feet. No clean formation givi re required to mment. The se- we failed to ad- dition, NMOC | Yes [X] be Fully.* ial Action ant finer deta ater haut true Nach Draw ction Takes ar of the pro- senup action report and cceptance equately in D acceptance | Taken.* acted from the top cks to the site and i Unit \$ 57 H. Soil er n.* oduction pad, adj on was taken dur iment heavy mas s true and compil /or file certain re of a C-141 report overstigate and re | incent to ampling w incent to to limits quite very eto to the lease no rt by the mediate | If YES, Vo NA k along the were e water lavel to as conducted p the modular i ad access call getation exists petation exists best of my h NMOCD ma contaminatio | stem edge rel prevent furth ar C-144 clos mpoundme rsed by the s. cnowledge i d perform c rked as "Fin n that pose the operato | leasing appro nar leastage at sure requirem int. The are location of and undersit corrective at nal Report" a threat to | almately 3 be and reattached sents. The att and that put the modular cond that put clions for no ground wat isibility for VATION | was was was rimpound risuant to eleases v elieve the er, surfa complia | dment alor dment alor hich may e operator ce water, i nce with a SION | the tank. The ents the sample ong the edge rules and endanger of liability puman health |
| If a Waterci Describe Co On August 27 Mr. Randy Gru water was trai results and pr Describe Ar The release approximatel of the produc I hereby cert regulations a public health should their or the enviro federal, state | NA NA Ause of Problem th, 2012 the mod- teen of XTO Ener- materned to Nash oposas a remedit rea Affected an affected the so by 15 X15 square thon pad; bayo tify that the ini- all operations an b or the environ operations havo operations havo | m and Remedi dular Impoundmingy mabilized we braw 49 H and letton plan. and Cleanup Action withwest come are feet. No clean formation givi re required to mment. The se- we failed to ad- dition, NMOC | Yes [X] be Fully.* ial Action ant finer deta ater haut true Nach Draw ction Takes ar of the pro- senup action report and cceptance equately in D acceptance | Taken.* acted from the top cks to the site and i Unit \$ 57 H. Soil er n.* oduction pad, adj on was taken dur iment heavy mas s true and compil /or file certain re of a C-141 report overstigate and re | incent to ampling w incent to to limit quite ve eta to the itease no rt by the mediate eport do | If YES, Vo NA k along the were e water lavel to as conducted p the modular i ad access call getation exists best of my h tiffications an contaminatio es not relieve | stem edge rei prevent furth er C-144 clos impoundme is ed by the is. cnowledge i d perform c rked as "Fin an that pose the operatio OIL. Co | leasing appro nar leastage at sure requirem int. The are location of and undersi corrective at nal Report" a threat to or of respon ONSER | almately 3 be and reattached sents. The att and that put the modular cond that put clions for no ground wat isibility for VATION | was was was rimpoun arsuant to elease v elieve the er, surfa complia | dment alor dment alor hich may e operator ce water, i nce with a SION | the tank. The ents the sample ong the edge rules and endanger of liability puman health |
| If a Waterci If a Waterci On August 27 Mr. Randy Gm water was trai results and pr Describe Ar The refease i approximatel of the produc I hereby cert regulations a public health should their or the enviro federal, state Signature: | NA NA Ause of Problem th, 2012 the mod- teen of XTO Ener- materned to Nash oposas a remedit rea Affected an affected the so by 15 X15 square thon pad; bayo tify that the ini- all operations an b or the environ operations havo operations havo | m and Remedi dular Impoundmingy mabilized we braw 49 H and letton plan. and Cleanup Action withwest come are feet. No clean formation givi re required to mment. The se- we failed to ad- dition, NMOC | Yes [X] be Fully.* ial Action ant finer deta ater haut true Nach Draw ction Takes ar of the pro- senup action report and cceptance equately in D acceptance | Taken.* acted from the top cks to the site and i Unit \$ 57 H. Soil er n.* oduction pad, adj on was taken dur iment heavy mas s true and compil /or file certain re of a C-141 report overstigate and re | incent to ampling w incent to to limit quite ve eta to the itease no rt by the mediate eport do | If YES, Vo NA k along the were e water lavel to as conducted p the modular i getation exists best of my 1 infloations an NMOCD ma contaminatio es not relieve | tern edge rei prevent furth ar C-144 ctas impoundme ised by the s. cnowledge i d perform c rked ns "Fin n that pose the operatio <u>OIL Cu</u> Signed | leasing appro- ner leastage at sure requirem inc. The are location of and underst corrective a nal Report" a threat to or of respon ONSER | almately 3 be and reattached sents. The att and that put the modular cond that put clions for no ground wat isibility for VATION | was was was rimpound risuant to eleases v elieve the er, surfa complia | dment alor dment alor hich may e operator ce water, i nce with a SION | the tank. The ents the sample ong the edge rules and endanger of liability puman health |
| If a Waterci Describe Co On August 27 Mr. Randy Gn water was that results and pm Describe Ar The release a approximatel of the produce I hereby cert regulations a public health should their or the enviro federal, state Signature: Printed Name | NA NA Ause of Problem when a control of the model and the model and the model and the model and the so by 15 X15 squa- the or the environ operations have meet. In add a or the environ operations have meet. In add a or local laws | m and Remedi dular Impoundme ray mobilized wa Draw 49 H and lation plan. and Cleanup Ac nuthwest come and the moduli formation givi re required to nument. The sive failed to ad dition, NMOC and/or regula | Yes [X] be Fully.* ial Action ant finer deta ater haut true Nach Draw ction Takes ar of the pro- senup action report and cceptance equately in D acceptance | Taken.* acted from the top cks to the site and i Unit \$ 57 H. Soil er n.* oduction pad, adj on was taken dur iment heavy mas s true and compil /or file certain re of a C-141 report overstigate and re | jacent to ampling w jacent to e to limits quite very ete to the clease no rt by the mediate eport do | If YES, Vo NA k along the were e water lavel to as conducted p the modular i ad access call getation exists best of my h tiffications an contaminatio es not relieve | stem edge rei prevent furth er C-144 clas impoundme issed by the s. cnowledge i d perform c rked na "Fin n that pose the operatio <u>OIL Cu</u> Signed avvironmen | leasing appro nar leastage at sure requirem int. The are location of and undersi corrective at nal Report" a threat to or of respon ONSER | almately 3 be and reattached sents. The att and that put the modular cond that put clions for no ground wat isibility for VATION | arrets of in the liner ached doc was r impoun- trevent to eleases v clieve th er, surfa complia | dment alor dment alor hich may e operator ce water, i nce with a SION | the tank. The ents the sample ong the edge rules and endanger of liability puman health |
| If a Waterci If a Waterci Describe Ca On August 27 Mr. Randy Gn water was trai regults and pr Describe Ar The release approximatel of the produc I hereby cert regulations a public health should their or the enviro federal, state Signature: Printed Name | NA NA Ause of Problem th, 2012 the more rear of XTO Ener instant to Nash oposas a remedi rea Affected an affected the so ly 15 X15 squa ction pad; beyo tify that the init all operations hav operations hav operations hav operations hav operations have operations have operations have operations have operations have ope | m and Remedi dular Impoundment gy mabilized we prove 49 H and letton plan. and Cleanup Act multivest come are feet. No clean formation givi re required to we failed to ad dition, NMOC and/or regular | Yes [X] be Fully.* ial Action ant finer delt ater haut true Nach Draw ction Takes ar impound en above in report and cceptance equately in D acceptance | Taken.* acted from the top cks to the site and i Unit \$ 57 H. Soil er n.* oduction pad, adj on was taken dur iment heavy mas s true and compil /or file certain re of a C-141 report overstigate and re | jacent to ampling w jacent to e to limits quite very ete to the clease no rt by the mediate eport do A A | If YES, Vo NA k along the were e water lavel to as conducted p the modular i ad access call getation exists a best of my in NMOCD ma contaminatio es not relieve pproved by E | stem edge rei prevent furth er C-144 clos impoundme ised by the s. cnowledge i rked as "Fin an that pose the operatio <u>OIL Co</u> <u>Signed</u> <u>AY 3 1</u> | isasing appro- ner leskage al sure requirem int. The are location of and undersi- corrective a nal Report" a threat to or of respon ONSER hal Special 2013 | admately 3 be not reattached ents. The att a of impact the modular tand that pu ctions for n ground wat usibility for <u>VATION</u> | rents of in the liner ached doc was r impoun rsoant to bleases v elieve the er, surfa complia V DIV | dment alor NMOCD which may cover operator ce water, f nce with a SION | the tank. The ents the sample ong the edge rules and endanger of liability puman health |
| If a Waterci Describe Ca On August 27 Mr. Randy Gn water was trai results and pri Describe Ar Describe Ar The release approximatel of the produc I hereby ceri regulations a public health should their or the enviro federal, state Signature: Printed Name | NA Ause of Problem th, 2012 the mod- th, 2012 the mod- th on XTO Ener- th or the environ- operations have the environ- operations have operations have operati | m and Remedi dular Impoundment gy mabilized we prove 49 H and letton plan. and Cleanup Act multivest come are feet. No clean formation givi re required to we failed to ad dition, NMOC and/or regular | Yes [X] be Fully.* ial Action ant finer detailer haut finer detailer haut finer detailer haut finer detailer haut finer detailer haut finer detailer constance countely in D acceptance countely in D acceptance | Taken.* acted from the top cks to the site and is Unit # 57 H. Soll su m.* oduction pad, adj on was taken dus iment heavy mas s true and compli- /or file certain re of a C-141 report avestigate and re- nce of a C-141 re- n | jacent to ampling w jacent to e to limits route very ete to the clease no rt by the mediate eport do A A A A Co R | If YES, Vo NA NA k along the were e water lavel to as conducted p the modular i ad access call petation exists best of my h biffications an NMOCD ma contaminatio es not relieve pproved by E | term edge rei prevent furth er C-144 ctas impoundme rsed by the s. cnowledge i d perform c rked ns "Fin a that pose the operatio <u>OIL CU</u> <u>Signed</u> AY 3 1 Approval: on per O | isasing appro- nar leakage at sure requirem inc. The ara- location of t and understi- corrective at and understi- corrective at and understi- corrective at and understi- a threat to or of respon- ONSER ABy ABy 2013 | admately 3 be nd reattached ents. The att a of impact the modules tions for m does not re ground wat sibility for <u>VATION</u> <u>Expiration</u> | rents of in the liner ached doc was r impoun rsoant to bleases v elieve the er, surfa complia V DIV | dment alor dment alor hich may e operator ce water, i nce with a SION | the tank. The ents the sample ong the edge rules and endanger of liability puman health |
| If a Waterci Describe Ca On August 27 Mr. Randy Gri water was tear results and pr Describe Ar The release approximatel of the produc I hereby cert regulations a public health should their or the enviro federal, state Signature: Printed Name Title: Operat | NA Ause of Problem th, 2012 the mod- th, 2012 the mod- th on XTO Ener- th or the environ- operations have the environ- operations have operations have operati | m and Remedi dular Impoundmingy mabilized we praw 49 H and letion plan. and Cleanup Active multiwest come and the modular formation give re-required to a difficient to a diff | Yes [X] be Fully.* ial Action ant finer detailer haut finer detail | Taken.* acted from the top cks to the site and i Unit \$ 57 H. Soil er n.* oduction pad, adj on was taken dur iment heavy mas s true and compil /or file certain re of a C-141 report overstigate and re | jacent to ampling w jacent to a to limits quita veg eto to the lease no rt by the mediate eport do A A A Co R Guit | If YES, Vo NA k along the were e water lavel to as conducted p the modular i ad access call getation exists a best of my in NMOCD ma contaminatio es not relieve pproved by E | term edge rei prevent furth ar C-144 close mpoundme reed by the s. cnowledge d d perform c rked as "Fin a that pose the operation OIL Cu Signed anvironmen AY 3 1 Approval: on per O JBMIT R | interiority of the second seco | admately 3 be nd reatlached ents. The att as of impact the modulat the modulat tions for n does not n ground wat sibility for <u>VATION</u> | rents of in the liner ached doc was r impoun rsoant to bleases v elieve the er, surfa complia V DIV | dment alor NMOCD which may cover operator ce water, f nce with a SION | the tank. The ents the sample ong the edge rules and endanger of liability puman health |

Soil Chemistry

On November 13, 2012, Hicks Consultants collected two 5-point soil samples on location for closure of the modular impoundment employed for hydraulic fracturing of five wells in 2012. On February 11, 2013 Hicks Consultants performed additional characterization to determine the vertical extent of chloride in soil near the western edge of the former modular impoundment, near the area of the reported release.

The location and chloride chemistry of the samples are presented on Plate 1. The chemistry is summarized in Table 1, below. Table 2 shows the lithology of the "Trench Sample". The laboratory certificate of analysis is attached.

The point samples for the Tank Composite and BG Composite were collected approximately two inches below the caliche pad/soil interface at a depth of approximately 1-foot. The Trench Sample consisted of discrete samples at 2, 4, and 6 foot depths.

| Sample ID | Date | Depth | Chloride | EC | Benzene | | TPH | GRO/DRO |
|-------------------------|------------|-------|---------------------------------------|-------|---------|--------------|----------------|--------------|
| NMAC 19.15.17.13.B(1).b | | (ft) | mg/kg 500 or background | uS/cm | mg/kg | тод/кg 50 | mg/kg 2,500 | mg/kg 500 |
| | | | · · · · · · · · · · · · · · · · · · · | | 1 | | | |
| Tank Composite | 11/13/2012 | 1 | 7,500 | NS | <0.49 | ND | <20 | <10 |
| BG Composite | 11/13/2012 | 1 | 3,000 | NS | <0.49 | ND | <20 | <10 |
| Trench Sample | 2/11/2013 | 2 | 3,480 | 8,010 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 4 | 2,120 | 3,020 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 6 | 2,000 | 7,050 | NS | NS | NS | NS |

Figure 1: Summary of soil chemistry

Notes

F

1. ND = non-detect

2 NS = not sampled

Figure 2: Lithology of Trench Sample

| Depth (ft) | Description |
|------------|--|
| 0-1 | Caliche pad |
| 1 - 4 | Top soil (loamy sand), dark brown, moist |
| 4 - 6 | Top soil, reddish brown, moist |
| 6 | Medim sand w/caliche, hard, brown, moist |

Note: native hard caliche was observed below 6 feet.

.

The Tank Composite sample with a chloride concentration of 7,500 mg/kg indicates production activities have impacted the western half of the caliche pad. The BG Composite sample has a chloride concentration comparable to the Trench Sample at the 2 foot depth (3,480 mg/kg). Soil chloride concentrations at the Trench Sample that is within the area of the Tank Composite sample show chloride concentrations are decreasing with depth, from 3,480 mg/kg at 2 feet to 2,000 mg/kg at 6 feet and indicate that the majority of chloride impairment is limited to the production pad surface.

The chemistry and lithology of the Trench Sample suggests that:

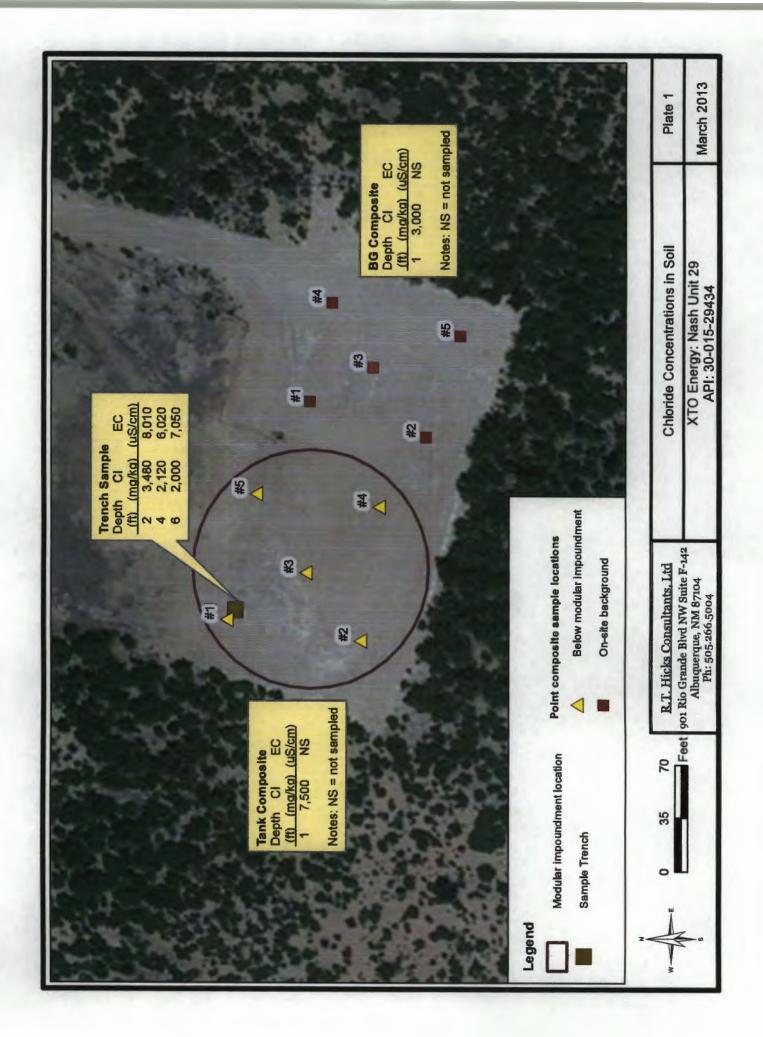
- the moist soil at a depth of 6 feet, which exhibits 2,000 mg/kg chloride, is likely impacted by shallow groundwater wicking up from the underlying brine groundwater zone,
- the moist soil near the surface (Trench Sample) is likely from recent precipitation events and past releases at the site, and
- soil at depths from 1 to 5 feet below surface have chloride and EC concentrations that will support vegetation. Re-vegetating the impacted area is included in the remediation plan and also satisfies BLM's request for interim reclamation.

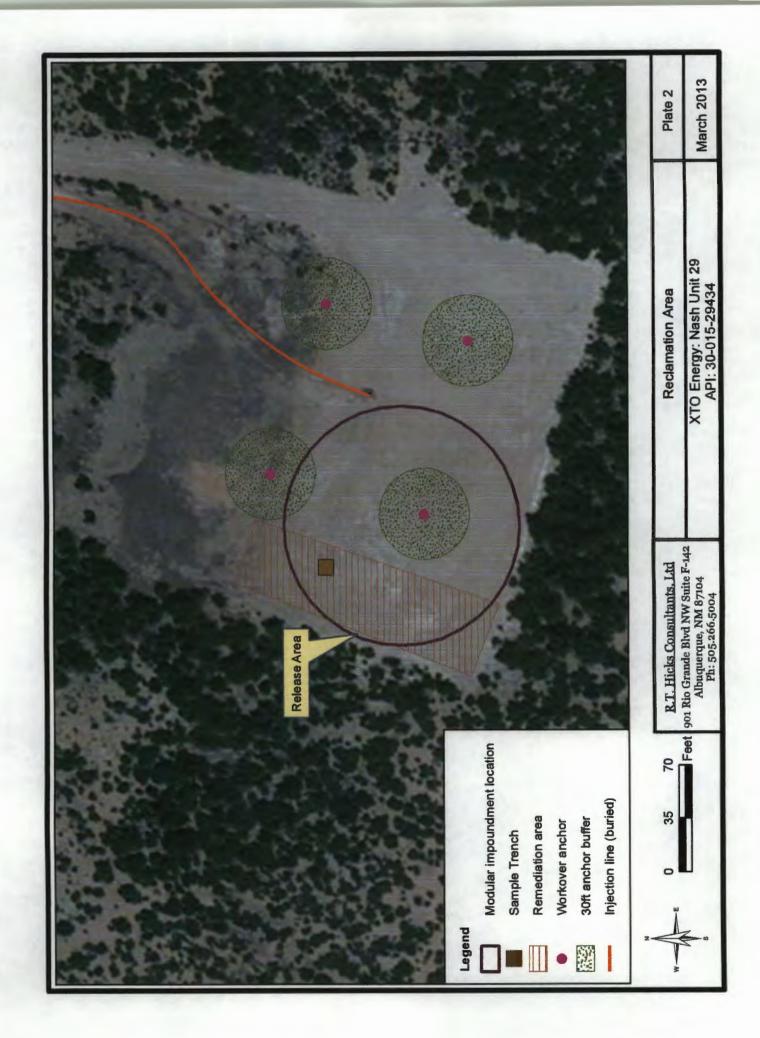
The remediation plan is presented below.

Remediation Plan

XTO Energy proposes to excavate and dispose of the western third (30%) of the caliche pad that was in contact with the modular impoundment. The 30% area includes the release area and out beyond to the edge of the caliche pad. Plate 2 identifies the area proposed for remediation. The excavated material will be transported to R360 or equivalent for proper disposal.

The remediated area will be contoured and seeded using BLM Seed Mixture Type 4 with Giant Sacaton seed added to the mixture. The excavated area is also subject to BLM's interim reclamation plan.





HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

November 29, 2012

Andrew Parker R.T. Hicks Consultants, LTD 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104 TEL: (505) 266-5004 FAX (505) 266-0745

RE: XTO Energy Nash Unit 29

OrderNo.: 1211653

Dear Andrew Parker:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/14/2012 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Dala

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

| Hall Environmental Analysi | | e Reported: 11/29/2012 | | | | | | |
|---|----------------------|------------------------------------|------------|--------------|-----------------------|--|--|--|
| CLIENT: R.T. Hicks Consultants, LTD Project: XTO Energy Nash Unit 29 | e ID: Tank Composite | | | | | | | |
| | | Collection Date: 11/13/2012 | | | | | | |
| Lab ID: 1211653-001 | Matrix: | SOIL | Received D | ate: 11/14/2 | 2012 10:50:00 AM | | | |
| Analyses | Result | RL | Qual Units | DF | Date Analyzed | | | |
| EPA METHOD 8015B: DIESEL RANGE | ORGANICS | | | | Analyst: JMP | | | |
| Diesel Range Organics (DRO) | ND | 10 | mg/Kg | 1 | 11/20/2012 6:22:22 AM | | | |
| Motor Oil Range Organics (MRO) | ND | 50 | mg/Kg | 1 | 11/20/2012 6:22:22 AM | | | |
| Surr: DNOP | 102 | 77.6-140 | %REC | 1 | 11/20/2012 6:22:22 AM | | | |
| EPA METHOD 8015B: GASOLINE RANG | ΞE | | | | Analyst: NSB | | | |
| Gasoline Range Organics (GRO) | ND | 4.9 | mg/Kg | 1 | 11/16/2012 2:32:25 PM | | | |
| Surr: BFB | 108 | 84-116 | %REC | 1 | 11/16/2012 2:32:25 PM | | | |
| EPA METHOD 300.0: ANIONS | | | | | Analyst: JRR | | | |
| Chloride | 7500 | 300 | mg/Kg | 200 | 11/20/2012 6:54:44 PM | | | |
| EPA METHOD 8260B: VOLATILES | | | 0.0 | | Analyst: RAA | | | |
| Benzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Toluene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Ethylbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Methyl tert-butyl ether (MTBE) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 1,2,4-Trimethylbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 1,3,5-Trimethylbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 1,2-Dichloroethane (EDC) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 1,2-Dibromoethane (EDB) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Naphthalene | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 1-Methylnaphthalene | ND | 0.19 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 2-Methylnaphthalene | ND | 0.19 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Acetone | ND | 0.73 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Bromobenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Bromodichloromethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Bromoform | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Bromomethane | ND | 0.15 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 2-Butanone | ND | 0.49 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Carbon disulfide | ND | 0.49 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Carbon tetrachloride | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Chlorobenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Chloroethane | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Chloroform | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| Chloromethane | ND | 0.15 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 2-Chlorotoluene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| 4-Chlorotoluene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| cis-1,2-DCE | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM | | | |
| air 4.0 Diabhrannanan | ND | 0.040 | | 4 | 44/04/0040 7.40.40 DI | | | |

Hal

Analytical Report Lab Order 1211653

Qualifiers: * Value exceeds Maximum Contaminant Level.

cis-1,3-Dichloropropene

Dibromochloromethane

Dibromomethane

1,2-Dichlorobenzene

1,2-Dibromo-3-chloropropane

Е Value above quantitation range

J Analyte detected below quantitation limits

ND

ND

ND

ND

ND

0.049

0.097

0.049

0.097

0.049

mg/Kg

mg/Kg

mg/Kg

mg/Kg

mg/Kg

Р Sample pH greater than 2

RL Reporting Detection Limit

Analyte detected in the associated Method Blank В

1

1

1

1

1

Н Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits R

Spike Recovery outside accepted recovery limits S

11/21/2012 7:19:43 PM

Date Reported: 11/29/2012 CLIENT: R.T. Hicks Consultants, LTD Client Sample ID: Tank Composite **Project:** XTO Energy Nash Unit 29 Collection Date: 11/13/2012 1211653-001 Matrix: SOIL Received Date: 11/14/2012 10:50:00 AM Analyses Result **RL** Qual Units DF **Date Analyzed** EPA METHOD 8260B: VOLATILES Analyst: RAA 1,3-Dichlorobenzene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM ND 0.049 1.4-Dichlorobenzene mg/Kg 1 11/21/2012 7:19:43 PM Dichlorodifluoromethane ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 1.1-Dichloroethane ND 0.097 11/21/2012 7:19:43 PM mg/Kg 1 1,1-Dichloroethene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 1,2-Dichloropropane ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 1,3-Dichloropropane ND 0.049 11/21/2012 7:19:43 PM mg/Kg 1 2,2-Dichloropropane ND 0.097 mg/Kg 1 11/21/2012 7:19:43 PM 1,1-Dichloropropene ND 0.097 mg/Kg 1 11/21/2012 7:19:43 PM ND Hexachlorobutadiene 0.097 mg/Kg 1 11/21/2012 7:19:43 PM 2-Hexanone ND 0.49 mg/Kg 1 11/21/2012 7:19:43 PM Isopropylbenzene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 4-Isopropyltoluene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 4-Methyl-2-pentanone ND 0.49 mg/Kg 1 11/21/2012 7:19:43 PM Methylene chloride ND 0.15 mg/Kg 1 11/21/2012 7:19:43 PM ND 0.15 n-Butylbenzene 1 11/21/2012 7:19:43 PM mg/Kg n-Propylbenzene ND 0.049 1 11/21/2012 7:19:43 PM mg/Kg sec-Butylbenzene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM Styrene ND 0.049 1 11/21/2012 7:19:43 PM mg/Kg tert-Butylbenzene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 1,1,1,2-Tetrachloroethane ND 0.049 1 11/21/2012 7:19:43 PM mg/Kg ND 0.049 1,1,2,2-Tetrachloroethane 1 11/21/2012 7:19:43 PM mg/Kg Tetrachloroethene (PCE) ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM trans-1.2-DCE ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM trans-1,3-Dichloropropene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 1,2,3-Trichlorobenzene ND 0.097 1 11/21/2012 7:19:43 PM mg/Kg 1.2.4-Trichlorobenzene ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM ND 1,1,1-Trichloroethane 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 1,1,2-Trichloroethane ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM Trichloroethene (TCE) ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM Trichlorofluoromethane ND 0.049 mg/Kg 1 11/21/2012 7:19:43 PM 1,2,3-Trichloropropane 1 11/21/2012 7:19:43 PM

Hall Environmental Analysis Laboratory, Inc.

Lab ID:

Qualifiers: Value exceeds Maximum Contaminant Level.

Surr: 1,2-Dichloroethane-d4

Surr: 4-Bromofluorobenzene

Surr: Dibromofluoromethane

Surr: Toluene-d8

EPA METHOD 418.1: TPH

Petroleum Hydrocarbons, TR

Vinyl chloride

Xvlenes, Total

- E Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH greater than 2
- Reporting Detection Limit RL

B Analyte detected in the associated Method Blank

1

1

1

1

1

1

1

11/21/2012 7:19:43 PM

11/21/2012

Analyst: LRW

- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S

Analytical Report Lab Order 1211653

ND 0.097 mg/Kg ND 0.049 mg/Kg ND 0.097 mg/Kg

%REC

%REC

%REC

%REC

mg/Kg

70-130

70-130

70-130

70-130

20

93.2

92.4

90.7

101

ND

| CLIENT: | R.T. Hicks Consultants, LTD | | | C | lient Sample | ID: BG Co | mposite | | |
|----------------------|-----------------------------|----------|---------------|----------|--|-----------|--|--|--|
| Project: | XTO Energy Nash Unit 29 | | | | - | | - | | |
| Lab ID: | 1211653-002 | Matrix: | SOIL | | Collection Date: 11/13/2012 Received Date: 11/14/2012 10:50:00 AM | | | | |
| | | | | <u> </u> | | | · | | |
| Analyses | | Result | RL | Qual | Units | DF | Date Analyzed | | |
| EPA MET | THOD 8015B: DIESEL RANGE O | ORGANICS | | | | | Analyst: JMP | | |
| Diesel R | ange Organics (DRO) | ND | 10 | | mg/Kg | 1 | 11/20/2012 8:28:08 AN | | |
| Motor Oi | l Range Organics (MRO) | ND | 51 | | mg/Kg | 1 | 11/20/2012 8:28:08 AM | | |
| Surr: [| DNOP | 98.6 | 77.6-140 | | %REC | 1 | 11/20/2012 8:28:08 AN | | |
| ЕРА МЕТ | HOD 8015B: GASOLINE RANG | E | | | | | Analyst: NSE | | |
| Gasoline | Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 11/16/2012 3:01:11 PM | | |
| Surr: E | • • <i>· ·</i> | 101 | 84-116 | | %REC | 1 | 11/16/2012 3:01:11 PM | | |
| EPA MET | THOD 300.0: ANIONS | | | | | | Analyst: JRR | | |
| Chloride | | 3000 | 150 | | mg/Kg | 100 | 11/20/2012 7:07:09 PM | | |
| | THOD 8260B: VOLATILES | | | | | | Analyst: RAA | | |
| Benzene | 1 | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Toluene | | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Ethylben | zene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| | ert-butyl ether (MTBE) | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| • | methylbenzene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| | methylbenzene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| | loroethane (EDC) | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| | pmoethane (EDB) | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Naphtha | · · · · | ND | 0.049 | | | 1 | 11/21/2012 7:48:47 PM | | |
| • | naphthalene | ND | 0.099 | | mg/Kg mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| - | naphthalene | ND | 0.20 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Acetone | naprinaiene | ND | 0.20 | | mg/Kg mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Bromobe | 007000 | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| | chloromethane | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Bromofo | | ND | 0.049 | | | 1 | | | |
| Bromom | | ND | 0.049 | | mg/Kg mg/Kg | | 11/21/2012 7:48:47 PN | | |
| 2-Butanc | | ND | | | mg/Kg mg/Kg | 1 | 11/21/2012 7:48:47 PN | | |
| Z-Butanc Carbon d | | ND ND | 0.49 | | mg/Kg mg/Kg | 1 1 | 11/21/2012 7:48:47 PN 11/21/2012 7:48:47 PN | | |
| | etrachloride | ND | 0.49 0.099 | | mg/Kg mg/Kg | 1 | 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM | | |
| Chlorobe | | ND | 0.099 | | mg/Kg mg/Kg | 1 | 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM | | |
| Chloroet | | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Chlorofo | | ND | 0.099 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Chlorom | | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| 2-Chloroi | | ND | 0.13 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| 4-Chloroi | | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| cis-1,2-D | | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| |)ichloropropene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| | omo-3-chloropropane | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PN | | |
| • | chloromethane | ND | 0.099 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| Dibromo | | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:48:47 PM | | |
| | lorobenzene | ND | 0.099 | | mg/Kg mg/Kg | 1 | 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM | | |

Η

Qualifiers: * Value exceeds Maximum Contaminant Level.

- Ε Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2
- Reporting Detection Limit RL

- Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit

В

- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S

Analytical Report Lab Order 1211653

Client Sample ID: BG Composite CLIENT: R.T. Hicks Consultants, LTD Collection Date: 11/13/2012 **Project:** XTO Energy Nash Unit 29 Matrix: SOIL Received Date: 11/14/2012 10:50:00 AM Lab ID: 1211653-002 **RL Qual** Units DF **Date Analyzed** Result Analyses **EPA METHOD 8260B: VOLATILES** Analyst: RAA ND 0.049 11/21/2012 7:48:47 PM mg/Kg 1 1,3-Dichlorobenzene 11/21/2012 7:48:47 PM 1 1,4-Dichlorobenzene ND 0.049 mg/Kg 0.049 1 11/21/2012 7:48:47 PM Dichlorodifluoromethane ND mg/Kg 0.099 mg/Kg 1 11/21/2012 7:48:47 PM 1.1-Dichloroethane ND 1.1-Dichloroethene ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 1.2-Dichloropropane ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 1,3-Dichloropropane ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 2,2-Dichloropropane ND 0.099 mg/Kg 1 11/21/2012 7:48:47 PM 1,1-Dichloropropene ND 0.099 mg/Kg 1 11/21/2012 7:48:47 PM ND 0.099 mg/Kg 1 11/21/2012 7:48:47 PM Hexachlorobutadiene 11/21/2012 7:48:47 PM ND 0.49 mg/Kg 1 2-Hexanone 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 Isopropylbenzene 11/21/2012 7:48:47 PM 0.049 1 ND mg/Kg 4-isopropyltoluene 0.49 mg/Kg 1 11/21/2012 7:48:47 PM 4-Methyl-2-pentanone ND 11/21/2012 7:48:47 PM ND 0.15 mg/Kg 1 Methylene chloride 11/21/2012 7:48:47 PM 0.15 1 n-Butylbenzene ND mg/Kg ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM n-Propylbenzene 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 sec-Butylbenzene 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 Styrene ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM tert-Butylbenzene ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 1,1,1,2-Tetrachloroethane 11/21/2012 7:48:47 PM ND 0.049 1,1,2,2-Tetrachloroethane mg/Kg 1 Tetrachloroethene (PCE) ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 trans-1,2-DCE 11/21/2012 7:48:47 PM 0.049 mg/Kg 1 trans-1,3-Dichloropropene ND 0.099 mg/Kg 1 11/21/2012 7:48:47 PM 1.2.3-Trichlorobenzene ND ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 1,2,4-Trichlorobenzene 11/21/2012 7:48:47 PM 0.049 1 1.1.1-Trichloroethane ND mg/Kg ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 1.1.2-Trichloroethane 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 Trichloroethene (TCE) 0.049 1 11/21/2012 7:48:47 PM ND mg/Kg Trichlorofluoromethane 11/21/2012 7:48:47 PM 1,2,3-Trichloropropane ND 0.099 mg/Kg 1 Vinyl chloride ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM ND 0.099 mg/Kg 1 Xylenes, Total 70-130 %REC 1 11/21/2012 7:48:47 PM 94.2 Surr: 1,2-Dichloroethane-d4 11/21/2012 7:48:47 PM Surr: 4-Bromofluorobenzene 87.7 70-130 %REC 1 %REC 1 11/21/2012 7:48:47 PM Surr: Dibromofluoromethane 91.6 70-130 %REC 1 11/21/2012 7:48:47 PM 105 70-130 Surr: Toluene-d8 EPA METHOD 418.1: TPH Analyst: LRW 11/21/2012 ND 20 mg/Kg 1

Petroleum Hydrocarbons, TR

Qualifiers: *

- Value exceeds Maximum Contaminant Level. Ε Value above quantitation range
- J
- Analyte detected below quantitation limits
- Р Sample pH greater than 2

RL Reporting Detection Limit В Analyte detected in the associated Method Blank

Holding times for preparation or analysis exceeded Н

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits R

Spike Recovery outside accepted recovery limits S

Hall Environmental Analysis Laboratory, Inc.

Analytical Report Lab Order 1211653 Date Reported: 11/29/2012

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | | licks Consulta Energy Nash V | | D | | | | | | | |
|---------------------|------------|---------------------------------|---------------|-----------|-------------|--------------|-----------|--------------|------|----------|------|
| Sample ID | MB-4894 | BLK | Tes | Code: El | PA Method | 300.0: Anion | s | | | | |
| Client ID: | PBS | Batch | 1D: 48 | 94 | F | lunNo: 70 | 001 | | | | |
| Prep Date: | 11/19/2012 | Analysis D | ate: 11 | /19/2012 | S | eqNo: 20 | 02928 | Units: mg/K | g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | | ND | 1.5 | | | | | | | | |
| Sample ID | LCS-4894 | SampT | ype: LC | S | Tes | tCode: El | PA Method | 300.0: Anion | s | | |
| Client ID: | LCSS | Batch | 1D: 48 | 94 | F | RunNo: 7 | D01 | | | | |
| Prep Date: | 11/19/2012 | Analysis D | ate: 11 | 1/19/2012 | 5 | eqNo: 2 | 02929 | Units: mg/K | g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | | 14 | 1.5 | 15.00 | 0 | 90.0 | 90 | 110 | | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Valuc above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits

WO#: 1211653

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| | Hicks Consultants, LTD Energy Nash Unit 29 | |
|----------------------------|---|--|
| Sample ID MB-4901 | SampType: MBLK | TestCode: EPA Method 418.1: TPH |
| Client ID: PBS | Batch ID: 4901 | RunNo: 7021 |
| Prep Date: 11/19/2012 | Analysis Date: 11/21/2012 | SeqNo: 203589 Units: mg/Kg |
| Analyte | Result PQL SPK value | SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual |
| Petroleum Hydrocarbons, TR | ND 20 | |
| Sample ID LCS-4901 | SampType: LCS | TestCode: EPA Method 418.1: TPH |
| Client ID: LCSS | Batch ID: 4901 | RunNo: 7021 |
| Prep Date: 11/19/2012 | Analysis Date: 11/21/2012 | SeqNo: 203590 Units: mg/Kg |
| Analyte | Result PQL SPK value | SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual |
| Petroleum Hydrocarbons, TR | 100 20 100.0 | 0 104 80 120 |
| Sample ID LCSD-4901 | SampType: LCSD | TestCode: EPA Method 418.1: TPH |
| Client ID: LCSS02 | Batch ID: 4901 | RunNo: 7021 |
| Prep Date: 11/19/2012 | Analysis Date: 11/21/2012 | SeqNo: 203591 Units: mg/Kg |
| Analyte | Result PQL SPK value | SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual |
| Petroleum Hydrocarbons, TR | 110 20 100.0 | 0 106 80 120 1.28 20 |

Qualifiers:

- * Value excccds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
 - R RPD outside accepted recovery limits

WO#: 1211653

| Client: | R.T. Hick | s Consulta | nts, LT | D | | | | | | | |
|----------------|------------------|-------------|---------------|-----------|-------------|----------|-----------|-------------|------------|----------|------|
| Project: | XTO Ene | rgy Nash U | nit 29 | | | | | | | | |
| Sample ID | MB-4900 | SampTy | pe: ME | BLK | Test | Code: E | PA Method | 8015B: Dies | el Range C | Organics | |
| Client ID: | PBS | Batch | ID: 49 | 00 | R | unNo: 6 | 989 | | | | |
| Prep Date: | 11/19/2012 | Analysis Da | ite: 11 | 1/20/2012 | s | eqNo: 2 | 02423 | Units: mg/k | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range (| Organics (DRO) | ND | 10 | | | | · · · · | | | | |
| Motor Oil Rang | e Organics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | | 9.9 | | 10.00 | | 98.8 | 77.6 | 140 | | | |
| Sample ID | LCS-4900 | SampTy | pe: LC | s | Test | Code: E | PA Method | 8015B: Dies | el Range O | Organics | |
| Client ID: | LCSS | Batch | ID: 49 | 00 | R | tunNo: 6 | 989 | | | | |
| Prep Date: | 11/19/2012 | Analysis Da | ite: 11 | 1/20/2012 | S | eqNo: 2 | 02424 | Units: mg/k | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range (| Organics (DRO) | 51 | 10 | 50.00 | 0 | 102 | 47.4 | 122 | | | |
| Surr: DNOP | | 4.0 | | 5.000 | | 80.2 | 77.6 | 140 | | | |
| Sample ID | 1211653-001AMS | SampTy | pe: MS | 6 | Tes | tCode: E | PA Method | 8015B: Dies | el Range C | Organics | |
| Client ID: | Tank Composite | Batch | ID: 49 | 00 | F | RunNo: 6 | 989 | | | | |
| Prep Date: | 11/19/2012 | Analysis Da | ite: 11 | 1/20/2012 | S | eqNo: 2 | 02426 | Units: mg/h | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range | Organics (DRO) | 54 | 10 | 50.97 | 0 | 106 | 12.6 | 148 | | | |
| Surr: DNOP | | 4.8 | | 5.097 | | 94.6 | 77.6 | 140 | | | |
| Sample ID | 1211653-001AMS |) SampTy | pe: MS | SD | Tes | tCode: E | PA Method | 8015B: Dies | el Range (| Organics | |
| Client ID: | Tank Composite | Batch | ID: 49 | 00 | F | lunNo: 6 | 989 | | | | |
| Prep Date: | 11/19/2012 | Analysis Da | ate: 11 | 1/20/2012 | S | eqNo: 2 | 02569 | Units: mg/k | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range | Organics (DRO) | 53 | 10 | 51.18 | 0 | 104 | 12.6 | 148 | 0.773 | 22.5 | |
| Surr: DNOP | | 5.1 | | 5.118 | | 98.8 | 77.6 | 140 | 0 | 0 | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
 - R RPD outside accepted recovery limits

WO#: 1211653

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | | ks Consulta ergy Nash I | | | | | | | | | |
|---------------------|------------------|----------------------------|---------|-----------|-------------|-----------|-----------|-------------|------------|----------|------|
| Sample ID | MB-4851 | SampT | ype: MI | BLK | Tes | tCode: E | PA Method | 8015B: Gas | oline Rang | e | |
| Client ID: | PBS | Batch | ID: 48 | 51 | F | RunNo: 6 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 1 | 1/16/2012 | 5 | SeqNo: 2 | 02014 | Units: mg/l | ۲g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Rang | e Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | | 990 | | 1000 | | 99.3 | 84 | 116 | | | |
| Sample ID | LCS-4851 | SampT | ype: LC | s | Tes | tCode: El | PA Method | 8015B: Gase | oline Rang | e | |
| Client ID: | LCSS | Batch | ID: 48 | 51 | F | RunNo: 6 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 1 | 1/16/2012 | S | SeqNo: 2 | 02015 | Units: mg/l | ٨g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Rang | e Organics (GRO) | 24 | 5.0 | 25.00 | 0 | 97.3 | 74 | 117 | | | |
| Surr: BFB | | 1000 | | 1000 | | 104 | 84 | 116 | | | |
| Sample ID | 1211653-001AMS | SampT | ype: MS | S | Tes | tCode: El | PA Method | 8015B: Gase | oline Rang | e | |
| Client ID: | Tank Composite | Batch | ID: 48 | 51 | F | RunNo: 6 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 1 | 1/16/2012 | S | SeqNo: 2 | 02020 | Units: mg/k | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Rang | e Organics (GRO) | 29 | 4.9 | 24.63 | 0 | 118 | 70 | 130 | | | |
| Surr: BFB | | 1100 | | 985.2 | | 109 | 84 | 116 | | | |
| Sample ID | 1211653-001AMS |) SampT | ype: MS | SD | Tes | tCode: El | PA Method | 8015B: Gaso | line Rang | e | |
| Client ID: | Tank Composite | Batch | ID: 48 | 51 | F | RunNo: 6 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 11 | 1/16/2012 | S | SeqNo: 2 | 02021 | Units: mg/k | ۲g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Rang | e Organics (GRO) | 29 | 5.0 | 24.75 | 0 | 118 | 70 | 130 | 0.0876 | 22.1 | |
| • | 01941100 (0110) | | 0.0 | 2 | • | 110 | | | 0.00.0 | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
 - R RPD outside accepted recovery limits

WO#: 1211653

Client: R.T. Hicks Consultants, LTD

Nach Unit 20 Project YTO F

| | Energy Nash | | | · · · · | | | | | | |
|--------------------------------|-------------|----------|-----------|-------------|----------|----------|-------------|--------|----------|------|
| Sample ID mb-4851 | | Type: Mi | | | | | 8260B: VOL | ATILES | | |
| Client ID: PBS | Batcl | h ID: 48 | 51 | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/15/2012 | Analysis E | Date: 1 | 1/21/2012 | S | SeqNo: 2 | 04634 | Units: mg/M | ٢g | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Benzene | ND | 0.050 | | | | | | | | |
| Toluene | ND | 0.050 | | | | | | | | |
| Ethylbenzene | ND | 0.050 | | | | | | | | |
| Methyl tert-butyl ether (MTBE) | ND | 0.050 | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 0.050 | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 0.050 | | | | | | | | |
| 1,2-Dichloroethane (EDC) | ND | 0.050 | | | | | | | | |
| 1,2-Dibromoethane (EDB) | ND | 0.050 | | | | | | | | |
| Naphthalene | ND | 0.10 | | | | | | | | |
| 1-Methylnaphthalene | ND | 0.20 | | | | | | | | |
| 2-Methylnaphthalene | ND | 0.20 | | | | | | | | |
| Acetone | ND | 0.75 | | | | | | | | |
| Bromobenzene | ND | 0.050 | | | | | | | | |
| Bromodichloromethane | ND | 0.050 | | | | | | | | |
| Bromoform | ND | 0.050 | | | | | | | | |
| Bromomethane | ND | 0.15 | | | | | | | | |
| 2-Butanone | ND | 0.50 | | | | | | | | |
| Carbon disulfide | ND | 0.50 | | | | | | | | |
| Carbon tetrachloride | ND | 0.10 | | | | | | | | |
| Chlorobenzene | ND | 0.050 | | | | | | | | |
| Chloroethane | ND | 0.10 | | | | | | | | |
| Chloroform | ND | 0.050 | | | | | | | | |
| Chloromethane | ND | 0.15 | | | | | | | | |
| 2-Chlorotoluene | ND | 0.050 | | | | | | | | |
| 4-Chlorotoluene | ND | 0.050 | | | | | | | | |
| cis-1,2-DCE | ND | 0.050 | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 0.050 | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | ND | 0.000 | | | | | | | | |
| Dibromochloromethane | ND | 0.050 | | | | | | | | |
| Dibromomethane | ND | 0.050 | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 0.050 | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 0.050 | | | | | | | | |
| | | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 0.050 | | | | | | | | |
| Dichlorodifluoromethane | ND | 0.050 | | | | | | | | |
| 1,1-Dichloroethane | ND | 0.10 | | | | | | | | |
| 1,1-Dichloroethene | ND | 0.050 | | | | | | | | |
| 1,2-Dichloropropane | ND | 0.050 | | | | | | | | |
| 1,3-Dichloropropane | ND | 0.050 | | | | | | | | |
| 2,2-Dichloropropane | ND | 0.10 | | | | | | | | |
| 1,1-Dichloropropene | ND | 0.10 | | | | | | | | |

Qualifiers:

Hexachlorobutadiene

* Value exceeds Maximum Contaminant Level.

ND

0.10

- Ε Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH greater than 2

- В Analyte detected in the associated Method Blank
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit R RPD outside accepted recovery limits

WO#: 29-Nov-12

1211653

Client: R.T. Hicks Consultants, LTD

Project: XTO Energy Nash Unit 29

| Sample ID mb-4851 | Samp | Type: ME | 3LK | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
|-----------------------------|------------|----------|-----------|-------------|----------|-----------|--------------------|--------|----------|------|
| Client ID: PBS | Batc | h ID: 48 | 51 | F | RunNo: 1 | 7060 | | | | |
| Prep Date: 11/15/2012 | Analysis [| Date: 11 | 1/21/2012 | 5 | SeqNo: 2 | 204634 | Units: mg/l | ٢g | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| 2-Hexanone | ND | 0.50 | | | | | | | | |
| sopropylbenzene | ND | 0.050 | | | | | | | | |
| 4-isopropyitoluene | ND | 0.050 | | | | | | | | |
| 4-Methyl-2-pentanone | ND | 0.50 | | | | | | | | |
| Methylene chloride | ND | 0.15 | | | | | | | | |
| n-Butylbenzene | ND | 0.15 | | | | | | | | |
| 1-Propylbenzene | ND | 0.050 | | | | | | | | |
| sec-Butylbenzene | ND | 0.050 | | | | | | | | |
| Styrene | ND | 0.050 | | | | | | | | |
| tert-Butylbenzene | ND | 0.050 | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.050 | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.050 | | | | | | | | |
| Tetrachloroethene (PCE) | ND | 0.050 | | | | | | | | |
| trans-1,2-DCE | ND | 0.050 | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 0.050 | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 0.10 | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 0.050 | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 0.050 | | | | | | | | |
| 1,1,2-Trichloroetharie | ND | 0.050 | | | | | | | | |
| Trichloroethene (TCE) | ND | 0.050 | | | | | | | | |
| Trichlorofluoromethane | ND | 0.050 | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 0.10 | | | | | | | | |
| Vinyl chloride | ND | 0.050 | | | | | | | | |
| Xyienes, Total | ND | 0.10 | | | | | | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.5000 | | 93.2 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.45 | | 0.5000 | | 89.4 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.46 | | 0.5000 | | 92.3 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.52 | | 0.5000 | | 103 | 70 | 130 | | | |
| Sample ID Ics-4851 | Samp | Гуре: LC | S | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
| Client ID: LCSS | Batc | h ID: 48 | 51 | F | RunNo: 7 | 7060 | | | | |
| Prep Date: 11/15/2012 | Analysis E | Date: 11 | /21/2012 | 5 | SeqNo: 2 | 204635 | Units: mg/l | (g | | |
| Analyte | Result | PQL | | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Benzene | 1.0 | 0.050 | 1.000 | 0 | 101 | 70 | 130 | | | |
| Toluene | 1.1 | 0.050 | 1.000 | 0 | 108 | | 120 | | | |
| Chlorobenzene | 1.0 | 0.050 | 1.000 | 0 | 101 | 70 | 130 | | | |
| 1,1-Dichloroethene | 1.1 | 0.050 | 1.000 | 0 | 110 | 74 | 124 | | | |
| Trichloroethene (TCE) | 0.88 | 0.050 | 1.000 | 0 | 87.9 | 70 | 130 | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.48 | | 0.5000 | | 96.4 | 70 | 130 | | | |
| 0 4 0 0 I | | | | | | | | | | |

Qualifiers:

* Value exceeds Maximum Contaminant Level.

0.43

E Value above quantitation range

Surr: 4-Bromofluorobenzene

J Analyte detected below quantitation limits

P Sample pH greater than 2

B Analyte detected in the associated Method Blank

70

130

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

86.1

0.5000

R RPD outside accepted recovery limits

Page 10 of 12

WO#: 1211653

| | ks Consult Ergy Nash | , | Ď | | | | | | | |
|---|---|---|---|---|---|--|--|--|--|------|
| Sample ID Ics-4851 | SampT | Гуре: LC | s | Tes | tCode: E | PA Method | 8260B; VOL | ATILES | | |
| Client ID: LCSS | | h ID: 48 | | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/15/2012 | Analysis D | - | | | SeqNo: 2 | | Units: mg/k | (0 | | |
| | Analysis L | | 1/21/2012 | | | 04035 | onits. Ing/r | \y | | |
| Analyte | Result | PQL | | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: Dibromofluoromethane | 0.47 | | 0.5000 | | 93.7 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.51 | | 0.5000 | | 103 | 70 | 130 | | | |
| Sample ID 1211653-002ams | SampT | Гуре: МS | 5 | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
| Client ID: BG Composite | Batcl | h ID: 48 | 51 | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/15/2012 | Analysis E | Date: 1 1 | /21/2012 | s | GeqNo: 2 | 04638 | Units: mg/H | ٢g | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Benzene | 0.91 | 0.049 | 0.9804 | 0 | 92.9 | 80.9 | 118 | | | |
| Toluene | 0.95 | 0.049 | 0.9804 | 0 | 97.4 | 69.5 | 119 | | | |
| Chlorobenzene | 0.87 | 0.049 | 0.9804 | 0 | 88.9 | 75.7 | 115 | | | |
| 1,1-Dichloroethene | 0.99 | 0.049 | 0.9804 | 0.01122 | 100 | 68.6 | 126 | | | |
| Trichloroethene (TCE) | 0.81 | 0.049 | 0.9804 | 0 | 82.4 | 68.7 | 115 | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.4902 | | 96.4 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.42 | | 0.4902 | | 85.6 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.47 | | 0.4902 | | 95.4 | 70 | 130 | | | |
| Curri Teluene de | 0.50 | | 0.4902 | | 102 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.4902 | | 102 | 70 | 100 | | | |
| | | Type: MS | - | Tes | | | | ATH ES | | |
| Sample ID 1211653-002amsd | I Samp1 | Гуре: МS h ID: 48 | 5D | | tCode: E | PA Method | 8260B: VOL | ATILES | | |
| Sample ID 1211653-002amsd Client ID: BG Composite | I SampT Batcl | h ID: 48 | 51 | F | tCode: E RunNo: 7 | PA Method 060 | 8260B: VOL | | | |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 | I Samp] Batcl Analysis E | h ID: 48 Date: 11 | SD 51 1/21/2012 | F | tCode: E RunNo: 7 SeqNo: 2 | PA Method 060 04639 | 8260B: VOL | ۶g | RPDI imit | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte | I SampT Batcl Analysis D Result | h ID: 48 Date: 1 1 PQL | 5D 51 1/21/2012 SPK value | F S SPK Ref Val | tCode: El RunNo: 7 SeqNo: 2 %REC | PA Method 060 04639 LowLimit | 8260B: VOL Units: mg/H HighLimit | (g %RPD | RPDLimit 20 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 | SampT Batcl Analysis D Result 0.92 | h ID: 48 Date: 1 1 <u>PQL</u> 0.049 | 5D 51 1/21/2012 SPK value 0.9891 | F S SPK Ref Val 0 | tCode: E RunNo: 7 SeqNo: 2 %REC 93.3 | PA Method 060 04639 LowLimit 80.9 | 8260B: VOL Units: mg/F HighLimit 118 | (g %RPD 1.30 | 20 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene | I SampT Batcl Analysis D Result | h ID: 48 Date: 1 1 PQL | 5D 51 1/21/2012 SPK value 0.9891 0.9891 | F S SPK Ref Val | tCode: El RunNo: 7 SeqNo: 2 %REC 93.3 98.8 | PA Method 060 04639 LowLimit | 8260B: VOL Units: mg/F HighLimit 118 119 | (g %RPD 1.30 2.28 | 20 20 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene | I SampT Batcl Analysis E Result 0.92 0.98 | h ID: 48 Date: 11 PQL 0.049 0.049 | 5D 51 1/21/2012 SPK value 0.9891 | F S SPK Ref Val 0 0 | tCode: E RunNo: 7 SeqNo: 2 %REC 93.3 | PA Method 060 04639 LowLimit 80.9 69.5 | 8260B: VOL Units: mg/F HighLimit 118 | (g %RPD 1.30 | 20 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene | I SampT Batcl Analysis E Result 0.92 0.98 0.88 | h ID: 48 Date: 11 PQL 0.049 0.049 0.049 | 5D 51 //21/2012 SPK value 0.9891 0.9891 0.9891 | F S SPK Ref Val 0 0 0 0 | tCode: El RunNo: 7 SeqNo: 2 %REC 93.3 98.8 89.3 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 | 8260B: VOL Units: mg/F HighLimit 118 119 115 | (g <u>%RPD</u> 1.30 2.28 1.32 | 20 20 20 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene | SampT Batcl Analysis E Result 0.92 0.98 0.88 1.0 | h ID: 48 Date: 11 PQL 0.049 0.049 0.049 0.049 | 50 51 1/21/2012 SPK value 0.9891 0.9891 0.9891 | F SPK Ref Val 0 0 0 0.01122 | tCode: E RunNo: 7 SeqNo: 2 %REC 93.3 98.8 89.3 99.6 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 | 8260B: VOL Units: mg/# HighLimit 118 119 115 126 | \$g %RPD 1.30 2.28 1.32 0.357 | 20 20 20 24.8 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) | I SampT Batcl Analysis E Result 0.92 0.98 0.88 1.0 0.82 | h ID: 48 Date: 11 PQL 0.049 0.049 0.049 0.049 | 50 51 27/2012 SPK value 0.9891 0.9891 0.9891 0.9891 | F SPK Ref Val 0 0 0 0.01122 | tCode: E RunNo: 7 SeqNo: 2 %REC 93.3 98.8 89.3 99.6 83.3 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 | 8260B: VOL Units: mg/# HighLimit 118 119 115 126 115 | (g <u>%RPD</u> 1.30 2.28 1.32 0.357 1.99 | 20 20 20 24.8 20 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 | I SampT Batcl Analysis E Result 0.92 0.98 0.88 1.0 0.82 0.47 | h ID: 48 Date: 11 PQL 0.049 0.049 0.049 0.049 | 50 51 2/21/2012 5PK value 0.9891 0.9891 0.9891 0.9891 0.4946 | F SPK Ref Val 0 0 0 0.01122 | tCode: E RunNo: 7 SeqNo: 2 %REC 93.3 98.8 89.3 99.6 83.3 95.9 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 | 8260B: VOL Units: mg/F HighLimit 118 119 115 126 115 130 | (g <u>%RPD</u> 1.30 2.28 1.32 0.357 1.99 0 | 20 20 24.8 20 0 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene | I SampT Batcl Analysis E 0.92 0.98 0.88 1.0 0.82 0.47 0.41 | h ID: 48 Date: 11 PQL 0.049 0.049 0.049 0.049 | 50 51 51 57 59 59 50 50 50 50 50 50 50 50 50 50 50 50 50 | F SPK Ref Val 0 0 0 0.01122 | tCode: E RunNo: 7 SeqNo: 2 93.3 98.8 89.3 99.6 83.3 95.9 83.4 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 70 70 | 8260B: VOL Units: mg/F HighLimit 118 119 115 126 115 130 130 | (g <u>%RPD</u> 1.30 2.28 1.32 0.357 1.99 0 0 0 | 20 20 24.8 20 0 0 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane | I Samp Batcl Analysis E Result 0.92 0.98 0.88 1.0 0.82 0.47 0.41 0.48 0.51 | h ID: 48 Date: 11 PQL 0.049 0.049 0.049 0.049 | 50 51 51 57 59 59 50 50 50 50 50 50 50 50 50 50 50 50 50 | F S SPK Ref Val 0 0 0 0.01122 0 | tCode: E RunNo: 7 SeqNo: 2 %REC 93.3 98.8 89.3 99.6 83.3 95.9 83.4 96.6 104 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 70 70 70 70 70 70 | 8260B: VOL Units: mg/k HighLimit 118 119 115 126 115 130 130 130 | (g 1.30 2.28 1.32 0.357 1.99 0 0 0 0 0 0 0 0 | 20 20 24.8 20 0 0 0 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 | I SampT Batcl Analysis E Result 0.92 0.98 0.88 1.0 0.82 0.47 0.41 0.48 0.51 | h ID: 483 Date: 11 PQL 0.049 0.049 0.049 0.049 0.049 | 50 51 1/21/2012 SPK value 0.9891 0.9891 0.9891 0.9891 0.4946 0.4946 0.4946 0.4946 0.4946 | F S SPK Ref Val 0 0 0.01122 0 Tes | tCode: E RunNo: 7 SeqNo: 2 %REC 93.3 98.8 89.3 99.6 83.3 95.9 83.4 96.6 104 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 70 70 70 70 70 | 8260B: VOL Units: mg/F HighLimit 118 119 115 126 115 130 130 130 130 | (g 1.30 2.28 1.32 0.357 1.99 0 0 0 0 0 0 0 0 | 20 20 24.8 20 0 0 0 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 | I SampT Batcl Analysis E Result 0.92 0.98 0.88 1.0 0.82 0.47 0.41 0.48 0.51 | h ID: 48: Date: 11 PQL 0.049 0.049 0.049 0.049 0.049 0.049 0.049 | 50 51 51 51 59K value 0.9891 0.9891 0.9891 0.9891 0.4946 0.4946 0.4946 0.4946 0.4946 8LK 81 | F S SPK Ref Val 0 0 0.01122 0 0 Tes: F | tCode: E RunNo: 7 SeqNo: 2 93.3 98.8 89.3 99.6 83.3 95.9 83.4 96.6 104 tCode: E | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 70 70 70 70 70 70 70 | 8260B: VOL Units: mg/F HighLimit 118 119 115 126 115 130 130 130 130 | % RPD 1.30 2.28 1.32 0.357 1.99 0 0 0 0 0 0 0 0 0 0 0 0 0 | 20 20 24.8 20 0 0 0 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID mb-4881 Client ID: PBS | I Samp Batcl Analysis E Result 0.92 0.98 0.88 1.0 0.82 0.47 0.41 0.48 0.51 Samp Batcl | h ID: 48: Date: 11 PQL 0.049 0.049 0.049 0.049 0.049 0.049 0.049 | 5D 51 1/21/2012 SPK value 0.9891 0.9891 0.9891 0.9891 0.9891 0.4946 0.4946 0.4946 0.4946 81 K 81 | F S SPK Ref Val 0 0 0.01122 0 0 Tes: F | tCode: E RunNo: 7 SeqNo: 2 93.3 98.8 89.3 99.6 83.3 95.9 83.4 96.6 104 tCode: E RunNo: 7 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 70 70 70 70 70 70 70 | 8260B: VOL Units: mg/F HighLimit 118 119 115 126 115 130 130 130 130 130 | % RPD 1.30 2.28 1.32 0.357 1.99 0 0 0 0 0 0 0 0 0 0 0 0 0 | 20 20 24.8 20 0 0 0 | Qual |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 4-Bromofluorobenzene Surr: Dibromofluoromethane Surr: Toluene-d8 Sample ID mb-4881 Client ID: PBS Prep Date: 11/19/2012 | I Samp1 Batcl Analysis I Result 0.92 0.98 0.88 1.0 0.82 0.47 0.41 0.48 0.51 Samp1 Batcl Analysis I | h ID: 48: Date: 11 PQL 0.049 0.049 0.049 0.049 0.049 0.049 | 5D 51 1/21/2012 SPK value 0.9891 0.9891 0.9891 0.9891 0.9891 0.4946 0.4946 0.4946 0.4946 81 K 81 | F S SPK Ref Val 0 0 0.01122 0 Tes F S | tCode: E RunNo: 7 SeqNo: 2 93.3 98.8 89.3 99.6 83.3 95.9 83.4 96.6 104 tCode: E RunNo: 7 SeqNo: 2 | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 70 70 70 70 70 PA Method 060 04640 | 8260B: VOL Units: mg/F HighLimit 118 119 115 126 115 130 130 130 130 130 130 Units: %RE | (g %RPD 1.30 2.28 1.32 0.357 1.99 0 0 0 0 0 0 0 ATILES | 20 20 24.8 20 0 0 0 0 | |
| Sample ID 1211653-002amsd Client ID: BG Composite Prep Date: 11/15/2012 Analyte Benzene Toluene Chlorobenzene 1,1-Dichloroethene Trichloroethene (TCE) Surr: 1,2-Dichloroethane-d4 Surr: 1,2-Dichloroethane Surr: Toluene-d8 Sample ID Mb-4881 Client ID: PBS Prep Date: Prep Date: 11/19/2012 Analyte 11/19/2012 | I Samp1 Batcl Analysis I Result 0.92 0.98 0.88 1.0 0.82 0.47 0.41 0.48 0.51 Samp1 Batcl Analysis I Result | h ID: 48: Date: 11 PQL 0.049 0.049 0.049 0.049 0.049 0.049 | 50 51 51 57 57 57 57 57 57 57 57 57 57 57 57 57 | F S SPK Ref Val 0 0 0.01122 0 Tes F S | tCode: E RunNo: 7 SeqNo: 2 93.3 98.8 89.3 99.6 83.3 95.9 83.4 96.6 104 tCode: E RunNo: 7 SeqNo: 2 %REC | PA Method 060 04639 LowLimit 80.9 69.5 75.7 68.6 68.7 70 70 70 70 70 PA Method 060 04640 LowLimit | 8260B: VOL Units: mg// HighLimit 118 119 115 126 115 130 130 130 130 8260B: VOL Units: %RE HighLimit | (g %RPD 1.30 2.28 1.32 0.357 1.99 0 0 0 0 0 0 0 ATILES | 20 20 24.8 20 0 0 0 0 | |

Qualifiers:

Surr: Toluene-d8

* Value exceeds Maximum Contaminant Level.

0.46

0.51

0.5000

0.5000

E Value above quantitation range

Surr: Dibromofluoromethane

- J Analyte detected below quantitation limits
- P Sample pH greater than 2

B Analyte detected in the associated Method Blank

70

70

130

130

- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
 - R RPD outside accepted recovery limits

92.1

103

Page 11 of 12

WO#: 1211653

Client:R.T. Hicks Consultants, LTDProject:XTO Energy Nash Unit 29

-

| Sample ID Ics-4881 | SampT | ype: LC | s | Tes | tCode: El | PA Method | 8260B: VOL | ATILES | | |
|-----------------------------|------------|----------|-----------|-------------|-----------|-----------|------------|--------|----------|------|
| Client ID: LCSS | Batch | n ID: 48 | 81 | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/19/2012 | Analysis D | ate: 1 | 1/21/2012 | S | SeqNo: 2 | 04641 | Units: %RE | С | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.5000 | | 94.6 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.45 | | 0.5000 | | 89.1 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.46 | | 0.5000 | | 92.8 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.53 | | 0.5000 | | 106 | 70 | 130 | | | |

WO#: 1211653

29-Nov-12

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits

| HALL Environmental Analysis Laboratory | Alb TEL: 505-345-397. | I Analysis Laboratory 4901 Hawkins NE nuquerque, NM 87105 5 FAX: 505-345-410; allenvironmental.con | ample Log-In Check List |
|---|--|--|--|
| Client Name: RT HICKS | | Work Order Number: 121 | 1653 |
| Received by/date: MG- 111 | 14/12- | | |
| Logged By: Anne Thorne | 11/14/2012 10:50:00 / | | Kun |
| Completed By: Anne Thome | 11/19/2012 | Ame 2 | K |
| Reviewed By: | 9/12 | | |
| Chain of Custody | | | |
| 1. Were seals intact? | | Yes 🗌 No 🛄 I | Not Present 🗹 |
| 2. Is Chain of Custody complete? | | Yes 🗹 No 🗌 I | Not Present |
| 3. How was the sample delivered? | | Client | |
| Log in | | | |
| 4. Coolers are present? (see 19. for coo | ler specific information) | Yes 🗌 No 🗍 | NA 🗹 |
| 5. Was an attempt made to cool the sar | nples? | Yes 🗹 No 🗌 | NA 🗔 |
| 6. Were all samples received at a temp | erature of >0° C to 6.0°C | Yes 🗹 No 🗌 | |
| 7. Sample(s) in proper container(s)? | | Yes 🗹 No 🗌 | |
| 8. Sufficient sample volume for indicated | d test(s)? | Yes 🗹 No 🗔 | |
| 9. Are samples (except VOA and ONG) | properly preserved? | Yes 🗹 No 🗌 | |
| 10. Was preservative added to bottles? | | Yes 🗌 No 🗹 | NA 🗆 |
| 11. VOA vials have zero headspace? | | Yes 🗌 No 🗌 No | VOA Vials 🗹 |
| 12, Were any sample containers received | l broken? | Yes 🗆 No 🗹 | |
| Does paperwork match bottle labels? (Note discrepancies on chain of custo | xdy) | Yes 🗹 No 🗌 | # of preserved bottles checked for pH: |
| 14, Are matrices correctly identified on C | hain of Custody? | Yes 🗹 No 🗌 | (<2 or >12 unless noted) |
| 15. Is it clear what analyses were request | ted? | Yes 🗹 No 🗌 | Adjusted? |
| 16. Were all holding times able to be met (If no, notify customer for authorizatio) | | Yes 🗹 No 🗌 | Checked by: |
| Special Handling (if applicable) | | | |
| 17. Was client notified of all discrepancie | s with this order? | Yes 🗌 No 🗌 | NA 🗹 |
| Person Notified: | Date | | _ |
| By Whom: | Via: | 🗌 eMail 🔲 Phone 🗌 | Fax 🔲 In Person |
| Regarding: | an a | The second s | |
| Client Instructions: | | | |

18. Additional remarks:

19. Cooler Information

| Cooler No | Temp °C | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|-----------|---------|-----------|-------------|---------|-----------|-----------|
| 1 | 1.0 | Good | Not Present | | | |

| Mailing Address: Aniling Address: Aniling Address: Phone #: 505. 36.6. 5004 email or Fax#: Andreu @ C4hic QA/OC Package: CANOC Package: CANOP CANOP |
|--|
| Matrix |
| Imail of rax#: $\Delta A = \Delta P$ I Level 4 (Full Valid Acreditation $\Delta A = \Delta P$ I Level 4 (Full Valid Acreditation $\Delta Ccreditation$ I Level 4 (Full Valid Acreditation $\Delta Ccreditation$ I cother |



February 18, 2013

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

RE: XTO NASH UNIT 29

Enclosed are the results of analyses for samples received by the laboratory on 02/13/13 7:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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 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.

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,

Celez D. Keene

Celey D. Keene Lab Director/Quality Manager



Analytical Results For:

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

| Received: | 02/13/2013 | Sampling Date: | 02/11/2013 |
|-------------------|-------------------------------|---------------------|---------------|
| Reported: | 02/18/2013 | Sampling Type: | Soil |
| Project Name: | XTO NASH UNIT 29 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Jodi Henson |
| Project Location: | UNIT 'J', SEC. 13, T23S, R29E | | |

Sample ID: SAMPLE TRENCH @ 2' BGS (H300404-01)

| Chloride, SM4500Cl-B | mg, | /kg | Analyzed By: DW | | | | | | |
|----------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|-------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 3480 | 16.0 | 02/18/2013 | ND | 448 | 112 | 400 | 0.00 | |
| Conductivity 120.1 | uS/ | cm | Analyzed By: DW | | | | | | |
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Conductivity* | 8010 | 1.00 | 02/15/2013 | | 476 | 95.2 | 500 | 0.752 | |

Sample ID: SAMPLE TRENCH @ 4' BGS (H300404-02)

| Chloride, SM4500Cl-B | mg, | /kg | Analyze | d By: DW | | | | | |
|----------------------|--------|-----------------|------------|-----------------|-----|------------|---------------|-------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 2120 | 16.0 | 02/18/2013 | ND | 416 | 104 | 400 | 3.77 | |
| Conductivity 120.1 | uS/ | uS/cm | | Analyzed By: DW | | | | | |
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Conductivity* | 6020 | 1.00 | 02/15/2013 | | 476 | 95.2 | 500 | 0.752 | |

Sample ID: SAMPLE TRENCH @ 6' BGS (H300404-03)

| Chloride, SM4500Cl-B | mg, | /kg | Analyzed By: DW | | | | | | |
|----------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|-------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 2000 | 16.0 | 02/18/2013 | ND | 416 | 104 | 400 | 3.77 | |
| Conductivity 120.1 | uS/cm | | Analyzed By: DW | | | | | | |
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Conductivity* | 7050 | 1.00 | 02/15/2013 | | 476 | 95.2 | 500 | 0.752 | |

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's lability and client's exclusive remedy for any daim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidential or consequential damages, including, wethout 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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg & Kune

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 SM4500CI-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 |

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, webout limitation, busiess 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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the sample service in All with written approval of Cardinal Euboratories.

Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



A Dres

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Mariand, Hobbs, NM 88240 (576) 393-2326 FAX (576) 393-2476

| Company Nam | | and the second state of the second stat | - 2 | Lot' Gene |
|---|---|---|--|-----------|
| | K. I. HICKS Consultants | BEE.C. | ANALYSIS REQUEST | |
| Project Manage | Project Manager: Andrw Packer | P.O.# | | |
| Address: | | Company: R. T. HICKS | | |
| lony: | State; Zip: | Âth. | | |
| Phone #: | Fax #: | Address: | | |
| Project # | Project Owner: Murchison | city: | | |
| Project Name: | XTO Nash Unit 39 | State: Zip; | | |
| Project Locatio | Project Location: Unit 'J', Sec. (3, T235, R29E | ¥ | | |
| Sampler Name | Kristin Pone | Fax #: | | |
| FOR LABUISE CHRY | WATRIX | PRESERV SAMPLING | | |
| Lab I.D | Ratawi Rataw | 9E: | | |
| #21w dia | PAR(E PAR(E PAR(E PAR(E) PAR(E) | стр/век 2 / ссо 7 / ссо 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 |)3 77 | |
| 1 000 | Sample trench @ 3' Bas X 1 X | 0 A ¥ 0 ₩ E | | |
| T | - | | | 5 |
| Y | Sample trinch @ 6 'Bas X 11 X | 0356 | ××× | |
| | | | | |
| - - - - | | | | |
| 1 | | | | |
| ۵. این | | | A constraint of the second sec | 1 |
| | | | | 1 |
| PLEASE NOTE: LOOKY MOVICE AN CLANS INCLU | EDSE for the statement of the stateme | andromentionenen innensitarund annun Russens annonen angluenna eta monetariadaen Domanet artisat eta al de Andria da Bra zenonti pade Dy She elecen (1914) Utitat artis fettas editat Cantaria artisti 33.4 Suo mine azarmatean artista ar | ersen fressensette for erste sid strandom fungtionersense for sense for a sense of the sense of | ٦ |
| service. In no eventshall address of suppressers are | service. In no event shall Cardinal the hadio for incidental or nonconcentration and use of about the indicate large in the indicate of the second system is national and a substances of about the second system is national system. As the dame the second system is national system is national system is national system and system is national system. As the second system is national system is national system is national system is national system. As the second system is national system. As the second system is national system. As the second system is national system is national system is national system is national system. As the second system is national system is national system is national system is national system. As the second system is national system is national system is national system. The | brui fredadari, businese otternajteos, kuz od soc. oz ios of podra onarod ty cierti. A varba io nov. izvarditen of tetriferenti cienti ja hacen tigata ette dite a bozo varba di podravita ja atterato. | | |
| Reimquished E | 3y: Date: Received By: | | II: D Yes D No Aud'l Phone #: Ves D No Add'Esty #: | |
| Kanin Pape | Time: 670.01 | REMARKS: | | ł |
| Reinquished E | | | | |
| Delivered By | Delivered By: (Circle One) Sample Condition | CHECKED BY: | andrew & thicks censult . cem | |
| Sampler - UPS | Sampler - UPS - Bus - Other: | | kristin @ " | |
| † Cardina | t Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326 | 530 | トン ₍ | age |
| | | | | |

Page 4 of 4

R. T. HICKS CONSULTANTS, LTD.

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

December 5, 2013

Mr. Mike Bratcher NMOCD District 2 811 South First Street Artesia, New Mexico 88210

RE: Nash Draw #29 modular impoundment final spill report. API No: 30-015-29434 2RP-1674

Mr. Bratcher:

R.T. Hicks Consultants is pleased to submit the enclosed Form C-141 "Release Notification and Correction Action" final report on the behalf of XTO Energy.

On September 23 - 27th, 2013; we performed reclamation activities in accordance with our remediation plan outline in the March 15 report. The remediation plan states:

XTO Energy proposes to excavate and dispose of the western third (30%) of the caliche pad that was in contact with the modular impoundment. The 30% area includes the release area and out beyond to the edge of the caliche pad. Plate 2 identifies the area proposed for remediation. The excavated material will be transported to R360 or equivalent for proper disposal.

The remediated area will be contoured and seeded using BLM Seed Mixture Type 4 with Giant Sacaton seed added to the mixture. The excavated area is also subject to BLM's interim reclamation plan.

Appendix A contains the C-141 Initial Report, dated March 15, 2013; which includes our remediation plan. Appendix B is a discussion on sampling and analysis during remedial activites. Appendix C contains the laboratory Certificate of Analysis. Photo documentation of remedial activities is located in Appendix D.

If you have any questions please contact me at 970-570-9535.

Sincerely, R.T. Hicks Consultants Durango Field Office

Andrew Parker

Cc: David Luna, XTO Energy, via email

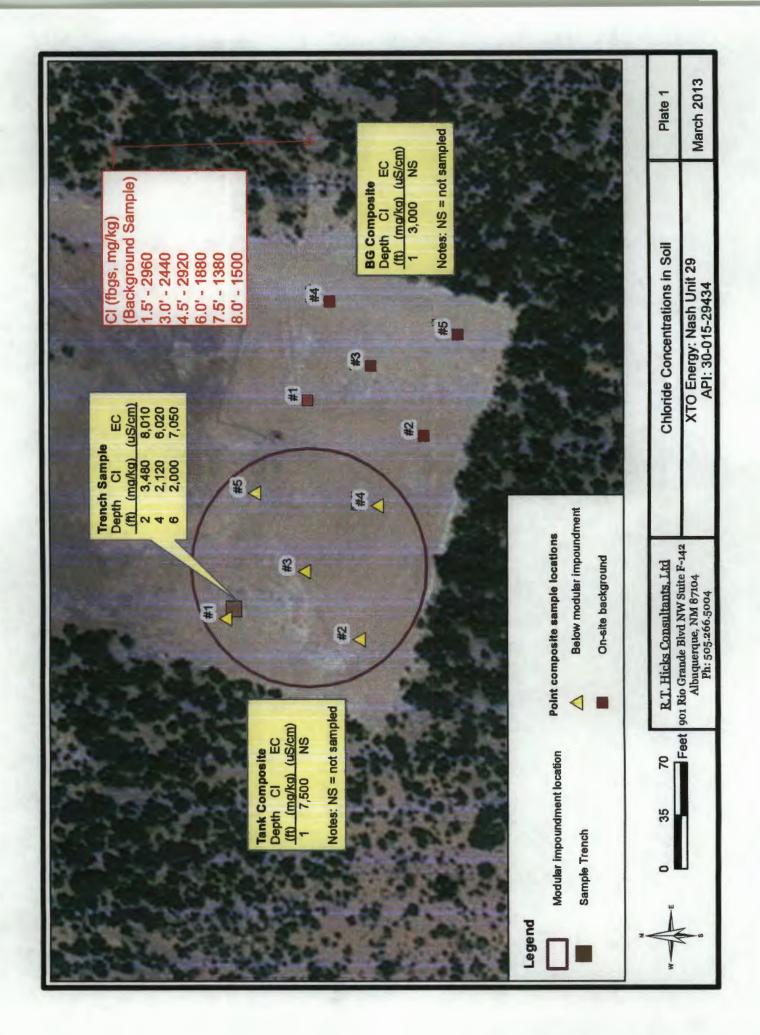
| | | | | | | | Π | RECEIV | ED / | NE |
|--|--|------------------|------------------|-------------------------------|------------|---------------------------------------|----------------------------|--|--|------------------------------------|
| District I | | | | | | • • • • • • • • • • • • • • • • • • • | 1 | DEC 09 20 | ſ | |
| 1625 N. Free District II | ich Dr., Hobbe | NM 88240 | | | - | f New Mex | al Resources | | 13 | Form C-14 Revised August 8, 201 |
| 811 S. First S District III | SL, Artesis, NI | M 88210 | | | | | I NI | MOCD ART | esial | riate District Office i |
| | izos Road, Azt | toc, NM 87410 | | | | rvation Di h St. Fran | | 8 | | with 19.15.29 NMAC |
| | rancis Dr., Sar | nta Fe, NM 8750 | ឋ | | | c, NM 87 | | | • | - |
| | 10 499- 498 a 494 a | | Rel | ease Notifi | catio | n and C | orrective A | Action | an an an the side of the second s | |
| nMLB14 | | | | | | OPERA | TOR | 🚺 Initi | al Report | X Final Repo |
| | | TO Energ | | JJ380 Hidland TX, 7 | 0701 | Contect | David L | | • | |
| the second s | and the second | Draw #2 | | | ·9/01 | | | | r modula | r impoundment |
| Surface O | wner BL | N | | Mineral (| Dwner | | | • • • | | 5-29434 |
| | ـــــــــــــــــــــــــــــــــــــ | • | | ĽÓC | ATIO | N OF RE | LEASE | | | |
| Unit Letter | Section | Township | Range | Feet from the | _ | South Line | Feet from the | East/West Line | County | · · · · |
| J | ^ე 13 | 238 | 29E | 1980 | | South | 2310 | East | Eddy | • |
| | 1 013 | ······ | La | titude N. 32.30 | 322 | Longitud | . W. 103.9371 | 9 | | |
| | ω | • | | | | OF RELI | | · . | | |
| | | | | roduced water | | Volume of | Release | Volume R | | |
| Source of R Was Immed | iste Notice (| | <u>ument - v</u> | vestern edge | | IFYES, To | our of Occurrence Whom? | Date and | Hour of Dis | covery 08/27/2012 |
| | | | Yes 🛛 | No 🔲 Not Re | quired | | NA | | •• | |
| By Whom? Was a Water | NA rcourse Reac | hed? | | | | Date and He If YES, Vol | ume Impacting t | he Watercourse. | | |
| | | | Yes 🛛 | No | | | NA | | | |
| If a Waterco | urse was Imp | ected, Descril | e Fully.* | | | | | | | |
| | N | A . | | | | | | | | |
| | | | | | | | | | | |
| | | m and Remedi | | | l thủ tank | aliza the work | na adati mianataa a | oproximistoly 3 barralo | | ndrinnal užstač. |
| Mr. Randy Grec | on of XTO Ener | yy mobilized wai | ier heul truc | is to the site and lov | vered the | weter level to p | rovent furthor leaks | go and reattached the | liner to the to | p of the tenk. The |
| | | | | | wes stim | Aution. Soli sam | pling was conducte | d per C-144 closure re | quirementa. | |
| | | nd Cleanup Ac | | n.* • ped, adjacent to the | sindom e | impoundment. | The area of Impact | W03 | | • |
| | | | | | | | | Impoundment along the | | allos burnelli consult |
| ubmitted on Ma | rch 15, 2018 (F | telecco ID: 2RP | 1674). Ap | pondix B discussion | rémediai i | octivitoo. | | | | |
| egulations all | operators an | e required to r | eport and/ | or file certain rele | ese noti | fications and | perform correctiv | erstand that pursue we actions for releas | es which m | ov endenger |
| ublic beath c | or the environ | ment. The ac | ceptonce (| of a C-141 report | by the N | MOCD mark | ed as "Final Rep | ort" does not reliev t to ground water, s | e the operat | or of liability |
| r the environs | ment. In add | ition, NMOCI | acceptar | ce of a C-141 rep | ort doe | not relieve th | e operator of res | ponsibility for com | pliance with | h any other |
| | | | - 1 | | T | · | OIL CONSE | ERVATION D | IVISION | |
| ignature: | | on | | Ken | | | Signed By | Mile Bran | Mit- | _ |
| rinted Name: | David t und | | | | Ap | proved by Env | vironmental Spec | ialist: | | |
| | | - | | | 1 | IAI | 1 4 2014 | | 2/1 | |
| itle: Operal | | | · · · · | | | roval Date: | ./ . | Expiration Date | | |
| Address | r: David_Lu | una@xtoene | gy.com | | - Con | ditions of Ap | proval: NH | 7 - // | \ttached | ן ני |
| ate: 12/05 | | | hone: 43 | 2-620-6742 | | | 17 | Inal | | |
| tach Additio | nal Sheets I | I Necessary | | | | | | | RA-/ | Init |
| | | ŝ | | | | | | | | ΨIT |
| | | | | | | | | | | |
| | | | | - | | | | | | |
| | · · · · · · | | | | | | | | | |

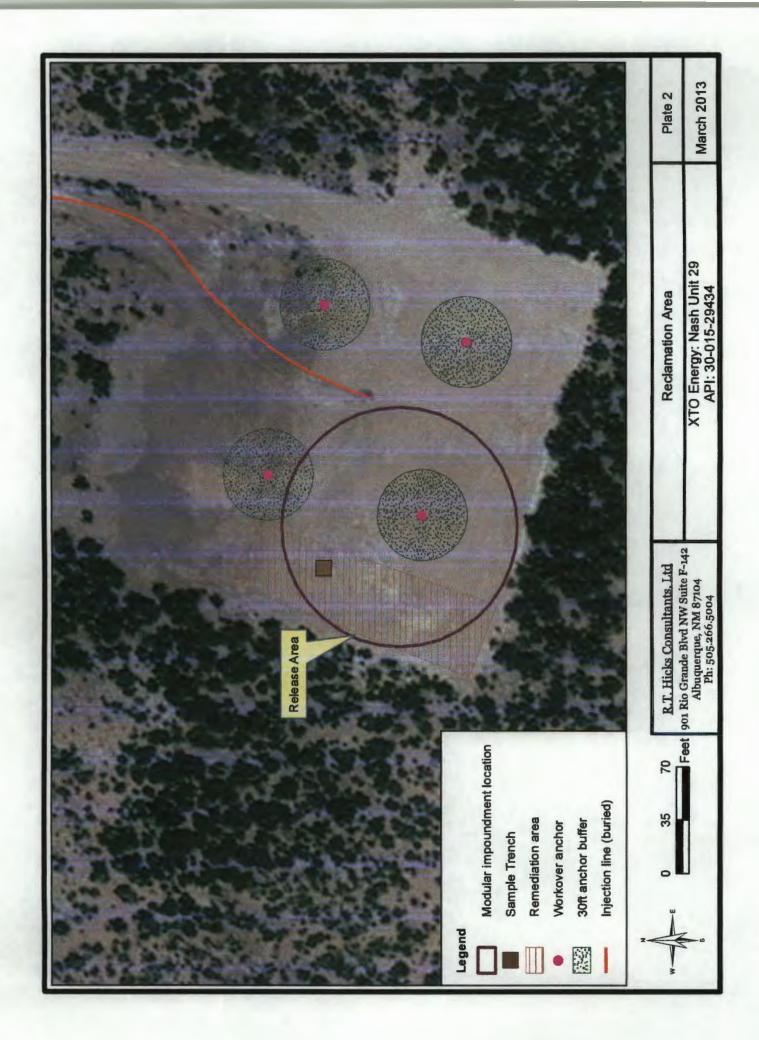
ļ

Plates

R.T. Hicks Consultants, Ltd.

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





Appendix A C-141 Initial Report

R.T. Hicks Consultants, Ltd.

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

R. T. HICKS CONSULTANTS, LTD.

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

March 15, 2013

Mr. Mike Bratcher NMOCD District 2 811 South First Street Artesia, New Mexico 88210 Mr. Brad Jones NMOCD 1220 S. St. Francis Drive Santa Fe, NM

RE: Nash Draw Unit #29 modular impoundment spill report. API No: 30-015-29434

Dear Sirs:

R.T. Hicks Consultants is pleased to submit the enclosed Form C-141 Release Notification and Correction Action on the behalf of XTO Energy.

The release from the modular impoundment was brought to our attention during the submittal of the C-144 Closure Report submitted to Mr. Bratcher, via email, on December 17, 2012.

We will revise the C-144 closure report to include results of the remediation plan that is the subject of this spill report. Included in the revision, per request of Mr. Jones, will be the inclusion of the entire C-144 permit application and correction to applicable dates and signatures.

We will submit the report to Mr. Jones with a copy to Mr. Bratcher. Both submittals will be delivered via certified mail/return receipt.

If you have any questions please contact me at 970-570-9535.

Sincerely, R.T. Hicks Consultants Durango Field Office

Andrew Parker

Cc: David Luna, XTO Energy, via email Jennifer Van Curen, BLM - Carlsbad Field Office, via certified mail/return receipt

| | | | | | | | RE | CEIVE |) |
|--|---|---|---|--|--|--|--|---|--|
| | | | | | | | MA | AR 25 2013 | |
| District I 1625 N. Frencl District II | | | | Si Energy Mi | ate of inerals | New Mex and Natura | tico NMO | CD ARTES | Form C-1 Revised August 8, 2 |
| 811 S. First SL District III | | NM 87410 | | | | | | Submit I Cop | y to appropriate District Offic |
| District IV | | a Fe, NM 8750 | 5 | | | 1 St. Franc | | | |
| | | | | ease Notifi | غناقب عداد | s, NM 875 | | ction | بمشاري فنقائه بإيناني فكريني كالتريب كالكريب |
| nMLB14 | nulan | 201 | KÇI | | LALIUI | OPERA' | | | al Report 🔲 Final Re |
| | | TO Energy, Ir | ic | | | Contact D | avid Luna | | |
| Address 20 Facility Na | | a, Suite 800 N | ildiand, T) | K 79701 | | | No. 432-620-6742 | 2 ced water modular | Impoundment |
| Surface Ow | | ///// #23 | | Mineral C | | | | | |
| C SULLING ON | ner BLM | | | | | | | | <u>). 30-015-29434</u> |
| Unit Letter | Section | Township | Range | Feet from the | _ | OF RE | Feet from the | East/West Line | County |
| L | 13 | 235 | 29E | 1980 | 1 | DUTH | 2310 | EAST | EDDY |
| | I | | I.a | titude N 32.3032 | 2 | Longitud | e W 103.93719 | L | |
| • | | | | | | OF RELI | | | |
| | | and non-treat | | ad water | UNE | Volume of | Reicase < 5 bbis | And a second distance of the second | lecovered None |
| Source of Re Was Immedia | | lular Impoundr Biven? | nent - wee | siem edge | | Date and H If YES, To | our of Occurrence Whom? | e 8/27/12 Date and | Hour of Discovery 8/27/12 |
| | | | Yes 🗶 | No 🗌 Not Re | quired | | N | ۱۸ | |
| By Whom? N Was a Watero | | hed? | x | | | Date and H If YES, Vo | our NA lume Impacting th | he Watercourse. | |
| | | | Yes 🗶 | No | | NA | | | |
| | | | | | | | | | |
| If a Watercou | rse was Imp | pacted, Descri | be Fully.* | | | | | | ······ |
| If a Watercou | rse was Imp NA | pacted, Descri | be Fully.* | | | | | | . <u></u> |
| | NA | ÷ | | | | | · · · · · · · · · · · · · · · · · · · | | |
| Describe Caus On August 27th, | NA ic of Proble 2012 the mo | m and Remed dular Impoundm | ial Action ant finar de | Taken.* | | along the west | | | s of treated produced wster. |
| Describe Caus On August 27th, Mr. Randy Greet water was transf | NA ic of Proble 2012 the mo n of XTO Ene arred to Nash | m and Remed dular Impoundm ngy mabilized wa Draw 49 H and | ial Action ant finar de ster haut tru | Taken.* lacked from the top o icks to the site and to | wered the | along the west water layel to | prevent further leaks | | liner to the top of the tank. The |
| Describe Caus On August 27th, Mr. Randy Gree | NA ic of Proble 2012 the mo n of XTO Ene amed to Nash case a remed | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and letion plan. | ial Action ant linar de star haut tru Neah Draw | Takces.* lacked from the top o icks to the alte and to i Unit # 57 H. Soil ser | wered the | along the west water layel to | prevent further leaks | ige and reattached the | liner to the top of the tank. The |
| Describe Caus On August 27th, Mr. Randy Gree water was transf results and prop Describe Area The release aff | NA ic of Proble 2012 the mo of XTO Ene amed to Nash asses a remed Affected as acted the so | m and Remed dular Impoundm rgy mabilized wi Draw 49 H and lation plan. nd Cleanup Ad nuthwest come | ial Action ant linar de star haut tru Nach Draw ction Take ar of the pi | Taken.* lacked from the top o cks to the site and to chill # 57 H. Soil se chil.* roduction pad, adja | wered the mpling wa scent to (| along the west water lavel to a conducted pe | prevent further leake r C-144 ciceure requ mpoundment. The | uge and reatlached the ulterments. The attach 9 area of impact we | a liner to the top of the tank. The ad document presents the samplin |
| Describe Caus On August 27th, Mr. Randy Gree water was transf results and prop Describe Area The release aff approximately of the productio | NA se of Proble 2012 the mo- n of XTO Ene amed to Nash asses a remed Affected as acted the so 15 X15 squa n pad; beyo | m and Remed dular Impoundm gy mobilized wi Draw 49 H and letton plan. nd Clennup Ac nuthwest come are feet. No cl and the modula | ial Action ant line; de star haut tru Nash Draw ction Take ar of the pr samup act ar impound | Taken.* lacked from the top o icks to the site and to i Linit # 57 H. Soil ser en.* roduction pad, adja ion was taken due dment heavy meaq | wend the mpling wa scant to t to limite julta veg | along the west water lavel to a conducted pe he modulier is d access cau station exists | prevent further leaks or C-144 closure requ mpoundment. The sed by the location | ige and reatlached the utrements. The attach a area of impact we n of the modular im | a liner to the top of the tank. The ad document presents the samplin s poundment along the edge |
| Describe Caus On August 27th, Mr. Randy Gree water was transf results and prop Describe Area The release aff approximately of the productio I hereby certify | NA se of Proble 2012 the mo on of XTO Ene samed to Nash asses a remed Affected as acted the sc 15 X15 sque on pad; beyon y that the in | m and Remed dular Impoundm gy mobilized wi Draw 49 H and letton plan. nd Cleanup Ac nuthwest come are feet. No cl and the modula formation give | ial Action ant finer de star haut fru Nash Draw ction Take tr of the pr sanup act ar impound on above i | Taken.* lacked from the top o icks to the site and to i Linit # 57 H. Soil ser en.* roduction pad, adje ion was taken due dment heavy meaq is true and comple | wered the mpling wa acant to i to limite juite veg to the | along the west water lavel to a conducted per he modulier is d access cau station exists best of my k | prevent further leaks or C-144 closure required mpoundment. The sed by the location nowledge and unit | ige and reatlached the utrements. The attach e area of impact we n of the modular im derstand that pursu | a liner to the top of the tank. The ad document presents the samplin is poundment along the edge ant to NMOCD rules and |
| Describe Caus On August 27th, Mr. Randy Green water was transf results and prop Describe Area The release aff approximately of the productio I hereby certify regulations all public health o | NA 2012 the mo of XTO Ene arred to Nash see a remed Affected an acted the so is X15 squa n pad; bayo that the in operators an r the enviro | m and Remed dular Impoundm gy mabilized wi Draw 49 H and letion plan. Ind Cleanup Ac nuthwest come withwest come in feet. No cli- mid the modula formation givi re required to inment. The s | ial Action ent liner de ster haut tru Nash Draw ction Take tr of the pu semup act tr impound cn above i report and coepiance | Taken.* lacked from the top o icks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy masq is true and comple Vor file certain rek of a C-141 report | wered the mpling wa acant to i to limite pute veg to to the ense not : by the ? | along the west water lavel to a conducted pe he modular it d access cau etation exists best of my k flications and MOCD mar | prevent further leaks in C-144 closure required mpoundment. The sed by the location nowledge and unit l perform correcti ked as "Final Rec | uge and reatlached the drements. The attache e area of impact we n of the modular im derstand that pursu ve actions for relet port" does not relie | a liner to the top of the tank. The ad document presents the samplin is poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability |
| Describe Caus On August 27th, Mr. Randy Gree water was transf results and prop Describe Area The release aff approximately of the production I hereby certify public health o should their op or the environm | NA c of Proble 2012 the mo of XTO Ene amed to Nash asses a remed Affected an acted the so is X15 square pad; bayo that the in operators an r the enviro enations has agent. In add | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and betton plan. Ind Cleanup Ad- nuthwest come and the modular formation givi re required to mment. The p- re failed to ad- dition, NMOC | ial Action ant finer de lar heut tru Neeh Draw sanup act tr of the pr sanup act tr impound tr impound tr impound tr and traport and cceptance equately i D accepts | Taken.* lacked from the top o locks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy maso is true and comple Vor file certain rela- to fa C-141 report avestigate and con | wered the repling wa acant to f to limite pute veg to to the case not by the ? nediate c | along the west water lavel to a conducted per he modular is d access cau station exists best of my k flications and MOCD man ontamination | prevent further leaks in C-144 closure required mpoundment. The sed by the location nowledge and unit l perform correcti ked as "Final Rep in that pose a threa | uge and reatlached the drements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relet port" does not reliet to ground water. | a liner to the top of the tank. The ad document presents the samplin is poundment along the edge ant to NMOCD rules and uses which may endanger |
| Describe Caus On August 27th, Mr. Randy Green water was transf results and prop Describe Area The release aff approximately of the productio I hereby certif() recgulations all public health o should their op | NA c of Proble 2012 the mo of XTO Ene amed to Nash asses a remed Affected an acted the so is X15 square pad; bayo that the in operators an r the enviro enations has agent. In add | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and betton plan. Ind Cleanup Ad- nuthwest come and the modular formation givi re required to mment. The p- re failed to ad- dition, NMOC | ial Action ant finer de lar heut tru Neeh Draw sanup act tr of the pr sanup act tr impound tr impound tr impound tr and traport and cceptance equately i D accepts | Taken.* lacked from the top o locks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy maso is true and comple Vor file certain rela- to fa C-141 report avestigate and con | wered the repling wa acant to f to limite pute veg to to the case not by the ? nediate c | along the west water lavel to a conducted per he modular is d access cau station exists best of my k flications and MOCD man ontamination | prevent further leaks in C-144 closure requ mpoundment. The sed by the location nowledge and una l perform correcti ked as "Final Rep in that pose a threa the operator of re | uge and reatlached the drements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relet port" does not reliet to ground water. | a liner to the top of the tank. The ad document presents the samplin poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other |
| Describe Caus On August 27th, Mr. Randy Gree water was transf results and prop Describe Area The release aff approximately of the production I hereby certify public health o should their op or the environm | NA c of Proble 2012 the mo of XTO Ene amed to Nash asses a remed Affected an acted the so is X15 square pad; bayo that the in operators an r the enviro enations has agent. In add | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and betton plan. Ind Cleanup Ad- nuthwest come and the modular formation givi re required to mment. The p- re failed to ad- dition, NMOC | ial Action ant finer de lar heut tru Neeh Draw sanup act tr of the pr sanup act tr impound tr impound tr impound tr and traport and cceptance equately i D accepts | Taken.* lacked from the top o locks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy maso is true and comple Vor file certain rela- to fa C-141 report avestigate and con | wered the mpling wa accent to t to limite juits veg te to the ease not by the 1 nediate o part doe | along the west water lavel to a conducted per best conducted per elation exists best of my k fications and MOCD mar ontamination s not relieve | prevent further leaks ar C-144 closure requining mooundment. The sed by the location nowledge and unit perform correcti ked as "Final Rep in that pose a threa the operator of re: OIL CONS | sge and reattached the drements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relet port" does not relie to ground water, sponsibility for con ERVATION I | a liner to the top of the tank. The ad document presents the samplin poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other |
| Describe Caus On August 27th, Mr. Randy Gree water was transf results and prop Describe Area The release aff approximately of the productio I hereby certify regulations all public health o should their op or the environs federal, state, o | NA te of Proble 2012 the mo- n of XTO Ene- aned to Nash asses a remed Affected as acted the sc is X15 sque n pad; bayou y that the in- operators as r the enviro erations has act. In ada r local laws | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and betton plan. Ind Cleanup Ad- nuthwest come and the modular formation givi re required to mment. The p- re failed to ad- dition, NMOC | ial Action ant finer de lar heut tru Neeh Draw sanup act tr of the pr sanup act tr impound tr impound tr impound tr and traport and cceptance equately i D accepts | Taken.* lacked from the top o locks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy maso is true and comple Vor file certain rela- to fa C-141 report avestigate and con | wered the mpling wa accent to t to limite juits veg te to the ease not by the 1 nediate o part doe | along the west water lavel to a conducted per best conducted per elation exists best of my k fications and MOCD mar ontamination s not relieve | prevent further leaks or C-144 closure requires mooundment. The sed by the location between the location nowledge and unit l perform correcti- ked as "Final Rep that pose a threa- the operator of re- <u>OIL CONSI</u> Signed By | sge and reattached the drements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relet port" does not relie tt o ground water, sponsibility for con ERVATION I | a liner to the top of the tank. The ad document presents the samplin poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other |
| Describe Caus On August 27th, Mr. Randy Great water was transf results and prop Describe Area The release aff approximately 1 of the producilo I hereby certify regulations all public health o should their op or the environa federal, state, o Signature: | NA 2012 the mo of XTO Ene- aned to Nash asses a remed Affected an acted the so is X15 sque in pad; bayo r that the in operators an r the enviro erations have asset. In add r local laws Devid Lune | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and betton plan. Ind Cleanup Ad- nuthwest come and the modular formation givi re required to mment. The p- re failed to ad- dition, NMOC | ial Action ant finer de lar heut tru Neeh Draw sanup act tr of the pr sanup act tr impound tr impound tr impound tr and traport and cceptance equately i D accepts | Taken.* lacked from the top o locks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy maso is true and comple Vor file certain rela- to fa C-141 report avestigate and con | wend the mpling wa acant to t to limite juits veg te to the ease not by the ? neclate o port doe | along the west water lavel to a conducted pe best of may ke best o | prevent further leaks ar C-144 closure requining mooundment. The sed by the location nowledge and unit perform correcti ked as "Final Rep in that pose a threa the operator of re: OIL CONS | see and reattached the drements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relea bort" does not relie at to ground water, sponsibility for con ERVATION I MULL LA | a liner to the top of the tank. The ad document presents the samplin is poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other DIVISION |
| Describe Caus On August 27th, Mr. Randy Green water was transf results and prop Describe Area The release aff approximately of the production I hereby certify regulations all public health o should their op or the environme federal, state, o Signature: Printed Name: | NA re of Proble 2012 the mo- n of XTO Ene- amed to Nash asses a remed Affected an acted the so 15 X15 sque in pad; bayou i that the in- operators and r the environ erations hav- r i local lawa Devid Lune as Engineer | m and Remed dular Impoundm agy mobilized wi Draw 49 H and bitton plan. Ind Cleanup Ad- nuthwest come are fact. No clean formation give re required to a formation give re required to a fittion, NMOC and/or regula | ial Action ant fine des star haut in Nach Draw ction Take tron Take tron Take tron the pi sanup act tron the pi sanup act tron take tron | Taken.* lacked from the top o locks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy maso is true and comple Vor file certain rela- to fa C-141 report avestigate and con | Ap | along the west water lavel to a conducted per he moduler is d access cau station exists best of my k filications and MOCD mar ontamination s not relieve proved by En MA proval Date: | prevent further leaks ar C-144 closure requires mooundment. The sed by the location nowledge and unit beform correcti- ked as "Final Rep that pose a threa the operator of re: <u>OIL CONSI</u> Signed Bx Nutroimental Spect | sge and reattached the drements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relet port" does not relie tt o ground water, sponsibility for con ERVATION I | a liner to the top of the tank. The ad document presents the samplin is poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other DIVISION |
| Describe Caus On August 27th, Mr. Randy Green water was transf results and prop Describe Area The release aff approximately to at the production I hereby certify regulations all public health o should their op of the environm federal, state, o Signature: Printed Name: Citie: Operation | NA re of Proble 2012 the mo- n of XTO Ene- amed to Nash asses a remed Affected an acted the so 15 X15 sque in pad; bayou i that the in- operators and r the environ erations hav- r i local lawa Devid Lune as Engineer | m and Remed dular Impoundm agy mobilized wi Draw 49 H and bitton plan. Ind Cleanup Ad- nuthwest come are fact. No cli- and the modula formation give re required to a formation give re required to a fittion, NMOC and/or regula | ial Action ant finer de star haut fru Nash Draw ction Take tron Take tron Take tron the pro- senup act tron the pro- senup act tron the pro- senup act tron the pro- senup act tron take tron take t | Taken.* tacked from the top of tacked from the top of tacks to the site and to take to the site and top take to the site and top taken due taken du | Ap | along the west water lavel to a conducted per he modular is d access cau station exists best of my k fications and fications and MOCD mar ontamination s not relieve proved by En fit proved by En fit proval Date: aditions of A | prevent further leaks or C-144 closure requires mooundment. The sed by the location nowledge and unit beform correcti- ked as "Final Rep that pose a threa- the operator of re: <u>OIL CONSI</u> <u>Signed By</u> <u>Nurronmental Spect</u> <u>A 1 201</u> | age and reattached the dements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relet your" does not relie the oground water, sponsibility for con ERVATION I Chirist. | a liner to the top of the tank. The ad document presents the samplin is poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other DIVISION |
| Describe Caus On August 27th, Mr. Randy Green water was transf results and prop Describe Area The release aff approximately of the production I hereby certify regulations all public health o should their op or the environm federal, state, o Signature: Printed Name: I Title: Operation E-mail Address Date: | NA se of Proble 2012 the mo- and to Nash aread to Nash aread to Nash aread to Nash aread to Nash aread the sc 15 X15 sque operators are r the environer that the in operators are r the environer in add r local lawa David Lune s Engineer David_Lune | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and intion plan. Ind Cleanup Action and the modula formation give re required to ment. This a we failed to ad fittion, NMOC and/or regular fittion, NMOC and/or regular fittion, NMOC and/or regular fittion, NMOC and/or regular | ial Action ant finer de star hauf fru Nash Draw ction Take ar impound en above i report and coeptance equately i D accept tions. | Taken.* lacked from the top o locks to the alte and to unit # 57 H. Soil ser oduction pad, adja ion was taken due dment heavy maso is true and comple Vor file certain rela- to fa C-141 report avestigate and con | wend the mpling wa acent to t to limite juits veg te to the ease not by the ? nediate c port doe Ap Ap Co. | along the west water lavel to a conducted pe be modular is d access cau station exists best of my k fications and MOCD mar ontamination s not relieve proved by En <u>proved by En</u> <u>proval Date:</u> aditions of A | prevent further leaks r C-144 closure requires r C-144 closure requires nowledge and unit perform correcting r Correcting | age and reattached the dements. The attached is area of impact we n of the modular im derstand that pursu ve actions for relax vort" does not relies to ground water, sponsibility for cou ERVATION I Clotist. | a liner to the top of the tank. The ad document presents the samplin s poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other DIVISION |
| Describe Caus On August 27th, Mr. Randy Green water was transf results and prop Describe Area The release aff approximately to at the production I hereby certify regulations all public health o should their op of the environm federal, state, o Signature: Printed Name: Citie: Operation | NA se of Proble 2012 the mo- and to Nash aread to Nash aread to Nash aread to Nash aread to Nash aread the sc 15 X15 sque operators are r the environer that the in operators are r the environer in add r local lawa David Lune s Engineer David_Lune | m and Remed dular Impoundm ngy mobilized wi Draw 49 H and intion plan. Ind Cleanup Action and the modula formation give re required to ment. This a we failed to ad fittion, NMOC and/or regular fittion, NMOC and/or regular fittion, NMOC and/or regular fittion, NMOC and/or regular | ial Action ant finer de star hauf fru Nash Draw ction Take ar impound en above i report and coeptance equately i D accept tions. | Taken.* tacked from the top of tacked from the top of tacks to the site and to take to the site and top take to the site and top taken due taken du | App App App App App App App App | along the west water lavel to a conducted per the moduler is d access cau etation exists best of my k filtrations and JMOCD mar ontaminations is not relieve proved by En proved by En prov | prevent further leaks or C-144 closure requires mooundment. The sed by the location nowledge and unit beform correcti- ked as "Final Rep that pose a threa- the operator of re: <u>OIL CONSI</u> <u>Signed By</u> <u>Nuironmental Spect</u> <u>A 1 201</u> | age and reattached the dements. The attached e area of impact we n of the modular im derstand that pursu ve actions for relax your" does not relie to ground water, sponsibility for course ERVATION I MAN: | a liner to the top of the tank. The ad document presents the samplin s poundment along the edge ant to NMOCD rules and uses which may endanger ve the operator of liability surface water, human health mpliance with any other DIVISION |

Soil Chemistry

On November 13, 2012, Hicks Consultants collected two 5-point soil samples on location for closure of the modular impoundment employed for hydraulic fracturing of five wells in 2012. On February 11, 2013 Hicks Consultants performed additional characterization to determine the vertical extent of chloride in soil near the western edge of the former modular impoundment, near the area of the reported release.

The location and chloride chemistry of the samples are presented on Plate 1. The chemistry is summarized in Table 1, below. Table 2 shows the lithology of the "Trench Sample". The laboratory certificate of analysis is attached.

The point samples for the Tank Composite and BG Composite were collected approximately two inches below the caliche pad/soil interface at a depth of approximately 1-foot. The Trench Sample consisted of discrete samples at 2, 4, and 6 foot depths.

| Sample ID | Date | Depth | Chloride | EC | Benzene | BTEX | трн | GRO/DRO |
|-------------------------|------------|-------|-------------------|-------|-------------------|-------|-------|---------|
| | | (ft) | mg/kg | uS/cm | mg/kg | mg/kg | mg/kg | mg/kg |
| NMAC 19.15.17.13.B(1).b | | | 500 or background | | 0.2 | 50 | 2,500 | 500 |
| Tank Composite | 11/13/2012 | 1 | 7,500 | NS | <0.49 | ND | <20 | <10 |
| BG Composite | 11/13/2012 | 1 | 3,000 | NS | <0.4 9 | ND | <20 | <10 |
| Trench Sample | 2/11/2013 | 2 | 3,480 | 8,010 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 4 | 2,120 | 3,020 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 6 | 2,000 | 7,050 | NS | NS | NS | NS |

Figure 1: Summary of soil chemistry

F

Notes

1. ND = non-detect

2 NS = not sampled

Figure 2: Lithology of Trench Sample

| Depth (ft) | Description |
|------------|--|
| 0-1 | Caliche pad |
| 1 - 4 | Top soil (loamy sand), dark brown, moist |
| 4 - 6 | Top soil, reddish brown, moist |
| 6 | Medim sand w/caliche, hard, brown, moist |

Note: native hard caliche was observed below 6 feet.

The Tank Composite sample with a chloride concentration of 7,500 mg/kg indicates production activities have impacted the western half of the caliche pad. The BG Composite sample has a chloride concentration comparable to the Trench Sample at the 2 foot depth (3,480 mg/kg). Soil chloride concentrations at the Trench Sample that is within the area of the Tank Composite sample show chloride concentrations are decreasing with depth, from 3,480 mg/kg at 2 feet to 2,000 mg/kg at 6 feet and indicate that the majority of chloride impairment is limited to the production pad surface.

The chemistry and lithology of the Trench Sample suggests that:

- the moist soil at a depth of 6 feet, which exhibits 2,000 mg/kg chloride, is likely impacted by shallow groundwater wicking up from the underlying brine groundwater zone,
- the moist soil near the surface (Trench Sample) is likely from recent precipitation events and past releases at the site, and
- soil at depths from 1 to 5 feet below surface have chloride and EC concentrations that will support vegetation. Re-vegetating the impacted area is included in the remediation plan and also satisfies BLM's request for interim reclamation.

The remediation plan is presented below.

Remediation Plan

XTO Energy proposes to excavate and dispose of the western third (30%) of the caliche pad that was in contact with the modular impoundment. The 30% area includes the release area and out beyond to the edge of the caliche pad. Plate 2 identifies the area proposed for remediation. The excavated material will be transported to R360 or equivalent for proper disposal.

The remediated area will be contoured and seeded using BLM Seed Mixture Type 4 with Giant Sacaton seed added to the mixture. The excavated area is also subject to BLM's interim reclamation plan.

Appendix B Discussion of Sampling Results



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

SUMMARY OF BACKGROUND SAMPLING RESULTS

Between November 13, 2012 and June 24, 2013, soil samples were obtained to determine the magnitude, extent, and background hydrocarbon and chloride concentrations associated with the reported release. Table 1 summarizes the results of soil sampling. Plate 1 shows the locations of the soil samples.

| Sample ID | Date | Depth | Chloride | EC | Benzene | BTEX | ТРН | GRO/DRO |
|-------------------------|------------|-------|-------------------|-------|---------|-------|-------|---------|
| | | (ft) | mg/kg | uS/cm | mg/kg | mg/kg | mg/kg | mg/kg |
| NMAC 19.15.17.13.B(1).b | | | 500 or background | | 0.2 | 50 | 2,500 | 500 |
| Tank Composite | 11/13/2012 | 1.0 | 7,500 | NS | <0.49 | ND | <20 | <10 |
| BG Composite | 11/13/2012 | 1.0 | 3,000 | NS | <0.49 | ND | <20 | <10 |
| Trench Sample | 2/11/2013 | 2.0 | 3,480 | 8,010 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 4.0 | 2,120 | 3,020 | NS | NS | NS | NS |
| Trench Sample | 2/11/2013 | 6.0 | 2,000 | 7,050 | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 1.5 | 2,960 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 3.0 | 2,440 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 4.5 | 2,920 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 6.0 | 1,880 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 7.5 | 1,380 | NS | NS | NS | NS | NS |
| Background Sample | 6/24/2013 | 8.0 | 1,500 | NS | NS | NS | NS | NS |

Table 1: Soil chemistry summary results

Notes

•

1. ND = non-detect

2 NS = not sampled

On November 13, 2012, Hicks Consultants collected two on-site 5-point composite soil samples for closure of the modular impoundment employed for hydraulic fracturing of five wells in 2012.

The point samples for the Tank Composite and BG Composite were collected approximately two inches below the caliche pad/soil interface at a depth of approximately 1-foot. The Trench Sample consisted of discrete samples at 2, 4, and 6 foot depths. Table 2 summarizes the lithology of the Trench Sample.

Table 2: Lithology of Trench Sample

| Depth (ft) | Description |
|------------|--|
| 0-1 | Caliche pad |
| 1-4 | Top soil (loamy sand), dark brown, moist |
| 4 - 6 | Top soil, reddish brown, moist |
| 6 | Medim sand w/caliche, hard, brown, moist |

Note: native hard caliche was observed below 6 feet.

December 2, 2013 Page 2

The Tank Composite sample with a chloride concentration of 7,500 mg/kg (see Table 1) indicates production activities have impacted the western half of the caliche pad. The BG Composite sample has a chloride concentration comparable to the Trench Sample at the 2 foot depth (3,480 mg/kg).

On February 11, 2013; in support of the C-141 initial report submission, Hicks Consultants performed additional characterization to determine the vertical extent of chloride in soil near the western edge of the former modular impoundment, in proximity of the reported release. The "Trench Sample" identified in Table 1 and on Plate 1 represents the February 2013 sample.

Soil chloride concentrations at the Trench Sample (collected within the area of the Tank Composite sample) show chloride concentrations are decreasing with depth, from 3,480 mg/kg at 2 feet to 2,000 mg/kg at 6 feet and indicate that the majority of chloride impairment is limited to the production pad surface.

On June 24, 2013 we sampled an off-site background location (Background Sample) per C-141/Part 29 approval conditions/stipulations for release event 2RP-1674. The

background location was located in an area not impacted by past or current production activities.

Comparing the on-site Trench Sample (Table 3) to the off-site Background Sample at depths below 2-feet bgs, the on-site chloride concentrations are either near or lower than off-site background concentrations.

Table 3: Chloride concentration comparison between an on-site and off-site (background)

| | Chloride (mg/kg) | | | | | | | |
|--------------------|------------------|-------------------|--|--|--|--|--|--|
| Depth (+/- 0.5 ft) | Trench Sample | Background Sample | | | | | | |
| 1.5 - 2 | 3,480 | 2,960 | | | | | | |
| 4 | 2,120 | 2,920 | | | | | | |
| 6 | 2,000 | 1,880 | | | | | | |

The chemistry and lithology of the trench samples suggest that:

- the moist soil at a depth of 6 feet, which exhibits approximately 2,000 mg/kg chloride, is likely impacted by shallow groundwater wicking up from the underlying brine groundwater zone,
- the moist soil near the surface (Trench Sample) was likely from recent precipitation events and past releases at the site,
- soil at depths from 1 to 5 feet below surface have chloride and EC concentrations that will support vegetation. Re-vegetation of the impacted area is included in the C-141 remediation plan and also satisfies BLM's request for interim reclamation, and
- the eastern portion of the location is not measurably impaired by production activities as the BG sample result (3,000 mg/kg) is not different from the background samples

Removing the upper 2-feet of soil within the remediation area as shown on Plate 2 will remediate the observed higher chlorides and allow for vegetation.

Appendix C Certificate of Analyses

R.T. Hicks Consultants, Ltd.

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



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107 Website: <u>www.hallenvironmental.com</u>

November 29, 2012

Andrew Parker R.T. Hicks Consultants, LTD 901 Rio Grande Blvd. NW Suite F-142 Albuquerque, NM 87104 TEL: (505) 266-5004 FAX (505) 266-0745

RE: XTO Energy Nash Unit 29

OrderNo.: 1211653

Dear Andrew Parker:

Hall Environmental Analysis Laboratory received 2 sample(s) on 11/14/2012 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <u>www.hallenvironmental.com</u> or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

| Hall Environmental Analysis | s Labora | tory, Ir | ıc. | | | Order 1211653 e Reported: 11/29/2012 |
|-------------------------------------|----------|----------|------|--------------|---------------------|---|
| CLIENT: R.T. Hicks Consultants, LTD | | | C | lient Sampl | e ID: Tank C | omposite |
| Project: XTO Energy Nash Unit 29 | | | Ċ | Collection I | Date: 11/13/2 | 2012 |
| Lab ID: 1211653-001 | Matrix: | SOIL | | Received I | Date: 11/14/2 | 2012 10:50:00 AM |
| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
| EPA METHOD 8015B: DIESEL RANGE | ORGANICS | | | | | Analyst: JMP |
| Diesel Range Organics (DRO) | ND | 10 | | mg/Kg | 1 | 11/20/2012 6:22:22 AN |
| Motor Oil Range Organics (MRO) | ND | 50 | | mg/Kg | 1 | 11/20/2012 6:22:22 AM |
| Surr: DNOP | 102 | 77.6-140 | | %REC | 1 | 11/20/2012 6:22:22 AM |
| EPA METHOD 8015B: GASOLINE RANG | θE | | | | | Analyst: NSE |
| Gasoline Range Organics (GRO) | ND | 4.9 | | mg/Kg | 1 | 11/16/2012 2:32:25 PM |
| Surr: BFB | 108 | 84-116 | | %REC | 1 | 11/16/2012 2:32:25 PM |
| EPA METHOD 300.0: ANIONS | | • | | - | | Analyst: JRR |
| Chloride | 7500 | 300 | | mg/Kg | 200 | 11/20/2012 6:54:44 PM |
| EPA METHOD 8260B: VOLATILES | | | | | | Analyst: RAA |
| Benzene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Toluene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Ethylbenzene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Methyl tert-butyl ether (MTBE) | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1,2,4-Trimethylbenzene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1,3,5-Trimethylbenzene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1,2-Dichloroethane (EDC) | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Naphthalene | ND | 0.097 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1-Methylnaphthalene | ND | 0.19 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 2-Methylnaphthalene | ND | 0.19 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Acetone | ND | 0.73 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Bromobenzene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Bromodichloromethane | ND | 0.049 | I. | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Bromoform | ND | 0.049 | I. | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Bromomethane | ND | 0.15 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 2-Butanone | ND | 0.49 | I | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Carbon disulfide | ND | 0.49 | I | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Carbon tetrachloride | ND | 0.097 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Chlorobenzene | ND | 0.049 | I | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Chloroethane | ND | 0.097 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Chloroform | ND | 0.049 | 1 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Chloromethane | ND | 0.15 | 1 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 2-Chlorotoluene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 4-Chlorotoluene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| cis-1,2-DCE | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| cis-1,3-Dichloropropene | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1,2-Dibromo-3-chloropropane | ND | 0.097 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Dibromochloromethane | ND | 0.049 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Dibromomethane | ND | 0.097 | | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1,2-Dichlorobenzene | ND | 0.049 | 1 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |

Qualifiers: * Value exceeds Maximum Contaminant Level.

- Ε Value above quantitation range
- J Analyte detected below quantitation limits
- Sample pH greater than 2 Р
- RL Reporting Detection Limit

- В Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Н
- Not Detected at the Reporting Limit ND
- R RPD outside accepted recovery limits
- Spike Recovery outside accepted recovery limits S

Analytical Report Lab Order 1211653

Hall Environmental Analysis Laboratory, Inc.

Analytical Report Lab Order 1211653 Date Reported: 11/29/2012

| CLIENT: | R.T. Hicks Consultants, LTD | | | Client Sampl | e ID: Tank (| Composite |
|-----------------|---------------------------------------|-----------|--------|--------------|---------------|-----------------------|
| Project: | XTO Energy Nash Unit 29 | | | Collection I | Date: 11/13/2 | 2012 |
| Lab ID: | 1211653-001 | Matrix: S | SOIL | | | 2012 10:50:00 AM |
| Analyses | · · · · · · · · · · · · · · · · · · · | Result | RL Qua | l Units | DF | Date Analyzed |
| EPA MET | THOD 8260B: VOLATILES | | | | | Analyst: RAA |
| 1,3-Dich | lorobenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1.4-Dich | lorobenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Dichloro | difluoromethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 1.1-Dich | loroethane | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| , | loroethene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | loropropane | ND | 0,049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | loropropane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | loropropane | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | loropropene | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | orobutadiene | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| 2-Hexan | | ND | 0.49 | mg/Kg | 1 | 11/21/2012 7;19;43 PM |
| | lbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | pyltoluene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | I-2-pentanone | ND | 0.49 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| , | ne chloride | ND | 0.15 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| n-Butylb | | ND | 0.15 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| n-Propyl | | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | lbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Styrene | , | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| - | lbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| - | Fetrachloroethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | Fetrachloroethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | oroethene (PCE) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| trans-1,2 | | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | 3-Dichloropropene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | ichlorobenzene | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | ichlorobenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | ichloroethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | ichloroethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | pethene (TCE) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | ofluoromethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| | ichloropropane | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Vinyl chl | | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| Xylenes, | | ND | 0.097 | mg/Kg | 1 | 11/21/2012 7:19:43 PM |
| - | 1,2-Dichloroethane-d4 | 93.2 | 70-130 | %REC | 1 | 11/21/2012 7:19:43 PM |
| | 4-Bromofluorobenzene | 92.4 | 70-130 | %REC | 1 | 11/21/2012 7:19:43 PM |
| | Dibromofluoromethane | 90.7 | 70-130 | %REC | 1 | 11/21/2012 7:19:43 PM |
| | Toluene-d8 | 101 | 70-130 | %REC | 1 | 11/21/2012 7:19:43 PM |
| | THOD 418.1: TPH | | | | | Analyst: LRW |
| | In Hydrocarbons, TR | ND | 20 | mg/Kg | 1 | 11/21/2012 |
| renoieu | in Hydrocarbons, TR | | 20 | myrry | | 1 1/2 1/2012 |

* Value exceeds Maximum Contaminant Level. Qualifiers:

- Е Value above quantitation range
- Analyte detected below quantitation limits J
- Sample pH greater than 2 Р
- RL Reporting Detection Limit

- Analyte detected in the associated Method Blank В
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- Spike Recovery outside accepted recovery limits S

| Hall Environmental Analys | is Labora | tory, Inc. | | Lab | Order 1211653 e Reported: 11/29/2012 |
|-------------------------------------|-----------|----------------|----------------|-----------|--|
| CLIENT: R.T. Hicks Consultants, LTD | | | Client Sample | ID: BG Co | mposite |
| Project: XTO Energy Nash Unit 29 | | | Collection D | | |
| • | Matrix: | SOIL | | | 2012 10:50:00 AM |
| Lab ID: 1211653-002 | Matrix: | SOIL | Received D | | 2012 10.30.00 AM |
| Analyses | Result | RL Q | ual Units | DF | Date Analyzed |
| EPA METHOD 8015B: DIESEL RANGE | ORGANICS | | | | Analyst: JMP |
| Diesel Range Organics (DRO) | ND | 10 | mg/Kg | 1 | 11/20/2012 8:28:08 AM |
| Motor Oil Range Organics (MRO) | ND | 51 | mg/Kg | 1 | 11/20/2012 8:28:08 AM |
| Surr: DNOP | 98.6 | 77.6-140 | %REC | 1 | 11/20/2012 8:28:08 AM |
| EPA METHOD 8015B: GASOLINE RAN | IGE | | | | Analyst: NSB |
| Gasoline Range Organics (GRO) | ND | 4.9 | mg/Kg | 1 | 11/16/2012 3:01:11 PM |
| Surr: BFB | 101 | 84-116 | %REC | 1 | 11/16/2012 3:01:11 PM |
| | 101 | 04 110 | , in Leo | | Analyst: JRR |
| EPA METHOD 300.0: ANIONS | | 150 | | 100 | • |
| Chloride | 3000 | 150 | mg/Kg | 100 | 11/20/2012 7:07:09 PM |
| EPA METHOD 8260B: VOLATILES | | | | | Analyst: RAA |
| Benzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Toluene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Ethylbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Methyl tert-butyl ether (MTBE) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 1,2,4-Trimethylbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 1,3,5-Trimethylbenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 1,2-Dichloroethane (EDC) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 1,2-Dibromoethane (EDB) | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Naphthalene | ND | 0.099 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 1-Methylnaphthalene | ND | 0.20 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 2-Methylnaphthalene | ND | 0.20 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Acetone | ND | 0.74 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Bromobenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Bromodichloromethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PN |
| Bromoform | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Bromomethane | ND | 0.15 | mg/Kg | 1 | 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM |
| 2-Butanone | ND | 0.49 | mg/Kg | 1 | |
| Carbon disulfide | ND | 0.49 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Carbon tetrachloride | ND | 0.099 | mg/Kg | 1 1 | 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM |
| Chlorobenzene Chloroethane | ND ND | 0.049 0.099 | mg/Kg mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Chloroform | ND | 0.099 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Chloromethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PN |
| 2-Chlorotoluene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 4-Chlorotoluene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| cis-1,2-DCE | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| cis-1,3-Dichloropropene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 1,2-Dibromo-3-chloropropane | ND | 0.099 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Dibromochloromethane | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| Dibromomethane | ND | 0.099 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |
| 1,2-Dichlorobenzene | ND | 0.049 | mg/Kg | 1 | 11/21/2012 7:48:47 PM |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- Е Value above quantitation range
- J Analyte detected below quantitation limits
- Р Sample pH greater than 2

RL Reporting Detection Limit

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits R

Spike Recovery outside accepted recovery limits S

Analytical Report

Analyte detected in the associated Method Blank В

Client Sample ID: BG Composite CLIENT: R.T. Hicks Consultants, LTD Collection Date: 11/13/2012 **Project:** XTO Energy Nash Unit 29 Matrix: SOIL Received Date: 11/14/2012 10:50:00 AM Lab ID: 1211653-002 Result **RL** Qual Units DF **Date Analyzed** Analyses **EPA METHOD 8260B: VOLATILES** Analyst: RAA 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 1,3-Dichlorobenzene 11/21/2012 7:48:47 PM 0.049 1 ND mg/Kg 1,4-Dichlorobenzene 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 Dichlorodifluoromethane 0.099 11/21/2012 7:48:47 PM ND mg/Kg 1 1.1-Dichloroethane 11/21/2012 7:48:47 PM 1,1-Dichloroethene ND 0.049 mg/Kg 1 1,2-Dichloropropane ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 1,3-Dichloropropane ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 2,2-Dichloropropane ND 0.099 mg/Kg 1 11/21/2012 7:48:47 PM 1,1-Dichloropropene ND 0.099 mg/Kg 1 11/21/2012 7:48:47 PM Hexachlorobutadiene ND 0.099 mg/Kg 1 11/21/2012 7:48:47 PM 0.49 1 11/21/2012 7:48:47 PM 2-Hexanone ND mg/Kg ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM Isopropylbenzene ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 4-isopropyltoluene 11/21/2012 7:48:47 PM 0.49 1 4-Methyl-2-pentanone ND mg/Kg 0.15 mg/Kg 1 11/21/2012 7:48:47 PM Methylene chloride ND ND 0.15 mg/Kg 1 11/21/2012 7:48:47 PM n-Butylbenzene 1 11/21/2012 7:48:47 PM ND 0.049 mg/Kg n-Propylbenzene ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM sec-Butylbenzene 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 Styrene 11/21/2012 7:48:47 PM ND 0.049 1 tert-Butylbenzene mg/Kg 1,1,1,2-Tetrachloroethane mg/Kg 1 11/21/2012 7:48:47 PM ND 0.049 1,1,2,2-Tetrachloroethane ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM mg/Kg ND 0.049 1 11/21/2012 7:48:47 PM Tetrachloroethene (PCE) 1 11/21/2012 7:48:47 PM ND 0.049 mg/Kg trans-1,2-DCE 11/21/2012 7:48:47 PM trans-1,3-Dichloropropene ND 0.049 mg/Kg 1 1 11/21/2012 7:48:47 PM ND 0.099 mg/Kg 1,2,3-Trichlorobenzene 11/21/2012 7:48:47 PM 1,2,4-Trichlorobenzene ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 1,1,1-Trichloroethane ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM ND 0.049 mg/Kg 1 1,1,2-Trichloroethane 11/21/2012 7:48:47 PM Trichloroethene (TCE) ND 0.049 mg/Kg 1 Trichlorofluoromethane ND 0.049 mg/Kg 1 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM 1.2.3-Trichloropropane ND 0.099 mg/Kg 1 1 11/21/2012 7:48:47 PM ND 0.049 mg/Kg Vinyl chloride 11/21/2012 7:48:47 PM ND 0.099 mg/Kg 1 Xylenes, Total Surr: 1.2-Dichloroethane-d4 94.2 70-130 %REC 1 11/21/2012 7:48:47 PM 11/21/2012 7:48:47 PM Surr: 4-Bromofluorobenzene 877 70-130 %REC 1 11/21/2012 7:48:47 PM Surr: Dibromofluoromethane 91.6 70-130 %RFC 1 Surr: Toluene-d8 105 70-130 %REC 1 11/21/2012 7:48:47 PM Analyst: LRW

EPA METHOD 418.1: TPH Petroleum Hydrocarbons, TR

Qualifiers:

* Value exceeds Maximum Contaminant Level.

ND

20

mg/Kg

Value above quantitation range Е

J Analyte detected below quantitation limits

Р Sample pH greater than 2

RL Reporting Detection Limit

Analyte detected in the associated Method Blank в

1

Holding times for preparation or analysis exceeded Н

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

Spike Recovery outside accepted recovery limits S

11/21/2012

Lab Order 1211653

Analytical Report

Date Reported: 11/29/2012

Hall Environmental Analysis Laboratory, Inc.

| Client: Project: | | licks Consulta Energy Nash U | , | Ď | | | | | | | |
|---------------------|------------|---------------------------------|-----------------|-----------|-------------|-----------|-----------|--------------|------|----------|------|
| Sample ID | MB-4894 | SampTy | | | | | | 300.0: Anion | s | | |
| Client ID: | PBS | Batch | ID: 48 | 94 | F | RunNo: 7 | 001 | | | | |
| Prep Date: | 11/19/2012 | Analysis Da | ite: 11 | /19/2012 | 5 | GeqNo: 2 | 02928 | Units: mg/K | g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | | ND | 1.5 | | | | | | | | |
| Sample ID | LCS-4894 | SampTy | pe: LC | S | Tes | tCode: El | PA Method | 300.0: Anion | s | | |
| Client ID: | LCSS | Batch | ID: 48 | 94 | F | RunNo: 7 | 001 | | | | |
| Prep Date: | 11/19/2012 | Analysis Da | nte: 1 1 | 1/19/2012 | 5 | SeqNo: 2 | 02929 | Units: mg/K | (g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Chloride | | 14 | 1.5 | 15.00 | 0 | 90.0 | 90 | 110 | | | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits

WO#: 1211653

29-Nov-12

Page 5 of 12

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: R.T. | Hicks Consultants, LTD | | | |
|----------------------------|---------------------------|---------------------------|---------------------|------------------------------------|
| Project: XTC |) Energy Nash Unit 29 | | | |
| Sample ID MB-4901 | SampType: MBLK | TestCode: EPA Method | 418.1: TPH | ana ata a shi - d ^{a a a} |
| Client ID: PBS | Batch ID: 4901 | RunNo: 7021 | | |
| Prep Date: 11/19/2012 | Analysis Date: 11/21/2012 | SeqNo: 203589 | Units: mg/Kg | |
| Analyte | Result PQL SPK value | SPK Ref Val %REC LowLimit | HighLimit %RPD | RPDLimit Qual |
| Petroleum Hydrocarbons, TR | ND 20 | | | |
| Sample ID LCS-4901 | SampType: LCS | TestCode: EPA Method | l 418.1: TPH | |
| Client ID: LCSS | Batch ID: 4901 | RunNo: 7021 | | |
| Prep Date: 11/19/2012 | Analysis Date: 11/21/2012 | SeqNo: 203590 | Units: mg/Kg | |
| Analyte | Result PQL SPK value | SPK Ref Val %REC LowLimit | HighLimít %RPD | RPDLimit Qual |
| Petroleum Hydrocarbons, TR | 100 20 100.0 | 0 104 80 | 120 | |
| Sample ID LCSD-4901 | SampType: LCSD | TestCode: EPA Method | l 418.1: TPH | |
| Client ID: LCSS02 | Batch ID: 4901 | RunNo: 7021 | | |
| Prep Date: 11/19/2012 | Analysis Date: 11/21/2012 | SeqNo: 203591 | Units: mg/Kg | |
| Analyte | Result PQL SPK value | SPK Ref Val %REC LowLimit | HighLimit %RPD | RPDLimit Qual |
| Petroleum Hydrocarbons, TR | 110 20 100.0 | 0 106 80 | 120 1.28 | 20 |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits

Page 6 of 12

WO#: 1211653

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

| Client: | R.T. Hick | s Consulta | ints, LT | ٢D | | | | | | | |
|---------------------|-------------|------------|----------|-----------|---|-----------|-----------|-------------|------------|----------|------|
| Project: | XTO Ene | rgy Nash I | Jnit 29 | | | | | | | | |
| Sample ID MB | -4900 | SampT | ype: ME | BLK | TestCode: EPA Method 8015B: Diesel Range Organics | | | | | | |
| Client ID: PBS | 6 | Batch | ID: 49 | 00 | RunNo: 6989 | | | | | | |
| Prep Date: 11 | /19/2012 | Analysis D | ate: 1 | 1/20/2012 | 5 | SeqNo: 2 | 02423 | Units: mg/H | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organi | ics (DRO) | ND | 10 | | | | | | | | |
| Motor Oil Range Org | anics (MRO) | ND | 50 | | | | | | | | |
| Surr: DNOP | | 9.9 | | 10.00 | | 98.8 | 77.6 | 140 | | | |
| Sample ID LCS | 5-4900 | SampT | ype: LC | s | Tes | tCode: E | PA Method | 8015B: Dies | el Range (| Organics | |
| Client ID: LCS | SS | Batch | ID: 49 | 00 | F | RunNo: 6 | 989 | | | | |
| Prep Date: 11 | /19/2012 | Analysis D | ate: 1 | 1/20/2012 | 5 | SeqNo: 2 | 02424 | Units: mg/K | (g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organ | ics (DRO) | 51 | 10 | 50.00 | 0 | 102 | 47.4 | 122 | | | |
| Surr: DNOP | | 4.0 | | 5.000 | | 80.2 | 77.6 | 140 | | | |
| Sample ID 121 | 1653-001AMS | SampT | ype: MS | 3 | Tes | tCode: El | PA Method | 8015B: Dies | el Range (| Organics | |
| Client ID: Tan | k Composite | Batch | ID: 49 | 00 | F | RunNo: 6 | 989 | | | | |
| Prep Date: 11 | /19/2012 | Analysis D | ate: 1 | 1/20/2012 | S | BeqNo: 2 | 02426 | Units: mg/M | ٤g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organ | ics (DRO) | 54 | 10 | 50.97 | 0 | 106 | 12.6 | 148 | | | |
| Surr: DNOP | | 4.8 | | 5.097 | | 94.6 | 77.6 | 140 | | | |
| Sample ID 121 | 1653-001AMS | SampT | ype: MS | SD | Tes | tCode: E | PA Method | 8015B: Dies | el Range (| Organics | |
| Client ID: Tan | k Composite | Batch | ID: 49 | 00 | F | RunNo: 6 | 989 | | | | |
| Prep Date: 11 | /19/2012 | Analysis D | ate: 11 | 1/20/2012 | S | SeqNo: 2 | 02569 | Units: mg/M | ٤g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Diesel Range Organ | ics (DRO) | 53 | 10 | 51.18 | 0 | 104 | 12.6 | 148 | 0.773 | 22.5 | |
| Surr: DNOP | | 5.1 | | 5.118 | | 98.8 | 77.6 | 140 | 0 | 0 | |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
 - R RPD outside accepted recovery limits

WO#: 1211653

| Client: Project: | | ks Consulta ergy Nash I | | | | | | | | | |
|---------------------|-------------------|----------------------------|-----------------|-----------|-------------|-------------------|-----------|--------------------|------------|-----------|---------|
| Sample ID | MB-4851 | SampT | ype: ME | 3LK | Test | Code: EF | PA Method | 8015B: Gaso | oline Rang | 9 | |
| Client ID: | PBS | Batch | ID: 48 | 51 | R | unNo: 69 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 1 | 1/16/2012 | S | eqNo: 20 | 02014 | Units: mg/H | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Rang | je Organics (GRO) | ND | 5.0 | | | | | | | | |
| Surr: BFB | | 990 | | 1000 | | 99.3 | 84 | 116 | | | |
| Sample ID | LCS-4851 | SampT | ype: LC | s | Test | Code: El | PA Method | 8015B: Gaso | oline Rang | e | |
| Client ID: | LCSS | Batch | 1D: 48 | 51 | F | unNo: 6 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 1 | 1/16/2012 | S | SeqNo: 21 | 02015 | Units: mg/h | ۲g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Rang | ge Organics (GRO) | 24 | 5.0 | 25.00 | 0 | 97.3 | 74 | 117 | | | |
| Surr: BFB | | 1000 | | 1000 | | 104 | 84 | 116 | | | |
| Sample ID | 1211653-001AMS | SampT | ype: M | S | Tes | tCode: El | PA Method | 8015B: Gaso | oline Rang | e | |
| Client ID: | Tank Composite | Batch | 1D: 48 | 51 | F | RunNo: 6 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 1 | 1/16/2012 | S | SeqNo: 2 | 02020 | Units: mg/k | ٢g | | |
| Analyte | | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Gasoline Rang | ge Organics (GRO) | 29 | 4.9 | 24.63 | 0 | 118 | 70 | 130 | | | |
| Surr: BFB | | 1100 | | 985.2 | | 109 | 84 | 116 | | | |
| Sample ID | 1211653-001AMS | D SampT | ype: M | SD | Tes | tCode: El | PA Method | 8015B: Gase | oline Rang | e | |
| Client ID: | Tank Composite | Batch | n ID: 48 | 51 | F | RunNo: 6 9 | 951 | | | | |
| Prep Date: | 11/15/2012 | Analysis D | ate: 1 | 1/16/2012 | S | SeqNo: 2 | 02021 | Units: mg/ł | (g | | |
| | | | BOL | | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Analyte | | Result | PQL | SPK value | SFK Kel Val | %REC | LOWLINI | riigiiLiinii | 70KFD | N DEIIII | - CRUUI |
| L | ge Organics (GRO) | Result 29 | PQL 5.0 | 24.75 | O O | 118 | 70 | 130 116 | 0.0876 | 22.1 0 | Guui |

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detceted at the Reporting Limit
 - R RPD outside accepted recovery limits

WO#: 1211653

R.T. Hicks Consultants, LTD

Client:

Project: XTO Energy Nash Unit 29 TestCode: EPA Method 8260B: VOLATILES Sample ID mb-4851 SampType: MBLK Client ID: PBS Batch ID: 4851 RunNo: 7060 Analysis Date: 11/21/2012 SeqNo: 204634 Units: mg/Kg Prep Date: 11/15/2012 %RPD RPDLimit Qual SPK value SPK Ref Val %REC LowLimit HighLimit Result PQL Analyte ND 0.050 Benzene 0.050 ND Toluene ND 0.050 Ethylbenzene 0.050 ND Methyl tert-butyl ether (MTBE) 0.050 ND 1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene ND 0.050 ND 0.050 1,2-Dichloroethane (EDC) 1,2-Dibromoethane (EDB) ND 0.050 Naphthalene ND 0.10 ND 0.20 1-Methylnaphthalene ND 0.20 2-Methylnaphthalene ND 0.75 Acetone ND 0.050 Bromobenzene 0.050 Bromodichloromethane ND ND 0.050 Bromoform ND 0.15 Bromomethane 0.50 2-Butanone ND ND 0.50 Carbon disulfide ND 0.10 Carbon tetrachloride Chlorobenzene ND 0.050 ND 0.10 Chloroethane ND 0.050 Chloroform ND 0.15 Chloromethane ND 0.050 2-Chlorotoluene ND 0.050 4-Chlorotoluene ND 0.050 cis-1,2-DCE ND 0.050 cis-1,3-Dichloropropene ND 0.10 1,2-Dibromo-3-chloropropane 0.050 Dibromochloromethane ND Dibromomethane ND 0.10 ND 0.050 1.2-Dichlorobenzene 0.050 ND 1,3-Dichlorobenzene ND 0.050 1.4-Dichlorobenzene Dichlorodifluoromethane ND 0.050 ND 0.10 1,1-Dichloroethane 1,1-Dichloroethene ND 0.050 1,2-Dichloropropane ND 0.050 ND 0.050 1,3-Dichloropropane ND 0.10 2,2-Dichloropropane ND 0.10 1,1-Dichloropropene

Qualifiers:

Hexachlorobutadiene

Value exceeds Maximum Contaminant Level.

ND

0.10

- Е Value above quantitation range Analyte detected below quantitation limits J
- Р Sample pH greater than 2

- В Analyte detected in the associated Method Blank
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits

WO#: 1211653

Client: R.T. Hicks Consultants, LTD **Project:** XTO Energy Nash Unit 29 Sample ID mb-4851 SampType: MBLK TestCode: EPA Method 8260B: VOLATILES Client ID: PBS Batch ID: 4851 RunNo: 7060 Prep Date: 11/15/2012 Analysis Date: 11/21/2012 SeqNo: 204634 Units: mg/Kg SPK value SPK Ref Val %REC LowLimit HighLimit %RPD RPDLimit Qual Analyte Result PQL 2-Hexanone ND 0.50 Isopropyibenzene ND 0.050 4-Isopropyltoluene ND 0.050 ND 0.50 4-Methyl-2-pentanone ND 0.15 Methylene chloride ND 0.15 n-Butylbenzene 0.050 n-Propylbenzene ND ND 0.050 sec-Butylbenzene ND 0.050 Styrene tert-Butylbenzene ND 0.050 ND 0.050 1,1,1,2-Tetrachloroethane ND 0.050 1,1,2,2-Tetrachloroethane Tetrachloroethene (PCE) ND 0.050 ND 0.050 trans-1,2-DCE ND 0.050 trans-1,3-Dichloropropene ND 0.10 1,2,3-Trichlorobenzene ND 0.050 1,2,4-Trichlorobenzene ND 0.050 1,1,1-Trichloroethane 1,1,2-Trichloroethane ND 0.050 Trichloroethene (TCE) ND 0.050 ND 0.050 Trichlorofluoromethane 1,2,3-Trichloropropane ND 0.10 ND 0.050 Vinyl chloride ND 0.10 Xylenes, Total 93.2 70 130 Surr: 1,2-Dichloroethane-d4 0.47 0.5000 Surr: 4-Bromofluorobenzene 0.45 0.5000 89.4 70 130 0.5000 92.3 70 130 Surr: Dibromofluoromethane 0.46 70 0.5000 103 130 Surr: Toluene-d8 0.52 TestCode: EPA Method 8260B: VOLATILES Sample ID Ics-4851 SampType: LCS Batch ID: 4851 RunNo: 7060 Client ID: LCSS

| Analysis Date: 11/21/2012 | | | 11/21/2012 SeqNo: 204635 U | | | Units: mg/K | .a | | |
|---------------------------|--|---|--|--|--|---|---|---|---|
| Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| 1.0 | 0.050 | 1.000 | 0 | 101 | 70 | 130 | | | |
| 1.1 | 0.050 | 1.000 | 0 | 108 | 80 | 120 | | | |
| 1.0 | 0.050 | 1.000 | 0 | 101 | 70 | 130 | | | |
| 1.1 | 0.050 | 1.000 | 0 | 110 | 74 | 124 | | | |
| 0.88 | 0.050 | 1.000 | 0 | 87.9 | 70 | 130 | | | |
| 0.48 | | 0.5000 | | 96.4 | 70 | 130 | | | |
| 0.43 | | 0.5000 | | 86.1 | 70 | 130 | | | |
| | 1.0 1.1 1.0 1.1 0.88 0.48 | 1.0 0.050 1.1 0.050 1.0 0.050 1.1 0.050 0.88 0.050 0.48 0.050 | 1.0 0.050 1.000 1.1 0.050 1.000 1.0 0.050 1.000 1.1 0.050 1.000 0.88 0.050 1.000 0.48 0.5000 1.000 | 1.0 0.050 1.000 0 1.1 0.050 1.000 0 1.0 0.050 1.000 0 1.1 0.050 1.000 0 1.1 0.050 1.000 0 0.88 0.050 1.000 0 0.48 0.5000 0 | 1.0 0.050 1.000 0 101 1.1 0.050 1.000 0 108 1.0 0.050 1.000 0 101 1.1 0.050 1.000 0 101 1.1 0.050 1.000 0 101 1.1 0.050 1.000 0 110 0.88 0.050 1.000 0 87.9 0.48 0.5000 96.4 | 1.0 0.050 1.000 0 101 70 1.1 0.050 1.000 0 108 80 1.0 0.050 1.000 0 101 70 1.1 0.050 1.000 0 101 70 1.1 0.050 1.000 0 110 74 0.88 0.050 1.000 0 87.9 70 0.48 0.5000 96.4 70 | 1.0 0.050 1.000 0 101 70 130 1.1 0.050 1.000 0 108 80 120 1.0 0.050 1.000 0 101 70 130 1.1 0.050 1.000 0 101 70 130 1.1 0.050 1.000 0 110 74 124 0.88 0.050 1.000 0 87.9 70 130 0.48 0.5000 96.4 70 130 | 1.0 0.050 1.000 0 101 70 130 1.1 0.050 1.000 0 108 80 120 1.0 0.050 1.000 0 101 70 130 1.0 0.050 1.000 0 101 70 130 1.1 0.050 1.000 0 110 74 124 0.88 0.050 1.000 0 87.9 70 130 0.48 0.5000 96.4 70 130 | 1.0 0.050 1.000 0 101 70 130 1.1 0.050 1.000 0 108 80 120 1.0 0.050 1.000 0 101 70 130 1.0 0.050 1.000 0 101 70 130 1.1 0.050 1.000 0 110 74 124 0.88 0.050 1.000 0 87.9 70 130 0.48 0.5000 96.4 70 130 130 |

Qualifiers:

Value exceeds Maximum Contaminant Level.

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH greater than 2

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit R RPD outside accepted recovery limits Page 10 of 12

WO#: 1211653

| Client: R.T. Hic | ks Consult | ants, LT | D | | | | | | | |
|-----------------------------|------------|------------------|-----------|-------------|-----------|-----------|--------------------|--------|----------|---------|
| Project: XTO En | ergy Nash | Unit 29 | | | | | | | | |
| Sample ID Ics-4851 | SampT | Type: LC | S | Tes | tCode: El | PA Method | 8260B: VOL/ | ATILES | | <u></u> |
| Client ID: LCSS | Batc | h ID: 48 | 51 | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/15/2012 | Analysis [| Date: 11 | 1/21/2012 | 5 | SeqNo: 2 | 04635 | Units: mg/K | ģ | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: Dibromofluoromethane | 0.47 | | 0.5000 | | 93.7 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.51 | | 0.5000 | | 103 | 70 | 130 | | | |
| Sample ID 1211653-002ams | Samp | Гуре: М\$ | 8 | Tes | tCode: El | PA Method | 8260B: VOL | ATILES | | |
| Client ID: BG Composite | Batc | h ID: 48 | 51 | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/15/2012 | Analysis [| Date: 1 4 | 1/21/2012 | 5 | SeqNo: 2 | 04638 | Units: mg/H | ζg | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Benzene | 0.91 | 0.049 | 0.9804 | 0 | 92.9 | 80.9 | 118 | | | |
| Toluene | 0.95 | 0.049 | 0.9804 | 0 | 97.4 | 69.5 | 119 | | | |
| Chlorobenzene | 0.87 | 0.049 | 0.9804 | 0 | 88.9 | 75.7 | 115 | | | |
| 1,1-Dichloroethene | 0.99 | 0.049 | 0.9804 | 0.01122 | 100 | 68.6 | 126 | | | |
| Trichloroethene (TCE) | 0.81 | 0.049 | 0.9804 | 0 | 82.4 | 68.7 | 115 | | | |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.4902 | | 96.4 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.42 | | 0.4902 | | 85.6 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.47 | | 0.4902 | | 95.4 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.50 | | 0.4902 | | 102 | 70 | 130 | | | |
| Sample ID 1211653-002ams | d Samp | Туре: М | SD | Tes | tCode: E | PA Method | 8260B: VOL | ATILES | | |
| Client ID: BG Composite | Batc | h ID: 48 | 51 | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/15/2012 | Analysis (| Date: 1 | 1/21/2012 | 5 | SegNo: 2 | 04639 | Units: mg/k | ٢g | | |

| Prep Date: 11/15/2012 Analysis Date: 11/21/2012 | | | | 5 | SeqNo: 2 | 04639 | Units: mg/H | (g | | |
|---|--------|-------|-----------|-------------|----------|----------|-------------|-------|----------|------|
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Benzene | 0.92 | 0.049 | 0.9891 | 0 | 93.3 | 80.9 | 118 | 1.30 | 20 | |
| Toluene | 0.98 | 0.049 | 0.9891 | 0 | 98.8 | 69.5 | 119 | 2.28 | 20 | |
| Chlorobenzene | 0.88 | 0.049 | 0.9891 | 0 | 89.3 | 75.7 | 115 | 1.32 | 20 | |
| 1,1-Dichloroethene | 1.0 | 0.049 | 0.9891 | 0.01122 | 99.6 | 68.6 | 126 | 0.357 | 24.8 | |
| Trichloroethene (TCE) | 0.82 | 0.049 | 0.9891 | 0 | 83.3 | 68.7 | 115 | 1.99 | 20 | |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.4946 | | 95.9 | 70 | 130 | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 0.41 | | 0.4946 | | 83.4 | 70 | 130 | 0 | 0 | |
| Surr: Dibromofluoromethane | 0.48 | | 0.4946 | | 96.6 | 70 | 130 | 0 | 0 | |
| Surr: Toluene-d8 | 0.51 | | 0.4946 | | 104 | 70 | 130 | 0 | 0 | |

| Sample ID mb-4881 | TestCode: EPA Method 8260B: VOLATILES | | | | | | | | | |
|-----------------------------|---------------------------------------|----------|-----------|---------------|----------|----------|------------|------|----------|------|
| Client ID: PBS | Batch | n ID: 48 | 81 | F | RunNo: 7 | 060 | | | | |
| Prep Date: 11/19/2012 | Analysis D | ate: 1 | 1/21/2012 | SeqNo: 204640 | | | Units: %RE | С | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.5000 | | 93.5 | 70 | 130 | | | |
| Surr: 4-Bromofluorobenzene | 0.44 | | 0.5000 | | 88.8 | 70 | 130 | | | |
| Surr: Dibromofluoromethane | 0.46 | | 0.5000 | | 92.1 | 70 | 130 | | | |
| Surr: Toluene-d8 | 0.51 | | 0.5000 | | 103 | 70 | 130 | | | |

Qualifiers:

* Value exceeds Maximum Contaminant Level.

Е Value above quantitation range

J Analyte detected below quantitation limits

Р Sample pH greater than 2

Analyte detected in the associated Method Blank в

Holding times for preparation or analysis exceeded Н

Not Detected at the Reporting Limit ND RPD outside accepted recovery limits R

Client:R.T. Hicks Consultants, LTDProject:XTO Energy Nash Unit 29

| Sample ID Ics-4881 | SampT | ype: LC | s | Tes | TestCode: EPA Method 8260B: VOLATILES | | | | | | | |
|-----------------------------|--------|----------|-----------|-------------|---------------------------------------|----------|-----------|------|----------|------|--|--|
| Client ID: LCSS | Batch | 1D: 48 | 81 | F | RunNo: 7 | 060 | | | | | | |
| Prep Date: 11/19/2012 | S | SeqNo: 2 | 04641 | Units: %REC | | | | | | | | |
| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual | | |
| Surr: 1,2-Dichloroethane-d4 | 0.47 | | 0.5000 | | 94.6 | 70 | 130 | | | | | |
| Surr: 4-Bromofluorobenzene | 0.45 | | 0.5000 | | 89.1 | 70 | 130 | | | | | |
| Surr: Dibromofluoromethane | 0.46 | | 0.5000 | | 92.8 | 70 | 130 | | | | | |
| Surr: Toluene-d8 | 0.53 | | 0.5000 | | 106 | 70 | 130 | | | | | |

Qualifiers:

- Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH greater than 2

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting LimitR RPD outside accepted recovery limits
- Page 12 of 12

WO#: 1211653

Hall Environmental Analysis Laboratory VIRONMENTAL 4901 Hawkins NE Sample Log-In Check List Albuquerque, NM 87105 NALYSIS TEL: 505-345-3975 FAX: 505-345-410; **ABORATORY** Website: www.hallenvironmental.com **Client Name:** RT HICKS Work Order Number: 1211653 Received by/date: _______ am the Logged By: Anne Thorne 11/14/2012 10:50:00 AM Completed By: am Im Anne Thome 11/19/2012 **Reviewed By:** 11/ 19/12 Chain of Custody Yes No Not Present 1. Were seals intact? Yes 🖌 No 🗌 Not Present 2. Is Chain of Custody complete? 3. How was the sample delivered? <u>Client</u> Log in 4. Coolers are present? (see 19. for cooler specific information) Yes 🗌 No 🗍 NA 🗹 Yes 🗹 No 🗌 5. Was an attempt made to cool the samples? Yes 🗹 No 🗌 NA 🗌 6. Were all samples received at a temperature of >0° C to 6.0°C Yes 🗹 No 🗌 7. Sample(s) in proper container(s)? 8.

| 8. | Sufficient sample volume for indicated test(s)? | Yes | \checkmark | No | \Box | |
|-----|---|-----|--------------|----|--------|--|
| 9. | Are samples (except VOA and ONG) properly preserved? | Yes | ✓ | No | | |
| 10. | Was preservative added to bottles? | Yes | | No | ✓ | NA 🗋 |
| 11. | VOA vials have zero headspace? | Yes | | No | | No VOA Vials 🗹 |
| 12. | Were any sample containers received broken? | Yes | | No | V | |
| 13. | Does paperwork match bottle labels? (Note discrepancies on chain of custody) | Yes | ✓ | No | | # of preserved bottles checked for pH: |
| 14. | Are matrices correctly identified on Chain of Custody? | Yes | ✓ | No | | (<2 or >12 unless noted) |
| 15. | Is it clear what analyses were requested? | Yes | \checkmark | No | | Adjusted? |
| 16. | Were all holding times able to be met? | Yes | ✓ | No | | |

Special Handling (if applicable)

(If no, notify customer for authorization.)

| Was client notified of all discrepancies with this order? |
|---|
|---|

Checked by:

NA 🗹

| Person Notified: | Date |
|----------------------|--|
| By Whom: | Via: 🗌 eMail 🗌 Phone 🗌 Fax 🗌 In Person |
| Regarding: | |
| Client Instructions: | |

18. Additional remarks:

17

19. Cooler Information

| Cooler No | | Condition | Seal Intact | Seal No | Seal Date | Signed By |
|---------------|-----|-----------|-------------|---------|-----------|-----------|
| 1 | 1.0 | Good | Not Present | | | |

| cord | R.T. Hicks Consultants & Standard Droiect Name: | www.hallenvironmental.com | F. C. XTO Forray Nash Unit # 39 4901 Hawkins NE - Albuquerque, NM 87109 | Project #: U/ Tel. 505-345-3975 Fax 505-345-4107 | | <u> </u> | 802° | 5) Se5 | Sampler: <i>Andrew Packer</i> (1808: 23, 10, 25, 1808: 24, 11) | | Sample Request ID | tank # 1,08" 402 aless ree 1 1 1 1 | tonk # 2 @ 8" " | * 3 0 | * 4 | | 7 | 86*2@8" " " " | 9 0 | 7 | 86 * 5 @ 8" " " " " " " " " " " " " " " " " " | Tank compositet X X X X X X X | > (amposite ** -002 | Multiller Illy 10:50 × Do | shed by: Received by: 7 / Date Time ** Do hot a hall 2 Point Sumples Blo #1 > 5 |
|-----------|---|---------------------------|---|---|---------------|--------------|----------------|---------------------------|--|------------|-------------------|------------------------------------|-----------------|---------|--------|--------|--------|---------------|--------|--------|---|-------------------------------|-----------------------|---|---|
| | | | Ĺ | <u> </u> | | | | Level 4 (Full Validation) | | | Sample Request ID | tank # 1.08" | tank # 2 @ 8" | * 3 0 | ¥ | | 7 | 8) (G | 300 | 7 | 86 * 5 @ 8" | Tank Compositet | > (omposile ** | 05 | 5 |
| hain-of-C | 2. T. Hicks | | Mailing Address: | | * 505.366 SON | Fax#: andrew | ackage: | Jard | ation AP ⊡ Other | (Type) | Time Matrix | 1254 501 | | 1259 '' | 1303 " | 1305 " | 1311 " | 1314 " | 1317 " | 1325 " | /3a7 " | - | | Time: Relinquished by: W. 50 Ruhuf (| Time: Relinquished by: |
| | | | Mailing / | | Phone #: | email or | QA/QC Package: | Standard | Accreditation | EDD (Type) | Date | 11-13.12 | | " | | 2 | " | " | 2 | 11 | ,1 | : | | | Date: |



February 18, 2013

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

RE: XTO NASH UNIT 29

Enclosed are the results of analyses for samples received by the laboratory on 02/13/13 7:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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 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.

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,

Celez & Keene

Celey D. Keene Lab Director/Quality Manager



Analytical Results For:

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

| Received: | 02/13/2013 | Sampling Date: | 02/11/2013 |
|-------------------|-------------------------------|---------------------|---------------|
| Reported: | 02/18/2013 | Sampling Type: | Soil |
| Project Name: | XTO NASH UNIT 29 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Jodi Henson |
| Project Location: | UNIT 'J', SEC. 13, T23S, R29E | | |

Sample ID: SAMPLE TRENCH @ 2' BGS (H300404-01)

| Chloride, SM4S00Cl-B | mg, | /kg | Analyze | d By: DW | | | | | |
|----------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|-------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 3480 | 16.0 | 02/18/2013 | ND | 448 | 112 | 400 | 0.00 | |
| Conductivity 120.1 | uS/cm | | Analyzed By: DW | | | | | | |
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Conductivity* | 8010 | 1.00 | 02/15/2013 | | 476 | 95.2 | 500 | 0.752 | |

Sample ID: SAMPLE TRENCH @ 4' BGS (H300404-02)

| Chloride, SM4500Cl-B | mg, | /kg | Analyze | d By: DW | | | | | |
|----------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|-------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 2120 | 16.0 | 02/18/2013 | ND | 416 | 104 | 400 | 3.77 | |
| Conductivity 120.1 | uS/cm | | Analyzed By: DW | | | | | | |
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Conductivity* | 6020 | 1.00 | 02/15/2013 | | 476 | 95.2 | 500 | 0.752 | |

Sample ID: SAMPLE TRENCH @ 6' BGS (H300404-03)

| Chloride, SM4500Cl-B Analyte | mg/kg | | Analyzed By: DW | | | | | | |
|---------------------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|-------|-----------|
| | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 2000 | 16.0 | 02/18/2013 | ND | 416 | 104 | 400 | 3.77 | |
| Conductivity 120.1 | uS/cm | | Analyzed By: DW | | | | | | |
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Conductivity* | 7050 | 1.00 | 02/15/2013 | | 476 | 95.2 | 500 | 0.752 | |

Cardinal Laboratories

*=Accredited Analyte

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 the amount paid by client for analyses. All claims, including those for nepligence and any other cause whitsoever shall be deemed waived unless made in writing and received by Cardinal within binty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, webout limitation, busiess interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, atfliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the amples demetfield above. This report shall not be reproduced except in full with written approval of Cardinal Laborativies.

Celey D. Kune

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 SM4500CI-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 |

Cardinal Laboratories

*=Accredited Analyte

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 the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thinty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, webout limitation, business interruptions, loss of use, or loss of profis incurred by client, its subsidiaries, affiliates or successions arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such client is applicable.

Celez D. Kune

Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM. 88240 (576) 393-2326 FAX (575) 393-2476

| (575) 393-2326 FAX (575) 393-2476 | | |
|--|--|------|
| R. T. HICKS | BILL TO ANALYSIS REQUEST | |
| | P.O. # | |
| Address: | Company: R. T. Hicks | |
| City: State: Zip: | Athr | |
| Phone #: | Address: | |
| Project #: Project Owner: Mutchison | SA Gity: | |
| Project Name: XTO Nash Unit 39 | State: Zip: | |
| Project Location: Unit 'J' Sec. 13, 7235, R29E | Phone #: | |
| Sampler Name: Kristin Pone | Fax #: | |
| | ATRIX PRESERV SAMPLING | |
| Ca Sort Comp Sort Comp C S S S S S S S S S S S S S S S S S S | ز: Ase: Col | |
| 147(9) # CON | | |
| Sample Franch @ 3' Bes K 1 | 33 | |
| 3 Sample Truch @ 1, 1363 X 11 X | | |
| | | |
| | | |
| | | |
| | | |
| Laster of the second | de relevance for la subscence resume la superior de serve la superior de serve la serve la serve la superior de 14 correct serve selse la relevant met de rest serve 14 entificaes. Les otress en la reletamente la subschebe | |
| and state of an analysis where the production of the subject of th | | |
| Kaistin Pape 11. 13.13 | Yes [] No | |
| Time: | emeri analysis te | |
| Delivered By: (Circle One) Sample Cool. It Sampler - UPS - Bus - Other: | andrian CHECKED BY: and relieve & rentration without the finite of the second s | |
| Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326 | | of 4 |
| | .) | |



June 28, 2013

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

RE: XTO NASH UNIT 29

Enclosed are the results of analyses for samples received by the laboratory on 06/26/13 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. 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 accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab accredited 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.

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,

Celuz D. Kune

Celey D. Keene Lab Director/Quality Manager



Analytical Results For:

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

| Received: | 06/26/2013 | Sampling Date: | 06/24/2013 |
|-------------------|-------------------------------|---------------------|---------------|
| Reported: | 06/28/2013 | Sampling Type: | Soil |
| Project Name: | XTO NASH UNIT 29 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Jodi Henson |
| Project Location: | UNIT 'J', SEC. 13, T23S, R29E | | |

Sample ID: BACKGROUND @ 1.5' (H301491-01)

| Chloride, SM4500Cl-B | mg/kg | | Analyze | Analyzed By: DW | | | | | |
|----------------------|--------|-----------------|------------|-----------------|-----|------------|---------------|------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 2960 | 16.0 | 06/28/2013 | ND | 448 | 112 | 400 | 3.64 | |

Sample ID: BACKGROUND @ 3' (H301491-02)

| Chloride, SM4500Cl-B | mg/kg | | Analyze | Analyzed By: DW | | | | | |
|----------------------|--------|-----------------|------------|-----------------|-----|------------|---------------|------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 2440 | 16.0 | 06/28/2013 | ND | 448 | 112 | 400 | 3.64 | |

Sample ID: BACKGROUND @ 4.5' (H301491-03)

| Chloride, SM4500Cl-B | mg/kg | | Analyze | Analyzed By: DW | | | | | |
|----------------------|--------|-----------------|------------|-----------------|-----|------------|---------------|------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 2920 | 16.0 | 06/28/2013 | ND | 448 | 112 | 400 | 3.64 | |

Sample ID: BACKGROUND @ 6' (H301491-04)

| Chloride, SM4500Cl-B | mg/kg | | Analyzed By: DW | | | | | | |
|----------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 1880 | 16.0 | 06/28/2013 | ND | 448 | 112 | 400 | 3.64 | |

Cardinal Laboratories

*=Accredited Analyte

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 the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be limited to the amount paid by client for analyses. All claims, including those for negligence and induding, without limitation, business interruptions, loss of use, or loss of profits incurred by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be limited to resonsequential damages, induding, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors ansing out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg Di Keine

Celey D. Keene, Lab Director/Quality Manager



Analytical Results For:

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

| Received: | 06/26/2013 | Sampling Date: | 06/24/2013 |
|-------------------|-------------------------------|---------------------|---------------|
| Reported: | 06/28/2013 | Sampling Type: | Soil |
| Project Name: | XTO NASH UNIT 29 | Sampling Condition: | Cool & Intact |
| Project Number: | NONE GIVEN | Sample Received By: | Jodi Henson |
| Project Location: | UNIT 'J', SEC. 13, T23S, R29E | | |

Sample ID: BACKGROUND @ 7.5' (H301491-05)

| Chloride, SM4500Cl-B | mg/kg | | Analyzed By: DW | | | | | | |
|----------------------|--------|-----------------|-----------------|--------------|-----|------------|---------------|------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 1380 | 16.0 | 06/28/2013 | ND | 448 | 112 | 400 | 3.64 | |

Sample ID: BACKGROUND @ 8' (H301491-06)

| Chloride, SM4500Cl-B | mg/kg | | Analyze | d By: DW | | | | | |
|----------------------|--------|-----------------|------------|--------------|-----|------------|---------------|------|-----------|
| Analyte | Result | Reporting Limit | Analyzed | Method Blank | BS | % Recovery | True Value QC | RPD | Qualifier |
| Chloride | 1500 | 16.0 | 06/28/2013 | ND | 448 | 112 | 400 | 3.64 | |

Cardinal Laboratories

*=Accredited Analyte

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 the amount paid by client for analyses. All claims, including those for negligence and any other cause whitsoever shall be deemed waived unless made in writing and received by Cardinal within thinty (30) days after completion of the applicable service. 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 the services hereunder by Cardinal, regardless of whether such claims based on any of the abive stated records or otherwise. Results relate only to the sample defined above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celeg & Keine

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 SM4500CI-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 |

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim ansing, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after competion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, webout limitation, business interruptions, loss of use, or loss of uses of uses of use and received by Cardinal explicities of successors ansing out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the abive stated reasons or otherwise. Results related into the samples leftendial above. This report shall not be reprodued except in full with written approval of Cardinal Laboratories.

Celey & Kune

Celey D. Keene, Lab Director/Quality Manager

| † Cardinal car | Delivered By: (Circle One) Sampler • UPS - Bus - Other | Kelinquisned By: | lautin t | ampres. All cams including those for neggence and a service. In no event shall Cardinal be liable for incidents affinates or successore arising out of or related to the per Relinquished BV: | PLEASE NOTE: Liability and Dar | | 2/ | ٨. | £ | لا | 2 | 1 Back | HSOHAI | Lab I.D. | FOR LAB USE ONLY | Sampler Name: | Project Location: | Project Name: X7 | Project #: | Phone #: | city: | Address: | Project Manager: | Company Name: | 101 (57 | | |
|---|---|---------------------------|--------------|---|--|---|----------|-------|----------|-------|-----|----------------|---|-----------------------|------------------|---------------|-------------------|------------------|--------------------------|-----------------|-------------------|----------|------------------|---------------------------------------|--|---------------------------|--------|
| nnot accept verbal chai | (Circle One) Bus - Other: | | | Carding these for negagence and any other causes (Cardinal be liable for incidental or consequenta Isting out of or related to the performance of sectors of the SV: | LEASE NOTE: Liability and Damages. Cardina's liability and climit's co | ¢ | " " " | " J.C | * 6 | " 4.5 |] " | ickaround Q 1. | | Sample I.D. | ~ | K. Pape ! | Eddy County | O Nash Araw | Pr | Fa | S | | 000 | R.T. Hicks (| 101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476 | | |
| Cardinal cannot accept verbal changes. Please fax written changes to (676) 393-3326 | Se sample Condition CHE | TIME: ACAL AUNO | 2613 Jou | anazoover snatice deenise waved unress mede in wittig and reseved by Candhai within 20 days in the completion of the a I damages, instuding without Emitation, buriness interruptions, lass of user, or loss of profis incurred by client, its subsidiaries, Aces hereunder by Candhai, regardenen d'affektive with daim is based upon any of the above stated reasons or otherweat Aces hereunder by Candhai, regardenen d'affektive with daim is based upon any of the above stated reasons or otherweat Aces hereunder by Candhai, regardenen d'affektive with daim is based upon any of the above stated reasons or otherweat Aces hereunder by Candhai and a state of the above stated reasons or otherweat Aces hereunder by Candhai and a state of the above stated reasons or otherweat and the above state of the above state of the above stated reasons or otherweat and the above state of the above state of the above stated reasons or otherweat above state of the above state of the above state of the above stated reasons or otherweat above state of the above state of the above stated reasons or otherweat above state of the above state of the above state of the above stated reasons or otherweat above state of the above state of the above state of the above sta | clusive remedy for any daim arising whather based in conduct or tort, what be Emiled | | | | | | | 5' 6111 | # CONT, GROUN WASTEN SOIL OIL SLUDGE OTHER ACID/BA | E : ASE: XOL | | Ē | Phone #: |) 29 State: | Project Owner: XTO city: | Fax #: Address: | State: Zip: Attn: | Company: | P.O. #: | <i>2h</i> | 5, NM 88240 5) 393-2476 | | |
| 326 | Man and Kristin @ | M Email to andrew | 1 Yes 1 No | t: C Yes C No | he amound | | <i>"</i> | | X | " | | 06243 | | | | 1 | | Zip: | | | | RT Hicks | | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | CHAIN-OF-CUSTODY | |
| | 2 | ndrew@rthicks consult.com | Add'i Fax #: | Add" Phone #: | | | | | | | | | | | | | | | | | | | | ANALYSIS REQUEST | | TODY AND ANALYSIS REQUEST | - - |



R.T. Hicks Consultants, Ltd.

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



Figure 1: Stockpiling chloride impacted caliche near western 1/3 of location pad.

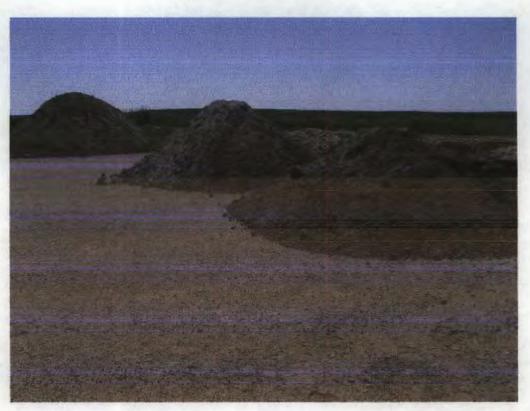


Figure 2: Stockpiled imapcted caclihe (two right soil piles) waiting transport to R360. The far left soil pile (background) is clean soil to be used for BLM interim reclamation activities.



Figure 3: Stockpiled chloride impacted caliche being loaded for trasnport to R360.



Figure 4: Western 1/3 of caliche pad removed and ready for ripping and seeding. Portions of the caliche pad were included in BLM interim reclamation activities.

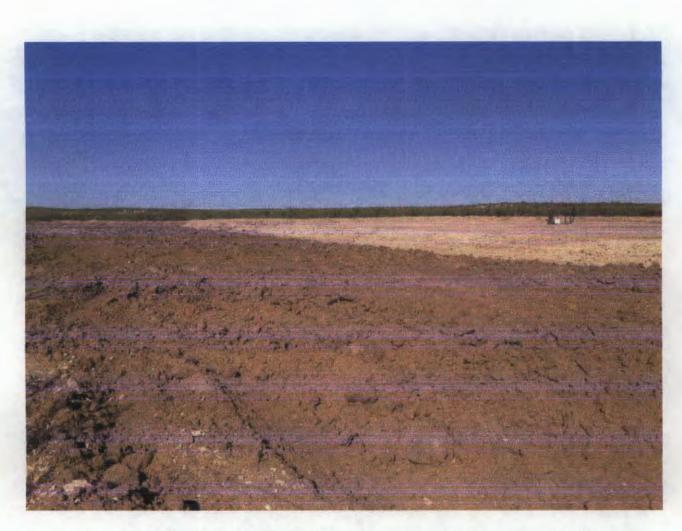


Figure 5: Photo of remediated western 1/3 of caliche pad, viewing north. Area was ripped and seeded with BLM seed mixture #4 and Alkali Sacaton.

APPENDIX E

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Friday, October 12, 2012 12:06 PM |
| То: | 'Bratcher, Mike, EMNRD' |
| Cc: | 'Jones, Brad A., EMNRD'; |
| Subject: | 72-hour Notice of Closure for Nash Unit #29 Modular Impoundment |

Mike:

Please accept this email as the 72-hour notice to NMOCD for closure of the Nash Unit #29 Modular Impoundment located in Section 13 T23S R29E Eddy County NM. Hicks Consultants will oversee closure activities as presented in the C-144. We will submit all required forms at the completion of the closure. We will begin closure activities after October 18th.

Please contact me if you have any questions.

Andrew Parker RT Hicks Consultants Ph: 505-266-5004 Cell: 505-350-5535

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Friday, October 12, 2012 12:21 PM |
| То: | 'Bratcher, Mike, EMNRD' |
| Cc: | 'Jones, Brad A., EMNRD'; |
| Subject: | RE: 72-hour Notice of Closure for Nash Unit #29 Modular Impoundment |

More info:

This is for XTO Energy. API # 30-015-29434. Unit Letter J Section 13 T23S R29E.

Andrew Parker RT Hicks Consultants Ph: 505-266-5004 Cell: 505-350-5535

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Friday, October 12, 2012 12:06 PM
To: 'Bratcher, Mike, EMNRD'
Cc: 'Jones, Brad A., EMNRD'; 'David_Luna@xtoenergy.com'
Subject: 72-hour Notice of Closure for Nash Unit #29 Modular Impoundment

Mike:

Please accept this email as the 72-hour notice to NMOCD for closure of the Nash Unit #29 Modular Impoundment located in Section 13 T23S R29E Eddy County NM. Hicks Consultants will oversee closure activities as presented in the C-144. We will submit all required forms at the completion of the closure. We will begin closure activities after October 18th.

Please contact me if you have any questions.

Andrew Parker RT Hicks Consultants Ph: 505-266-5004 Cell: 505-350-5535

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|--|
| Sent: | Thursday, November 08, 2012 5:08 PM |
| То: | 'Bratcher, Mike, EMNRD' |
| Cc: | 'David_Luna@xtoenergy.com' |
| Subject: | 72-hour Sampling Notice for Closure at Nash Unit #29 Modular Impoundment |

Hello Mike:

Please accept this email as the 72-hour closure sampling notice for the below site:

Nash Unit #29 Modular Impoundment located in Section 13 T23S R29E Eddy County NM (API # 30-015-29434). Either on Tuesday Nov. 13 or Wednesday Nov. 14th we will perform post closure sampling as described in the June 13, 2012 C-144 Closure section. Please call me if you have any questions.

Andrew Parker RT Hicks Consultants Ph: 505-266-5004 Cell: 505-350-5535

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Friday, October 12, 2012 12:21 PM
To: 'Bratcher, Mike, EMNRD'
Cc: 'Jones, Brad A., EMNRD'; 'David_Luna@xtoenergy.com'
Subject: RE: 72-hour Notice of Closure for Nash Unit #29 Modular Impoundment

More info:

This is for XTO Energy. API # 30-015-29434. Unit Letter J Section 13 T23S R29E.

Andrew Parker RT Hicks Consultants Ph: 505-266-5004 Cell: 505-350-5535

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Friday, October 12, 2012 12:06 PM
To: 'Bratcher, Mike, EMNRD'
Cc: 'Jones, Brad A., EMNRD'; 'David_Luna@xtoenergy.com'
Subject: 72-hour Notice of Closure for Nash Unit #29 Modular Impoundment

Mike:

Please accept this email as the 72-hour notice to NMOCD for closure of the Nash Unit #29 Modular Impoundment located in Section 13 T23S R29E Eddy County NM. Hicks Consultants will oversee closure activities as presented in the C-144. We will submit all required forms at the completion of the closure. We will begin closure activities after October 18th.

Please contact me if you have any questions.

Andrew Parker RT Hicks Consultants Ph: 505-266-5004 Cell: 505-350-5535

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|--------------|---|
| Sent: | Monday, December 17, 2012 10:39 AM |
| То: | mike.bratcher@state.nm.us |
| Cc: | Van Curen, Jennifer E (jvancure@blm.gov); David_Luna@xtoenergy.com |
| Subject: | XTO Nash Unit #29 Closure Plan |
| Attachments: | Closure Report for C-144 Nash Draw 29 Poseidon Tank.pdf |

Mike:

Attached is the C-144 Closure Plan for Nash Unit #29 Modular Impoundment located in Section 13 T23S R29E Eddy County NM (API # 30-015-29434). Per the Pit Rule, we are only submitting the closure plan at the District level. As appropriate, we will let you determine whether it is necessary to forward the closure plan to Santa Fe.

Please contact us with any questions or comments.

Andrew Parker RT Hicks Consultants Cell: 505-350-5535 (Preferred) Office: 505-266-5004

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Thursday, December 20, 2012 12:47 PM |
| То: | mike.bratcher@state.nm.us |
| Cc: | David_Luna@xtoenergy.com |
| Subject: | Nash Unit #29 Poseidon Tank Interim Reclamation Update |

Hello Mike:

I want to let you know the status of the interim reclamation as required by the BLM at the above referenced location. As stated in our closure report dated December 17, 2012, we will be submitting an interim reclamation plan to the BLM within the next few weeks. Before submitting such a plan, we will perform additional sampling at the location to determine if chloride concentrations in the soil is influenced by the brackish water of the nearby salt lake and to determine off-location chloride concentrations. We need to acquire this additional information in order to know how to properly reclaim the location. After we receive analytical results from our additional soil sampling, we will submit an interim reclamation plan to the BLM with a copy to NMOCD. Any near surface soils affected from the less than three barrel leak from the tank will be included in the interim reclamation.

Andrew Parker RT Hicks Consultants Cell: 505-350-5535 (Preferred) Office: 505-266-5004

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Tuesday, June 04, 2013 7:06 AM |
| То: | Jones, Brad A., EMNRD <brad.a.jones@state.nm.us> (brad.a.jones@state.nm.us); 'mike.bratcher@state.nm.us'</brad.a.jones@state.nm.us> |
| Cc: | Van Curen, Jennifer E (jvancure@blm.gov); David_Luna@xtoenergy.com; 'Randall Hicks' |
| Subject: | XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status |
| | Inquiry - API No: 30-015-29434 |

Mr. Jones and Mr. Bratcher:

I am concerned there is confusion who is reviewing the Nash Unit 29 Modular Impoundment Spill Report that contains a remediation plan. The spill report is dated March 15, 2013 and was submit to District 2 - Artesia and the Environmental Bureau – Santa Fe via certified mail . Please let me know at your convenience when we can expect a response so we can begin work on the remediation. During the remediation, we will also conduct interim reclamation for the BLM. BLM is anxious to see interim reclamation begin.

Thank you.

| From: | Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us></mike.bratcher@state.nm.us> |
|--------------|---|
| Sent: | Wednesday, June 05, 2013 8:44 AM |
| То: | Andrew Parker; Jones, Brad A., EMNRD |
| Cc: | Van Curen, Jennifer E; David_Luna@xtoenergy.com; 'Randall Hicks' |
| Subject: | RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status |
| | Inquiry - API No: 30-015-29434 |
| Attachments: | Nash Draw 29 background sample.jpg |

Andrew,

The review of the C-141/Part 29 release event will be handled by the District 2 office. There was a misunderstanding on my part as to who would oversee that portion of the project. OCD tracking number for this release event is **2RP-1674**. The remediation proposal submitted is approved with the following conditions/stipulations:

- Like approval by BLM
- Notify OCD 48 hours prior to commencement of remedial activities.
- Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD
- A representative sample is to be obtained in an area off the location pad, unaffected by any activities that may have occurred related to any drilling, completion, production, injection or movement of produced fluids at this location. The analysis of this sample will be considered natural background for the area. Attached is a Google image indicating the preferred area to obtain this sample, assuming the area is unaffected by human and/or production activities.
- OCD may require additional remedial or investigatory actions after receipt and review of the above referenced sample analysis.
- A form C-141 marked Final Report, and a closure report, is to be submitted to OCD upon satisfactory completion of project.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notifications, please contact me.

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Tuesday, June 04, 2013 7:06 AM
To: Jones, Brad A., EMNRD; Bratcher, Mike, EMNRD
Cc: Van Curen, Jennifer E; David Luna@xtoenergy.com; 'Randall Hicks'
Subject: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Mr. Jones and Mr. Bratcher:

I am concerned there is confusion who is reviewing the Nash Unit 29 Modular Impoundment Spill Report that contains a remediation plan. The spill report is dated March 15, 2013 and was submit to District 2 - Artesia and the Environmental Bureau – Santa Fe via certified mail . Please let me know at your convenience when we can expect a response so we can begin work on the remediation. During the remediation, we will also conduct interim reclamation for the BLM. BLM is anxious to see interim reclamation begin.

Thank you.

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|--------------|--|
| Sent: | Tuesday, June 11, 2013 9:13 AM |
| То: | mike.bratcher@state.nm.us |
| Cc: | David_Luna@xtoenergy.com; |
| Subject: | FW: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan |
| | Status Inquiry - API No: 30-015-29434 |
| Attachments: | Nash Draw 29 background sample_AlternateSmallSize.jpg |

Mike:

Sorry for the large size in the earlier email. I removed the photos and reduce the aerial image showing the location of the proposed background sample. From my original email:

We staked the proposed background sample location. We had to move the suggested location east of the pad, rather than SE of the pad per your suggestion. The mesquite was to dense in your suggested location. We chose the proposed location as there is a small opening through the mesquite. Is the new proposed location acceptable to NMOCD that is located east of the well pad versus southeast of the well pad (see attached map)?

Our preliminary plan for sampling is to obtain a surface sample and a sample every 1.5 to 2 feet for chloride until 8 to 9 feet below ground surface is reached. We will field titrate for chloride and select representative samples for laboratory analysis. We will use a backhoe to obtain the samples.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Kristin Pope [mailto:kristin@rthicksconsult.com]
Sent: Monday, June 10, 2013 10:09 PM
To: 'Andrew Parker'
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

I staked the background sample point approximately 50-60 ft off the eastern edge of the pad/road, due east of the well. The coordinates are 32.30312 N, 103.93643 W

Not able to connect to the server tonight for some reason, but next time I can, I'll post the attached pics in the file.

As soon as I get the go-ahead from you and OCD, I will coordinate w/Parker Energy and Gene for sampling.

Kristin Pope R.T. Hicks Consultants Carlsbad Field Office 575.302.6755 From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Monday, June 10, 2013 9:44 AM
To: kristin@rthicksconsult.com
Cc: David Luna@xtoenergy.comk
Subject: FW: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Kristin:

We need to obtain a background sample near the location noted on the attached map as part of the approval of our reclamation plan. Mr. Bratcher is not familiar with the site and his location is in the middle of mesquite. Obviously this will not work.

We will use Parker Energy for the backhoe trench sampling. We will call Gene to coordinate the backhoe when we are ready. But first, I need you to go down to the location and mark the backhoe trench location for the one call. Call me so we can discuss potential locations for the sample location other than Mr. Bratcher's mesquite location. I am thinking of collecting a sample for chloride at the surface and 1.5 foot intervals thereafter until we reach the extent of the backhoe reach; which should be approximately 8 to 9 feet. I am hoping to show increasing chloride with depth as we approach the brackish saturated zone.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us]
Sent: Wednesday, June 05, 2013 8:44 AM
To: Andrew Parker; Jones, Brad A., EMNRD
Cc: Van Curen, Jennifer E; <u>David Luna@xtoenergy.com</u>; 'Randall Hicks'
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Andrew,

The review of the C-141/Part 29 release event will be handled by the District 2 office. There was a misunderstanding on my part as to who would oversee that portion of the project. OCD tracking number for this release event is **2RP-1674**. The remediation proposal submitted is approved with the following conditions/stipulations:

- Like approval by BLM
- Notify OCD 48 hours prior to commencement of remedial activities.
- Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD
- A representative sample is to be obtained in an area off the location pad, unaffected by any activities that may have occurred related to any drilling, completion, production, injection or movement of produced fluids at this location. The analysis of this sample will be considered natural background for the area. Attached is a Google image indicating the preferred area to obtain this sample, assuming the area is unaffected by human and/or production activities.
- OCD may require additional remedial or investigatory actions after receipt and review of the above referenced sample analysis.
- A form C-141 marked Final Report, and a closure report, is to be submitted to OCD upon satisfactory completion of project.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notifications, please contact me.

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Tuesday, June 04, 2013 7:06 AM
To: Jones, Brad A., EMNRD; Bratcher, Mike, EMNRD
Cc: Van Curen, Jennifer E; <u>David Luna@xtoenergy.com</u>; 'Randall Hicks'
Subject: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Mr. Jones and Mr. Bratcher:

I am concerned there is confusion who is reviewing the Nash Unit 29 Modular Impoundment Spill Report that contains a remediation plan. The spill report is dated March 15, 2013 and was submit to District 2 - Artesia and the Environmental Bureau – Santa Fe via certified mail . Please let me know at your convenience when we can expect a response so we can begin work on the remediation. During the remediation, we will also conduct interim reclamation for the BLM. BLM is anxious to see interim reclamation begin.

Thank you.

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|--|
| Sent: | Tuesday, June 11, 2013 11:22 AM |
| To: | kristin@rthicksconsult.com |
| Subject: | FW: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan |
| | Status Inquiry - API No: 30-015-29434 |

Looks like we have the go ahead. Please initiate the one call via Gene.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us]
Sent: Tuesday, June 11, 2013 10:01 AM
To: Andrew Parker
Cc: David_Luna@xtoenergy.com; kristin@rthicksconsult.com
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Andrew,

The proposed location will be fine. I just want to use an undisturbed/unaffected area to get an idea of what natural background is for this area. It was a concern for some of the folks in SF that the background sample was obtained on the site pad, so I think what you are proposing should alleviate that issue.

Thanks,

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Tuesday, June 11, 2013 9:13 AM
To: Bratcher, Mike, EMNRD
Cc: David Luna@xtoenergy.com; kristin@rthicksconsult.com
Subject: FW: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Mike:

Sorry for the large size in the earlier email. I removed the photos and reduce the aerial image showing the location of the proposed background sample. From my original email:

We staked the proposed background sample location. We had to move the suggested location east of the pad, rather than SE of the pad per your suggestion. The mesquite was to dense in your suggested location. We chose the proposed location as there is a small opening through the mesquite. Is the new proposed location acceptable to NMOCD that is located east of the well pad versus southeast of the well pad (see attached map)?

Our preliminary plan for sampling is to obtain a surface sample and a sample every 1.5 to 2 feet for chloride until 8 to 9 feet below ground surface is reached. We will field titrate for chloride and select representative samples for laboratory analysis. We will use a backhoe to obtain the samples.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Kristin Pope [mailto:kristin@rthicksconsult.com]
Sent: Monday, June 10, 2013 10:09 PM
To: 'Andrew Parker'
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

I staked the background sample point approximately 50-60 ft off the eastern edge of the pad/road, due east of the well. The coordinates are 32.30312 N, 103.93643 W

Not able to connect to the server tonight for some reason, but next time I can, I'll post the attached pics in the file.

As soon as I get the go-ahead from you and OCD, I will coordinate w/Parker Energy and Gene for sampling.

Kristin Pope R.T. Hicks Consultants Carlsbad Field Office 575.302.6755

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Monday, June 10, 2013 9:44 AM
To: kristin@rthicksconsult.com
Cc: David Luna@xtoenergy.comk
Subject: FW: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Kristin:

We need to obtain a background sample near the location noted on the attached map as part of the approval of our reclamation plan. Mr. Bratcher is not familiar with the site and his location is in the middle of mesquite. Obviously this will not work.

We will use Parker Energy for the backhoe trench sampling. We will call Gene to coordinate the backhoe when we are ready. But first, I need you to go down to the location and mark the backhoe trench location for the one call. Call me so we can discuss potential locations for the sample location other than Mr. Bratcher's mesquite location. I am thinking of collecting a sample for chloride at the surface and 1.5 foot intervals thereafter until we reach the extent of the backhoe

reach; which should be approximately 8 to 9 feet. I am hoping to show increasing chloride with depth as we approach the brackish saturated zone.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us]
Sent: Wednesday, June 05, 2013 8:44 AM
To: Andrew Parker; Jones, Brad A., EMNRD
Cc: Van Curen, Jennifer E; David Luna@xtoenergy.com; 'Randall Hicks'
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Andrew,

The review of the C-141/Part 29 release event will be handled by the District 2 office. There was a misunderstanding on my part as to who would oversee that portion of the project. OCD tracking number for this release event is **<u>2RP-1674</u>**. The remediation proposal submitted is approved with the following conditions/stipulations:

- Like approval by BLM
- Notify OCD 48 hours prior to commencement of remedial activities.
- Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD
- A representative sample is to be obtained in an area off the location pad, unaffected by any activities that may have occurred related to any drilling, completion, production, injection or movement of produced fluids at this location. The analysis of this sample will be considered natural background for the area. Attached is a Google image indicating the preferred area to obtain this sample, assuming the area is unaffected by human and/or production activities.
- OCD may require additional remedial or investigatory actions after receipt and review of the above referenced sample analysis.
- A form C-141 marked Final Report, and a closure report, is to be submitted to OCD upon satisfactory completion of project.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notifications, please contact me.

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720 From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Tuesday, June 04, 2013 7:06 AM
To: Jones, Brad A., EMNRD; Bratcher, Mike, EMNRD
Cc: Van Curen, Jennifer E; David Luna@xtoenergy.com; 'Randall Hicks'
Subject: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Mr. Jones and Mr. Bratcher:

I am concerned there is confusion who is reviewing the Nash Unit 29 Modular Impoundment Spill Report that contains a remediation plan. The spill report is dated March 15, 2013 and was submit to District 2 - Artesia and the Environmental Bureau – Santa Fe via certified mail . Please let me know at your convenience when we can expect a response so we can begin work on the remediation. During the remediation, we will also conduct interim reclamation for the BLM. BLM is anxious to see interim reclamation begin.

Thank you.

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Monday, June 17, 2013 10:12 AM |
| То: | mike.bratcher@state.nm.us |
| Cc: | 'Kristin Pope' |
| Subject: | XTO Nash Unit 29 C-141/Part 29 release event #2RP-1674 48 hour notice |

Mr. Bratcher:

Per your reclamation plan condition of approval for NMOCD Release # 2RP-1674, please accept this email as the 48 hour notice for background sampling. The sampling is scheduled for Friday June 21, 2013. The condition of approval that is the topic of this email is noted below.

• Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD

We plan to obtain one background soil sampling east of the location in an area that is undisturbed from past oil field operations. We proposed to obtain soil samples at the surface and every 1.5 to 2 feet below ground surface to approximately 8 feet below ground surface. We will field titrate for chloride and submit the sample showing the highest chloride for laboratory testing for chloride. Please contact me if you have any questions or comments.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us]
Sent: Wednesday, June 05, 2013 8:44 AM
To: Andrew Parker; Jones, Brad A., EMNRD
Cc: Van Curen, Jennifer E; David Luna@xtoenergy.com; 'Randall Hicks'
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Andrew,

The review of the C-141/Part 29 release event will be handled by the District 2 office. There was a misunderstanding on my part as to who would oversee that portion of the project. OCD tracking number for this release event is **2RP-1674**. The remediation proposal submitted is approved with the following conditions/stipulations:

- Like approval by BLM
- Notify OCD 48 hours prior to commencement of remedial activities.
- Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD
- A representative sample is to be obtained in an area off the location pad, unaffected by any activities that may have occurred related to any drilling, completion, production, injection or movement of produced fluids at this location. The analysis of this sample will be considered natural background for the area. Attached is a Google image indicating the preferred area to obtain this sample, assuming the area is unaffected by human and/or production activities.

- OCD may require additional remedial or investigatory actions after receipt and review of the above referenced sample analysis.
- A form C-141 marked Final Report, and a closure report, is to be submitted to OCD upon satisfactory completion of project.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notifications, please contact me.

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Tuesday, June 04, 2013 7:06 AM
To: Jones, Brad A., EMNRD; Bratcher, Mike, EMNRD
Cc: Van Curen, Jennifer E; David Luna@xtoenergy.com; 'Randall Hicks'
Subject: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Mr. Jones and Mr. Bratcher:

I am concerned there is confusion who is reviewing the Nash Unit 29 Modular Impoundment Spill Report that contains a remediation plan. The spill report is dated March 15, 2013 and was submit to District 2 - Artesia and the Environmental Bureau – Santa Fe via certified mail . Please let me know at your convenience when we can expect a response so we can begin work on the remediation. During the remediation, we will also conduct interim reclamation for the BLM. BLM is anxious to see interim reclamation begin.

Thank you.

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Wednesday, June 19, 2013 8:33 AM |
| То: | mike.bratcher@state.nm.us |
| Subject: | FW: XTO Nash Unit 29 C-141/Part 29 release event #2RP-1674 48 hour notice |

Mr. Bratcher:

The background sampling was delayed until Monday June 24th, 2013.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Kristin Pope [mailto:kristin@rthicksconsult.com]
Sent: Wednesday, June 19, 2013 1:10 AM
To: 'Andrew Parker'
Subject: RE: XTO Nash Unit 29 C-141/Part 29 release event #2RP-1674 48 hour notice

Parker Energy "Mike" called me Tuesday and said they had to reschedule for Monday morning. Ugh. Sorry.

Kristin Pope R.T. Hicks Consultants Carlsbad Field Office 575.302.6755

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Monday, June 17, 2013 10:12 AM
To: mike.bratcher@state.nm.us
Cc: 'Kristin Pope'
Subject: XTO Nash Unit 29 C-141/Part 29 release event #2RP-1674 48 hour notice

Mr. Bratcher:

Per your reclamation plan condition of approval for NMOCD Release # 2RP-1674, please accept this email as the 48 hour notice for background sampling. The sampling is scheduled for Friday June 21, 2013. The condition of approval that is the topic of this email is noted below.

• Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD

We plan to obtain one background soil sampling east of the location in an area that is undisturbed from past oil field operations. We proposed to obtain soil samples at the surface and every 1.5 to 2 feet below ground surface to approximately 8 feet below ground surface. We will field titrate for chloride and submit the sample showing the highest chloride for laboratory testing for chloride. Please contact me if you have any questions or comments.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us]
Sent: Wednesday, June 05, 2013 8:44 AM
To: Andrew Parker; Jones, Brad A., EMNRD
Cc: Van Curen, Jennifer E; David Luna@xtoenergy.com; 'Randall Hicks'
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Andrew,

The review of the C-141/Part 29 release event will be handled by the District 2 office. There was a misunderstanding on my part as to who would oversee that portion of the project. OCD tracking number for this release event is **2RP-1674**. The remediation proposal submitted is approved with the following conditions/stipulations:

- Like approval by BLM
- Notify OCD 48 hours prior to commencement of remedial activities.
- Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD
- A representative sample is to be obtained in an area off the location pad, unaffected by any activities that may
 have occurred related to any drilling, completion, production, injection or movement of produced fluids at
 this location. The analysis of this sample will be considered natural background for the area. Attached is a
 Google image indicating the preferred area to obtain this sample, assuming the area is unaffected by human
 and/or production activities.
- OCD may require additional remedial or investigatory actions after receipt and review of the above referenced sample analysis.
- A form C-141 marked Final Report, and a closure report, is to be submitted to OCD upon satisfactory completion of project.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notifications, please contact me.

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com] Sent: Tuesday, June 04, 2013 7:06 AM To: Jones, Brad A., EMNRD; Bratcher, Mike, EMNRD **Cc:** Van Curen, Jennifer E; <u>David Luna@xtoenergy.com</u>; 'Randall Hicks' **Subject:** XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Mr. Jones and Mr. Bratcher:

I am concerned there is confusion who is reviewing the Nash Unit 29 Modular Impoundment Spill Report that contains a remediation plan. The spill report is dated March 15, 2013 and was submit to District 2 - Artesia and the Environmental Bureau – Santa Fe via certified mail . Please let me know at your convenience when we can expect a response so we can begin work on the remediation. During the remediation, we will also conduct interim reclamation for the BLM. BLM is anxious to see interim reclamation begin.

Thank you.

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|--------------|--|
| Sent: | Friday, August 16, 2013 4:55 PM |
| То: | 'Bratcher, Mike, EMNRD' |
| Cc: | 'David_Luna@xtoenergy.com' |
| Subject: | NMOCD 2RP-1674 - XTO Nash Unit 29 Modular Impoundment Spill Report and |
| | Remediation Plan |
| Attachments: | Plate1_backgroundSample.pdf; Plate2_reclamationLayout.pdf; |
| | backgroundSamplingJune26_2013.pdf |

Mike:

We sampled a background location per C-141/Part 29 approval conditions/stipulations for release event 2RP-1674. Attached is a map (Plate 1) showing the location and results of the Background Sample collected on June 24, 2013. Results are shown in the white box with red outline. Included is the laboratory Certificate of Analysis. We will follow this email with a hard copy to be sent via Certified Mail.

The Background Sample shows an average chloride concentration of 2,773 mg/kg between 1.5 and 4.5 feet below ground surface (bgs). Below 4.5 feet chloride concentration is less than 2,000 mg/kg. The Trench Sample shows a higher chloride concentration of approximately 520 mg/kg between 1.5 and 2-feet bgs. Comparing the Trench Sample to the Background Sample, the average chloride concentration in the Trench Sample between 4 and 6 feet bgs is lower.

- average concentration of chloride between 4 and 6 feet bgs in the Trench Sample is 2,060 mg/kg.
- average concentration of chloride between 4.5 and 6 feet bgs in the Background Sample is 2,400 mg/kg.

Removing the upper 2-feet of soil within the remediation area as shown on Plate 2 will remediate the observed higher chlorides.

For your convenience, we reproduced a portion of our remediation plan as presented in our March 15 spill report, below:

XTO Energy proposes to excavate and dispose of the western third (30%) of the caliche pad that was in contact with the modular impoundment. The 30% area includes the release area and out beyond to the edge of the caliche pad. Plate 2 identifies the area proposed for remediation. The excavated material will be transported to R360 or equivalent for proper disposal.

The remediated area will be contoured and seeded using BLM Seed Mixture Type 4 with Giant Sacaton seed added to the mixture.

We anticipate starting remedial activities within the next few weeks. We will notify NMOCD 48-hours prior to remedial activities.

Please contact me at 970-570-9535 if you have any questions or comments.

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us]
Sent: Wednesday, June 05, 2013 8:44 AM
To: Andrew Parker; Jones, Brad A., EMNRD
Cc: Van Curen, Jennifer E; David Luna@xtoenergy.com; 'Randall Hicks'
Subject: RE: XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan Status Inquiry - API No: 30-015-29434

Andrew,

The review of the C-141/Part 29 release event will be handled by the District 2 office. There was a misunderstanding on my part as to who would oversee that portion of the project. OCD tracking number for this release event is **2RP-1674**. The remediation proposal submitted is approved with the following conditions/stipulations:

- Like approval by BLM
- Notify OCD 48 hours prior to commencement of remedial activities.
- Notify OCD 48 hours prior to obtaining samples where the analyses are to be presented to OCD
- A representative sample is to be obtained in an area off the location pad, unaffected by any activities that may have occurred related to any drilling, completion, production, injection or movement of produced fluids at this location. The analysis of this sample will be considered natural background for the area. Attached is a Google image indicating the preferred area to obtain this sample, assuming the area is unaffected by human and/or production activities.
- OCD may require additional remedial or investigatory actions after receipt and review of the above referenced sample analysis.
- A form C-141 marked Final Report, and a closure report, is to be submitted to OCD upon satisfactory completion of project.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

If you have any questions or concerns, and for notifications, please contact me.

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

| From: Sent: | Andrew Parker <andrew@rthicksconsult.com> Tuesday, September 17, 2013 10:04 AM</andrew@rthicksconsult.com> |
|----------------|--|
| To: | 'Bratcher, Mike, EMNRD' |
| Cc: | 'David_Luna@xtoenergy.com' |
| Subject: | RE: NMOCD 2RP-1674 - XTO Nash Unit 29 Modular Impoundment Spill Report and Remediation Plan |

Mr. Bratcher:

This email is the 72-hour notice to perform the spill remediation for the above referenced site per the C-141 spill report. We will begin work on Monday September 23rd, 2013.

Andrew Parker

From: Sent: To: Subject: Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us> Wednesday, October 23, 2013 9:37 AM Andrew Parker RE: Fall Color

Andrew,

That must be horrible to have such beautiful scenery all around you. Very nice.

I will try to get all the paperwork on my end together and imaged, but it will be at least next week before I can work on it.

Thanks,

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com] Sent: Wednesday, October 23, 2013 9:14 AM To: Bratcher, Mike, EMNRD Subject: Fall Color

Mike:

Thanks for the suggestions on how to finalize the spill report. FYI: The last image online is the approved C-144 by Mr. Jones.

And a little view up the road from my house (see attached photo).

Andrew Parker

| From: | Andrew Parker <andrew@rthicksconsult.com></andrew@rthicksconsult.com> |
|----------|---|
| Sent: | Monday, January 13, 2014 10:14 AM |
| То: | 'Bratcher, Mike, EMNRD' |
| Cc: | David_Luna@xtoenergy.com |
| Subject: | XTO Nash Unit 29 C-141/Part 29 release event #2RP-1674 |

Mr. Bratcher:

Per my phone message to you a few weeks ago, please upload the approved C-141 initial plan and final report to NMOCD imaging. I followed your recommendation to submit the C-144 final closure report that included the C-141 Final Closure Report to Mr. Jones prior to having a signed final report.

Mr. Jones called me and "dinged" me for :

- not including a signed/approved C-141 Final Report. I included the report but not the approved version.
- not including a signed/approved C-141 Intial Report. I did not think NMOCD-Santa Fe would want the extra paperwork. I was wrong.

Thanks Mike.

Andrew Parker RT Hicks Consultants Durango Field Office (970) 570-9535

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us] Sent: Wednesday, October 23, 2013 9:37 AM To: Andrew Parker Subject: RE: Fall Color

Andrew,

That must be horrible to have such beautiful scenery all around you. Very nice.

I will try to get all the paperwork on my end together and imaged, but it will be at least next week before I can work on it.

Thanks,

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720 From: Andrew Parker [mailto:andrew@rthicksconsult.com] Sent: Wednesday, October 23, 2013 9:14 AM To: Bratcher, Mike, EMNRD Subject: Fall Color

Mike:

Thanks for the suggestions on how to finalize the spill report. FYI: The last image online is the approved C-144 by Mr. Jones.

And a little view up the road from my house (see attached photo).

Andrew Parker

| From: | Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us></mike.bratcher@state.nm.us> |
|----------|---|
| Sent: | Thursday, January 16, 2014 9:21 AM |
| То: | Andrew Parker |
| Cc: | David_Luna@xtoenergy.com |
| Subject: | RE: XTO Nash Unit 29 C-141/Part 29 release event #2RP-1674 |

Andrew,

I just completed the imaging process for this project. The initial and final C-141 have made it to the well file (30-015-29434) and are available there now. Most of the entire project should be in the admin order file (2RP-1674), including the C-141s. I just checked and that is still uploading, some 600 + pages, but it should all be in there by end of day.

Sorry for the delay, but as always, I try to do the best I can with what resources I have available.

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com]
Sent: Monday, January 13, 2014 10:14 AM
To: Bratcher, Mike, EMNRD
Cc: David Luna@xtoenergy.com
Subject: XTO Nash Unit 29 C-141/Part 29 release event #2RP-1674

Mr. Bratcher:

Per my phone message to you a few weeks ago, please upload the approved C-141 initial plan and final report to NMOCD imaging. I followed your recommendation to submit the C-144 final closure report that included the C-141 Final Closure Report to Mr. Jones prior to having a signed final report.

Mr. Jones called me and "dinged" me for :

- not including a signed/approved C-141 Final Report. I included the report but not the approved version.
- not including a signed/approved C-141 Intial Report. I did not think NMOCD-Santa Fe would want the extra paperwork. I was wrong.

Thanks Mike.

From: Bratcher, Mike, EMNRD [mailto:mike.bratcher@state.nm.us] Sent: Wednesday, October 23, 2013 9:37 AM To: Andrew Parker Subject: RE: Fall Color

Andrew,

That must be horrible to have such beautiful scenery all around you. Very nice.

I will try to get all the paperwork on my end together and imaged, but it will be at least next week before I can work on it.

Thanks,

Mike Bratcher NMOCD District 2 811 S. First Street Artesia, NM 88210 O: 575-748-1283 X108 C: 575-626-0857 F: 575-748-9720

From: Andrew Parker [mailto:andrew@rthicksconsult.com] Sent: Wednesday, October 23, 2013 9:14 AM To: Bratcher, Mike, EMNRD Subject: Fall Color

Mike:

Thanks for the suggestions on how to finalize the spill report. FYI: The last image online is the approved C-144 by Mr. Jones.

And a little view up the road from my house (see attached photo).



May 22, 2012

പ

Ö

Brad Jones Oil Conservation Division New Mexico Energy, Minerals and Natural Resources Department 1220 South St. Francis Dr. Santa Fe, NM 87505

Re: Part 34 Use Permit Application for Treating Produced Water using CleanWave[™] Technology

Dear Mr. Jones:

By this letter application, XTO is requesting the Oil Conservation Division's approval of a Part 34 Use Permit for a project to recycle produced water in the Nash Draw, Brushy Canyon basin (the "Project"). The Project will use Halliburton Energy Services, Inc.'s ("HESI's") CleanWaveTM water treatment technology. CleanWaveTM uses proprietary treatment processes to generate water for reuse in fracturing fluids. By recycling a portion of the water produced in oil and gas operations, CleanWaveTM is intended to minimize oil and gas wastes and fresh water consumption.

We understand that there is not an Oil Conservation Division form required to apply for a Part 34 Use Permit and that the information set forth below, which is consistent with information required under the Division's rules for management of produced water, including the division authorization allowed under New Mexico Administrative Code 19.15.34.12, is the information necessary to allow the Division to consider and authorize the Project.

1. Applicant: XTO Energy, Inc.

2.

Oil and Gas Registration Identification (OGRID) Number: 5380

3. Contact Persons

David Luna Senior Operations Engineer (SE New Mexico) XTO Energy a subsidiary of ExxonMobil Cell: 432-296-3955 Office: 432-620-6742 email: David_Luna@xtoenergy.com

Renee LeBas Southern Region BD Manager - Water Solutions Halliburton Energy Services, Inc. 281.575.3076 (direct) 281.687.6993 (mobile) email: renee.lebas@halliburton.com

Jason C. Moore Counsel Halliburton Energy Services, Inc. 713.839.3283 (direct) 281.687.4308 (mobile) 713.839.4561 (fax) email: jason.moore3@halliburton.com

4. Mailing Address:

XTO Energy, Inc. 200 N. Loraine, Ste. 800 Midland, TX 79705

Halliburton Energy Services, Inc. 2107 CityWest Boulevard (4-1335A) Houston, Texas 77042-3051

5. Location of Proposed Project:

Basin/Field: Nash Draw/Brushy Canyon Lease: Nash Unit Well No: Nash Unit #4 (API No. 30-015-21777) Location: Sec 13, T23S, R29E, Unit A

6. Surface Owner

NM State Land Office Attachment A: Approval to place CleanWave on location

Purpose and expected results of proposed project:

The purpose of the Project is to conserve the use of fresh water and minimize oil and gas waste in hydraulic fracturing operations in New Mexico. By some estimates, oil and gas wells may require as much as 4 million gallons to complete hydraulic fracturing operations. Between 10% and 40% of the fluid volume used in fracturing operations flows back during the subsequent clean-up. And for every barrel of oil produced, approximately four barrels of water are produced. Up to 98% of oil and gas waste is co-produced water. In a time of increasingly scarce water in New Mexico, the CleanWave[™] service offers a promising solution for hydraulic fracturing water needs in the state.

The Project is expected to result in "no fresh water" being utilized for hydraulic fracturing operations and less disposal of oil and gas waste water. The Project also expects to demonstrate the economic and technical viability of using produced water for hydraulic fracturing operations.

8. Engineering information:

7.

HESI's mobile CleanWave[™] system uses an electrical process that has the capacity to destabilize and coagulate suspended colloidal matter in water. When produced water passes through the electrocoagulation cells, the anodic process releases positively charged ions which bind onto the negatively charged colloidal particles in water resulting in coagulation. At the same time gas bubbles, produced at the cathode, attach to the coagulated matter causing it to float to the surface. Heavier coagulants sink to the bottom leaving clear produced water, suitable for use in fracing operations.

XTO's focus is to treat produced water to a standard suitable for reuse in fracturing. In doing so, the volume of wastewater sent for disposal is minimized. The treated produced water is used in fracturing, thus eliminating our need for freshwater.

9. Design and construction information:

Attachments B, C, & D [Site Layout, Topo, & Aerial Map] shows the planned layout and design of the Project equipment to be used at XTO well operations, with information on the location and size of receiving, processing, and storage areas. Existing above grade 1000 bbl tanks (3) will be used for storage of untreated produced water, while the treated produced water will also be temporarily stored in existing above grade 1000 bbl tanks (2).

- 3 -

The existing above grade tanks are surrounded by earthen berm that is lined with a 20 mil geomembrane. This is intended to lessen any impact by capturing fluids inside the containment in the event of an unplanned release.

The two chemicals that will be on location are Sodium Hydroxide 50% solution (Caustic Soda Solution) and Hydrochloric Acid. The chemicals are stored in 1000 gallon, double walled high density polyethylene (HDPE) storage tanks. They are placed (secondary containment) in separate HESI trailers that are enclosed containers. The containers are sealed and act as additional containment beyond the 2 tank walls. The caustic container can retain 3 times the caustic volume (3000 gallons) and the acid container can retain 2 times the acid volume (2000 gallons). There is leak detection sensors located at floor level in the 4 corners of the containers and overflow detection is performed by sensors in the overflow line near the top of the tank.

XTO will take reasonable actions to contain releases from known potential sources by using tarps, buckets, absorbent pads, diatomaceous earth, duck ponds at critical points to catch small leaks or spills until the source can be eliminated. XTO will follow 19.15.29 and or 19.15.30 of NMAC for notification requirements of any release. Form C-141 [Attachment E] will be used for reporting.

10. Operating information:

The Project is expected to proceed over a period of 120 days.

While the treatment period may extend longer than 120 days, XTO anticipates processing a total volume of less than 250,000 bbl of produced water. This produced water is supplied from the Nash 53 SWD Battery (API:30-015-39400, Sec 13, T23S, R29E, Unit A). The treated produced water will be used in fracing operations for the following wells with corresponding API.

| Nash Unit #39 | 30-015-36951 |
|---------------|--------------|
| Nash Unit #40 | 30-015-37166 |
| Nash Unit #41 | 30-015-37165 |
| Nash Unit #56 | 30-015-38992 |
| Nash Unit #57 | 30-015-39303 |
| Nash Unit #58 | 30-015-39304 |
| Nash Unit #49 | 30-015-38663 |

ł

The estimated maximum volume of untreated produced water to be stored at the facility will be 3,000 bbl.

The estimated maximum volume of treated produced water to be stored at the facility at any one time will be 2,000 bbl. The treated produced water will be stored at the facility for no more than 1 day. As the water is being treated it will be pumped to another site via an existing buried steel pipeline [Attachment F] owned and maintained by XTO.

Only produced water will be treated in the Project.

Attachment G [MSDS] includes the Material Safety Data Sheets for chemicals or additives used, if necessary, in the CleanWave[™] recycling process.

Only XTO will use the treated produced water. The treated produced water will only be used in fracturing operations. Any produced water and treated produced water not used will be disposed of at XTO's Nash 53 SWD (API #30-015-39400: Sec 13, T23S, R29E, Unit H). This will occur at the end of the treating project during Closure. The removal process is discussed below in the Closure Plan.

Solids removed as part of the treatment process are expected to be less than 0.1 % of the total volume of produced water treated. The solids adhere to the "bubbles" that are produced from the electro-coagulation process. These lighter solids float on top (electro-flotation) and accumulate at one end of the 2-500 bbl above grade weir tanks. The heavier solids will slowly settle to the bottom of the 2-500 bbl settling tanks. These solids will be removed at the end of each fracture job. Each fracturing operation will require 40,000 bbl of treated produced water which will create about 40 bbl of solids (sludge). We are performing 6 fracturing jobs which will require 6 solids removal. The solids are removed by a vacuum truck. We will use Quality Transport Inc, approved C133 Hauler (#C133-239), for the solids removal. They will hook up a 3" vacuum hose to a 3" valve that draws from the bottom of the settling tanks. About 20 bbls of solids will be "sucked" in along with about 20 bbls of water. This will remove the heavy solids. The hose is then connected to a 3" valve on the weir tanks. It draws from the top and will remove about 20 bbls of solids that are floating on top. We will use a 50/50 mixture of solids sludge to produced water, which will create about 80 bbls. The sludge/waste will be disposed of in an approved disposal facility operated by Controlled Recovery Inc. (CRI), Permit R9166, 575-393-1071. This will be accompanied by a C-138 manifest [Attachment H].

- 5 -

XTO's BMP (Best Management Practices) will be followed during the solids removal process. This means that a drip pan will be placed under each connection that is used on the weir tanks and settling tanks. After the hose is disconnect, any remaining fluid in the hose will be caught in the drip pan. These fluids will then be pored over into the tanks. If Quality Transport has a more stringent method then their BMP will be followed.

An additional benefit of the CleanWave[™] service is that it can result in significant reduction of truck use in water management. On average, each CleanWave[™] unit working monthly would eliminate 175 truckloads of water, 6,300 miles of truck traffic and 900 hours of road time and emissions.

11. Monitoring information:

XTO will inspect equipment, processing, and storage areas as necessary. Produced water treatment units are equipped with emergency shutdown controls in each trailer that are automatically activated in the event of an unplanned release or when the system operates outside of engineered limits. Triggers for automatic shutdown include: minimum flow for running supply pumps is not met; differential pressure exceeds set points; temperature in the electro-coagulation cells is 10°F higher than manifold temperature; or effluent tanks are full and cannot receive more water. All environmental, injury and near miss incidents should be reported to XTO.

XTO will take reasonable actions to contain releases from known potential sources by using tarps, buckets, absorbent pads, diatomaceous earth, duck ponds at critical points to catch small leaks or spills until the source can be eliminated. XTO will follow 19.15.29 and or 19.15.30 of NMAC for notification requirements of any release. Form C-141 [Attachment E] will be used for reporting.

Real time analysis will be carried out constantly to measure turbidity and pH of treated water. Samples would be taken on a daily basis and transferred to HESI's district field lab to measure various analytes to ensure that the proposed processing will result in a recyclable product that meets the engineering standards for the proposed use. Attachment I [Water Quality Parameters and Ranges] provides information on water quality parameters to be tested.

12. Closure plan:

XTO will remove water, produced and treated produced, from all of the treating equipment (CleanWave unit, settling/weir tanks) at the end of the Project. This will be performed by using Quality Transport Inc, approved C133 Hauler (#C133-239), to pull the unused water from the settling tanks and weir tanks and transferring over into the existing above grade tanks on the same location. This will be performed using XTO BMP of a drip pan to catch any fluids that might drip out of the vacuum hose during connecting and disconnecting of the hose. It will then be disposed of in XTO's Nash 53 SWD (API #30-015-39400: Sec 13, T23S, R29E, Unit H). Any solids will be removed as per the Operating Information in Step #9 above. HESI will remove any of its own equipment and units used in the CleanWave[™] treatment process. Once removed, the location will be restored back to the condition it was in prior to setting up for this project. Any staining will be cleaned by digging up the stained soil, bagging it, and sending it via Quality Transport to an approved disposal facility operated by Controlled Recovery Inc. (CRI), Permit R9166, 575-393-1071. This will be accompanied by a C-138 manifest [Attachment H]. The location will be inspected by XTO to verify that no vegetation outside the existing location has been disturbed. If any disturbance exists, then it will be contoured and seeded with the approve seeding from the State Land Office. The OCD will be notified of the closure. This will be done via a summary report that will include before and after photos.

Considering the information in this application, the Division's approval of this Project permit would be appropriate for the following reasons:

- The Division has long encouraged oil and gas waste minimization through recycling (See OCD Environmental Handbook Categories and Disposal Methods for Oil Field Wastes);
- > The treated product will meet engineering standards for its intended use;
- The Division has approved previous projects for water recycling operations using the authority under NMAC 19.15.34.12;
- Similar mobile recycling projects are being approved in other states with promising results; and
- The potential benefits of waste minimization and conservation of water will be significant under the Project.

Please see the enclosed materials for further information on the CleanWaveTM process and the planned operations. If you have any questions, please contact David Luna at 432-620-6742.

Sincerely,

David Luna



"Martinez, Pete" <PMartinez@slo.state.nm.u s> To "Dawson, Scott" <sdawson@slo.state.nm.us>, "'david_luna@xtoenergy.com" <david_luna@xtoenergy.com> CC "Martinez, Donald" <dwmartinez@slo.state.nm.us>

05/04/2012 03:03 PM

bcc

Subject RE: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project

Mr. Luna,

The New Mexico State Land office has reviewed your request to put some equipment used in treating produced water on an XTO location that is on State Lands. You have advised this office that XTO has a Battery on that location and will not go outside the current pad.

Our records reflect the following:

- 1. Murchison Oil and Gas Inc. is the current "Operator of Record" for the Nash Unit.
- 2. XTO has been approved as the "Sub-Operator" for the Nash Unit Delaware formation.

3. Your 2012 Plan of development was reviewed and all the wells in your request have been approved as part of the 2012 Plan of Development for the Nash Unit.

Please be advised that since all the wells in your request are on committed lands within the Nash Unit and the subject wells were in an approved plan of development, your request is approved.

As long as you remain in the unit boundaries no rights-of-ways or easements are required.

If you have any questions, or if we may be of further help, please don't hesitate to call on us.

Pete Martinez

Unitizations New Mexico State Land Office Oil, Gas & Minerals Division Suite 217 310 Old Santa Fe Trail

Mailing Address: P. O. Box 1148 Santa Fe, NM 87504-1148

Office: 505-827-5791 Fax: 505-827-4739 Email: <u>pmartinez@slo.state.nm.us</u>

Web Site: www.nmstatelands.org CONFIDENTIALITY. This electronic mail and any files transmitted with it may contain information proprietary to the sender and is intended solely for the use of the individual or entity to whom they are addressed, shall be maintained in confidence and not disclosed to third parties without the written consent of the sender. If you are not the intended recipient or the person responsible for delivering the electronic mail to the intended recipient, be advised that you have received this electronic mail in error and that any use, dissemination, forwarding, printing, or copying of this electronic mail is strictly prohibited. If you have received this electronic mail in error, please immediately notify the sender by return mail.

-- Thanks --

I am needing approval from the State Land Office to put some equipment, used in treating produced water, on an XTO location that is on State Lands. We have a Battery on that location and will not go outside the current pad

From: Dawson, Scott
Sent: Friday, May 04, 2012 1:25 PM
To: Martinez, Pete
Subject: FW: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project

Pete,

I am coming down to talk to you about this.

Thanks,

Scott

From: <u>David Luna@xtoenergy.com [mailto:David Luna@xtoenergy.com]</u>
Sent: Thursday, May 03, 2012 3:38 PM
To: Dawson, Scott
Cc: Martinez, Donald; Armijo, Melissa
Subject: RE: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project

Scott,

Attached is the Nash Unit Wells. It shows the wells that are producing and the ones that we plan on

fracing this year. Hope this helps.

David Luna

"Dawson, Scott" < <u>sdawson@slo.state.nm.us</u>>

05/03/2012 04:12 PM

To"Martinez, Donald" <<u>dwmartinez@slo.state.nm.us</u>>, "David_Luna@xtoenergy.com" < <u>David_Luna@xtoenergy.com</u>> ^{CC}"Armijo, Melissa" <<u>marmijo@slo.state.nm.us</u>>

SubjRE: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project ect

Donald, David and Melissa,

If all wells they are servicing are unit wells and within the Nash Unit – there are no right of ways required. Send me a map of the wells going into the system and we can review it.

Scott Dawson

Petroleum Engineering Specialist NM State Land Office Oil, Gas and Minerals Division PO Box 1148 310 Old Santa Fe Trail Santa Fe, New Mexico 87504-1148 Ph. 505-827-6628 Fax 505-827-4739 <u>sdawson@slo.state.nm.us</u>

Website: <u>www.nmstatelands.org</u>

CONFIDENTIALITY. This electronic mail and any files transmitted with it may contain information proprietary to the sender and is intended solely for the use of the individual or entity to whom they are addressed, shall be maintained in confidence and not disclosed to third parties without the written consent of the sender. If you are not the intended recipient or the person responsible for delivering the electronic mail to the intended recipient, be advised that you have received this electronic mail in error and that any use, dissemination, forwarding, printing, or copying of this electronic mail is strictly prohibited. If you have received this electronic mail in error, please immediately notify the sender by return mail.

-- Thanks --

From: Martinez, Donald

Sent: Thursday, May 03, 2012 2:25 PM
To: 'David_Luna@xtoenergy.com'
Cc: Dawson, Scott; Armijo, Melissa
Subject: RE: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project

Mr. Luna,

Please forgive me however let us go over this with Scott and we will contact you later. Thank you.

Donald W. Martinez New Mexico State Land Office Surface Resources Division PH: (505) 827-5731 Fax: (505) 827-5741

From: <u>David Luna@xtoenergy.com [mailto:David Luna@xtoenergy.com]</u>
Sent: Wednesday, May 02, 2012 12:51 PM
To: Martinez, Donald
Subject: Fw: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project

Forgot to attach.

----- Forwarded by David Luna/MID/CTOC on 05/02/2012 01:46 PM -----

David Luna/MID/CTOC

05/02/2012 01:45 PM

To<u>dwmartinez@slo.state.nm.us</u>

SubjectFw: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project

Donald,

Attached is a map of what we are doing in the Nash Unit. We are going to take our produced water, clean it up, store it for up to 10 days, and then use it for fracing.

The location for the Halliburton treating facility (couple of trailers) is located on State of New Mexico surface. The storage area is on BLM. All of the transfer lines and frac wells are also BLM. Should not need any easements from the State Land Office because we are using existing lines and tanks.

Let me know what you think.

Thanks,

David Luna Senior Operations Engineer (SE New Mexico) XTO Energy a subsidiary of ExxonMobil 200 N. Loraine, Suite 800 Midland, Tx. 79701 Cell: 432-296-3955 Office: 432-620-6742 email: David Luna@xtoenergy.com

----- Forwarded by David Luna/MID/CTOC on 05/02/2012 01:40 PM -----

"Dawson, Scott" < <u>sdawson@slo.state.nm.us</u>>

05/02/2012 11:42 AM

To<u>"David_Luna@xtoenergy.com</u>" <<u>David_Luna@xtoenergy.com</u>> cc"Bloom, Greg" <<u>gbloom@slo.state.nm.us</u>>, "Roybal, Larry" <<u>LRoybal@slo.state.nm.us</u>>, "Martinez, Donald" <<u>dwmartinez@slo.state.nm.us</u>> SubjFW: Treating produced water for fracing - Nash Draw Brushy Canyon Basin Project ect

Mr. Luna,

We reviewed your proposed produced water treatment facility and concur with the purpose and expected results of the proposed project.

We agree that the expectations of the project is to conserve the use of fresh water and minimize oil and gas waste in hydraulic fracturing operations in New Mexico. We also believe the facility will be in the best interest of the State Land Office and oil and gas operations in the project area.

We want to make sure that XTO obtains all required rights of ways, easements and permits for the facility from the State Land Office. You can call Donald Martinez who is the Director of our Right of Way Division if you have any questions. His phone number is (505) 827-5731 and his e-mail address is dwmartinez@slo.state.nm.us

There are just a few items that we request of you:

1.) Can you let me know how the project is working for all parties when you get it in operation?

2.) Can you let me know if the project extends beyond the expected period of 120 days?

3.) Can you send us a copy of your approved closure plan from the OCD at the end of the project ?

Thanks and if you have any questions, please contact either Donald or myself.

Scott Dawson

Petroleum Engineering Specialist NM State Land Office Oil, Gas and Minerals Division PO Box 1148 310 Old Santa Fe Trail Santa Fe, New Mexico 87504-1148 Ph. 505-827-6628 Fax 505-827-4739 sdawson@slo.state.nm.us

Website:

www.nmstatelands.org

CONFIDENTIALITY. This electronic mail and any files transmitted with it may contain information proprietary to the sender and is intended solely for the use of the individual or entity to whom they are addressed, shall be maintained in confidence and not disclosed to third parties without the written consent of the sender. If you are not the intended recipient or the person responsible for delivering the electronic mail to the intended recipient, be advised that you have received this electronic mail in error and that any use, dissemination, forwarding, printing, or copying of this electronic mail is strictly prohibited. If you have received this electronic mail in error, please immediately notify the sender by return mail.

-- Thanks --

From: Dawson, Scott Sent: Thursday, April 26, 2012 4:18 PM To: 'David_Luna@xtoenergy.com' Subject: RE: Treating produced water for fracing

David,

We are still reviewing you proposed produced water treatment facility. I need to talk to my supervisors and staff on this facility before I can reply.

Thanks for sending all the information and documentation, and we will reply soon.

Scott Dawson

Petroleum Engineering Specialist NM State Land Office Oil, Gas and Minerals Division PO Box 1148 310 Old Santa Fe Trail Santa Fe, New Mexico 87504-1148 Ph. 505-827-6628 Fax 505-827-4739 <u>sdawson@slo.state.nm.us</u>

Website: <u>www.nmstatelands.org</u>

CONFIDENTIALITY. This electronic mail and any files transmitted with it may contain information proprietary to the sender and is intended solely for the use of the individual or entity to whom they are addressed, shall be maintained in confidence and not disclosed to third parties without the written consent of the sender. If you are not the intended recipient or the person responsible for delivering the electronic mail to the intended recipient, be advised that you have received this electronic mail in error and that any use, dissemination, forwarding, printing, or copying of this electronic mail is strictly prohibited. If you have received this electronic mail in error, please immediately notify the sender by return mail.

-- Thanks --

From: <u>David_Luna@xtoenergy.com [mailto:David_Luna@xtoenergy.com]</u> Sent: Wednesday, April 25, 2012 5:05 PM To: Dawson, Scott Subject: Treating produced water for fracing

Scott,

I am needing approval from the State Land Office to put some equipment, used in treating produced water, on an XTO location that is on State Lands.

We have a Battery on that location and will not go outside the current pad. The information is below:

Lease: Nash Unit Well No: Nash Unit #4 (API No. 30-015-21777) Location: Sec 13, T23S, R29E, Unit A Lease: K-6606

I have been working with the OCD Environmental Engineer, Brad Jones, for the last month on an application to do this. He also need something from you stating that it is OK for us to use this equipment at that site.

I attached some maps and the "Application".

thanks in advance,

David Luna Senior Operations Engineer (SE New Mexico) XTO Energy a subsidiary of ExxonMobil 200 N. Loraine, Suite 800 Midland, Tx. 79701 Cell: 432-296-3955 Office: 432-620-6742 email: <u>David_Luna@xtoenergy.com</u>

This email has been scanned by the Symantec Email Security.cloud service. For more information please visit <u>http://www.symanteccloud.com</u>

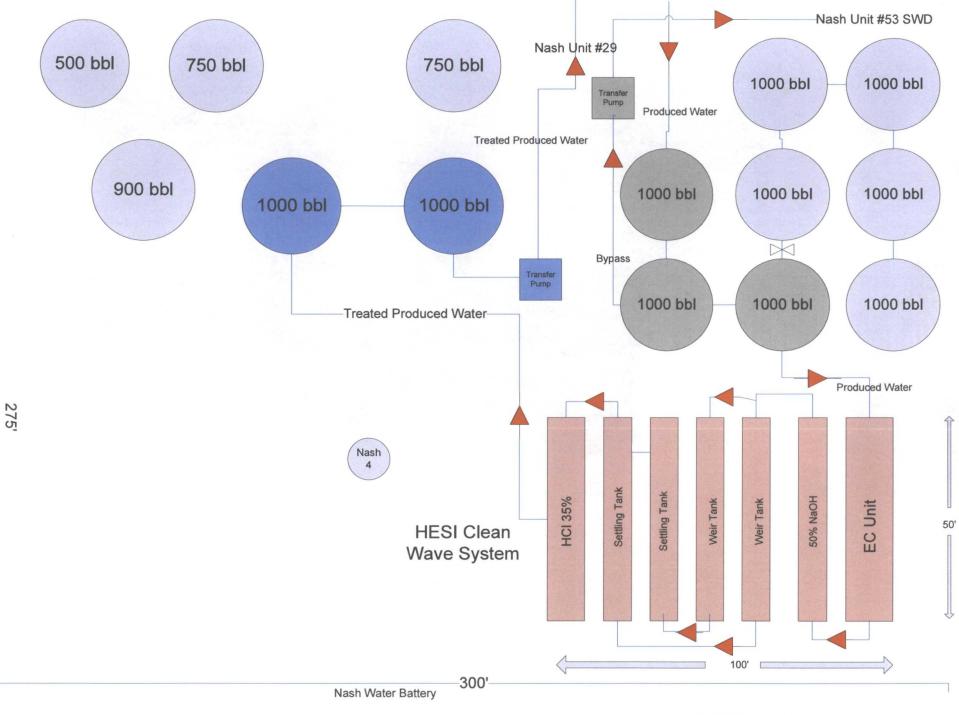
This email has been scanned by the Symantec Email Security.cloud service. For more information please visit <u>http://www.symanteccloud.com</u>

This email has been scanned by the Symantec Email Security.cloud service. For more information please visit <u>http://www.symanteccloud.com</u>

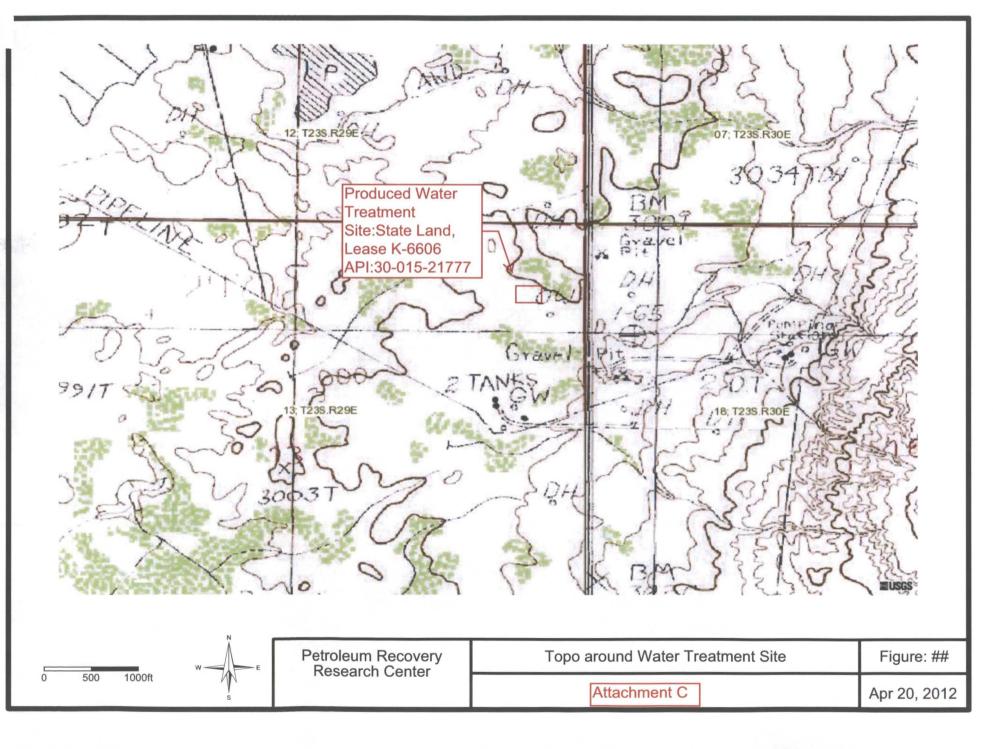
This email has been scanned by the Symantec Email Security.cloud service. For more information please visit <u>http://www.symanteccloud.com</u>

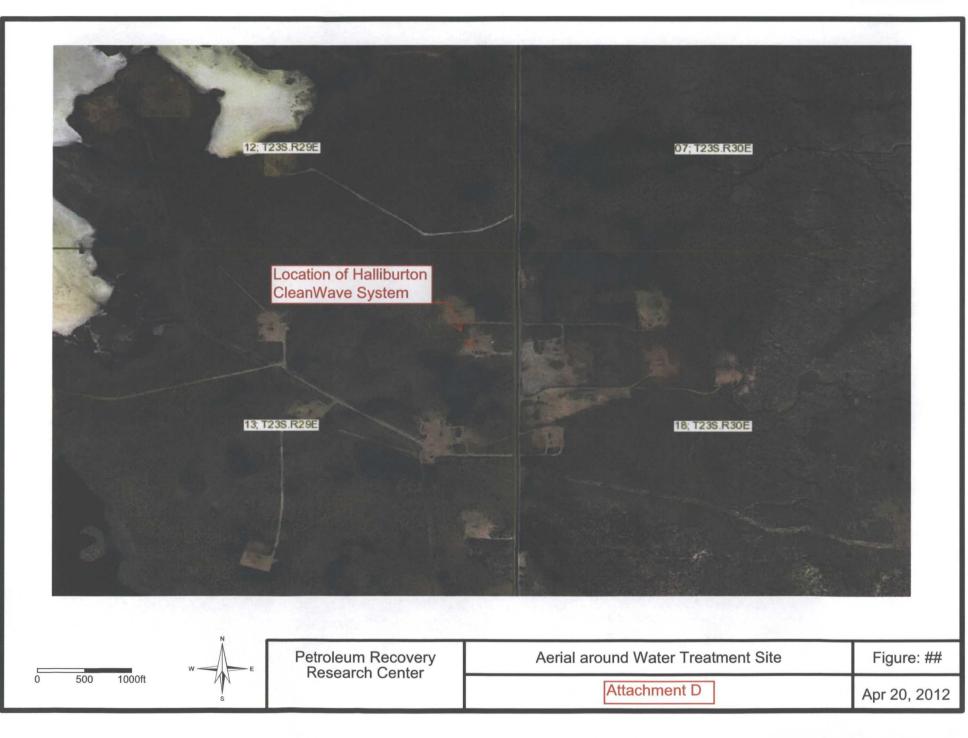
This email has been scanned by the Symantec Email Security.cloud service. For more information please visit <u>http://www.symanteccloud.com</u>

This email has been scanned by the Symantec Email Security.cloud service. For more information please visit http://www.symanteccloud.com



Attachment B





District 1 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

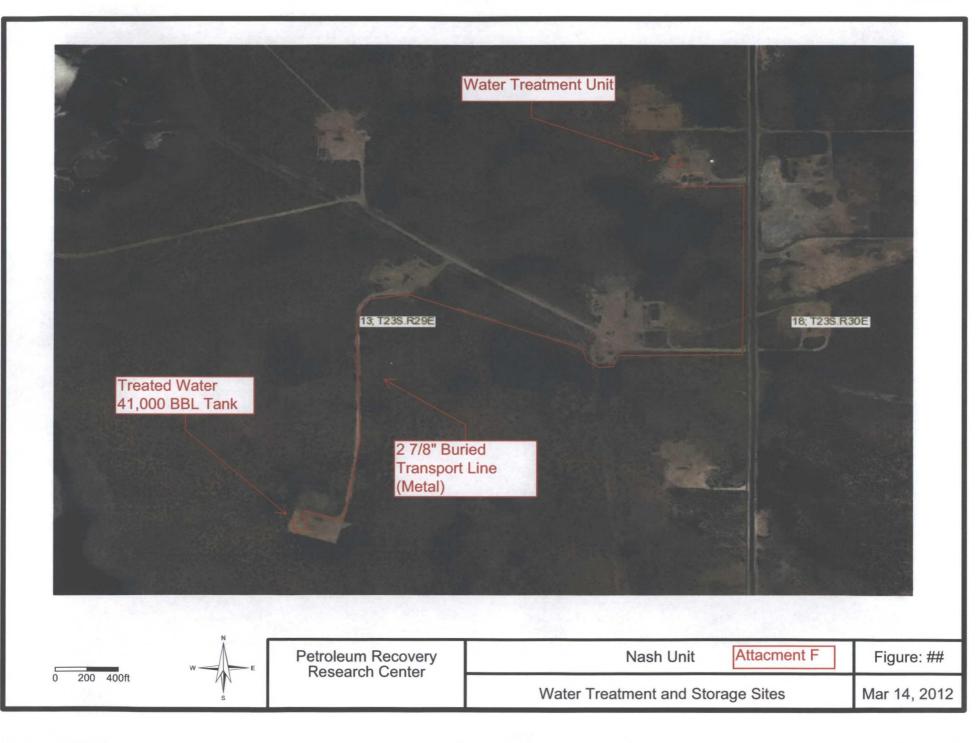
Form C-141 Revised August 8, 2011

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

| | | | Rele | ease Notific | cation | and Co | orrective A | ction | | | | |
|--|---------------------------------------|---------------|------------|---------------|---------|---------------|-------------------|-------------|------------|--------------|-------|-----------|
| | | | | | | OPERA | ГOR | |] Initia | al Report | 🗌 Fin | al Report |
| | | | | Contact | | | | | | | | |
| | | | | Telephone N | | | | | | | | |
| Facility Nat | ne | ····· | | | F | Facility Typ | e | | | ····· | | |
| Surface Ow | ner | | | Mineral C | Owner | | | | API No |). | | |
| | | | | LOCA | ATION | OF REI | LEASE | | · | | | |
| Unit Letter | Section | Township | Range | Feet from the | North/S | South Line | Feet from the | East/Wes | st Line | County | | |
| · · · · · · · · · · | 1 | L | La | titude | | _ Longitud | e | L | | 1 | | |
| | | | | NAT | URE | OF REL | EASE | | | | | |
| Type of Rele | | | | | | Volume of | | | | Recovered | | |
| Source of Re Was Immedia | | | | | | | lour of Occurrenc | e D | Date and | Hour of Disc | overy | |
| was immedia | ate Notice (| | Yes |] No 🗌 Not Re | equired | If YES, To | whom? | | • | | | i |
| By Whom? | | | ******** | | | Date and H | lour | | | | | |
| Was a Water | course Read | | – | - | | If YES, Vo | lume Impacting t | the Waterco | ourse. | | | |
| | | | Yes 🗌 | | | | | | | | | |
| If a Watercou | irse was Im | pacted, Descr | ibe Fully. | * | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Describe Cau | ise of Probl | em and Reme | dial Actio | n Taken * | | | | | | | | |
| Desenbe Cat | | em and Reme | | ii Takoli. | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Describe Are | a Affected | and Cleanup A | Action Tal | ken.* | | | | | | | | |
| | | - | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. | | | | | | | | | | | | |
| | | | | | | | OIL CON | SERVA | TION | DIVISIO | N | |
| Signature: | | | | | | | | | | | | |
| Printed Name | Approved by Environmental Specialist: | | | | | | | | | | | |
| | <i>.</i> | | | | | | | | | | | |
| Title: | | | | | A | Approval Dat | e: | Exp | piration 1 | Date: | | |
| E-mail Addre | ess: | | | | c | Conditions of | Approval: | | | Attached | | |
| Date | | | Phone | | | | | | | | | |

* Attach Additional Sheets If Necessary

Attachment E



MATERIAL SAFETY DATA SHEET

Sodium Hydroxide 50% Solution



MSDS Ref. No.: 1310-73-2-3 Date Approved: 05/13/2009 Revision No.: 5

This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:

SYNONYMS:

GENERAL USE:

Sodium Hydroxide 50% Solution

Caustic Soda Solution; Lye Solution; Sodium Hydrate Solution, White Caustic Solution

pH Control

This chemical is certified to ANSI/NSF Standard 60, Drinking Water Chemicals-Health Effects (as packaged in the original, unopened container). The maximum dosage level for this chemical is 200 mg/L

MANUFACTURER

FMC Wyoming Corporation Alkali Chemicals Division 1735 Market Street Philadelphia, PA 19103 (215) 299-6000 (General Information) msdsinfo@fmc.com (Email - General Information)

EMERGENCY TELEPHONE NUMBERS

(307) 872-2452 (Plant - Green River, WY)

(303) 595-9048 (Medical - Call Collect)

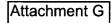
For leak, fire, spill, or accident emergencies, call: (800) 424-9300 (CHEMTREC - U.S.A. & Canada)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

- Water white liquid with no appreciable odor.
- Solution is corrosive to body tissues and metallic materials.
- Product may react violently with acids.

POTENTIAL HEALTH EFFECTS: Solution is corrosive and severely irritating to the eyes and skin.



MEDICAL CONDITIONS AGGRAVATED: Skin and lung disorders may be affected adversely by this material; an individual's specific medical condition and circumstances of exposure determine the likelihood of an adverse effect.

3. COMPOSITION / INFORMATION ON INGREDIENTS

| Chemical Name | CAS# | Wt.% | EC No. | EC Class |
|------------------|-----------|------|-----------|----------------|
| Sodium Hydroxide | 1310-73-2 | 50 | 215-185-5 | C; R35 |
| Water | 7732-18-5 | 50 | 231-791-2 | Not classified |

4. FIRST AID MEASURES

EYES: Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.

SKIN: Immediately flush with plenty of water while removing contaminated clothing and/or shoes, and thoroughly wash with soap and water. See a medical doctor immediately.

INGESTION: Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

NOTES TO MEDICAL DOCTOR: Sodium hydroxide at this concentration is corrosive. Major burns to all surfaces may result. Prolonged dilution with water is required. Neutralization of eye burns is absolutely contraindicated; for skin, 2% acetic acid has been recommended, but washing with water is effective. Ingestion requires milk or water dilution, consideration of esphagoscopy and management for possible esophageal stricture.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Not applicable

FIRE / EXPLOSION HAZARDS: Non-combustible.

FIRE FIGHTING PROCEDURES: Not applicable

FLAMMABLE LIMITS: Not applicable

HAZARDOUS COMBUSTION PRODUCTS: None

SENSITIVITY TO IMPACT: Not Sensitive

SENSITIVITY TO STATIC DISCHARGE: Not Sensitive

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Wear personal protective equipment as recommended in Section 8, "Exposure Controls/Personal Protection" below.

Contain spill using absorbent material and place in an approved container.

Dispose of according to the method outlined in Section 13, "Disposal Considerations" below.

7. HANDLING AND STORAGE

HANDLING: During handling of liquid, prevent contact with skin and eyes by using adequate personal protective equipment (see Section 8, "Exposure Controls/Personal Protection" below). If the release of airborne material is likely, exhaust ventilation and/or respiratory protection may also be necessary.

STORAGE: Store in closed containers away from sources of heat.

COMMENTS: Use only in systems, processes and procedures in which effective ventilation has been provided to meet established exposure limits.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

| Chemical Name | ACĞIH | OSHA | Supplier |
|------------------|-------------------------------|---------------------------|----------|
| Sodium Hydroxide | 2 mg/m ³ (ceiling) | 2 mg/m ³ (PEL) | |

ENGINEERING CONTROLS: Adequate engineering controls and/or personal protective equipment must be used to prevent contact with skin and eyes. Engineering controls and/or respirators may be necessary when the generation of airborne mists or fogs are possible.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: Chemical goggles (and face shield if necessary) should be worn to prevent contact.

RESPIRATORY: When exposure above the established standard is likely, a respiratory protection program that complies with OSHA General Industry Standard 1910.134 should be implemented. Wear full face-piece respirators approved by MSHA / NIOSH if mists are expected.

PROTECTIVE CLOTHING: Rubber or vinyl apron. Rubber boots or rubber overshoes.

GLOVES: Impervious rubber or vinyl gloves with gauntlets. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

COMMENTS:

The information noted above provides general guidance for handling this product. Specific work environments and material handling practices will dictate the selection and use of personal protection equipment (PPE).

9. PHYSICAL AND CHEMICAL PROPERTIES

| ODOR: | No appreciable odor |
|------------------------------------|--|
| APPEARANCE: | Water white liquid |
| AUTOIGNITION TEMPERATURE: | Not applicable |
| BOILING POINT: | 145 °C (293 °F) |
| COEFFICIENT OF OIL / WATER: | Not applicable |
| EVAPORATION RATE: | (butyl acetate = 1) Not available |
| FLASH POINT: | Non-combustible |
| FREEZING POINT: | 4.4°C (40°F) |
| ODOR THRESHOLD: | Not applicable |
| OXIDIZING PROPERTIES: | Not available |
| PERCENT VOLATILE: | Not applicable |
| pH: | (as is) 13.7 |
| SOLUBILITY IN WATER: | Infinite |
| SPECIFIC GRAVITY: | $1.53 @ 15.5^{\circ}C (60^{\circ}F) (water = 1)$ |
| VAPOR DENSITY: | Not applicable |
| VAPOR PRESSURE: | 6.33 mm Hg @ 40 °C (104 °F) |

COMMENTS:

pH (1% solution): 13.0

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID:

STABILITY: POLYMERIZATION: INCOMPATIBLE MATERIALS: Contact with acids, flammable liquids, organic halogen compounds, nitro compounds, and amphoteric metals, such as aluminum, magnesium and zinc.

Slightly reactive

Will not occur

Acids, flammable liquids, organic halogen compounds, nitro compounds, and amphoteric metals, such as aluminum, magnesium and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS: None

11. TOXICOLOGICAL INFORMATION

EYE EFFECTS: Severely irritating, corrosive (rabbit) [RTECS 1986, NIOSH 1975]

SKIN EFFECTS: Severely irritating, corrosive (rabbit) [RTECS 1986, PB 234-899 1974]

DERMAL LD₅₀: Corrosive

ORAL LD₅₀: 400 mg/kg (rabbit) LDLo [PB 234-899 1974]

INHALATION LC₅₀: Corrosive

TARGET ORGANS: Skin, eyes, mucous membranes

ACUTE EFFECTS FROM OVEREXPOSURE: Sodium hydroxide is corrosive and may produce severe eye, skin and respiratory tract irritation and upper gastrointestinal tract damage. Ingestion of concentrated solutions has caused death in animals and humans. [Gosselin, Smith & Hodge, 1984; PB 234-899 1974]

CHRONIC EFFECTS FROM OVEREXPOSURE: Sodium hydroxide may produce inflammation of the eyes, skin, and mucous membranes. Esophageal carcinoma at the site of a chronic lye stricture has been reported. [Gosselin, Smith & Hodge 1984]

CARCINOGENICITY:

| NTP: | Not listed |
|--------|--------------------|
| IARC: | Not listed |
| OSHA: | Not listed |
| OTHER: | Not Listed (ACGIH) |

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: Bluegill sunfish: 48-hour $LC_{50} = 99 \text{ mg/L}$ Mosquito fish: 96-hour $LC_{50} = 125 \text{ mg/L}$ Brown shrimp (Crangon crangon): 48-hour $LC_{50} = 30 - 100 \text{ mg/L}$

The damaging effects are mostly a consequence of the increase in pH. The upper pH limit tolerated by most freshwater fish is 8.4; the pH must generally be greater than 9 before the aqueous environment becomes lethal for fully developed fish. Freshwater algae are destroyed above pH 8.5. Concentrations of 20 to 100 mg/L have been reported to kill salmon, trout, carp and crayfish. [Ref., Environment Canada, Environmental Protection Service, Sodium Hydroxide Environmental and Technical Information for Problem Spills. June 1984]

CHEMICAL FATE INFORMATION: The pH effect of sodium hydroxide in water is naturally reduced by the absorption of atmospheric carbon dioxide. This reduction is also effected by dilution with water and by the natural acidity of a given water body. There is no degradation of sodium hydroxide in waters, only loss by absorption or through chemical neutralization.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Dispose of in accordance with all local, state and federal environmental rules and regulations. Check the pH of the waste to be disposed, if it is greater than 12.5 it must be handled as a RCRA hazardous waste.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (DOT)

| PROPER SHIPPING NAME: | Sodium Hydroxide Solution |
|----------------------------------|---------------------------|
| PRIMARY HAZARD CLASS / DIVISION: | 8 |
| UN/NA NUMBER: | UN 1824 |
| PACKING GROUP: | II |

Date: 05/13/2009

LABEL(S):

PLACARD(S):

ADDITIONAL INFORMATION:

Corrosive

Corrosive

Sodium hydroxide is in an "RQ" quantity when this material meets or exceeds 2500 pounds per bulk package.

49 STCC Number: 4935240

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

PROPER SHIPPING NAME:

Sodium Hydroxide Solution

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) / INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

PROPER SHIPPING NAME:

Sodium Hydroxide Solution

OTHER INFORMATION:

Cool containers with water if exposed to fire or excessive heat conditions.

15. REGULATORY INFORMATION

UNITED STATES

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A): Not listed

SECTION 311 HAZARD CATEGORIES (40 CFR 370): Immediate (Acute) Health Hazard

SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):

The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.: None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):

This product does not contain any toxic chemicals subject to the reporting requirements of Section 313, Title III of the SARA (Superfund Amendments and Reauthorization Act) of 1986.

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4): Listed

RQ

<u>Chemical Name</u> Sodium Hydroxide

1,000 lb Category C

TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA INVENTORY STATUS (40 CFR 710): All components are listed or exempt.

CANADA

WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Hazard Classification / Division:EIngredient Disclosure List:ListedDomestic Substance List:All components are listed or exempt.

EU EINECS NUMBERS:

215-185-5 (sodium hydroxide)

HAZARD AND RISK PHRASE DESCRIPTIONS:

С

R35

EC Symbols:

(Corrosive)

EC Risk Phrases:

(Causes severe burns.)

16. OTHER INFORMATION

<u>HMIS</u>

| Health | 3 |
|---------------------------|---|
| Flammability | 0 |
| Physical Hazard | 1 |
| Personal Protection (PPE) | J |

Protection = J (Safety goggles, gloves, apron & combination dust & vapor respirator)

HMIS = Hazardous Materials Identification System

Degree of Hazard Code:

- 4 =Severe
- 3 =Serious
- 2 = Moderate
- 1 =Slight
- 0 = Minimal

<u>NFPA</u>

| Health | 3 |
|--------------|------|
| Flammability | 0 |
| Reactivity | 1 |
| Special | None |
| NT | |

No special requirements

NFPA (National Fire Protection Association)

Degree of Hazard Code:

- 4 = Extreme
- 3 = High
- 2 = Moderate
- 1 =Slight
- 0 = Insignificant

REVISION SUMMARY:

This MSDS replaces Revision #4, dated January 26, 2004. Changes in information are as follows: Section 1 (Product and Company Identification) Section 8 (Exposure Controls / Personal Protection) Section 14 (Transport Information) Section 15 (Regulatory Information) Section 16 (Other Information)

FMC - Trademark of FMC Corporation

© 2009 FMC Corporation. All Rights Reserved.

FMC Corporation believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be applicable where such product is used in combination with any other materials or in any process. It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Further, since the conditions and methods of use are beyond the control of FMC Corporation, FMC Corporation expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

HALLIBURTON

SAFETY DATA SHEET (2001/58/EC)

HYDROCHLORIC ACID

Product Trade Name:

Revision Date:

04-Jan-2010

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Identification of Substances or Preparation

| Product Trade Name: Synonyms: Chemical Family: Application: | HYDROCHLORIC ACID None Inorganic acid Solvent |
|--|--|
| Company Undertaking Identification | Halliburton Energy Services Halliburton House, Howemoss Place Kirkhill Industrial Estate Dyce Aberdeen, AB21 0GN United Kingdom Emergency Phone Number: +44 1224 795277 or +1 281 575 5000 |
| | www.halliburton.com |
| Prepared By | Chemical Compliance Telephone: 1-580-251-4335 e-mail: fdunexchem@halliburton.com |

2. HAZARDS IDENTIFICATION

Risk Phrases

R34 Causes burns.

R37 Irritating to respiratory system.

| Hazard | Overv | view |
|--------|-------|------|
|--------|-------|------|

May cause eye, skin, and respiratory burns. May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| SUBSTANCE | CAS Number | PERCENT | EINECS | UK WEL | Germany MAK/TRK | Netherland MAC | Is EEC Classification |
|-------------------|---------------|----------|-----------|--------|--------------------|-------------------|-----------------------|
| Hydrochloric acid | 7647-01-0 | 30 - 60% | 231-595-7 | 1 ppm | 2 ppm | 5 ppm | C; R34 Xi; R37 |
| | • | | | | | | |

4. FIRST AID MEASURES

Inhalation

If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

HYDROCHLORIC ACID Page 1 of 6

Attachment G

| minutes. Get medical attention. Remove contaminated clothing and launder be reuse.EyesIn case of contact, or suspected contact, immediately flush eyes with plenty of for at least 15 minutes and get medical attention immediately after flushing.IngestionDo not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and see medical attention. Never give anything by mouth to an unconscious person.Notes to PhysicianNot Applicable |
|--|
| minutes. Get medical attention. Remove contaminated clothing and launder be reuse. Eyes In case of contact, or suspected contact, immediately flush eyes with plenty of for at least 15 minutes and get medical attention immediately after flushing. Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and set |
| minutes. Get medical attention. Remove contaminated clothing and launder be reuse.EyesIn case of contact, or suspected contact, immediately flush eyes with plenty of |
| minutes. Get medical attention. Remove contaminated clothing and launder be |
| Skin In case of contact, immediately flush skin with plenty of soap and water for at l |

5. FIRE FIGHTING MEASURES

| Suitable Extinguishing Media | Water fog, carbon dioxide, foam, dry chemical. |
|---|--|
| Unsuitable Extinguishing Media | None known. |
| Special Exposure Hazards | May form explosive mixtures with strong alkalis. Decomposition in fire may produce toxic gases. Reaction with steel and certain other metals generates flammable hydrogen gas. Do not allow runoff to enter waterways. |
| Special Protective Equipment for Fire-Fighters | Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel. |

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Use appropriate protective equipment.

| Environmental Precautionary Measures | Prevent from entering sewers, waterways, or low areas. |
|---|--|
| Procedure for Cleaning / Absorption | Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove. |
| 7. HANDLING AND STOR | AGE |
| Handling Precautions | Avoid contact with eyes, skin, or clothing. Avoid breathing vapors. Wash hands after use. Launder contaminated clothing before reuse. |
| Storage Information | Store away from alkalis. Store in a cool well ventilated area. Keep container closed when not in use. Product has a shelf life of 24 months. |

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

| Engineering Controls | Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation. |
|------------------------|--|
| Respiratory Protection | Acid gas respirator. |
| Hand Protection | Impervious rubber gloves. |
| Skin Protection | Full protective chemical resistant clothing. Rubber boots. |
| Eye Protection | Chemical goggles; also wear a face shield if splashing hazard exists. |
| Other Precautions | Eyewash fountains and safety showers must be easily accessible. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| Physical State: Color: Odor: | L C F |
|---|-------------|
| pH: | Ć |
| Specific Gravity @ 20 C (Water=1): | |
| Density @ 20 C (kg/l): | |
| Bulk Density @ 20 C (kg/m ³): | 1 |
| Boiling Point/Range (C): | |
| Freezing Point/Range (Ć): | - |
| Pour Point/Range (C): | 1 |
| Flash Point/Range (C): | 1 |
| Flash Point Method: | 1 |
| Autoignition Temperature (C): | 1 |
| Flammability Limits in Air - Lower (g/m ³): | 1 |
| Flammability Limits in Air - Lower (%): | 1 |
| Flammability Limits in Air - Upper (g/m ³): | 1 |
| Flammability Limits in Air - Upper (%): | 1 |
| Vapor Pressure @ 20 C (mmHg): | 2 |
| Vapor Density (Air=1): | 1 |
| Percent Volatiles: | 3 |
| Evaporation Rate (Butyl Acetate=1): | 1 |
| Solubility in Water (g/100ml): | 5 |
| Solubility in Solvents (g/100ml): | 1 |
| VOCs (g/l): | 1 |
| Viscosity, Dynamic @ 20 C (centipoise): | 1 |
| Viscosity, Kinematic @ 20 C (centistrokes): | 1 |
| Partition Coefficient/n-Octanol/Water: | 1 |
| Molecular Weight (g/mole): | 3 |
| Decomposition Temperature (C): | 1 |

Liquid Clear colorless Pungent acrid 8.0 1.18 1.16 Not Determined 110 -46 Not Determined 26 Not Determined 35 Not Determined Soluble Not Determined Not Determined 4 Not Determined Not Determined Not Determined 36.5 Not Determined

10. STABILITY AND REACTIVITY

| Stability Data: | Stable |
|---|---|
| Hazardous Polymerization: | Will Not Occur |
| Conditions to Avoid | None anticipated |
| Incompatibility (Materials to Avoid) | Strong alkalis. |
| Hazardous Decomposition Products | Flammable hydrogen gas. Chlorine. Hydrogen sulfide. |
| Additional Guidelines | Not Applicable |

11. TOXICOLOGICAL INFORMATION

| Principle Route of Exposure | Eye or skin contact, inhalation. |
|-------------------------------|--|
| Inhalation | Causes severe respiratory irritation. |
| Skin Contact | May cause skin burns. |
| Eye Contact | May cause eye burns. |
| Ingestion | Causes burns of the mouth, throat and stomach. |
| Aggravated Medical Conditions | Skin disorders. |

HYDROCHLORIC ACID Page 3 of 6

| Chronic Effects/Carcinogenicity | Prolonged, excessive exposure may cause erosion of the teeth. |
|---|---|
| Other Information | None known. |
| Toxicity Tests | |
| Oral Toxicity: | Not determined |
| Dermal Toxicity: | Not determined |
| Inhalation Toxicity: | LC50: 3124 ppm/1 hr. (Rat) |
| Primary Irritation Effect: | Not determined |
| Carcinogenicity | Not determined |
| Genotoxicity: | Not determined |
| Reproductive / Developmental Toxicity: | Not determined |

12. ECOLOGICAL INFORMATION

| Ecotoxicological Information | | |
|------------------------------|----------------|--|
| Bio-accumulation | Not determined | |
| Persistence/Degradability | Not determined | |
| Mobility (Water/Soil/Air) | Not determined | |

Acute Fish Toxicity:
Acute Crustaceans Toxicity:Not determined
Acute Algae Toxicity:Not determined
Acute Algae Toxicity:Not determinedChemical Fate InformationNot determinedOther InformationNot applicable

13. DISPOSAL CONSIDERATIONS

Disposal MethodDisposal should be made in accordance with federal, state, and local regulations.Contaminated PackagingFollow all applicable national or local regulations.

14. TRANSPORT INFORMATION

Land Transportation

ADR

UN1789, Hydrochloric Acid Solution, 8, II

Air Transportation

ICAO/IATA

UN1789,Hydrochloric Acid Solution, 8, II RQ (Hydrochloric Acid - 2273 kg.)

Sea Transportation

IMDG

UN1789,Hydrochloric Acid Solution, 8, II RQ (Hydrochloric Acid - 2273 kg.) EmS F-A, S-B

Other Shipping Information

Labels:

Corrosive

| 15. REGULATORY INFORM | IATION |
|---|--|
| EC Supply labeling Requirements | This product is subject to the labeling requirements of EC Directives 67/548/EEC and 88/379/EEC as amended. |
| Classification | C - Corrosive. |
| Risk Phrases | R34 Causes burns. R37 Irritating to respiratory system. |
| Safety Phrases | S9 Keep container in a well ventilated place. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S45 In case of accident or if you feel unwell, seek medical advice immediately. S1/2 Keep locked up and out of reach of children. S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. |
| EINECS Inventory | This product, and all its components, complies with EINECS |
| Germany, Water Endangering Classes (WGK) | WGK 1: Low hazard to waters. |
| | |

16. OTHER INFORMATION

The following sections have been revised since the last issue of this MSDS Not applicable

 Additional Information
 For additional information on the use of this product, contact your local Halliburton representative.

 For questions about the Material Safety Data Sheet for this or other Halliburton products, contact Chemical Compliance at 1-580-251-4335.

 Component Classification
 C - Corrosive. R34 Causes burns. R37 Irritating to respiratory system.

 Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the user.

END OF MSDS

District 1 1625 N. French Dr., Hobbs, NM 88240 District II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-138 Revised August 1, 2011

*Surface Waste Management Facility Operator and Generator shall maintain and make this documentation available for Division inspection.

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE

| 1. Generator Name and Address: |
|--|
| |
| 2. Originating Site: |
| 3. Location of Material (Street Address, City, State or ULSTR): |
| |
| 4. Source and Description of Waste: |
| |
| |
| Estimated Volume yd^3 / bbls Known Volume (to be entered by the operator at the end of the haul) yd^3 / bbls |
| Estimated Volume yd³ / bbls Known Volume (to be entered by the operator at the end of the haul) yd³ / bbls 5. GENERATOR CERTIFICATION STATEMENT-OF-WASTE STATUS |
| I,, representative or authorized agent for do hereby |
| certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: (Check the appropriate classification) |
| RCRA Exempt: Oil field wastes generated from oil and gas exploration and production operations and are not mixed with non- |
| exempt waste. Operator Use Only: Waste Acceptance Frequency [] Monthly [] Weekly [] Per Load |
| RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24, or listed hazardous waste as defined in 40 CFR, part 261, subpart D, as amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items) |
| 🗆 MSDS Information 🔲 RCRA Hazardous Waste Analysis 📄 Process Knowledge 📄 Other (Provide description in Box 4) |
| GENERATOR 19.15.36.15 WASTE TESTING CERTIFICATION STATEMENT FOR LANDFARMS |
| I, do hereby certify that |
| representative samples of the oil field waste have been subjected to the paint filter test and tested for chloride content and that the samples have been found to conform to the specific requirements applicable to landfarms pursuant to Section 15 of 19.15.36 NMAC. The results |
| of the representative samples are attached to demonstrate the above-described waste conform to the requirements of Section 15 of 19.15.36 NMAC. |
| 5. Transporter: |
| |
| OCD Permitted Surface Waste Management Facility |
| Name and Facility Permit #: |
| Address of Facility: |
| Method of Treatment and/or Disposal: |
| 🗌 Evaporation 🔲 Injection 🔲 Treating Plant 🔲 Landfarm 🔲 Landfill 🔲 Other |
| Waste Acceptance Status: |
| APPROVED DENIED (Must Be Maintained As Permanent Record) |
| PRINT NAME: TITLE: DATE: |
| SIGNATURE: TELEPHONE NO.: |
| Attachment H |

HALLEURTON

Field Laboratory Water Analysis Test Methods

Overview: Each field laboratory will use the water analysis test methods outlined in the table below in order to provide standardization of lest procedures and uniformity of results throughout the NWA. At a minimum each field laboratory should be capable of performing the tests listed in columns "C", "D", and "E".

Definitions
"Standard Field Water Analysis": Tests to be performed as part of a routine analysis of a PE/Cement/Field water sample.
"Additional Field Water Tests": Tests that are performed as part of a routine CleanWave water sample.
"Standard CleanWave Analysis": Tests to be performed as part of a routine CleanWave water sample.
"Standard CleanWave Analysis": Tests to be performed as part of a routine CleanWave water sample.
"Standard CleanWave Analysis": Tests to be performed as part of a routine CleanWave water sample.
"Standard CleanWave Analysis": Tests to be performed as part of a routine CleanWave water sample.
"Standard CleanWave Analysis": Tests to be performed as part of a routine CleanWave water sample.
"Standard CleanWave Tests": Tests that are performed as part of a routine CleanWave water sample.
"Standard CleanWave Tests": Tests that are performed as routines: Labs should not purchase the equipment/materials to perform this testing it should be sent to the Vernal field lab for analysis. Labs should not purchase the equipment/materials for this testing because of how infrequently it is requested.

| Test | Standard Field Water Analysis | Additional Field Water Tests | Standard CleanWave Analysis | Additional CleanWave Tests | Test Type/Method | Procedure | |
|------------------------------------|----------------------------------|---------------------------------|--------------------------------|-------------------------------|--------------------------------------|---------------------------------------|--|
| Bacteria | | x - (PE Water) | | x | VK Enterprises Serial Dilution Vials | DTC Analytical Procedure | |
| Barlum | | | | × | HACH DR/2800 Spectrophotometer | HACH Method 8014 | |
| Bicarbonate | x | | x | | HCI Buret Titration | GLBP: WM-GL-HES-QM-221.030 | |
| Boron | | | | × | HACH DR/2800 Spectrophotometer | HACH Method 10061 | |
| Calcium | x | | x | | EDTA Buret Titration | GLBP: WM-GL-HES-QM-221.090 | |
| Carbonate | × | | x | | HCI Buret Titration | GLBP: WM-GL-HES-QM-221.030 | |
| Carbohydrate | · · · | x - (PE Water) | | | Visual Observation | . TBD | |
| Chloride | x | | X | | HACH QuanTab Test Strip | Refer To QuanTab Test Strip Container | |
| Color | | | X | | Visual Observation | Record Color Observed | |
| Conductivity | | | x | | HACH HQ14D Conductivity Meter | Refer To User Manual | |
| iron (total) | x | | x | | HACH DR/800 Series Colorimeter | HACH Method 8008 | |
| Magnesium | × | | x | | EDTA Buret Titration | GLBP: WM-GL-HES-QM-221.200 | |
| рН | × | * | X | | pH Meter | Refer To User Manual | |
| Potassium | x | | x | | HACH DR/2800 Spectrophotometer | HACH Method 8049 | |
| Resistivity | x | | | | Fann Model 88C Resistivity Meter | Refer To User Manual | |
| Sodium | x | | | | Calculation | GLBP: WM-GL-HES-QM-221,310 | |
| Specific Gravity | x | | x | | Hydrometer | GLBP: WM-GL-HES-QM-222.060 | |
| Strontium | | | | x | Seachem Strontium Test Kit | Refer To Test Kit Instructions | |
| Sulfate | x | | × | | HACH DR/800 Series Colorimeter | HACH Method 8051 | |
| Sulfide | | | | x | HACH DR/2800 Spectrophotometer | HACH Method 8131 | |
| Tannin/Lignin | | x - (Cement Water) | | | HACH DR/800 Series Colorimeter | HACH Method 8193 | |
| TDS | x | | | | HACH HQ14D Conductivity Meter | Refer To User Manual | |
| Temperature | x' | | x | | Fann Model 88C Resistivity Meter | Refer To User Manual | |
| Total Petroleum Hydrocarbons (TPH) | | | | x | HACH DR/2800 Spectrophotometer | HACH Method 10050 | |
| Transmittance | | | | x | RealTech UVT Field Meter | Refer To User Manual | |
| Turbidity | | | x | | HACH 2100Q Turbidity Meter | Refer To User Manual | |

²Test can be performed with 200-1500mg/L Baker Potassium Test Strips if HACH DR/2800 Spectrophotometer is not available

| Item | Vendor | Part Number | Price |
|--|----------------|---------------|-------|
| | | | PACE |
| DR/890 Colorimeter | HACH | 4847000 | |
| DR/2800 Spectrophotometer | HACH | DR2800-01B1 | |
| 21000 Turbididty Meter | HACH | 2100Q01 | |
| HQ14D Conductivity Meter | HACH | HQ14D53000000 | |
| 30-600mg/L Chloride QuanTab Test Strip | HACH | 2744940 | |
| 300-6000mg/L Chloride QuanTab Test Strip | HACH | 2751340 | |
| RealTech UVT Meter | RealTech | TBD | |
| IRB Test Vials | VK Enterprises | BB-PR | |
| SRB Test Vials | VK Enterprises | BB-AB | |
| Syringes For Bacteria Vials | VK Enterprises | SY-3C | |
| Model 88C Resistivity Meter | Fann | 207960 | |

Attachment I

.

CleanWave/Stream Water Quality Parameters for Field and District Labs

| Parameter | Desired | Max, 😪 | Field | Current | Lab Instrumente | |
|--|----------------------|-----------------|------------|---------------|------------------------------------|---|
| | Analyticals Range | observed | Instrument | Hach Range | | |
| pH . | 2-14 | 13 | Hach | 0-14 | Any decent lab- | |
| | | | HQ40d | | grade pH meter | |
| Conductivity (mS) | Auto- | 252 | Hach | 0-200 | HQ14d or sensION5- | |
| | ranging to | | HQ40d | | cond meter | |
| | 250mS | | | | (suggested) | ļ |
| Turbidity (ntu) | 0-1000 | 3000 | Hach | 0-1000 | Hach 2100Q or | |
| and the second | | | 2100Q | | LaMotte 2020 (0- | |
| | | | | | 4000ntu range) | |
| Transmittance;254nm | 0-100% | 100 | Real Tech | n/a | Same as field, if | |
| (% transmittance) | | • | UVT Field | | needed | |
| Alleries (Contraction | 0-500 | C 000 | Meter | ļ | HCI titration | |
| Alkalinity (mg/l, as HCO3) | | 6,800 | n/a m/a | 0-6000 | | |
| Chloride (mg/l) Sulfate (mg/l) | 0-50k 0-200 | 137,000 3880 | n/a n/a | Up to 900 | Quantab strip spectrophotometer | |
| liron, total (mg/L) | 0-200 | 192 | n/a n/a | 0-3 | spectrophotometer | + |
| Calcium(mg/l) | 0-20,000 | 30,600 | Digital | 10-4000 | Titration, total | |
| Calmin (mBvi) | 0-20,000 | 30,000 | titrator | 10-4000 | hardness | |
| Magnesium (mg/l) | 0-2000 | 4,000 | Digital | 10-4000 | Titration, total | |
| | 0 2000 | 4,000 | titrator | | hardness only | |
| Potassium (mg/l) | 0-750 | 2,000 | n/a | .1-7 | spectrophotometer | |
| Sulfide (µg/l) | | | n/a | 5-800 | spectrophotometer | 1 |
| Boron (mg/l) | 0-50 | 400 | n/a | .2-14 | spectrophotometer | |
| Barium (mg/l) | 0-500 | 400 | n/a | 2-100 | spectrophotometer | |
| Strontium (mg/l) | 0-250 | 700 | n/a | n/a | | |
| ТРН | 500 | 750 | n/a | 20 | spectrophotometer | 1 |
| Bacteria (Serial dilution) | | | l | | | |
| Sector Contractor | | | | | | |
| | | | | | (| |
| | | | | | | |
| en e | | | | | | |
| | | | | | | |