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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Harold D. Ward, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Friday, February 5, 2021  
WELL WORK PLUGGING PERMIT  
Vertical Plugging

EAGLE NATRIUM LLC  
POST OFFICE BOX 191  
NEW MARTINSVILLE, WV 26155

Re: Permit approval for 11  
47-051-00523-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. Please be advised that form WR-38, Affidavit of Plugging and Filling Well, is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

Operator's Well Number: 11  
Farm Name: EAGLE NATRIUM LLC/AXIAL  
U.S. WELL NUMBER: 47-051-00523-00-00  
Vertical Plugging  
Date Issued: 2/5/2021

## PERMIT CONDITIONS

West Virginia Code § 22-6-11 allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

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### CONDITIONS

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1. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.

1) Date 11/9, 2020  
2) Operator's Well No. 11 Brine Well  
3) API Well No. 47-051 - 00523

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

- 4) Well Type: Oil \_\_\_/ Gas \_\_\_/ Liquid injection Brine / Waste disposal \_\_\_/  
(If "Gas, Production \_\_\_ or Underground storage \_\_\_) Deep \_\_\_/ Shallow \_\_\_
- 5) Location: Elevation 636 ft Watershed Ohio River  
District Franklin County Marshall Quadrangle New Martinsville, WV
- 6) Well Operator Eagle Natrium, LLC 7) Designated Agent J. Thomas Horan  
Address P.O. Box 191 Address P.O. Box 191  
New Martinsville, WV 26155 New Martinsville, WV 26155
- 8) Oil and Gas Inspector to be notified Name James Nicholson 9) Plugging Contractor Name \_\_\_\_\_  
Address P.O. Box 44 Address \_\_\_\_\_  
Moundsville, WV 26041

10) Work Order: The work order for the manner of plugging this well is as follows:

(See enclosed Plugging & Abandonment Workover Procedure)

- CEMENT PLUGS - CLASS A CEMENT w/ NO MORE THAN 3% CaCl<sub>2</sub>.
- GEL SPACERS - FRESH WATER w/ MINIMUM OF 6% BENTONITE (BY WEIGHT)
- FOR ANY BRIDGE PLUG TO SATISFY OUR PLUGGING REQUIREMENTS, IT MUST HAVE A MINIMUM OF 100' OF CLASS A CEMENT PLACED UPON IT.
- THIS WELL HAS 8455' OF 7" CASING LEFT IN IT CEMENTED TO 2120' SPOT GEL TO ATTAINABLE BOTTOM, AS 7390' TO 6750'. IT APPEARS THAT THIS WELL HAS A CAST IRON BRIDGE PLUG @ 7390', AND YOU WILL BE SETTING 2 CIBP @ 6750' & 6700' RESPECTIVELY.
- PROCEED WITH WORK PLAN.

JNM

RECEIVED  
Office of Oil and Gas

NOV 12 2020

WV Department of  
Environmental Protection

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector Jim Unlue Date 11/9/2020



**Westlake  
Chemical**

**BRINE WELL NO. 11  
NATRIUM FACILITY**

**SPECIFICATION FOR  
PLUGGING AND ABANDONMENT WORKOVER  
OF BRINE WELL No. 11**



		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 2 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p><b>INTRODUCTION:</b></p> <p>Westlake Chemical Company ("Eagle Natrium, LLC") contracted Lonquist Field Service, LLC ("LFS") to develop a plugging and abandonment workover prognosis and cost estimate for an existing brine well ("Brine Well No. 11") at their Marshall County, West Virginia Natrium Facility. Brine Well No. 11 had an unsuccessful MIT back in January 2019, and has been inactive ever since. The existing Class III Solution Mine Well ("Brine Well No. 11") workover will consist of running a Segmented Bond Log on the existing 7" production casing, and setting two (2) 7" CIBPs on wireline at the bottom of the 7" production casing. After setting the CIBP's the wellsite will be prepared via setting a fluid containment liner and mats to enable a workover rig to be able to mobilize onto location. Once the workover rig has rigged up, a 2-7/8" cement string will be run into the well, allowing 500 ft cement plugs to be placed. The cement plugs will be placed from the top of the second 7" CIBP up to 4,700' which is above the perforations in the 7" @ 4,950' and the Marcellus shale formation. Each plug will be Bradenhead squeezed to act as a pressure test and to ensure that isolation has been established from the damaged 7" casing and Marcellus shale formation fractures. The 7" casing will be cut and removed from its free point to surface. Gel plugs will be used to fill the cemented 7" casing. Additional cement plugs will be placed from 2490' to isolate the top of the 7" casing stub and fill the remaining 7" X openhole annulus. A cement plug will be placed across the 10-3/4" intermediate casing shoe. A cement bond log will be run on the 10-3/4" casing to surface to verify cementing. The 10-3/4" intermediate casing will be cemented closed. The wellhead will be cut below ground level and a marker installed.</p> <p>The plugging and abandonment procedure and well configuration are based off of the attached proposed wellbore schematic. The following points outline main goals of the workover operations:</p> <p><b>Phase 1 - Wireline set plugs</b></p> <ul style="list-style-type: none"> <li>• Westlake Chemical to fill 7" casing with freshwater down to the casing shoe</li> <li>• Move in and rig up wireline, and nipple up the wireline pressure control equipment and 7-1/16" 5M lubricator</li> <li>• Open wellhead master valve</li> <li>• Run WL Junk Basket and CCL from surface to 6,800'</li> <li>• Run Segmented Bond Log from 6,800' to surface</li> <li>• Make up the 1<sup>st</sup> 7" CIBP and setting tool, and set at 6,750' on wireline, tag and test plug</li> <li>• Make up the 2<sup>nd</sup> 7" CIBP and setting tool, and set at 6,700' on wireline, tag and test plug</li> <li>• POOH and ND 7-1/16" 5M lubricator, RDMO Wireline, Packer Hand and Torque Crew</li> </ul> <p><b>Phase 2 - Site Prep</b></p> <ul style="list-style-type: none"> <li>• Install fluid primary containment, and laydown location Mats</li> <li>• Unload and Spot the following equipment: <ul style="list-style-type: none"> <li>○ Tanks and Berms, Manifold</li> <li>○ Unload Auxiliary Equipment, BOP</li> </ul> </li> </ul> <p><b>Phase 3 - Cementing Plugs with Workover Rig</b></p> <ul style="list-style-type: none"> <li>• MIRU Workover Rig and Cementers, and unload workstring</li> <li>• Place four (4) cement plugs (1 - 4) from 6,550' to 4700', and performing a Bradenhead squeeze on each plug.</li> <li>• Run free point on 7" casing, split shot cut and pull free 7" casing out of the well.</li> <li>• Fill 7" casing with 6% gel spacer up to 2,490'</li> </ul>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

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<ul style="list-style-type: none"> <li>○ If there are any un-cemented sections of 7" casing that cannot not be pulled out of the well, those sections of casing will be perforated with 6 spf for 1ft spaced out every 50ft and cement will be placed across those intervals of un-cemented casing</li> <li>• Run WL Junk Basket and CCL from surface to 1,600'</li> <li>• Run Segmented Bond Log from 1,600' to surface on the 10-3/4" intermediate casing string <ul style="list-style-type: none"> <li>○ If there are any un-cemented sections of 10-3/4" casing that cannot not be pulled out of the well, those sections of casing will be perforated with 6 spf for 1ft spaced out every 50ft and cement will be placed across those intervals of un-cemented casing</li> </ul> </li> <li>• Place cement plug (5) from 2,490' to 1920', and perform a Bradenhead squeeze</li> <li>• Place three (3) cement plugs (6 – 8) from below the 10-3/4" intermediate casing shoe, and up to 420' from surface. Pressure Test.</li> <li>• Place final cement plug (9) from top of cement plug (8) to surface</li> <li>• Rig down workover rig and related equipment</li> </ul> <p><b>Phase 4 - Cleanup and Civil Work</b></p> <ul style="list-style-type: none"> <li>• Clean and load out mats, and remove containment</li> <li>• MIRU Cementers, Cement well to surface if the cement is not at surface, RDMO</li> <li>• Excavate around the wellhead, and remove cement around the wellhead</li> <li>• Cut and pull all the casings and wellhead a minimum of 5 feet below ground level</li> <li>• Weld a ½ inch steel plate across the casings with the well's closure date and well API number inscribed on top</li> <li>• Install a well marker that is at least 30" above grade and 6" wide that details well's closure date and well API number inscribed on top</li> <li>• Fill in excavation</li> </ul> <p><b>REGULATORY INFORMATION:</b></p> <p>Brine Well No. 11 is regulated by the West Virginia Department of Environmental Protection (WV DEP) Office of Oil and Gas (OOG). The WV DEP Office of Oil &amp; Gas will be notified and all activities approved of prior to commencing work activities.</p> <p><b>SAFETY INFORMATION - VISION STATEMENT:</b></p> <p>LFS believes that all accidents and incidents are preventable. Our corporate goal is to have zero incidents, accidents, or near misses. To further our commitment to safety, LFS has staffed a Safety Director, whose sole purpose is to identify and mediate possible safety concerns and to be a resource to advise on such safety issues. He will be involved in work safety plans, managing JSAs, and offering oversight on our daily safety meeting program. We require that all of our employees and subcontractors accept that philosophy and uphold the standards of LFS. Our field supervisors are well-control certified, with both site specific and industry required safety qualifications related to new well drilling and well workovers. LFS supervisors are responsible to complete pre-job meetings with the contractors and clients, obtain daily work permits, complete JSAs, safety meetings, review Emergency Response Plans, identify any unsafe practices or potential hazards, and implement corrective actions to minimize employee exposure. LFS implements a site specific safety plan that defines the scope of work and identifies the appropriate safety standards and responsibilities for applicable parties for each project</p>						
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<p>performed. LFS will implement a complete HSE plan for all phases of the operation. Our goal is always to ensure compliance with all client needs, as well as all local, State, and Federal safety and environmental regulations.</p> <p>A work permit per tour, obtained from LFS, will be required, and well site safety meetings will be conducted at the beginning of each tour and at the beginning of critical operations by LFS supervisor prior to commencing any well work. All contractors involved during the tour or the critical operations will be required to attend the safety meeting, and all will be required to participate in the JSA process.</p> <p>The following safety gear and personal protective equipment are required:</p> <ul style="list-style-type: none"> <li>• Hard Hat</li> <li>• Safety Glasses with side protection (shields or curvature)</li> <li>• Fire Retardant Clothing</li> <li>• Colored work vest when working within 150' of roads or near moving heavy equipment</li> <li>• Steel-toed Safety Shoes w/Ankle Support – Leather or Rubber</li> <li>• Gloves</li> <li>• Fall protection required – 4' or above</li> <li>• Any additional required safety equipment</li> <li>• Tour and Critical Operation Safety Meeting</li> <li>• JSA Form – Completed per tour and prior to critical operations by all contractors present</li> </ul> <p>Additional safety and housekeeping items include:</p> <ul style="list-style-type: none"> <li>• A Hot Work Permit is REQUIRED to perform any work where an engine will be running</li> <li>• A copy of all hot-work permits will be kept on file</li> <li>• The LEL will be checked at the start of the workday and anytime work ceases for more than 30 minutes</li> <li>• All personnel will be required to complete at least once the safety orientation required by Westlake Chemical Natrium</li> <li>• Zero tolerance for any fluid release</li> <li>• Spills and releases to be reported to Westlake Chemical Natrium</li> <li>• Any Injuries and Near Misses are to be reported and investigated to/by LFS and Westlake Chemical Natrium</li> <li>• Vehicles to have company placards or logos</li> <li>• Good housekeeping standards</li> <li>• No Tobacco or Vapor Products on Westlake Chemical Property</li> <li>• Good housekeeping standards</li> </ul> <p>A completed and detailed site specific safety plan along with a spill containment plan is being generated to accompany the workover procedure, and it will be included with the final field package for the project.</p>						
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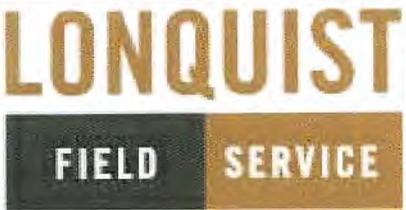
		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>		Project No: <b>F1552</b>		
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<p><b>WORK PLAN:</b></p> <p>The daily work activities will commence after all permits have been acquired and the pre-tour safety meetings have been completed. All depths shown below are estimated depths and based on previous workover operations. The well conditions and local geology will dictate the final setting depths of each casing string. The WV DEP Office of Oil &amp; Gas will be contacted and plans submitted for any activity that deviates from the plan prescribed below.</p> <p><b>Pre-job Notifications</b></p> <ol style="list-style-type: none"> <li>1. <b>Notify WV DEP Office of Oil &amp; Gas (Office of Oil and Gas) 30 days prior (24 hrs at a minimum) to the commencement of the workover.</b> <ol style="list-style-type: none"> <li>a. WV DEP Office of Oil &amp; Gas Contacts: 601 - 57th Street Charleston, WV 25304 (304) 926-0450</li> <li>b. Contact the state inspector (James Nicholson) whose contact information is in the regulatory section of this procedure.           <ol style="list-style-type: none"> <li>i. Jim Nicholson 304-552-3874 WV DEP Oil &amp; Gas inspector</li> </ol> </li> </ol> </li> </ol> <p><b>Phase 1 - Wireline set plugs</b></p> <ol style="list-style-type: none"> <li>1. (Westlake Chemical) to fill 7" casing with freshwater down to the casing shoe</li> <li>2. (Westlake Chemical) to nipple down wellhead piping to 7-1/16" 3M Master Valve, and remove the wellhead building off to the side of the location before moving in the wireline crew and equipment.</li> <li>3. Move in the Wireline Unit, Grease Trailer, Packer hand and tools, and Crane and rig up on location. Unload and nipple up the 7-1/16" 5 M 3M lubricator and wellhead rental spools, and torque turn all flange bolts.</li> <li>4. Open wellhead's master valve. Run CCL, 6.151" Gauge Ring, and Junk Basket from 0' to 6,800', Pull up into the lubricator. Close master valve. Laydown the basket and check for trash was in the junk basket. Repeat junk basket runs if necessary until the junk basket comes back clean.</li> <li>5. Run Segmented Bond Log from 6,800' to 0' to look for good cement bond sections from 6,800' to 6,500' to set the CIBPs, and look for the top of cement on the 7" casing which is expected to be at 2,120'. POOH with wireline and close the wellhead master valve</li> <li>6. Make up the 1st 7" Cast Iron Bridge Plug (CIBP), and open the master valve. Run in the hole with the 1st CIBP and set at 6,750' (or other depth determined from the SBL results). Tag plug with wireline to confirm set, and POOH with plug setting tool. Close Master valve. Connect line to vacuum truck. Open Master valve to check for flow back. Shut in Master valve.</li> <li>7. Make up the 2nd 7" Cast Iron Bridge Plug (CIBP), and open the master valve. Run in the hole with the 2nd CIBP and set at 6,700' (or other depth determined from the SBL results). Tag plug with wireline to confirm set, and POOH with plug setting tool and lay down. Close Master valve. Open Master valve to check for flow back. Close Master valve</li> <li>8. If well is still flowing through perforations at 4,950', then set a contingency 7" Retrievable Bridge Plug (RBP) at 4,000' (above the perforations).</li> </ol>						
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<p>9. Nipple down the wireline lubricator and wellhead rentals. Rig down and move out the Wireline Unit, Grease Trailer, Packer hand and Crane</p> <p><b>Phase 2 - Site Prep</b></p> <p>10. Install primary fluid containment, and laydown location Mats</p> <ol style="list-style-type: none"> <li>Sub Base liner of 18,500 sq ft</li> <li>Mat rentals area of 18,500 sq ft (estimated 155 mats with 160 sq ft/mat)</li> <li>Muscle wall containment quantity of 30</li> </ol> <p>11. Unload and Spot the rental frac tanks and berms, hose manifold, and auxiliary equipment</p> <p><b>Phase 3 – Cementing Plugs with Workover Rig</b></p> <p>12. Move in the Workover Rig and rig up on location. Rig up rig pump and tank with mud gas separator. Perform a Rig Audit to check rig equipment and check all the safety equipment on the rig are in compliance with up to date inspections/certifications.</p> <p>13. Unload 6,800' of Workstring (2-7/8", 7.9 lbs/ft, P-110 PH6), and handling tools, and spinner tongs</p> <p>14. Nipple up the BOP:</p> <ol style="list-style-type: none"> <li>DSA: 7-1/16" 3M X 7-1/16" 5M</li> <li>BOP Double Ram (7-1/16" 5M X 7-1/16" 5M)</li> <li>Mud Cross: (7-1/16" 5M X 7-1/16" 5M w/ 2-1/16" 3M outlets)</li> <li>HCR Valves (2-1/16" 5M) and choke line to the choke manifold</li> <li>BOP Annular Preventer (7-1/16" 5M X 7-1/16" 5M)</li> <li>Stripper head (7 1/16")</li> </ol> <p>15. Test all BOP preventers, valves and choke lines every trip. Actuate ram preventers every trip on tubing every trip, and actuate annular at least once a week on tubing.</p> <p>16. Rig up workover rig floor stairs and hand rails.</p> <p>17. If a 7" RBP was set on wireline, it will need to be retrieved via wireline before continuing.</p> <p>18. Run in the hole with test plug (2-7/8 PH 6) and 1jt of 2-7/8 PH 6 to the casing head and seat. Open casing head annulus valve. Pressure test pipe rams, blind rams, HCR valves, mud cross, and choke line to 200 psig low, 3,000 psig high for 15 minutes. Pressure test the Annular preventer to 200 psig low, and 1,500 psig high for 15 minutes. Pull test plug out of the hole.</p> <p>19. Tap 2" LP into the 10-3/4" casing, and install 2" LP 3M Ball Valve and 2" LP bull plug with 1/2" tap and needle valve with pressure gauge.</p> <p>20. TIH with 2-7/8" PH 6 workstring and tag the top of the CIBP at 6,700', and prepare to start placing cementing plugs</p> <p><b>21. Notify WV DEP Office of Oil &amp; Gas 24 hours prior to cementing (See WV DEP Office of Oil &amp; Gas Contacts in Step 1).</b></p>						
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District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p>22. Rig up cement equipment, mix and pump cement plug No.1 of 15.6 ppg Class A Cement – Neat from 6,700'-6,200'. Pull up 500', and reverse circulate until clear fluid comes to surface. Pull up another 2,000', and close annular and perform a Bradenhead squeeze on the cement plug. WOC for 8-12 hours.</p> <p>23. TIH and tag the top of the plug, and reverse out any green cement from the well. Mix and pump cement plug No.2 of 15.6 ppg Class A Cement – Neat from 6,200' – 5,700'. Pull up 500', and reverse circulate until clear fluid comes to surface. Pull up another 2000', and close annular and perform a Bradenhead squeeze on the cement plug. WOC for 8-12 hours.</p> <p>24. TIH and tag the top of the plug, and reverse out any green cement from the well. Mix and pump cement plug No.3 of 15.6 ppg Class A Cement – Neat from 5,700' – 5,200'. Pull up 500', and reverse circulate until clear fluid comes to surface. Pull up another 2000', and close annular and perform a Bradenhead squeeze on the cement plug. WOC for 8-12 hours.</p> <p>25. TIH and tag the top of the plug, and reverse out any green cement from the well. Mix and pump cement plug No.4 of 15.6 ppg Class A Cement – Neat from 5,200' – 4,700'. Pull up 500', and reverse circulate until clear fluid comes to surface. Pull up another 2000', and close annular and perform a Bradenhead squeeze on the cement plug. WOC for 8-12 hours.</p> <p>26. Rig down rig floor, hand rails and stairs. Nipple down 7-1/16" 5M BOP Stack, DSA, and 7-1/16" 3M Valve. Release 7 1/16" BOP stack.</p> <p>27. Nipple up the BOP onto of the wellhead spool hanging off the 7".</p> <ol style="list-style-type: none"> <li>DSA: to bottom of wellhead flange to 13-5/8" 5M</li> <li>Mud Cross: (13-5/8" 5M X 13-5/8" 5M w/ 4-1/16" 3M outlets)</li> <li>HCR Valves (4-1/16" 5M) and choke line to the choke manifold</li> <li>BOP Annular Preventer (13-5/8" 5M X 13-5/8" 5M)</li> </ol> <p>28. Test all BOP preventers, valves and choke lines every trip. Actuate ram preventers every trip on tubing every trip, and actuate annular at least once a week on tubing.</p> <p>29. Rig up workover rig floor stairs and hand rails.</p> <p>30. Run in the hole with test plug (2-7/8 PH 6) and 1jt of 2-7/8 PH 6 to the casing head and seat. Open casing head annulus valve. Pressure test pipe rams, blind rams, HCR valves, mud cross, and choke line to 200 psig low, 3,000 psig high for 15 minutes. Pressure test the Annular preventer to 200 psig low, and 1,500 psig high for 15 minutes. Pull test plug out of the hole.</p> <p>31. Move in and rig up casing crews to pull 7" casing. Rig up 7" casing spear and pick up the 7" casing to the rig floor. MIRU Wireline, and run free point on the 7" casing expected to be at 2,120' TOC, and POOH and switch tools. Run split shot down to the free point and cut the 7" casing at a collar. RDMO wireline. Pick up 7" above rig floor and set slips, Lay down casing spear. Pull and laydown 7" casing out of the well. Rig down casing crew.</p> <ol style="list-style-type: none"> <li>If the 7" cannot be pulled at the top of cement which is expected to be at 2120', then the cut will be made up hole, and perforations will be made in the 7" stub, and cement will be spotted to seal casing and top.</li> </ol>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 8 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p>32. Move in the Wireline Unit, and pack-off lubricator. Run CCL, Gauge Ring, and Junk Basket from 0' to the top of cement plug no. 4 which is expected to be at 4,700'. Run Segmented Bond Log from the bottom of the 10-3/4" intermediate casing shoe at 1,608' up to surface, and look for good cement bond sections. POOH with wireline.</p> <p>a. If there is no cement, then an attempt to pull the 10-3/4" intermediate casing will be made to remove the casing sections that are across the coal beds at 164' – 167', 250' – 256'.</p> <p>b. If there is partial cement, then a perforating program will be implemented to shoot 1ft guns with 6SPF charges spaced out every 50ft across the un-cemented sections of 10-3/4" casing that were not able to be pulled out of the well.</p> <p>33. (Optional) MIRU Wireline and perforate the 7" casing if there are any un-cemented sections of 7" casing that could not be pulled out of the well. The perforating program will be to shoot 1ft guns with 6SPF charges spaced out every 50ft across the un-cemented sections of 7" casing that were not able to be pulled out of the well.</p> <p>34. TIH and tag the top of the plug 4,700', and reverse out any green cement from the well. Spot 6% gel spacer from top of cement plug up to 2,420'. If the 7" casing had to be perforated as stated in previous task no. 33, then cement will need to be placed across perforated sections of 7" casing with 6% gel spaced in between.</p> <p>35. Mix and pump cement plug No.5 of 15.6 ppg Class A Cement – Neat from 2,420' – 1,920'. Pull up 500', and reverse circulate until clear fluid comes to surface. Pull up 1,000', and reverse circulate until clear fluid comes to surface. Pull up another 500', and WOC for 8-12 hours.</p> <p>36. TIH and tag the top of the plug 1,920', and reverse out any green cement from the well. Mix and pump cement plug No.6 of 15.6 ppg Class A Cement – Neat from 1,920' – 1,420'. Pull up 500', and reverse circulate until clear fluid comes to surface. Pull up another 500', and WOC for 8-12 hours.</p> <p>37. TIH and tag the top of the plug, and reverse out any green cement from the well.</p> <p>38. Install TIW and pressure test the cement plug to for 30 minutes Remove TIW</p> <p>39. Mix and pump cement plug No.7 of 15.6 ppg Class A Cement – Neat from 1,420 – 920'. Pull up 500', and reverse circulate until clear fluid comes to surface. WOC for 8-12 hours.</p> <p>40. TIH and tag the top of the plug, and reverse out any green cement from the well. Mix and pump cement plug No.8 of 15.6 ppg Class A Cement – Neat from 920' – 420'. Pull up to surface, and reverse circulate until clear fluid comes to surface. WOC for 8-12 hours.</p> <p>41. TIH and tag the top of the plug, and reverse out any green cement from the well. Mix and pump cement plug No.9 of 15.6 ppg Class A Cement – Neat from 420' – 0'. Pull out of the hole. Rig down cementers and load out workstring. WOC for 8-12 hours.</p> <p>42. Nipple down the 5M BOP Stack, DSA.</p> <p>43. Clean out rig tank and frac tanks on location, and load out equipment. Haul off mud and green cement "waste water" to disposal to be solidified at Quala disposal.</p> <p>44. Rig down workover equipment, frac tanks, and other rental equipment</p>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 9 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p><b>Phase 4 - Cleanup and Civil Work</b></p> <p>45. Clean and load out mats, and remove sub base liner containment</p> <p>46. MIRU Cementers, Cement well to surface if the cement is not at surface, RDMO</p> <p>47. Excavate around the wellhead to expose casing 5' below ground level, and remove cement around the wellhead</p> <p>48. Cut and pull all the casings and wellhead a minimum of 5 feet below ground level</p> <p>49. Weld a ½ inch steel plate across the casings with the well's closure date and well API number inscribed on top</p> <p style="padding-left: 40px;">a. API Number and plug date to be inscribed on top of steel plate</p> <p style="padding-left: 40px;">b. Surface monuments installed as per WV DEP OOG and Westlake requirements</p> <p>50. Install a well marker that is at least 30" above grade and 6" wide that details well's closure date and well API number inscribed on top</p> <p>51. Fill in excavation, and close up. Move off location</p>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>			Project No: <b>F1552</b>		
		Date: November 09, 2020		Page: 10 of 20			
		Well No: <b>11</b>		State: <b>West Virginia</b>		County: <b>Marshall</b>	
District: <b>Franklin</b>		Location: <b>TBD</b>		Quadrangle: <b>New Martinsville</b>		Field: <b>Marshall County</b>	
API No: <b>47-051-00523</b>		Estimated TD: <b>6,816'</b>		Target Geology: <b>Salina Formation</b>		Operator: <b>Eagle Natrium, LLC</b>	
Status: <b>Inactive Solution Mining</b>							

**Reporting Information**

Daily Reports – Email or Fax

- Stephen Clark
- Ed McLaughlin
- Dick Lonquist
- Eric Busch
- Joshua Willis

Final Reports – Email and Hard Copy

- Stephen Clark
- Lonquist & Company, LLC

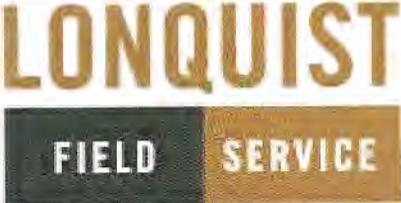
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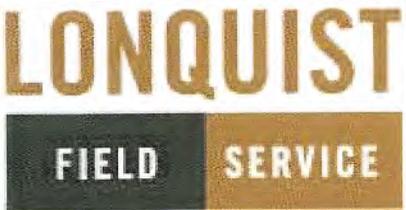
- Daily Reports
- Well Schematics
- Well Completion Report
- Well Logs
- Photos

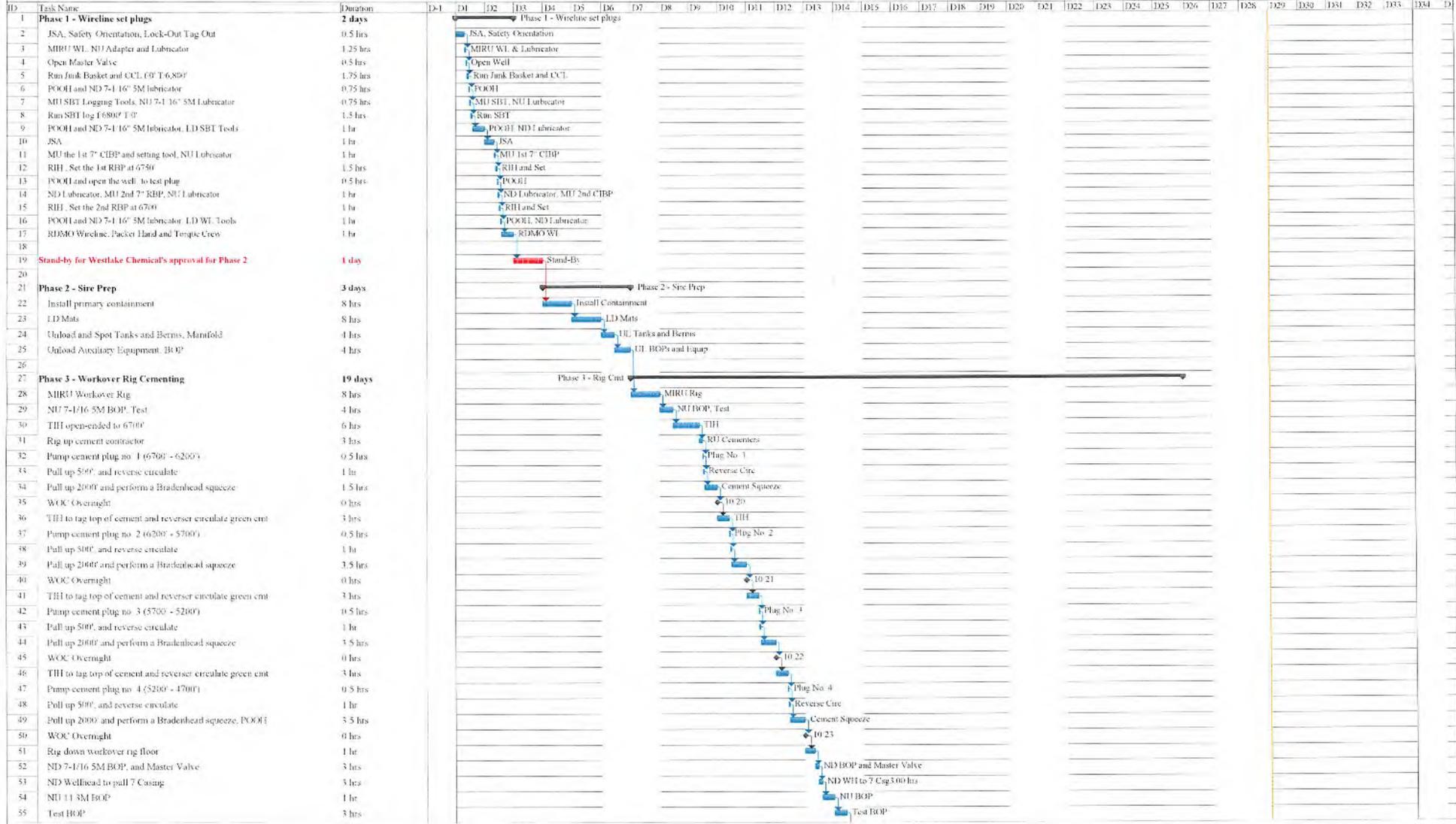
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 11 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<b>Well Owner</b> <p>Eagle Natrium, LLC 16339 Energy Road, Proctor West Virginia, 26055</p> <ul style="list-style-type: none"> <li>▪ Ed McLaughlin. – Owner's Representative <ul style="list-style-type: none"> <li>○ Telephone – 304-266-8647</li> <li>○ Email – <a href="mailto:Edward.Mclaughlin@westlake.com">Edward.Mclaughlin@westlake.com</a></li> </ul> </li> <li>▪ Stephen M. Clark, P.E. – Owner's Representative <ul style="list-style-type: none"> <li>○ Telephone – 304.455.2200, Ext. 3318</li> <li>○ Cell – 304.266.8264</li> <li>○ Email – <a href="mailto:Stephen.Clark@Westlake.com">Stephen.Clark@Westlake.com</a></li> </ul> </li> </ul>						
<b>Regulatory</b> <p>West Virginia Department of Environmental Protection Office of Oil and Gas 601 - 57th Street Charleston, WV 25304 (304) 926-0450</p> <ul style="list-style-type: none"> <li>▪ Jeff McLaughlin – Permitting - Vertical Wells/Plugging - Technical Analyst <ul style="list-style-type: none"> <li>○ Telephone – 304-926-0499, ext.1614</li> <li>○ Email – <a href="mailto:Jeffrey.W.McLaughlin@wv.gov">Jeffrey.W.McLaughlin@wv.gov</a></li> </ul> </li> <li>▪ James Nicholson – WVDEP Office of Oil and Gas Inspector for Marshall (051) <ul style="list-style-type: none"> <li>○ Telephone – 304-552-3874</li> <li>○ Email – <a href="mailto:James.I.Nicholson@wv.gov">James.I.Nicholson@wv.gov</a></li> </ul> </li> </ul>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 12 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<b>Contractor</b>						
<p>Lonquist Field Service, LLC 1001 McKinney, Suite 1650 Houston, TX 77002</p> <ul style="list-style-type: none"> <li>▪ Richard Lonquist – President <ul style="list-style-type: none"> <li>○ Telephone – (512) 699-1527</li> <li>○ Fax – (512) 732-9816</li> <li>○ Email – <a href="mailto:richard@lonquist.com">richard@lonquist.com</a></li> </ul> </li> <li>▪ Eric Busch – Sr. Vice President <ul style="list-style-type: none"> <li>○ Office – (713) 559-9953</li> <li>○ Mobile – (832) 216-0785</li> <li>○ Fax – (713) 559-9959</li> <li>○ Email – <a href="mailto:eric@lonquist.com">eric@lonquist.com</a></li> </ul> </li> <li>▪ Rob Crews – Vice President <ul style="list-style-type: none"> <li>○ Office – (713) 559-9955</li> <li>○ Mobile – (713) 320-2278</li> <li>○ Fax – (713) 559-9959</li> <li>○ Email – <a href="mailto:rob@lonquist.com">rob@lonquist.com</a></li> </ul> </li> <li>▪ Joshua Willis – Petroleum Engineer <ul style="list-style-type: none"> <li>○ Office – (713) 559-9954</li> <li>○ Mobile – (832) 592-3791</li> <li>○ Fax – (713) 559-9959</li> <li>○ Email – <a href="mailto:joshua@lonquist.com">joshua@lonquist.com</a></li> </ul> </li> <li>▪ Roy Reppond – Senior Completion Supervisor <ul style="list-style-type: none"> <li>○ Mobile – (337) 581-3909</li> <li>○ Fax – (713) 559-9959</li> <li>○ Email – <a href="mailto:roy@lonquist.com">roy@lonquist.com</a></li> </ul> </li> <li>▪ Mark Schumacher – Senior Completion Supervisor <ul style="list-style-type: none"> <li>○ Mobile – (304)-677-0151</li> <li>○ <a href="mailto:appliedpe@aol.com">appliedpe@aol.com</a></li> </ul> </li> <li>▪ Dave Bimber – Senior Completion Supervisor <ul style="list-style-type: none"> <li>○ Mobile – (713)868-9511</li> <li>○ <a href="mailto:dbimber@verizon.net">dbimber@verizon.net</a></li> </ul> </li> </ul>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

		Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 13 of 20	
Well No: 11	State: <b>West Virginia</b>	County: <b>Marshall</b>		Field: <b>Marshall County</b>		
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>		Operator: <b>Eagle Natrium, LLC</b>		
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>		Status: <b>Inactive Solution Mining</b>		
<p><b>PROPOSED SCHEDULE</b></p>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

**Brine Well No. 11  
Plugging and Abandonment  
2020 Proposed Schedule  
11/09/2020**



4705100523

**Brine Well No. 11  
Plugging and Abandonment  
2020 Proposed Schedule  
11/09/2020**



4705100523

# LONQUIST

**FIELD SERVICE**

Westlake Chemical  
Natrium Facility  
Brine Well No. 11  
Plugging and Abandonment Procedure  
Rev 2

Project No: **F1552**

Date: November 09, 2020

Page: 14 of 20

Well No: 11	State: West Virginia	County: Marshall	Field: Marshall County
District: Franklin	Location: TBD	Quadrangle: New Martinsville	Operator: Eagle Natrium, LLC
API No: 47-051-00523	Estimated TD: 6,816'	Target Geology: Salina Formation	Status: Inactive Solution Mining

**PROPOSED WELLBORE & WELLHEAD SCHEMATICS**

PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

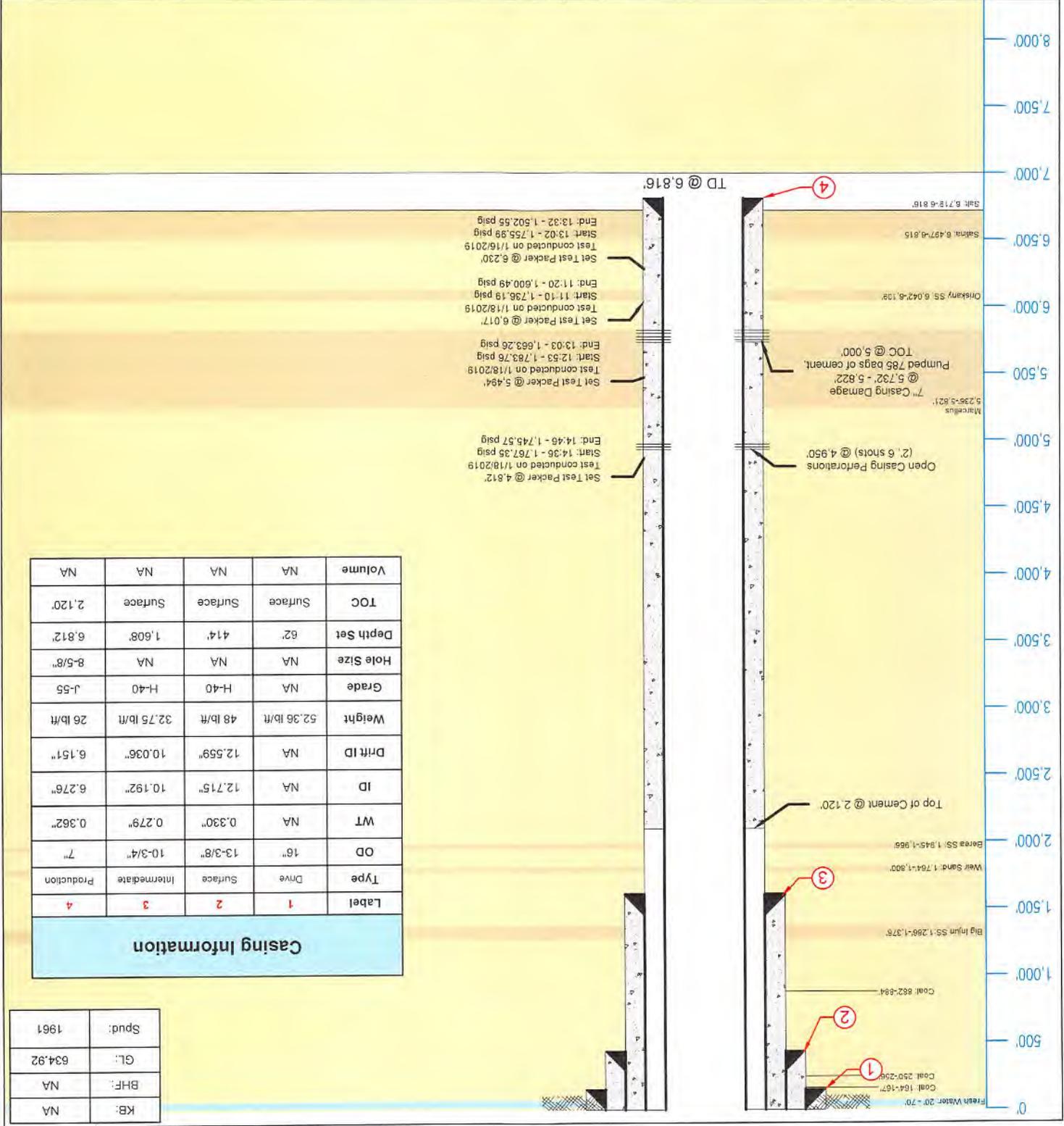
470510523



AUSTIN - MCHTA  
HOUSTON - GALGARY  
1001 McKinney St. Suite 1650  
Houston, Texas 77002  
Tel: 713.559.9950  
Fax: 713.559.9959

Country: USA		State/Province: West Virginia	County/Parish: Marshall (51)
District: Franklin (03)		Quadrangle: New Martinsville (509)	Survey/STR: NA
API No: 47-051-0523		Field: Marshall County	Well Type/Status: NA
Permit No: NA	Project No: F1552	Date: 10/12/2020	Approved: JRW
Drawn: JRW	Reviewed: JRW	Notes:	
Rev No:	Eagle Natrium LLC		

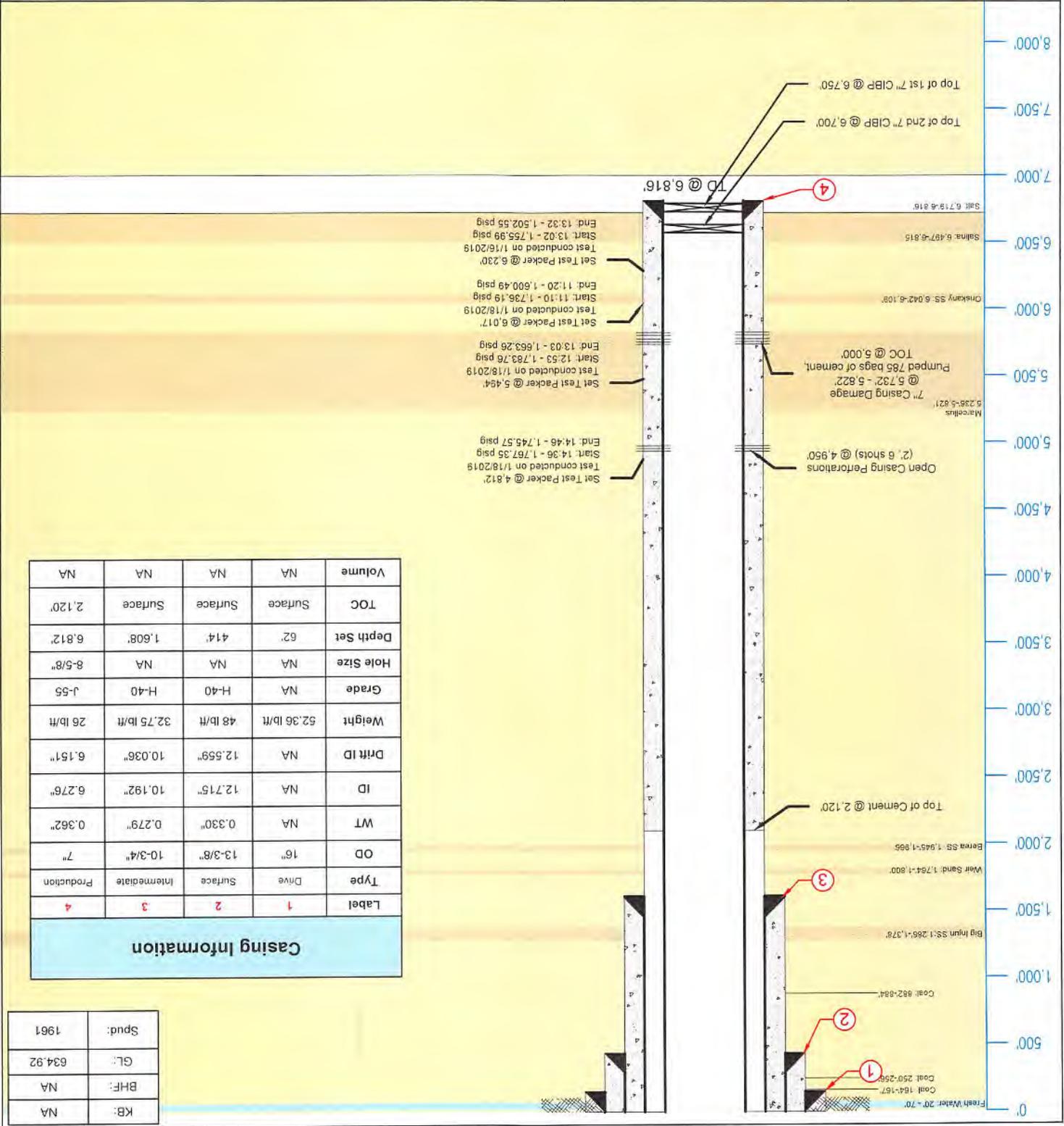
Brine Well 11 - Current Wellbore



Casing Information				
Label	1	2	3	4
Type	Drive	Surface	Intermediate	Production
OD	16"	13-3/8"	10-3/4"	7"
WT	NA	0.330"	0.279"	0.362"
ID	NA	12.715"	10.192"	6.276"
Drift ID	NA	12.559"	10.036"	6.151"
Weight	52.36 lb/ft	48 lb/ft	32.75 lb/ft	26 lb/ft
Grade	NA	H-40	H-40	J-55
Hole Size	NA	NA	NA	8-5/8"
Depth Set	62'	414'	1,608'	6,812'
TOC	Surface	Surface	Surface	2,120'
Volume	NA	NA	NA	NA

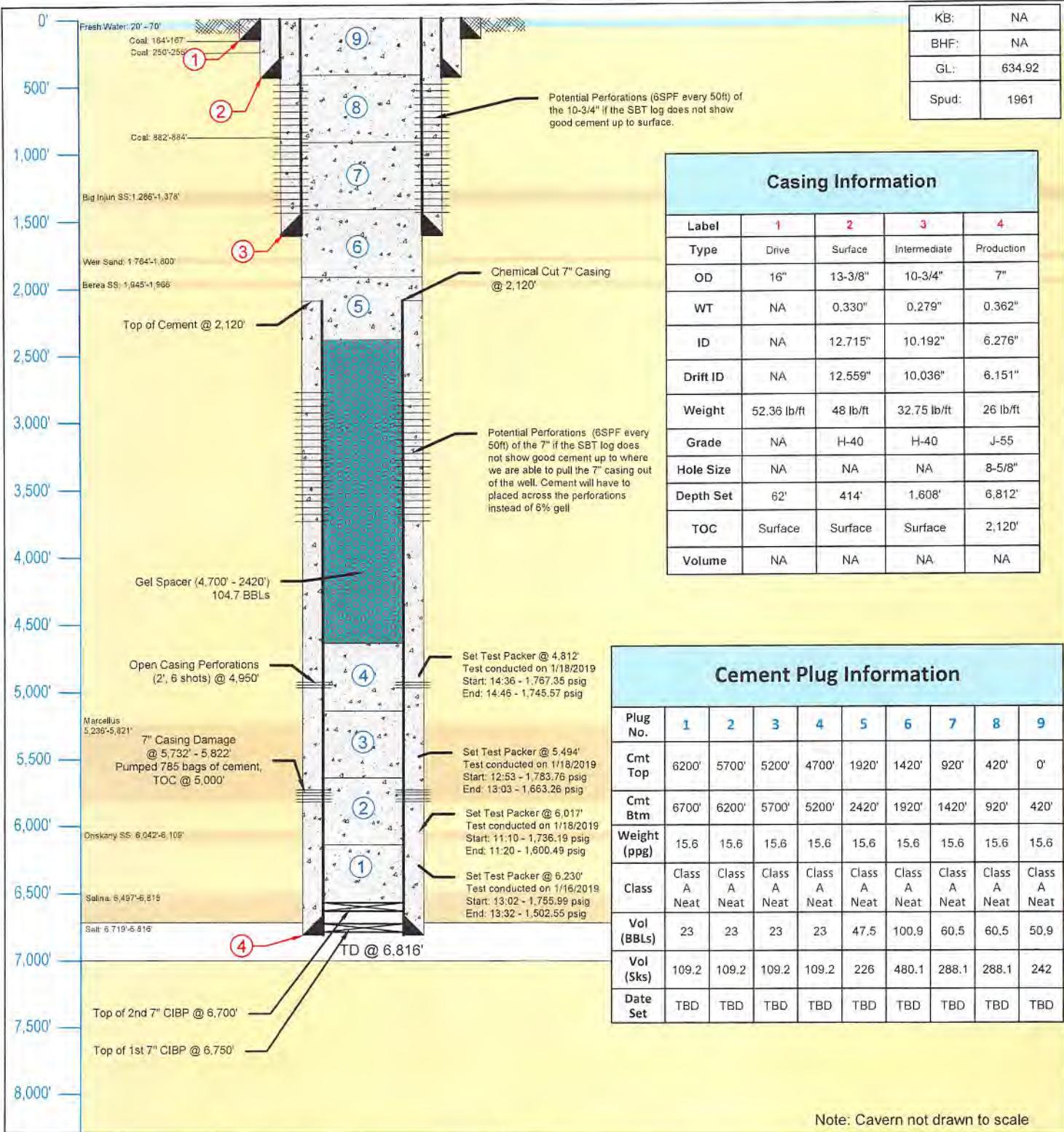
KB:	NA
BHF:	NA
GL:	634.92
Spud:	1961

Eagle Natrium LLC		Country: USA	State/Province: West Virginia	County/Parish: Marshall (51)
Brine Well 11 - P&A Wireline Set CIBPs		District: Franklin (03)	Quadrangle: New Martinsville (509)	Survey/STR: NA
		API No: 47-051-0523	Field: Marshall County	Well Type/Status: NA
		Permit No: NA	Project No: F1552	Date: 10/12/2020
		Drawn: JRW	Reviewed: JRW	Approved: JRW
		Rev No: 1	Notes:	



Label	Type	OD	WT	ID	Drift ID	Weight	Grade	Hole Size	Depth Set	TOC	Volume
1	Drive	13-3/8"	0.330"	12.715"	NA	52.36 lb/ft	H-40	NA	62'	Surface	NA
2	Surface	10-3/4"	0.279"	10.192"	10.036"	48 lb/ft	H-40	NA	414'	Surface	NA
3	Intermediate	7"	0.362"	6.276"	6.151"	32.75 lb/ft	J-55	8-5/8"	6.812'	Surface	2,120'
4	Production					26 lb/ft	J-55	8-5/8"	6.812'	Surface	NA

KB:	NA
BHF:	NA
GL:	634.92
Spud:	1961



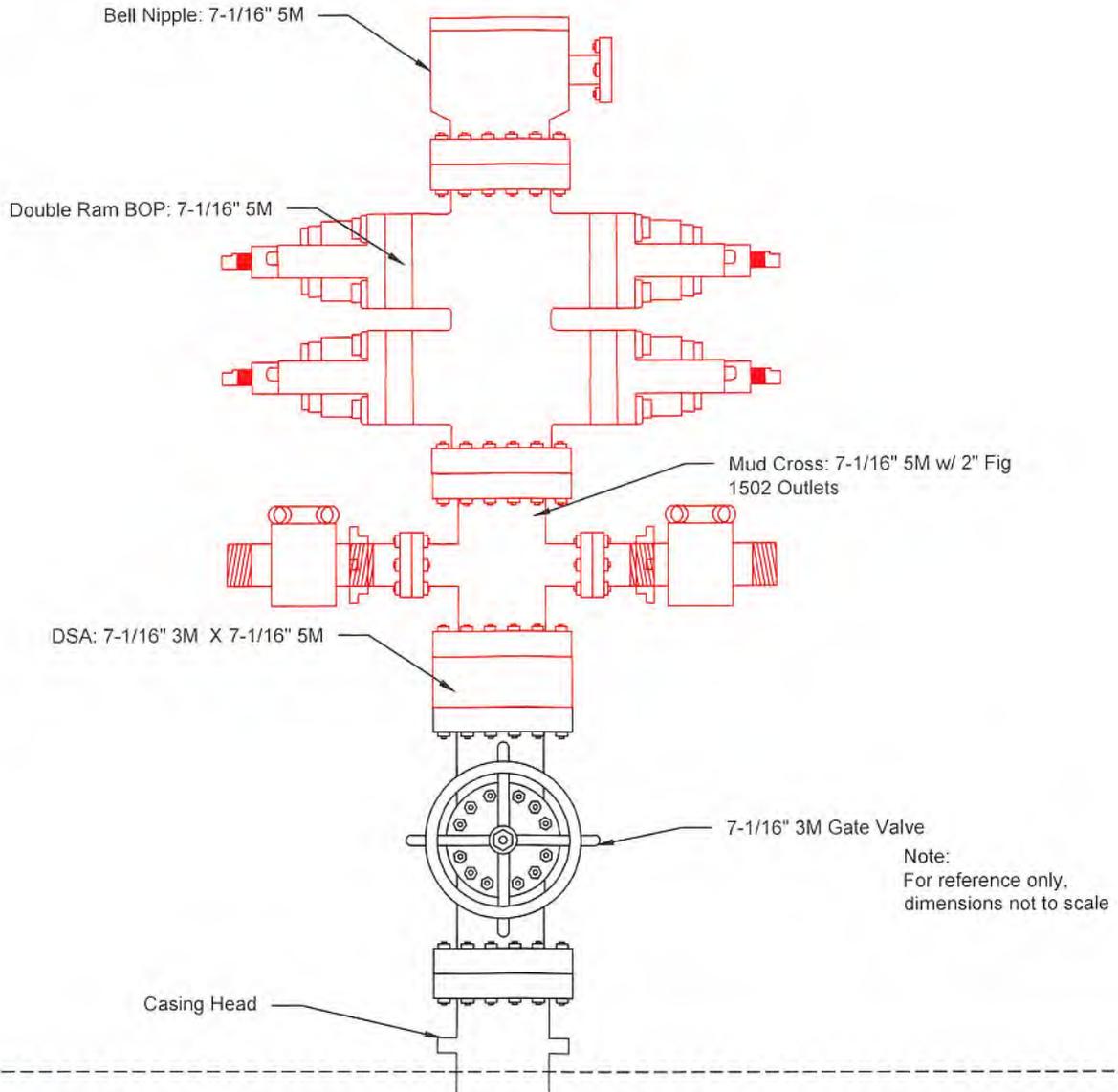
KB:	NA
BHF:	NA
GL:	634.92
Spud:	1961

Casing Information				
Label	1	2	3	4
Type	Drive	Surface	Intermediate	Production
OD	16"	13-3/8"	10-3/4"	7"
WT	NA	0.330"	0.279"	0.362"
ID	NA	12.715"	10.192"	6.276"
Drift ID	NA	12.559"	10.036"	6.151"
Weight	52.36 lb/ft	48 lb/ft	32.75 lb/ft	26 lb/ft
Grade	NA	H-40	H-40	J-55
Hole Size	NA	NA	NA	8-5/8"
Depth Set	62'	414'	1,608'	6,812'
TOC	Surface	Surface	Surface	2,120'
Volume	NA	NA	NA	NA

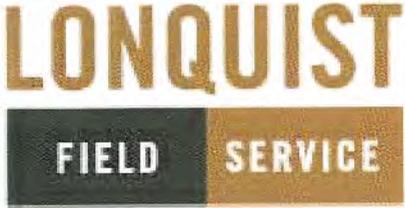
Cement Plug Information									
Plug No.	1	2	3	4	5	6	7	8	9
Cmt Top	6200'	5700'	5200'	4700'	1920'	1420'	920'	420'	0'
Cmt Btm	6700'	6200'	5700'	5200'	2420'	1920'	1420'	920'	420'
Weight (ppg)	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
Class	Class A Neat								
Vol (BBLs)	23	23	23	23	47.5	100.9	60.5	60.5	50.9
Vol (Sks)	109.2	109.2	109.2	109.2	226	480.1	288.1	288.1	242
Date Set	TBD								

Note: Cavern not drawn to scale

	Eagle Natrium LLC		Brine Well 11 - Plugging and Abandonment	
	Country: USA	State/Province: West Virginia	County/Parish: Marshall (51)	
	District: Franklin (03)	Quadrangle: New Martinsville (509)	Survey/STR: NA	
	API No: 47-051-0523	Field: Marshall County	Well Type/Status: NA	
Texas License F-9147	Permit No: NA	Project No: F1552	Date: 10/29/2020	
1001 McKinney St, Suite 1650 Houston, Texas 77002 Tel: 713.559.9950 Fax: 713.559.9959	Drawn: JRW	Reviewed: JRW	Approved: JRW	
	Rev No: 1	Notes: added perforations on 7" and 10-3/4" un-cemented sections, and gell spacer throughout 7" casing that is not full of cement		



	Eagle US 2, LLC		Brine Well No. 11 - Proposed Wellhead Schematic MIT Operations	
	Country: USA	State: West Virginia	County/Parish: Marshall (51)	
	District: Franklin (03)	Quadrangle: New Martinsville (509)	Survey/STR: NA	
	Well API No: 47-051-0523	Field: Marshall County	Well Type/Status: Active	
	Texas License F-9147	Permit No: NA	Project No: F1483	Date: 12/07/2018
1001 McKinney, Suite 1650 Houston, Texas 77002 Tel: 713.559.9950 Fax: 713.559.9959	Drawn: CJG	Reviewed: JRW	Approved: NA	
Rev No:	Notes:			

		Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 15 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p><b>CEMENT PLUG DETAILS</b></p>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

**BW 11 - Cement Volumes Rev 1.****10/29/2020****7" Cased Hole - Cement Plug No.1**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	6.276	6700	6200	500	0.0383	20%	23.0	128.9	1.180	109.2
<b>TOTAL</b>									<b>23.0</b>	<b>128.9</b>		<b>109.2</b>

**7" Cased Hole - Cement Plug No.2**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	6.276	6200	5700	500	0.0383	20%	23.0	128.9	1.180	109.2
<b>TOTAL</b>									<b>23.0</b>	<b>128.9</b>		<b>109.2</b>

**7" Cased Hole - Cement Plug No.3**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	6.276	5700	5200	500	0.0383	20%	23.0	128.9	1.180	109.2
<b>TOTAL</b>									<b>23.0</b>	<b>128.9</b>		<b>109.2</b>

**7" Cased Hole - Cement Plug No.4**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	6.276	5200	4700	500	0.0383	20%	23.0	128.9	1.180	109.2
<b>TOTAL</b>									<b>23.0</b>	<b>128.9</b>		<b>109.2</b>

**7" Cased Hole - Gell Spacer**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Gel Spacer	Gel	Csg	6.276	4700	2420	2280	0.0383	20%	104.7			
<b>TOTAL</b>									<b>104.7</b>	<b>0.0</b>		<b>0.0</b>

**7" Cased Hole - Cement Plug No.5**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	6.276	2420	2120	300	0.0383	50%	17.2	96.7	1.180	81.9
Class A Neat	15.6	OH	10.192	2120	1920	200	0.1009	50%	30.3	170.0	1.180	144.0
<b>TOTAL</b>									<b>47.5</b>	<b>96.7</b>		<b>226.0</b>

**Open Hole Cement Plug No.6**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	OH	10.192	1920	1420	500	0.1009	100%	100.9	566.6	1.180	480.1
<b>TOTAL</b>									<b>100.9</b>	<b>566.6</b>		<b>480.1</b>

**10-3/4" Cased Hole - Cement Plug No.7**

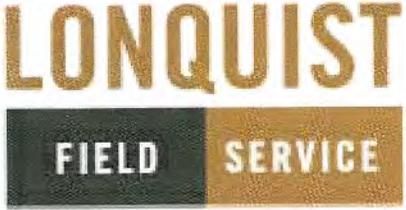
Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	10.192	1420	920	500	0.1009	20%	60.5	339.9	1.180	288.1
<b>TOTAL</b>									<b>60.5</b>	<b>339.9</b>		<b>288.1</b>

**10-3/4" Cased Hole - Cement Plug No.8**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	10.192	920	420	500	0.1009	20%	60.5	339.9	1.180	288.1
<b>TOTAL</b>									<b>60.5</b>	<b>339.9</b>		<b>288.1</b>

**10-3/4" Cased Hole - Cement Plug No.9**

Type	Weight (ppg)	Type	OD (in)	Bottom (Ft)	Top (Ft)	Height (Ft)	Volume (BBL/FT)	% of Excess	Volume (BBLs)	Volume (CF)	Yield (CF/sks)	Volume (sks)
Class A Neat	15.6	Csg	10.192	420	0	420	0.1009	20%	50.9	285.6	1.180	242.0
<b>TOTAL</b>									<b>50.9</b>	<b>285.6</b>		<b>242.0</b>

		<p style="text-align: center;">Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</p>			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 16 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p>AFE</p>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

		<b>Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</b>		Project No: <b>F1552</b>	
				Date: November 09, 2020	
				Page: 17 of 20	
Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>		
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>		
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>		

**DIRECTIONS**

PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

4705100523

Google Maps

Westlake Chemical to Wells Bottom, 3, WV 26155

Drive 1.6 miles, 4 min



Imagery ©2019 Google, Map data ©2019 1000 ft



via WV-2 S

4 min

Fastest route, the usual traffic

1.6 miles

### Explore Wells Bottom



Restaurants



Hotels



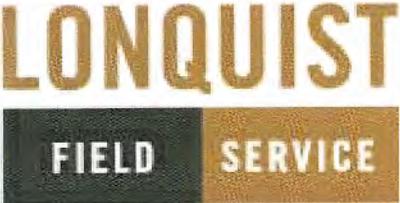
Gas stations



Parking Lots

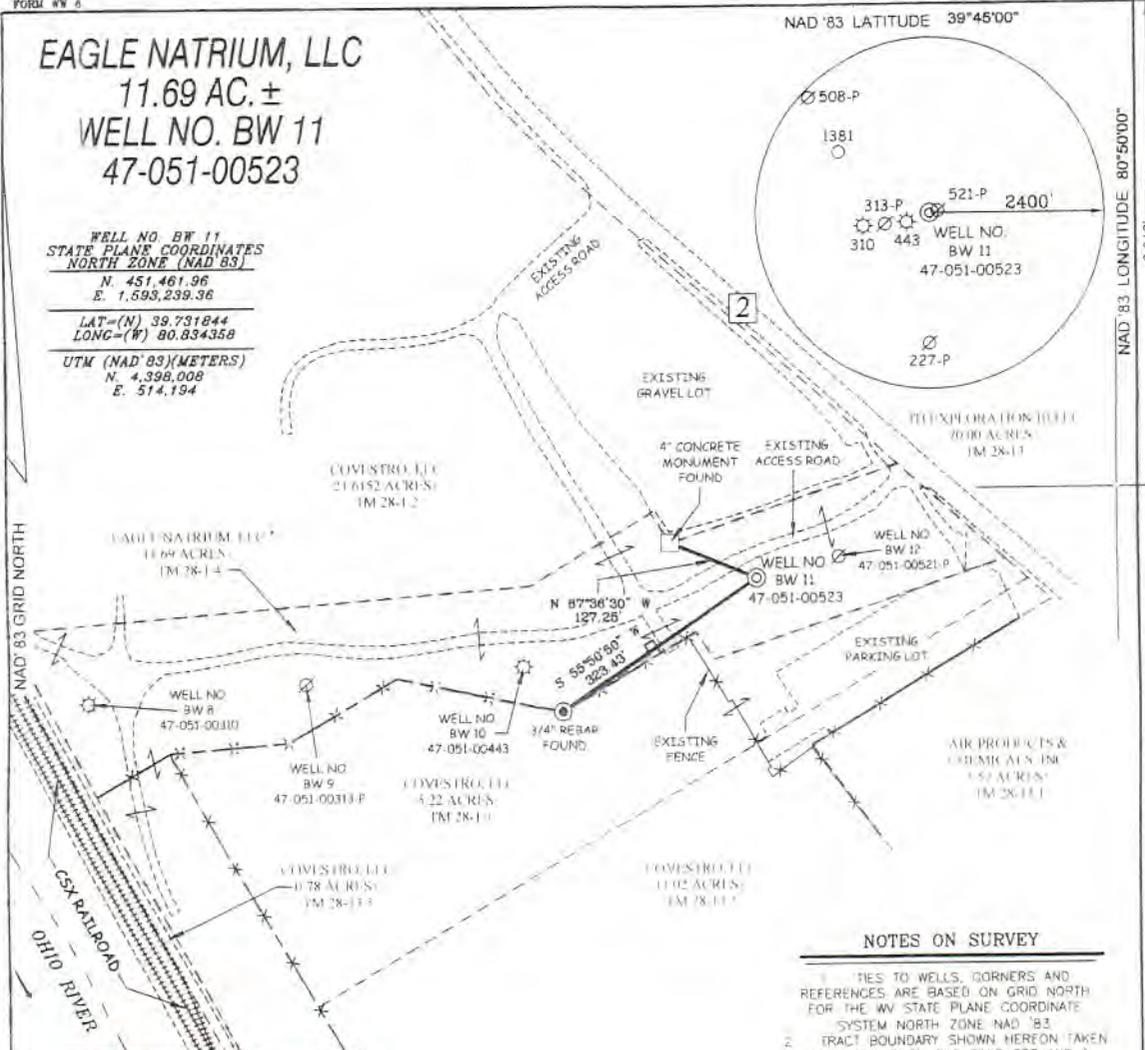


More

		<p style="text-align: center;">Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2</p>			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 18 of 20	
Well No: 11	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: 47-051-00523	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p><b>SURVEY PLAT OF WELLBORE</b></p>						
<b>PREPARED BY</b>	<b>DATE</b>	<b>APPROVED BY</b>	<b>DATE</b>	<b>CLIENT APPROVAL</b>	<b>DATE</b>	<b>Client Signature</b>
JRW	11/09/2020	RSC	11/09/2020			

**EAGLE NATRIUM, LLC**  
 11.69 AC. ±  
**WELL NO. BW 11**  
 47-051-00523

WELL NO. BW 11  
 STATE PLANE COORDINATES  
 NORTH ZONE (NAD 83)  
 N. 451,461.96  
 E. 1,593,239.36  
 LAT=(N) 39.731844  
 LONG=(W) 80.834358  
 UTM (NAD 83)(METERS)  
 N. 4,398,008  
 E. 514,194



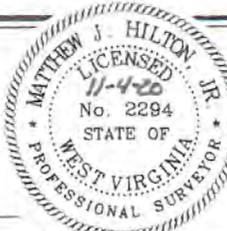
**NOTES ON SURVEY**

1. TIES TO WELLS, CORNERS AND REFERENCES ARE BASED ON GRID NORTH FOR THE WV STATE PLANE COORDINATE SYSTEM NORTH ZONE NAD 83.
2. TRACT BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 799 PAGE 387 AND A PREVIOUS SURVEY BY SLS IN 2004 - 2005.
3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARSHALL COUNTY IN NOVEMBER, 2020.
4. WELL STATE PLANE, LAT /LONG AND UTM (NAD 83) COORDINATES ESTABLISHED BY DGPS (SURVEY GRADE).



I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION

P.S. 2294 *Matthew J. Hilton Jr.*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 DATE NOVEMBER 4 20 20  
 REVISED \_\_\_\_\_ 20 \_\_\_\_\_  
 OPERATORS WELL NO. BW 11  
 API WELL NO. 47 - 051 - 00523  
 STATE COUNTY PERMIT

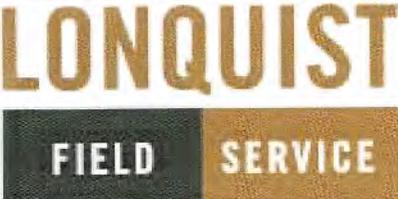
MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8874PBW11-PLUG.dwg  
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 200'

STATE OF WEST VIRGINIA  
 DIVISION OF ENVIRONMENTAL PROTECTION  
 OFFICE OF OIL AND GAS

WELL TYPE	OIL _____ GAS _____	BRINE & LIQUID INJECTION <input checked="" type="checkbox"/>	WASTE DISPOSAL _____	IF "GAS" PRODUCTION _____ STORAGE _____ DEEP <input checked="" type="checkbox"/> SHALLOW _____
LOCATION :	GROUND	ELEVATION <u>636'</u>	WATERSHED <u>OHIO RIVER</u>	
DISTRICT	<u>FRANKLIN</u>	COUNTY	<u>MARSHALL</u>	QUADRANGLE <u>NEW MARTINSVILLE 7 S'</u>
SURFACE OWNER	<u>EAGLE NATRIUM, LLC</u>		ACREAGE	<u>11.69 ±</u>
ROYALTY OWNER	<u>EAGLE NATRIUM, LLC</u>		ACREAGE	_____
PROPOSED WORK :	LEASE NO. _____		_____	
DRILL _____ CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE _____ PLUG OFF OLD FORMATION _____ PERFORATE NEW FORMATION _____ PLUG AND ABANDON <input checked="" type="checkbox"/> CLEAN OUT AND REPLUG _____ OTHER _____ PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION <u>SALINA</u> ESTIMATED DEPTH _____				

WELL OPERATOR EAGLE NATRIUM, LLC DESIGNATED AGENT J THOMAS HORAN  
 ADDRESS P.O. BOX 191 ADDRESS P.O. BOX 191  
NEW MARTINSVILLE, WV 26155 NEW MARTINSVILLE, WV 26155

COUNTY NAME  
 PERMIT

		Westlake Chemical Natrium Facility Brine Well No. 11 Plugging and Abandonment Procedure Rev 2			Project No: <b>F1552</b>	
					Date: November 09, 2020	
					Page: 19 of 20	
Well No: 11	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>			
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>			
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>			
<p><b>VENDOR PROPOSALS</b></p>						
PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

**LONQUIST**

**FIELD SERVICE**

Westlake Chemical  
 Natrium Facility  
 Brine Well No. 11  
 Plugging and Abandonment Procedure  
 Rev 2

Project No: **F1552**

Date: November 09, 2020

Page: 20 of 20

Well No: <b>11</b>	State: <b>West Virginia</b>	County: <b>Marshall</b>	Field: <b>Marshall County</b>
District: <b>Franklin</b>	Location: <b>TBD</b>	Quadrangle: <b>New Martinsville</b>	Operator: <b>Eagle Natrium, LLC</b>
API No: <b>47-051-00523</b>	Estimated TD: <b>6,816'</b>	Target Geology: <b>Salina Formation</b>	Status: <b>Inactive Solution Mining</b>

**SAFETY PLAN**

PREPARED BY	DATE	APPROVED BY	DATE	CLIENT APPROVAL	DATE	Client Signature
JRW	11/09/2020	RSC	11/09/2020			

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47-051-0523 County Marshall District Franklin  
Quad New Martinsville, WV Pad Name N/A Field/Pool Name N/A  
Farm name Axiall Corp. Well Number No. 11 Injection  
Operator (as registered with the OOG) Eagle Natrium LLC/Axiall Corp.  
Address N. St. Rt. 2, City New Martinsville State WV Zip 26155

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing \_\_\_\_\_ Easting \_\_\_\_\_  
Landing Point of Curve Northing \_\_\_\_\_ Easting \_\_\_\_\_  
Bottom Hole Northing \_\_\_\_\_ Easting \_\_\_\_\_

Elevation (ft) \_\_\_\_\_ GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other Water Injection  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine

Mud Type(s) and Additive(s)  
Brine Water mixed with 2%KCL

RECEIVED  
Office of Oil and Gas  
NOV 12 2013

WV Department of  
Environmental Protection  
11/19/2013

Date permit issued 10/21/2013 Date drilling commenced 10/26/2013 Date drilling ceased \_\_\_\_\_  
Date completion activities began N/A Date completion activities ceased N/A  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 50' Open mine(s) (Y/N) depths N/A  
Salt water depth(s) ft 1050'-1750' Void(s) encountered (Y/N) depths N/A  
Coal depth(s) ft 256' - 261' Cavern(s) encountered (Y/N) depths N/A  
Is coal being mined in area (Y/N) N

Reviewed by:

\_\_\_\_\_

WR-35  
Rev. 8/23/13

API 47-051 - 0523

Farm name Axiall Corp.

Well number No. 11 Injection

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor		16"	62'	New	52.36		
Surface							
Coal							
Intermediate 1		10 3/4"	1609'	New	H-40 @32.75		
Intermediate 2							
Intermediate 3							
Production		7"	8455'	New	N-80 @ 26lb/ft		
Tubing		5"	365'		N-80 @18lb/ft		
Packer type and depth set							

Comment Details Perforations were made in the 7" Production casing to perform a squeeze job, not for fracing purposes. The perms. were made from 4950' to 4948'. Cement was squeezed from 4950' to 2120'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor							
Surface							
Coal							
Intermediate 1						Surface	
Intermediate 2							
Intermediate 3							
Production						2120'	
Tubing							

Drillers TD (ft) N/A      Loggers TD (ft) N/A  
 Deepest formation penetrated N/A      Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) N/A

Check all wireline logs run       caliper     density     deviated/directional     induction  
 neutron     resistivity     gamma ray     temperature     sonic

Well cored     Yes     No      Conventional      Sidewall      Were cuttings collected     Yes     No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING N/A

RECEIVED  
Office of Oil and Gas

NOV 12 2020

WAS WELL COMPLETED AS SHOT HOLE     Yes     No      DETAILS N/A

WV Department of  
Environmental Protection

WAS WELL COMPLETED OPEN HOLE?     Yes     No      DETAILS N/A

WERE TRACERS USED     Yes     No      TYPE OF TRACER(S) USED N/A





Quadrangle New Martinsville

Storage  51-00523

Permit No. MARS 523

**WELL RECORD**

Oil or Gas Well Brine

Company Pittsburgh Plate Glass Company  
 Address New Martinsville, West Virginia  
 Farm J. N. Wells Acres \_\_\_\_\_  
 Location (waters) East Bank Ohio River - Natrium  
 Well No. 11 Elev. 639  
 District Franklin County Marshall  
 The surface of tract is owned in fee by Pittsburgh Plate Glass Company Address New Martinsville  
 Mineral rights are owned by Pittsburgh Plate Glass Company Address New Martinsville  
 Drilling commenced April 18, 1964  
 Drilling completed July 4, 1964  
 Date Shot - From - To -  
 With -  
 Open Flow /10ths Water in - Inch  
 /10ths Merc. in - Inch  
 Volume - Cu. Ft.  
 Rock Pressure - lbs. - hrs.  
 Oil - bbls., 1st 24 hrs.  
 WELL ACIDIZED \_\_\_\_\_  
 WELL FRACTURED \_\_\_\_\_

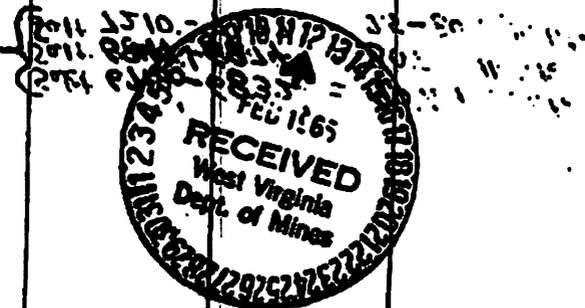
Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16	62	62	Kind of Packer
12			Bridge Plug
10 3/4	1608	1608	Size of
8 1/2			7"
8 1/2	845 1/2	845 1/2	Depth set
6 3/16			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

CASING CEMENTED 10-3/4 SIZE 1608 No. 1 April 23 Date

COAL WAS ENCOUNTERED AT See Log FEET \_\_\_\_\_ INCHES  
 FEET \_\_\_\_\_ INCHES FEET \_\_\_\_\_ INCHES  
 FEET \_\_\_\_\_ INCHES FEET \_\_\_\_\_ INCHES

RESULT AFTER TREATMENT \_\_\_\_\_  
 ROCK PRESSURE AFTER TREATMENT \_\_\_\_\_  
 Fresh Water \_\_\_\_\_ Feet \_\_\_\_\_ Salt Water \_\_\_\_\_ Feet \_\_\_\_\_

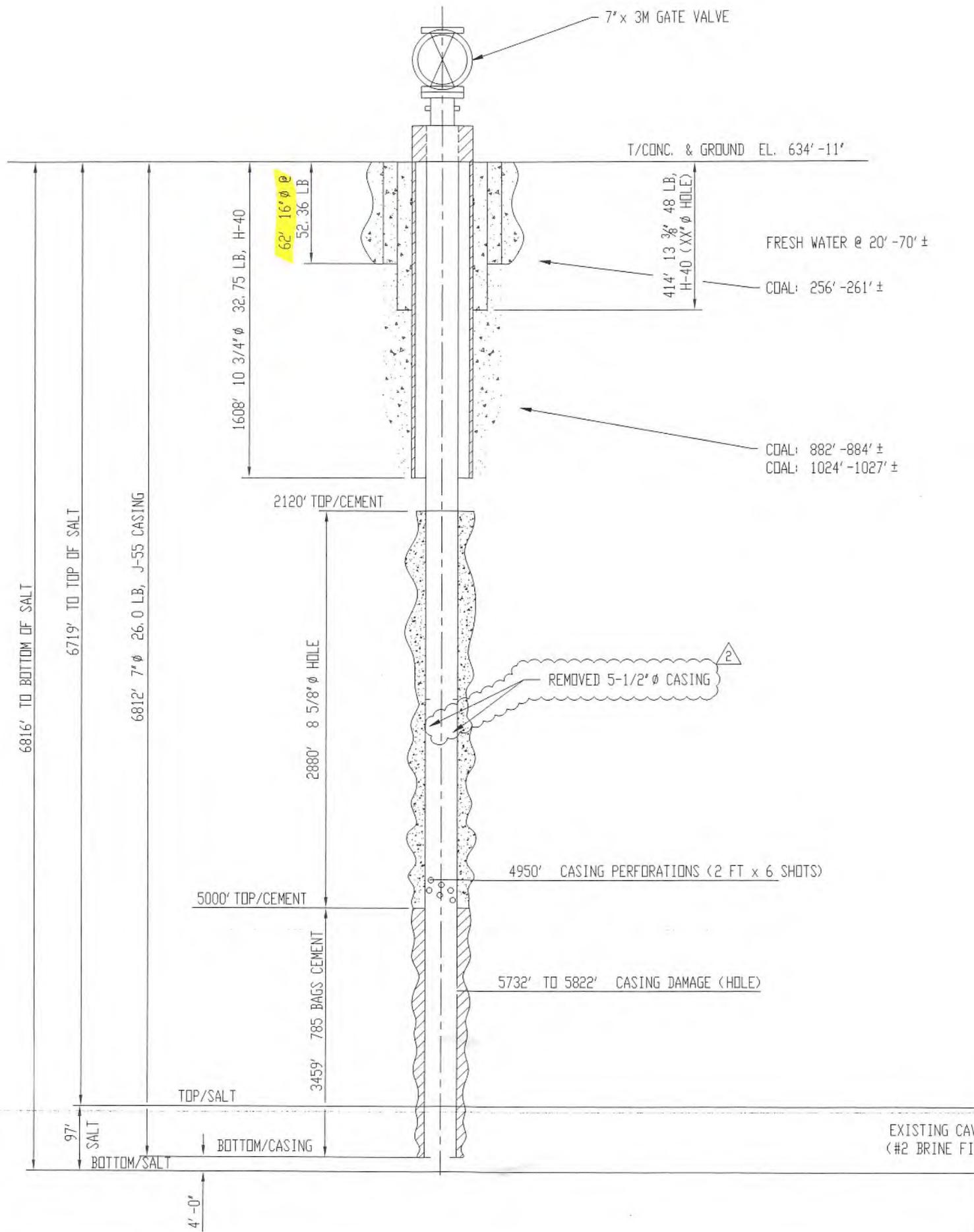
Formation	Unit	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Monongahela				0	256			
Conemaugh				256	783			
	Pittsburgh Coal			256	261			
	Ames Lime			415	423			
	Saltsburg Sand (1st Cow Run)			503	527			
	Brush Creek Lime			710	716			
Allegheny				783	1070			
	Upper Freeport Lime			789	800			
	Lower Kitt. Coal Hor.			1024	1027			
Pottsville Form.				1070	1245			
	Homewood Sands			1070	1122			
	Maxton Sand			1210	1245			
Top Miss. System				1245				
	Little Lime			1257	1278			
	Pencil Cave Shale			1278	1288			
	Greenbrier Lime			1288	1375			
	"Big Lime"							
Pocono				1375	1620			
	Keener, Big Injun Weir			1375	1620			
	Berea Sand			1757	1840			
	Horison			1950	1982			
Top Devonian System				1982				
	Catskill ?			1982	2295			
	Chemung			2295	3460			
	Riley			2905	2952			
	Benson							



Tioga Metacentonite	5805	5812
Onondaga Limestone	5823	6048
Oriskany (Ridgely)	6048	6132
" (Shriver)	6132	6267
Helderberg	6287	6405
Top Silurian	6405	6405
Keyser Limestone	6405	6507
Salina	6507	7492
Lockport (Packer)	7492	7804
Keefer	7804	7833
Roschill - Clinton	7833	8149
Irondequoit	8149	8238
(Packer Shell)	8238	8261
Reynales	8261	8285
Therold	8285	8317
Medina	8317	8359
Red Medina Sands	8359	8444
White Medina Sands	8444	8462
Whirlpool Sand (?)	8462	
Queenston		
Total Depth	8470'	

47051-00523 P

Salt 6710-6832' = 90%+ Halite  
 Salt 6847-6874' = 80% Halite  
 Salt 7210-7277' = 25-80% Halite



7' x 3M GATE VALVE

T/CONC. & GROUND EL. 634'-11'

FRESH WATER @ 20' - 70' ±

COAL: 256' - 261' ±

COAL: 882' - 884' ±

COAL: 1024' - 1027' ±

2120' TOP/CEMENT

2880' 8 5/8" Ø HOLE

REMOVED 5-1/2" Ø CASING

4950' CASING PERFORATIONS (2 FT x 6 SHOTS)

5000' TOP/CEMENT

5732' TO 5822' CASING DAMAGE (HOLE)

3459' 785 BAGS CEMENT

TOP/SALT

97' SALT

BOTTOM/CASING

BOTTOM/SALT

4'-0"

EXISTING CAV (#2 BRINE FI

6816' TO BOTTOM OF SALT

6719' TO TOP OF SALT

6812' 7" Ø 26.0 LB, J-55 CASING

1608' 10 3/4" Ø 32.75 LB, H-40

62' 16" Ø 52.36 LB

414' 13 3/8" 48 LB, H-40 (XX" Ø HOLE)

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Environmental Protection

NOTES:

- a.) ORIGINAL DRILL DATE : 1961- 1962
- b.) FIELD MODIFICATIONS DONE IN 3/2013.
- c.) SEE SK-40911 FOR ORIGINAL LOG/CROSS SECTION.

3 DMW	3/18/20	6300' OF 5-1/2"Ø CASING REMOVED
2 DMW	7/05/16	REVISED/ADDED WATER AND COAL LEVELS
1 DWS	12/8/14	CHANGE EXISTING CAVITY
REV. BY	DATE	DESCRIPTION

DEPT: 70 - BRINE		
TITLE: #11 BRINE WELL (API #47-051-0523)		
ELEVATIONAL CROSS SECTION		
DRAWING TYPE: MECHANICAL PROCESS EQUIPMENT		MPE
EQUIPMENT No: 7000-115-0011		
	DRAWN M. HUSARIK	DATE 12/09/13
	CHECKED E. McLAUGHLIN	DATE 12/09/13
	APP' VD E. McLAUGHLIN	DATE 12/09/13
	SCALE : NONE	ACAD YES
	JOB No P-XXX-G	REV
	DWG 70-2644	3

**EAGLE NATRIUM, LLC**  
**11.69 AC. ±**  
**WELL NO. BW 11**  
**47-051-00523**

**WELL NO. BW 11**  
**STATE PLANE COORDINATES**  
**NORTH ZONE (NAD 83)**

N. 451,461.96  
 E. 1,593,239.36

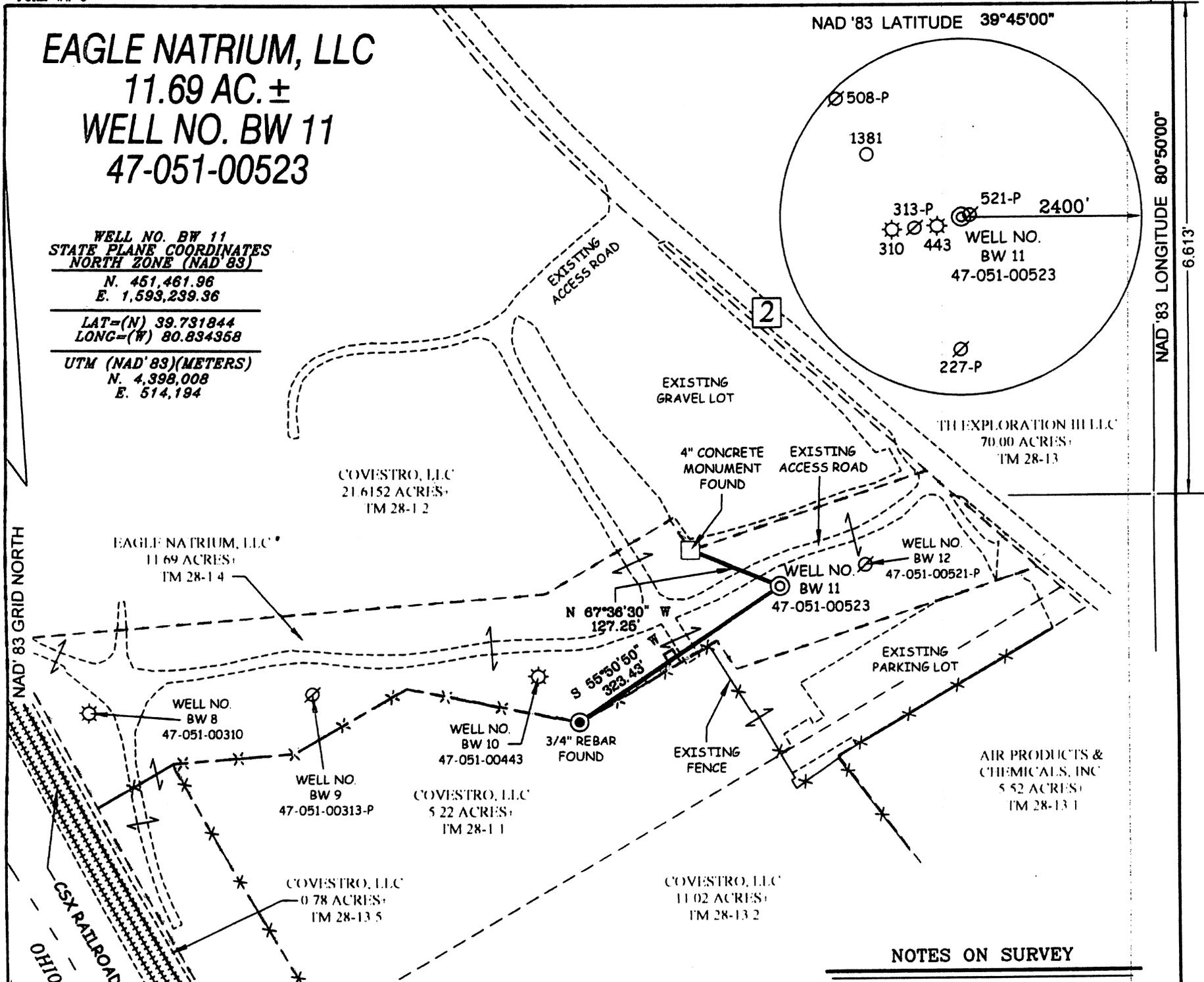
LAT=(N) 39.731844  
 LONG=(W) 80.834358

**UTM (NAD 83)(METERS)**  
 N. 4,398,008  
 E. 514,184

NAD '83 LATITUDE 39°45'00"

NAD '83 LONGITUDE 80°50'00"

6.613'



**NOTES ON SURVEY**

TIES TO WELLS CORNERS AND



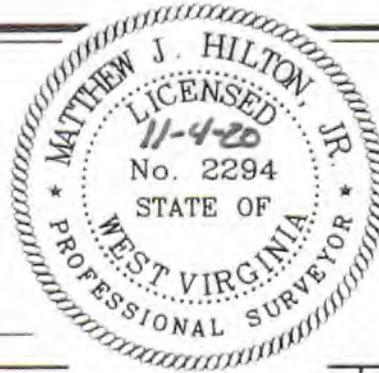
slsww.com

- FOR THE WEST VIRGINIA SURVEYING SYSTEM NORTH ZONE NAD '83.
- 2. TRACT BOUNDARY SHOWN HEREON TAKEN FROM DEED BOOK 799 PAGE 387 AND A PREVIOUS SURVEY BY SLS IN 2004 - 2005.
- 3. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF MARSHALL COUNTY IN NOVEMBER, 2020.
- 4. WELL STATE PLANE, LAT./LONG. AND UTM (NAD'83) COORDINATES ESTABLISHED BY DGPS(SURVEY GRADE).

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION

P.S.  
2294

*Matthew J. Hilton, Jr.*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE NOVEMBER 4 20 20

REVISED \_\_\_\_\_ 20 \_\_\_\_\_

OPERATORS WELL NO BW 11

API WELL NO. 47 - 051 - 00523  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8874PBW11-PLUG.dwg  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 200'

STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS



WELL TYPE OIL BRINE & LIQUID INJECTION X WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP X SHALLOW

LOCATION : GROUND  
ELEVATION 636' WATERSHED OHIO RIVER  
DISTRICT FRANKLIN COUNTY MARSHALL QUADRANGLE NEW MARTINSVILLE 7.5'

SURFACE OWNER EAGLE NATRIUM, LLC ACREAGE 11.69 ±

ROYALTY OWNER EAGLE NATRIUM, LLC ACREAGE \_\_\_\_\_

PROPOSED WORK : LEASE NO \_\_\_\_\_

DRILL \_\_\_\_\_ CONVERT \_\_\_\_\_ DRILL DEEPER \_\_\_\_\_ REDRILL \_\_\_\_\_ FRACTURE OR STIMULATE \_\_\_\_\_ PLUG OFF OLD FORMATION \_\_\_\_\_ PERFORATE NEW FORMATION \_\_\_\_\_ PLUG AND ABANDON X CLEAN OUT AND REPLUG \_\_\_\_\_ OTHER \_\_\_\_\_

PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION SALINA  
ESTIMATED DEPTH \_\_\_\_\_

WELL OPERATOR EAGLE NATRIUM, LLC DESIGNATED AGENT J. THOMAS HORAN  
ADDRESS P.O. BOX 191 ADDRESS P.O. BOX 191  
NEW MARTINSVILLE, WV 26155 NEW MARTINSVILLE, WV 26155

COUNTY NAME

PERMIT

47-051-00523P

TRUE N  
MAP N

8 7 6 5

D

C

B

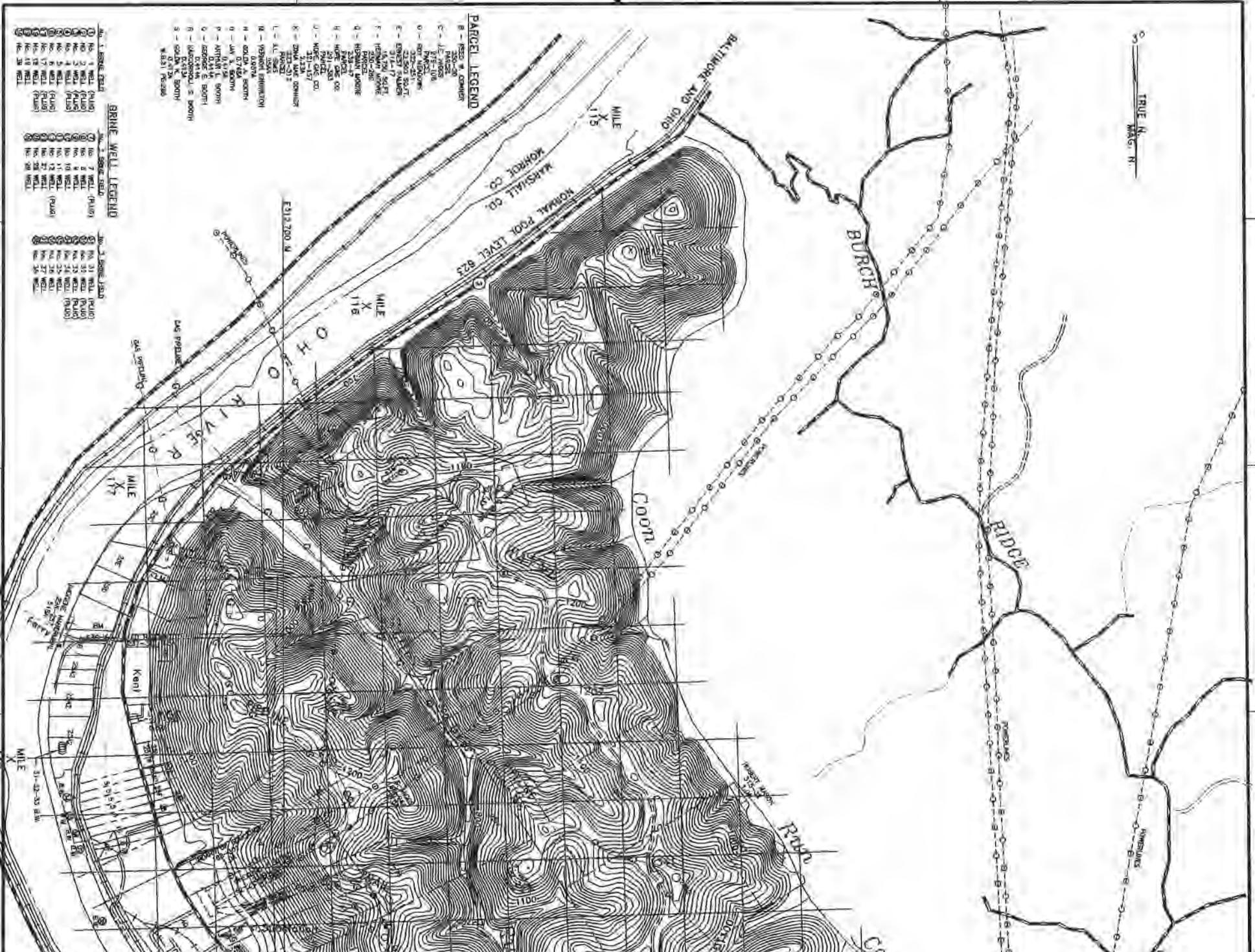
A

**PARCEL LEGEND**

- B - IRON W. COOPER
- 300-20
- C - J. B. PAVEL
- 875-100
- 0 - PAVEL
- 320-25.17
- E - SHERIDAN
- 314-17
- F - J. W. SHERIDAN
- 200-200
- 4 - HERRICK
- 234-7
- H - PAVEL CO.
- 571-200
- J - HERRICK
- 11-157
- K - DANA T. COOPER
- 112-217
- L - A. J. COOPER
- 112-217
- M - VERNON W. WILSON
- N - GOLDEN S. BOOTH
- 0-17-200
- P - ANTHONY T. BOOTH
- 0-17-200
- Q - GARDNER S. BOOTH
- R - GARDNER S. BOOTH
- S - GARDNER S. BOOTH
- W. B. S. BOOTH
- W. B. S. BOOTH

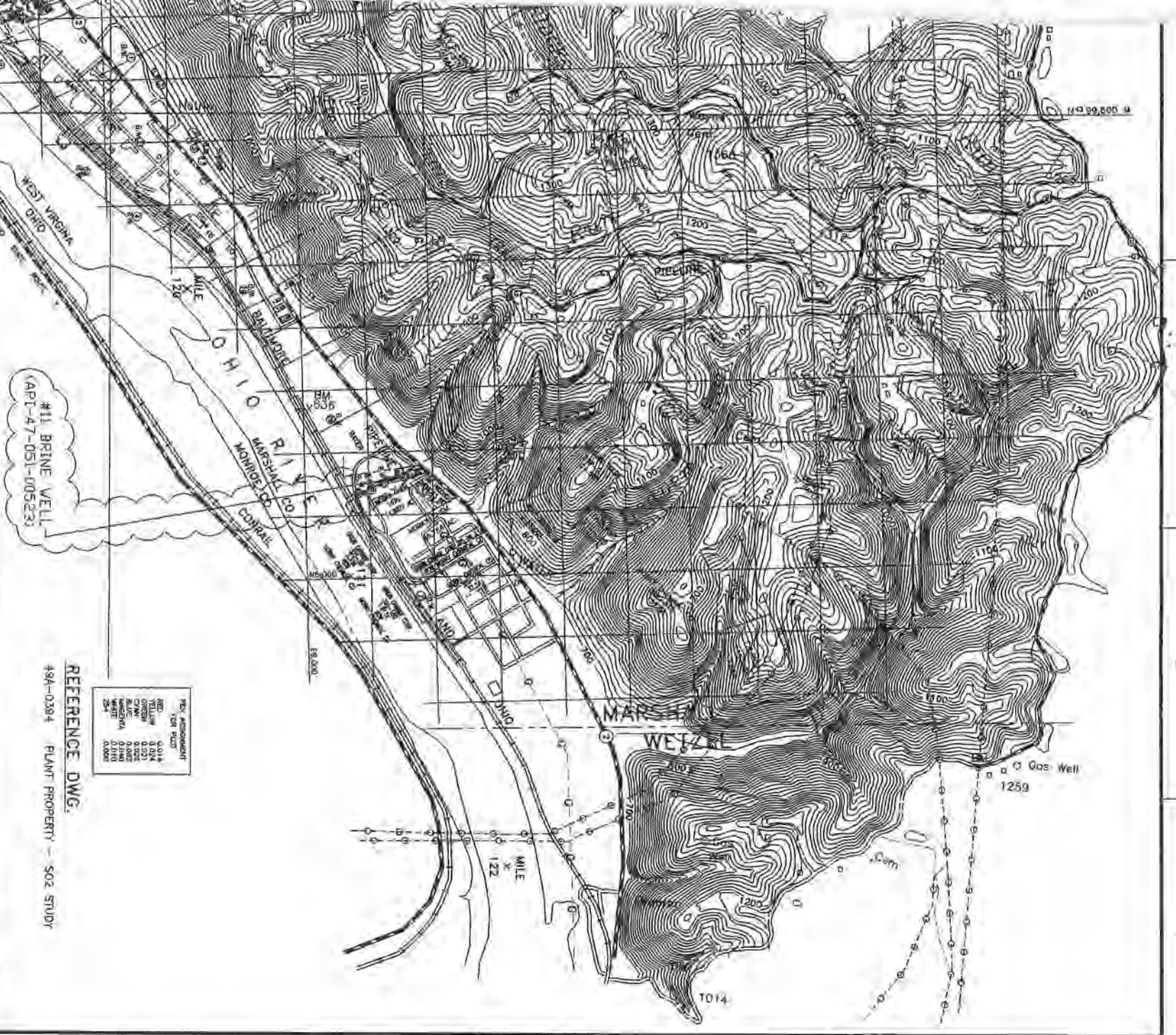
**BRINE WELL LEGEND**

- No. 1 BRINE WELL
- No. 2 BRINE WELL
- No. 3 BRINE WELL
- No. 4 BRINE WELL
- No. 5 BRINE WELL
- No. 6 BRINE WELL
- No. 7 BRINE WELL
- No. 8 BRINE WELL
- No. 9 BRINE WELL
- No. 10 BRINE WELL
- No. 11 BRINE WELL
- No. 12 BRINE WELL
- No. 13 BRINE WELL
- No. 14 BRINE WELL
- No. 15 BRINE WELL
- No. 16 BRINE WELL
- No. 17 BRINE WELL
- No. 18 BRINE WELL
- No. 19 BRINE WELL
- No. 20 BRINE WELL



8 7 6 5

47-051-00523F



Key assignment for color

RED	0.014
YELLOW	0.024
GREEN	0.021
BLUE	0.022
MAGENTA	0.018
BLACK	0.000
35%	

#11 BRINE WELL  
(APT-47-051-00523)

REFERENCE DWG.  
434-0394 PLANT PROPERTY - S02 STUDY

REV	DATE	DESCRIPTION	BY
REV	DATE		

NEW MARTINSVILLE, W. VA.

Chemicals

INDUSTRIES

OPER. APPR. \_\_\_\_\_  
DESIGN APPR. \_\_\_\_\_

PRINT ISSUED: \_\_\_\_\_ FOR: APPR. \_\_\_\_\_ RES. CONST. \_\_\_\_\_

PLANT PROPERTY AREA  
TOPOGRAPHICAL MAP  
BRINE WELL STUDY  
DECEMBER 2000

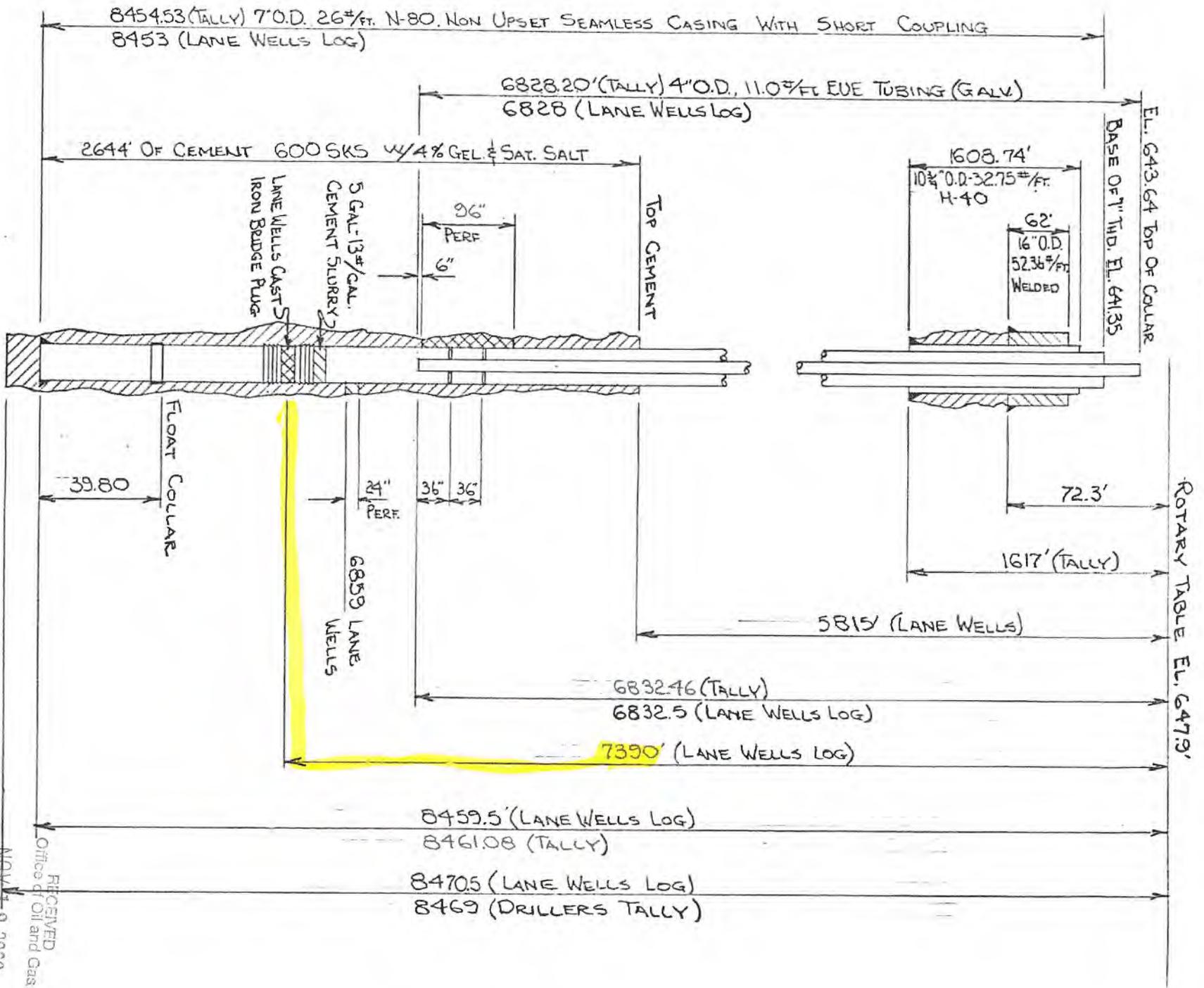
DRAWN: SAH. CHECKED: \_\_\_\_\_  
CHARGE: 12/7/00. SUB: SCALE 1"=1000'  
DATE: \_\_\_\_\_ DWG: 434-0435  
CONST. APPR. \_\_\_\_\_

American®  
E404SCAE  
(614) 865-2277  
4-11-81

# 3 2 1 A B C D

# NO. 11 BRINE WELL

47-051-00523P  
NE-50: IV-2  
CIRCA 11/2014

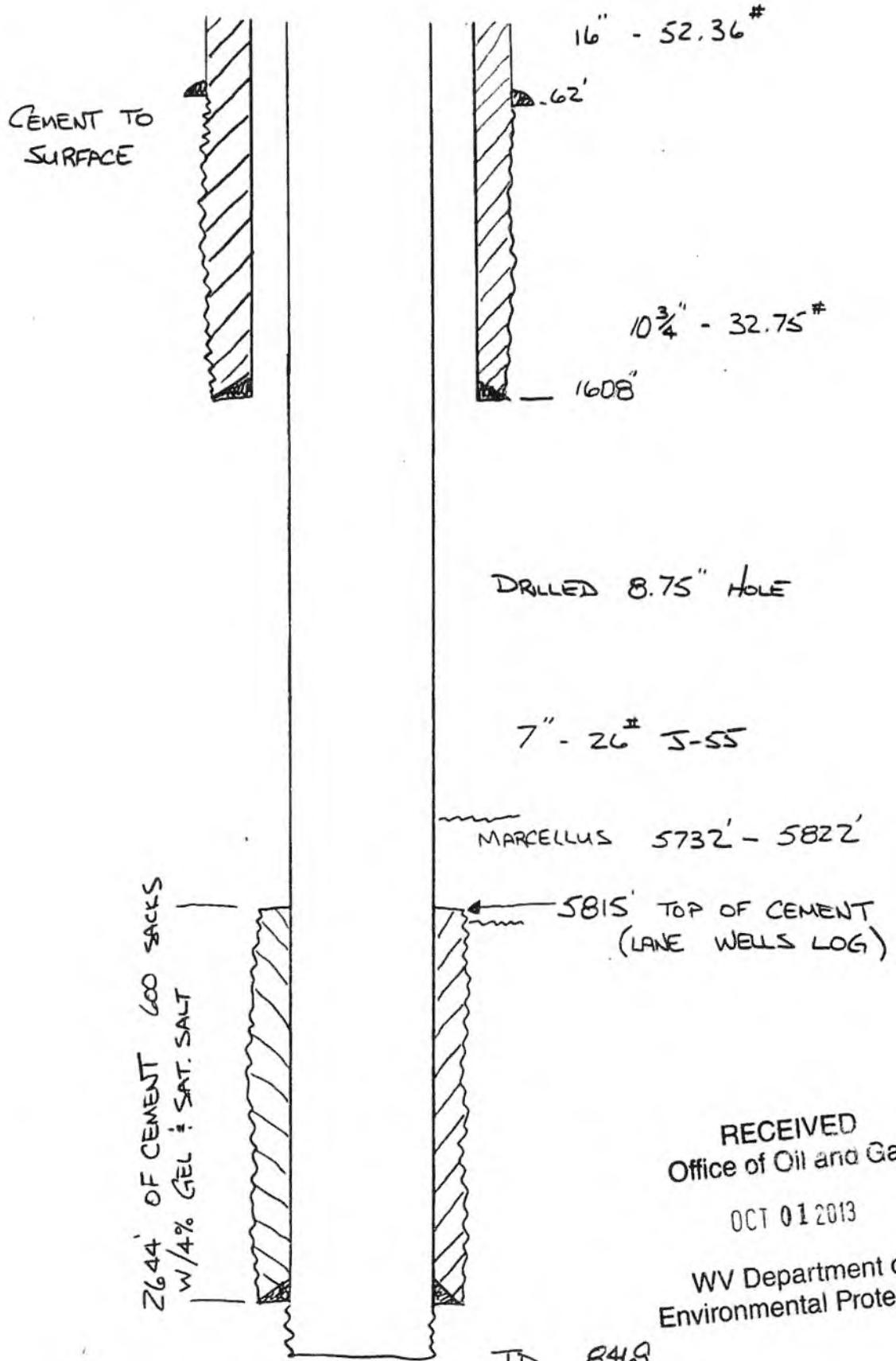


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BRINE WELL # 11

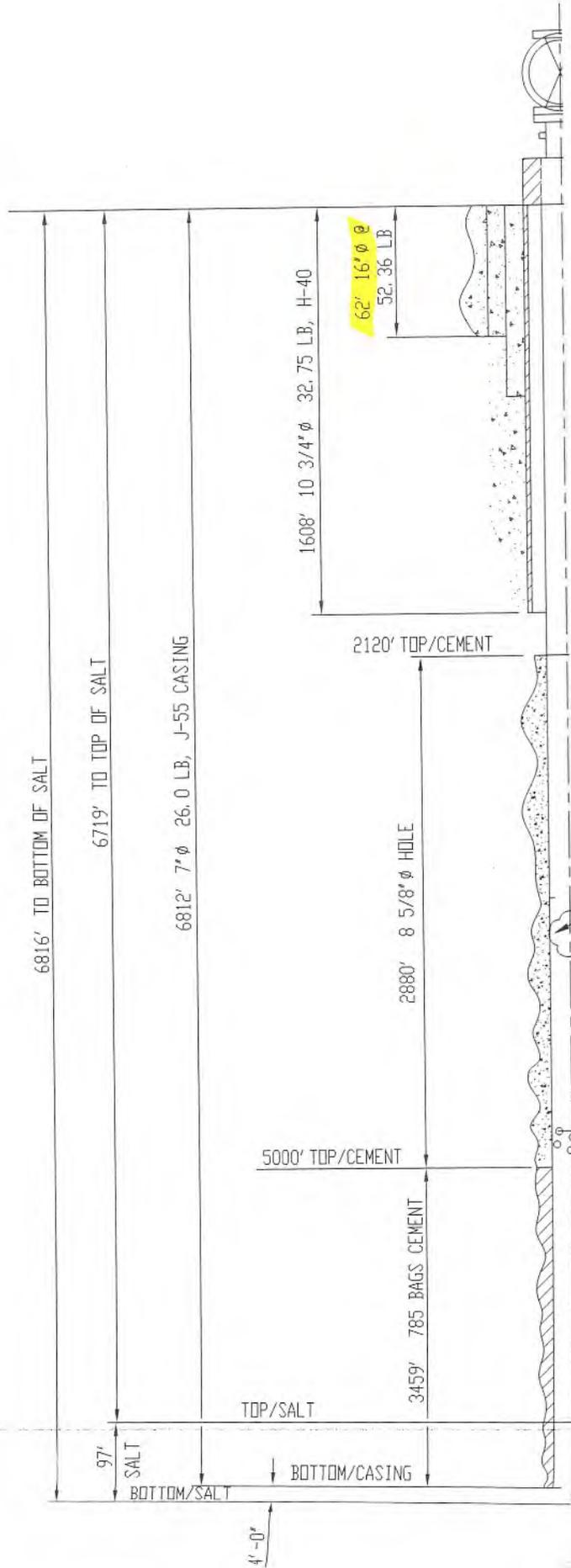
5100523 R

47-051-00523 P



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TD 8469



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NOV 12 2020  
WV Department of  
Environmental Protection

DATE: 1961-1962  
CORRECTIONS DONE IN 3/2013.  
FOR ORIGINAL LOG/CROSS SECTION.

REV. BY	DATE	DESCRIPTION
3 DMW	3/18/20	6300' OF 5-1/2" Ø CASING REMOVED
2 DMW	7/05/16	REVISED/ADDED WATER AND COAL LEVELS
1 DWS	12/8/14	CHANGE EXISTING CAVITY

DEPT:	70 - BRINE
TITLE:	#11 BRINE WELL (API #47-051-0523)
ELEVATIONAL CROSS SECTION	
DRAWING TYPE:	MECHANICAL PROCESS EQUIPMENT MPE
EQUIPMENT No:	7000-115-0011
<b>axial</b>	DRAWN M. HUSARIK DATE 12/09/13
	CHECKED E. McLAUGHLIN DATE 12/09/13
	APP'VD E. McLAUGHLIN DATE 12/09/13
	SCALE: NONE ACAD YES
	JOB No P-XXX-G

47-051-00523P



Select County: (051) Marshall    Select datatypes:  (Check All)

Enter Permit #: 523

Location     Production     Plugging

Owner/Completion     Stratigraphy     Sample

Pay/Show/Water     Logs     Btm Hole Loc

- [Table Descriptions](#)
- [County Code Translations](#)
- [Permit Numbering Series](#)
- [Usage Notes](#)
- [Contact Information](#)
- [Disclaimer](#)
- [WVGES Main](#)
- ["Pipeline-Plus" New](#)

WV Geological & Economic Survey:

Well: County = 051 Permit = 523

Report Time: Tuesday, May 31, 2011 4:30:49 PM

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705100523	Marshall	523	Franklin	New Martinsville	New Martinsville	38.731516	-80.628293	514633.8	4397972.7

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	FARM	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR	PROP_VD	PROP_TRGT_FM
4705100523	7-1-1964	Original Loc	Completed	J Wells/Allied Chem 8		J N Wells 11				PPG Industries, Inc.		

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	G_BEF	O_AFT	O_BEF	O_AFT	P_
4705100523	7-1-1964	-/-	636	Ground Level	Unnamed	Juniata Fm	Tuscarora Ss	Miscellaneous Well	Unsuccessful	Brine	Rotary	NotOpen	8470	8470		0	0	0	0	0

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705100523	Original Loc	Pittsburgh coal	Well Record	256	Reasonable	5	Reasonable	636	Ground Level
4705100523	Original Loc	Ames Ls	Well Record	415	Reasonable	8	Reasonable	636	Ground Level
4705100523	Original Loc	1st Cow Rm/Moundsvle	Well Record	503	Reasonable	24	Reasonable	636	Ground Level
4705100523	Original Loc	Lo Kittanning coal	Well Record	1024	Reasonable	3	Reasonable	636	Ground Level
4705100523	Original Loc	Homewd Ss/Zn Cow Run	Well Record	1070	Reasonable	52	Reasonable	636	Ground Level
4705100523	Original Loc	Little Lime	Well Record	1257	Reasonable	21	Reasonable	636	Ground Level
4705100523	Original Loc	Pencil Cave	Well Record	1278	Reasonable	10	Reasonable	636	Ground Level
4705100523	Original Loc	Big Lime	Well Record	1288	Reasonable	87	Reasonable	636	Ground Level
4705100523	Original Loc	Greenbrier Group	Well Record	1288	Reasonable	87	Reasonable	636	Ground Level
4705100523	Original Loc	Big Irjun (Price&eq)	Well Record	1375	Reasonable	245	Reasonable	636	Ground Level
4705100523	Original Loc	Weir	Well Record	1757	Reasonable	83	Reasonable	636	Ground Level
4705100523	Original Loc	Berea Ss	Well Record	1950	Reasonable	32	Reasonable	636	Ground Level
4705100523	Original Loc	Hamshirts Gsp	Well Record	1952	Reasonable	313	Reasonable	636	Ground Level
4705100523	Original Loc	Greenland Gap Fm	Well Record	2255	Reasonable	1185	Reasonable	636	Ground Level
4705100523	Original Loc	Riley	Well Record	2905	Reasonable	47	Reasonable	636	Ground Level
4705100523	Original Loc	Benson	Well Record	3052	Reasonable	6	Reasonable	636	Ground Level
4705100523	Original Loc	Brallier	Well Record	3460	Reasonable	1427	Reasonable	636	Ground Level
4705100523	Original Loc	Harrell Sh	Well Record	4887	Reasonable	63	Reasonable	636	Ground Level
4705100523	Original Loc	Hamilton	Well Record	4950	Reasonable	282	Reasonable	636	Ground Level
4705100523	Original Loc	Marcellus Sh	Well Record	5232	Reasonable	590	Reasonable	636	Ground Level
4705100523	Original Loc	Onondaga Ls	Well Record	5823	Reasonable	225	Reasonable	636	Ground Level
4705100523	Original Loc	Oriskany	Well Record	6048	Reasonable	84	Reasonable	636	Ground Level
4705100523	Original Loc	Helderberg	Well Record	6132	Reasonable	273	Reasonable	636	Ground Level
4705100523	Original Loc	Salina	Well Record	6405	Reasonable	1087	Reasonable	636	Ground Level
4705100523	Original Loc	McKenzie Fm	Well Record	7492	Reasonable	312	Reasonable	636	Ground Level
4705100523	Original Loc	Keeler Ss	Well Record	7804	Reasonable	29	Reasonable	636	Ground Level
4705100523	Original Loc	Rose Hill Fm	Well Record	7833	Reasonable	509	Reasonable	636	Ground Level
4705100523	Original Loc	Tuscarora Ss	Well Record	8389	Reasonable	91	Reasonable	636	Ground Level
4705100523	Original Loc	Juniata Fm	Well Record	8462	Reasonable	0	Reasonable	636	Ground Level

There is no Wireline (E-Log) data for this well

There is no Plugging data for this well

There is no Sample data for this well

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WV Department of  
Environmental Protection

WW-4A  
Revised 6-07

1) Date: 11/9/2020  
2) Operator's Well Number  
No. 11 Brine Well  
3) API Well No.: 47 - 051 - 00523

**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS**  
**NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL**

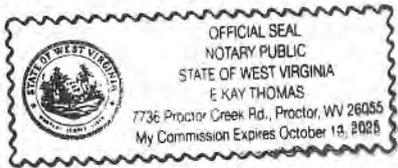
4) Surface Owner(s) to be served:	5) (a) Coal Operator
(a) Name <u>Eagle Natrium, LLC</u>	Name _____
Address <u>P.O. Box 191</u>	Address _____
<u>New Martinsville, WV 26155</u>	
(b) Name _____	(b) Coal Owner(s) with Declaration
Address _____	Name _____
	Address _____
(c) Name _____	Name _____
Address _____	Address _____
6) Inspector <u>James Nicholson</u>	(c) Coal Lessee with Declaration
Address <u>P.O. Box 44</u>	Name _____
<u>Moundsville, WV 26041</u>	Address _____
Telephone <u>304-552-3874</u>	

**TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:**

- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
- (2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.



Well Operator	<u>Eagle Natrium, LLC</u>	<u>RECEIVED</u>
By:	<u>[Signature]</u>	Office of Oil and Gas
Its:	Agent	<u>NOV 12 2020</u>
Address	<u>P.O. Box 191</u>	
	<u>New Martinsville, WV 26155</u>	
Telephone	<u>304-451-3797</u>	WV Department of Environmental Protection

Subscribed and sworn before me this 9<sup>th</sup> day of November  
E. Kay Thomas Notary Public  
My Commission Expires OCT 13, 2025

**Oil and Gas Privacy Notice**

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at [depprivacyoffier@wv.gov](mailto:depprivacyoffier@wv.gov).

**SURFACE OWNER WAIVER**

Operator's Well  
Number

No. 11 Brine Well (NA)

**INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW4-A**

The well operator named on page WW-4A is applying for a permit from the State to plug and abandon a well. (Note: If the surface tract is owned by more than three persons, then these materials were served on you because your name appeared on the Sheriff's tax ticket on the land or because you actually occupy the surface tract. In either case, you may be the only owner who will actually receive these materials.) See Chapter 22 of the West Virginia Code. Well work permits are valid for 24 months. If you do not own any interest in the surface tract, please forward these materials to the true owner immediately if you know who it is. Also, please notify the well operator and the Office of Oil and Gas.

**NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.  
WHERE TO FILE COMMENTS AND OBTAIN ADDITIONAL INFORMATION:**

Chief, Office of Oil and Gas  
Department of Environmental Protection  
601 57<sup>th</sup> St. SE  
Charleston, WV 25304  
(304) 926-0450

**Time Limits and methods for filing comments.** The law requires these materials to be served on or before the date the operator files his Application. You have **FIVE (5) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

**Comments must be in writing.** Your comments must include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

The Chief has the power to deny or condition a well work permit based on comments on the following grounds:

- 1) The proposed well work will constitute a hazard to the safety of persons.
- 2) The soil erosion and sediment control plan is not adequate or effective;
- 3) Damage would occur to publicly owned lands or resources;
- 4) The proposed well work fails to protect fresh water sources or supplies;
- 5) The applicant has committed a substantial violation of a previous permit or a substantial violation of one or more of the rules promulgated under Chapter 22, and has failed to abate or seek review of the violation...".

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NOV 12 2020  
WV Department of  
Environmental Protection

**If you want a copy of the permit as it is issued or a copy of the order denying the permit, you should request a copy from the Chief.**

**VOLUNTARY STATEMENT OF NO OBJECTION**

I hereby state that I have read the instructions to surface owners and that I have received copies of a Notice and Application For A Permit To Plug And Abandon on Forms WW-4A and WW-4B, and a survey plat.

I further state that I have no objection to the planned work described in these materials, and I have no objection to a permit being issued on those materials.

FOR EXECUTION BY A NATURAL PERSON  
ETC.

FOR EXECUTION BY A CORPORATION,

_____	Date _____	Name (NA; Eagle Natrium, LLC owns surface)
Signature	By _____	_____
	Its _____	_____
		Date _____
	Signature _____	Date _____

WW-4B

API No. 4 7-051-00523 (NA)  
Farm Name EAGLE NATRIUM LLC/AXIALL CORP.  
Well No. 11 Brine Well

**INSTRUCTIONS TO COAL OPERATORS  
OWNERS AND LESSEE**

The well operator named on the obverse side of WW-4 (B) is about to abandon the well described in the enclosed materials and will commence the work of plugging and abandoning said well on the date the inspector is notified. Which date shall not be less than five days after the day on which this notice and application so mailed is received, or in due course should be received by the Department of Environmental Protection Office of Oil & Gas.

This notice and application is given to you in order that your respective representatives may be present at the plugging and filling of said well. You are further notified that whether you are represented or not the operator will proceed to plug and fill said well in the manner required by Section 24, Article 6, Chapter 22 of the Code and given in detail on obverse side of this application.

NOTE: If you wish this well to be plugged according to 22-6-24(d) then as per Regulation 35CSR4-13.9 you must complete and return to this office on form OB-16 "Request by Coal Operator, Owner, or Lessee for plugging" prior to the issuance of this plugging permit.

**WAIVER**

The undersigned coal operator \_\_\_\_/ owner \_\_\_\_/ lessee \_\_\_\_/ of the coal under this well location has examined this proposed plugging work order. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date: \_\_\_\_\_

(NA) \_\_\_\_\_

By: \_\_\_\_\_

Its \_\_\_\_\_

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NOV 12 2020

WV Department of  
Environmental Protection

WW-9  
(5/16)

API Number 47 - 051 - 00523  
Operator's Well No. No. 11 Brine Well

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS  
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Eagle Natrium, LLC OP Code 39600

Watershed (HUC 10) Ohio River Quadrangle New Martinsville, WV

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes  No

Will a pit be used? Yes  No

If so, please describe anticipated pit waste: (NA)

Will a synthetic liner be used in the pit? Yes  No  If so, what ml.? (NA)

Proposed Disposal Method For Treated Pit Wastes:

- Land Application (if selected provide a completed form WW-9-GPP)
- Underground Injection ( UIC Permit Number \_\_\_\_\_ )
- Reuse (at API Number \_\_\_\_\_ )
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain All waste will be disposed in an approved landfill.)

Will closed loop system be used? If so, describe: NA

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. NA

-If oil based, what type? Synthetic, petroleum, etc. NA

Additives to be used in drilling medium? NA

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All waste will be disposed in an approved landfill.

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) NA

-Landfill or offsite name/permit number? Quala (EnviroTank Clean) Facility # 701 / US EPA ID #: OHD987000783

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on April 1, 2016, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature J. Thomas Horan

Company Official (Typed Name) J. Thomas Horan

Company Official Title Manager, Environmental Control

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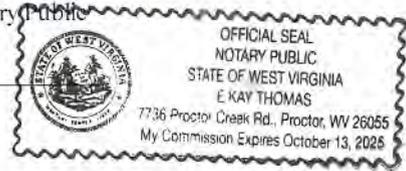
WV Department of  
Environmental Protection

Subscribed and sworn before me this 9<sup>th</sup> day of November, 2020

E. Kay Thomas

My commission expires Oct. 13, 2025

Notary Public



Proposed Revegetation Treatment: Acres Disturbed < 1 acre Prevegetation pH \_\_\_\_\_

Lime \_\_\_\_\_ Tons/acre or to correct to pH \_\_\_\_\_

Fertilizer type \_\_\_\_\_

Fertilizer amount \_\_\_\_\_ lbs/acre

Mulch \_\_\_\_\_ Tons/acre

**Seed Mixtures**

**Temporary**

**Permanent**

Seed Type                      lbs/acre

Seed Type                      lbs/acre

NA

**Attach:**

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

**(Attached)**

Plan Approved by: \_\_\_\_\_

*Jan Tralobane*

Comments: \_\_\_\_\_

Also enclosed: \_\_\_\_\_

**Drawing #49A-0435 - Topographical Map**

**#11 Brine Well Geologic Data**

Title: Oil & Gas Inspector

Date: 11/9/2020

Field Reviewed?    (  ) Yes                      (  ) No

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**STATE OF WEST VIRGINIA**  
**DEPARTMENT OF ENVIRONMENTAL PROTECTION**  
**OFFICE OF OIL AND GAS**  
**GROUNDWATER PROTECTION PLAN**

Operator Name: Eagle Natrium, LLC  
Watershed (HUC 10): Ohio River Quad: New Martinsville, WV  
Farm Name: \_\_\_\_\_

1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

Brine will be used to circulate any material encountered during scraper runs, perforations, or cutting operations. All waste will be disposed in an approved landfill. Thus, well effluent will not be land applied.

2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

All temporary brine storage tanks will be installed in containment consisting of berms and liner. Fuel tanks will have their own containment.

3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

The Ohio River is approximately 1/4th mile away from the work site.

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4. Summarize all activities at your facility that are already regulated for groundwater protection.

The Westlake Natrium Plant is a NPDES regulated facility for discharge into the Ohio River (Permit No. WV 0004359). The Plant is also covered by the WV AST Rule (Registration No. 2014-0002939).

WV Department of  
Environmental Protection

5. Discuss any existing groundwater quality data for your facility or an adjacent property.

The groundwater at the Westlake Natrium Plant is contaminated due to historical operations. The Plant is covered under a Corrective Action Permit (No. WVD 004336343).

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

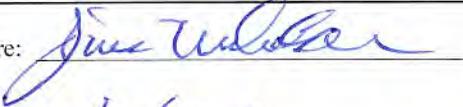
No waste material will be used for deicing or fill material on the property.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

Westlake employees and its well consultant will provide training to drilling employees (contractors) discussing the requirements for preventing groundwater contamination. The training will also include the requirements for properly storing oil and fuels.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

Supervision (well consultant) will be present for the entire drilling (P&A) operations. Ongoing inspections will be performed to prevent groundwater contamination.

Signature: 

Date: 11/9/2020

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WW-7  
8-30-06



West Virginia Department of Environmental Protection  
Office of Oil and Gas  
**WELL LOCATION FORM: GPS**

API: 47-051-00523 WELL NO.: No. 11 Brine Well  
 FARM NAME: Eagle Natrium, LLC  
 RESPONSIBLE PARTY NAME: Eagle Natrium, LLC  
 COUNTY: Marshall DISTRICT: Franklin  
 QUADRANGLE: New Martinsville  
 SURFACE OWNER: Eagle Natrium, LLC  
 ROYALTY OWNER: Eagle Natrium, LLC  
 UTM GPS NORTHING: 4,398,008  
 UTM GPS EASTING: 514,194 GPS ELEVATION: 636 ft.

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

1. Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
2. Accuracy to Datum – 3.05 meters
3. Data Collection Method:

Survey grade GPS  : Post Processed Differential \_\_\_\_\_

Real-Time Differential \_\_\_\_\_

Mapping Grade GPS \_\_\_\_\_ : Post Processed Differential \_\_\_\_\_

Real-Time Differential \_\_\_\_\_

4. **Letter size copy of the topography map showing the well location.**

I the undersigned, hereby certify this data is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Office of Oil and Gas.

J.P. Hoan  
Signature

Manager, Environmental Control

Title

11/9/20 NOV 12 2020

Date WV Department of  
Environmental Protection

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COPY

47-051-00523 P

OP-8  
Rev. 1/12

BOND NUMBER K09554737

This bond replaces Liberty Mutual Insurance Company Bond # 674020813 effective March 15, 2017.

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS  
BLANKET BOND FOR OIL OR GAS WELLS,  
LIQUID INJECTION WELLS OR WASTE DISPOSAL WELLS

\*\*\*Duplicate Original\*\*\*

KNOWN ALL MEN BY THESE PRESENTS:

(1) That we, Eagle Natrium LLC

(2) State Route 2 North, PO Box 181, New Martinsville, WV 26155

As Principal, and (3) Westchester Fire Insurance Company

(4) 436 Walnut Street, Philadelphia, PA 19106  
a firm and/or a corporation authorized to do business in the State of West Virginia, as Surety, are held and firmly bound unto the State of West Virginia in the just and full sum of (5) Fifty Thousand and no/100ths dollars (\$50,000.00) to the payment whereof well and truly to make, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bound Principal in pursuance of the provisions of Chapter 22, Article 6 and/or 6A, of the Code of West Virginia, 1931, as amended, and the regulations promulgated thereunder, has made or intends to make application to the Chief of the Office of Oil and Gas, Department of Environmental Protection, the State of West Virginia for a permit to perform well work (as defined in Chapter 22, Article 6 and/or 6A), on oil or gas wells and/or liquid injection wells and/or waster disposal wells, or has acquired or purchased, or shall hereafter acquire or purchase such wells, or has been or shall be assigned operating responsibility for such wells located in West Virginia; and

WHEREAS, THE Obligee as a condition precedent to the issuance of such Permit or release of other obligation has required the Principal to furnish a SURETY BOND acceptable to the Obligee guaranteeing the performance of said provisions of Chapter 22, Article 6 or 6A, of the Code of West Virginia, 1931, as amended, and the regulations promulgated thereunder;

NOW THEREFORE, the condition of this obligation is such that if the Principal, its personal representatives, successors, heirs and assigns shall in performing well work (as defined in Chapter 22, Article 6 and/or 6A) or operating such wells shall furnish all reports, information and affidavits as may be required by the Department of Environmental Protection, Office of Oil and Gas, documenting that said wells have been plugged and abandoned in accordance with Chapter 22, Article 6, of the Code of West Virginia, 1931, as amended, and the regulations promulgated thereunder, then this obligation to be void; otherwise to remain in full force and effect.

This bond shall be effective from the (11) 15th day of March, 2017, until released by the Department of Environmental Protection.

IN WITNESS WHEREOF the said Principal has hereunder set his or its hand and affixed his or its seal, and the said surety has caused its corporate name to be signed hereto and its corporate seal to be hereunto affixed by its duly authorized officer or agent this instrument this (12) 17th day of March, 2017.

(15) Principal Corporate Seal (13) Eagle Natrium LLC Ralph A. Byrnie (Seal)  
(Principal)

(14) By: Sr. Vice President - Vinyls  
(Title)  
(Must be President or V. President)

(18) Surety Corporate Seal (16) Westchester Fire Insurance Company (Seal)  
(Surety)

(17) By: [Signature]

19) Countersigned: n/a  
(Resident West Virginia Agent)

(20) Address: 3280 Peachtree Road NE, Suite 200, Atlanta, GA 30305

(21) Telephone: 404-460-0754

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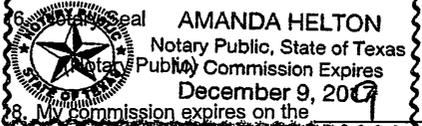
(REVERSE)

ACKNOWLEDGMENTS

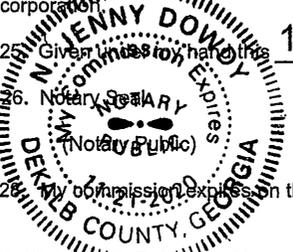
Acknowledgment by Principal if Individual or Partnership

- 1. STATE OF \_\_\_\_\_
  - 2. County of \_\_\_\_\_ to-wit:
  - 3. I, \_\_\_\_\_, a Notary Public in and for the
  - 4. county and state aforesaid, do hereby certify that \_\_\_\_\_ whose name is signed to the foregoing writing, has this day acknowledged the same before me in my said county.
  - 5. Given under my hand this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.
  - 6. Notary Seal
  - 7. \_\_\_\_\_
- (Notary Public)
- 8. My commission expires on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Acknowledgment by Principal if Corporation or Limited Liability Company

- 9. STATE OF Texas
- 10. County of Harris to-wit:
- 11. I, Amanda Helton, a Notary Public in and for the
- 12. county and state aforesaid, do hereby certify that Robert F. Buesinger
- 13. who as, Sr. Vice President - Vinyls signed the foregoing writing for
- 14. Eagle Natrium LLC a corporation/LLC, has this day, in my said county, before me, acknowledged the said writing to be the act and deed of the said corp/LLC.
- 15. Given under my hand this 3 day of April, 2017.
- 16.  Amanda Helton
- 17. \_\_\_\_\_
- 18. My commission expires on the 9 day of December, 2017.

Acknowledgment by Surety

- 19. STATE OF Georgia
- 20. County of Dekalb to-wit:
- 21. I, N. Jenny Dowdy, a Notary Public in and for the
- 22. county and state aforesaid, do hereby certify that Stephen A. Vann
- 23. who as, Attorney-In-Fact signed the foregoing writing for
- 24. Westchester Fire Insurance Company a corporation has this day, in my said county, before me, acknowledged the said writing to be the act and deed of the said corporation.
- 25. Given under my hand this 17th day of March, 2017.
- 26.  N. Jenny Dowdy
- 27. \_\_\_\_\_
- 28. My commission expires on the 21st day of November, 2017.

Sufficiency in Form and Manner Of Execution Approved

Attorney General

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

By \_\_\_\_\_ (Assistant Attorney General)

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WV Department of Environmental Protection

47-051-00523P

WESTCHESTER FIRE INSURANCE COMPANY

Power of Attorney

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the Commonwealth of Pennsylvania pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authorizations relate to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company or otherwise.
  - (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, to the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
  - (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
  - (4) Each of the Chairman, the President and Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the seal of the Company or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
  - (5) The signature of any officer or other person executing any Written Commitment or appointment pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.
- Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

Does hereby nominate, constitute and appoint Stephen A Vann, all of the City of ATLANTA, Georgia, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Fifty million dollars & zero cents (\$50,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office.

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 23 day of June 2016.

WESTCHESTER FIRE INSURANCE COMPANY

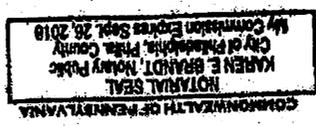
*Stephen M. Haney*  
Stephen M. Haney, Vice President



COMMONWEALTH OF PENNSYLVANIA  
COUNTY OF PHILADELPHIA  
ss.

On this 23 day of June, AD. 2016 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.



*Karen E. Brumfiel*  
Notary Public



I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

*Mr. Mark, 2017*  
day of March, 2017

*William L. Kelly*  
William L. Kelly, Assistant Secretary



THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER June 23, 2018.

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PA Department of Environmental Protection



DocuGuard #04546 contains a security pattern, blue background, heat-sensitive ink, non-reactive watermark, and microtext printing on border.



**Westlake  
Chemical**

P.O. Box 191  
New Martinsville, WV 26155  
Tel 304-451-3797 • Fax 304-455-2422  
J.Horan@Westlake.com

November 10, 2020

**Certified Mail Return Receipt Requested**

James Martin, Chief  
WV Department of Environmental Protection  
Office of Oil & Gas  
601 57<sup>th</sup> Street  
Charleston, WV 25304

Dear Mr. Martin:

**Subject: Plug and Abandon Permit Application for Operator's Well No. 11,  
API Well Number 47-051-00523**

Please find attached, the required completed forms and associated map to plug and abandon Operator's Well No. 11, API Well Number 47-051-00523 located at the Eagle Natrium LLC, Natrium Plant.

If you have any questions, please call Mr. Steve Clark at (304) 451-3881.

Sincerely,

A handwritten signature in blue ink that reads "J. Thomas Horan".

J. Thomas Horan  
Manager Environmental

Attachments:

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