



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

September 27, 2013

WELL WORK PERMIT

Re-Work

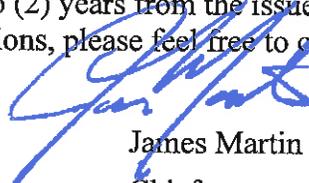
This permit, API Well Number: 47-5100443, issued to EAGLE NATRIUM LLC, is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all 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.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days 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.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-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) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: M-497
Farm Name: DOBBS, STEPHEN
API Well Number: 47-5100443
Permit Type: Re-Work
Date Issued: 09/27/2013

Promoting a healthy environment.

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.

CONDITIONS

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.
-

WW - 2B
(Rev. 8/10)

**STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION**

51 3 509

1) Well Operator: Eagle Natrium LLC. 39600 Marshall Franklin New Martinsville
Operator ID County District Quadrangle

2) Operator's Well Number: # 10 Injection Well 3) Elevation: 635.71'

4) Well Type: (a) Oil _____ or Gas Brine
(b) If Gas: Production _____ / Underground Storage _____
Deep _____ / Shallow _____

5) Proposed Target Formation(s): Salina Proposed Target Depth: 6808'

6) Proposed Total Depth: 8835.5' Feet Formation at Proposed Total Depth: Salina

7) Approximate fresh water strata depths: 50'

8) Approximate salt water depths: 1050' to 1750'

9) Approximate coal seam depths: 252' to 258'

10) Approximate void depths,(coal, Karst, other): N/A

11) Does land contain coal seams tributary to active mine? No

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)
See attached documents.

13) CASING AND TUBING PROGRAM

TYPE	SPECIFICATIONS			FOOTAGE INTERVALS		CEMENT
	Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu. Ft.)
Conductor	16"		52.36#	61'	61'	
Fresh Water						
Coal						
Intermediate	10 3/4"		32.75#	1611.5'	1611.5'	440 sacks
Production	7"	J-55	26#	6808.62'	6808.62'	360 sacks
Tubing						
Liners						

Packers: Kind: N/A
Sizes: _____
Depths Set _____

Procedure to Remediate #10 Injection Well

1. Pick up 7" casing scraper w/ bit and clean ID of casing to 5900'
2. Set drillable bridge plug at 5850' and load hole. CHECK FLUID LEVEL.
- 2A → 3. Run cement bond log to verify cement quality, detect annular flow and any annular restrictions
4. Shoot 4 squeeze holes at point determined from log. (est. 5800')
5. Attempt injection test down 7.00" csg. Pressure not to exceed 800 psi
6. TIH with 2.875" work string and 7.00" cement retainer
7. Set retainer at approx. 5750' (or 50' above squeeze holes)
8. Establish circulation and control well with weighted fluid (10 ppg) - 290 bbls annular vol.
- * 9. Pump cement to fill annulus from 5800' to 1600' est. 1000 sks @ 10% excess - 215 bbls
10. Displace cement to 5700' - 33 bbls
11. Sting out of retainer and wash up - 225 bbls
12. TOOH with work string
13. Run bond log to verify cement placement
14. Perform MIT test on casing
15. Drill out retainer and bridge plug
16. Verify total depth
17. TOOH and secure well head

2A.) ALLOW FLUID TO SET FOR EIGHT (8) HOURS AND CHECK FLUID LEVEL AGAIN. TO CALCULATE ANY LEAK OFF.

* CEMENT NOT TO GO PAST SNOR ON 10"
~~IF NOT ORIGINALLY CEMENTED TO SURFACE.~~

** INSPECTOR NEEDS TO BE ON SITE TO REVIEW LOGGING DATA AND BOND LOGS TO HELP FACILITATE SUBSEQUENT PROCEDURES.

BRINE WELL #10

CEMENT TO SURFACE
W 440 SKS



61' 16" 52.36'

10.75" 32.75'

1612'

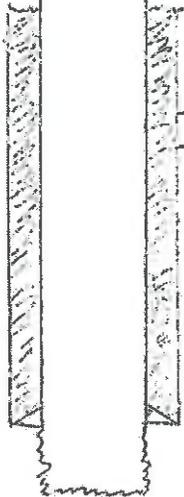
DRILLED 8.75" HOLE

7.00" 26" I-SS RAJ JUNE 1962

TOC @ 5100'
FROM LANE-WELLS
SUSPECT A CHANNEL
FOR GAS MIGRATION

360 SKS CMT

MARCELLUS 575B-5B1E



6811'

TD 6835'

5100443R



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION 24

Quad- New Martinsville

WELL RECORD

Oil or Gas Well Brine
(KIND)

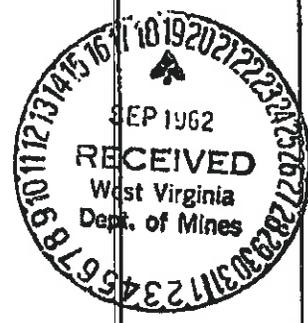
Permit No. MARS-1113

Company Pittsburgh Plate Glass Company
 Address New Martinsville, West Virginia
 Farm J. N. Wells Acres 86.86
 Location (water) East Bank Ohio River, Natrium
 Well No. 10 Elev. 634.3
 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 27, 1962
 Drilling completed June 3, 1962
 Dat: 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.
 Fresh water _____ feet _____ feet
 Salt water _____ feet _____ feet

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16	61	61	Kind of Packer
18			
10	1612	1612	Class of
8 1/4			
7	6811	6811	Depth set
5 3/16			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

CASING CEMENTED _____ SIZE _____ No. Ft. _____ Date _____
 COAL WAS ENCOUNTERED AT _____ FEET _____ INCHES
 _____ FEET _____ INCHES FEET _____ INCHES
 _____ FEET _____ INCHES FEET _____ INCHES

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth Found	Remarks
			0	12			
Clay		Soft	12	47			
Sand & Gravel		Soft	47	73			
Sand		Hard	73	82			
Shale		Hard	82	92			
Sandy Lime		Hard	92	102			
Shale		Hard	102	110			
Sand		Hard	110	127			
Shale		Hard	127	132			
Sand		Hard	132	146			
Shale		Hard	146	153			
Sand		Hard	153	163			
Sandy Shale		Hard	163	176			
Sand		Hard	176	183			
Shale		Hard	183	191			
Sand		Hard	191	202			
Shale		Hard	202	224			
Sand		Hard	224	229			
Shale		Hard	229	237			
Sand		Hard	237	250			
Shale		Hard	250	258			
Coal		Hard	258	262			Pittsburgh Coal
Shale		Hard	262	288			
Sand		Hard	288	313			
Shale		Hard	313	377			
Sand		Hard	377	407			
Shale		Hard	407	512			
Sand		Hard	512	534			
Shale		Hard	534	570			
Sand		Hard	570	591			
Sandy Shale		Hard	591	736			
Sand		Hard	736	752			
Shale		Hard	752	756			
Sand		Hard	756	779			
Sandy Shale		Hard	779	865			
Coal		Hard	865	869			
Shale		Hard	869	888			
Coal		Hard	888	893			
Shale		Hard	893	924			



(Over) OCT - 1 1962

J. N. WELLS 46, 10... PITTSBURGH 6811 11/11/7 612556 - MARSH

Formation	Color	Hard or Soft	Top 24	Bottom	Oil, Gas or Water	Depth Found	Remarks
Sand		Hard	924	928			
Shale		Hard	928	962			
Sand		Hard	962	1007			
Shale		Hard	1007	1108			
Sand		Hard	1108	1125			
Sandy Shale		Hard	1125	1220			
Sand		Hard	1220	1259			Maxton
Shale		Hard	1259	1271			
Lime		Hard	1271	1281			Little Lime
Shale		Hard	1281	1292			Pencil Cave
Sand		Hard	1292	1308			
Lime		Hard	1308	1356			Big Lime
Sand		Hard	1356	1390			Keener
Sand		Hard	1390	1601			Big Injun
Sand		Hard	1601	1620			Squaw
Shale		Hard	1620	1764			
Sand		Hard	1764	1879			Wair
Shale		Hard	1879	1963			
Sand		Hard	1963	1968			
Shale		Hard	1968	1974			
Sand		Hard	1974	1978			
Shale		Hard	1978	2112			
Sand		Hard	2112	2141			
Shale		Hard	2141	2302			
Sand		Hard	2302	2320			
Shale		Hard	2320	2347			
Sand		Hard	2347	2370			
Shale		Hard	2370	2911			
Shaly Sand		Hard	2911	2959			
Shale		Hard	2959	2979			
Shaly Sand		Hard	2979	2999			
Shale		Hard	2999	3805			
Shaly Sand		Hard	3805	3827			
Shale		Hard	3827	4008			
Shaly Sand		Hard	4008	4021			
Shale		Hard	4021	5729			
Shale		Hard	5729	5759			Calcareous
Shale		Hard	5759	5821			Marcellus
Lime		Hard	5821	6043			Onondaga
Sand		Hard	6043	6100			Oriskany
Lime		Hard	6100	6697			Helderberg
Salt & Lime		Hard	6697	6823			
Lime		Hard	6823	6841			T.D. 6841

Date September 17, 1962

APPROVED Pittsburgh Plate Glass Company, Owner

By C. H. Giase
(Title)

C. H. Giase, Plant Utilities Engineer

WW-2A Surface Waiver

SURFACE OWNER WAIVER

County Marshall

Operator Eagle Natrium LLC

Operator well number #10 Injection Well

INSTRUCTIONS TO SURFACE OWNERS NAMED ON PAGE WW2-A

The well operator named on page WW2A is applying for a permit from the State to do oil or gas well work. (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 57th 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 **FIFTEEN (15) 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 a 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..."

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.

List of Water Testing Laboratories. The Office maintains a list of water testing laboratories which you can hire to test your water to establish water quality prior to and after drilling. Contact the Chief to obtain a copy.

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 Well Work Permit on Form WW2-A, and attachments consisting of pages 1 through ___ including a work order on Form WW2-B, a survey plat, and a soil and erosion plan, all for proposed well work on my surface land as described therein.

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

FOR EXECUTION BY A CORPORATION, ETC.

Signature Date _____

Company Name Eagle Natrium LLC/Axiell Corporation
By Ed McLaughlin
Its _____ Date _____

Print Name

Ed McLaughlin 9/26/2013
Signature Date

WW-2A1
(Rev. 1/11)

Operator's Well Number #10 Injection Well

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6, Section 8(d)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
PPG	EAGLE NATRIUM, LLC	%	351/285
APPLICATION FOR EMERGENCY INFORMATION			IN FEE

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources
- WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator:
By: Its:

Eagle Natrium LLC
Manager, Environmental Control

J. D. [Signature]

WW-9
(5/13)

Page _____ of _____
API Number 47-051 - 0443
Operator's Well No. #10 Injection 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

Elevation 635.71' County Marshall District Franklin

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

Will a pit be used for drill cuttings? Yes _____ No x

If so, please describe anticipated pit waste: _____

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? NO

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Brine

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

Additives to be used in drilling medium? _____

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Removed Offsite

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

-Landfill or offsite name/permit number? SWF-1034

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, 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

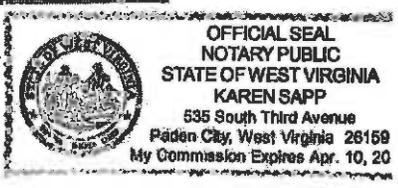
Company Official (Typed Name) J. Thomas Horan

Company Official Title Manager, Environmental Control

Subscribed and sworn before me this 26th day of September, 2013

Karen Sapp Notary Public

My commission expires April 10, 2016



Form WW

Operator's Well No. #10 Injection Well

Proposed Revegetation Treatment: Acres Disturbed N/A Prevegetation pH _____

Lime _____ Tons/acre or to correct to pH _____

Fertilizer (10-20-20 or equivalent) _____ lbs/acre (500 lbs minimum)

Mulch _____ Tons/acre

Seed Mixtures

Seed Type	Area I		Seed Type	Area II	
		lbs/acre			lbs/acre
_____			_____		
_____			_____		
_____			_____		

Attach:
Drawing(s) of road, location, pit and proposed area for land application.

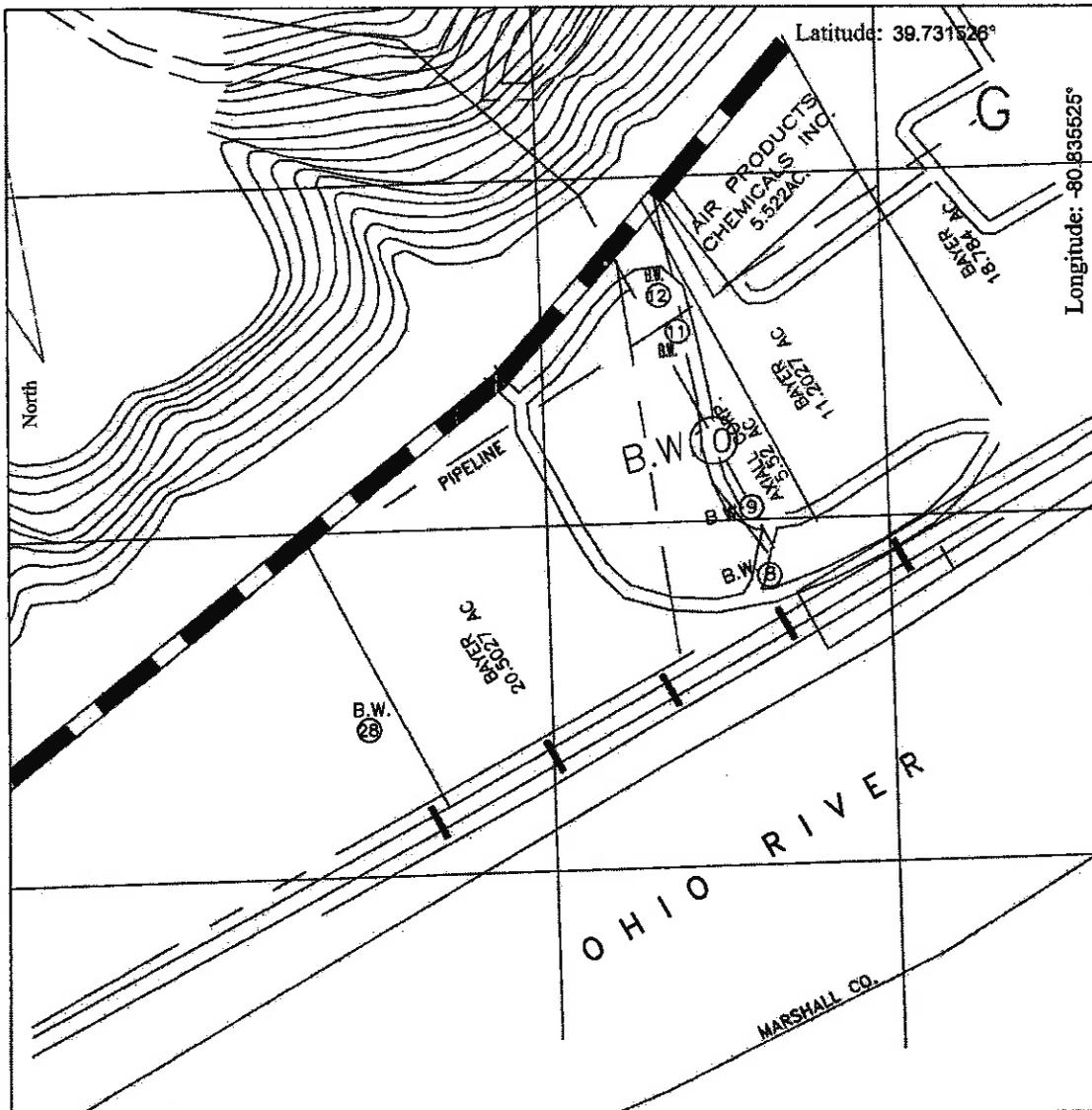
Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: _____

Comments: _____

Title: _____ Date: _____

Field Reviewed? () Yes () No



FILE #:	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 DEPARTMENT OF ENVIRONMENTAL PROTECTION.	Signed: _____	PLACE SEAL HERE
DRAWING #:			
SCALE: 1" = 250'			
MINIMUM DEGREE OF ACCURACY: 1 in 10,000			
PROVEN SOURCE OF ELEVATION: GPS	R.P.E.:	L.L.S.:	

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

WVDEP
OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: **September 23, 2013**

OPERATOR'S WELL #: **10 Brine Well**

API WELL #: **47 - 051 - 00443**

STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: Ohio River ELEVATION: 635.7

COUNTY/DISTRICT: Marshall/Franklin QUADRANGLE: New Martinsville, WV-OHIO

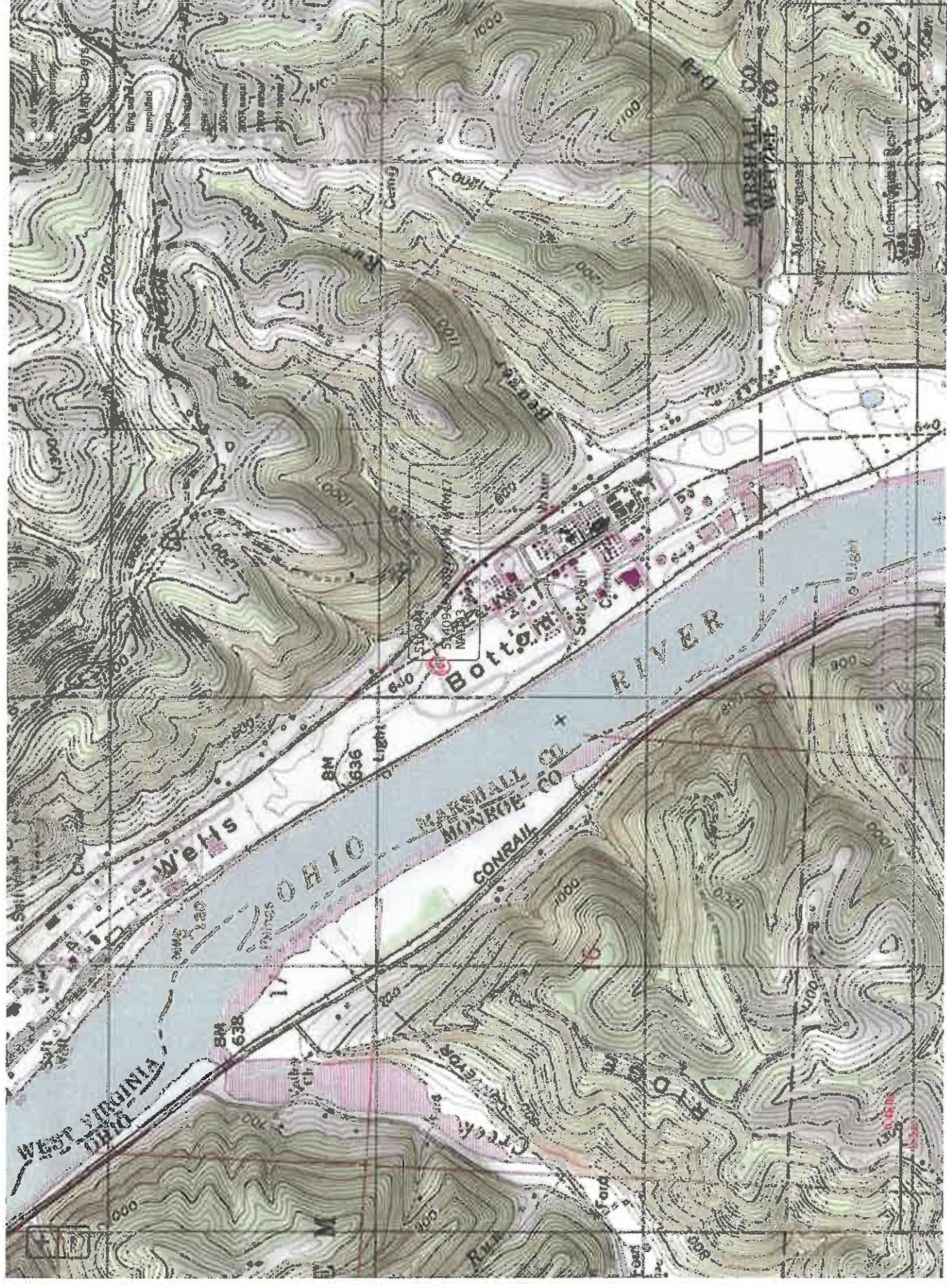
SURFACE OWNER: Axiall Corporation ACREAGE: 5.52

OIL & GAS ROYALTY OWNER: Axiall Corporation ACREAGE: 5.52

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): Seal Casing

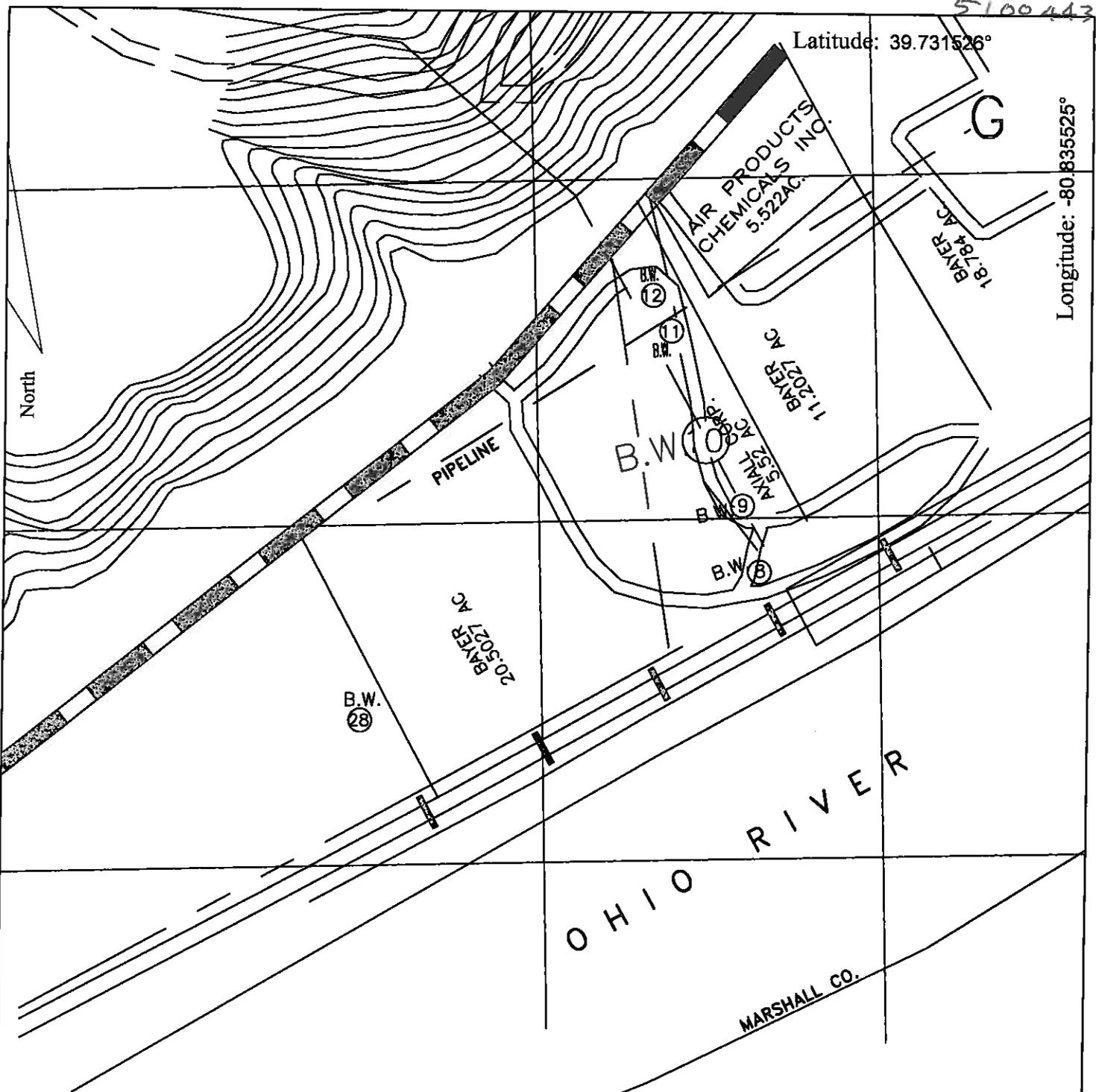
TARGET FORMATION: Salina ESTIMATED DEPTH: 8835.5 Feet

WELL OPERATOR Eagle Natrium LLC DESIGNATED AGENT J. Thomas Horan
 Address P.O. Box 191 Address P.O. Box 191
 City New Martinsville State WV Zip Code 26155 City New Martinsville State WV Zip Code 26155





51004432



FILE #: _____
 DRAWING #: _____
 SCALE: 1" = 250'
 MINIMUM DEGREE OF ACCURACY: 1 in 10,000
 PROVEN SOURCE OF ELEVATION: GPS

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 DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: Stephen Clarke
 L.A. REG. #21878
 R.P.E.: #21878 L.L.S.: _____

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WVDEP
OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: **September 23, 2013**
 OPERATOR'S WELL #: **10 Brine Well**
 API WELL #: **47 - 051 - 00443**
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: Ohio River ELEVATION: 635.7

COUNTY/DISTRICT: Marshall/Franklin QUADRANGLE: New Martinsville, WV-OHIO

SURFACE OWNER: Axial Corporation ACREAGE: 5.52

OIL & GAS ROYALTY OWNER: Axial Corporation ACREAGE: 5.52

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): Seal Casing

TARGET FORMATION: Salina ESTIMATED DEPTH: 6835.5 Feet

WELL OPERATOR Axial Corporation DESIGNATED AGENT J. Thomas Horan
 Address P.O. Box 191 Address P.O. Box 191
 City New Martinsville State WV Zip Code 26155 City New Martinsville State WV Zip Code 26155