

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

December 08, 2014

WELL WORK PERMIT

Horizontal 6A Well

This permit, API Well Number: 47-10303043, issued to EQT PRODUCTION COMPANY, 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: 513920

Farm Name: DALLISON, RICHARD ET AL

API Well Number: 47-10303043

Permit Type: Horizontal 6A Well

Date Issued: 12/08/2014

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. <u>Failure to adhere to the specified permit</u> conditions may result in enforcement action.

CONDITIONS

- 1. The entire well pad shall be bermed, including a mountable berm at the well pad entrances, to prevent runoff from leaving the pad during drilling and completion operations.
- 2. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
- 3. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than fifty (50) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
- 4. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
- 5. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
- 6. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
- 7. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
- 8. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
- 9. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.
- 10. Operator shall provide the Office of Oil & Gas notification of the date that drilling commenced on this well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov within 30 days of commencement of drilling.

STATE OF WEST VIRGINIA

DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

|) Well Operator: EQT Production | Company | | | 103 | 4 | 254 |
|---|--------------|------------------------|------------|-------------------|----------|------------|
|) Well Operator. EQT Froduction | Tompany | Oper | ator ID | County | District | Quadrangle |
| 2) Operator's Well Number: | Ę | 513920 | | _Well Pad Nam | e: | BIG192 |
| 3) Farm Name/Surface Owner : | | Dallison | | _Public Road A | ccess: | 7/6 |
| 4) Elevation, current ground: | 1,452.0 | Elevation, p | roposed p | ost-construction: | 1,45 | 2.0 |
| 5) Well Type: (a) Gas | Oil | Undergr | ound Stora | ge | - | |
| Other | | | | | | |
| (b) If Gas: | Shallow | | реер | | | |
| н | orizontal | | | | | |
| 6) Existing Pad? Yes or No: | yes | | | | | |
| | | with the anticipated t | | 7655 | | |
| 8) Proposed Total Vertical Depth: | | | | Marcellus | | |
| 9) Formation at Total Vertical Depth | | | | 15579 | | |
| 10) Proposed Total Measured Dept | | | | 7,060 | | |
| 11) Proposed Horizontal Leg Lengt12) Approximate Fresh Water Strat | | | | 549, 581, | 780 | |
| 13) Method to Determine Fresh Wa | | | | By offset v | | |
| 14) Approximate Saltwater Depths: | | | | 2257, 2370 | | |
| 15) Approximate Coal Seam Depth | | | | 804, 919, 1009, | 1240 | |
| 16) Approximate Depth to Possible | | e, karst, other): | | | None r | reported |
| 17)Does proposed well location | | | rlying or | | | |
| adjacent to an active mine? (a) If Yes, provide Mine Info: | Nama: | | | | | |
| (a) if Yes, provide wife into. | | | | | | |
| | | | | | | |
| | | | | | | |
| | -7-5 v 5 v 3 | | | | | |
| | | | Do | 1 | | |

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CASING AND TUBING PROGRAM

18)

| TYPE | <u>Size</u> | <u>New</u> <u>or</u> Used | Grade | Weight per ft. | FOOTAGE: for Drilling | INTERVALS: Left in Well | CEMENT: Fill- up (Cu.Ft.) |
|--------------|-------------|---------------------------------|-------|-------------------|--------------------------|----------------------------|---|
| Conductor | 26 | New | MC-50 | Varies | 80 | 80 | 98 C.T.S. |
| Fresh Water | 13 3/8 | New | MC-50 | 54 | 1,000 | 1,000 | 868 C.T.S. |
| Coal | 1.4 | - | Tan_ | | 10÷ | A A | <u> </u> |
| Intermediate | 9 5/8 | New | MC-50 | 40 | 2,765 | 2,765 | 1,079 C.T.S. |
| Production | 5 1/2 | New | P-110 | 20 | 15,579 | 15,579 | See Note 1 |
| Tubing | 2 3/8 | | J-55 | 4.6 | | | May not be run, if run will be set 100' less than TD |
| Liners | | | | | | | |

| TYPE | Size | Wellbore Diameter | <u>Wall</u> <u>Thickness</u> | Burst Pressure | Cement Type | Cement Yield (cu. ft./k) |
|--------------|--------|----------------------|---------------------------------|-------------------|----------------|-----------------------------|
| Conductor | 26 | 30 | 0.5 | | Construction | 1.18 |
| Fresh Water | 13 3/8 | 17 1/2 | 0.38 | 2,480 | * See Note 2 | 1.21 |
| Coal | | | | | A | |
| Intermediate | 9 5/8 | 12 3/8 | 0.395 | 3,590 | * See Note 2 | 1.21 |
| Production | 5 1/2 | 8 1/2 | 0.361 | 12,640 | | 1.27/1.86 |
| Tubing | | | | | | |
| Liners | | | | | | |

Packers

| | 100 | |
|-------------|-----|--|
| Kind: | N/A | |
| Sizes: | N/A | |
| Depths Set: | N/A | |

Note 1: EQT plans to bring the TOC on the production casing cement job 1,000' above kick off point, which is at least 500' above the shallowest production zone, to avoid communication.

Note 2: Reference Variance 2014-17. (Attached)

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SEP 1 5 2014

WV Department of Environmental Projection 12/12/14

| | | approximate depth of 7002 |
|---|--|---|
| then kick off the horizontal leg into the Marcellus using a slick water frac. | | |
| 0) Describe fracturing/stimulating methods in detail, including anticipate | ed max press | ure and max rate: |
| lydraulic fracturing is completed in accordance with state regulations using water recycled it | from previously f | ractured wells and obtained from |
| reshwater sources. This water is mixed with sand and a small percentage (less than 0.3%) elling agent, gel breaker, friction reducer, biocide, and scale inhibitor), referred to in the ind | dustry as a "slick | water" completion. Maximum |
| nticipated treating pressures are expected to average approximately 8500 psi, maximum a | nticipated treating | ig rates are expected to average |
| approximately 100 bpm. Stage lengths vary from 150 to 300 feet. Average approximately | 200,000 barrels | of water per stage. Sand sizes |
| vary from 100 mesh to 20/40 mesh. Average approximately 200,000 pounds of sand per si | tage. | |
| 21) Total area to be disturbed, including roads, stockpile area, pits, etc, | (acres): | no additional disturbance |
| 22) Area to be disturbed for well pad only, less access road (acres): | | no additional disturbance |
| 23) Describe centralizer placement for each casing string. | 100 FOO! | |
| Surface: Bow spring centralizers - One at the shoe and one spaced ev Intermediate: Bow spring centralizers - One cent at the shoe and one s | paced every | 500'. |
| Production: One spaced every 1000' from KOP to Int csg shoe | | |
| | Curtaes IT | Type 1 Cement): 0-3% Calcium Chloride |
| Describe all cement additives associated with each cement type. Jsed to speed the setting of cement slurries. | Surface () | TYPE 1 Cement, 0-3% calcium emonae |
| 1.4% flake, Loss Circulation Material (LCM) is used to combat the loss of the ce | ment slurry to | a thief zone. |
| ntermediate (Type 1 Cement): 0-3% Calcium Chloride. Salt is used in shallow, low | temperature fo | rmations to speed the setting of cement |
| | of whole drilling | a fluid or coment clurry (not filtrate) |
| slurries. 0.4% flake. Loss Circulation Material (LCM) is used to combat the loss | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. Production: | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. Production: Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening t | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. Production: | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. Production: Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening t | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. Production: Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening to 0.3% CFR (dispersant). Makes cement easier to mix. | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. Production: Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening to 0.3% CFR (dispersant). Makes cement easier to mix. Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening | of whole drillin | g fluid or cement slurry (not filtrate) |
| to a thief zone. Production: Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening to 0.3% CFR (dispersant). Makes cement easier to mix. Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening 0.2-0.3% CFR (dispersant). This is to make the cement easier to mix. | of whole drillin | g fluid or cement slurry (not filtrate) |
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| to a thief zone. Production: Lead (Type 1 Cement): 0.2-0.7% Lignosulfonate (Retarder). Lengthens thickening to 0.3% CFR (dispersant). Makes cement easier to mix. Tail (Type H Cement): 0.25-0.40% Lignosulfonate (Retarder). Lengthens thickening 0.2-0.3% CFR (dispersant). This is to make the cement easier to mix. 60 % Calcuim Carbonate. Acid solubility. 0.4-0.6% Halad (fluid loss). Reduces amount of water lost to formation. 25) Proposed borehole conditioning procedures. Surface: Circulate hole of the conditioning procedures. | of whole drillin | nately 30-45 minutes) rotating & reciprocating |
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DMH 9-10-14



^{*}Note: Attach additional sheets as needed.



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 dep.wv.gov

March 18, 2014

Nabors Completion & Production Services Company 1380 Route 286 Hwy E #121 Indiana PA 15701

Re: Cement Variance Request

Dear Sir or Madam,

This agency is approving a variance request for the cement blend listed below to be used on surface and coal protection strings for the drilling of oil and gas wells in the state of West Virginia. The variance cannot be used without requesting its use on a permit application and approval by this agency:

Type 1 (2% Calcium Chloride-Accelerator, 0.25% Super Flake-Lost Circulation, 5.2% Water, 94% Type "1" Cement)

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If you have any questions regarding this matter feel free to contact me at 304-926-0499, ext. 1653.

mes ex

James Peterson

Environmental Resources Specialist / Permitting

Promoting a healthy environment.

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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 dep.wv.gov

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

| IN THE MATTER OF A VARIANCE FROM |) | ORDER NO. | 2014 - 17 |
|--------------------------------------|---|-----------|-----------|
| REGULATION 35 CSR § 4-11.4/11.5/14.1 |) | | |
| AND 35 CSR § 8-9.2.h. 4/5/6/8 OF THE |) | | |
| THE OPERATIONAL |) | | |
| REGULATIONS OF CEMENTING OIL |) | | |
| AND GAS WELLS |) | | |

REPORT OF THE OFFICE

Nabors Completion & Production Services Co. requests approval of a different cement blend for use in cementing surface and coal protection casing of oil and gas wells.

FINDINGS OF FACT

- 1.) Nabors Completion & Production Services Co. proposes the following cement blend:
 - 2% Calcium Chloride (Accelerator)
 - 0.25 % Super Flake (Lost Circulation)
 - 94% Type "1" Cement
 - 5.20 % Water
- 2.) Laboratory testing results indicate that the blend listed in Fact No.1 will achieve a 500 psi compressive strength within 6 hours and a 2,435 psi compressive strength within 24 hours.

Promoting a healthy environment.

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CONCLUSIONS OF LAW

Pursuant to Articles 6 and 6A, Chapter 22 of the Code of West Virginia, the Office of Oil and Gas has jurisdiction over the subject matter embraced in said notice, and the persons interested therein, and jurisdiction to promulgate the hereinafter prescribed Order.

Pursuant to 35 CSR § 4-11.5 and 35 CSR § 8-9.2.h.8 the Chief of the Office of Oil and Gas may approve different cement blends upon the well operator providing satisfactory proof that different cement types are adequate.

ORDER

It is ordered that Nabors Completion & Production Services Co. may use the cement blend listed in Findings of Fact No.1 for the cementing of surface and coal protection easing of oil and gas wells in the State as may be requested by oil and gas operators. The waiting time on the cement blend shall be 8 hours. The cement blend shall be mixed in strict accordance with the specifications for each blend and weight measurements made on-site to assure the cement slurries meet the minimum weight specifications. A sample shall be collected and, if after 8 hours the cement is not set up, additional time will be required. Nabors Completion & Production Services Co. shall keep a record of cement blend jobs in which the cement blend approved under this order is to be used and made available to the Office of Oil and Gas upon request.

Dated this, the 18th day of March, 2014.

IN THE NAME OF THE STATE OF WEST VIRGINIA

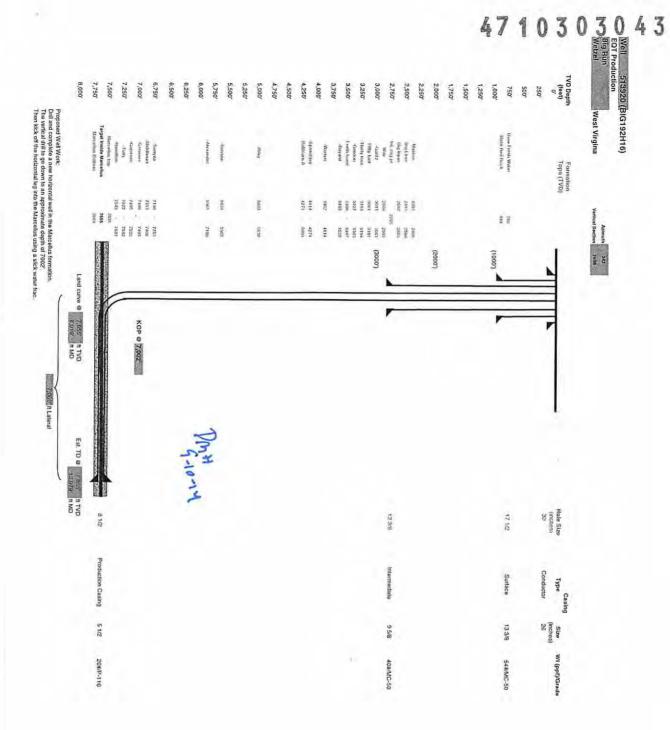
OFFICE OF OIL AND GAS DEPARTMENT OF ENVIRONMENTAL PROTECTION OF THE STATE OF WEST VIRGINIA

James Martin, Chief Office of Oil and Gas

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7,353' -Middlesex 7,406' -Genesee

7,631' -Marcellus

7,684' Onondaga

7,495' -Geneseo 7,500' — 7,522' -Tully 7,542' -Hamilton

8,000' -

10 Deg DLS

5 1/2", P-110, 20# 15,079' ft MD

- 7,500

- 8,000

8,019 ft MD

7,655 ft TVD

WW-9 (5/13) API No. 47 103 of 4740 3 0 3 0 4 3 Operator's Well No. 513926

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

Fluids/Cuttings Disposal & Reclamation Plan

| Operator Name | EQT Pro | duction Co. | | OP Code | | - | |
|---|--|---|--|---|--|--|--|
| Watershed (HUC10) | | | Quadra | ingle | Big Run 7.5 | | |
| Contract to the second | | | etzel | District | Grant | | |
| Do you anticipate using | | | olete the pro | posed well wor | k? Yes x No | ·— | |
| Will a pit be used ? Yes | | | | | | | |
| | cribe anticipated pit v liner be used in the p | | No | X If so, | what ml.?60 |) | |
| Proposed Disp | Land Application Underground | d Injection (UIC API Number posal (Supply fo | | mber 001 | | <u>)</u> | |
| Will closed loop system fluid. The drill cuttings ar | | The closed loop systems an off | | | om the drilling | | |
| Drilling medium antic | pated for this well? | Air, freshwater, oil | based, etc. | | top-hole sections of the wellbo , and Pilot hole sections, water e curve and lateral. | Towns A section | |
| Additives to be used in Deflocculant, Lubricant, Det | drilling medium? ergent, Defoaming, Wa | lnut Shell, X-Cide, SOLT | EX Terra. Of | itrol, Lime, Chloride | Salts,Rate Filtration Co s the following are | ontrol, | Dm H |
| generally used when drilling | on air: lubricant, deter | gent, defoaming. Water | based fluids u | se the following che | emicals: MILBAH, | | Glosy |
| viscosifer, alkalinity control, | ime, chloride salts, rate | filtration control, defloc | culant, lubricar | t, detergent, detoa | aming, wainut sneii, | | 23.4 |
| x-cide, SOLTEX terra Drill cuttings disposal | — method? Leave in | nit landfill removed | d offsite etc | | Landfill | | |
| | | medium will be used? (C | | | n/a | | |
| | fsite name/permit nu | | | See Attached L | ist | | |
| on August 1, 2005, by the O provisions of the permit are or regulation can lead to ent | ffice of Oil and Gas of the enforceable by law. Victorcement action. If of law that I have personant the information is true including the possibility atureed Name) | onally examined and am at, based on my inquiry a, accurate, and complet y of fine or imprisonmen | familiar with the grant of those individual in a may are to the control of the co | nmental Protection eneral permit and/ ne information subruals immediately re that there are signif | . I understand that the or other applicable law nitted on this esponsible for obtaining | | |
| Subscribed and sworn | Defore me this | 6 day o | f | ept | , 20 18 | EIVE | |
| Vaga | la lype | | | | Notary Public | | |
| My commission expire | s | 8.24 | 22 | | | STATE OF NOT Pa EQ Bridge Confinestic | FICIAL SEAL F WEST VIRGINIA ARY PUBLIC mela Sykes T. Production O Box 280 port, WV 26330 O Expression 24, 2022 |

4710303043

| Fertilize type Fertilizer Am Mulch | ount1/3 | lbs/acre (500 lbs minimum)Tons/acre | 6.5 | |
|------------------------------------|-----------------------------|-------------------------------------|----------------------|--------|
| Fertilizer Am | ount1/3 | lbs/acre (500 lbs minimum) | | |
| Mulch | - | _ | | |
| | 2 | Tons/acre | | |
| | | | | |
| | | Seed Mixtures | | |
| Seed Type (Y-31 | Temporary Ibs/acre 40 | Seed Type Orchard Grass | Permanent Ib 1 | s/acre |
| Alsike Clover | 5 | Alsike Clover | 5 | |
| Annual Rye | 15 | | | |
| Photocopied section | of involved 7.5' topograph | ic sheet. | | |
| Plan Approved by: | 1. | | | |
| Comments: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | Ger Inspector | Date: | | |

Office of Circumo Gas SEC (5704

WV Department of Environmer12/12/14 tion

EQT Production Water plan Offsite disposals for Marcellus wells

4710303043

CWS TRUCKING INC.

P.O. Box 391 Williamstown, WV 26187 740-516-3586 Noble County/Noble Township Permit # 3390

LAD LIQUID ASSETS DISPOSAL INC.

226 Rankin Road Washington, PA 15301 724-350-2760 724-222-6080 724-229-7034 fax Ohio County/Wheeling Permit # USEPA WV 0014

TRI COUNTY WASTE WATER MANAGEMENT, INC.

1487 Toms Run Road Holbrook, PA 15341 724-627-7178 Plant 724-499-5647 Office Greene County/Waynesburg Permit # TC-1009

Waste Management - Meadowfill Landfill

Rt. 2, Box 68 Dawson Drive Bridgeport, WV 26330 304-326-6027 Permit #SWF-1032-98 Approval #100785WV

Waste Management - Northwestern Landfill

512 E. Dry Road Parkersburg, WV 26104 304-428-0602 Permit #SWF-1025 WV-0109400 Approval #100833WV

BROAD STREET ENERGY LLC

37 West Broad Street Suite 1100 Columbus, Ohio 43215 740-516-5381 Washington County/Belpre Twp. Permit # 8462

TRIAD ENERGY

P.O. Box 430 Reno, OH 45773 740-516-6021 Well 740-374-2940 Reno Office Jennifer Nobel County/Jackson Township Permit # 4037

KING EXCAVATING CO.

Advanced Waste Services 101 River Park Drive New Castle, Pa. 16101 Facility Permit# PAR000029132



4710303043

Site Specific Safety Plan

EQT BIG 192 Pad

<u>Jacksonburg</u>

Wetzel County, WV

| 513916 | 513917 | For Wells: 513918 | 513920 | |
|----------------|--------------|----------------------|---|--------|
| | | | | |
| | Date | Prepared: Augus | st 21, 2014 | |
| EQT Production | 1 | W | /V Oil and Gas Inspector | |
| 1 gyju | Jerusov 1 | _ | Oil + Gar Inspector itle G-10-14 BECCHIVI | |
| Date | | D | Office of Oil at | 16 Gas |

SEP 1 5 2014

WV Department of Environmental 2/42/14pn

