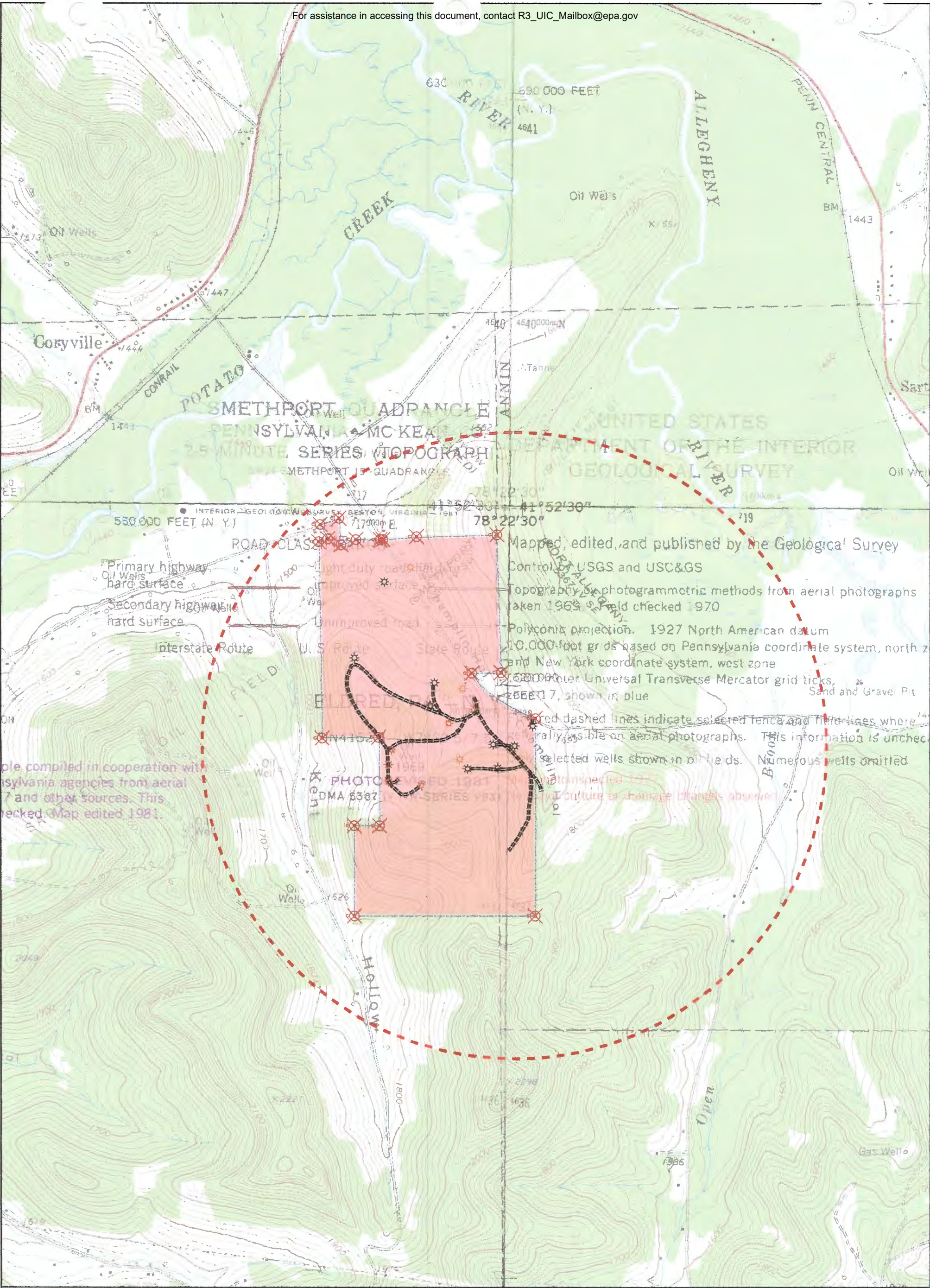


OMB No. 2040-0042

Approval Expires 11/30/2014

 United States Environmental Protection Agency Underground Injection Control Permit Application <small>(Collected under the authority of the Safe Drinking Water Act. Sections 1421, 1422, 40 CFR 144)</small>		I. EPA ID Number	
			T/A C
Read Attached Instructions Before Starting For Official Use Only			
Application approved mo day year		Date received mo day year	
Permit Number		Well ID	
FINDS Number			
II. Owner Name and Address		III. Operator Name and Address	
Owner Name Benson Energy, LLC		Owner Name Brice Benson	
Street Address 772 Champlin Hill Rd		Street Address 772 Champlin Hill Rd	
Phone Number (814) 887-5060		Phone Number (814) 887-5060	
City Smethport	State PA	City Smethport	State PA
ZIP CODE 16749		ZIP CODE 16749	
IV. Commercial Facility		V. Ownership	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<input checked="" type="checkbox"/> Private <input type="checkbox"/> Federal <input type="checkbox"/> Other	
VI. Legal Contact		VII. SIC Codes	
<input checked="" type="checkbox"/> Owner <input type="checkbox"/> Operator			
VIII. Well Status (Mark "x")			
<input checked="" type="checkbox"/> A. Operating		<input checked="" type="checkbox"/> B. Modification/Conversion	
Date Started mo day year 01/05/2011		<input type="checkbox"/> C. Proposed	
IX. Type of Permit Requested (Mark "x" and specify if required)			
<input checked="" type="checkbox"/> A. Individual		<input type="checkbox"/> B. Area	
Number of Existing Wells		Number of Proposed Wells	
Name(s) of field(s) or project(s)			
X. Class and Type of Well (see reverse)			
A. Class(es) (enter code(s))		B. Type(s) (enter code(s))	
Class II		D	
C. If class is "other" or type is code 'x,' explain		D. Number of wells per type (if area permit)	
		(1) Class II D	
XI. Location of Well(s) or Approximate Center of Field or Project			
Latitude		Longitude	
Deg Min Sec		Deg Min Sec	
41 51 49.9		78 22 27.3	
Township and Range		Feet From	
Sec Twp Range 1/4 Sec		Line Feet From Line	
XII. Indian Lands (Mark 'x')			
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
XIII. Attachments			
(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)			
For Classes I, II, III, (and other classes) complete and submit on a separate sheet(s) Attachments A-U (pp 2-8) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application.			
XIV. Certification			
I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments 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 and imprisonment. (Ref. 40 CFR 144.32)			
A. Name and Title (Type or Print)		B. Phone No. (Area Code and No.)	
Brice Benson President		814 887-2842	
C. Signature		D. Date Signed	
Br M. Benson		1-11-14	



Benson Energy, LLC

772 Chaplin Hill Rd.
Smethport, PA 16749

Henderson Resource Group LLC

Date: November 12, 2013
Drawn By: M. Henderson

Map Name: 1-Mile Buffer Limit

Legend

- Pre 1985 Wells
- Post 1985 Wells
- Corners
- Lease Road
- 1 Mile Buffer
- Property Boundary

Property Information

USGS: Smethport & Port Alleghany
Township: Annin
County: McKean
Acreage: 436.3

0 750 1,500 3,000
Feet

Scale: 1" = 1500'



Benson Energy, LLC

772 Chaplin Hill Rd.
Smethport, PA 16749

Henderson Resource Group LLC

Date: November 12, 2013

Drawn By: M. Henderson

Map Name: 1-Mile Buffer Limit

Legend

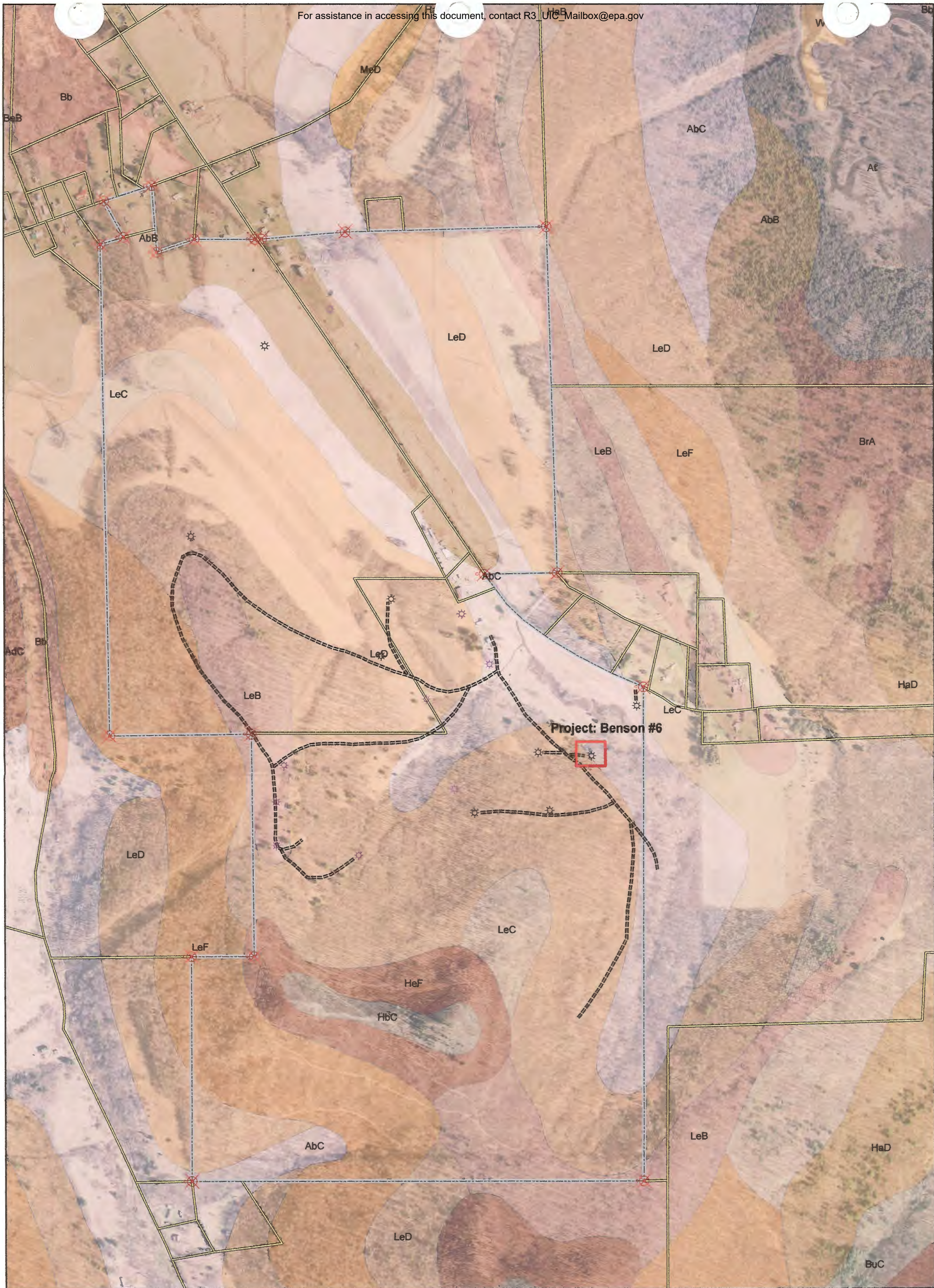
-  Pre 1985 Wells
-  Post 1985 Wells
-  Lease Road
-  1 Mile Buffer
-  Property Boundary

Property Information

USGS: Smethport & Port Alleghany
Township: Annin
County: McKean
Acreage: 436.3

0 750 1,500 3,000
Feet

Scale: 1" = 1500'



Benson Energy, LLC

772 Chaplin Hill Rd.
Smethport, PA 16749

Henderson Resource Group LLC

Date: November 12, 2013

Drawn By: M. Henderson

Map Name: McKean County Soil Data

Legend

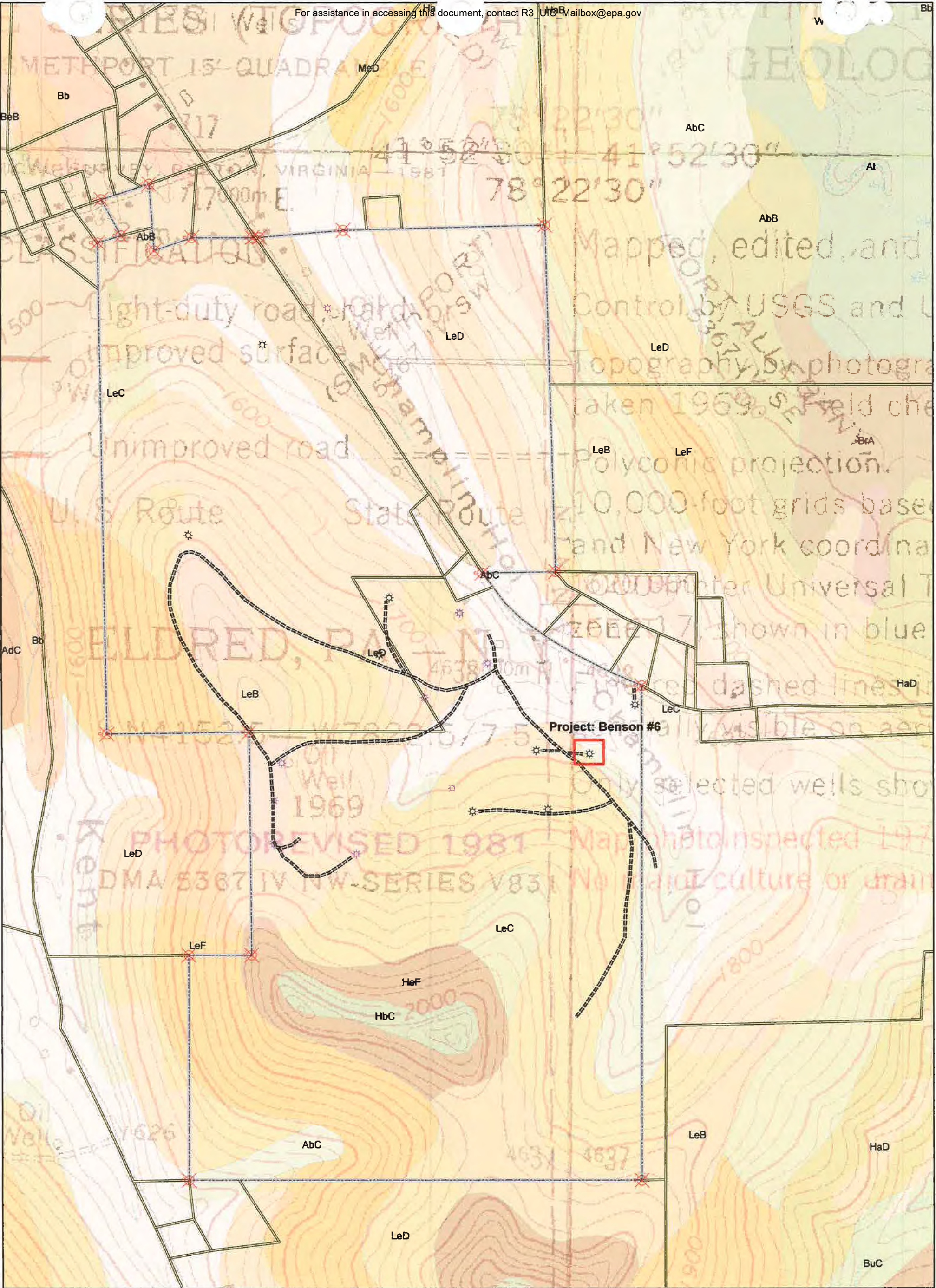
-  Pre 1985 Wells
-  Post 1985 Wells
-  Corners
-  Lease Road
-  Property Boundary

Property Information

USGS: Smethport & Port Alleghany
Township: Annin
County: McKean
Acreage: 436.3

0 300 600 1,200
Feet

Scale: 1" = 600'



Benson Energy, LLC

772 Chaplin Hill Rd.
Smethport, PA 16749

Henderson Resource Group LLC

Date: November 12, 2013
Drawn By: M. Henderson

Map Name: McKean County Soil Data

Legend

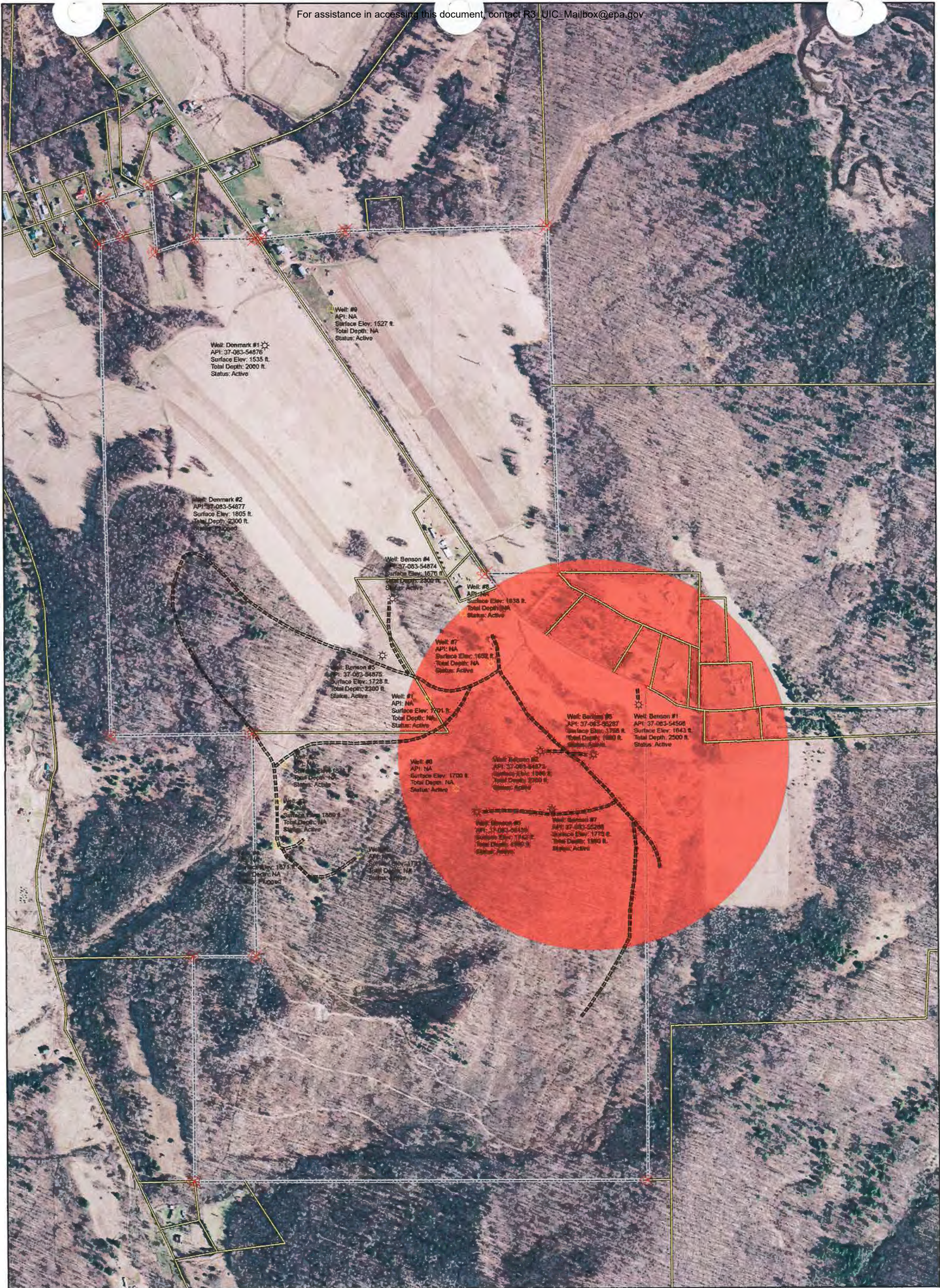
- ☆ Pre 1985 Wells
- ⊛ Post 1985 Wells
- ⊗ Corners
- Lease Road
- ▭ Property Boundary

Property Information

USGS: Smethport & Port Alleghany
Township: Annin
County: McKean
Acreage: 436.3



Scale: 1" = 600'



Benson Energy, LLC

772 Chaplin Hill Rd.
Smethport, PA 16749

Henderson Resource Group LLC

Date: November 12, 2013

Drawn By: M. Henderson

Map Name: Area of Review (Aerial)
Existing Producing Wells

Legend

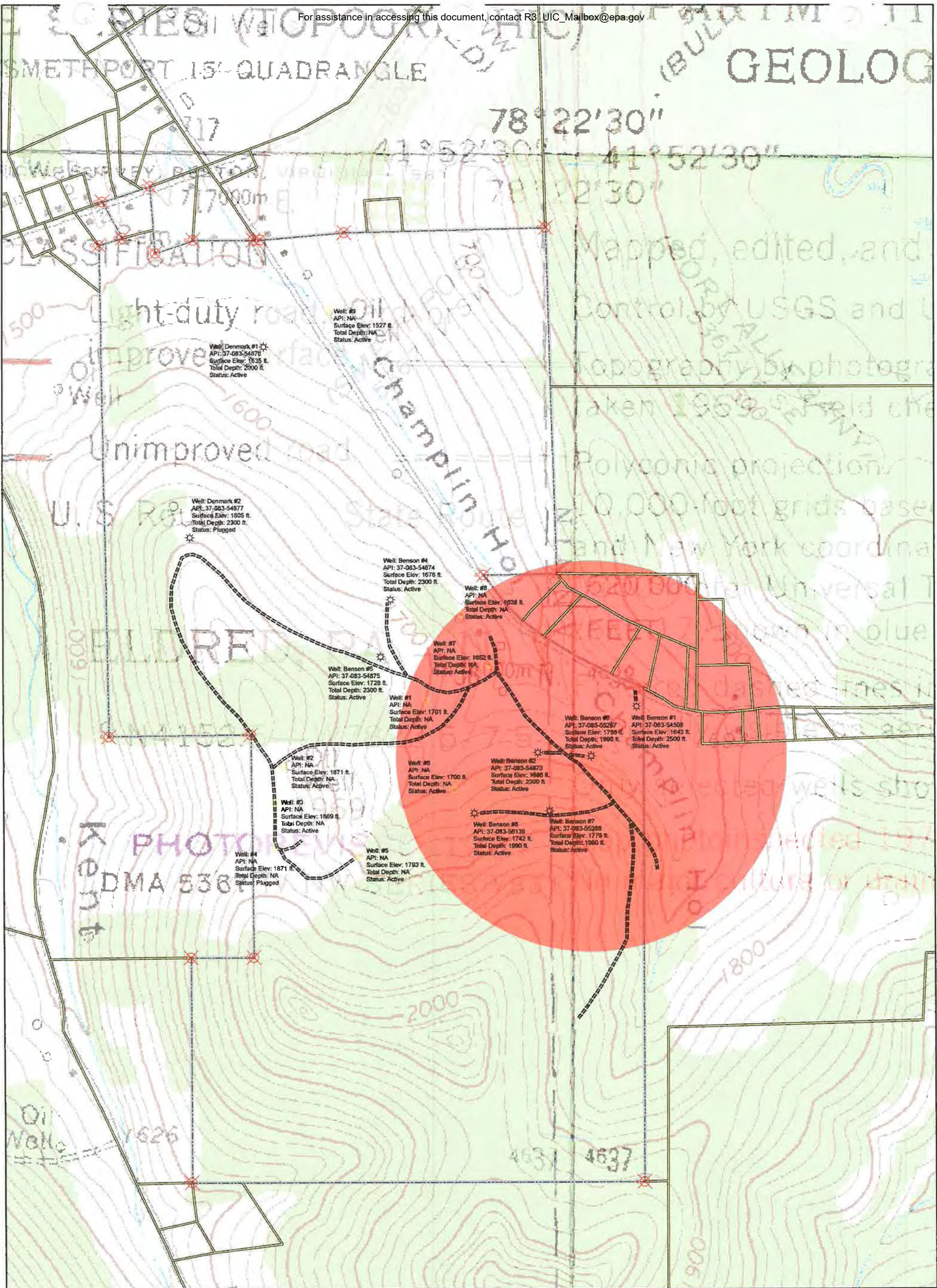
- Pre 1985 Wells
- Post 1985 Wells
- Corners
- Lease Road
- 1/4 Mile AOR
- Property Boundary

Property Information

USGS: Smethport & Port Alleghany
Township: Annin
County: McKean
Acreage: 436.3

0 300 600 1,200
Feet

Scale: 1" = 600'



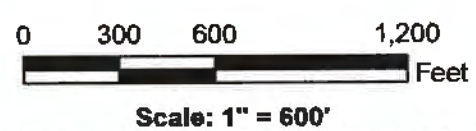
Benson Energy, LLC
772 Chaplin Hill Rd.
Smethport, PA 16749

Henderson Resource Group LLC
Date: November 12, 2013
Drawn By: M. Henderson

Map Name: Area of Review (Topographical)
Existing Producing Wells

- Legend**
- Pre 1985 Wells
 - Post 1985 Wells
 - Comers
 - Lease Road
 - 1/4 Mile AOR
 - Property Boundary

Property Information
USGS: Smethport & Port Alleghany
Township: Annin
County: McKean
Acreage: 436.3



2013

Class II Underground Injection Control Permit for Benson Oil Company

Lease Address:

Benson Oil Company
772 Chaplin Hill Rd.
Smethport, PA 16740
Keating Township



Prepared For:
Benson Oil Company
772 Chaplin Hill Road
Smethport, PA 16740

By:
Henderson Resource Group
121 Dewey Ave.
Hazel Hurst, PA 16733

Phone: (814) 778-5628
October 24, 2013



Henderson Resource Group LLC



Henderson Resource Group LLC

MINERAL OWNERSHIP SUMMARY

Surface Owner: V. Benson

Subsurface Owner: Benson Energy, LLC

Mineral Address: 772 ^{Chaplin} ~~Chaplin~~ Hill Rd.
Smethport, PA 16740

County: McKean

Municipality: Annin Township

USGS Topo Map: Smethport & Port Allegheny

Open Waterways:

Stream Name

^{Chaplin} ~~Chaplin~~ Hollow Creek

Stream Classification

CWF

Distance from Injection Well to Stream: 169 ft.

Designated Watershed: ^{Chaplin} ~~Chaplin~~ Hollow
^{Chaplin}

USDW Locations in Review Area:

<u>Owner</u>	<u>Latitude</u>	<u>Longitude</u>
R. Ford	41 52' 03.96"N	78 22' 42.97"W
V. Benson	41 51' 57.70"N	78 22' 38.57"W
W. Shea	41 51' 55.25"N	78 22' 21.03"W
J. Renner	41 51' 54.34"N	78 22' 15.26"W
K. Shatley	41 51' 52.21"N	78 22' 15.78"W
D. Leet	41 51' 52.17"N	78 22' 12.61"W
B. Schwartz	41 52' 00.80"N	78 22' 21.34"W

Coordinate Datum: NAD 27

Average Depth of Wells: 115 ft.

Directions to Lease: Starting from the intersection of US Rte. 46 and Chaplin Hill Rd. The lease entrance is approximately 1.5 miles on the right of Chaplin Hill Rd., a green metal building and log cabin can be seen from the road. The entrance is not gated.

Lease Description

The Benson Energy, LLC is both the surface and subsurface owner for approximately fifty-three percent (53%) of the mineral ownership located at 772 Chaplin Hill Rd. in Smethport, Pennsylvania. The other forty-seven percent (47%) of surface ownership is divided into another three landowners, with approximately forty-three percent (43%) owned by W. Tanner. The mineral property is located on the north eastern corner of the Smethport and north western corner of the Port Alleghany 7 ½ USGS Topographical Maps. The mineral property is approximately 436.3 acres in size.

Physical Features – The well locations for the mineral property are located on a northeastern facing slope that range for 2 to 25%. The property consists of 128 acres of cultivated fields (29%), 8 acres of residential lawns (1%), and 300 acres of forest cover (70%).

Soils – According to the McKean County Soil Survey, the mineral property contains the following soil types.

<u>Soil Abbreviation</u>	<u>% of Property</u>
AbB	7%
AbC	13%
LeB	8%
LeD	42%
LeC	5%
LeF	9%
HbC	8%
HeF	1%

More information concerning these soil types can be found in Appendix A of this document, or Appendix E to view the soil map for this area. Data gathered from the McKean County Soil Survey.

Open Waterways – There is one Cold Water Fisheries (CWF) stream that runs through the middle of the property that is named Chaplin Hill Creek, which flows into Potato Creek 1.3 miles to the north of the property. A segment of Chaplin Hill Creek flows approximately 169 ft. from the injection well. There is also a 1/3 acre pond located at the entrance of the mineral property, and is approximately 1,170 ft. from the injection well location.

Business Description

Benson Energy, LLC is a family owned Limited Liability Company that produces crude oil and natural gas from privately owned mineral lands, or from lease lands owned by other people or corporations. Crude oil is stored within steel tanks until it is trucked to a local refinery.

Project Description

Benson Energy, LLC requests approval for a Class II Underground Injection Control Permit from Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection for enhance oil recovery. Benson Energy, LLC plans to convert an existing producer well (Benson #6 API: 37-083-55287) into an injection well for enhance oil recovery using surrounding wells. Brine Water will be injected into the Bradford 3rd Sandstone formation, and will be supplied by normal well operations conducted on the lease. No outside source of contaminated water will be used for this operation. Should insufficient Brine Water be available, Benson Energy, LLC can use clean water from a water well onsite, to offset the lack of production water.



Stimulation Program – The Benson lease maintains an active drilling program that utilizes hydraulic fracturing to stimulate producing wells. Sandstone formations within the well are treated at about 2,800 to 3,200 psi, and the number of treatments is determined by the number of formations and the thickness of those formations. A combine use of brine and fresh water is utilized during the fracturing operation, which is combined with gels and sand to maintain the fractures within the targeted formation. The gel used is determined by the contractor who is performing the frac operation.

Injection Procedures – The utilization of the injection well for the purposes of oil recovery will be during normal working hours of the operator for the lease. This operation will be supervised at all times by the lease operator. Benson Energy, LLC already owns a FMC L09 Piston pump, which will be the primary pump for this operation, has a maximum pressure of 1,200 psi and a maximum flow rate of 29 GPM.

Maximum Production Rates for Equipment:

Maximum Allowable Surface Pressure (psi): 965
Maximum Flow Rate (GPM): 29
Maximum Water Dailey Usage (Gallons): 13,920
Maximum Water Dailey Usage (Barrels): 331
Maximum Fracture Gradient: 0.8 psi/ft

Operating Production Rates for Equipment:

Operating Pressure (PSI): 800
Operating Flow Rate (GPM): 10.5
Operating Water Dailey Usage (Gallons): 5,040
Operating Water Dailey Usage (Barrels): 120
Specific Gravity of Fluid: 1.11
Operating Bottom Hole Pressure (psi): 875
Operating Fracture Gradient (psi/ft): 0.67

**Operating Rates are based on HP and RPM rate capabilities of the motor installed with the pump.*

A 210 Barrel double walled steel tank will be placed on the well site within an earthen containment berm with a 30-mil pit liner providing spill containment. Pea Gravel will provide cover for the pit liner and establish a level surface for the tank to rest.

Construction Procedures – During the construction of the Benson #6 (API: 37-083-55287) well, 7" casing was installed to a depth of 452 feet, and cemented to isolate all USDW aquifers. According to the well log, dated January 20, 2011 performed by Penn Gold, the deepest USDW is at 440 feet. Department of Environmental Protection records show, that as of October 18, 2013, zero pollutants have been recorded within the USDW zones during the two years this well has been in operation.

Benson #6 (API: 37-083-55287) Well Details

USGS 7 ½ Quad: Port Allegheny

Latitude: 41 51' 49.90" N

Longitude: 78 22' 27.30" W

Elevation: 1,756 ft.

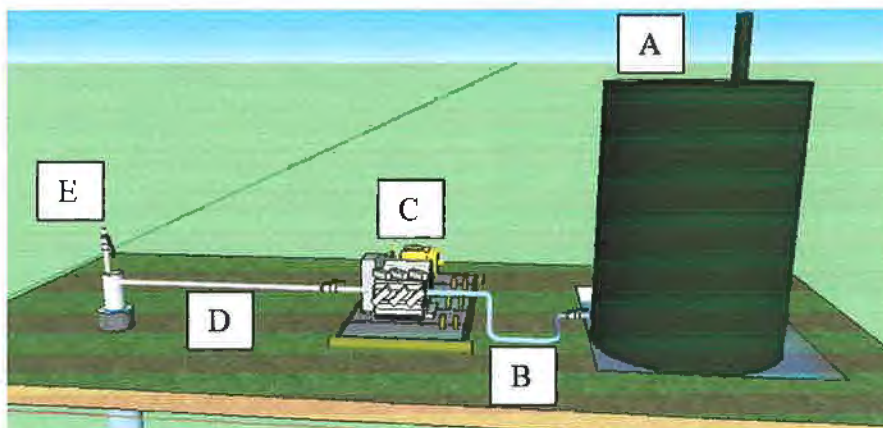
Well Depth (TD): 1,996.6 ft.

Surface Casing Size: 7"

Surface Casing Depth: 452'

Status: Active Oil Producer

Benson Energy, LLC plans to convert this producer well into an injection well for enhance recovery of oil. Benson Energy, LLC will plug the well back to Bradford 3rd Formation at 1,350', then install 4 ½" pipe to serve as the long string casing, 1 ½" pipe for the injection tubing, and a packer to seal the formation zone. Cement will also be used to seal the area between bore hole and 4 ½" casing string. Approximately forty-five (45) feet of limestone will serve as the confining zone from the depth of 1,250 to 1,300 feet.



Site Schematic:

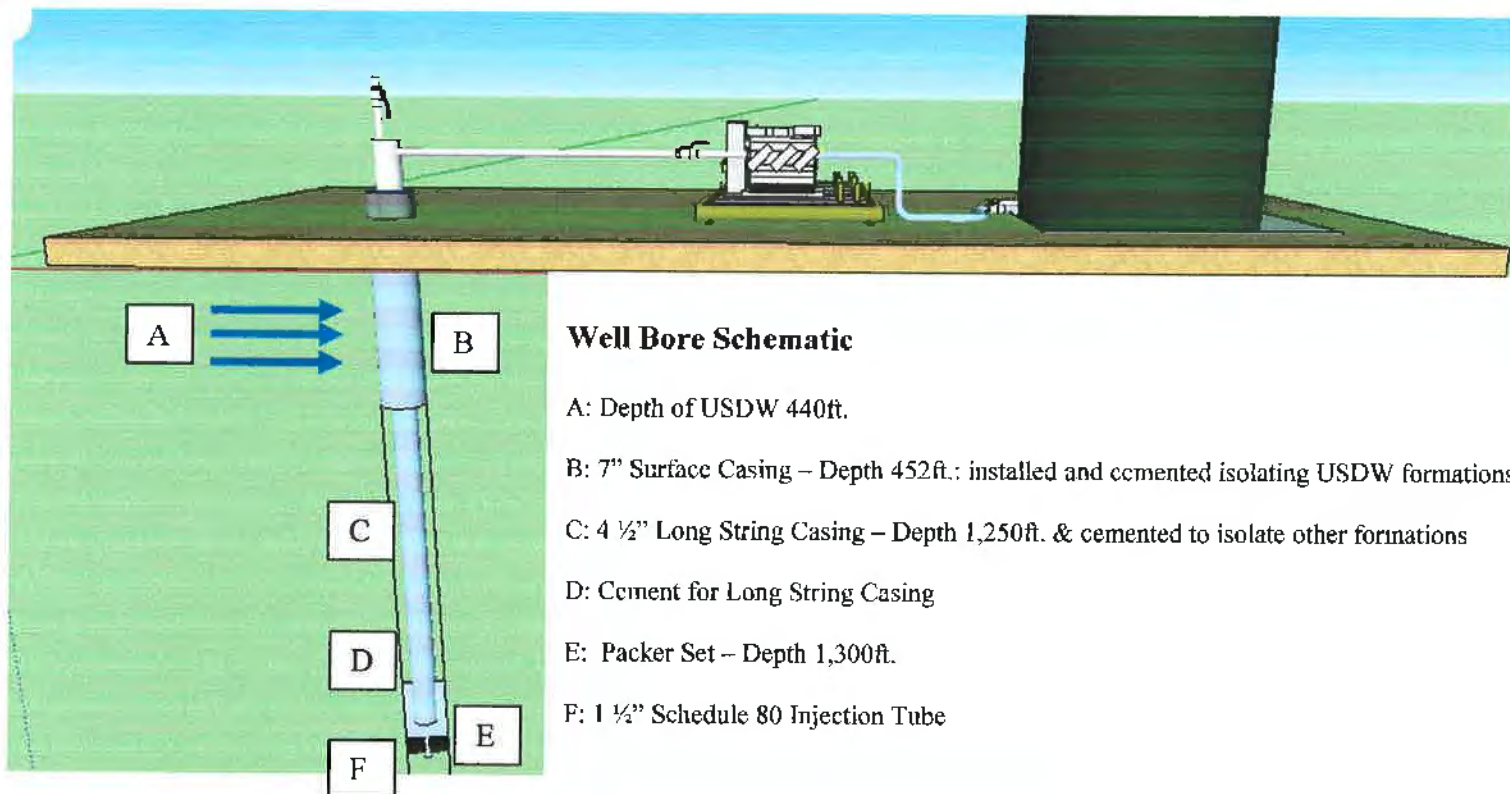
A: 210 Barrel Double Wall Steel Storage Tank in 2 ft. containment.

B: 2" Suction Line from storage tank to pump.

C: FMC Pump & Motor mounted on movable skid with operation controls.

D: 1 ½" Schedule 80 Injection Pipe.

E: Injection Well Head.



Maintenance and Monitoring Well Activities

Maintenance Program – The enhanced recovery program will only operate during working hours of the lease operator. Fluid levels are checked each morning to ensure the safety of the pump. Clean water can be added to the mixture of production water should inefficient amount of fluid be available for the operation. Operator is responsible for checking over the system for damage, and implementing the necessary repairs.

Monitoring Program – A monitoring well will be drilled, with a depth of 150 ft., and provide Benson Energy, LLC with baseline data concerning USDW's within the Area of Review (AOR) and serve to monitor water aquifers in the area of concern. Water quality data will be collected from the monitoring well before activating the enhance recovery system. This data will be compared to other tests taken once the system is activated to check for changes in existing minerals or the addition of pollutants. Baseline data for all existing drinking water supplies within the AOR can be found in Appendix B.

Well Failure Procedure – Once a report or complaint is received, cease injection operations immediately, and notify the Pennsylvania Department of Environmental Protection in Meadville, PA and the Environmental Protection Agency in Pittsburgh, PA to assist in investigating this claim or report. Producer Wells will continue to operate, but injection operations will be suspended, until Benson Energy, LLC gains approval from all regulating agencies to continue operation.

Plugging and Abandonment Plan

Should a problem occur with the well, where it is determined by the Pennsylvania DEP and EPA that enhance recovery operations should cease and the well is to be abandoned, then the following plan should be implemented.

- Remove injection tubing and 4 ½" casing from the well bore.
- Insert cement plugs at producing zones indicated by the well log developed by Penn Gold on January 20, 2011.
- Insert Top Hole plug by starting the cement at a depth of 500' and continue to cement until it circulates to the top of the bore hole.
- Leave cement string in place and attached identification tag to pipe with well name and API number for the well. This will be left in place as a permanent marker for the plugged well.

Formation Description & Testing

Formation Data – The proposed well is an already existing producing well, which Benson Energy, LLC plans to convert into a Class II Injection well. This well has already been treated using hydraulic fracturing practices. This would affect any core samples collected at this date for porosity and permeability. The formation fractured at approximately 3,120 psi and treated around 2,350 psi. Approximately one hundred (100) sacks of sand were used during the treatment, to assist in maintaining the fractures within the formation.

Treated Formations Within Well

Bradford 1 st Formation	Depth: 703 ft.
Tiona Formation	Depth: 974 ft.
Bradford 2 nd Formation	Depth: 1,033 ft.
Bradford 3 rd Formation	Depth: 1,335 ft.
Lewis Run Formation	Depth: 1,475 ft.
Kane Formation	Depth: 1,644 ft.
Sartwell Formation	Depth: 1,723 ft.
Haskell Formation	Depth: 1,836 ft.

Formation Characteristics

Targeted Formation: Bradford 3rd Sandstone
Formation Depth: 1,300 to 1,350 feet
Sandstone Thickness: 23 feet
Average Porosity for Formation: 10.2%
Confinement Zone Thickness: 45 feet

Formation Test – Should the Pennsylvania Department of Environmental Protection determine a formation test is required for the UIC Class II Permit. Benson Energy, LLC plans to perform a detailed one foot fluorescence sample analysis, to confirm favorable reservoir characteristics of the Benson #6 well, by testing a newer well in the area before a hydraulic fracture treatment is applied. The fluorescence analysis involves measuring the four sandstone reservoir characteristics, which are described below.

Natural Fluorescence – This is the percentage of sandstone sample chips that fluoresce under ultra-violet light scaled from 0 to 100%. A qualitative interpretation of natural fluorescence from 60 to 100% indicates net producible sandstone. Benson Energy, LLC expects the Bradford 3rd Formation to exhibit 60% or greater natural fluorescence for at least fifteen (15) feet of the twenty-three (23) foot formation.

Fluorescence Intensity – This is the sample fluorescence color measured; light, medium, bright, and very bright. The more mobile oil is, will be represented by a brighter color, and the less mobile oil will be, is represented by a pale color. A qualitative interpretation of the fluorescence intensity from bright to very bright indicates more mobile producible sandstone.

Solvent Cut Fluorescence Rate – This is the permeability indicator in which a solvent acts as a leaching agent on representative sample chips per one (1) foot intervals. The leaching (oil streamer or oil halo) rate is recorded in seconds from slow (11 – 13 seconds) to instant (1 – 2 seconds). Higher solvent cut fluorescence rates are indicative of higher permeability zones within the sandstone section. Instant cut rates are indicative of very high permeability sandstone capable of waterflood completion.

Solvent Cut Oil Saturation – This is the amount of oil that the solvent leached from representative samples. The amount is relatively measured (very light, light, medium, heavy, very heavy). The amount is indicative of true oil saturation per one (1) foot intervals. Oil saturations of heavy to very heavy are indicative of sandstones that are capable of waterflood production.

Mechanical Integrity Test (MIT) – The Mechanical Integrity Test (MIT) will be conducted by representatives of Benson Energy, LLC. An Open Annulus test will be performed on the injection well by Benson Energy, LLC, and any new injection well to be constructed in the future, using freshwater to detect leaks in the injection tubing by monitoring changes in water levels.

APPENDIX A

Soil Data Information

McKean County, Pennsylvania

AbB—Albrights silt loam, 3 to 8 percent slopes

Map Unit Setting

- Elevation: 500 to 1,500 feet
- Mean annual precipitation: 35 to 51 inches
- Mean annual air temperature: 41 to 62 degrees F
- Frost-free period: 115 to 165 days

Map Unit Composition

- Albrights and similar soils: 85 percent
- Minor components: 5 percent

Description of Albrights

Setting

- Landform: Mountain slopes
- Landform position (two-dimensional): Footslope
- Landform position (three-dimensional): Mountainbase
- Down-slope shape: Concave
- Across-slope shape: Concave
- Parent material: Residuum weathered from acid, red siltstone, sandstone, and shale

Properties and qualities

- Slope: 3 to 8 percent
- Depth to restrictive feature: 18 to 32 inches to fragipan
- Drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: About 12 to 30 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Very low (about 2.7 inches)

Interpretive groups

- Farmland classification: All areas are prime farmland
- Land capability (nonirrigated): 2e
- Hydrologic Soil Group: C

Typical profile

- 0 to 8 inches: Silt loam
- 8 to 19 inches: Gravelly silt loam
- 19 to 70 inches: Channery clay loam

Minor Components

Brinkerton

- Percent of map unit: 5 percent
- Landform: Hillslopes
- Landform position (two-dimensional): Toeslope
- Landform position (three-dimensional): Base slope
- Down-slope shape: Concave
- Across-slope shape: Concave

McKean County, Pennsylvania

AbC—Albrights silt loam, 8 to 15 percent slopes

Map Unit Setting

- Elevation: 500 to 1,500 feet
- Mean annual precipitation: 35 to 51 inches
- Mean annual air temperature: 41 to 62 degrees F
- Frost-free period: 115 to 165 days

Map Unit Composition

- Albrights and similar soils: 85 percent
- Minor components: 3 percent

Description of Albrights

Setting

- Landform: Mountain slopes
- Landform position (two-dimensional): Footslope
- Landform position (three-dimensional): Mountainbase
- Down-slope shape: Concave
- Across-slope shape: Concave
- Parent material: Residuum weathered from acid, red siltstone, sandstone, and shale

Properties and qualities

- Slope: 8 to 15 percent
- Depth to restrictive feature: 18 to 32 inches to fragipan
- Drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
- Depth to water table: About 12 to 30 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Very low (about 2.7 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 3e
- Hydrologic Soil Group: C

Typical profile

- 0 to 8 inches: Silt loam
- 8 to 19 inches: Gravelly silt loam
- 19 to 70 inches: Channery clay loam

Minor Components

Brinkerton

- Percent of map unit: 3 percent
- Landform: Hillslopes
- Landform position (two-dimensional): Toeslope
- Landform position (three-dimensional): Base slope
- Down-slope shape: Concave
- Across-slope shape: Concave

McKean County, Pennsylvania

LeB—Leck Kill channery silt loam, 3 to 8 percent slopes

Map Unit Setting

- Elevation: 500 to 1,500 feet
- Mean annual precipitation: 35 to 51 inches
- Mean annual air temperature: 46 to 55 degrees F
- Frost-free period: 115 to 165 days

Map Unit Composition

- Leck kill and similar soils: 95 percent

Description of Leck Kill

Setting

- Landform: Hills
- Landform position (two-dimensional): Backslope
- Landform position (three-dimensional): Side slope
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Residuum weathered from sandstone and shale

Properties and qualities

- Slope: 3 to 8 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 4.8 inches)

Interpretive groups

- Farmland classification: All areas are prime farmland
- Land capability (nonirrigated): 2e
- Hydrologic Soil Group: B

Typical profile

- 0 to 6 inches: Channery silt loam
- 6 to 26 inches: Channery silt loam
- 26 to 44 inches: Extremely channery silt loam
- 44 to 48 inches: Weathered bedrock

McKean County, Pennsylvania

LeC—Leck Kill channery silt loam, 8 to 15 percent slopes

Map Unit Setting

- Elevation: 500 to 1,500 feet
- Mean annual precipitation: 35 to 51 inches
- Mean annual air temperature: 46 to 55 degrees F
- Frost-free period: 115 to 165 days

Map Unit Composition

- Leck kill and similar soils: 95 percent

Description of Leck Kill

Setting

- Landform: Hills
- Landform position (two-dimensional): Backslope
- Landform position (three-dimensional): Side slope
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Residuum weathered from sandstone and shale

Properties and qualities

- Slope: 8 to 15 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 4.8 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 3e
- Hydrologic Soil Group: B

Typical profile

- 0 to 6 inches: Channery silt loam
- 6 to 26 inches: Channery silt loam
- 26 to 44 inches: Extremely channery silt loam
- 44 to 48 inches: Weathered bedrock

McKean County, Pennsylvania

LeF—Leck Kill channery silt loam, 25 to 50 percent slopes

Map Unit Setting

- Elevation: 500 to 1,500 feet
- Mean annual precipitation: 38 to 46 inches
- Mean annual air temperature: 45 to 54 degrees F
- Frost-free period: 140 to 170 days

Map Unit Composition

- Leck kill and similar soils: 80 percent

Description of Leck Kill

Setting

- Landform: Mountains
- Landform position (two-dimensional): Backslope
- Landform position (three-dimensional): Mountainflank
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Reddish residuum derived from sedimentary rock

Properties and qualities

- Slope: 25 to 60 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 6.00 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 4.8 inches)

Interpretive groups

- Farmland classification: Not prime farmland
- Land capability (nonirrigated): 7e
- Hydrologic Soil Group: B

Typical profile

- 0 to 6 inches: Channery silt loam
- 6 to 26 inches: Channery silt loam
- 26 to 44 inches: Extremely channery silt loam
- 44 to 48 inches: Bedrock

McKean County, Pennsylvania

HbC—Hazleton channery loam, 8 to 15 percent slopes

Map Unit Setting

- Elevation: 1,100 to 2,500 feet
- Mean annual precipitation: 38 to 46 inches
- Mean annual air temperature: 46 to 57 degrees F
- Frost-free period: 140 to 170 days

Map Unit Composition

- Hazleton and similar soils: 80 percent

Description of Hazleton

Setting

- Landform: Mountains
- Landform position (two-dimensional): Backslope, summit
- Landform position (three-dimensional): Mountaintop, upper third of mountainflank
- Down-slope shape: Convex
- Across-slope shape: Convex
- Parent material: Residuum weathered from acid sandstone

Properties and qualities

- Slope: 8 to 15 percent
- Depth to restrictive feature: 40 to 60 inches to lithic bedrock
- Drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.43 to 6.00 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 5.3 inches)

Interpretive groups

- Farmland classification: Farmland of statewide importance
- Land capability (nonirrigated): 3e
- Hydrologic Soil Group: A

Typical profile

- 0 to 6 inches: Channery loam
- 6 to 36 inches: Very channery sandy loam
- 36 to 54 inches: Extremely channery loamy sand
- 54 to 58 inches: Bedrock

McKean County, Pennsylvania

HeF—Hartleton and Buchanan soils, 25 to 60 percent slopes

Map Unit Setting

- Elevation: 500 to 1,800 feet
- Mean annual precipitation: 35 to 51 inches
- Mean annual air temperature: 46 to 55 degrees F
- Frost-free period: 115 to 165 days

Map Unit Composition

- Hartleton and similar soils: 50 percent
- Buchanan and similar soils: 30 percent

Description of Hartleton

Setting

- Landform: Hills
- Landform position (two-dimensional): Backslope
- Landform position (three-dimensional): Side slope
- Down-slope shape: Linear
- Across-slope shape: Linear
- Parent material: Residuum weathered from sandstone and shale

Properties and qualities

- Slope: 25 to 60 percent
- Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
- Drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Low (about 3.7 inches)

Interpretive groups

- Farmland classification: Not prime farmland
- Land capability (nonirrigated): 7e
- Hydrologic Soil Group: B

Typical profile

- 0 to 5 inches: Channery silt loam
- 5 to 37 inches: Very channery silt loam
- 37 to 46 inches: Extremely channery loam
- 46 to 50 inches: Weathered bedrock

Description of Buchanan

Setting

- Landform: Mountain slopes, valley sides
- Landform position (two-dimensional): Footslope
- Landform position (three-dimensional): Lower third of mountain flank
- Down-slope shape: Concave, linear
- Across-slope shape: Linear, concave

Properties and qualities

- Slope: 25 to 45 percent
- Depth to restrictive feature: More than 80 inches
- Drainage class: Moderately well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
- Depth to water table: About 18 to 36 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water capacity: Moderate (about 6.4 inches)

Typical profile

- 0 to 10 inches: Silt loam
- 10 to 25 inches: Silt loam
- 25 to 66 inches: Gravelly loam

APPENDIX B

Certificate of Analysis for Water Purveyors

APPENDIX C

Area of Review (AOR) Well Data Tables

Post 1985 Well Data Table

<u>Well Name</u>	<u>Depth (ft)</u>	<u>API Number</u>	<u>Latitude</u>	<u>Longitude</u>
Benson 1	2500	37-083-54508	41-51-53.10	-78-22-24.40
Benson 2	2300	37-083-54873	41-51-50.13	-78-22-33.10
Benson 4	2300	37-083-54874	41-52-00.24	-78-22-46.30
Benson 5	2300	37-083-54875	41-51-56.46	-78-22-47.17
Benson 6	1990	37-083-55287	41-51-49.90	-78-22-27.30
Benson 7	1907	37-083-55288	41-51-46.70	-78-22-30.68
Benson 8	1990	37-083-56139	41-51-46.00	-78-22-37.70
Denmark 1	2000	37-083-54876	41-52-17.01	-78-22-57.71
Denmark 2 (Plugged)	2300	37-083-54877	41-52-04.31	-78-23-04.18

Pre 1985 Well Data Table

<u>Well Name</u>	<u>Depth (ft)</u>	<u>API Number</u>	<u>Latitude</u>	<u>Longitude</u>
Well #1	NA	NA	41-51-53.56	-78-22-43.05
Well #2	NA	NA	41-51-49.21	-78-22-55.86
Well #3	NA	NA	41-51-46.68	-78-22-56.48
Well #4 (Plugged)	NA	37-083-16110	41-51-43.75	-78-22-56.45
Well #5	NA	NA	41-51-43.10	-78-22-49.03
Well #6	NA	NA	41-51-47.57	-78-22-40.60
Well #7	NA	NA	41-51-55.94	-78-22-37.55
Well #8	NA	NA	41-51-59.18	-78-22-40.03

**No Well Records exist for the Pre-1985 wells, including well logs.*

***Pennsylvania DEP has not issued any API numbers for the wells.*

USDW Locations in Review Area:

<u>Owner</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Phone</u>
R. Ford	41 52' 03.96"N	78 22' 42.97"W	Unlisted
V. Benson	41 51' 57.70"N	78 22' 38.57"W	814-887-2892
W. Shea	41 51' 55.25"N	78 22' 21.03"W	814-887-5809
J. Renner	41 51' 54.34"N	78 22' 15.26"W	814-887-5836
K. Shatley	41 51' 52.21"N	78 22' 15.78"W	814-887-6022
D. Leet	41 51' 52.17"N	78 22' 12.61"W	Unlisted
B. Schwartz	41 52' 00.80"N	78 22' 21.34"W	814-887-5736



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

WELL PERMIT

DEP USE ONLY	
Permittee's eFACTS ID 275425	Auth ID 805313
Watershed Name	Quality

Permittee ROBERT D BENSON & VICKIE L BENSON		OGO # OGO-67310	Permit Number 37-083-54508-	Date Issued 11/03/2009
Address 3137 BELLS RUN RD		Farm Name & Well Number BENSON 1		Well Serial #
		Municipality Annin	County McKean	
SHINGLEHOUSE, PA 16748-3427		7 1/2' Quadrangle Name Port Allegany		Map Section # 1
Phone (814) 697-6895	Project #		Latitude 41-51-53.1000	Longitude -78-22-24.4000
Surf Elev at Site 1643 feet	Anticipated Total Depth 2500 feet	Well Type OG	Offset distances referenced to NE corner of map section. South 3735 feet West 10926 feet	

This permit covering the well operator and well location shown above is evidence of permission granted to conduct activities in accordance with the Oil and Gas Act and the Oil and Gas Conservation Law, if the well is subject to that act and any rules and regulations promulgated thereunder, subject to the conditions contained herein and in accordance with the application submitted for this permit. This permit does not convey any property rights.

This permit and the permittee's authority to conduct the activities authorized by this permit are conditioned upon operator's compliance with applicable law and regulations.

Notification must be given to the district oil and gas inspector, the surface landowner and political subdivision of the date well drilling will begin at least 24 hours prior to commencement of drilling activities.

The permittee hereby authorizes and consents to allow, without delay, employees or agents of the Department to have access to and to inspect all areas upon presentation of appropriate credentials, without advance notice or a search warrant. This includes any property, facility, operation or activity governed by the Oil and Gas Act, the Oil and Gas Conservation Law, the Coal and Gas Resource Coordination Act and other statutes applicable to oil and gas activities administered by the Department. The authorization and consent shall include consent to the Department to collect samples of wastewaters or gases, to take photographs, to perform measurements, surveys, and other tests, to inspect any monitoring equipment, to inspect the methods of operation and disposal, and to inspect and copy documents required by the Department to be maintained. The authorization and consent includes consent to the Department to examine books, papers, and records pertinent to any matter under investigation pursuant to the Oil and Gas Act or pertinent to a determination of whether the operator is in compliance with the above referenced statutes. This condition in no way limits any other powers granted to the Department under the Oil and Gas Act and other statutes, rules and regulations applicable to these activities as administered by the Department.

This permit does not relieve the operator from the obligation to comply with the Clean Streams Law and all statutes, rules and regulations administered by the Department.

Special Permit Conditions:

This permit expires 11/03/2010 unless drilling is commenced on or before that date and prosecuted with due diligence.

Staci Gustafson for S. Craig Lobins
Regional Oil and Gas Program Manager

DAVE FORD
Oil and Gas Inspector

321 NORTH STATE ST., WARREN, PA 16365
Address

814/723-3273
Telephone



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM




Application for Transfer of Well Permit or Registration

<p>To identify wells to be transferred, fill out this form, naming the former operator and the new operator. Please read instructions before starting. Use continued pages to list additional wells. ID 275425</p>	DEP USE ONLY			
	Client ID	Auth #	C.	INV.
	278814	822833	new 2-23-10	new 3-2-10
	APS #	Bond Agreement #	C.S.	EXA.
	712866	12394	id 2-28-10	new 3-2-10

TRANSFER FROM:				TRANSFER TO:			
Name		OGO#		Name		OGO#	
ROBERT D. BENSON AND VICKIE L. BENSON		67310		BENSON ENERGY, LLC		67485	
Address		67310		Address			
3137 BELLS RUN ROAD				772 CHAMPLAIN HILL ROAD			
City	State	Zip		City	State	Zip	
SHINGLEHOUSE	PA	16748		SMETHPORT	PA	16749	
Telephone		Fax		Telephone		Fax	
814-697-6895		814 697-6895		814-887-5060			
Bond Number: 12232				Bond Number: N/A			

SIGNATURES and CERTIFICATION

Subject to the penalties of Title 18-PA C.S. §4904 relating to unsworn falsification to authorities, I certify that I have the authority to submit this request for transfer of permit or registration for the oil / gas wells listed herein. Further, I certify that the information provided on this form and attachments is true and correct to the best of my knowledge and information.

SIGNATURE of Transferor, or Transferor's authorized agent acting on behalf of the Transferor.	SIGNATURE of Transferee, or Transferee's authorized agent acting on behalf of the Transferee.
 	
<div style="display: flex; justify-content: space-between;"> Signature Date </div>	<div style="display: flex; justify-content: space-between;"> Signature Date </div>
Robert D. Benson/ Vickie L. Benson	Brice N. Benson Managing Member/ President
(Type or print name and title)	(Type or print name and title)

WELLS TO BE TRANSFERRED

[illegible]

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**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM**

DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 828995
Watershed Name	Quality

WELL PERMIT

Permittee BENSON ENERGY LLC		OGO # OGO-67485	Permit Number 37-083-54873-		Date Issued 04/29/2010
Address 772 CHAMPLIN HILL RD		Farm Name & Well Number BENSON 2			Well Serial #
		Municipality Keating		County McKean	
SMETHPORT, PA 16749-5316		7 1/2" Quadrangle Name Smethport			Map Section # 3
Phone (814) 887-5060	Project #		Latitude 41-51-50.1300	Longitude -78-22-33.1000	
Surf Elev at Site 1686 feet	Anticipated Total Depth 2300 feet	Well Type OL	Offset distances referenced to NE corner of map section. South 4035 feet West 234 feet		

This permit covering the well operator and well location shown above is evidence of permission granted to conduct activities in accordance with the Oil and Gas Act and the Oil and Gas Conservation Law, if the well is subject to that act and any rules and regulations promulgated thereunder, subject to the conditions contained herein and in accordance with the application submitted for this permit. This permit does not convey any property rights.

This permit and the permittee's authority to conduct the activities authorized by this permit are conditioned upon operator's compliance with applicable law and regulations.

Notification must be given to the district oil and gas inspector, the surface landowner and political subdivision of the date well drilling will begin at least 24 hours prior to commencement of drilling activities.

The permittee hereby authorizes and consents to allow, without delay, employees or agents of the Department to have access to and to inspect all areas upon presentation of appropriate credentials, without advance notice or a search warrant. This includes any property, facility, operation or activity governed by the Oil and Gas Act, the Oil and Gas Conservation Law, the Coal and Gas Resource Coordination Act and other statutes applicable to oil and gas activities administered by the Department. The authorization and consent shall include consent to the Department to collect samples of wastewaters or gases, to take photographs, to perform measurements, surveys, and other tests, to inspect any monitoring equipment, to inspect the methods of operation and disposal, and to inspect and copy documents required by the Department to be maintained. The authorization and consent includes consent to the Department to examine books, papers, and records pertinent to any matter under investigation pursuant to the Oil and Gas Act or pertinent to a determination of whether the operator is in compliance with the above referenced statutes. This condition in no way limits any other powers granted to the Department under the Oil and Gas Act and other statutes, rules and regulations applicable to these activities as administered by the Department.

This permit does not relieve the operator from the obligation to comply with the Clean Streams Law and all statutes, rules and regulations administered by the Department.

Special Permit Conditions:

This permit expires 04/29/2011 unless drilling is commenced on or before that date and prosecuted with due diligence.

Steve Gustafson for S. Craig Lobias
Regional Oil and Gas Program Manager

DAVE FORD
Oil and Gas Inspector

321 NORTH STATE ST., WARREN, PA 16365
Address

814/723-3273
Telephone

copy

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
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DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 827001
Watershed Name	Quality

WELL PERMIT

Permittee BENSON ENERGY LLC		OGO # OGO-67485	Permit Number 37-083-54874-	Date Issued 04/29/2010
Address 772 CHAMPLIN HILL RD		Farm Name & Well Number BENSON 4		Well Serial #
		Municipality Keating	County McKean	
SMETHPORT, PA 16749-5316		7½' Quadrangle Name Smethport		Map Section # 3
Phone (814) 887-5060	Project #		Latitude 41-52-0.2400	Longitude -78-22-46.3000
Surf Elev at Site 1676 feet	Anticipated Total Depth 2300 feet	Well Type OL	Offset distances referenced to NE corner of map section. South 3012 feet West 1233 feet	

This permit covering the well operator and well location shown above is evidence of permission granted to conduct activities in accordance with the Oil and Gas Act and the Oil and Gas Conservation Law, if the well is subject to that act and any rules and regulations promulgated thereunder, subject to the conditions contained herein and in accordance with the application submitted for this permit. This permit does not convey any property rights.

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Regional Oil and Gas Program Manager

DAVE FORD
Oil and Gas Inspector

321 NORTH STATE ST., WARREN, PA 16365
Address

814/723-3273
Telephone



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DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 827005
Watershed Name	Quality

WELL PERMIT

Permittee BENSON ENERGY LLC		OGO.# OGO-67485	Permit Number 37-083-54875-		Date Issued 04/29/2010
Address 772 CHAMPLIN HILL RD			Farm Name & Well Number BENSON 5		Well Serial #
			Municipality Keating	County McKean	
SMETHPORT, PA 16749-5316			7 1/2' Quadrangle Name Smethport		Map Section # 3
Phone (814) 887-5060		Project #		Latitude 41-51-56.4600	Longitude -78-22-47.1700
Surf Elev at Site 1728 feet	Anticipated Total Depth 2300 feet	Well Type OL	Offset distances referenced to NE corner of map section. South 3394 feet West 1299 feet		

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Special Permit Conditions:

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Regional Oil and Gas Program Manager

DAVE FORD

Oil and Gas Inspector

321 NORTH STATE ST., WARREN, PA 16365

Address

814/723-3273

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

WELL PERMIT

DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 859195
Watershed Name	Quality

Permittee BENSON ENERGY LLC		OGO.# OGO-67485	Permit Number 37-083-55287-00	Date Issued 01/05/2011
Address 772 CHAMPLIN HILL RD		Farm Name & Well Number BENSON 6		Well Serial #
		Municipality Annin	County McKean	
SMETHPORT, PA 16749-5316		7 1/2' Quadrangle Name Port Allegany		Map Section # 1
Phone (814) 887-5060	Project #		Latitude 41-51-49.9000	Longitude -78-22-27.3000
Surf Elev at Site 1756 feet	Anticipated Total Depth 1990 feet 1990	Well Type OL	Offset distances referenced to NE corner of map section. South 4059 feet West 11146 feet	

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Special Permit Conditions:

This permit expires 01/05/2012 unless drilling is commenced on or before that date and prosecuted with due diligence.

S. Craig Loh
 Regional Oil and Gas Program Manager

Timothy Curry
 Oil & Gas Inspector

321 N. State St.
 N. Warren, PA 16365

814-723-3273
 Telephone



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 859197
Watershed Name	Quality

WELL PERMIT

Permittee BENSON ENERGY LLC		OGO.# OGO-67485	Permit Number 37-083-55288-00	Date Issued 01/05/2011
Address 772 CHAMPLIN HILL ROAD		Farm Name & Well Number BENSON 7		
		Municipality Keating		County McKean
SMETHPORT, PA 16749-5316		7 1/2' Quadrangle Name Smethport		Map Section # 3
Phone (814) 887-5060	Project #		Latitude 41-51-46.7000	Longitude -78-22-30.6800
Surf Elev at Site 1775 feet	Anticipated Total Depth 4900 feet	Well Type OL	Offset distances referenced to NE corner of map section. South 4382 feet West 51 feet	

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Special Permit Conditions:

This permit expires 01/05/2012 unless drilling is commenced on or before that date and prosecuted with due diligence.

S. Curry
Regional Oil and Gas Program Manager

Timothy Curry
Oil & Gas Inspector

321 N. State St.
N. Warren, PA 16365

814-723-3273
Telephone

copy

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DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM**

DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 977041
Watershed Name	Quality

WELL PERMIT

Permittee BENSON ENERGY LLC		OGO.# OGO-67485	Permit Number 37-083-56139-00-00		Date Issued 07/18/2013
Address 772 CHAMPLIN HILL RD			Farm Name & Well Number BENSON 8		Well Serial #
			Municipality Keating	County McKean	
SMETHPORT, PA 16749-5316			7 1/2' Quadrangle Name Smethport		Map Section # 3
Phone (814) 887-5060		Project #	Latitude 41-51-46.0000	Longitude -78-22-37.7000	
Surf Elev at Site 1742 feet	Anticipated Total Depth 1990 feet	Well Type OL	Offset distances referenced to NE corner of map section South 4453 feet West 582 feet		

This permit covering the well operator and well location shown above is evidence of permission granted to conduct activities in accordance with the Oil and Gas Act and the Oil and Gas Conservation Law, if the well is subject to that act and any rules and regulations promulgated thereunder, subject to the conditions contained herein and in accordance with the application submitted for this permit. This permit does not convey any property rights.

This permit and the permittee's authority to conduct the activities authorized by this permit are conditioned upon operator's compliance with applicable law and regulations.

Notification must be given to the district oil and gas inspector, the surface landowner and political subdivision of the date well drilling will begin at least 24 hours prior to commencement of drilling activities.

The permittee hereby authorizes and consents to allow, without delay, employees or agents of the Department to have access to and to inspect all areas upon presentation of appropriate credentials, without advance notice or a search warrant. This includes any property, facility, operation or activity governed by the Oil and Gas Act, the Oil and Gas Conservation Law, the Coal and Gas Resource Coordination Act and other statutes applicable to oil and gas activities administered by the Department. The authorization and consent shall include consent to the Department to collect samples of wastewaters or gases, to take photographs, to perform measurements, surveys, and other tests, to inspect any monitoring equipment, to inspect the methods of operation and disposal, and to inspect and copy documents required by the Department to be maintained. The authorization and consent includes consent to the Department to examine books, papers, and records pertinent to any matter under investigation pursuant to the Oil and Gas Act or pertinent to a determination of whether the operator is in compliance with the above referenced statutes. This condition in no way limits any other powers granted to the Department under the Oil and Gas Act and other statutes, rules and regulations applicable to these activities as administered by the Department.

This permit does not relieve the operator from the obligation to comply with the Clean Streams Law and all statutes, rules and regulations administered by the Department.

Special Permit Conditions:

The Operator shall inform their county DEP Oil & Gas Inspector 3 days prior to land application activity. The Operator shall follow 25 Pa Code §78.56 and 78.60 through 78.63 regulations as applicable.

Contact the Oil & Gas Inspector at least 24 hours prior to commencing any frac/stimulation procedures.

This permit expires 07/18/2014 unless drilling is commenced on or before that date and prosecuted with due diligence.

S. Craig Loh
Regional Oil and Gas Program Manager

Tim Curry
Oil & Gas Inspector

321 N. State St.
Warren, PA 16365

814-723-3273
Telephone



**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM**

DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 828150
Watershed Name	Quality

WELL PERMIT

Permittee BENSON ENERGY LLC		OGO.# OGO-67485	Permit Number 37-083-54876-		Date Issued 05/18/2010
Address 772 CHAMPLIN HILL RD			Farm Name & Well Number DENMARK 1		Well Serial #
			Municipality Keating	County McKean	
SMETHPORT, PA 16749-5316			7 1/2' Quadrangle Name Smethport		Map Section # 3
Phone (814) 887-5060	Project #		Latitude 41-52-17.0100	Longitude -78-22-57.7100	
Surf Elev at Site 1535 feet	Anticipated Total Depth 2000 feet	Well Type OL	Offset distances referenced to NE corner of map section. South 1314 feet West 2096 feet		

This permit covering the well operator and well location shown above is evidence of permission granted to conduct activities in accordance with the Oil and Gas Act and the Oil and Gas Conservation Law, if the well is subject to that act and any rules and regulations promulgated thereunder, subject to the conditions contained herein and in accordance with the application submitted for this permit. This permit does not convey any property rights.

This permit and the permittee's authority to conduct the activities authorized by this permit are conditioned upon operator's compliance with applicable law and regulations.

Notification must be given to the district oil and gas inspector, the surface landowner and political subdivision of the date well drilling will begin at least 24 hours prior to commencement of drilling activities.

The permittee hereby authorizes and consents to allow, without delay, employees or agents of the Department to have access to and to inspect all areas upon presentation of appropriate credentials, without advance notice or a search warrant. This includes any property, facility, operation or activity governed by the Oil and Gas Act, the Oil and Gas Conservation Law, the Coal and Gas Resource Coordination Act and other statutes applicable to oil and gas activities administered by the Department. The authorization and consent shall include consent to the Department to collect samples of wastewaters or gases, to take photographs, to perform measurements, surveys, and other tests, to inspect any monitoring equipment, to inspect the methods of operation and disposal, and to inspect and copy documents required by the Department to be maintained. The authorization and consent includes consent to the Department to examine books, papers, and records pertinent to any matter under investigation pursuant to the Oil and Gas Act or pertinent to a determination of whether the operator is in compliance with the above referenced statutes. This condition in no way limits any other powers granted to the Department under the Oil and Gas Act and other statutes, rules and regulations applicable to these activities as administered by the Department.

This permit does not relieve the operator from the obligation to comply with the Clean Streams Law and all statutes, rules and regulations administered by the Department.

Special Permit Conditions:

This permit expires 05/18/2011 unless drilling is commenced on or before that date and prosecuted with due diligence.

Steve Gustafson for S. Craig Lobins
Regional Oil and Gas Program Manager

DAVE FORD
Oil and Gas Inspector

321 NORTH STATE ST., WARREN, PA 16365
Address

814/723-3273
Telephone

copy

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5500-FM-OG0001A Rev. 11/2007



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Permittee's eFACTS ID 278814	Auth ID 828158
Watershed Name	Quality

WELL PERMIT

Permittee BENSON ENERGY LLC		OGO.# OGO-67485	Permit Number 37-083-54877-		Date issued 04/30/2010
Address 772 CHAMPLIN HILL RD			Farm Name & Well Number DENMARK 2		Well Serial #
			Municipality Keating	County McKean	
SMETHPORT, PA 16749-5316			7 1/2' Quadrangle Name Smethport		Map Section # 3
Phone (814) 887-5060		Project #	Latitude 41-52-4.3100		Longitude -78-23-4.1800
Surf Elev at Site 1805 feet	Anticipated Total Depth 2300 feet	Well Type OL	Offset distances referenced to NE corner of map section. South 2600 feet West 2586 feet		

This permit covering the well operator and well location shown above is evidence of permission granted to conduct activities in accordance with the Oil and Gas Act and the Oil and Gas Conservation Law, if the well is subject to that act and any rules and regulations promulgated thereunder, subject to the conditions contained herein and in accordance with the application submitted for this permit. This permit does not convey any property rights.

This permit and the permittee's authority to conduct the activities authorized by this permit are conditioned upon operator's compliance with applicable law and regulations.

Notification must be given to the district oil and gas inspector, the surface landowner and political subdivision of the date well drilling will begin at least 24 hours prior to commencement of drilling activities.

The permittee hereby authorizes and consents to allow, without delay, employees or agents of the Department to have access to and to inspect all areas upon presentation of appropriate credentials, without advance notice or a search warrant. This includes any property, facility, operation or activity governed by the Oil and Gas Act, the Oil and Gas Conservation Law, the Coal and Gas Resource Coordination Act and other statutes applicable to oil and gas activities administered by the Department. The authorization and consent shall include consent to the Department to collect samples of wastewaters or gases, to take photographs, to perform measurements, surveys, and other tests, to inspect any monitoring equipment, to inspect the methods of operation and disposal, and to inspect and copy documents required by the Department to be maintained. The authorization and consent includes consent to the Department to examine books, papers, and records pertinent to any matter under investigation pursuant to the Oil and Gas Act or pertinent to a determination of whether the operator is in compliance with the above referenced statutes. This condition in no way limits any other powers granted to the Department under the Oil and Gas Act and other statutes, rules and regulations applicable to these activities as administered by the Department.

This permit does not relieve the operator from the obligation to comply with the Clean Streams Law and all statutes, rules and regulations administered by the Department.

Special Permit Conditions:

This permit expires **04/30/2011** unless drilling is commenced on or before that date and prosecuted with due diligence.

S. Craig Loh

Regional Oil and Gas Program Manager

DAVE FORD
Oil and Gas Inspector

321 NORTH STATE ST., WARREN, PA 16365
Address

814/723-3273
Telephone



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS MANAGEMENT

DEP USE ONLY

Site ID #	Primary Facility ID #
eFACTS Client #	Sub-facility ID #
Bonded Well? <input type="checkbox"/> Yes <input type="checkbox"/> No	Bond Agreement #

CERTIFICATE OF WELL PLUGGING**WELL INFORMATION**

Well Operator Benson Energy LLC	DEP ID# 278814	Well API # 37-083-54877-	Well Farm Name Denmark	Well # 2
Address 772 Champlin Hill Road		LAT 41°52' 4.31" LONG - 78°23' 4" 18	Project Number	Serial #
City Smethport	State Pa	Zip 16749-5316	Municipality Keating	County McKean
Phone 814.887.5060	Fax	Email	USGS 7.5 min quadrangle map Smethport	

Complete the next section (coal) if applicable.

Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee
Address	Address	Address
City, State, Zip	City, State, Zip	City, State, Zip

The undersigned representatives of the Well Operator certify that we participated in plugging this well, and that the work was started on (date) 7/29/2013, and that the well was plugged as follows:

Filling Material and Plugs	Depth		Casing and Tubing		
	From	To	Size	Pulled	Left
2B Stone	0	403	1-1/2"	1966'	0
Cement	403	488	7"	0	388
Gell	488	819	9-5/8"	0	15.7
Cement---Tagged	819	1053			
Gell	1053	1095			
Cement	1095	1281	Depth to coal seams, if any		
Gell	1281	1440			
Cement	1440	1582			
Gell	1582	1595			
Cement	1595	1705	Describe Monument 1-1/2" Poly—Brass Tag W/ API#		
Gell	1705	1858			
Dept. approved Attainable Bottom Cement	1858	1960			
Plug Back	1960	TD 2134'			

Signature of Participants

Signature - Well Operator 	Signature - Qualified Participant 	Signature - Qualified Participant
Print or Type Signer's Name and Title Brian N. Benson President Benson Energy, LLC	Print or Type Signer's Name, Title, & Co. Gregory Maxson, Pres. JJBucher Prod Corp	Print or Type Signer's Name, Title, & Co. Drew Davis, JJBPC

Signers certify that the work of plugging this well was completed on (date) 8/5/2013, and that the information above is true and accurate.

DEP USE ONLY

☐ Approved
DEP Rep:

☐ Denied
Date:

Upon completion of plugging, mail one copy of this certificate to each coal operator, owner, or lessee, if any, and one copy to the appropriate DEP Regional Oil and Gas Management Program office.

Dept. of Environmental Protection
NW District Oil & Gas Operations
230 Chestnut Street
Meadville, PA 16335-3481

Dept. of Environmental Protection
SW District Oil & Gas Operations
400 Waterfront Drive
Pittsburgh, PA 15222-4745

8000-FM-OOGM0005 8/2012



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS MANAGEMENT

NOTICE OF INTENTION BY
WELL OPERATOR TO PLUG A WELL

DEP USE ONLY	
Auth # <u>9985</u>	APS #
Site # <u>732151</u>	Primary Facility #
eFACTS Client # <u>278814</u>	Sub-fac #

<input checked="" type="checkbox"/> Well Operator <u>Benson Energy LLC</u>	<input type="checkbox"/> Coal Operator	DEP ID# <u>278814</u>	Well API # (Permit / Reg) <u>37-083-54877</u>	Date Drilled (If Known) <u>5/10/5-17, 5-19</u>
Address <u>772 Champlin Hill RD</u>		Phone <u>814 887-5060</u>	Well Farm Name <u>Denmark's</u>	
City <u>Smethport</u>	State <u>PA</u>	Zip Code <u>16749</u>	Well # <u>#2</u>	Well Serial #
<input checked="" type="checkbox"/> Agent (contractor) acting on behalf of the operator named above. <u>JJ Bucher Producing (Greg Maxson)</u>			County <u>McKean</u>	GPS Latitude <u>4°52'4.3100"</u>
Address <u>Bells Run RD</u>			Municipality <u>Keating Twp</u>	GPS Longitude <u>-78°23'4.180"</u>
City <u>Shinglehouse</u>	State <u>PA</u>	Zip Code <u>16748</u>	NAD <u>83</u>	
Attach well record if not previously submitted.				

Coal Operator, Owner, and Lessee			Complete this section if applicable. Prior to abandoning any well in an area		
Underlain by a workable coal seam, the well operator or owner shall notify the coal operator, lessee, or owner of the intention to plug and abandon the well, and shall submit a plat showing the location and affix the date and time at which the work of plugging will commence.					
Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee
Address		Address		Address	
City, State, Zip		City, State, Zip		City, State, Zip	
Phone	Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No	Phone	Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No	Phone	Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
This Party hereby waives the rights to be notified of the date and time before plugging work will begin, and to be present at the plugging of this well. Signature:		This Party hereby waives the rights to be notified of the date and time before plugging work will begin, and to be present at the plugging of this well. Signature:		This Party hereby waives the rights to be notified of the date and time before plugging work will begin, and to be present at the plugging of this well. Signature:	

Scheduled Date and Time of Plugging	Plugging is scheduled to begin on (date) <u>6/13</u> at (time) <u>TBA</u>
--	---

Checklist and Additional Attached Information	Signature of Applicant (Operator or Agent)
<input checked="" type="checkbox"/> Location Plat <u>No</u> <input type="checkbox"/> Current Well Record <input checked="" type="checkbox"/> Available Well Record <u>Previously submitted</u> <input type="checkbox"/> Application for Approval of Alternate Method of Plugging <input type="checkbox"/> Other, describe:	Signature <u>Brian M. Benson</u> Date <u>5-31-13</u> Print or Type Signer's Name and Title <u>Brian M. Benson; President</u>

DEP USE ONLY		
If this well has not been permitted or registered previously, DEP hereby assigns this permit / registration number to the well location described in this notice:		Notice acknowledged by:
API#: _____ Date: _____	DEP Rep: <u>Bd</u> <u>6/5/13</u>	Geologist: <u>[Signature]</u>
Please refer to this number in all future correspondence.	(Signature)	Date: <u>6/4/13</u>
(Print Name)		

DEP will fill in the information below and send a copy of this notice to the applicant and these DEP staff or offices.		
DEP Oil and Gas Inspector	DEP Mine Inspector MID #	Rec'd in DEP Reg. Ofc. Plugging must begin within 30 days of: <div style="border: 1px solid black; padding: 5px; text-align: center;"> RECEIVED JUN 03 2013 </div>
Name	Name	
Address	Address	
City, State, Zip	City, State, Zip	
Phone	Phone	



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Oil and Gas Management Program
WELL LOCATION PLAT

DEP USE ONLY	DEP Application Tracking #:	G:
	Permit #: 083-54877	C:
	Project #:	

Denotes location of well on topo map.

Surface Hole Coordinates:

True Latitude: NORTH

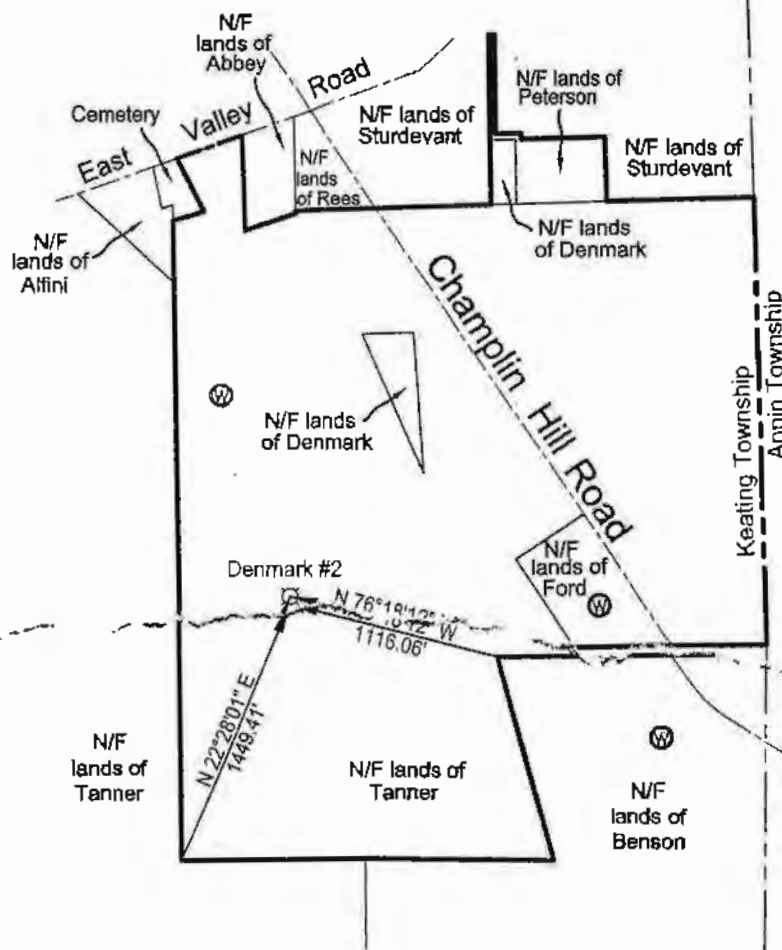
41° 52' 04.31"

True Longitude: WEST

78° 23' 04.18"

Denotes water supply

Well is located on topo map 2600 feet south of latitude 41° 52' 30"



Top Hole Well is located on topo map 2586 feet west of longitude 78° 22' 30"



D. Michael Canada

Surveyor or Engineer: D. Michael Canada
Pa. Lic. # 029272 E Phone #: (716) 379-7918

Dwg #: 6904B

Date: March 2, 2010

Scale: 1 in. = 1000 ft.

Tract Acreage: 210.77

Lat. & Long Metadata Method: RTK GPS Accuracy: ± 5 ft.		Elevation Metadata Method: GPS Accuracy: ± 5 ft. Datum: NAD 83		Survey Date: February 26, 2010	
Applicant / Well Operator Name: Benson Energy, LLC		DEP ID#:		Well (Farm) Name: Denmark	Well #: 2
Address: 772 Champlin Hill Road, Smethport, PA 16749		County - Code: McKean		Municipality: Keating	Well Type: vertical
Surface Landowner / Lessor: Ward A. & Dawn M. Tanner		USGS 7 1/2 Quadrangle Map Name: Smethport 0418		Map Section: 3	Surface Elevation: 1805 ft.
Target Formation(s): Haskell		Angle & Course of Deviation (Drilling):		Anticipated Total Depth TVD: 2300' TMD:	
Surface Owner of Water Purveyor with a Water Supply within 1,000 ft.		Approximate Course and Distance to Water Supply		Owner, Lessee, or Operator of Workable Coal Seam	
Tanner		N 18° 56' 53" W 1105.75'			

Plug Copy From DEP / Benson old hole #104

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5500-FM-OG0005 Rev. 1/2010



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS MANAGEMENT PROGRAM

DEP USE ONLY	
Auth #	APS #
Site # 734414	Primary Facility #
eFACTS Client #	Sub fac #

Notice of Intention by Well Operator to Plug a Well

<input checked="" type="checkbox"/> Well Operator <input type="checkbox"/> Coal Operator		DEP ID# 278814	Well API # (Permit / Reg) 083-16110	Date Drilled (if known) N/A
Address Benson Energy, LLC 772 Chaplin Hill Rd. City Smethport, PA		Phone (814) 882-5060	Well Farm Name Benson	Well Serial # SA
<input type="checkbox"/> Agent (contractor) acting on behalf of the operator named above.		County McKean	Municipality	
Address		Phone	Attach well record if not previously submitted.	
City	State	Zip Code		

Coal Operator, Owner, and Lessee

Complete this section if applicable. Prior to abandoning any well in an area underlain by a workable coal seam, the well operator or owner shall notify the coal operator, lessee, or owner of the intention to plug and abandon the well, and shall submit a plat showing the location and affix the date and time at which the work of plugging will commence.

Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee	Coal <input type="checkbox"/> Operator <input type="checkbox"/> Owner <input type="checkbox"/> Lessee
Address	Address	Address
City, State, Zip	City, State, Zip	City, State, Zip
Phone	Phone	Phone
Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No	Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No	Notified? <input type="checkbox"/> Yes <input type="checkbox"/> No
This Party hereby waives the rights to be notified of the date and time before plugging work will begin, and to be present at the plugging of this well. Signature:	This Party hereby waives the rights to be notified of the date and time before plugging work will begin, and to be present at the plugging of this well. Signature:	This Party hereby waives the rights to be notified of the date and time before plugging work will begin, and to be present at the plugging of this well. Signature:

Scheduled Date and Time of Plugging Plugging is scheduled to begin on (date) 4/5/10 at (time) 11AM

Checklist and Additional Attached Information <input checked="" type="checkbox"/> Location Plat <input type="checkbox"/> Current Well Record <input type="checkbox"/> Available Well Record <input type="checkbox"/> Application for Approval of Alternate Method of Plugging <input checked="" type="checkbox"/> Other, describe: (Metadata Attached)	Signature of Applicant (Operator or Agent) Signature Date 4/5/10 Print or Type Signer's Name and Title Brice N. Benson / President
--	--

DEP USE ONLY

If this well has not been permitted or registered previously, DEP hereby assigns this permit / registration number to the well location described in this notice: API# 083-16110 Date: 5/12/10 Please refer to this number in all future correspondence.	Notice acknowledged by: DEP Rep: (Signature) (Print Name) Date: 5/12/10	Geologist: Date: 5/12/10
--	--	-----------------------------

DEP will fill in the information below and send a copy of this notice to the applicant and these DEP staff or offices.

DEP Oil and Gas Inspector	DEP Mine Inspector MID #	Rec'd in DEP Reg. Ofc. Plugging must begin within 30 days of
Name	Name	
Address	Address	
City, State, Zip	City, State, Zip	
Phone	Phone	

APPENDIX D

Benson #6 Well Log

For assistance in accessing this document, contact 833-940-MAILBOX@epa.gov

DENSITY MATRIX: 2.68 G/CC
 FLUID DENSITY: 1.0
 TRK 33 SOLO UNIT



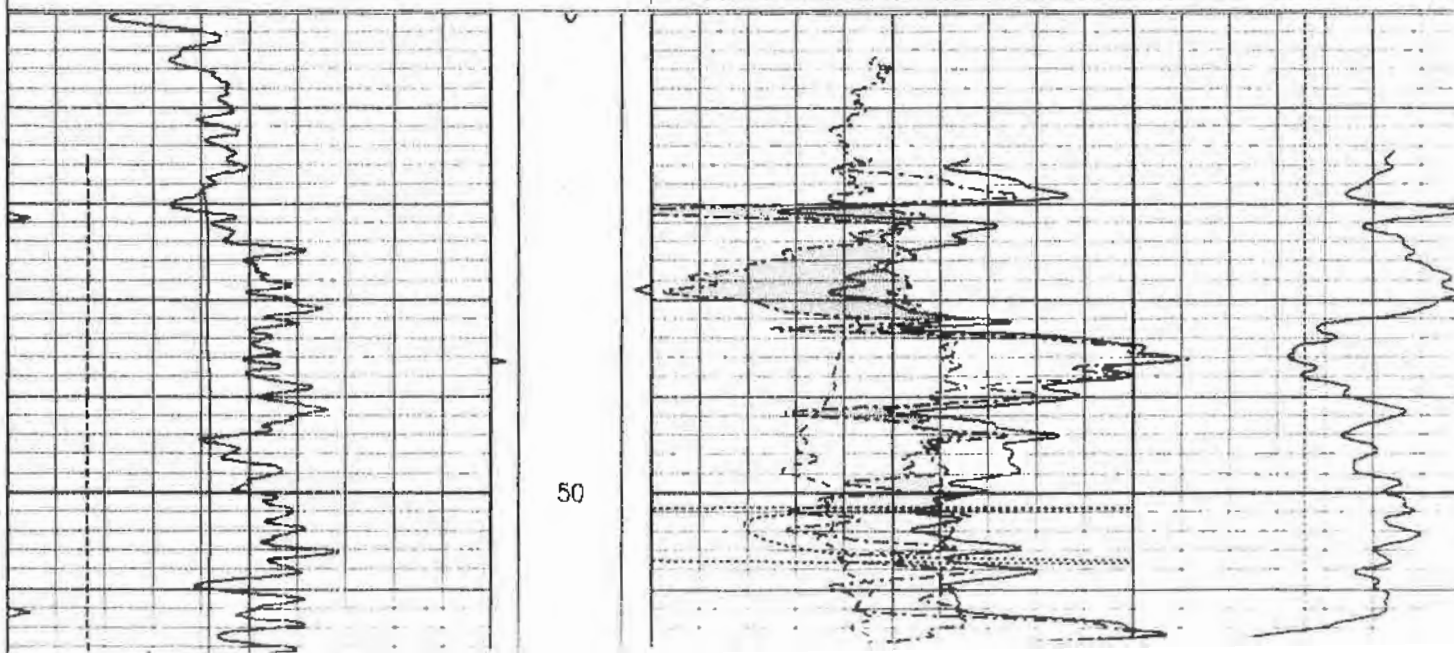
WELL SERVICES, INC.

MAIN PASS

Database File: benson.db
 Dataset Pathname: benson/6/run1/merge2
 Presentation Format: pengold5
 Dataset Creation: Thu Jan 20 13:36:56 2011
 Charted by: Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	200	Ann. Vol. =	30	Density Porosity (pu)	
5	Density Caliper (in)	15	10 (ft3)	0	Bulk Density (g/cc)	
0	Tension (lb)	1500	<Min Mrk.	60	Temperature (degF)	
	Bore Vol. Tick (ft3)			-3	Differential Temperature (degF)	
				30	Neutron (pu)	
0	Deep Res. (Ohm-m)	100	50	Cement (cps)		
100	Deep Res. (Ohm-m)	200				C
0	Medium Res. (Ohm-m)	100				-0.25
100	Medium Res. (Ohm-m)	200				

2 Matrix Density (g/cc)



50

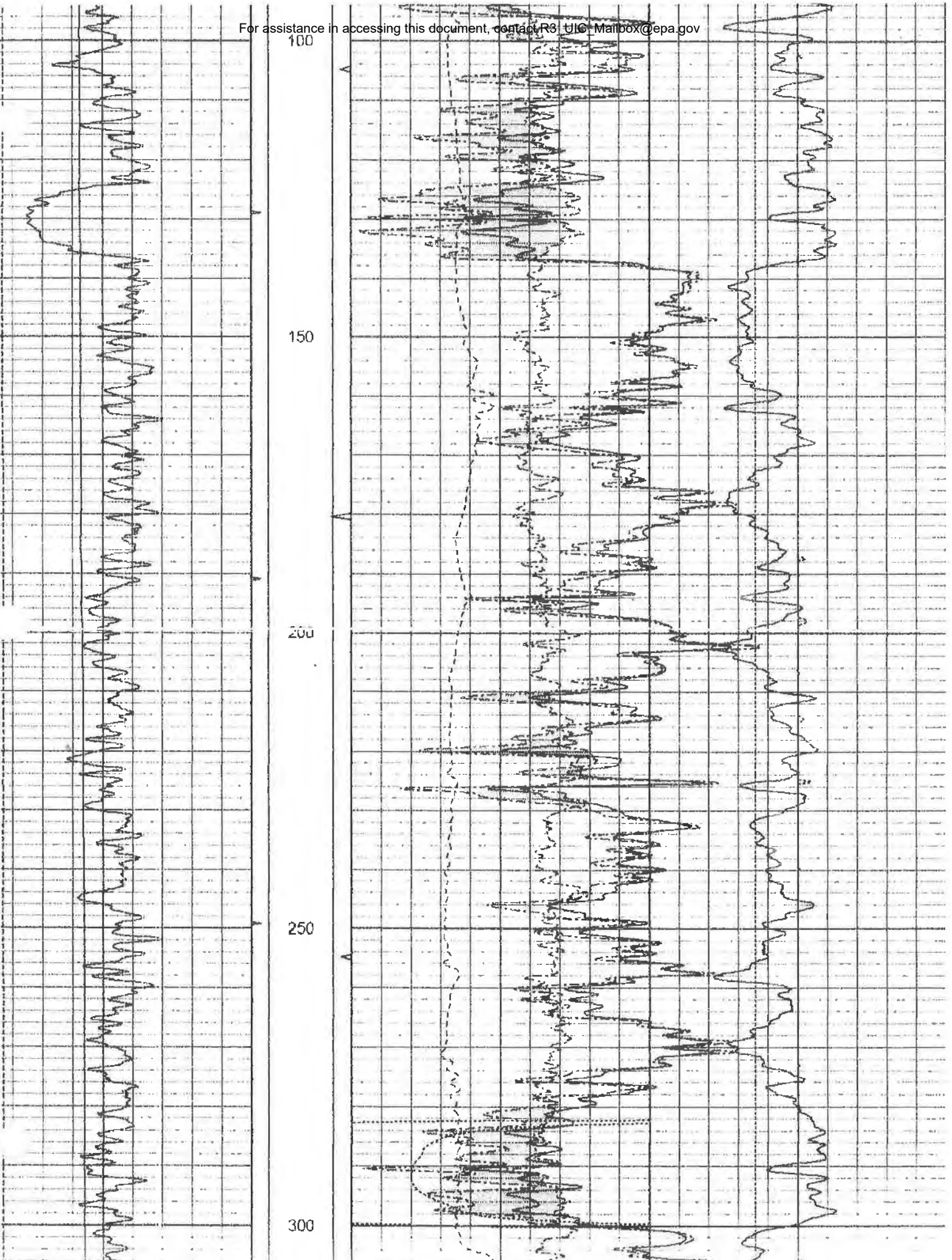
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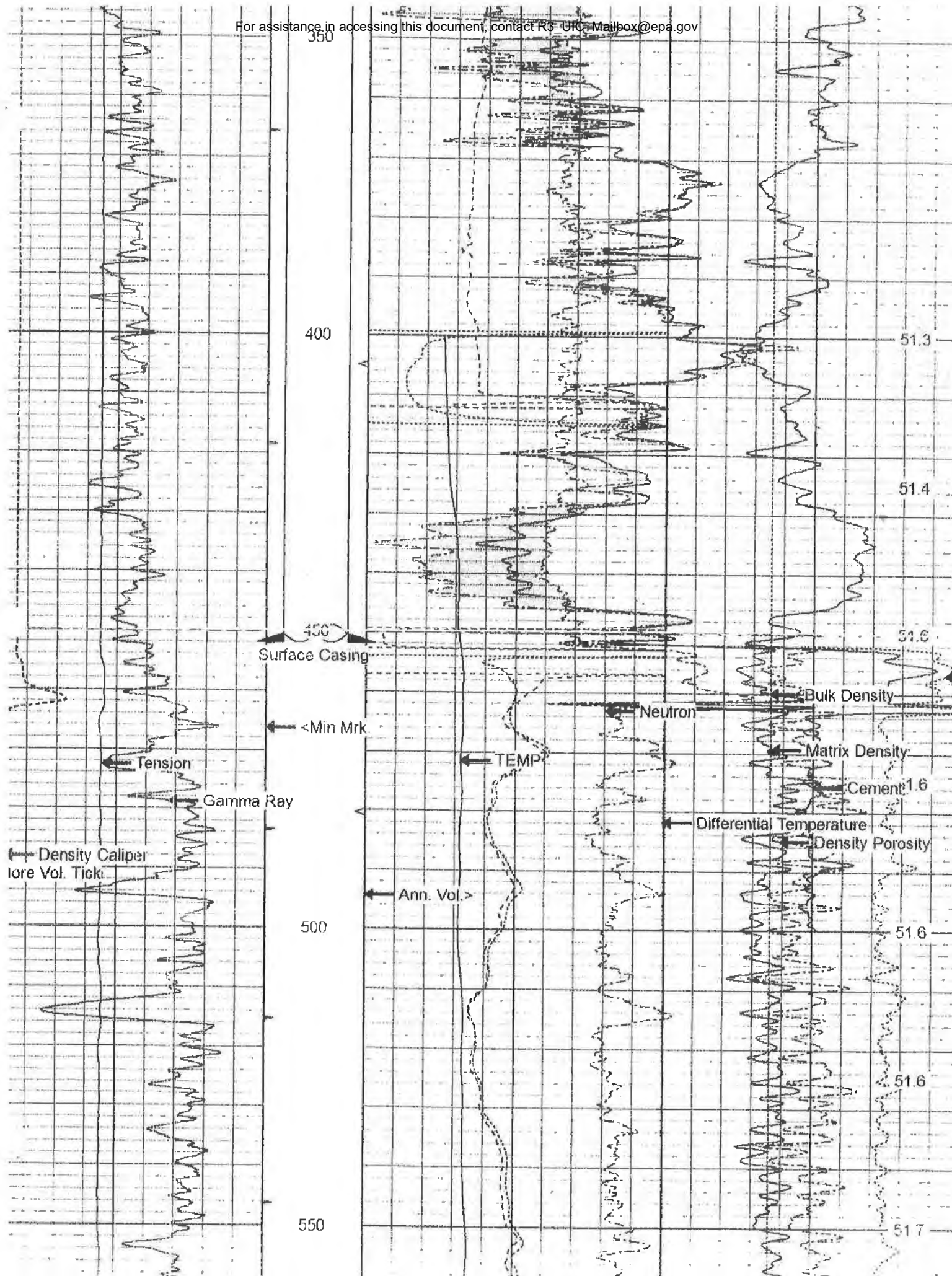
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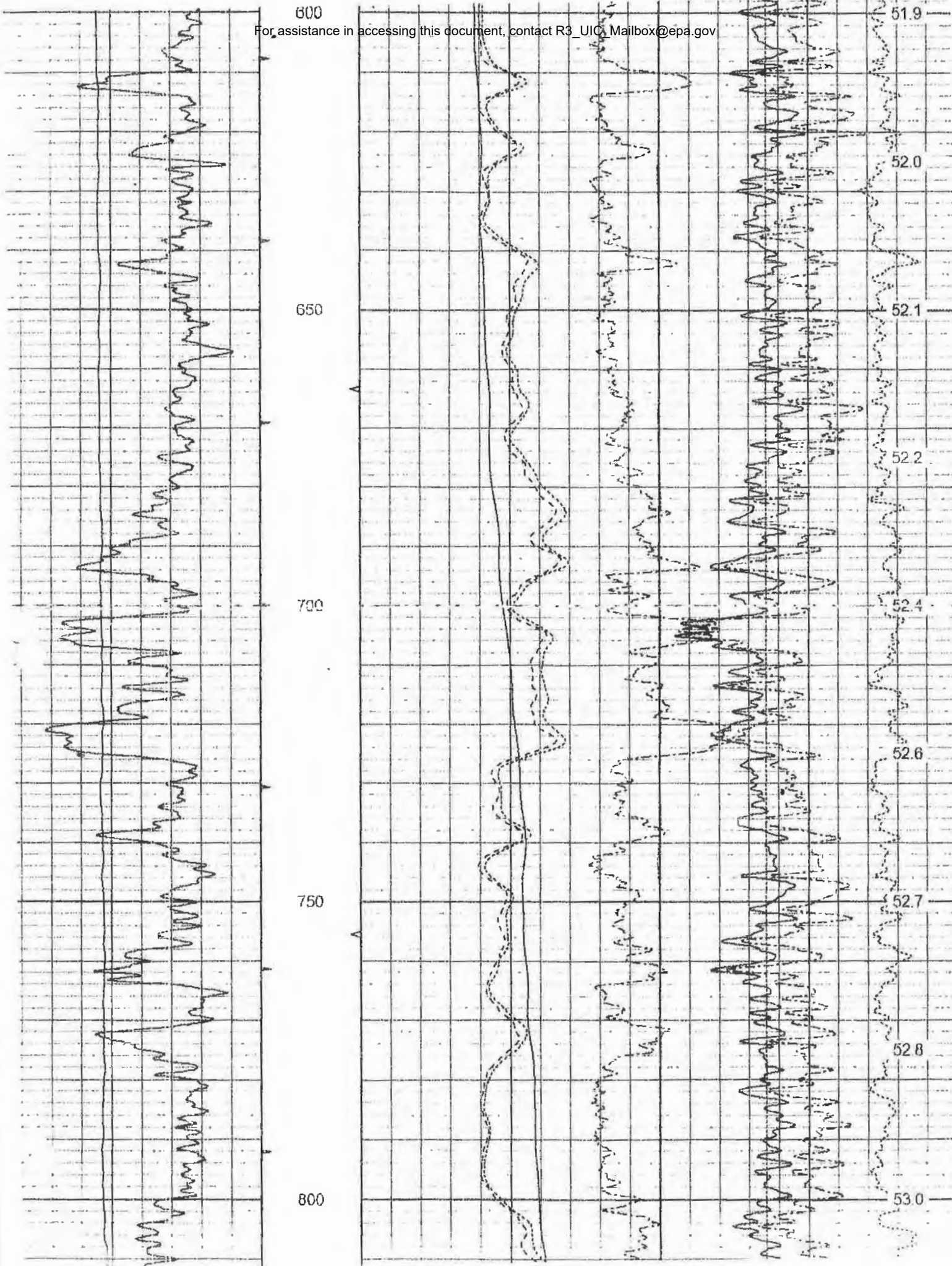
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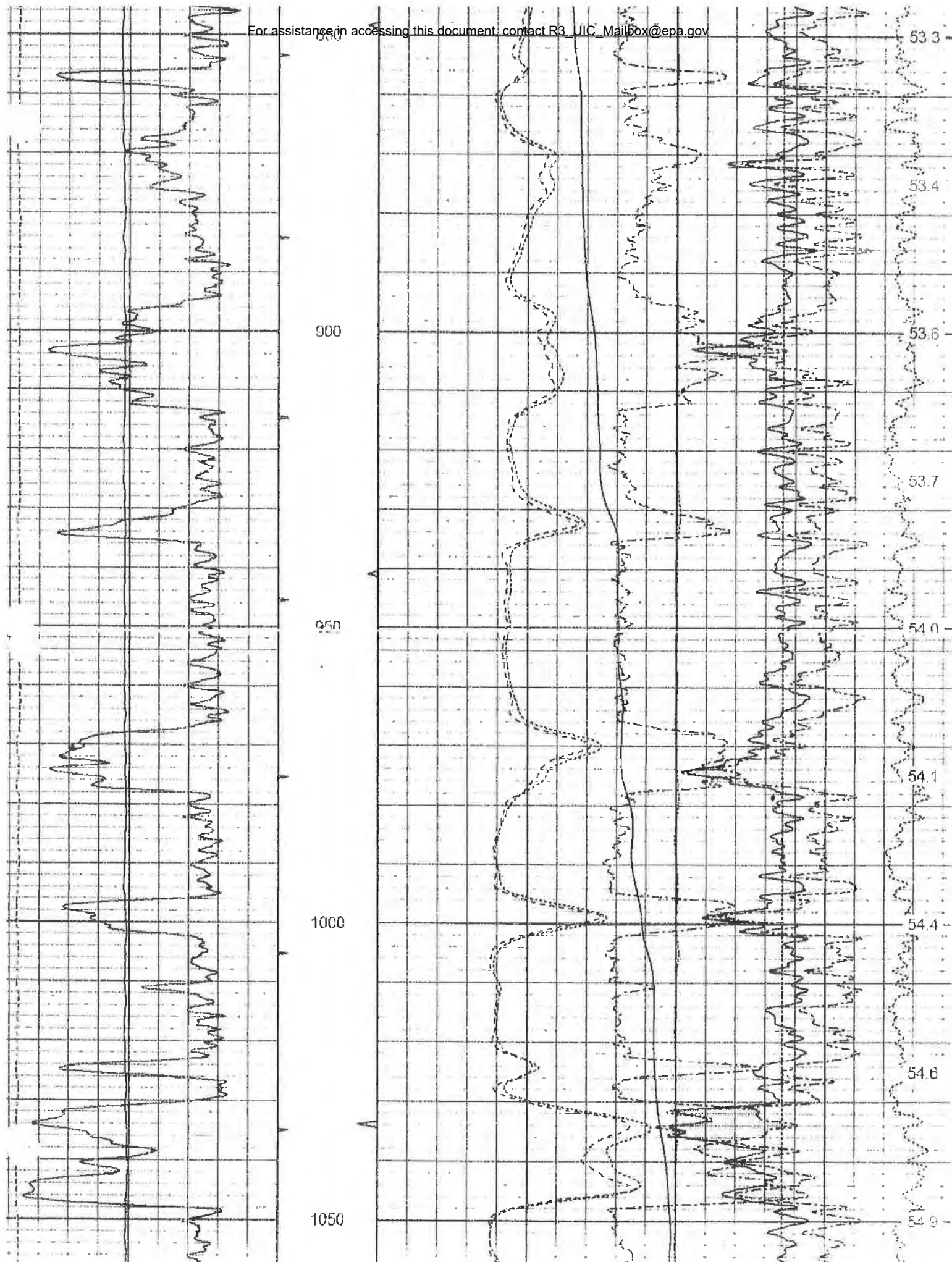
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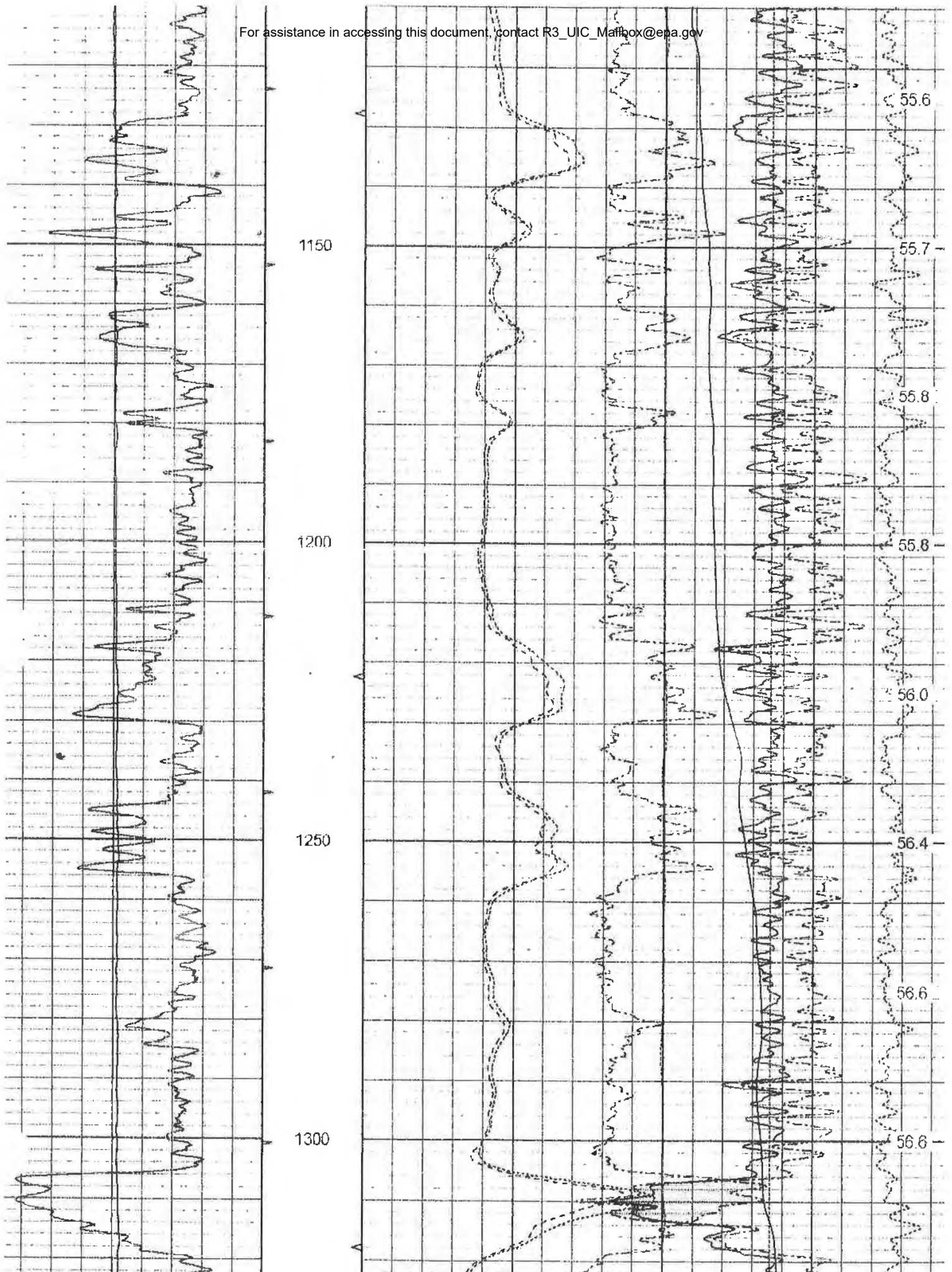
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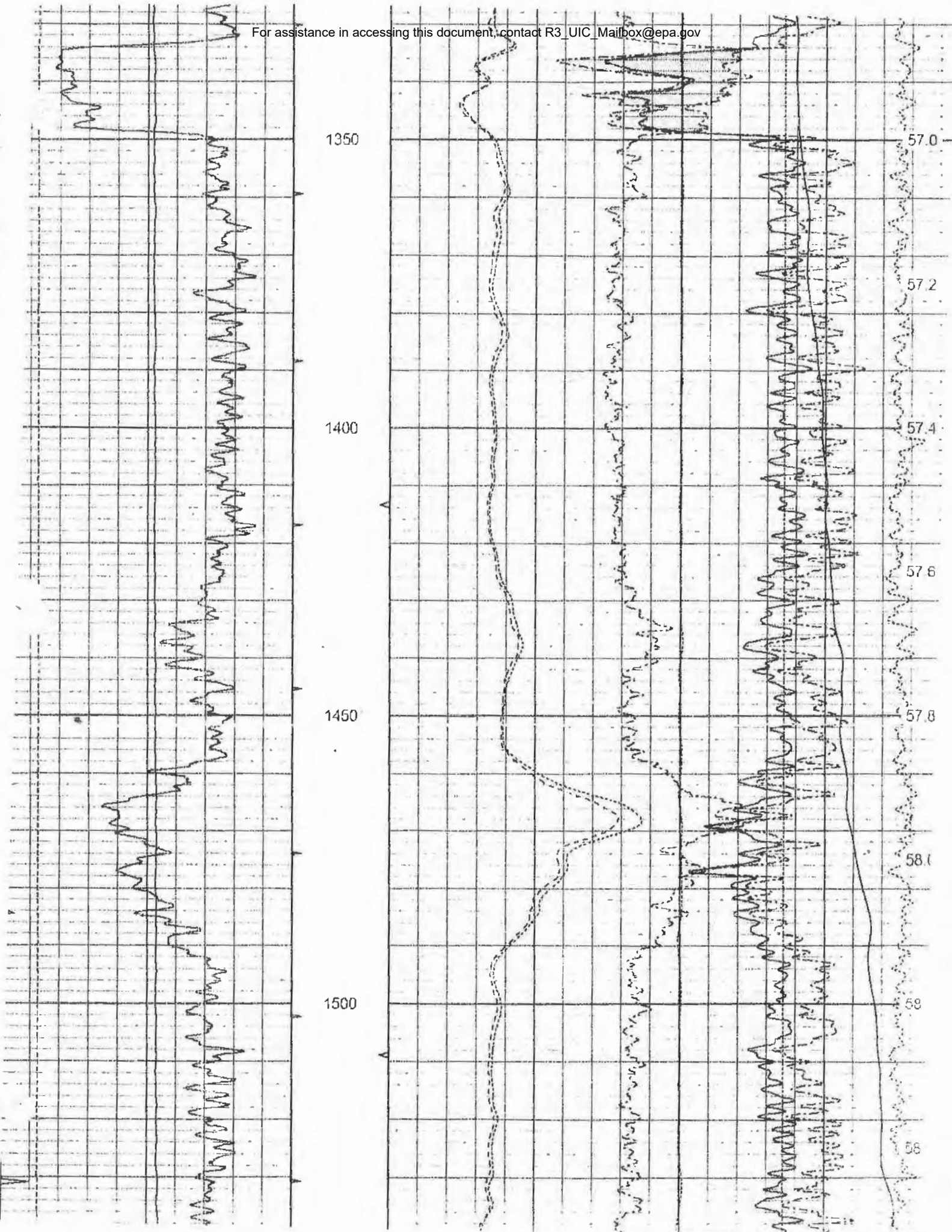


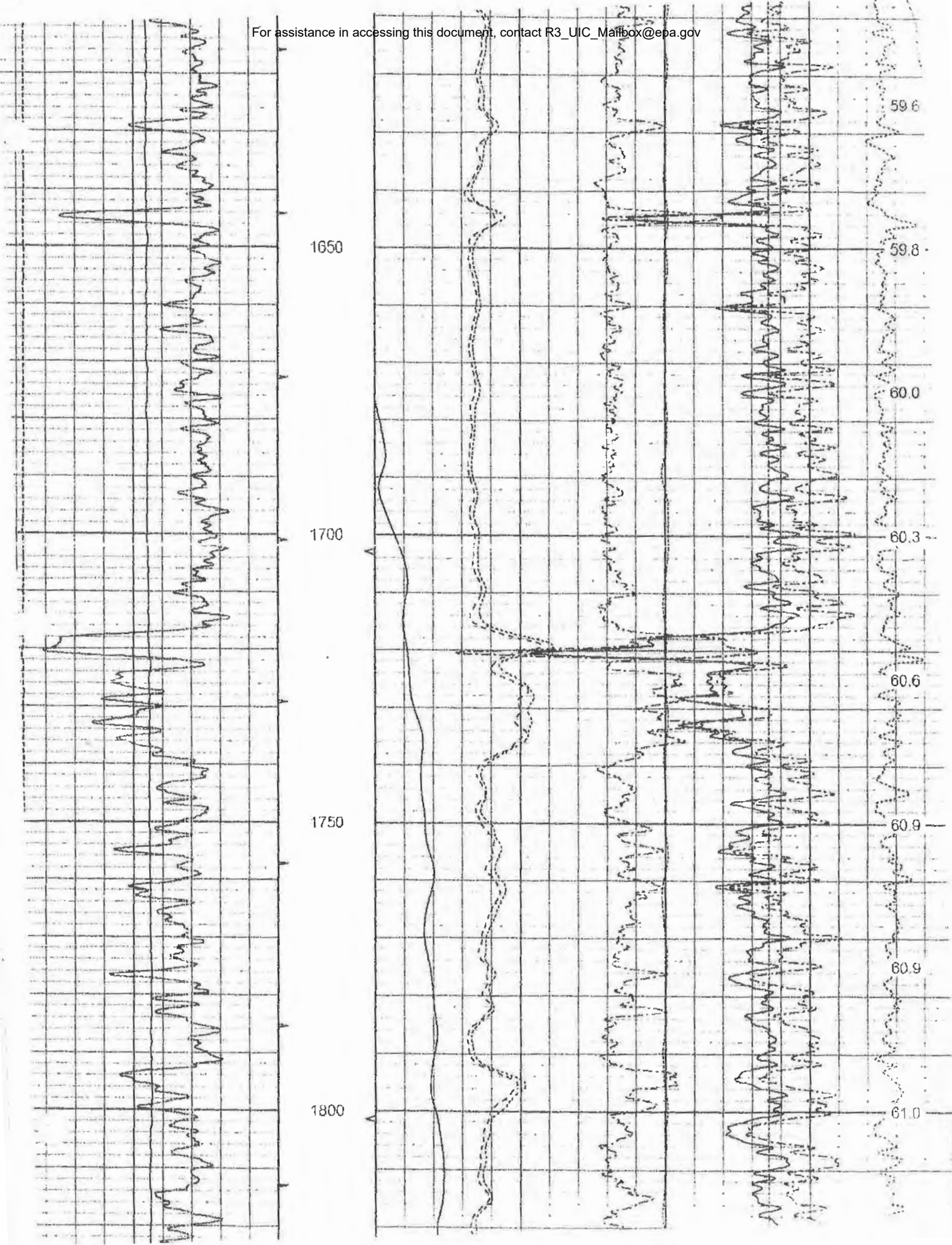


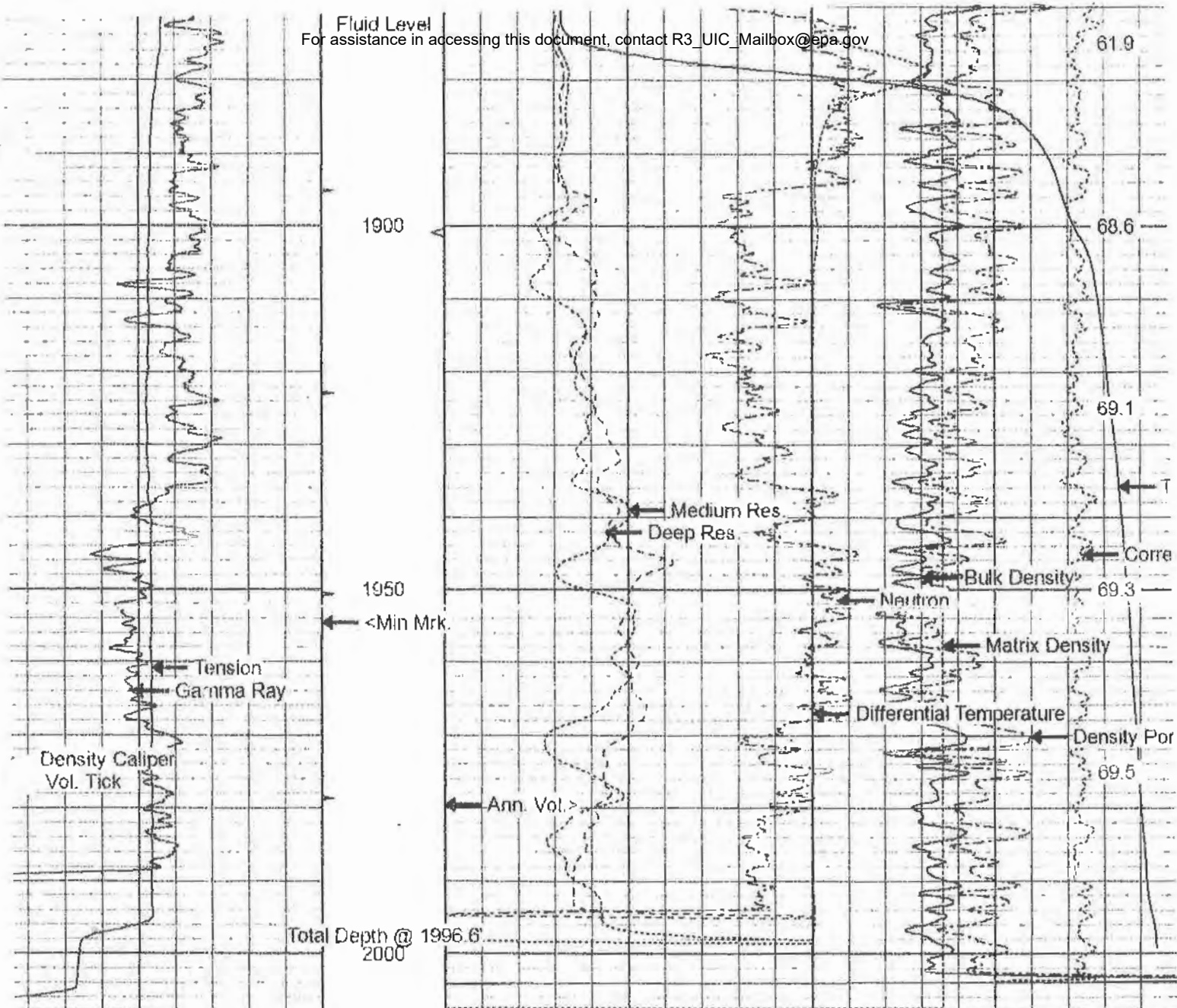












Gamma Ray (GAPI)	200	Ann. Vol.	30	Density Porosity (pu)	-10
Density Caliper (in)	15	10 (ft3)	0 2	Bulk Density (g/cc)	3
Tension (lb)	1500	<Min Mkr.	60	Temperature (degF)	70
Bore Vol. Tick (ft3)			-3	Differential Temperature (degF)	3
			30	Neutron (pu)	-10
			0	Deep Res. (Ohm-m)	100 50
			100	Deep Res. (Ohm-m)	200
			0	Medium Res. (Ohm-m)	100
			100	Medium Res. (Ohm-m)	200
				Cement (cps)	350
				Correction	-0.25 (g/cc) 0.25
				TEMP	(degF)
			2	Matrix Density (g/cc)	3

APPENDIX E

Lease Maps

APPENDIX F

Chemical Composition of Injection Fluid



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Microbac Laboratories, Inc.

Erie Division

1962 Wager Road • Erie, PA 16509 • Phone: 814-825-8533 • Fax: 814-825-9254

Keith Blanchard, Managing Director • E-mail: eriemm@microbac.com • <http://www.microbac.com>

CERTIFICATE OF ANALYSIS

Work Order Number:

13K1672

Henderson Resource Group LLC

Attn: Michael Henderson

121 Dewey Avenue

Hazel Hurst, PA 16733

Date Reported 12/17/2013

Date Received 11/12/2013

Account Number 000000008226



Purchase Order:

Subject: Holding Tank for Production Water

TEST	METHOD	RESULT	UNITS	PREPARED	ANALYZED	TECH	NOTES
01 Benson Energy							
Sample Date: 11/12/2013				Sample Time: 09:45			
No Sample Available				11/19/13 9:35	11/19/13 9:35	CMC	
Benson Energy							
Sample Grab Taken 11/12/13 @9:45, 9:47, 9:50, 9:51, 9:53							
Sample Date: 11/12/2013				Sample Time: 09:53			
Alkalinity As CaCO ₃	SM2320 B	16.8 mg CaCO ₃ /L		11/14/13 11:51	11/14/13 12:28	BJJ	
Chloride	EPA 300.0, Rv. 2.1	112000 mg/L		11/14/13 19:15	11/14/13 19:15	CP3	
pH	SM4500-H+ B	6.1 Units		11/13/13 15:00	11/13/13 15:00	DJS	H4
Total Dissolved Solids - TDS	SM2540 C (1997)	198000 mg/L		11/19/13 11:00	11/20/13 13:23	MWR	H
Total Suspended Solids - TSS	SM2540 D (1997)	76.0 mg/L		11/14/13 13:20	11/14/13 13:20	CMF	
Conductivity at 25 °C	EPA 120.1	280000 µMHOS/cm		11/13/13 15:00	11/13/13 15:00	CAP	
Specific Gravity	ASTM D1429	1.11		12/17/13 11:16	12/17/13 11:16	CAP	Y
Sulfate	EPA 300.0, Rv. 2.1	709 mg/L		11/13/13 19:58	11/13/13 19:58	CP3	
Barium	EPA 200.7, Rv. 4.4	0.275 mg/L		11/14/13 15:10	11/21/13 15:12	MWR	
Calcium	EPA 200.7, Rv. 4.4	18800 mg/L		11/14/13 10:25	11/25/13 10:26	MWR	
Hardness - Total as CaCO ₃	EPA 200.7, Rv. 4.4	57700 mg/L		11/14/13 10:25	11/25/13 10:26	MWR	
Iron	EPA 200.7, Rv. 4.4	47.6 mg/L		11/14/13 10:25	11/25/13 10:26	MWR	
Magnesium	EPA 200.7, Rv. 4.4	2590 mg/L		11/14/13 10:25	11/25/13 10:26	MWR	
Manganese	EPA 200.7, Rv. 4.4	19.1 mg/L		11/14/13 10:25	11/25/13 10:26	MWR	
Potassium	EPA 200.7, Rv. 4.4	134 mg/L		11/14/13 10:25	11/25/13 10:26	MWR	
Sodium	EPA 200.7, Rv. 4.4	40500 mg/L		11/14/13 10:25	11/25/13 10:26	MWR	
Strontium	EPA 200.7, Rv. 4.4	362 mg/L		11/14/13 10:44	12/4/13 10:46	MWR	

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