



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

June 06, 2014

WELL WORK PERMIT

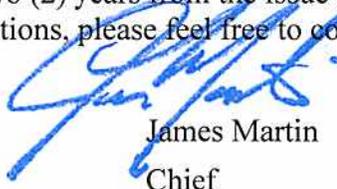
Vertical Well

This permit, API Well Number: 47-7901538, issued to CABOT OIL & GAS CORPORATION, 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: CABOT 50
Farm Name: AMHERST INDUSTRIES, INC.
API Well Number: 47-7901538
Permit Type: Vertical Well
Date Issued: 06/06/2014

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

1. 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 §22-6-20, 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.
2. Pursuant to 35 CSR 4-19.1.a, at the request of the surface owner all water wells or springs within 1000 feet of the proposed well that are actually utilized for human consumption, domestic animals or other general use shall be sampled and analyzed.
3. Pursuant to 35 CSR 4-19.1.c, if the operator is unable to sample and analyze any water well or spring with one thousand (1,000) feet of the permitted well location, the Office of Oil and Gas requires the operator to sample, at a minimum, one water well or spring located between one thousand (1,000) feet and two thousand (2,000) feet of the permitted well location.
4. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
5. During the surface casing and cementing process, in the event cement does not return to the surface, or any other casing string that is permitted to circulate cement to the surface and does not return to the surface, the oil and gas inspector shall be notified within twenty-four (24) hours
6. Well work activities shall not constitute a hazard to the safety of persons.



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street, SE Charleston, WV 25304
(304)926-0499, Ext 1656

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

May 15, 2014

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-079-01538

COMPANY: Cabot Oil & Gas Corporation

FARM: Amherst Industries - Cabot #50

COUNTY Putnam DISTRICT: Pocatalico QUAD: Bancroft

The application for the above company is **approved to drill to Rogersville Shale formation.**

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners; NA
2. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells, well name, and the name and address of the operator; none
3. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or **unit boundary** and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

Cindy Raines
Executive Assistant

WW - 2B
(Rev. 8/10)

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

1) Well Operator: Cabot Oil & Gas Corporation 08145 079 Putnam Pocatalico Bancroft
Operator ID County District Quadrangle

3 230

2) Operator's Well Number: Cabot #50 3) Elevation: 1,004.23'

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

5) Proposed Target Formation(s): Rogersville Shale Proposed Target Depth: 13,855'

6) Proposed Total Depth: 14,000' Feet Formation at Proposed Total Depth: Rogersville Shale

7) Approximate fresh water strata depths: 150 ft.

8) Approximate salt water depths: 1500 ft.

9) Approximate coal seam depths: 332 ft.

10) Approximate void depths,(coal, Karst, other): 332 ft.

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

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

The conductor, fresh water and surface strings are proposed to be drilled on air or water based mud. The intermediate and production strings are proposed to be drilled on air or salt/polymer based mud. Completions will be using break down acid followed by fresh water displacement. Total water less than 5,000 bbls. for drilling and completions.

13) **CASING AND TUBING PROGRAM**

GC 6/5/14
4/28/2014

TYPE	SPECIFICATIONS			FOOTAGE	INTERVALS	CEMENT
	Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu. Ft.)
Conductor	24"			100'	100'	
Fresh Water	18 5/8"	J55	87.5	400'	400'	352
Surface Surface	13 3/8"	J55	54.5	2,100'	2,100'	1,459
Intermediate	9 5/8"	N80	47	6,400'	6,400'	2,005
Production	4.5"	Q125	15.1	14,000'	14,000'	471
Tubing						
Liners	7"	T-95	26	10,300'	4,000'	507

Received

Packers: Kind: _____ APR 30 2014
 Sizes: _____
 Depths Set _____

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Cabot Oil & Gas Corporation OP Code 307249

Watershed (HUC 10) Guano Creek of Kanawha River Quadrangle Bancroft

Elevation 1,004.23 County Putnam District Pocatalico

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

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

If so, please describe anticipated pit waste: _____

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

Proposed Disposal Method For Treated Pit Wastes:

- _____ Land Application
- X _____ Underground Injection (UIC Permit Number 2D0791452)
- _____ Reuse (at API Number _____)
- _____ Off Site Disposal (Supply form WW-9 for disposal location)
- _____ Other (Explain _____)

Will closed loop system be used? Yes

Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Air and possibly salt system as backup

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

Additives to be used in drilling medium? See attached sheet

Received

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

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

APR 30 2014

-Landfill or offsite name/permit number? Tunnell Hill Reclamation, LLC/Ohio Environmental Protection Agency Permit #06-08443

Office of Oil and Gas

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

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

Company Official Signature [Signature]

Company Official (Typed Name) Steve Novakowski

Company Official Title Drilling Manager

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Constance C. Carden, Notary Public
McDonald Boro, Washington County
My Commission Expires Nov. 16, 2017
PENNSYLVANIA ASSOCIATION OF NOTARIES

Subscribed and sworn before me this 28th day of April, 2014

Constance C. Carden Notary Public

My commission expires 11/16/2017

Form WW-9

Operator's Well No. Cabot #50

Proposed Revegetation Treatment: Acres Disturbed 5.96 Prevegetation pH 6.5

Lime 2 Tons/acre or to correct to pH 6.5

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

Mulch Hay or Straw At 2 Tons/acre

Seed Mixtures

Seed Type	Area I	lbs/acre
Winter Rye		168
Winter Wheat		180
Annual Ryegrass		40
Yellow Clover - 5 Birdsfoot Trefoll -10		

Seed Type	Area II	lbs/acre
Tall Fescue		40
Birdsfoot Trefoll		10
Redtop		3
Yellow Clover - 5 Birdsfoot Trefoll		

See Construction plans for additional seed mixtures

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Janie Stevens*

Comments: _____

Received

APR 30 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

Title: *Inspector*

Date: *4/28/2014*

Field Reviewed? Yes No

WW-9

ADDITIVES TO BE USED IN DRILLING MEDIUM

BARAZAN D PLUS - Viscosifier
Barite (4.1 SG) – Weight Agent
Bicarbonate of Soda
Caustic Soda
DEXTRID LT - Starch
Lime
PAC-L - Filtration Control
Potassium Chloride
Evaporated Salt

Potential Additives:

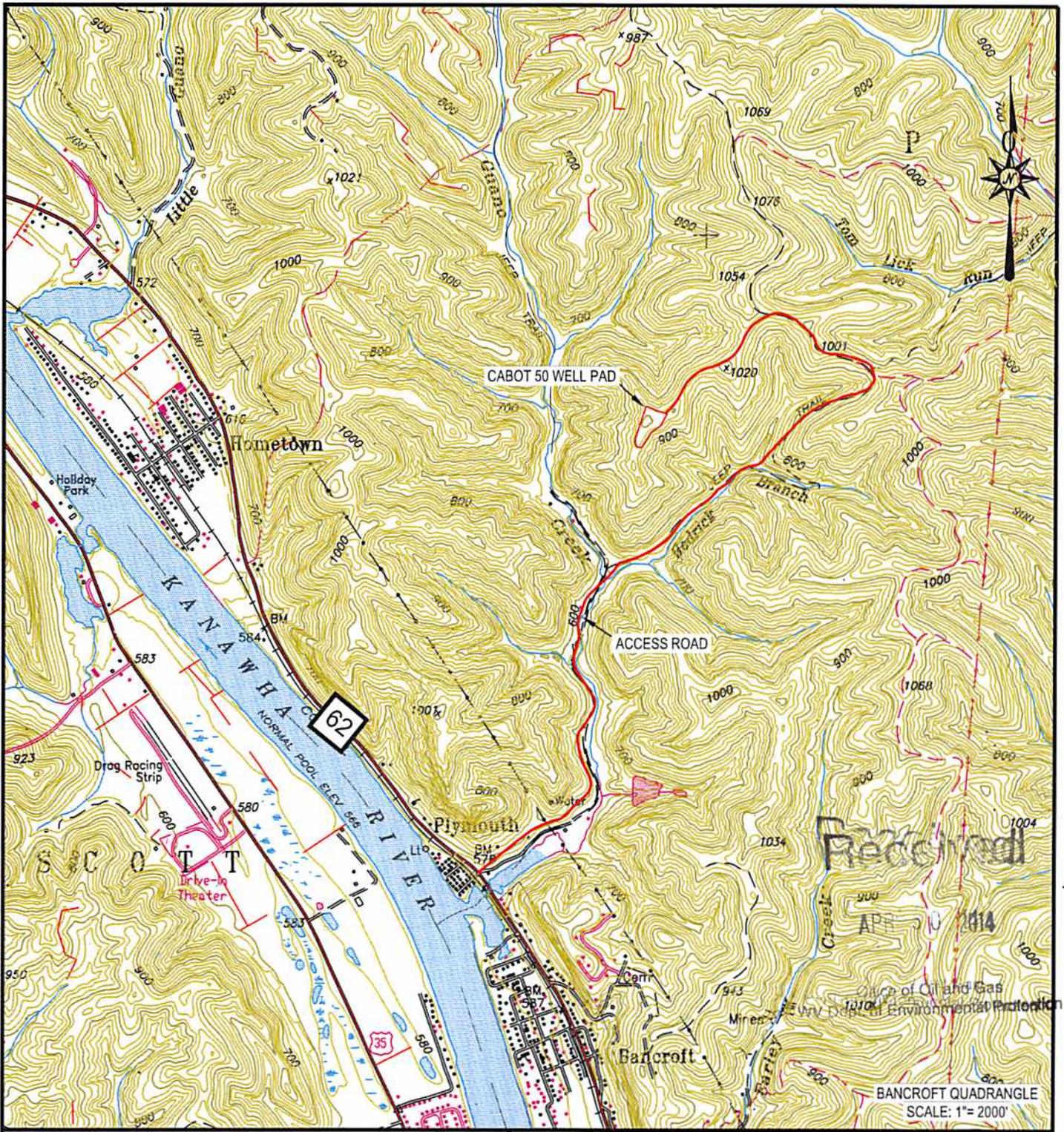
ALDACIDE G - Microbiocide
BARA-DEFOAM W300 – Defoamer
CLAYSEAL PLUS – Shale Stabilizer
NO-SULF – H2S Scavenger
OXYGON – Oxygen Scavenger
Soda Ash / Citric Acid
QUIK-THIN – Thinner

Received

APR 30 2014

Office of Oil and Gas
WV Dept. of Environmental Protection

Handwritten signature and date: [Signature] 4/28/2014



Cabot Oil & Gas Corporation

CABOT 50
LOCATION MAP

LOCATED ON THE WATERS OF GUANO CREEK
OF THE KANAWHA RIVER
UNION DISTRICT, PUTNAM COUNTY, WV
BANCROFT QUADRANGLE

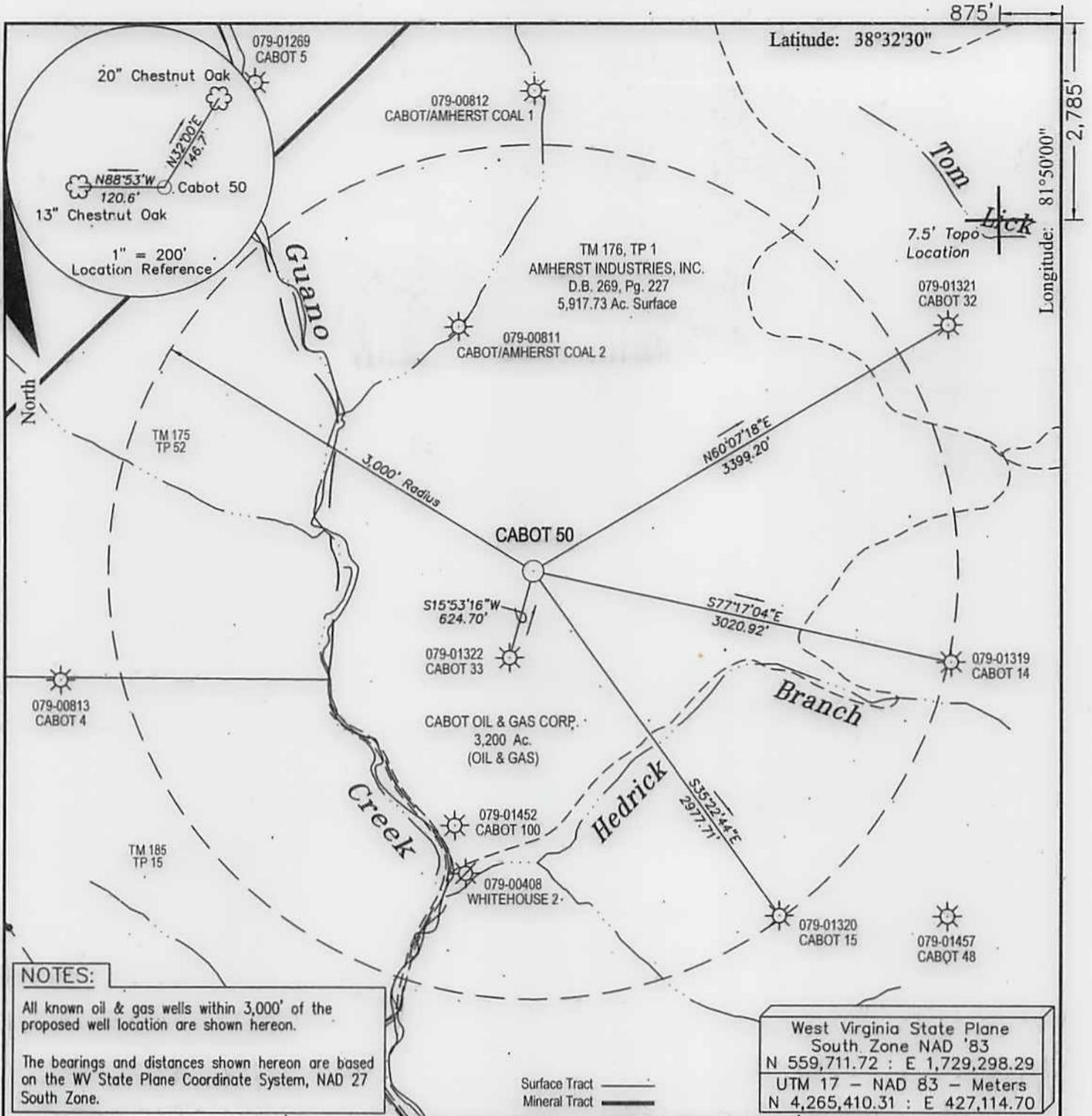


CUNNINGHAM

LAND SURVEYING & MAPPING SERVICES, LLC

- 5213 STEPHEN WAY •
- CROSS LANES, WEST VIRGINIA 25313 •
- VOICE (304) 561-4129 • FAX (304) 776-0703 •
- E-MAIL ADDRESS • DKCUNNINGHAM@SUDDENLINK.NET •

PROJECT NO. CABOT	DWG. NO. CABOT 50 TOPO
DATE: 04/22/14	SCALE: AS NOTED
CHK'D BY: D.K.C.	FILE: C:\PROJECT FOLDER\CABOT



NOTES:

All known oil & gas wells within 3,000' of the proposed well location are shown hereon.

The bearings and distances shown hereon are based on the WV State Plane Coordinate System, NAD 27 South Zone.

West Virginia State Plane
South Zone NAD '83
N 559,711.72 : E 1,729,298.29
UTM 17 - NAD 83 - Meters
N 4,265,410.31 : E 427,114.70

FILE #: _____

DRAWING #: Cabot 50 ww6

SCALE: 1" = 1000'

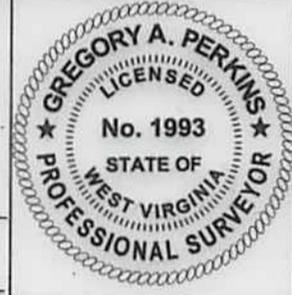
MINIMUM DEGREE OF ACCURACY: 1 : 12,729

PROVEN SOURCE OF ELEVATION: Global Positioning System (GPS)

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

Signed: _____

R.P.E.: _____ L.L.S.: 1993



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

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



DATE: April 21, 2014

OPERATOR'S WELL #: Cabot 50

API WELL #: 47 079 01538

STATE COUNTY PERMIT

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

WATERSHED: Guano Creek of Kanawha River ELEVATION: 1,004.23'

COUNTY/DISTRICT: Putnam / Pocatalico QUADRANGLE: Bancroft

SURFACE OWNER: Amherst Industries, Inc. ACREAGE: 5,917.73

OIL & GAS ROYALTY OWNER: Cabot Oil & Gas Corporation ACREAGE: 1,800

LEASE #: 47-9123M DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: Rogersville Shale ESTIMATED DEPTH: 14,000

WELL OPERATOR Cabot Oil & Gas Corp. DESIGNATED AGENT Whitney Johnson
Address Five Penn Center West, Suite 401 Address P.O. Box 450
City Pittsburgh State PA Zip Code 15276 City Glasgow State WV Zip Code 25086

OK SH 9/21/14