11/16/2018

west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Tuesday, November 13, 2018
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ANTERO RESOURCES CORPORATION
1615 WYNKOOP STREET
DENVER, CO 80202

Re: Permit Modification Approval for RAY UNIT 1H
47-085-10346-00-00

Extend lateral length to 18400'

ANTERO RESOURCES CORPORATION

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number:	RAY UNIT 1H
Farm Name:	DAVID L. WEEKLEY REVOCABLE TRUST
U.S. WELL NUMBER:	47-085-10346-00-00
Horizontal 6A	New Drill
Date Modification Issued:	11/13/2018

Permit Modification API# 47-085-10346

WW-6B
(04/15)

API NO. 47- 085 - 10346 11/16/2018
OPERATOR WELL NO. Ray Unit 1H
Well Pad Name: Weekley Trust

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

1) Well Operator:	Antero Resources Corporal	494507062	085 - Ritchie	Clay	Pennsboro 7.5'
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: Ray Unit 1H Well Pad Name: Weekley Trust

3) Farm Name/Surface Owner: David L. Weekley Public Road Access: CR 74-2

4) Elevation, current ground: 1235' Elevation, proposed post-construction: _____

5) Well Type (a) Gas X Oil _____ Underground Storage _____
Other _____
(b)If Gas Shallow X Deep _____
Horizontal X

Michael Daff 8-16-18

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus Shale: 7000' TVD, Anticipated Thickness- 75 feet, Associated Pressure- 2800#

8) Proposed Total Vertical Depth: 7000' TVD

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 17300' MD

11) Proposed Horizontal Leg Length: 7553'

12) Approximate Fresh Water Strata Depths: 338', 375'

13) Method to Determine Fresh Water Depths: Offset well records. Depths have been adjusted according to surface elevations.

14) Approximate Saltwater Depths: None Identified

15) Approximate Coal Seam Depths: 887'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No X

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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18) **CASING AND TUBING PROGRAM**

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20"	New	H-40	94#	80	80	CTS, 77 Cu. Ft.
Fresh Water	13-3/8"	New	J-55	54.5#	425 *see # 19	425 *see # 19	CTS, 590 Cu. Ft.
Coal	9-5/8"	New	J-55	36#	2500	2500	CTS, 1018 Cu. Ft.
Intermediate							
Production	5-1/2"	New	P-110	23#	17300	17300	4350 Cu. Ft
Tubing	2-3/8"	New	N-80	4.7#			
Liners							

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20"	24"	0.438"	1530	50	Class A	~1.18
Fresh Water	13-3/8"	17-1/2"	0.38"	2730	1000	Class A	~1.18
Coal	9-5/8"	12-1/4"	0.352"	3520	1500	Class A	~1.18
Intermediate							
Production	5-1/2"	8-3/4" & 8-1/2"	0.415"	12,630	2500	Lead-H/POZ & Tail - H	H/POZ-1.44 & H-1.8
Tubing	2-3/8"	4.778"	0.19"	11,200			
Liners							

MDG
8-16-18

PACKERS

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

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19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill, perforate, fracture a new horizontal shallow well and complete Marcellus Shale.

*Antero will be air drilling the fresh water string which makes it difficult to determine when fresh water is encountered. Therefore, we have built in a buffer for the casing setting depth which helps to ensure that all fresh water zones are covered.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Antero plans to pump Slickwater into the Marcellus Shale formation in order to ready the well for production. The fluid will be comprised of approximately 99 percent water and sand, with less than 1 percent special-purpose additives as shown in the attached "List of Anticipated Additives Used for Fracturing or Stimulating Well."

Anticipated Max Pressure - 9300 lbs
Anticipated Max Rate - 80 bpm

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): Existing 32.87 acres

22) Area to be disturbed for well pad only, less access road (acres): Existing 8.15 acres

23) Describe centralizer placement for each casing string:

Conductor: no centralizers
Surface Casing: one centralizer 10' above the float shoe, one on the insert float collar and one every 4th joint spaced up the hole to surface.
Intermediate Casing: one centralizer above float joint, one centralizer 5' above float collar and one every 4th collar to surface.
Production Casing: one centralizer at shoe joint and one every 3 joints to top of cement in intermediate casing.

24) Describe all cement additives associated with each cement type:

Conductor: no additives, Class A cement.
Surface: Class A cement with 2-3% calcium chloride and 1/4 lb of flake
Intermediate: Class A cement with 1/4 lb of flake, 5 gallons of clay treat
Production: Lead cement- 50/50 Class H/Poz + 1.5% salt + 1% C-45 + 0.5% C-16a + 0.2% C-12 + 0.45% C-20 + 0.05% C-51
Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

Conductor: blowhole clean with air, run casing, 10 bbls fresh water.
Surface: blowhole clean with air, trip to conductor shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate pipe capacity + 40 bbls fresh water followed by 25 bbls bentonite mud, 10 bbls fresh water spacer.
Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

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Environmental Protection

*Note: Attach additional sheets as needed.

MAC
8-16-18

WW-6A1

11/16/2018

Operator's Well Number Ray Unit 1H Permit Modification API# 47-085-10346

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)

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

(1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;

(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Grantor, lessor, etc.	Grantee, lessee, etc.	Royalty	Book/Page
David L. Weekley Revocable Trust, Lease			
David L. Weekley Revocable Trust	**Antero Resources Corporation**	**1/8+**	**0295/0030**
Norman Fleming, et ux Lease			
Norman Fleming, et ux	**Antero Resources Corporation**	**1/8+**	**0306/0511**
Brian Keith Jones Lease (TM 3 P 4)			
Brian Keith Jones	**Antero Resources Corporation**	**1/8+**	**0303/0899**
Brian Keith Jones Lease (TM 3 P 3)			
Brian Keith Jones	**Antero Resources Corporation**	**1/8+**	**0303/0902**
Gary Michael Der, et ux Lease			
Gary Michael Der	**Antero Resources Corporation**	**1/8**	**0302/0788**
Oley J. Bishop, et ux Lease			
Oley J. Bishop, et ux	J&J Enterprises, Inc.	1/8	0168/0572
J&J Enterprises, Inc.	Eastern Pennsylvania Exploration Company	Assignment	0208/0132
Eastern Pennsylvania Exploration Company	Eastern American Energy Corp	Assignment	0218/0187
Eastern American Energy Corp	Energy Corporation of America	Merger	0006/0450
Energy Corporation of America	Antero Resources Appalachian Corporation	Assignment	0257/0377
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**
Raymond Cecil Darnell Lease			
Raymond Cecil Darnell	**Antero Resources Corporation**	**1/8+**	**0305/0292**
Joe Dom, Inc. Lease			
Joe Dom, Inc.	Gene Stalnaker, Inc.	1/8	0160/0672
Gene Stalnaker, Inc.	Angus Energy, Inc.	Assignment	0212/0137
Angus Energy, Inc.	Stalnaker Energy Corporation	Name Change	0002/0225
Stalnaker Energy Corporation	Antero Resources Appalachian Corporation	Assignment	0258/0084
Antero Resources Appalachian Corporation	**Antero Resources Corporation**	**Name Change**	**Exhibit 1**

***Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.**

****CONTINUED ON NEXT PAGE****

WW-6A1
(5/13)

Operator's Well No. Ray Unit 1H

INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
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Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
Richard Hall Barnard Lease	Richard Hall Barnard	Antero Resources Corporation	1/8+	0442/0067

*Partial Assignments to Antero Resources Corporation include 100% rights to extract, produce and market the oil and gas from the Marcellus and any other formations completed with this well.

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

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

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

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

Well Operator: Antero Resources Corporation
By: Maria Henry
Its: VP of Geology

11/16/2018

FORM WW-6A1
EXHIBIT 1

FILED

JUN 10 2013

IN THE OFFICE OF SECRETARY OF STATE

Natalie E. Tennant
Secretary of State
1900 Kanawha Blvd E
Bldg 1, Suite 157-K
Charleston, WV 25305

Penney Barker, Manager
Corporations Division
Tel: (304)558-8000
Fax: (304)558-8381
Website: www.wvsos.com
E-mail: business@wvsos.com

Office Hours: Monday – Friday
8:30 a.m. – 5:00 p.m. ET

FILE ONE ORIGINAL
(Two if you want a filed stamped copy returned to you)
FEE: $25.00

APPLICATION FOR AMENDED CERTIFICATE OF AUTHORITY

In accordance with the provisions of the West Virginia Code, the undersigned corporation hereby applies for an Amended Certificate of Authority and submits the following statement:

1. Name under which the corporation was authorized to transact business in WV: Antero Resources Appalachian Corporation

2. Date Certificate of Authority was issued in West Virginia: 6/25/2008

3. Corporate name has been changed to: Antero Resources Corporation
(Attach one Certified Copy of Name Change as filed in home State of incorporation.)

4. Name the corporation elects to use in WV: Antero Resources Corporation
(due to home state name not being available)

5. Other amendments:
(attach additional pages if necessary)

6. Name and phone number of contact person. (This is optional, however, if there is a problem with the filing, listing a contact person and phone number may avoid having to return or reject the document.)

Alvyn A. Schopp — Contact Name
(303) 357-7310 — Phone Number

7. Signature information (See below *Important Legal Notice Regarding Signature):

Print Name of Signer: Alvyn A. Schopp — Title/Capacity: Authorized Person

Signature: [signature] — Date: June 10, 2013

*Important Legal Notice Regarding Signature: Per West Virginia Code §31D-1-120, Penalty for signing false document. Any person who signs a document he or she knows is false in any material respect and knows that the document is to be delivered to the secretary of state for filing is guilty of a misdemeanor and, upon conviction thereof, shall be fined not more than one thousand dollars or confined in the county or regional jail not more than one year, or both.

Form CF-1 — Issued by the Office of the Secretary of State — Revised 4/13

WV/01 - 06/6/2013 Website Master Edition

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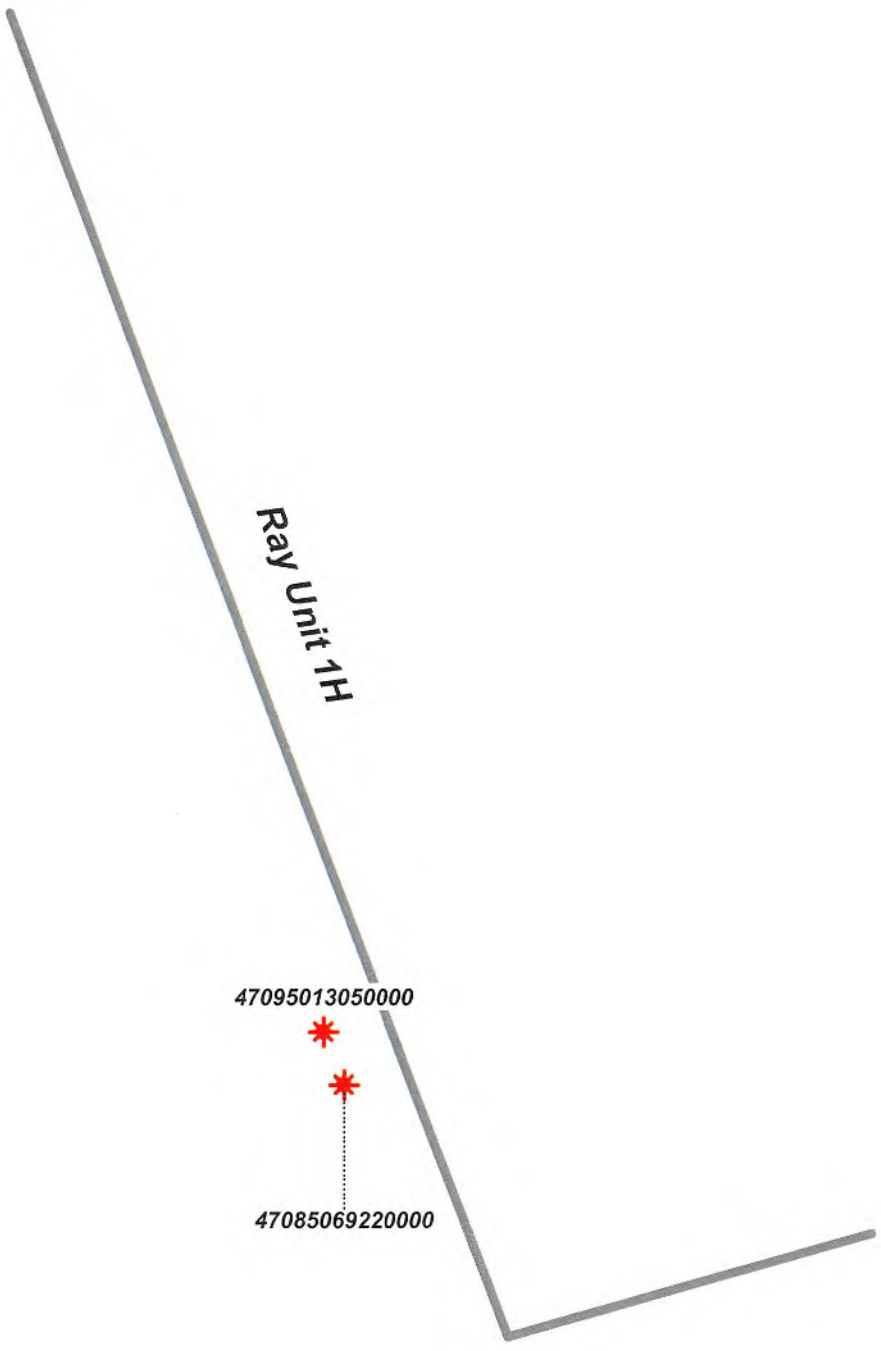
WV Department of
Environmental Protection

11/16/2018

RAY UNIT 1H (WEEKLEY TRUST PAD) - AREA OF REVIEW 35-8-5.11 PAGE 1

Permit Modification API# 47-085-10346



AOR

0 1,000
FEET

WELL SYMBOLS
Gas Well

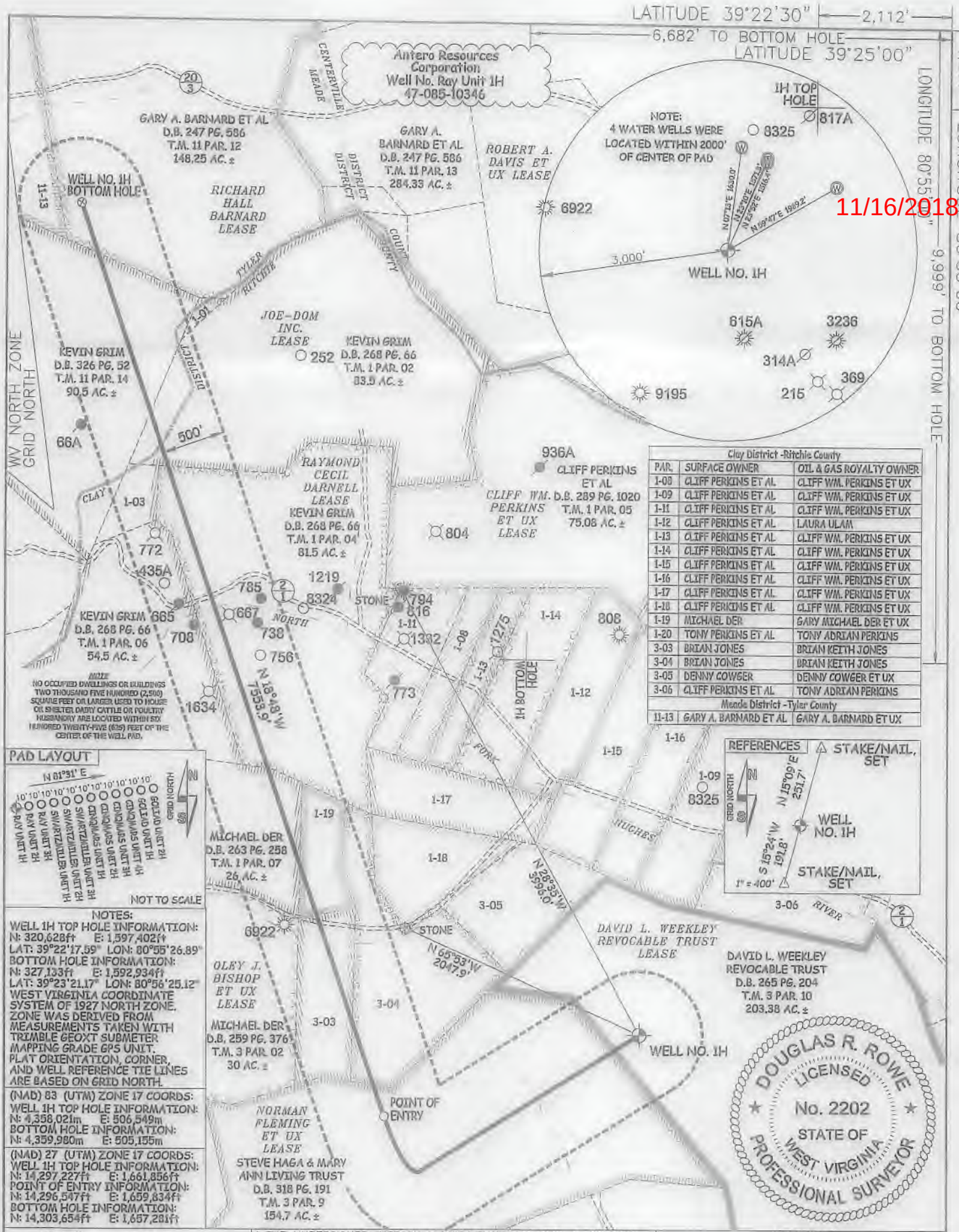
January 22, 2018

PETRA 1/22/2018 4:55:17 PM

RAY UNIT 1H (WEEKLEY TRUST PAD) - AREA OF REVIEW 35-8-5.11 PAGE 2

Permit Modification API# 47-085-10346

UWI (APINum)	Well Name	Well Number	Operator	Hist Oper	TD	Perforated Interval (shallowest, deepest)	Perforated Formations	Producible Formation(s) not perf'd
47085069220000	BISHOP OLEY J ETAL	JK-912	ALLIANCE PETR CORP	J & J ENTERPRISES	5995	4529-5757	Weir, Riley, Benson, Rhinestreet	Greenbrier, Bradford
47095013050000	GREGG MILDRED	1	SCHULTZ RUN GAS	COASTAL CORP THE	5016	1903-4756	Greenbrier, Bradford, Riley, Benson	Weir



JOB # 17-043WA
DRAWING # RAY1HR1
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

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 RULES ISSUED AND PERSCRIBED BY THE DEPTARTMENT OF ENVIRONMENTAL PROTECTION.

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

WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415

LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Existing Fence
Found monument, as noted

DOUGLAS R. ROWE P.S. 2202
DATE 07/30/18
OPERATOR'S WELL# RAY UNIT #1H

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,235' AS BUILT WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE PENNSBORO 7.5' - TH MIDDLEBOURNE 7.5' - BH DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER DAVID L. WEEKLEY REVOCABLE TRUST ACREAGE 203.38 ACRES +/-
OIL & GAS ROYALTY OWNER DAVID L. WEEKLEY REVOCABLE TRUST; NORMAN FLEMING ET UX; LEASE ACREAGE 229 AC±; 126.5 AC±;
BRIAN KEITH JONES; BRIAN KEITH JONES; GARY MICHAEL DER ET UX; JOE-DOM INC.; 31 AC±; 14 AC±; 10 AC±; 380 AC±;
RAYMOND CECIL DARNELL; RICHARD HALL BARNARD 81.5 AC±; 148.252 AC±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER X REDRILL ___ FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) MOD-BHL PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,000' TVD 17,300' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
DENVER, CO 80202 CHARLESTON, WV 25313

47 - 085 - 10346
STATE COUNTY PERMIT

COUNTY NAME PERMIT

FORM WW-6

WW-6B
(04/15)

Permit Modification API# 47-085-10346
11/16/2018

API NO. 47- 085 - 10346
OPERATOR WELL NO. Ray Unit 1H
Well Pad Name: Weekley Trust

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

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		Operator ID	County	District	Quadrangle

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5) Well Type (a) Gas X Oil Underground Storage
Other
(b)If Gas Shallow X Deep
Horizontal X

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
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15) Approximate Coal Seam Depths: 887'

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17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes No X

(a) If Yes, provide Mine Info: Name:
Depth:
Seam:
Owner:

VOID

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Permit Modification API# 47-085-10346
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Liners							

VOID

PACKERS

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

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VOID

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Production: Tail cement- Class H + 45 PPS Calcium Carbonate + 1.0% FL-160 + 0.2% ACGB-47 + 0.05% ACSA-51 + 0.2% ACR-20

25) Proposed borehole conditioning procedures:

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Intermediate: blowhole clean with air, trip to surface casing shoe, trip to bottom, blowhole clean with air, trip out, run casing, circulate 40 bbls brine water followed by 10 bbls fresh water and 25 bbls bentonite mud, pump 10 bbls fresh water.
Production: circulate with 14 lb/gal NaCl mud, trip to middle of lateral, circulate, pump high viscosity sweep, trip to base of curve, pump high viscosity sweep, trip to top of curve, trip to bottom, circulate, pump high viscosity sweep, trip out, run casing, circulate 10 bbls fresh water, pump 48 bbls barite pill, pump 10 bbls fresh water followed by 48 bbls mud flush and 10 bbls water.

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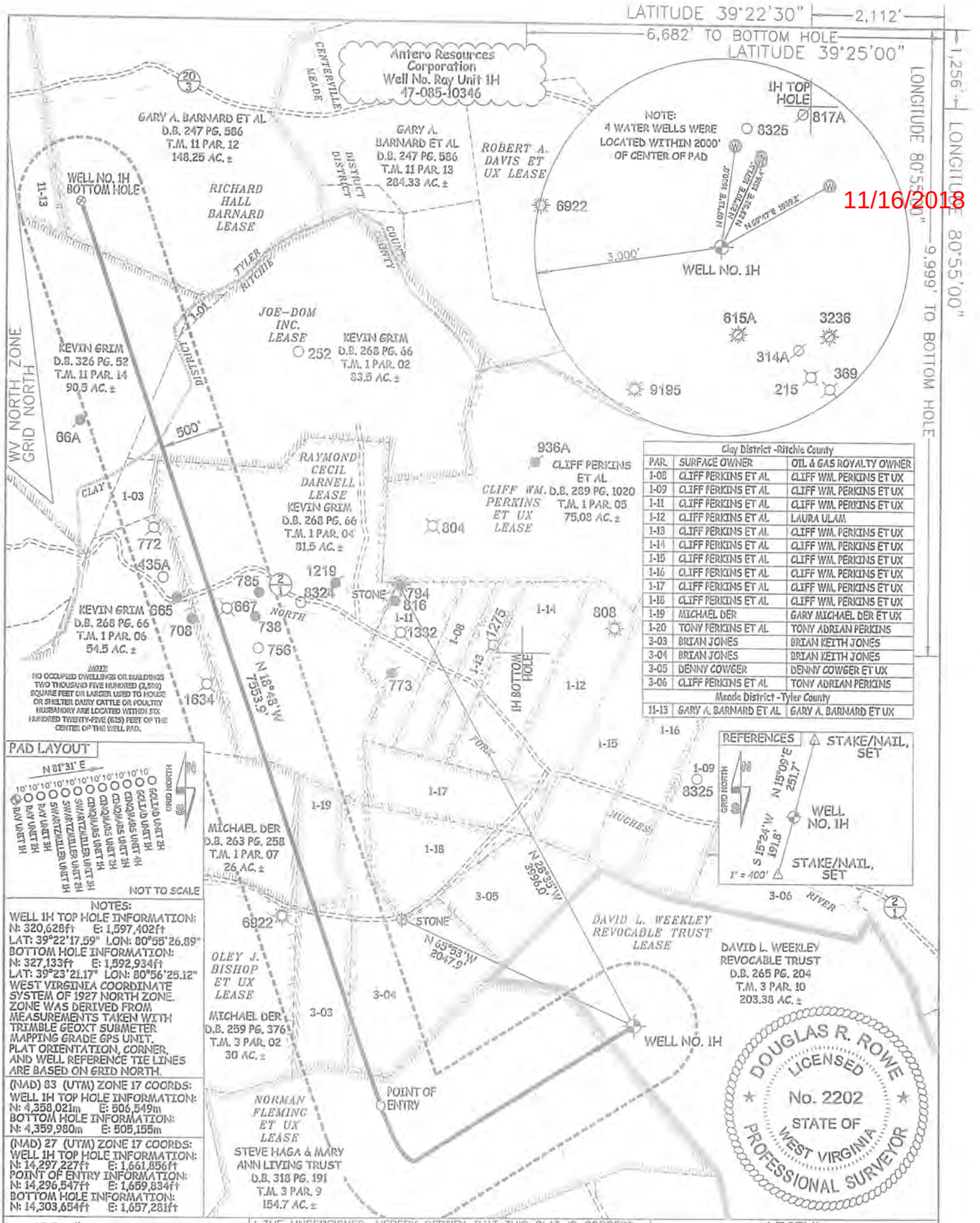
*Note: Attach additional sheets as needed.



JOB # 17-043WA
DRAWING # RAY1HR1
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

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 RULES ISSUED AND PERSCRIBED BY THE DEPTARTMENT OF ENVIRONMENTAL PROTECTION.

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

WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415

LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Existing Fence
Found monument, as noted

DOUGLAS R. ROWE P.S. 2202
DATE 07/30/18
OPERATOR'S WELL# RAY UNIT #1H

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,235' AS BUILT WATERSHED NORTH FORK HUGHES RIVER
QUADRANGLE PENNSBORO 7.5' - TH MIDDLEBOURNE 7.5' - BH DISTRICT CLAY COUNTY RITCHIE
SURFACE OWNER DAVID L. WEEKLEY REVOCABLE TRUST ACREAGE 203.38 ACRES +/-
OIL & GAS ROYALTY OWNER DAVID L. WEEKLEY REVOCABLE TRUST; NORMAN FLEMING ET UX; LEASE ACREAGE 229 AC±; 126.5 AC±;
BRIAN KEITH JONES; BRIAN KEITH JONES; GARY MICHAEL DER ET UX; JOE-DOM INC.; 31 AC±; 14 AC±; 10 AC±; 380 AC±;
RAYMOND CECIL DARNELL; RICHARD HALL BARNARD 81.5 AC±; 148.252 AC±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER X REDRILL ___ FRACTURE OR STIMULATE X
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY) MOD-BHL PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,000' TVD 17,300' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME PERMIT

FORM WW-6

11/16/2018

11/16/2018

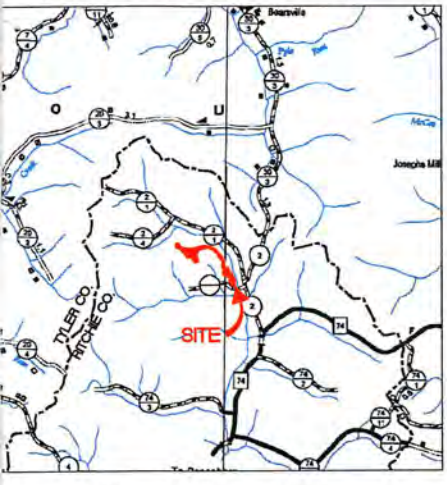
ATER CONTAINMENT PAD
& SEDIMENT
'MENT PLAN

Y, WEST VIRGINIA
RIVER WATERSHED

SBORO QUAD MAPS

00

WVDOH COUNTY ROAD MAP



5000 0 5000
SCALE: 1" = 5000'

MISS Utility of West Virginia
1-800-245-4848
West Virginia State Law
(Section XIV: Chapter 24-C)
Requires that you call two business days before you dig in the state of West Virginia.
IT'S THE LAW!!

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AUG 6 2018
WV Department of
Environmental Protection

WEST VIRGINIA STATE PLANE COORDINATE SYSTEM
NORTH ZONE, NAD83
ELEVATION BASED ON NAVD88
ESTABLISHED BY SURVEY GRADE GPS & OPUS
POST-PROCESSING

SHEET INDEX

WEEKLEY TRUST LIMITS OF DISTURBANCE AREA (AC)	
Total Site	
Impacts to David L. Weekley, Trustee of the David L. Weekley Revocable Trust UTA TM 3-10	
Access Road "A" (749')	2.72
Access Road "B" (2,486')	10.67
Well Pad	8.15
Water Containment Pad	3.70
Excess/Topsoil Material Stockpiles	7.63
Total Affected Area	**32.87**
Total Wooded Acres Disturbed	30.22

Proposed Well Name	WV North NAD 27	WV North NAD 83	UTM (METERS) Zone 17	NAD 83 Lat & Long
Ray Unit 1H	N 320627.84 E 1597402.38	N 320662.16 E 1565961.32	N 4358020.94 E 506549.28	LAT 39-22-17.8714 LONG -80-55-26.2802
Ray Unit 2H	N 320629.32 E 1597412.28	N 320663.64 E 1565971.21	N 4358021.44 E 506552.28	LAT 39-22-17.8875 LONG -80-55-26.1546
Ray Unit 3H	N 320630.79 E 1597422.17	N 320665.11 E 1565981.10	N 4358021.94 E 506555.29	LAT 39-22-17.9037 LONG -80-55-26.0290
Swartzmiller Unit 1H	N 320632.26 E 1597432.06	N 320666.59 E 1565990.99	N 4358022.44 E 506558.29	LAT 39-22-17.9198 LONG -80-55-25.9033
Swartzmiller Unit 2H	N 320633.74 E 1597441.95	N 320668.06 E 1566000.88	N 4358022.94 E 506561.30	LAT 39-22-17.9359 LONG -80-55-25.7777
Swartzmiller Unit 3H	N 320635.21 E 1597451.84	N 320669.54 E 1566010.77	N 4358023.44 E 506564.30	LAT 39-22-17.9520 LONG -80-55-25.6520
Cinqmars Unit 1H	N 320636.69 E 1597461.73	N 320671.01 E 1566020.65	N 4358023.94 E 506567.31	LAT 39-22-17.9682 LONG -80-55-25.5264
Cinqmars Unit 2H	N 320638.16 E 1597471.62	N 320672.49 E 1566030.55	N 4358024.44 E 506570.31	LAT 39-22-17.9843 LONG -80-55-25.4008
Cinqmars Unit 3H	N 320639.64 E 1597481.51	N 320673.96 E 1566040.44	N 4358024.94 E 506573.32	LAT 39-22-18.0004 LONG -80-55-25.2751
Cinqmars Unit 4H	N 320641.11 E 1597491.40	N 320675.44 E 1566050.33	N 4358025.44 E 506576.33	LAT 39-22-18.0165 LONG -80-55-25.1495
Goliad Unit 1H	N 320642.59 E 1597501.29	N 320676.91 E 1566060.23	N 4358025.94 E 506579.33	LAT 39-22-18.0327 LONG -80-55-25.0239
Goliad Unit 2H	N 320644.06 E 1597511.18	N 320678.38 E 1566070.12	N 4358026.44 E 506582.34	LAT 39-22-18.0488 LONG -80-55-24.8982
Well Pad Elevation	1,235.0			

NOTES:

1. ALL BMP'S MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL ALL AREAS WITHIN THE LIMIT OF DISTURBANCE ARE COMPLETE AND PERMANENTLY STABILIZED. MAINTENANCE MUST INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROLS AFTER EACH RUNOFF EVENT IN EXCESS OF 0.5" AND ON A BIWEEKLY BASIS.
2. THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL STABILIZATION MUST BE INITIATED NO LATER THAN 7 DAYS AFTER REACHING FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT THE SURFACE HAS BEEN STABILIZED BY HARD COVER SUCH AS PAVEMENT OR BUILDINGS. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.
3. ALL PERMANENT SEDIMENT CONTROL MEASURES CAN BE REMOVED AFTER THE SITE IS PERMANENTLY STABILIZED AND APPROVAL IS RECEIVED FROM THE WVDEP.
4. ANY AREAS DISTURBED BY REMOVAL OF CONTROLS SHALL BE REPAIRED, STABILIZED, AND PERMANENTLY SEEDED.
5. THE AS-BUILT INFORMATION SHOWN HEREON REFLECTS FIELD DATA COLLECTED RELATING TO THE FINAL GRADING OF THE DISTURBED AREA AS OF MARCH 5, 2018. NAVITUS ENGINEERING IS NOT RESPONSIBLE FOR ANY CHANGES MADE TO THE SITE AFTER THE ABOVE MENTIONED DATES.
6. THE EXISTING CONTAINMENT BERM AROUND THE WELL PAD SHALL BE REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS
7. THE EXISTING EGRESSES TO THE WELL PAD SHALL HAVE THE MOUNTABLE BERMS REPAIRED AS NECESSARY TO ENSURE 100% CONTAINMENT OF ALL FLUIDS PRIOR TO DRILLING OPERATIONS.

NAVITUS
ENERGY ENGINEERING
Telephone: (888) 662-4185 | www.NavitusEng.com

REVISION	DATE

Antero RESOURCES

THIS DOCUMENT WAS PREPARED FOR: ANTERO RESOURCES CORPORATION

COVER SHEET

WEEKLEY TRUST

WELL PAD & WATER CONTAINMENT PAD
CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CITUS B. KIMP
REGISTERED
19578
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
03/05/2018

DATE: 03/05/2018
SCALE: AS SHOWN
SHEET 1 OF 9

11/16/2018

LEGEND

LEGEND

EX. INDEX CONTOUR & CONTOUR LABEL	PR. INDEX CONTOU
EX. INTERMEDIATE CONTOUR	PR. INTERMEDIATE
EX. PROPERTY LINE	PR. INTERMEDIATE
EX. TOP OF BERM	PR. INDEX ROAD C
EX. ROAD EDGE OF GRAVEL/DIRT	PR. INTERMEDIATE
EX. ROAD EDGE OF PAVEMENT	PR. PADS/STOCKPI
EX. ROAD CENTERLINE	PERMITTED LIMITS
EX. GUARDRAIL	MODIFICATION LIMI
EX. BRIDGE	PR. ROAD/IMPOUN
EX. DITCHLINE/DRAINAGE FEATURE	PR. ROAD CENTERI
EX. RIP-RAP	PR. GUARDRAIL
EX. CULVERT	PR. ROCK CONSTR
EX. TREELINE	PR. AIR BRIDGE
EX. BUILDING	PR. CULVERT
EX. MISCELLANEOUS FEATURE	PR. DITCH
EX. 100 YR FEMA FLOODPLAIN	PR. RIP-RAP TRAI
EX. DELINEATED STREAM	PR. OUTLET PROTI
EX. DELINEATED WETLAND/POND	PR. DIVERSION
100' WETLAND/STREAM BUFFER	PR. ROCK LEVEL S
STREAM/WETLAND DELINEATION STUDY AREA	PR. COMPOST FILT
EX. FENCELINE	PR. SUPER SILT F
EX. GATE	PR. WELL HEAD
EX. PERIMETER SAFETY FENCE	PR. PAD DEWATER
EX. ACCESS GATE WITH EMERGENCY LIFELINE	PR. TOP OF PAD
EX. WELL HEAD ON DESIGNED PAD	PR. 220' X 320' E
EX. GAS WELL	PR. SPOT SHOT
EX. PIPELINE	PR. PERIMETER Sa
EX. PIPELINE R/W	PR. ACCESS GATE
EX. PIPELINE METER	PR. PIPELINE
EX. PIPELINE VALVE	PR. PIPELINE R/W
EX. PIT	PR. OVERHEAD UT
EX. OVERHEAD UTILITY	PR. POWER POLE/
EX. POWER POLE/GUY WIRE	PR. OVERHEAD UT
EX. UNDERGROUND ELECTRIC	PR. WATERLINE
EX. UNDERGROUND TELEPHONE	BORING LOCATION
EX. UNDERGROUND FIBER OPTIC	X-SECTION/PROFI
EX. UTILITY R/W	X-SECTION/PROFI
EX. WATERLINE	X-SECTION/PROFI
EX. WATER WELL/EX. SPRING	X-SECTION/PROFI
EX. COMPOST SOCK	X-SECTION/PROFI
EX. SUPER SILT FENCE	X-SECTION/PROFI
EX. SILT FENCE	MATCHLINE
APPROX. LOCATION OF SLIDE AREA	EX. METER
APPROX. LOCATION OF BORROW/ SPOIL AREA	EX. TANK
PR. TOE BENCH	EX. COMBUSTOR
EX. APPROX. SURFACE & SUB-SURFACE ELECTRIC LINE AREA	EX. GPU
EX. APPROX. SURFACE & SUB-SURFACE DUMP LINE AREA	EX. SEPARATOR
EX. APPROX. SURFACE & SUB-SURFACE WELL LINE AREA	EX. VRT
EX. APPROX. SURFACE & SUB-SURFACE SALES LINE AREA	EX. KNOCK-OUT

11/16/2018

R (10' INTERVAL) & CONTOUR LABEL	1000
CONTOUR (2' INTERVAL)	
CONTOUR (1' INTERVAL)	
ONTOUR (10' INTERVAL) & CONTOUR LABEL	1000
ROAD CONTOUR (2' INTERVAL)	
E TOPO LIMITS	
OF DISTURBANCE	
S OF DISTURBANCE	
MENT EDGE OF GRAVEL	
INE	
CTION ENTRANCE	
	CLV #1
	DL #1
EZOIDAL DITCH	DL #1
CTION	OP #1
	DIV #1
PREADER	
R SOCK	CS #1 xx'
NCE	SSF #1 — SSF — SSF
NG SYSTEM	
ONTAINMENT BERM	
AD FOOTPRINT	
	1000
FETY FENCE	
WITH EMERGENCY LIFELINE	
LITY	OHU
GUY WIRE	
LITY R/W	
E GRID INDEX	
E GRID INTERMEDIATE	
E PROPOSED GRADE	
E EXISTING GRADE	
E WATER SURFACE	
E CULVERT	

	EX. STAIRS/CATWALK		
	EX. DEWATERING SYSTEM		
	EX. PIG LAUNCHER		
	EX. SECONDARY CONTAINMENT		
	EX. ABOVE-GND VAPOR LINE		
	EX. ESD ESD	EX. MAILBOX	
ESSEL	EX. CONTROL PT.	EX. MUSTER AREA	

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AUG 6 2018

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Antero Resources

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LEGEND

WEEKLEY TRUST

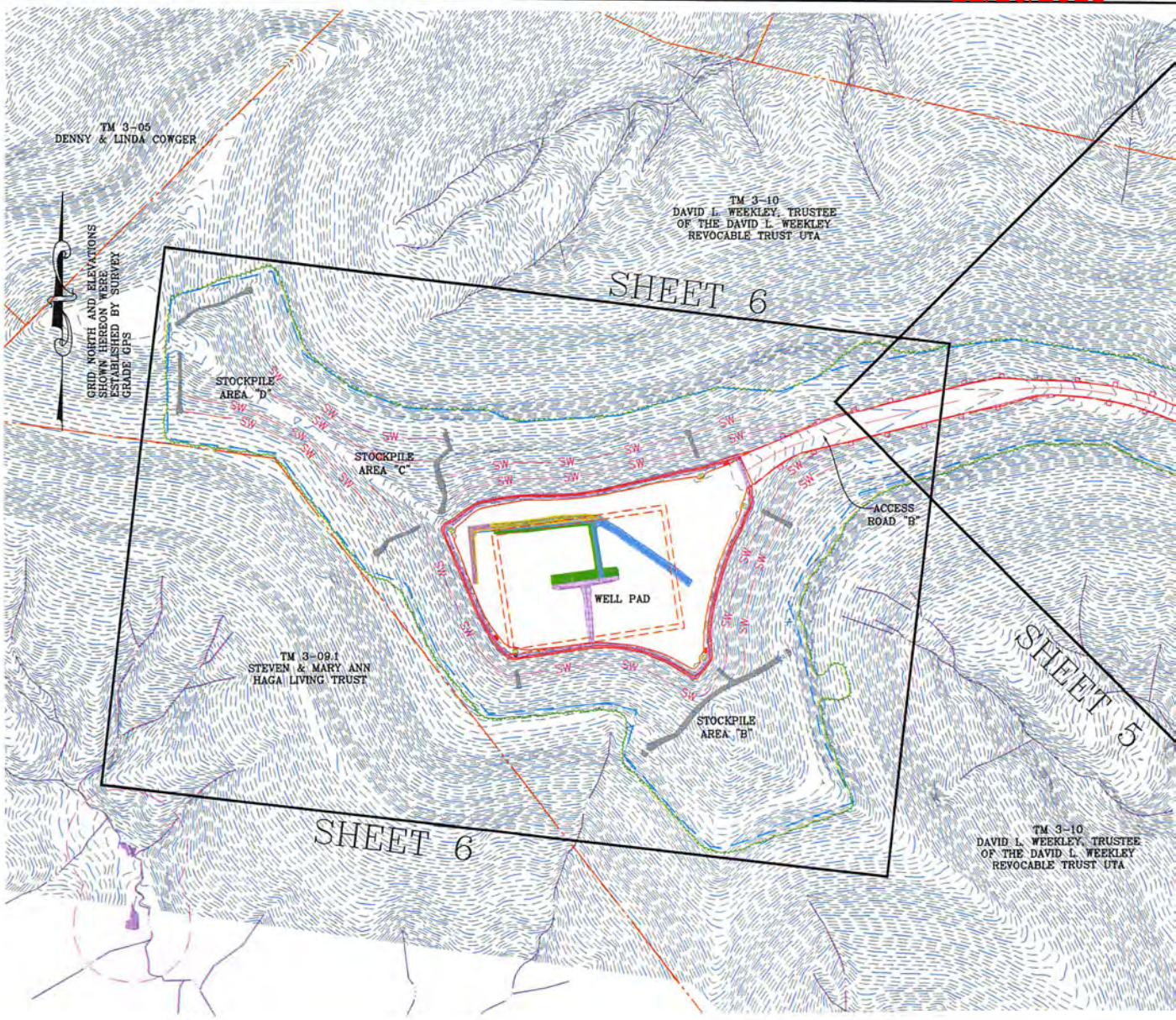
WELL PAD & WATER CONTAINMENT PAD

CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CYRUS B. KUMP
REGISTERED
19578
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

03/05/2018

DATE: 03/05/2018
SCALE: N/A
SHEET 2 OF 9



GENERAL NOTES:

1. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED ON APRIL 6, 2014 AERIAL PHOTOGRAPHY COMPILED MAY, 2014 BY BLUE MOUNTAIN AERIAL MAPPING, BURTON, WEST VIRGINIA.

2. AS-BUILT INFORMATION SHOWN HEREON IS BASED ON FIELD SURVEY PERFORMED BY NAVITUS ENGINEERING, INC. BETWEEN OCTOBER 20, 2017 TO MARCH 5, 2018.

3. THE PROPERTY LINES SHOWN HEREON DO NOT REPRESENT A BOUNDARY SURVEY ON ANY OF THE PARCELS SHOWN. PROPERTY CORNERS AND LINES PERTINENT TO WELL LOCATION ARE BASED ON A FIELD SURVEY. THE REMAINDER OF THE PROPERTY LINES ARE BASED ON COUNTY REAL ESTATE TAX MAPS, GIS INFORMATION AND DEEDS OF RECORD.

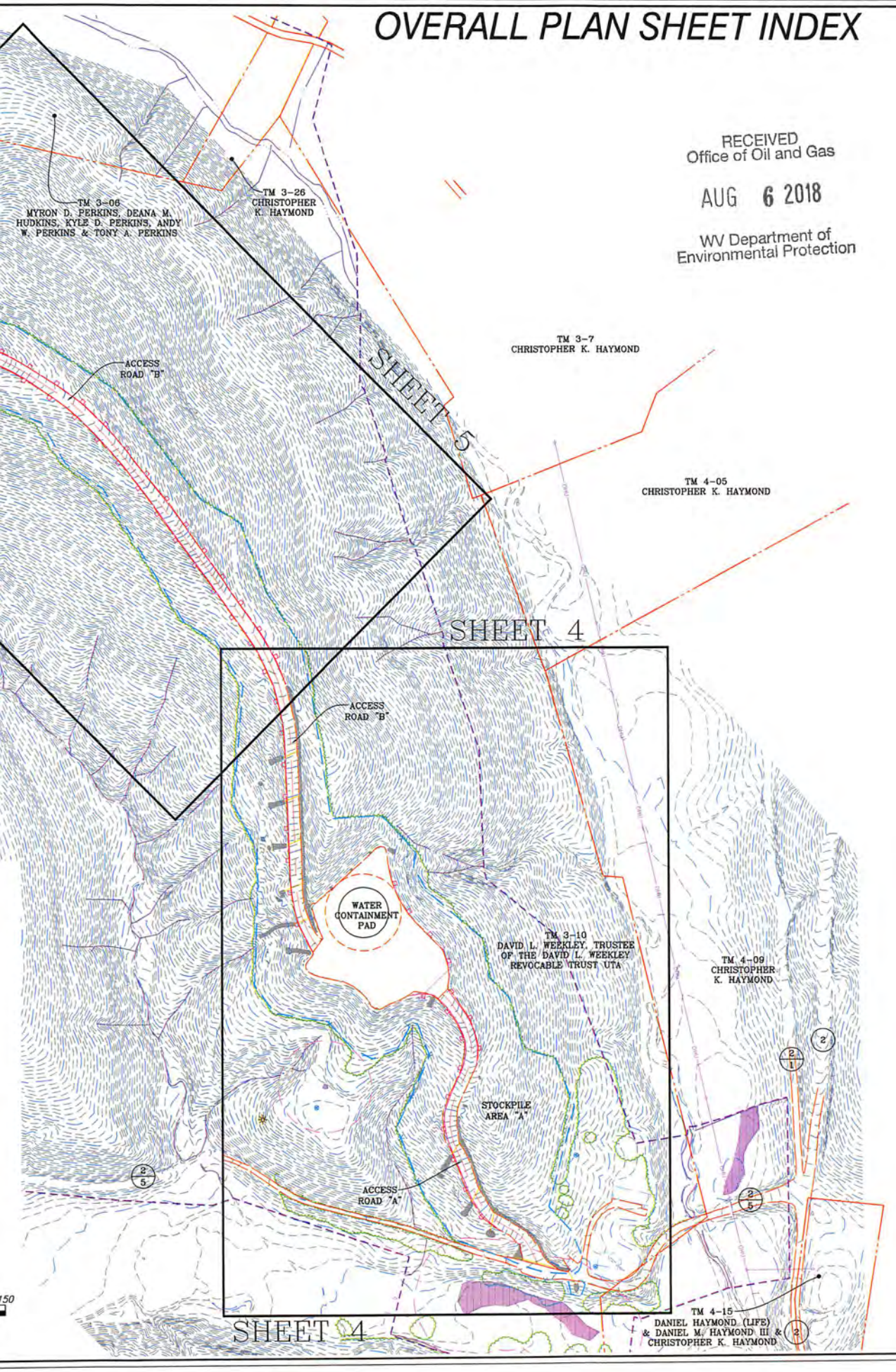
4. UTILITIES AND THEIR LOCATIONS AS SHOWN HEREON ARE BASED ON: A) OBSERVABLE EVIDENCE OF THOSE VISIBLE, ABOVE-GROUND FACILITIES, FEATURES, AND MARKERS WHICH WERE FOUND ON THE SUBJECT PROPERTY AT THE TIME OF SURVEY PERFORMED BY NAVITUS ENGINEERING AND B) FIELD MARKINGS PLACED BY UTILITY COMPANIES IN RESPONSE TO THE WV 811 TICKET SUBMITTED BY NAVITUS ENGINEERING. NAVITUS ENGINEERING CANNOT GUARANTEE THE ACCURACY OF THE UTILITY MARKINGS PERFORMED BY OTHERS OR THAT ALL UTILITIES EXISTING WITHIN THE LIMITS OF THIS PLAN ARE SHOWN. ANY UTILITIES ENCOUNTERED SUBSEQUENT TO PLAN APPROVAL OR DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE PLAN SHOULD BE REPORTED TO NAVITUS ENGINEERING AND ANTERO RESOURCES CORPORATION.

150 0

GRAPHIC SCALE (IN FEE

11/16/2018

OVERALL PLAN SHEET INDEX



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AUG 6 2018
WV Department of
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OVERALL PLAN SHEET INDEX

WEEKLEY TRUST

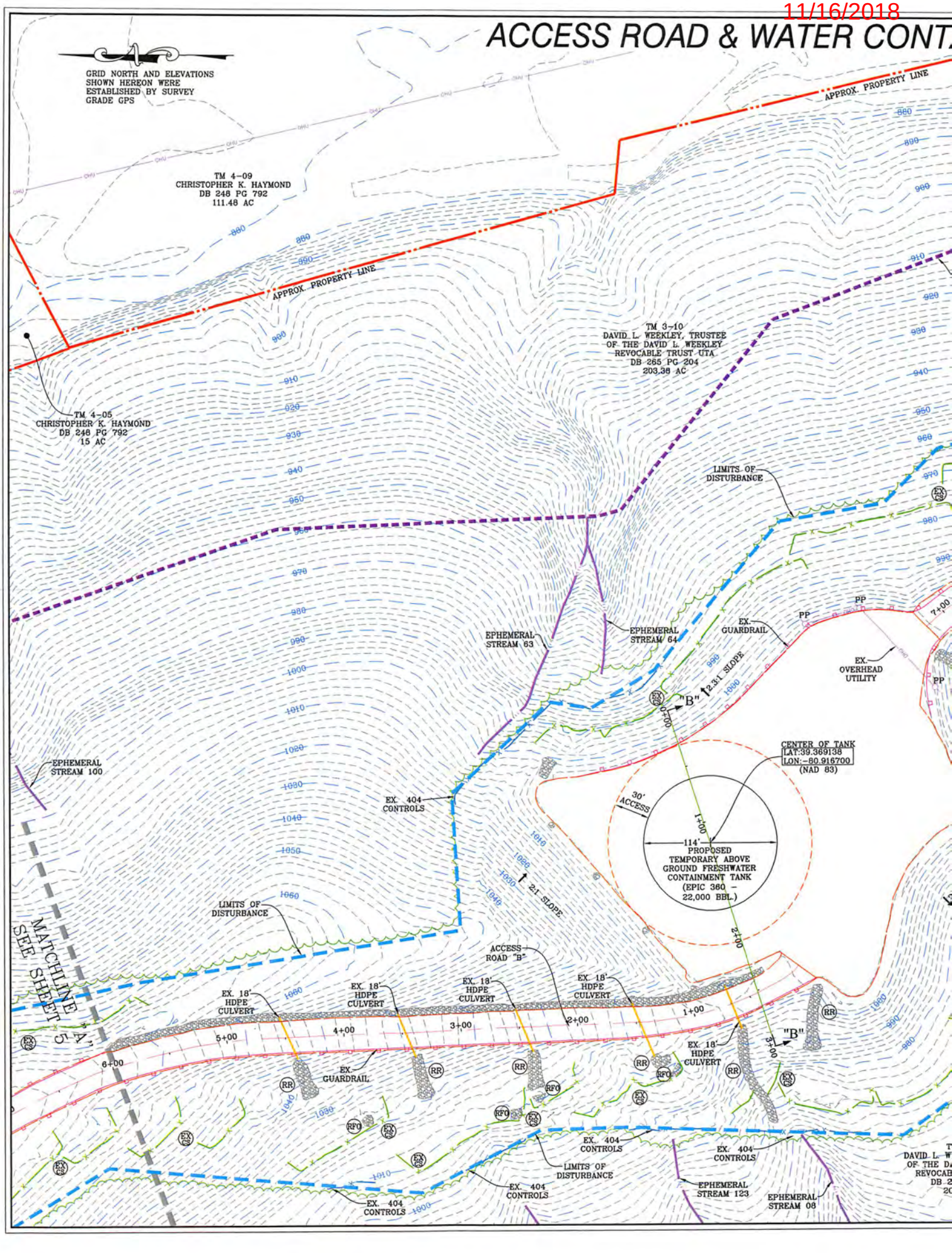
WELL PAD & WATER CONTAINMENT PAD

CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CYRUS S. KUHN
REGISTERED
19578
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
03/05/2018

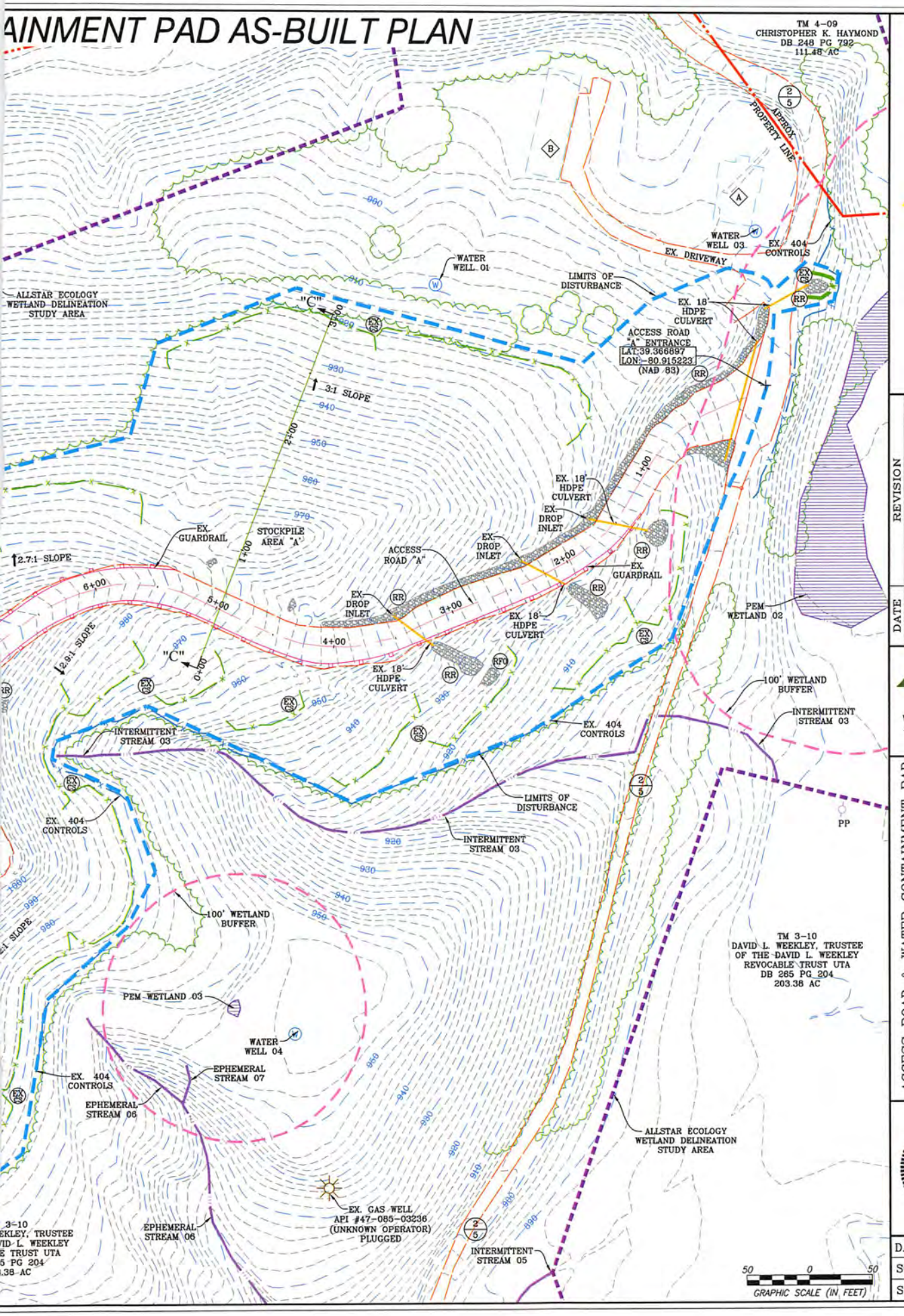
DATE: 03/05/2018
SCALE: 1" = 150'
SHEET 3 OF 9

ACCESS ROAD & WATER CONT



11/16/2018

AINMENT PAD AS-BUILT PLAN



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ACCESS ROAD & WATER CONTAINMENT PAD AS-BUILT PLAN

WELL PAD & WATER CONTAINMENT PAD

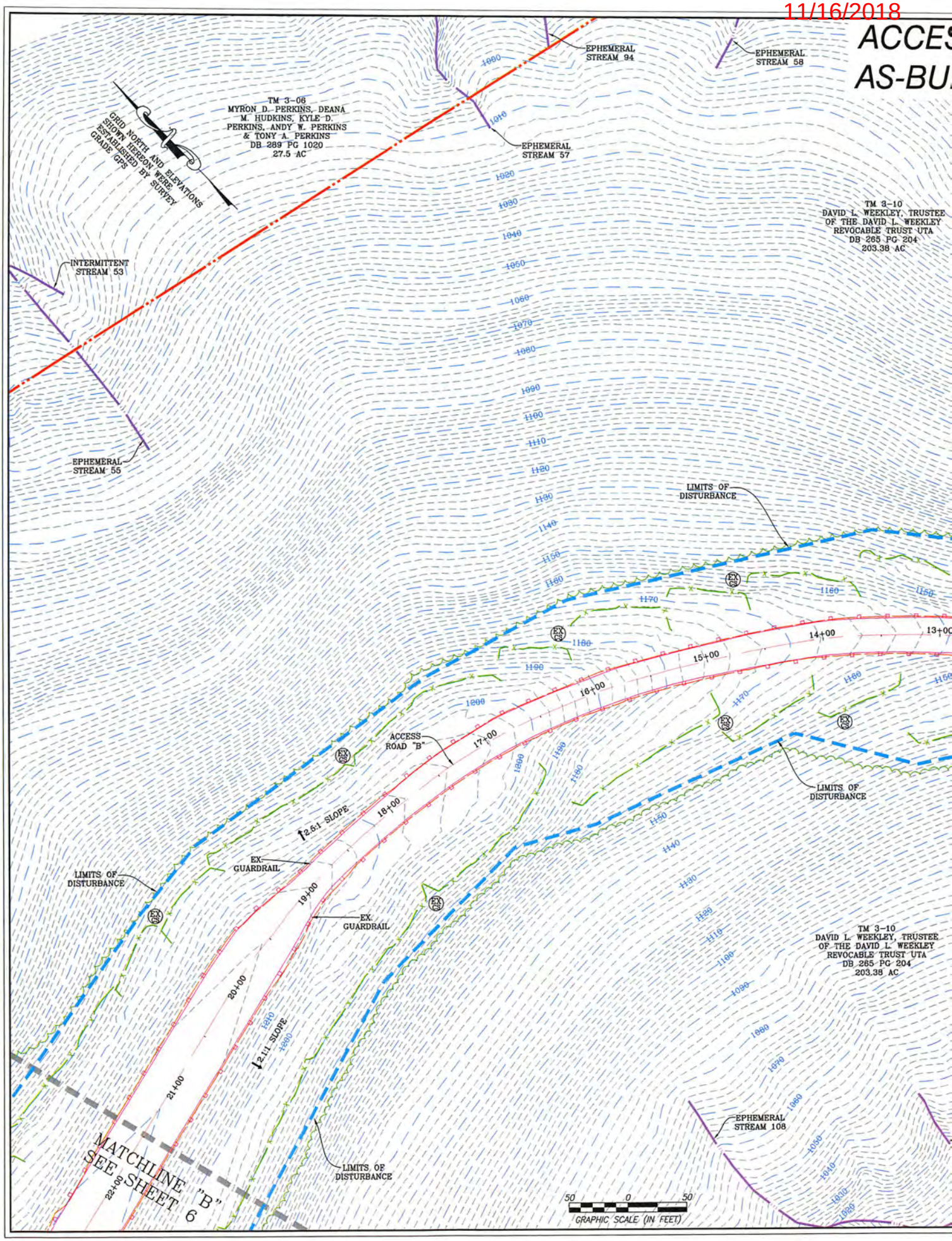
WEEKLEY TRUST

CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CYRUS B. KUMP
REGISTERED
19578
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
03/05/2018

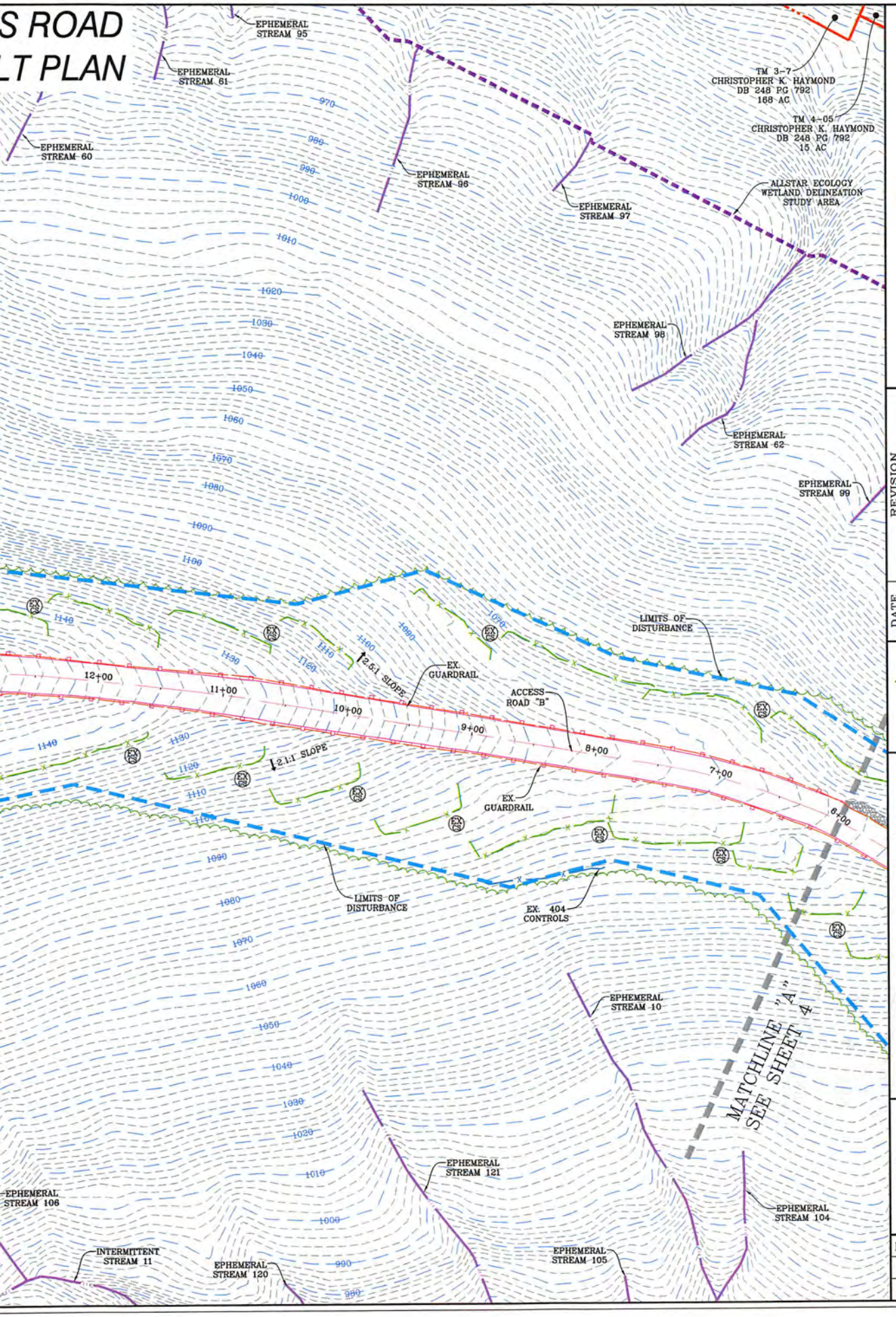
DATE: 03/05/2018
SCALE: 1" = 50'
SHEET 4 OF 9

ACCES
AS-BU


EPHEMERAL STREAM 94
EPHEMERAL STREAM 58
TM 3-06
MYRON D. PERKINS, DEANA M. HUDKINS, KYLE D. PERKINS, ANDY W. PERKINS & TONY A. PERKINS
DB 289 PG 1020
27.5 AC
GRID NORTH AND ELEVATIONS SHOWN HEREON WERE ESTABLISHED BY SURVEY GRADE GPS
EPHEMERAL STREAM 57
TM 3-10
DAVID L. WEEKLEY, TRUSTEE OF THE DAVID L. WEEKLEY REVOCABLE TRUST UTA
DB 265 PG 204
203.38 AC
INTERMITTENT STREAM 53
EPHEMERAL STREAM 55
LIMITS OF DISTURBANCE
14+00
15+00
16+00
17+00
18+00
19+00
20+00
21+00
ACCESS ROAD "B"
2.6:1 SLOPE
2.1:1 SLOPE
EX. GUARDRAIL
LIMITS OF DISTURBANCE
EX. GUARDRAIL
LIMITS OF DISTURBANCE
TM 3-10
DAVID L. WEEKLEY, TRUSTEE OF THE DAVID L. WEEKLEY REVOCABLE TRUST UTA
DB 265 PG 204
203.38 AC
EPHEMERAL STREAM 108
MATCHLINE "B"
SEE SHEET 6
22+00
LIMITS OF DISTURBANCE
50 0 50
GRAPHIC SCALE (IN FEET)

11/16/2018

S ROAD
LT PLAN



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ACCESS ROAD AS-BUILT PLAN

WEELKEY TRUST

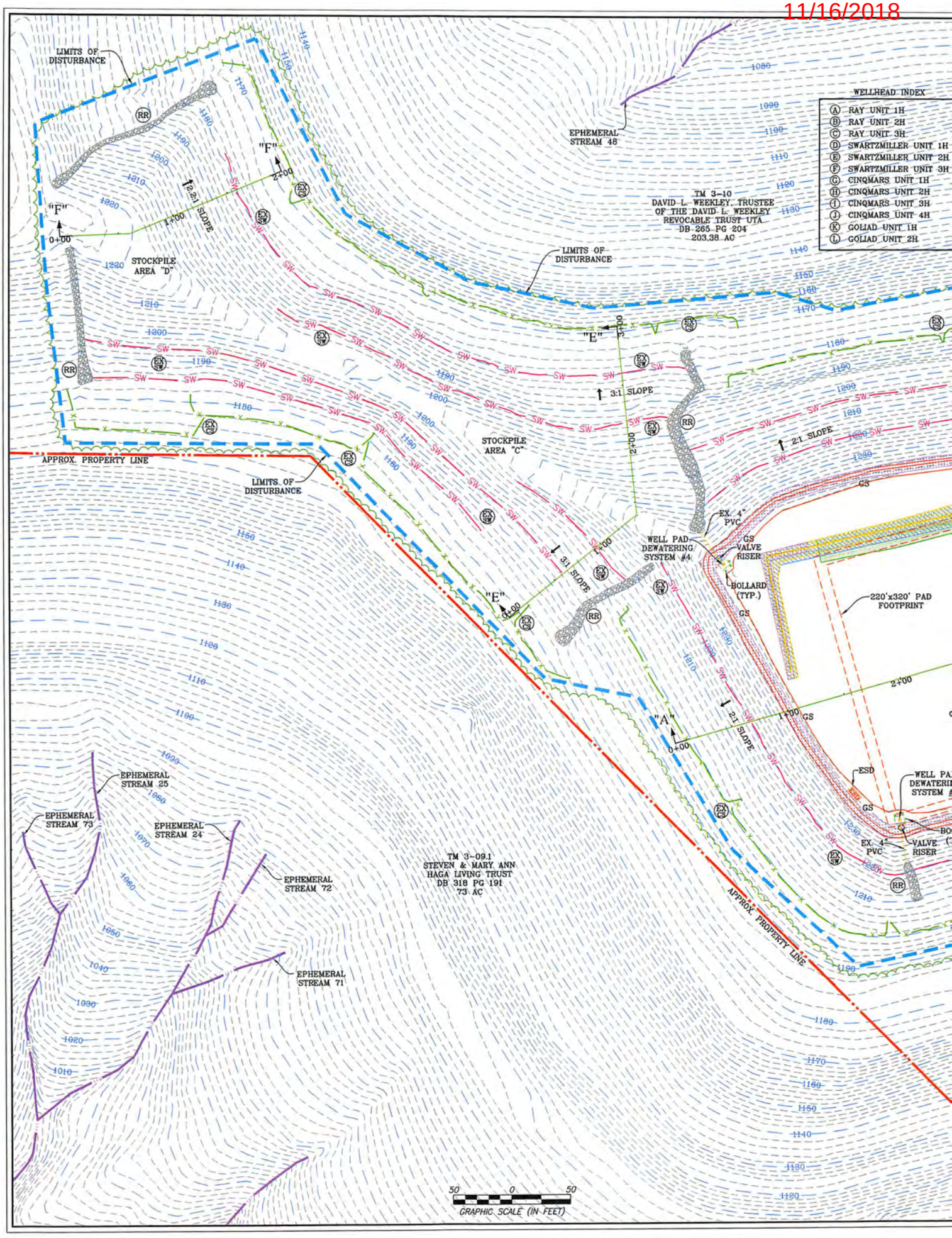
WELL PAD & WATER CONTAINMENT PAD

CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CHRIS B. KUMP
REGISTERED
19578
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER
03/05/2018

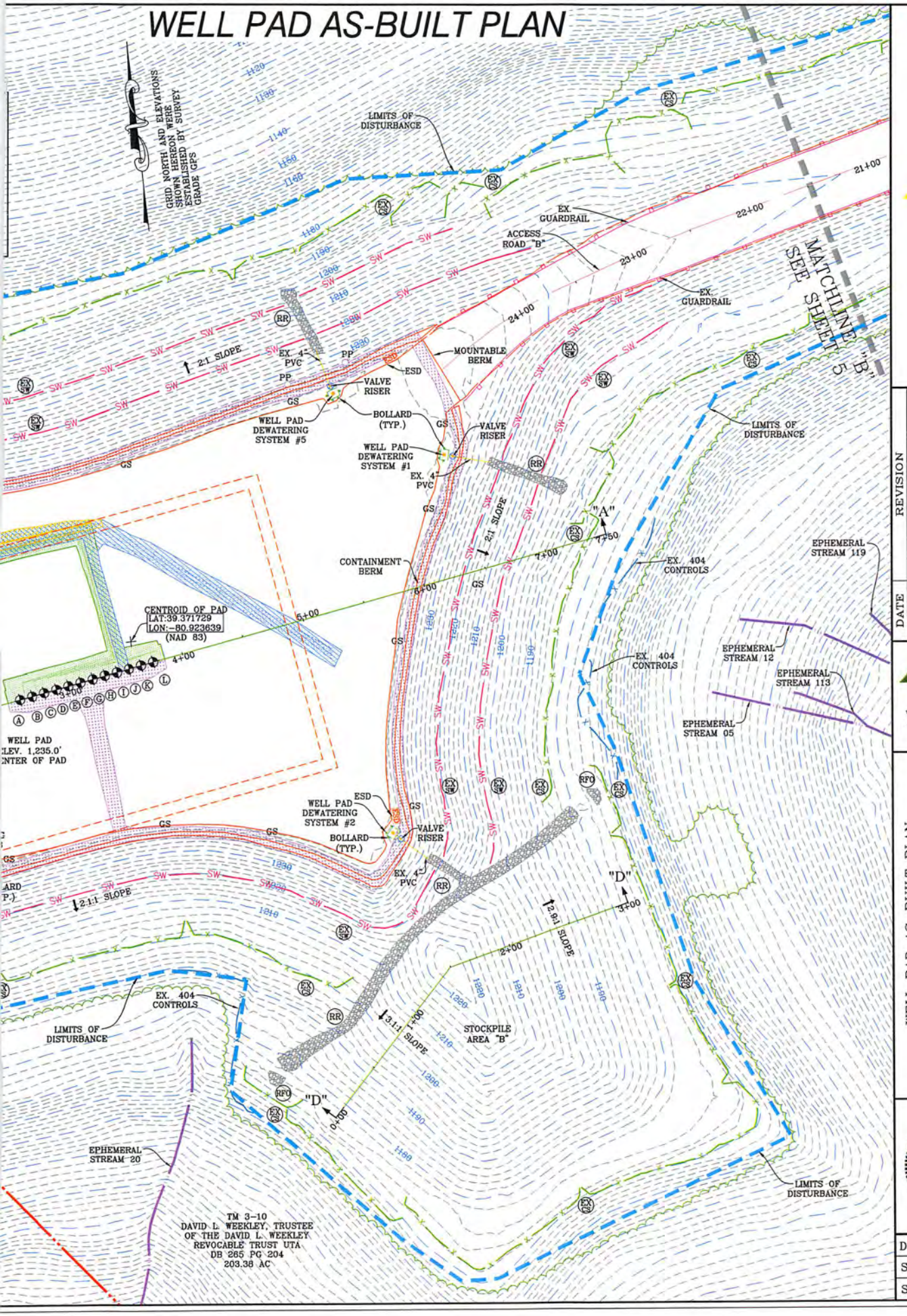
DATE: 03/05/2018
SCALE: 1" = 50'
SHEET 5 OF 9

11/16/2018


LIMITS OF DISTURBANCE
"F"
0+00
1+00
2+00
2:1 SLOPE
STOCKPILE AREA "D"
EPHEMERAL STREAM 48
TM 3-10
DAVID L. WEEKLEY, TRUSTEE OF THE DAVID L. WEEKLEY REVOCABLE TRUST UTA
DB 265 PG 204
203.38 AC
WELLHEAD INDEX
(A) RAY UNIT 1H
(B) RAY UNIT 2H
(C) RAY UNIT 3H
(D) SWARTZMILLER UNIT 1H
(E) SWARTZMILLER UNIT 2H
(F) SWARTZMILLER UNIT 3H
(G) CINQMARS UNIT 1H
(H) CINQMARS UNIT 2H
(I) CINQMARS UNIT 3H
(J) CINQMARS UNIT 4H
(K) GOLIAD UNIT 1H
(L) GOLIAD UNIT 2H
"E"
3:1 SLOPE
STOCKPILE AREA "C"
APPROX. PROPERTY LINE
WELL PAD DEWATERING SYSTEM #4
EX. 4" PVC
GS VALVE RISER
BOLLARD (TYP.)
220'x320' PAD FOOTPRINT
"A"
ESD
EPHEMERAL STREAM 25
EPHEMERAL STREAM 73
EPHEMERAL STREAM 24
EPHEMERAL STREAM 72
EPHEMERAL STREAM 71
TM 3-09.1
STEVEN & MARY ANN HAGA LIVING TRUST
DB 318 PG 191
73 AC
50 0 50
GRAPHIC SCALE (IN FEET)

11/16/2018

WELL PAD AS-BUILT PLAN



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DATE	REVISION

Antero Resources

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WELL PAD AS-BUILT PLAN

WEELEY TRUST

WELL PAD & WATER CONTAINMENT PAD

CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

CYRUS B. KUMP REGISTERED 19578 STATE OF WEST VIRGINIA PROFESSIONAL ENGINEER

03/05/2018

DATE: 03/05/2018

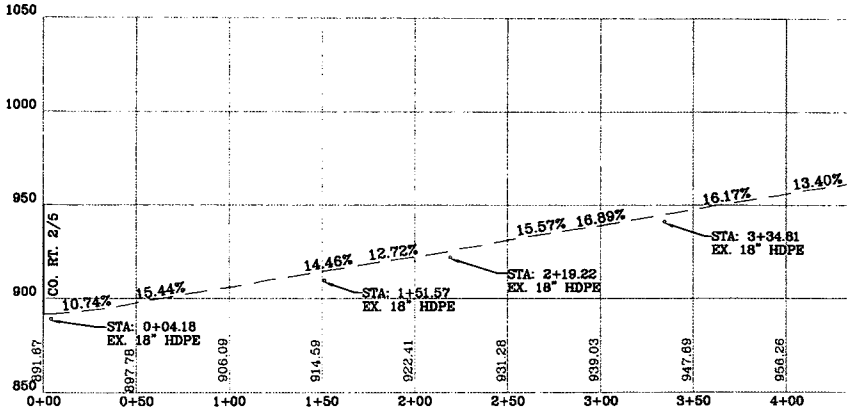
SCALE: 1" = 50'

SHEET 6 OF 9

11/16/2018

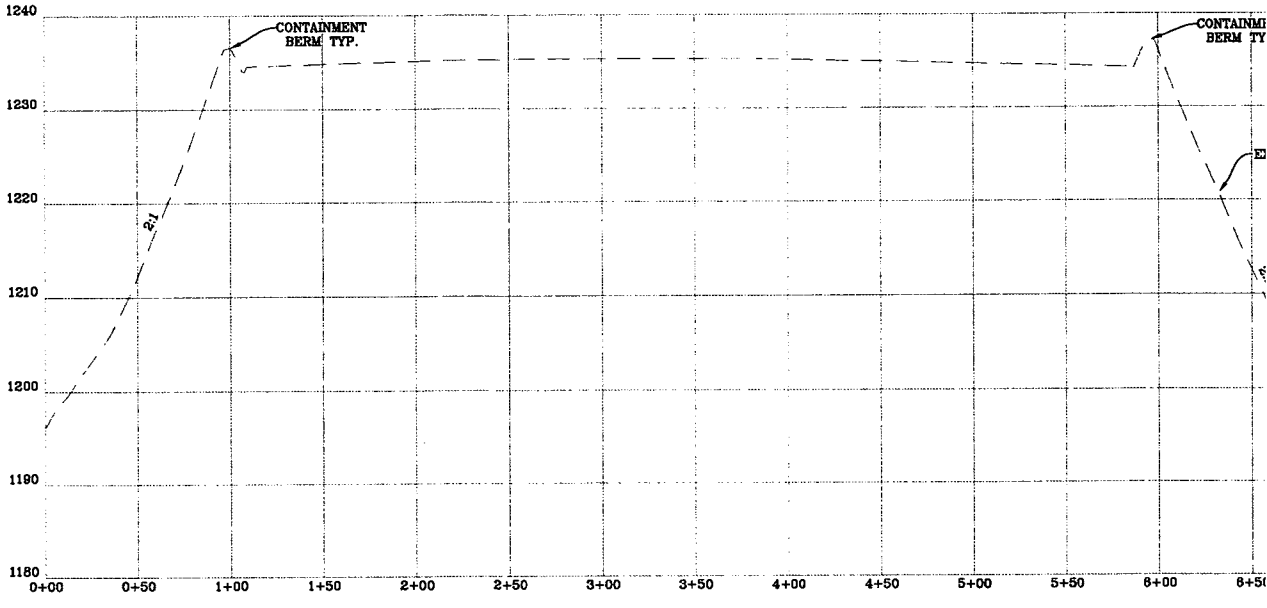
11/16/2018

ACCESS ROAD AS-BUILT
CONTAINMENT PA



ACCESS ROAD "A" AS-BUI

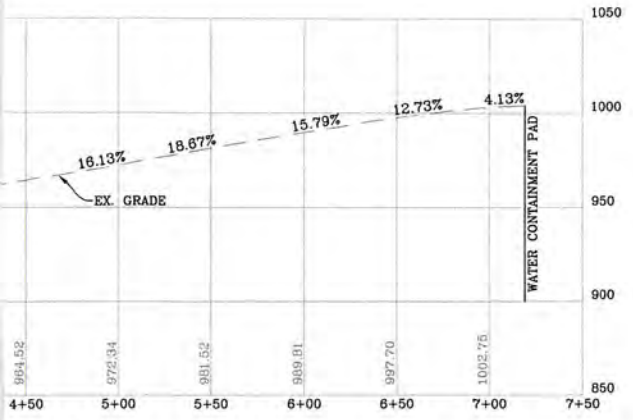
SCALE: HORIZ. 1" = 50' VERT. 1"



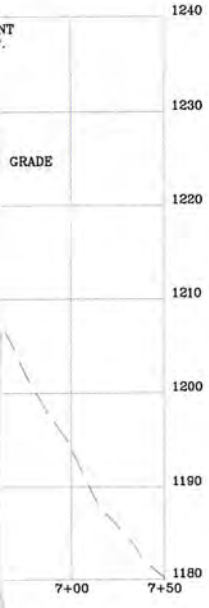
WELL PAD AS-BUILT CROSS-SECTION "A-A"

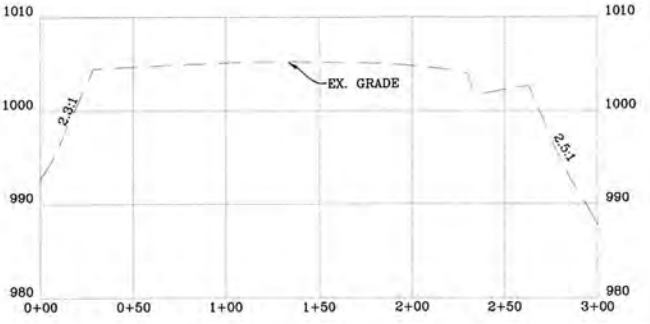
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

PROFILE, WELL PAD & WATER
D AS-BUILT SECTIONS



T PROFILE
= 50'





WATER CONTAINMENT PAD AS-BUILT CROSS-SECTION "B-B"

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

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ACCESS ROAD AS-BUILT PROFILE, WELL PAD & WATER CONTAINMENT PAD AS-BUILT SECTIONS

WEEKLEY TRUST

WELL PAD & WATER CONTAINMENT PAD

CLAY DISTRICT
RITCHIE COUNTY, WEST VIRGINIA

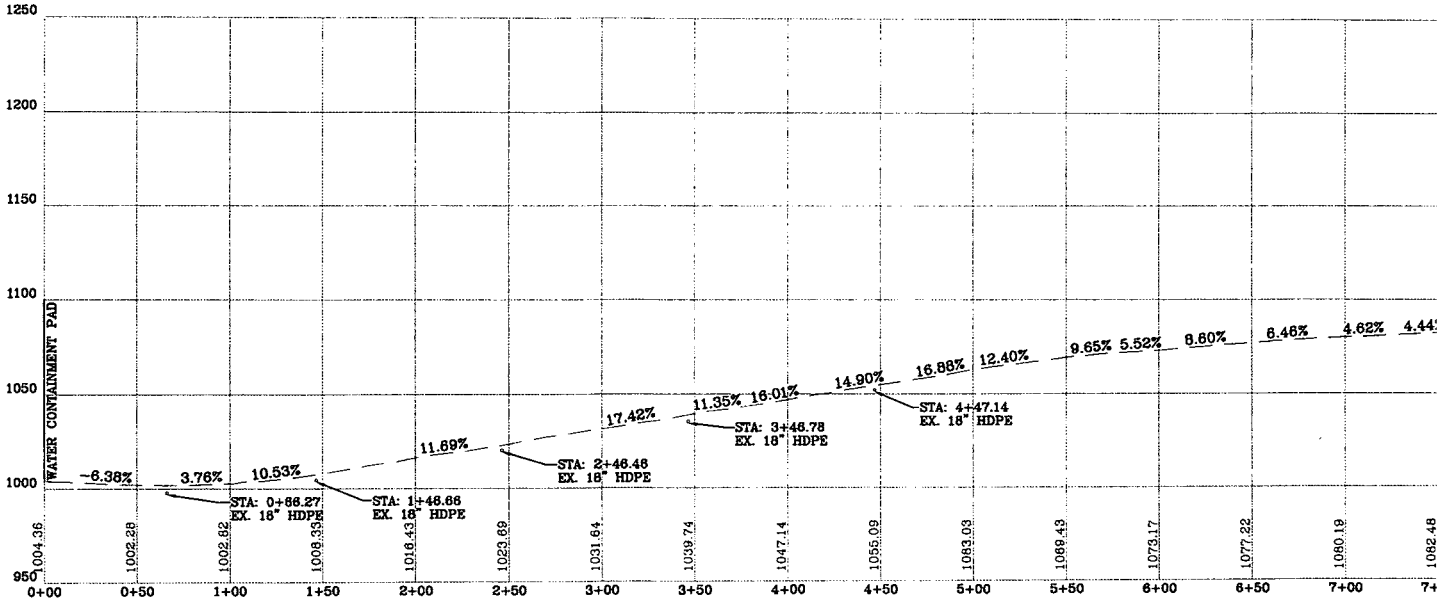
CYRUS B. KUMP
REGISTERED
19578
STATE OF
WEST VIRGINIA
PROFESSIONAL ENGINEER

03/05/2018

DATE: 03/05/2018
SCALE: AS SHOWN
SHEET 7 OF 9

11/16/2018

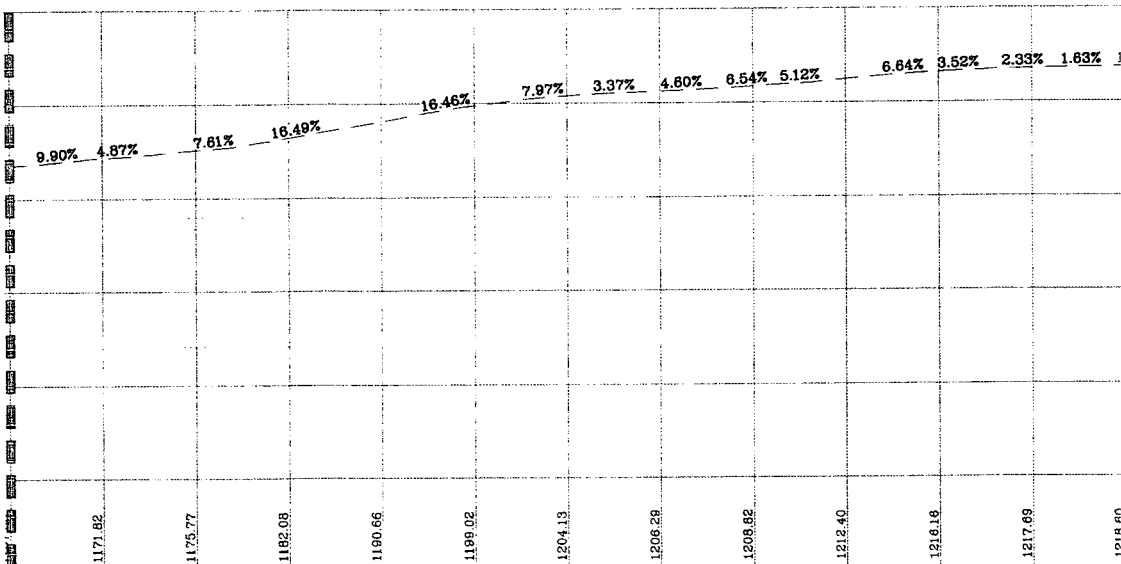
ACCESS ROAD AS-BU



ACCESS ROAD "B" AS-BU

SCALE: HORIZ. 1" = 50' VERT. 1

MATCHLINE
SEE ABOVE

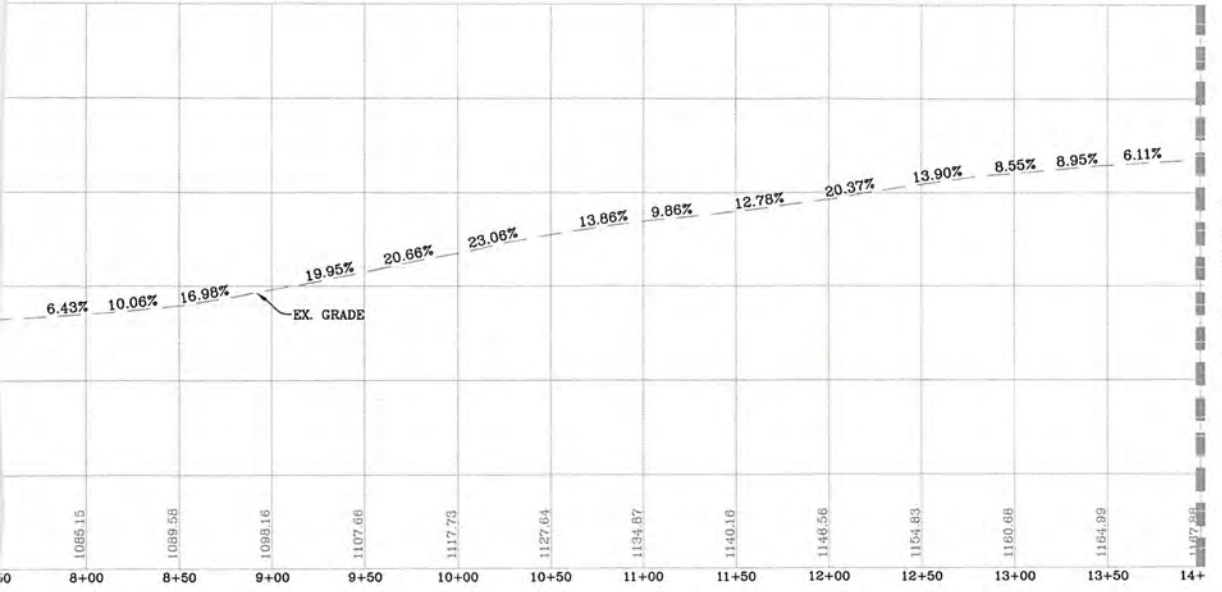


ACCESS ROAD "B" AS-BU

SCALE: HORIZ. 1" = 50' VERT.

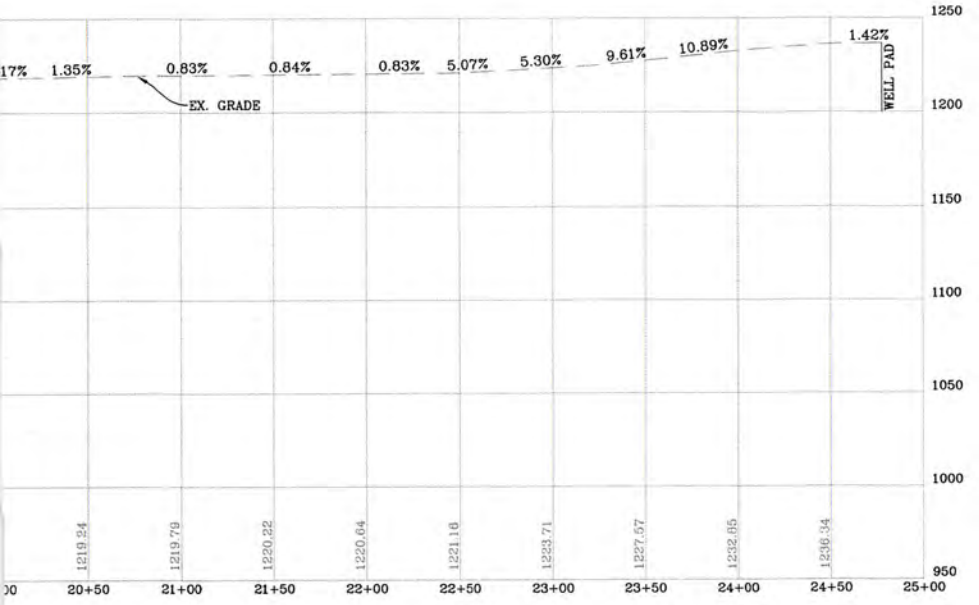
11/16/2018

ILT PROFILE



MATCHLINE SEE BELOW

ILT PROFILE
= 50'



LT PROFILE
= 50'

RECEIVED
Office of Oil and Gas

AUG 6 2018

WV Department of
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ACCESS ROAD AS-BUILT PROFILE

WEEKLEY TRUST

WELL PAD & WATER CONTAINMENT PAD

CLAY DISTRICT
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03/05/2018

DATE: 03/05/2018
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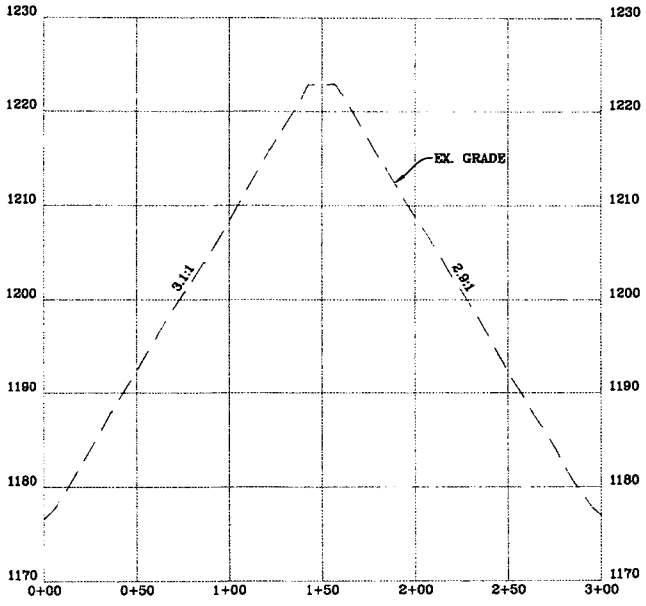
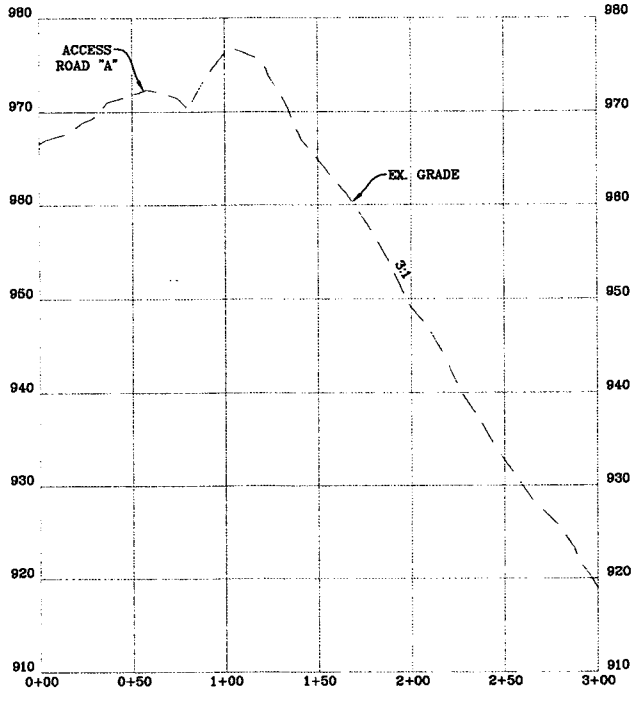
SHEET 8 OF 9



STOCKPILE AREA "B" AS-BUILT CROSS-SECTION "D-D"

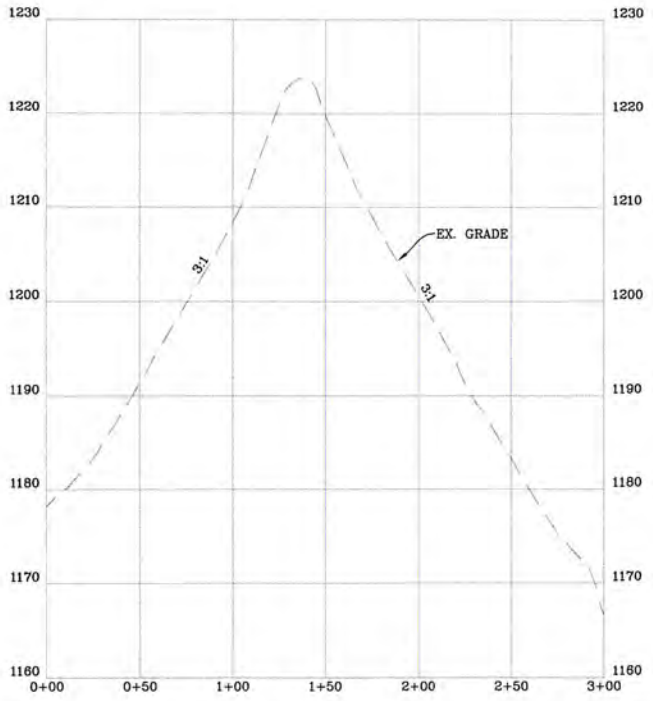
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



STOCKPILE AREA "A" AS-BUILT CROSS-SECTION "C-C"

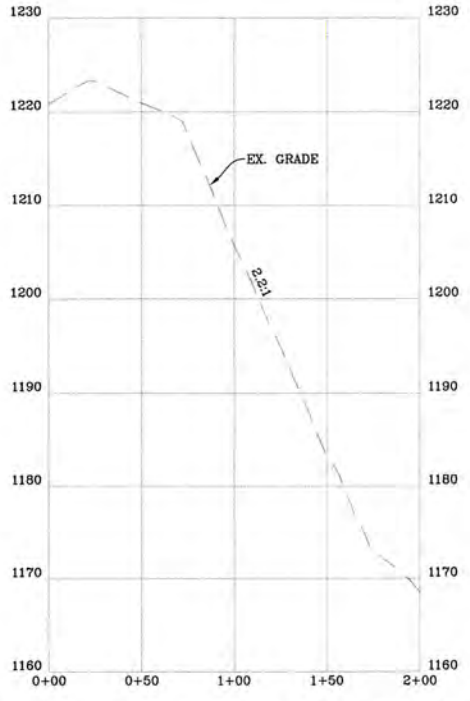
SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

T SECTIONS



STOCKPILE AREA "C" AS-BUILT CROSS-SECTION "E-E"

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'



STOCKPILE AREA "D" AS-BUILT CROSS-SECTION "F-F"

SCALE: HORIZ. 1" = 50' VERT. 1" = 10'

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STOCKPILE AS-BUILT SECTIONS

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03/05/2018

DATE: 03/05/2018

SCALE: AS SHOWN

SHEET 9 OF 9