

YOST WELL PAD EXPANSION CLAY DISTRICT, MONONGALIA COUNTY, WV JUNE 2021



TWO WORKING DAYS PRIOR TO EXCAVATION, THE CONTRACTOR MUST CONTACT THE WV ONE CALL SYSTEM, INC., 1-800-245-4848 SERIAL # 1210029702

OWNER



northeast
NATURAL ENERGY
NORTHEAST NATURAL ENERGY, LLC
707 VIRGINIA STREET SUITE 1200
CHARLESTON, WV 25301



SHEET INDEX

1. TITLE SHEET
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24. ACCESS ROAD B CROSS-SECTIONS
- 25-27. DETAIL SHEET
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- 29-33. SITE RECLAMATION PLAN

PLANS PREPARED BY:
BOORD BENCHEK & ASSOCIATES, INC.
ENGINEERING, SURVEYING, CONSTRUCTION AND MINING SERVICES
SOUTHPOINTE, PA 15317 PHONE: 724-746-1055

Supan Han
10-25-21



ANDREW BENCHEK
P.E.

DATE

PERMITTED PROJECT BOUNDARY: 28.54 ACRES
ADDITIONAL PROJECT BOUNDARY : 2.58 ACRES
TOTAL: 31.12 ACRES

PROPERTY OWNER PROJECT BOUNDARY ACREAGE

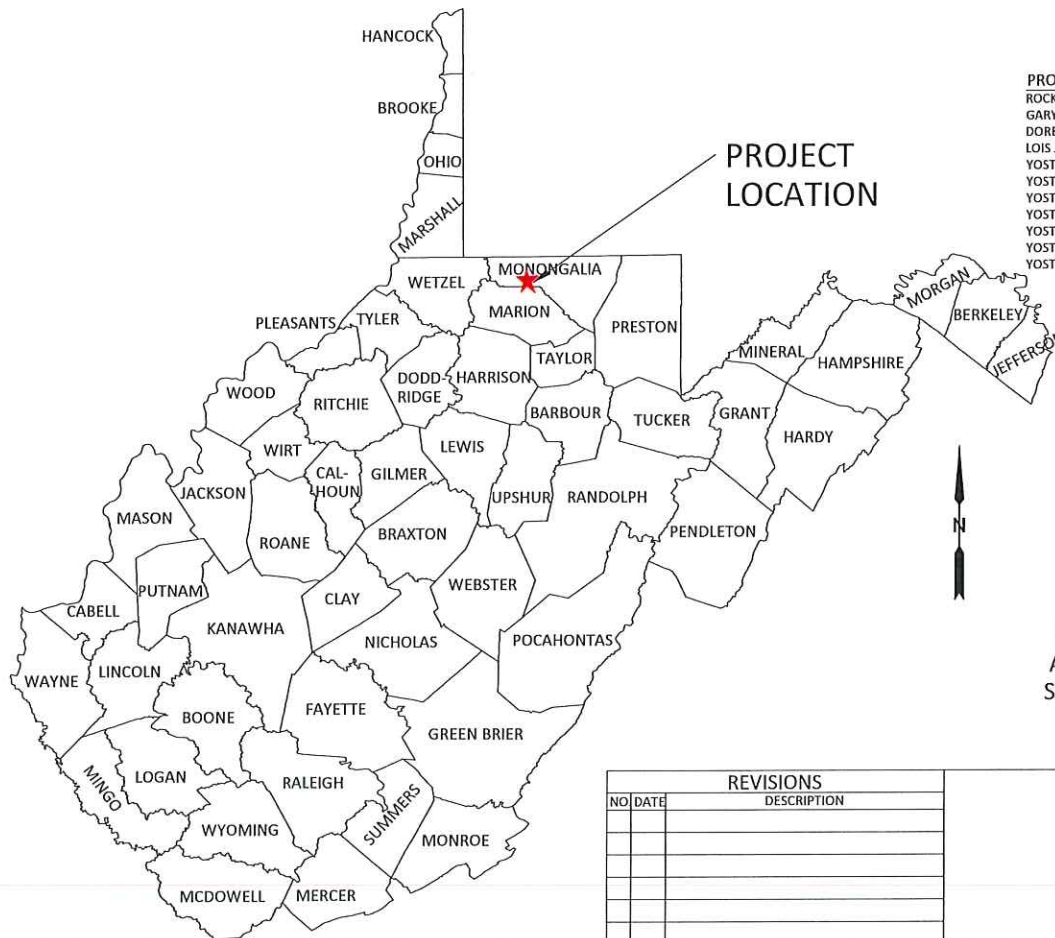
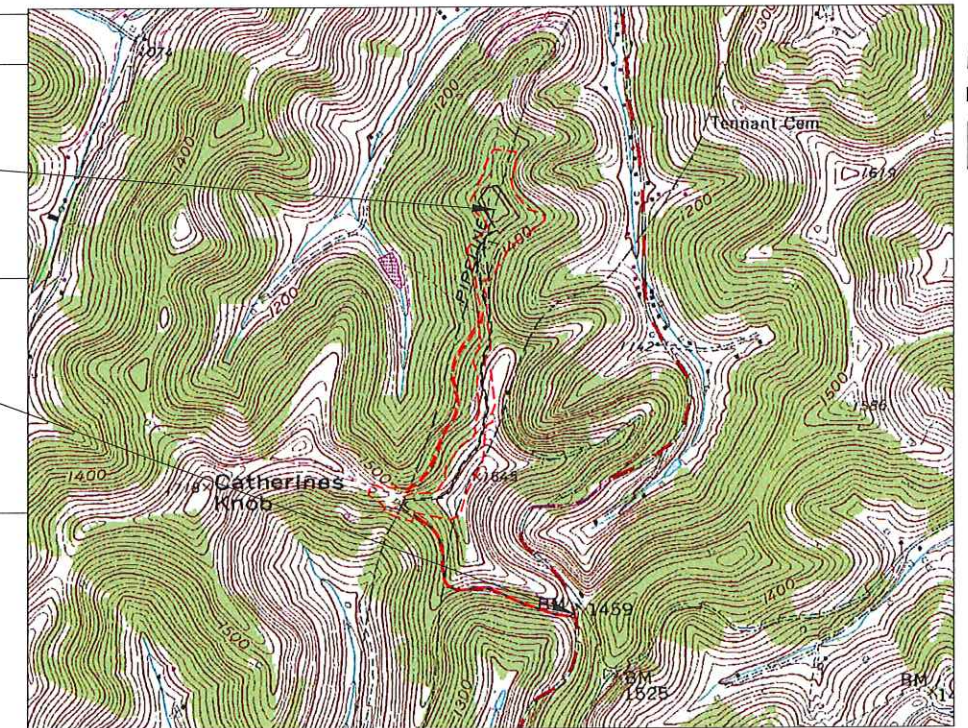
ROCKY & CATHY J. BARR (TAX MAP AND PARCEL 19-45):	3.2 AC.
GARY D. YOST (TAX MAP AND PARCEL 20-44):	0.56 AC.
DOREEN J. PARKS & BROTHERS LLC. (TAX MAP AND PARCEL 19-43):	0.60 AC.
LOIS JEAN & FREDDIE C. MCCOY AMANDA WILSON & MAUDIE RUTH ESTATE (TAX MAP AND PARCEL 19-44):	8.07 AC.
YOST HERITAGE INC. (TAX MAP AND PARCEL 19-43.1):	4.39 AC.
YOST HERITAGE INC. (TAX MAP AND PARCEL 19-44.1):	4.35 AC.
YOST HERITAGE INC. (TAX MAP AND PARCEL 19-43.2):	3.57 AC.
YOST HERITAGE INC. (TAX MAP AND PARCEL 19-43.4):	3.19 AC.
YOST HERITAGE INC. (TAX MAP AND PARCEL 19-43.3):	2.82 AC.
YOST HERITAGE INC. (TAX MAP AND PARCEL 19-44.1):	0.34 AC.
YOST HERITAGE INC. (TAX MAP AND PARCEL 19-52.1):	0.03 AC.

- API NUMBERS**
- Yost 1H - 061-01799
 - Yost 3H - 47-06101673
 - Yost 5H - 47-06101670
 - Yost 7H - 061-01800
 - Yost 9H - 47-06101671
 - Yost 11H - 061-01801

IN ACCORDANCE WITH WV 35 CSR 8
THE FOLLOWING EROSION & SEDIMENT CONTROL PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES ESTABLISHED BY THE CHIEF AND PROVIDED IN THE OFFICE'S EROSION AND SEDIMENT CONTROL FIELD MANUAL. A GENERAL CONSTRUCTION SEQUENCE, DESCRIPTION OF STABILIZATION METHODS, AND DETAILS & SPECIFICATIONS FOR EROSION & SEDIMENT BEST MANAGEMENT PRACTICES HAVE BEEN INCLUDED IN THE PROVIDED DETAIL SHEETS.

COORDINATES

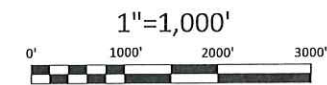
- CENTER OF WELLS (NAD 83)**
LAT: 39° 38' 29.9"
LONG: 80° 13' 05.0"
- (NAD 27)**
LAT: 39° 38' 29.6"
LONG: 80° 13' 05.7"
- SITE ENTRANCE (NAD 83)**
LAT: 39° 37' 46.5"
LONG: 80° 12' 53.8"
- (NAD 27)**
LAT: 39° 37' 46.2"
LONG: 80° 12' 54.6"



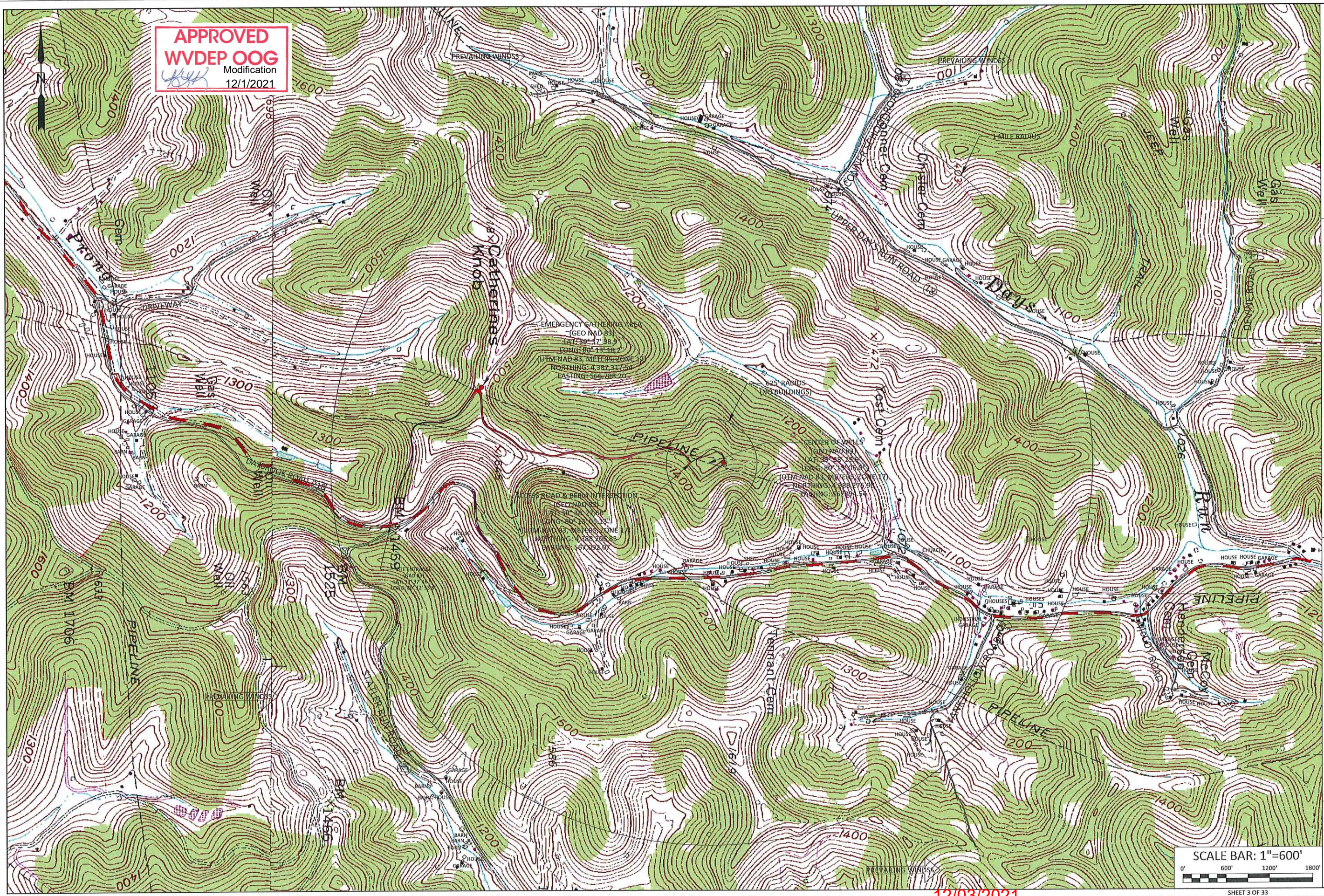
REVISIONS	
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TITLE SHEET
YOST WELL PAD EXPANSION
CLAY DISTRICT, MONONGALIA COUNTY, WV

SHEET
1
OF
33



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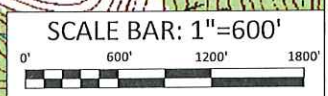
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EVACUATION ROUTE/PREVAILING WINDS

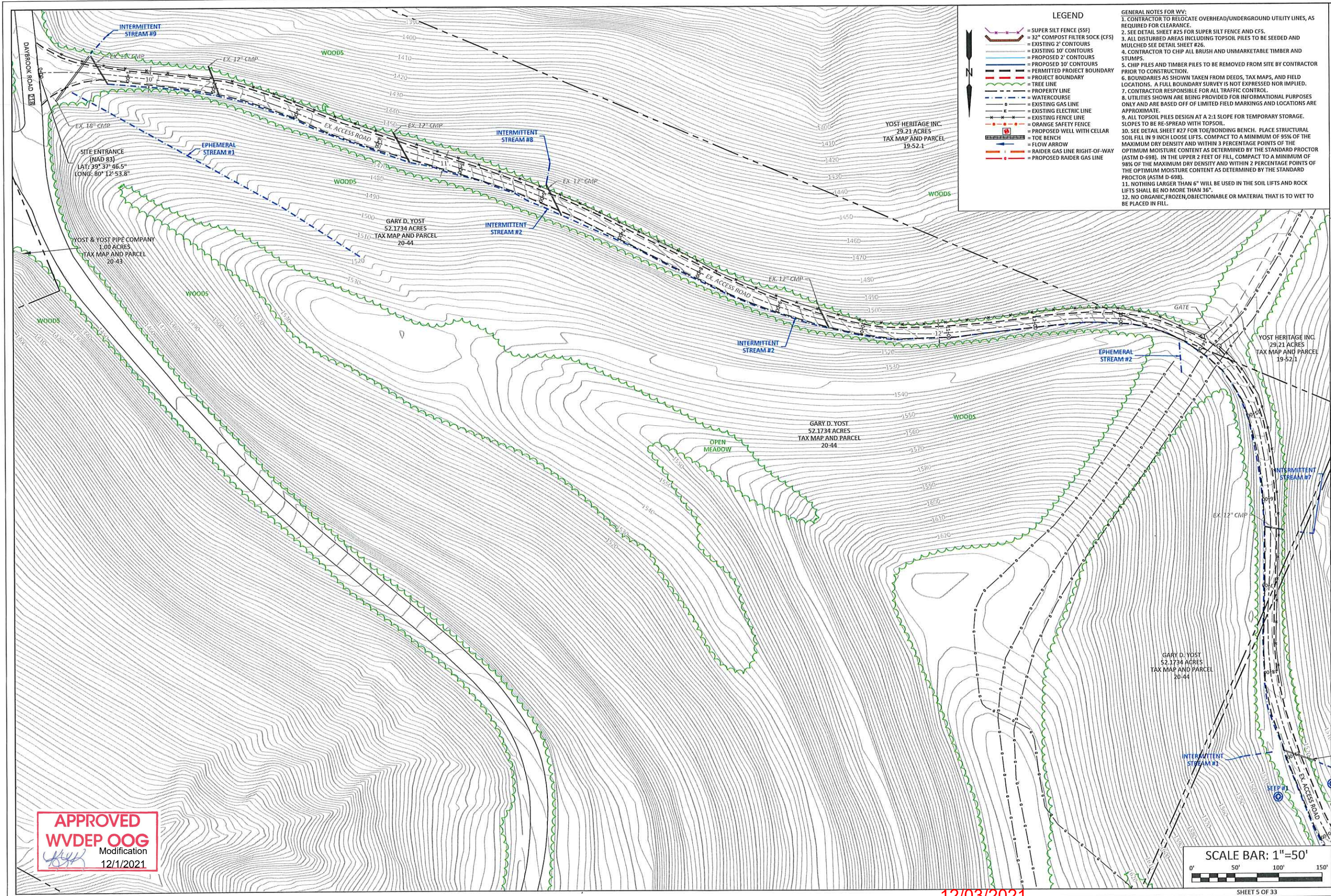
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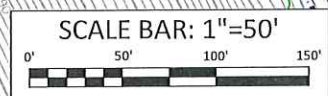
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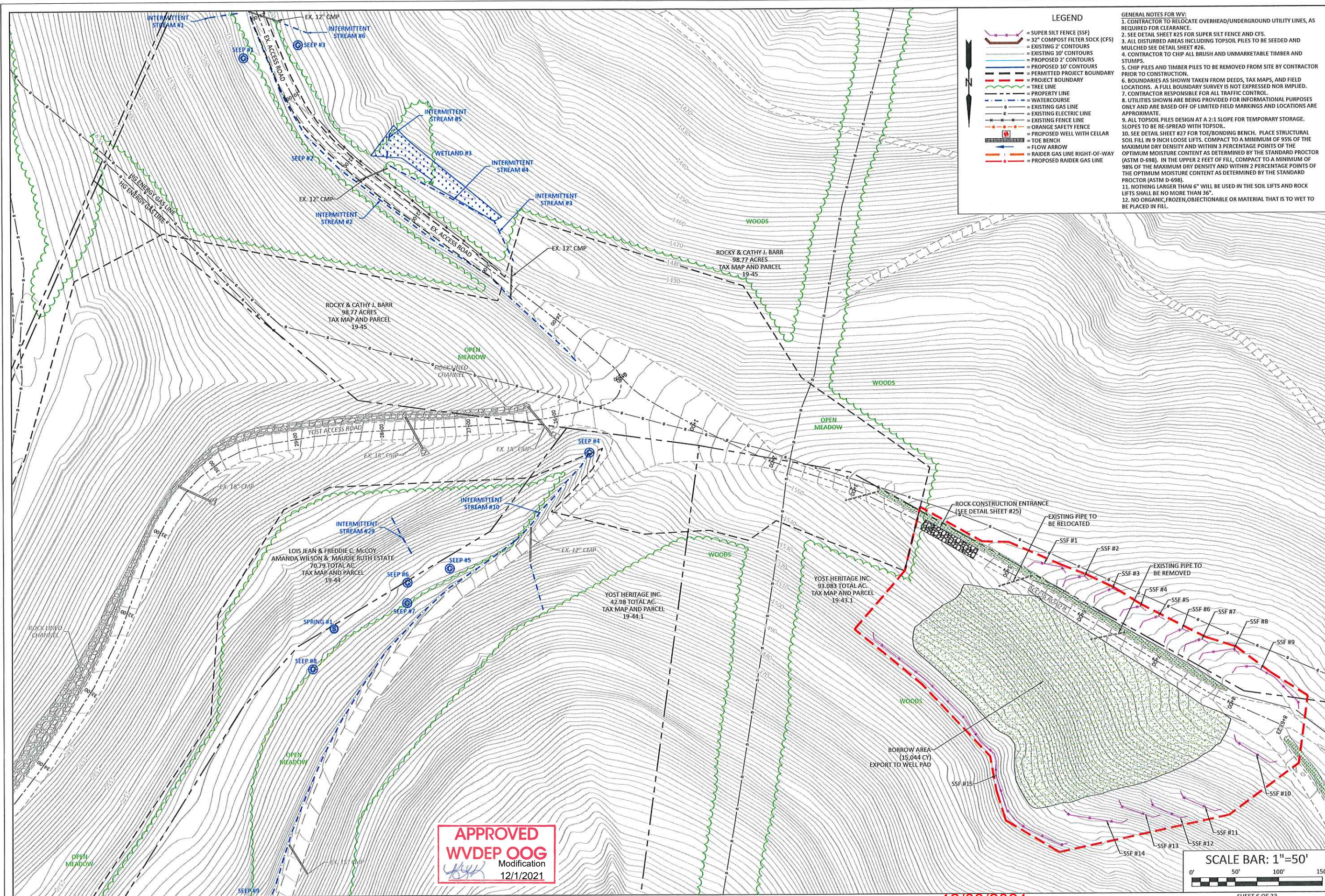
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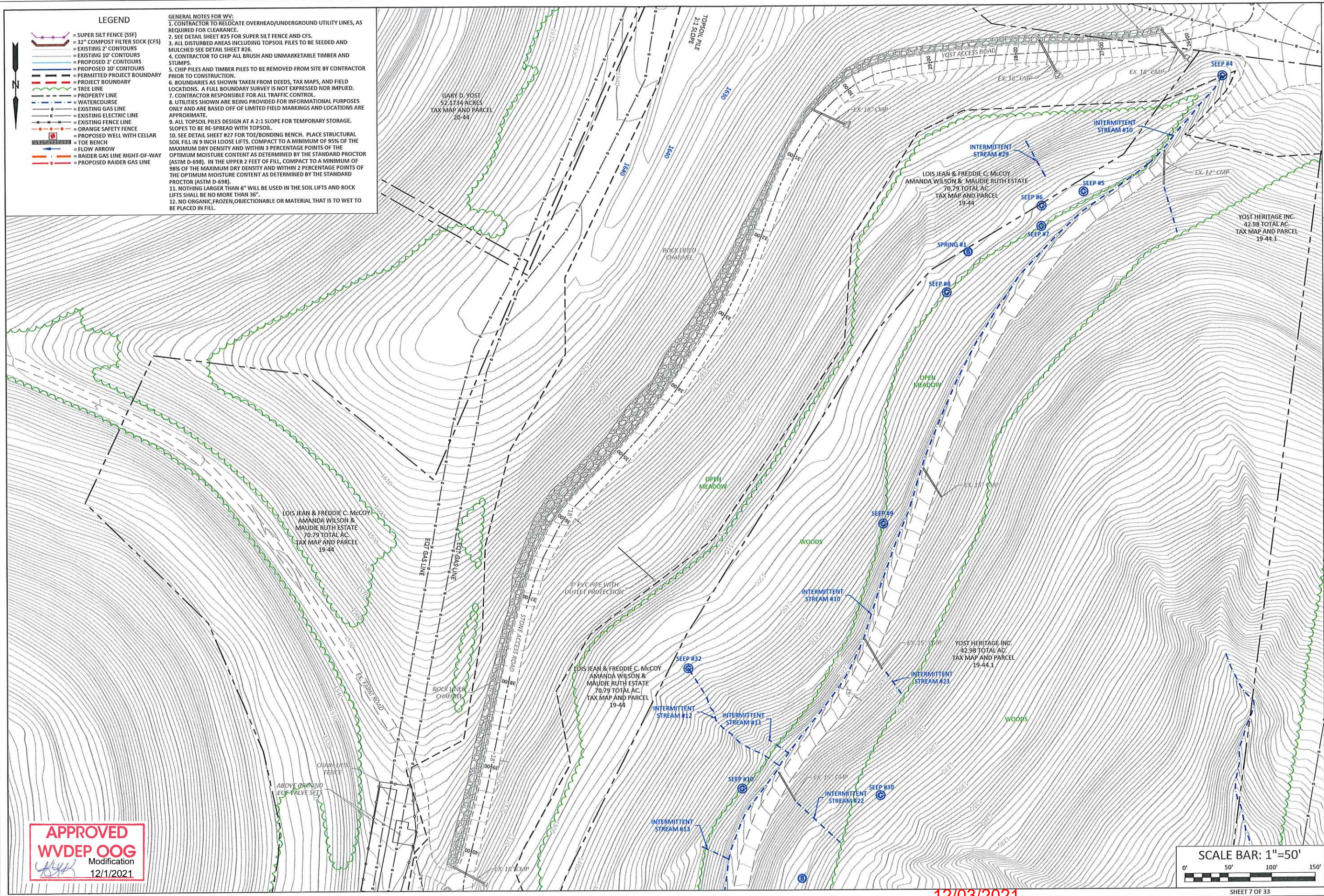


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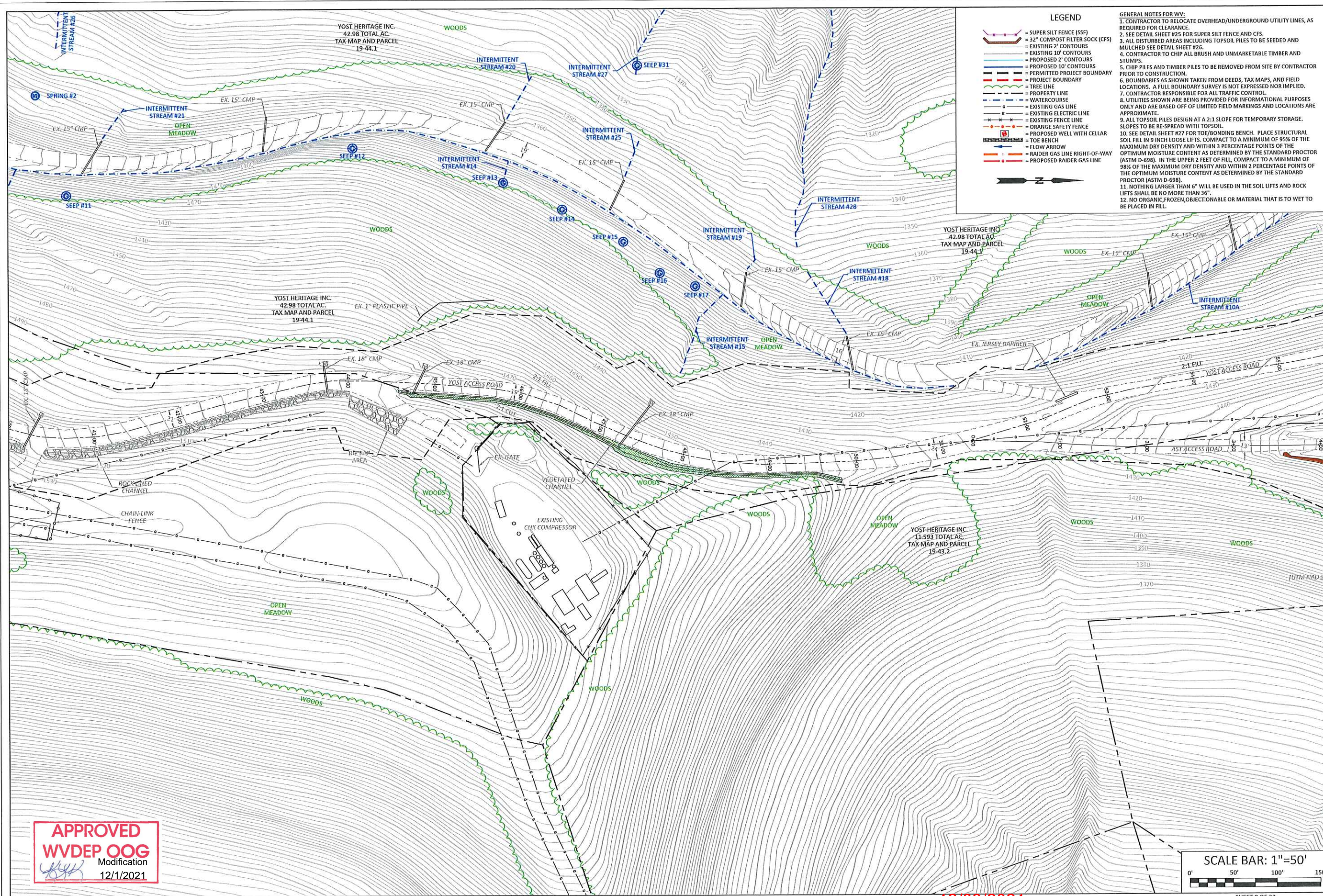
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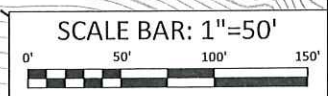
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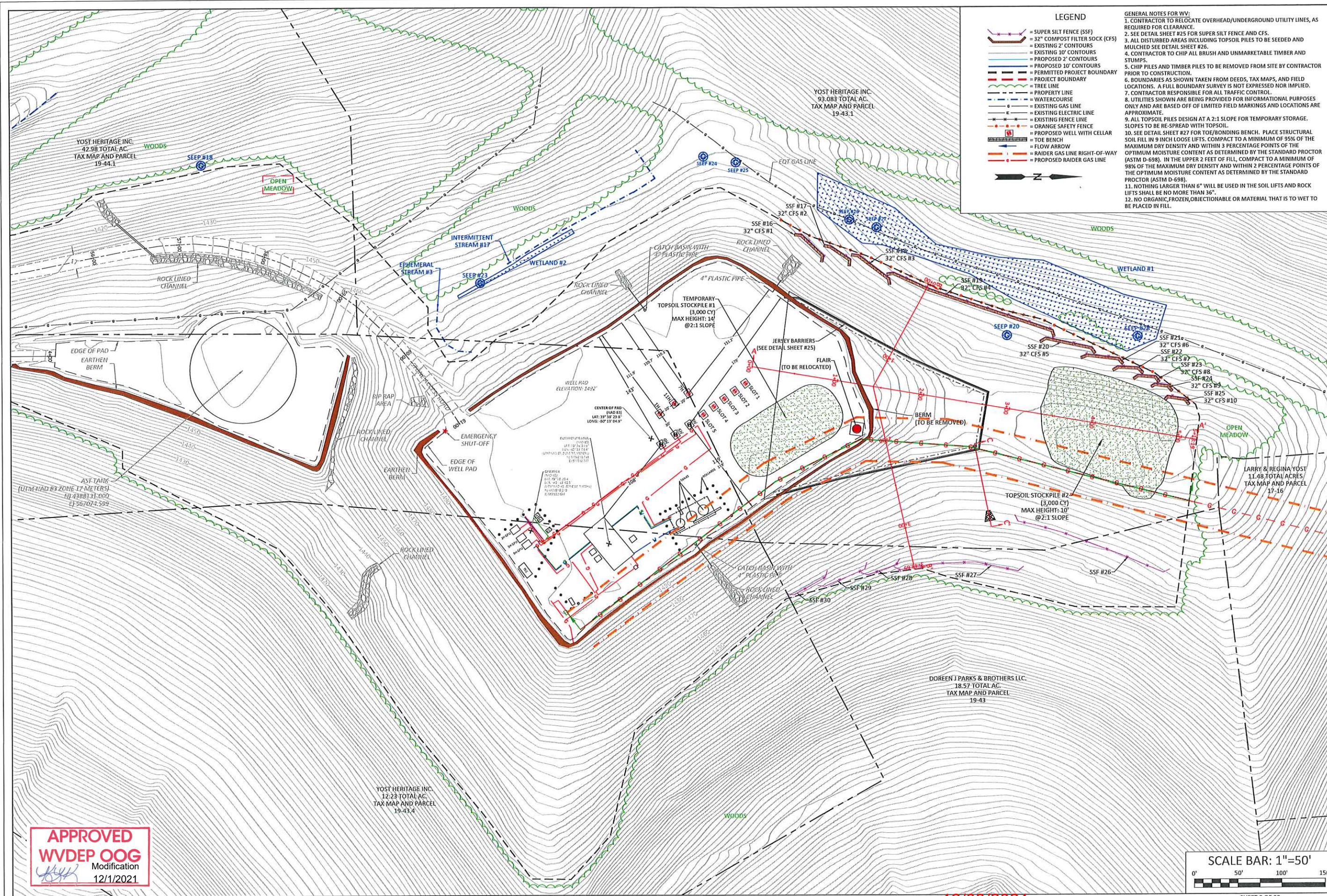
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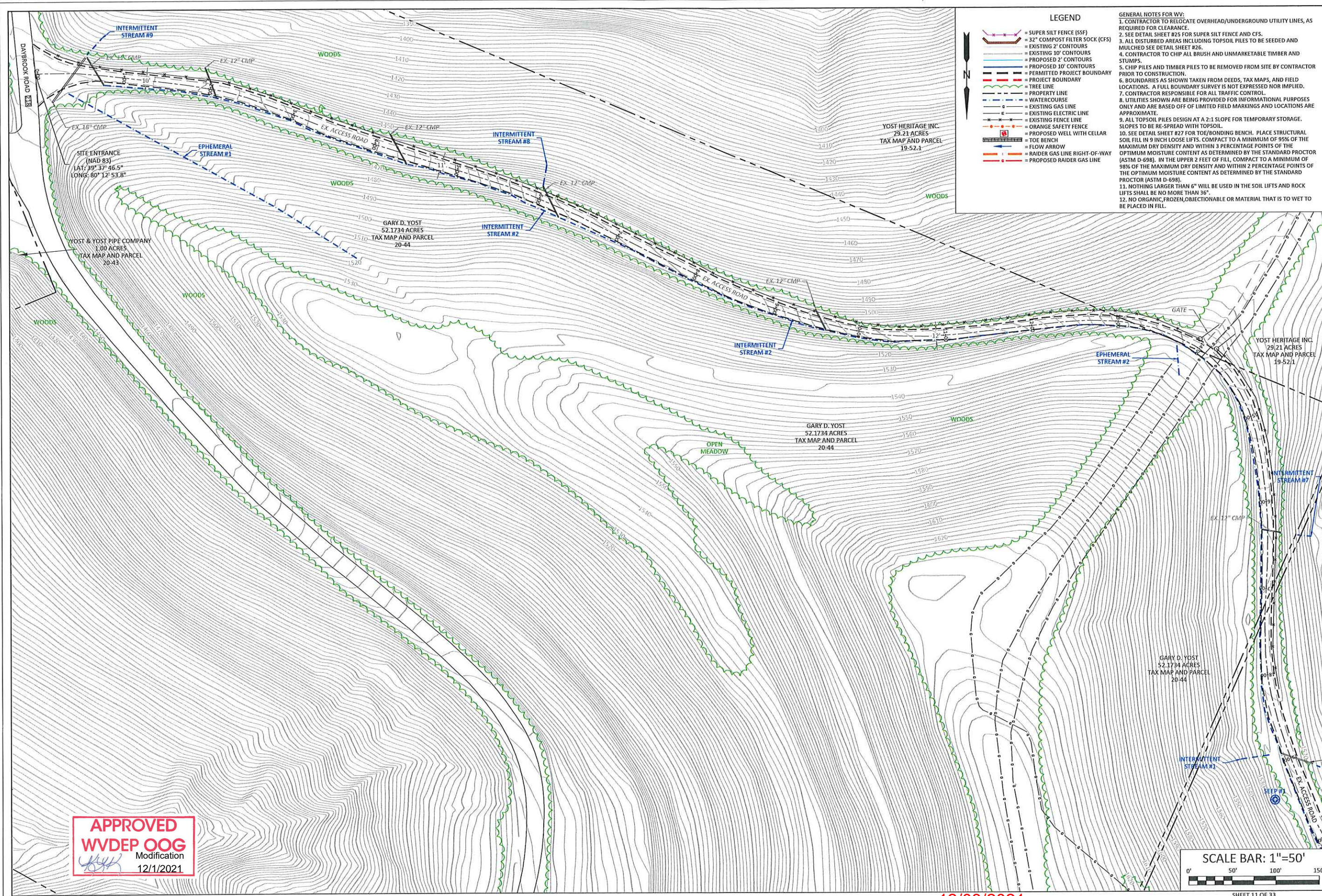
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BOORD, BENCHEK and ASSOC., INC.
 Engineering, Surveying, Construction,
 and Mining Services
 Southpointe, PA 15317 Phone: 724-746-1055

E&S CONTROL AND SITE PLAN

THIS DOCUMENT WAS PREPARED BY:
 BOORD, BENCHEK AND ASSOC., INC.
 FOR: NORTHEAST NATURAL ENERGY, LLC.

DATE:
 JUNE 2021

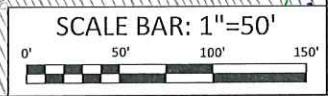
YOST WELL PAD
 EXPANSION

CLAY DISTRICT,
 MONONGALIA
 COUNTY, WV

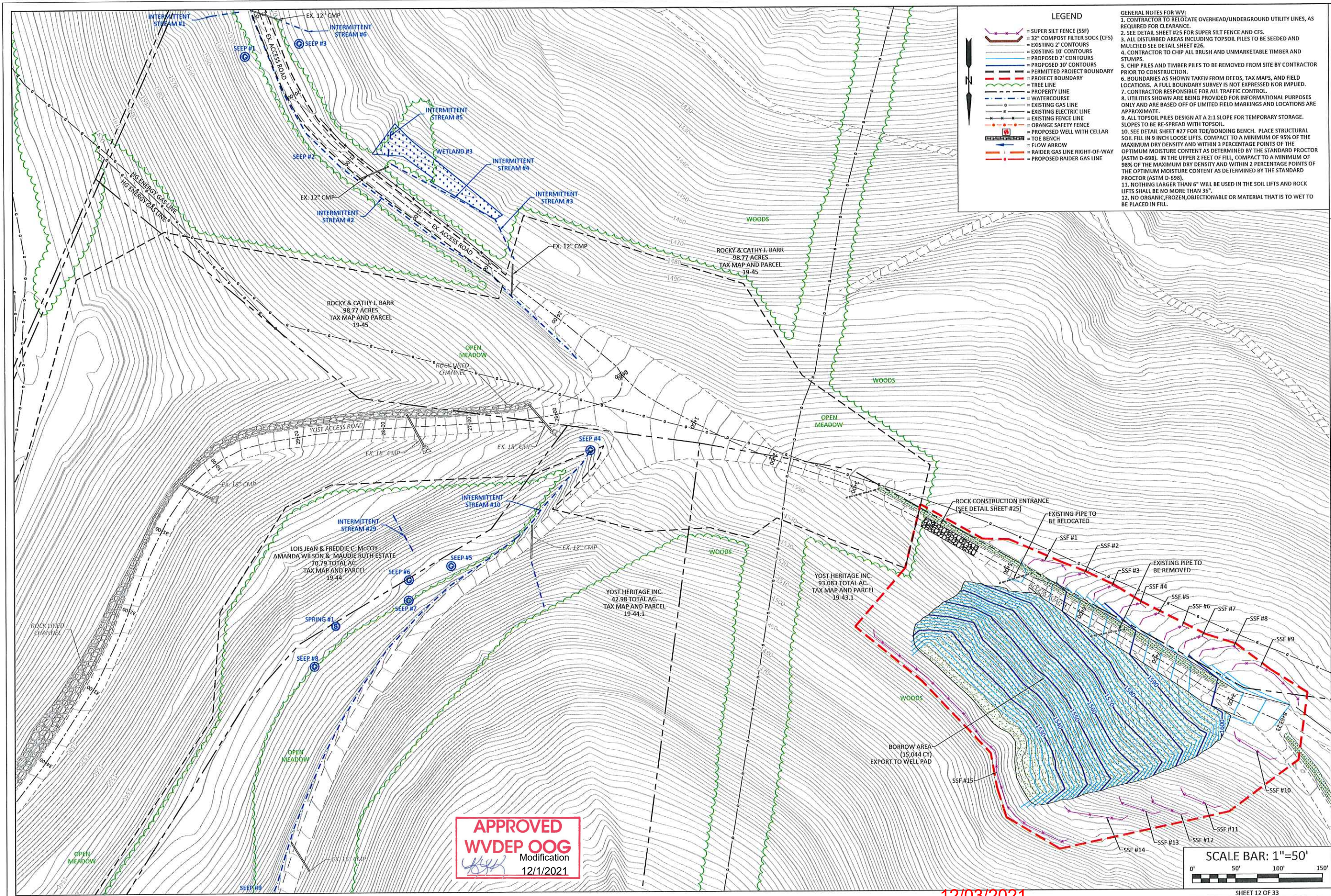
NO	DATE	DESCRIPTION



APPROVED
WVDEP OOG
 Modification
 12/1/2021



12/03/2021



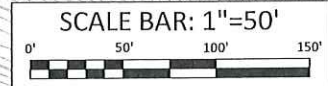
LEGEND

- = SUPER SILT FENCE (SSF)
- = 32" COMPOST FILTER SOCK (CFS)
- = EXISTING 2' CONTOURS
- = EXISTING 10' CONTOURS
- = PROPOSED 2' CONTOURS
- = PROPOSED 10' CONTOURS
- = PERMITTED PROJECT BOUNDARY
- = PROJECT BOUNDARY
- = TREE LINE
- = PROPERTY LINE
- = WATERCOURSE
- = EXISTING GAS LINE
- = EXISTING ELECTRIC LINE
- = EXISTING FENCE LINE
- = ORANGE SAFETY FENCE
- = PROPOSED WELL WITH CELLAR
- = TOE BENCH
- = FLOW ARROW
- = RAIDER GAS LINE RIGHT-OF-WAY
- = PROPOSED RAIDER GAS LINE

GENERAL NOTES FOR WV:

1. CONTRACTOR TO RELOCATE OVERHEAD/UNDERGROUND UTILITY LINES, AS REQUIRED FOR CLEARANCE.
2. SEE DETAIL SHEET #25 FOR SUPER SILT FENCE AND CFS.
3. ALL DISTURBED AREAS INCLUDING TOPSOIL PILES TO BE SEEDED AND MULCHED SEE DETAIL SHEET #26.
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E&S CONTROL AND SITE PLAN

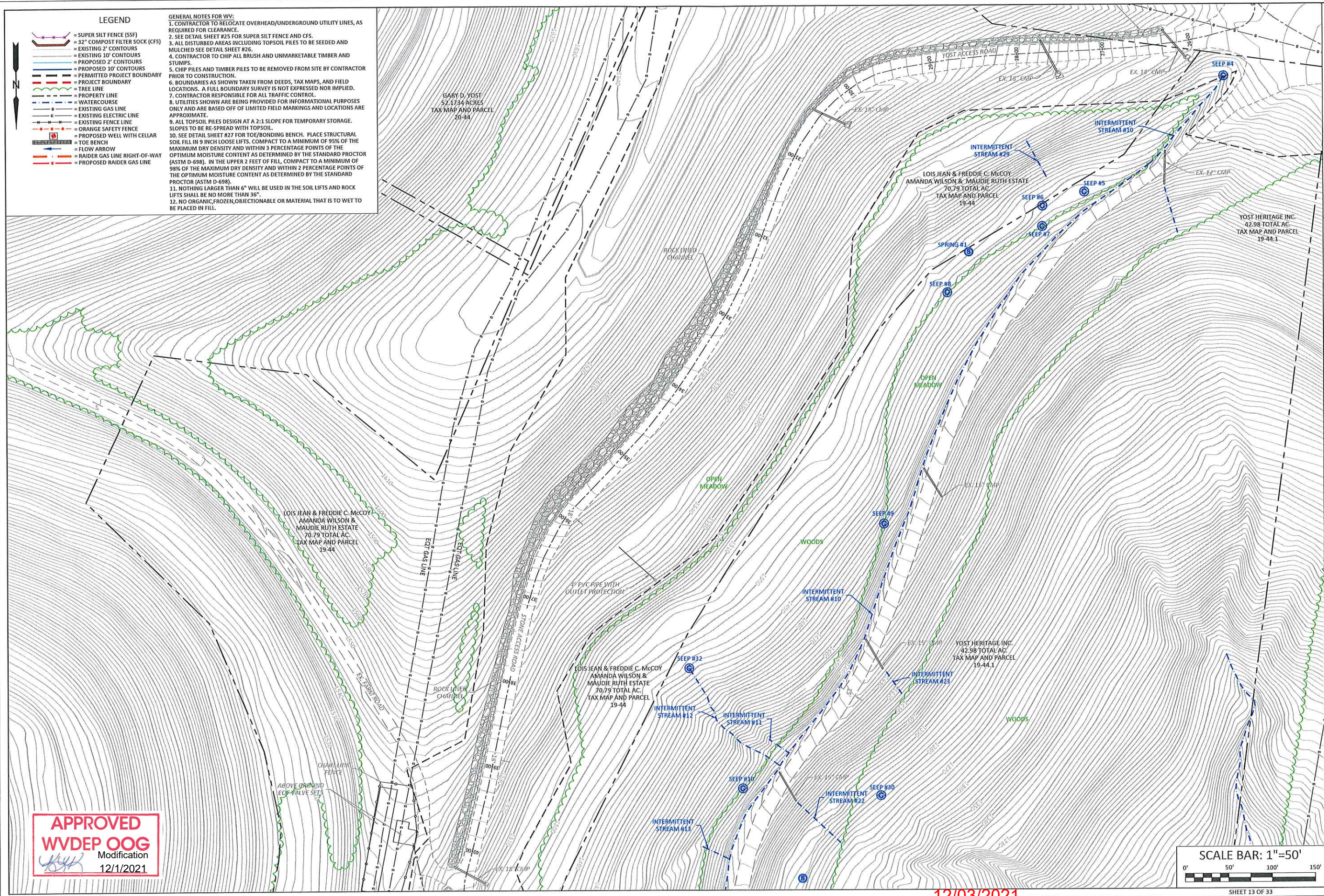
THIS DOCUMENT WAS PREPARED BY:
 BOORD, BENCHEK AND ASSOC., INC.
 FOR: NORTHEAST NATURAL ENERGY, LLC.

DATE:
 JUNE 2021
 YOST WELL PAD
 EXPANSION
 CLAY DISTRICT,
 MONONGALIA
 COUNTY, WV

NO.	DATE	DESCRIPTION



12/03/2021



LEGEND

- = SUPER SILT FENCE (SSF)
- = 32" COMPOST FILTER SOCK (CFS)
- = EXISTING 2' CONTOURS
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E&S CONTROL AND SITE PLAN

THIS DOCUMENT WAS PREPARED BY:
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DATE:
 JUNE 2021

YOST WELL PAD
 EXPANSION

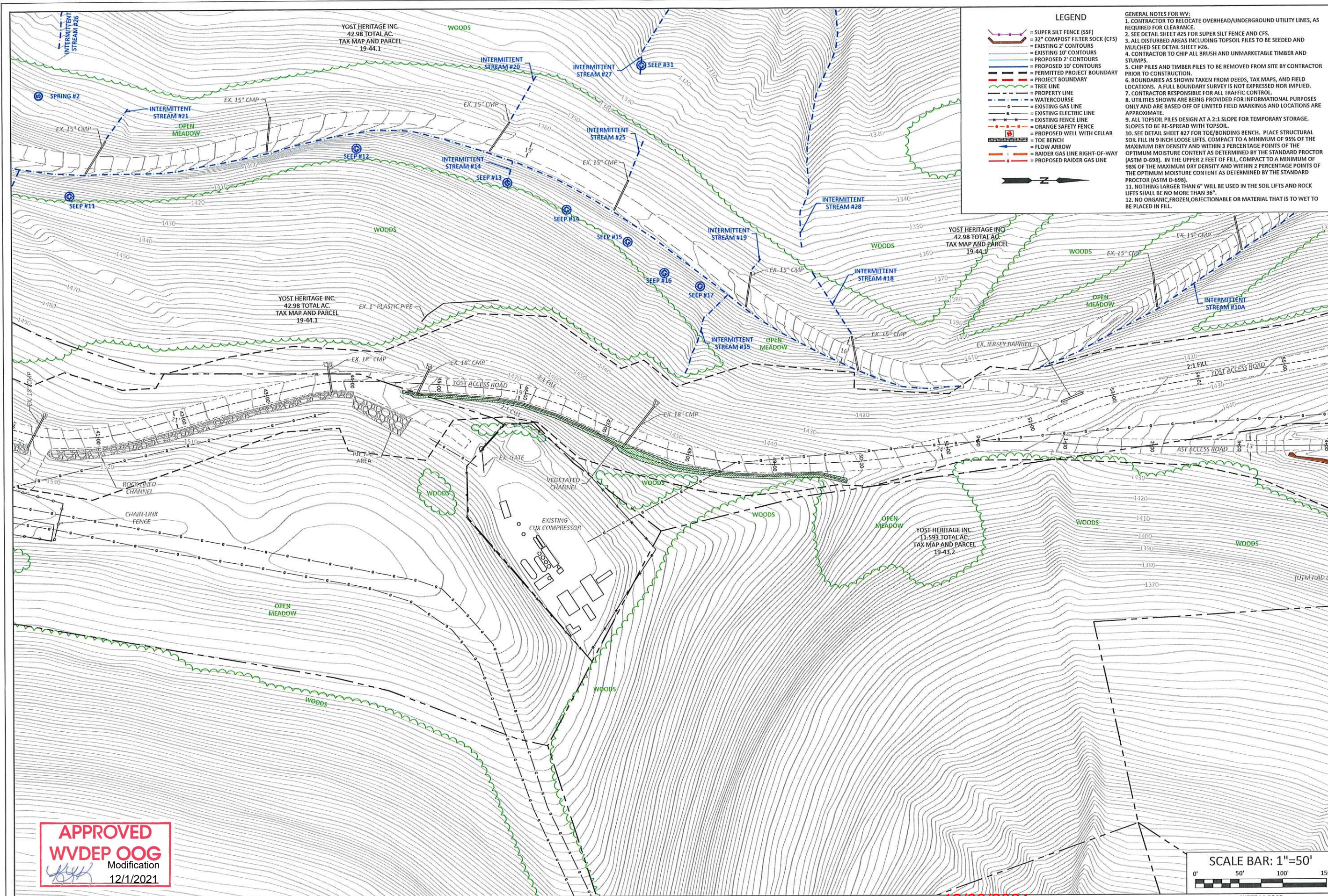
CLAY DISTRICT,
 MONONGALIA
 COUNTY, WV

NO	DATE	REVISIONS DESCRIPTION

APPROVED
WVDEP OOG
 Modification
 12/1/2021



12/03/2021



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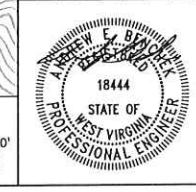
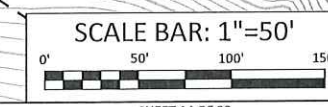
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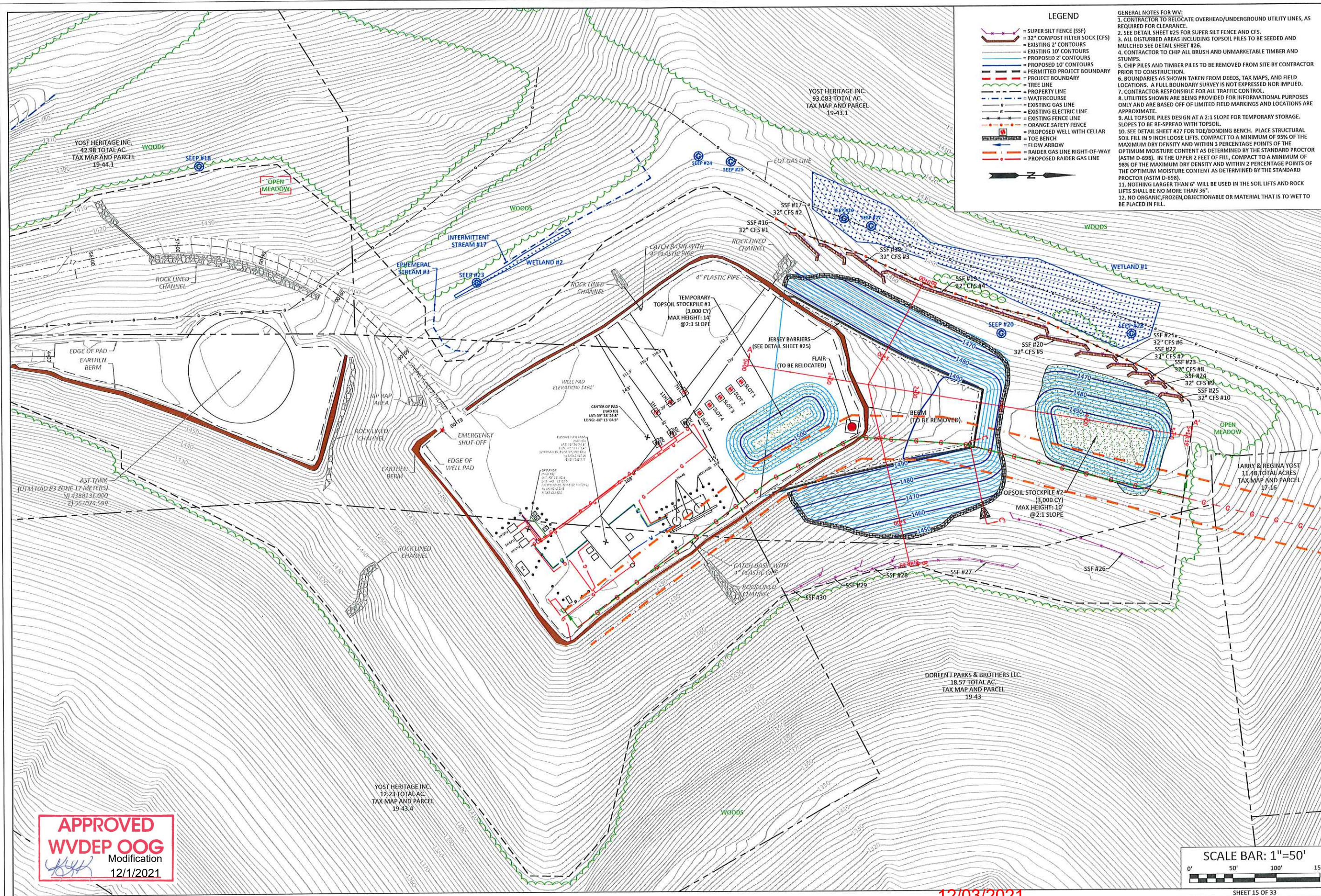
CLAY DISTRICT,
 MONONGALIA
 COUNTY, WV

NO	DATE	REVISIONS	DESCRIPTION

APPROVED
WVDEP OOG
 Modification
 12/1/2021



12/03/2021



LEGEND

- SSSF (Super Silt Fence)
- CFS (Compost Filter Sock)
- Existing 2' Contours
- Existing 10' Contours
- Proposed 2' Contours
- Proposed 10' Contours
- Permitted Project Boundary
- Project Boundary
- Tree Line
- Property Line
- Watercourse
- Existing Gas Line
- Existing Electric Line
- Existing Fence Line
- Orange Safety Fence
- Proposed Well with Cellar
- Toe Bench
- Flow Arrow
- Raider Gas Line Right-of-Way
- Proposed Raider Gas Line

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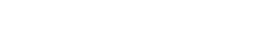
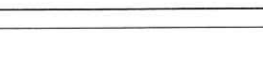
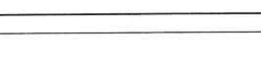
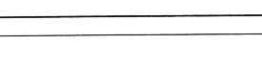
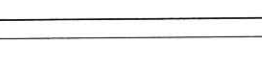
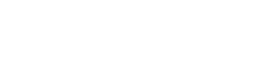
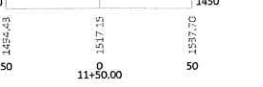
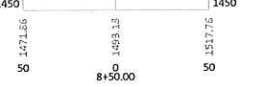
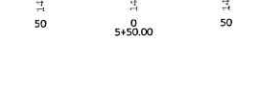
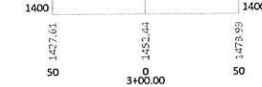
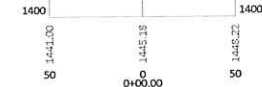
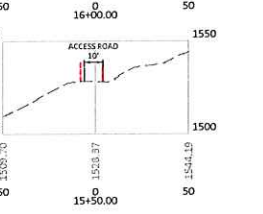
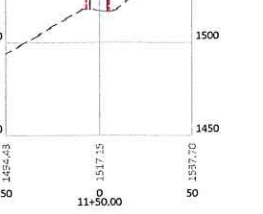
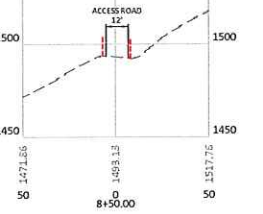
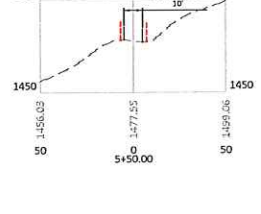
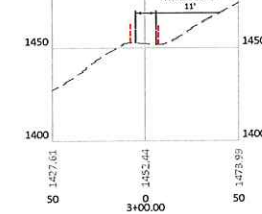
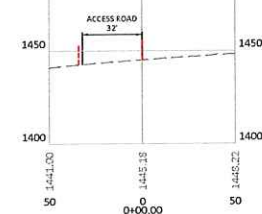
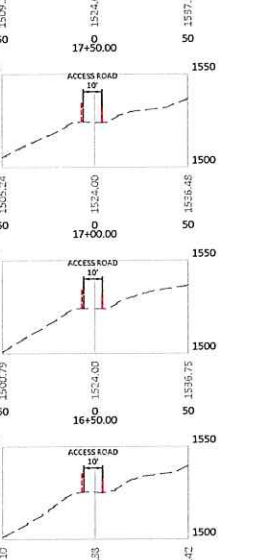
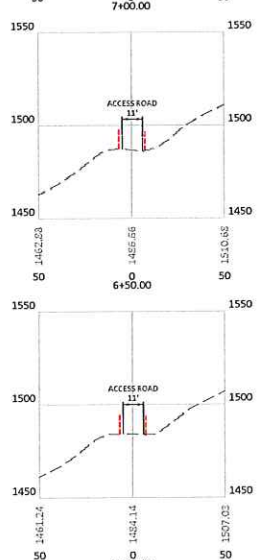
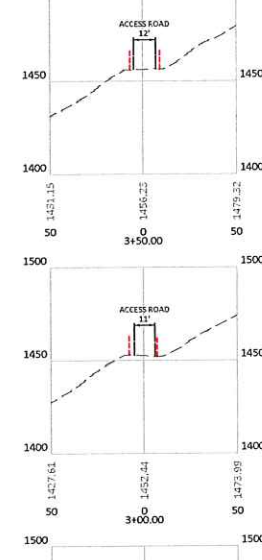
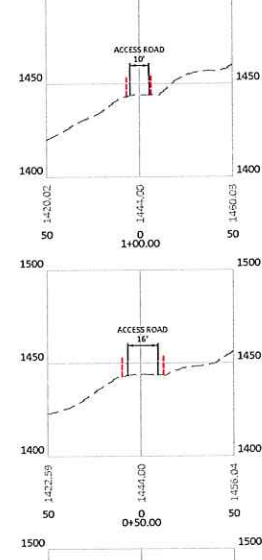
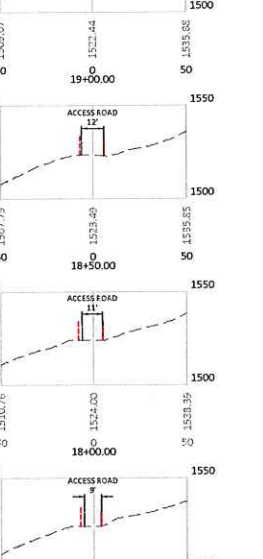
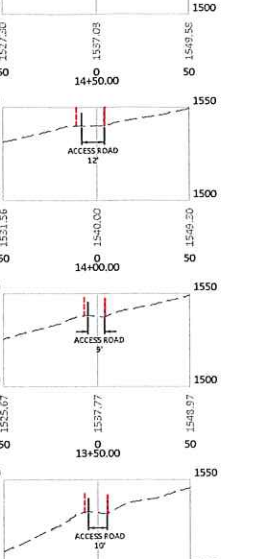
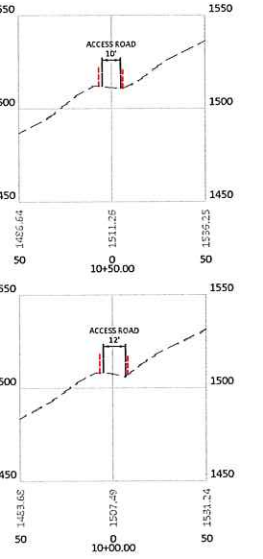
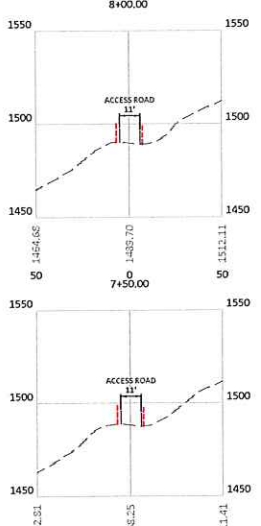
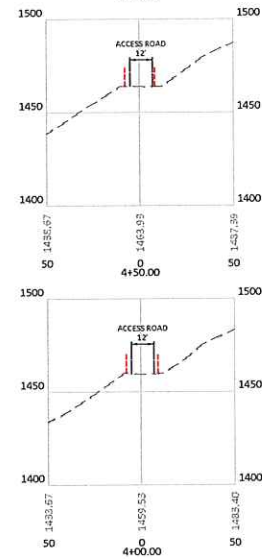
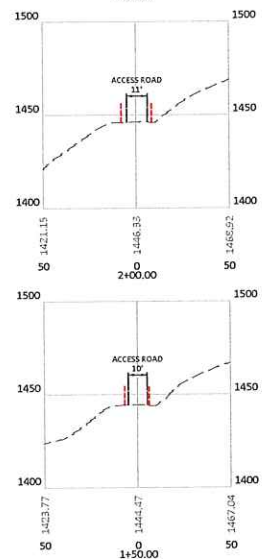
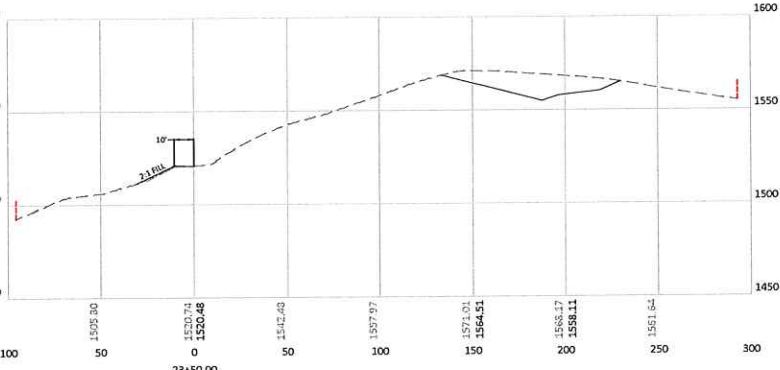
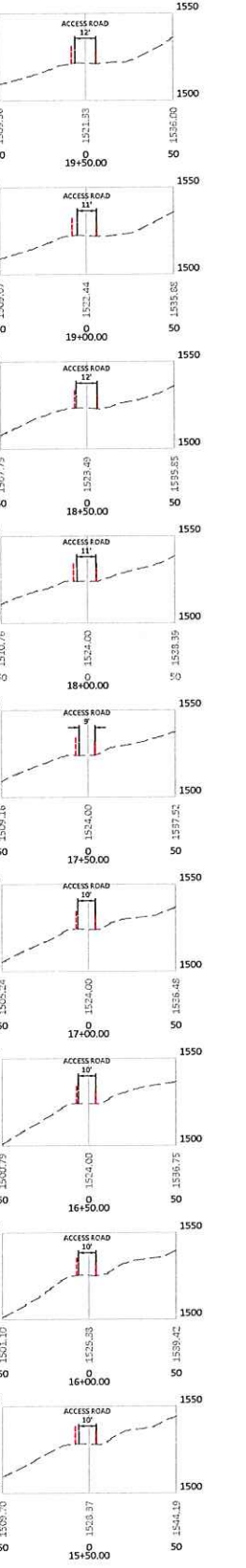
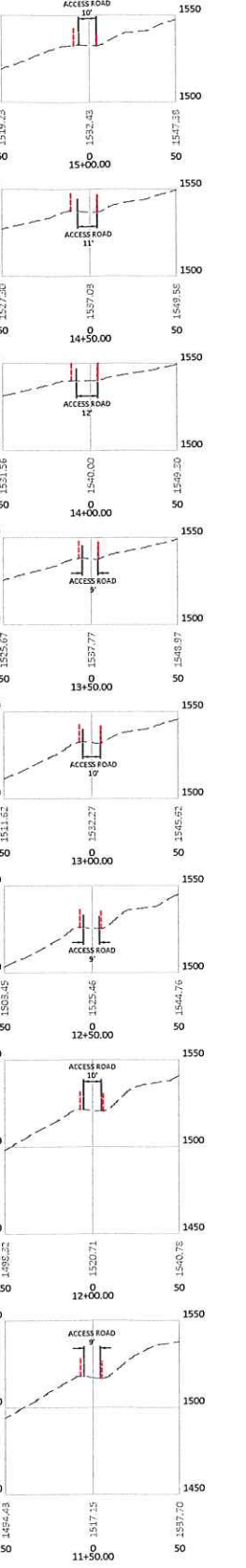
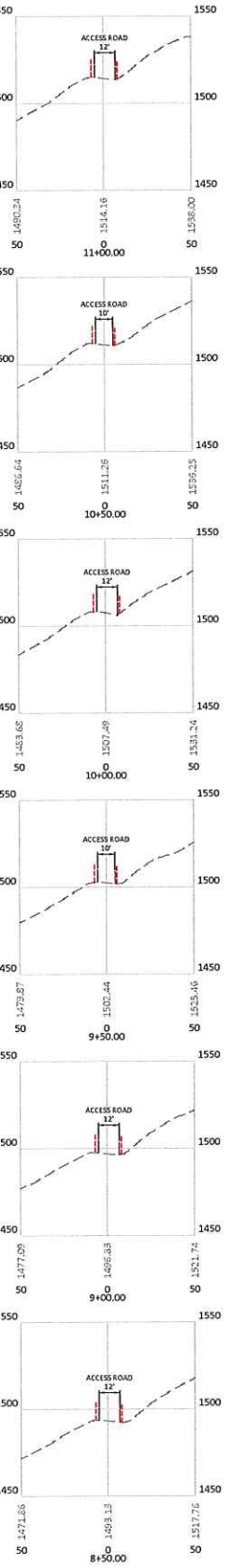
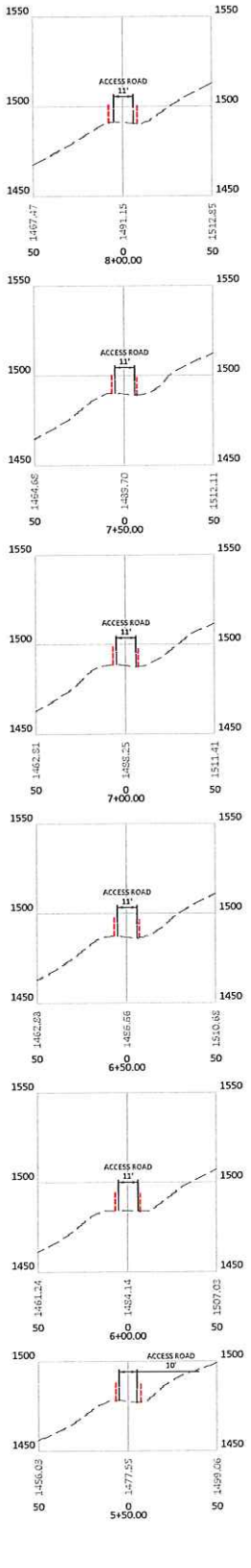
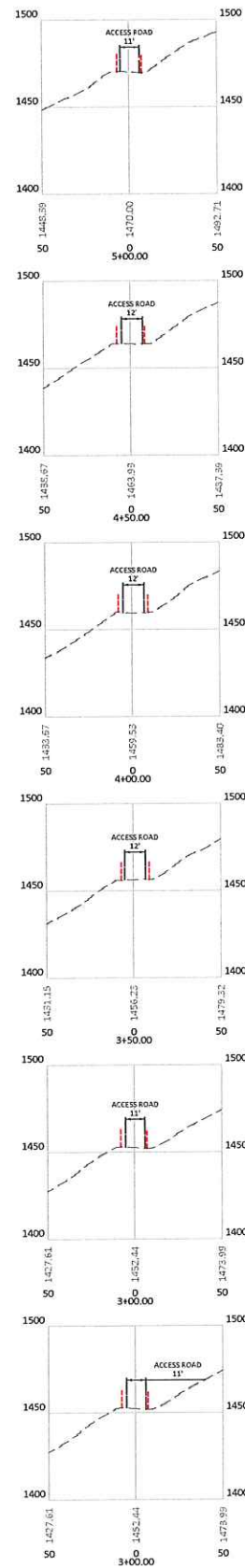
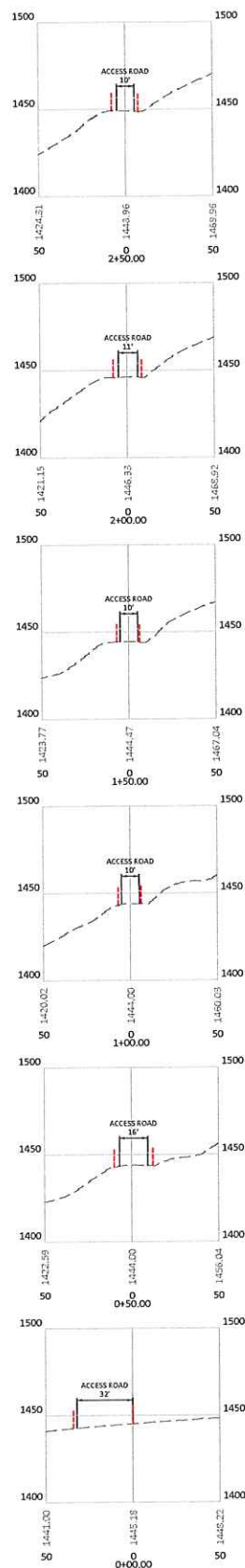
DATE: JUNE 2021
 YOST WELL PAD EXPANSION
 CLAY DISTRICT, MONONGALIA COUNTY, WV

NO.	DATE	REVISIONS DESCRIPTION

APPROVED WVDEP OOG
 Modification
 12/1/2021



12/03/2021



APPROVED
WVDEP OOG
Modification
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LEGEND

- - - = PROJECT BOUNDARY
- = SUPER SILT FENCE
- = EXISTING EDGE OF ROAD
- - - = EXISTING GRADE
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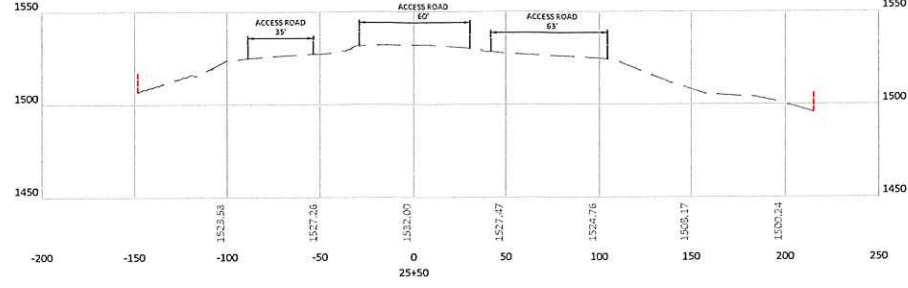
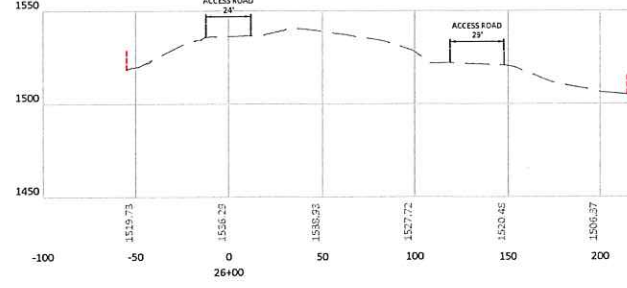
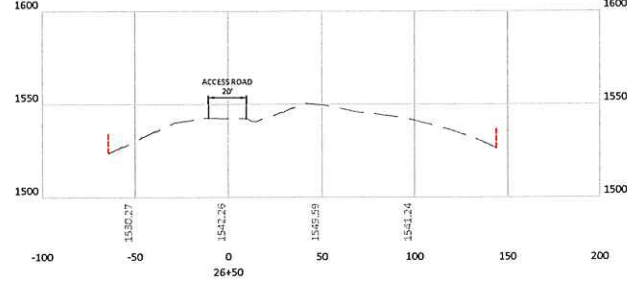
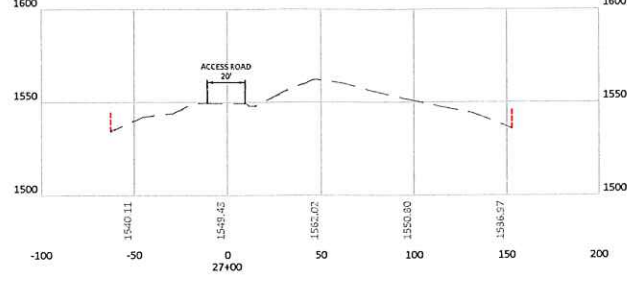
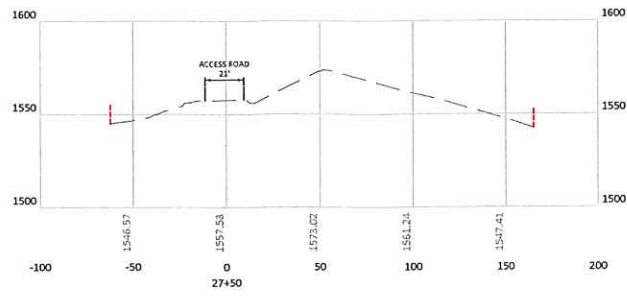
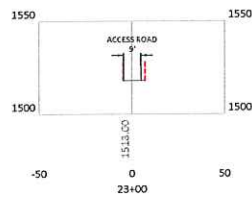
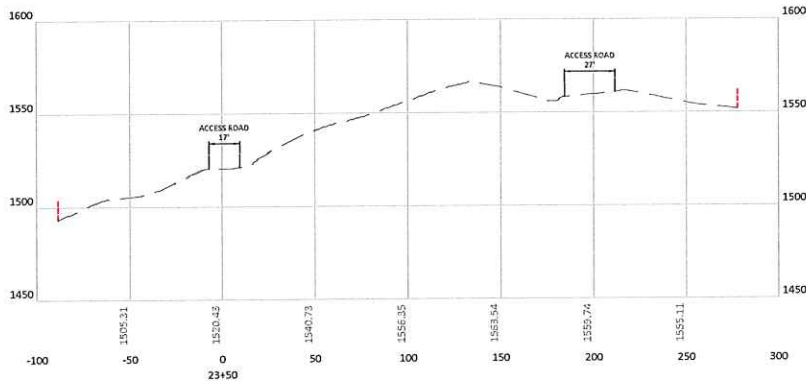
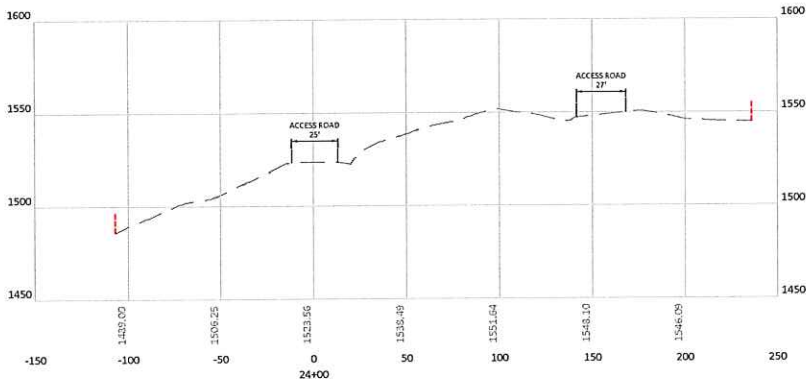
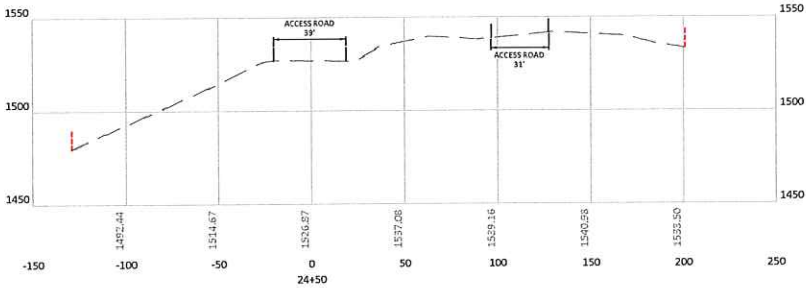
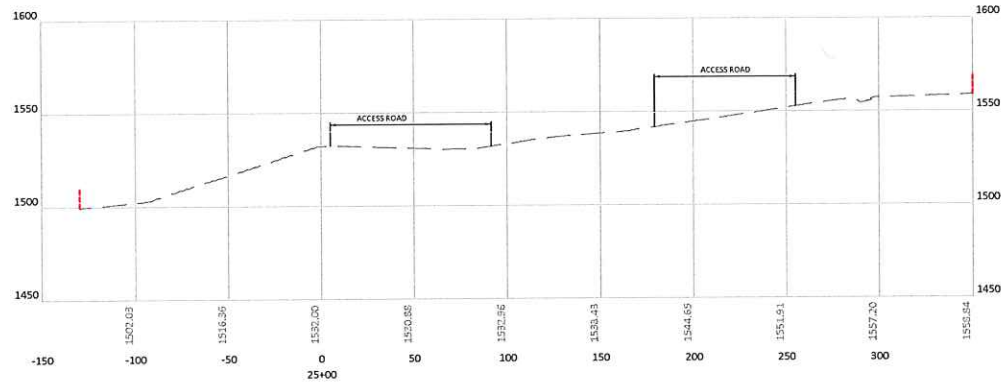
**YOST ACCESS ROAD
CROSS-SECTIONS**
THIS DOCUMENT WAS PREPARED BY:
BOORD, BENCHEK AND ASSOC., INC.
FOR: NORTHEAST NATURAL ENERGY, LLC.

DATE:
JUNE 2021
YOST WELL PAD
EXPANSION
CLAY DISTRICT,
MONONGALIA
COUNTY, WV

NO	DATE	REVISIONS	DESCRIPTION

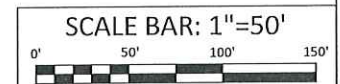
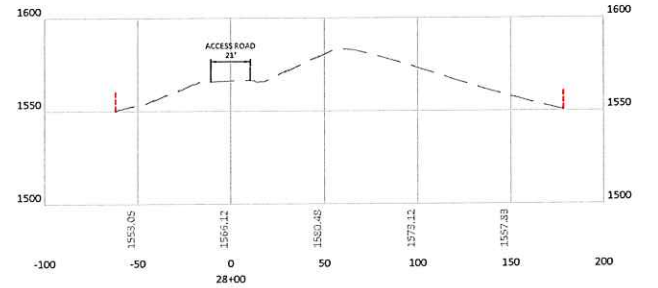
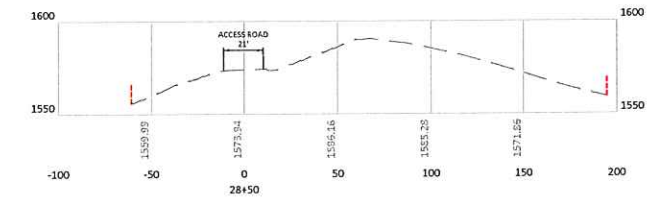
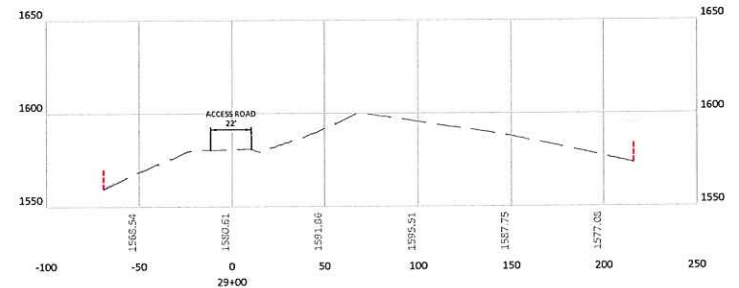
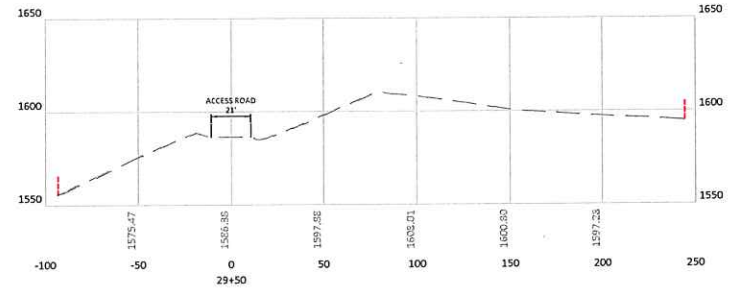
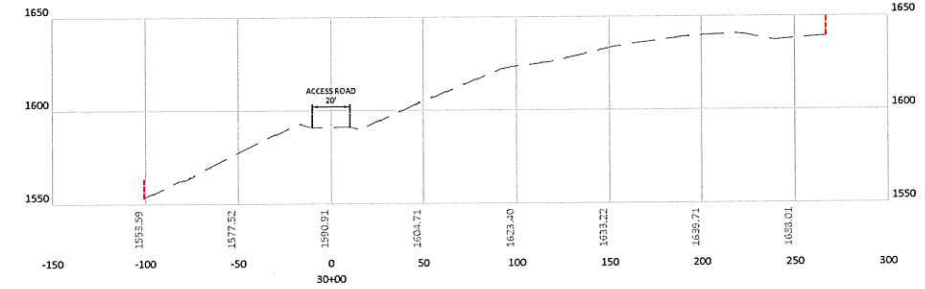


12/03/2021



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WVDEP OOG
Modification
12/1/2021

LEGEND
 - - - - - = PROJECT BOUNDARY
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BOORD, BENCHEK and ASSOC., INC.
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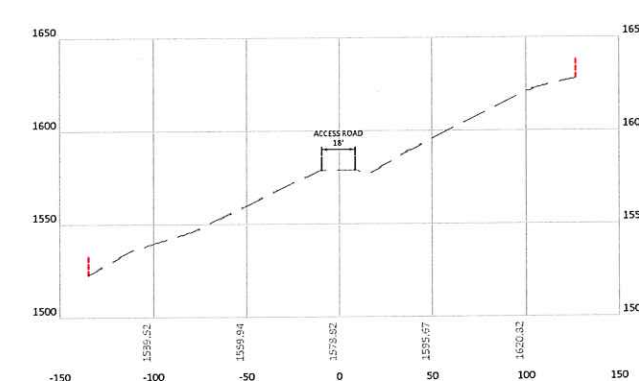
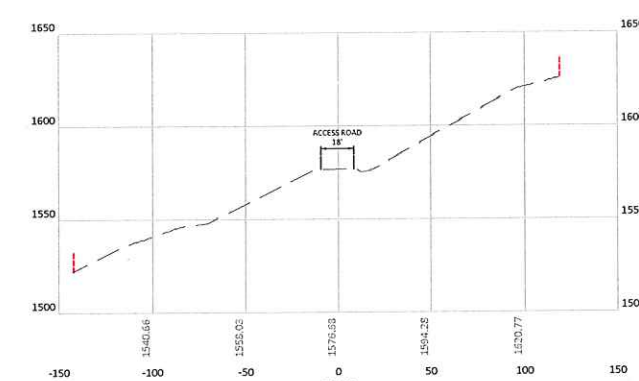
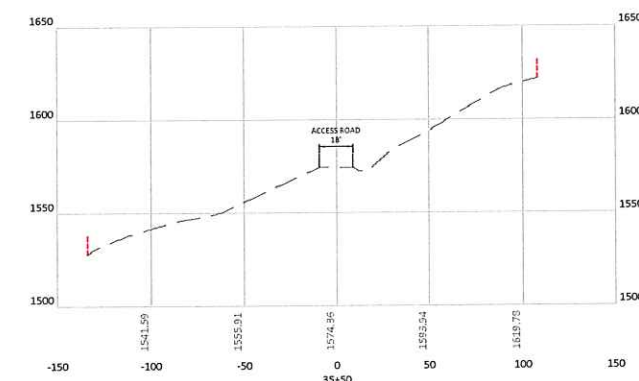
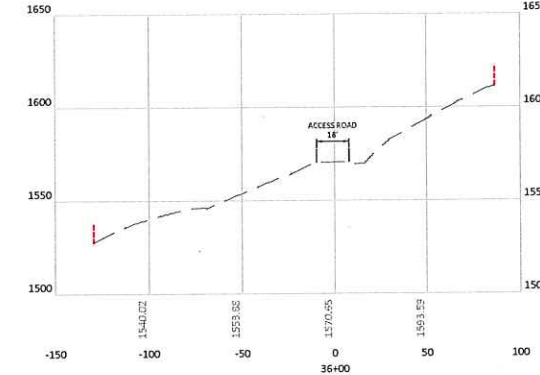
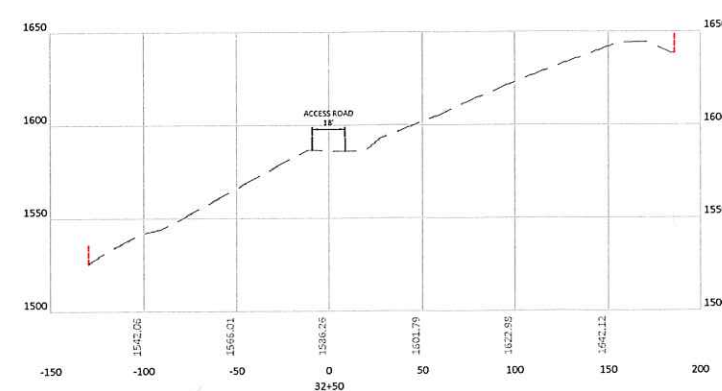
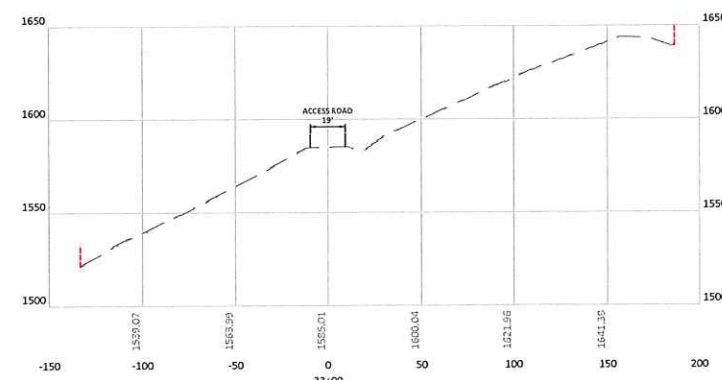
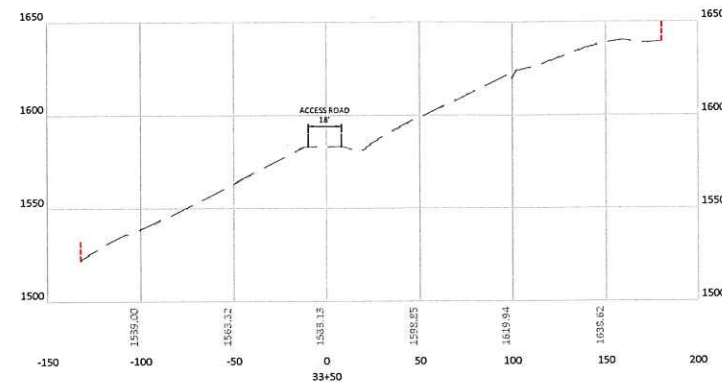
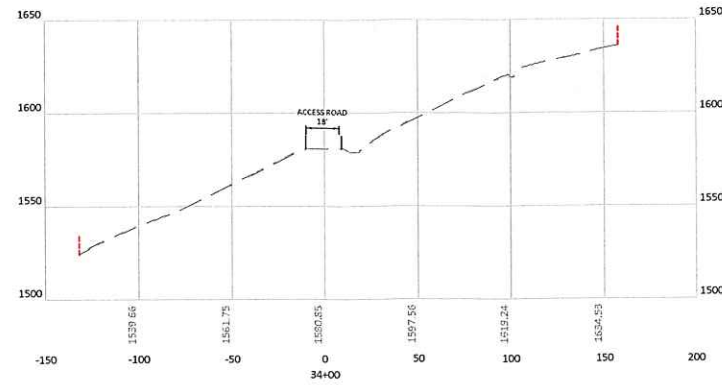
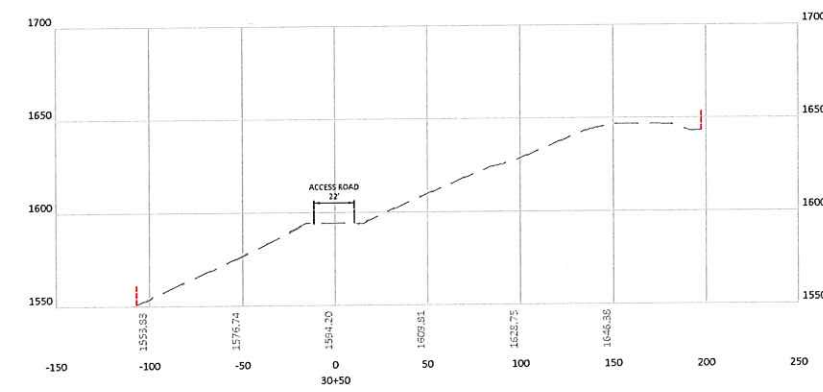
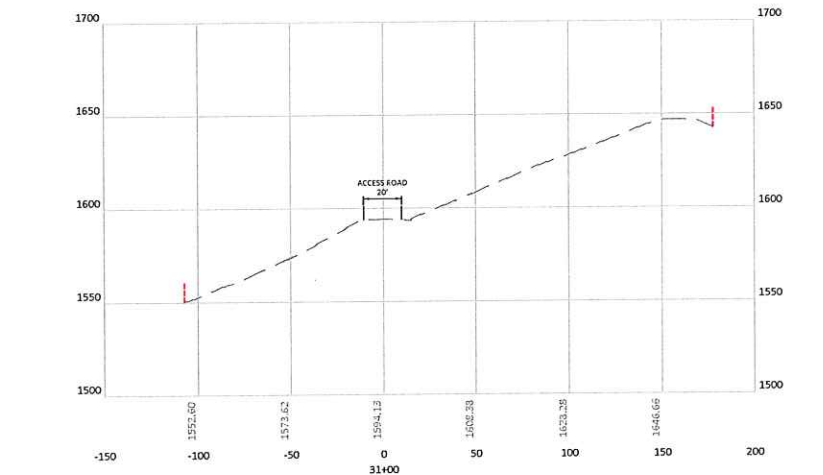
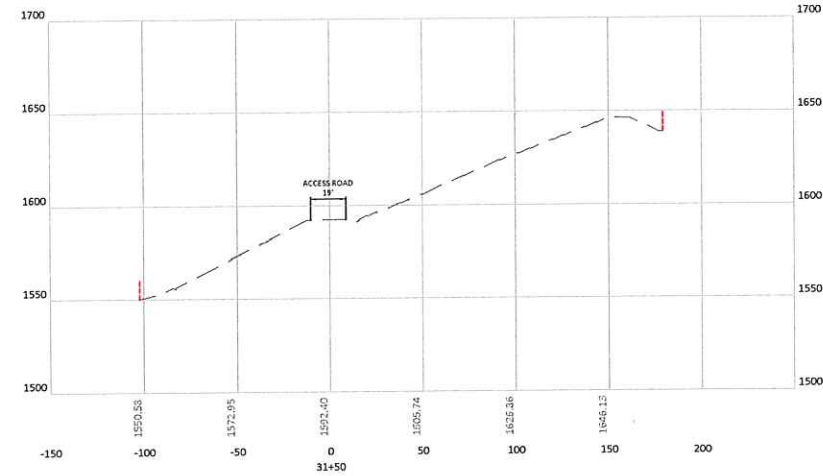
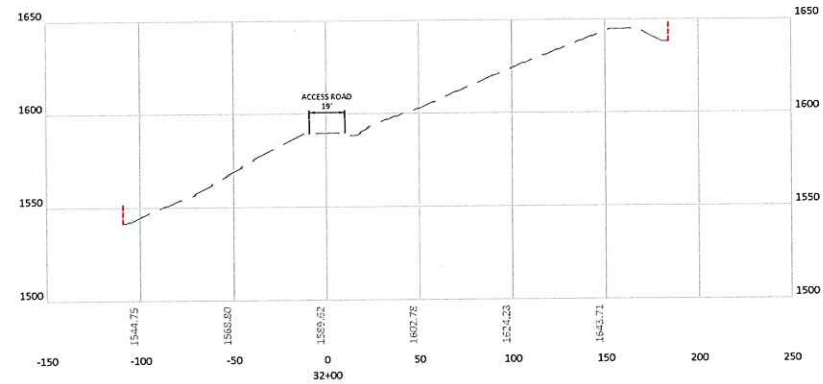
YOST WELL PAD
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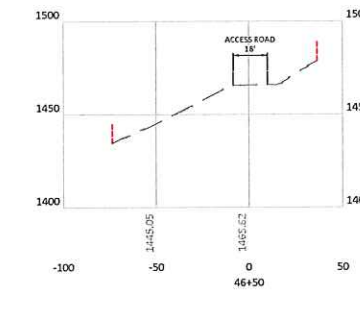
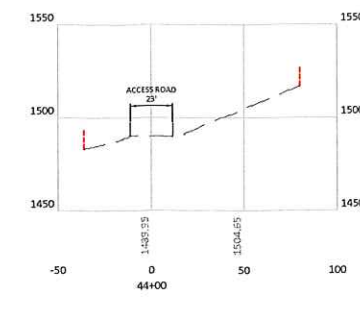
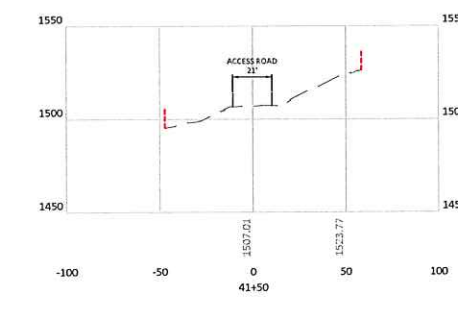
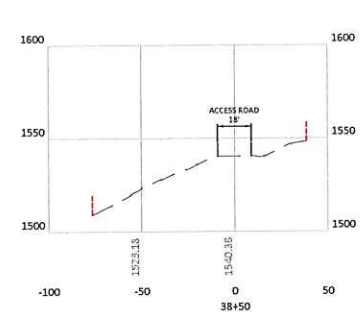
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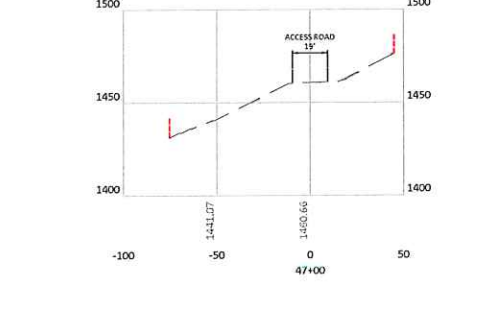
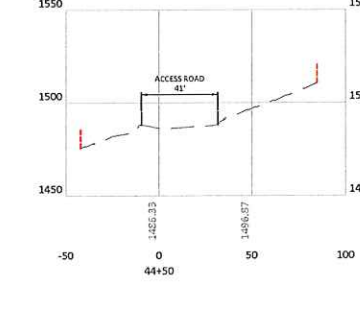
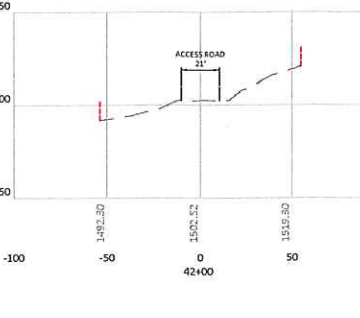
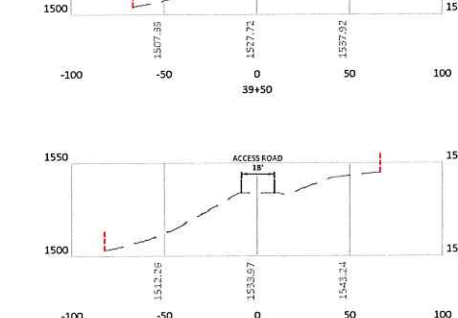
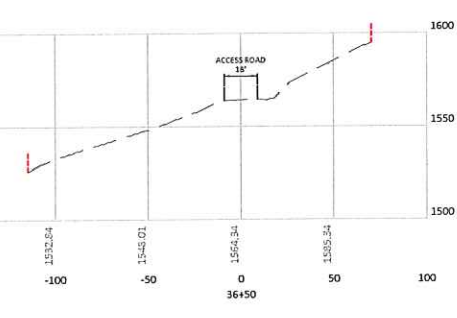
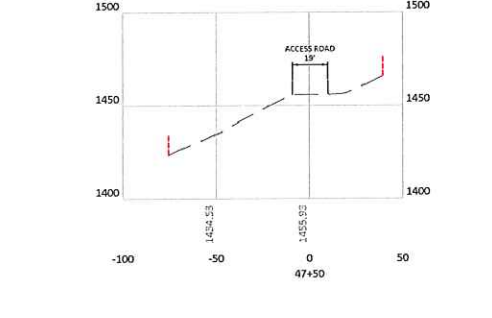
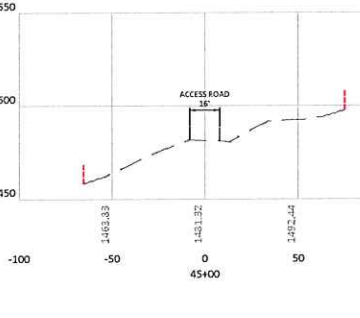
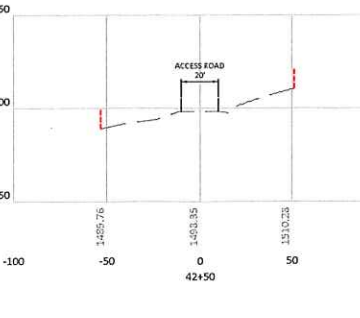
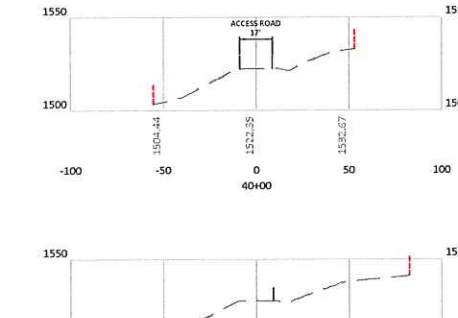
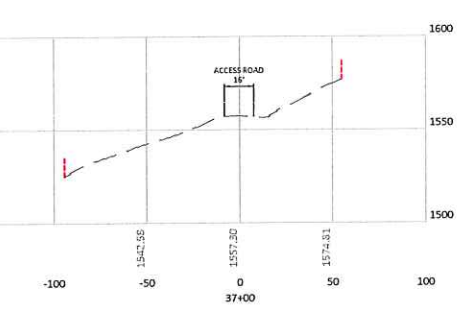
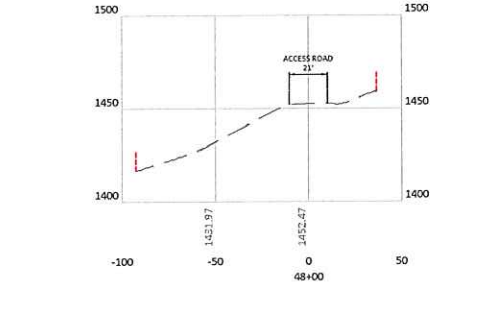
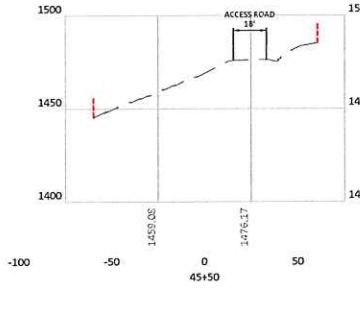
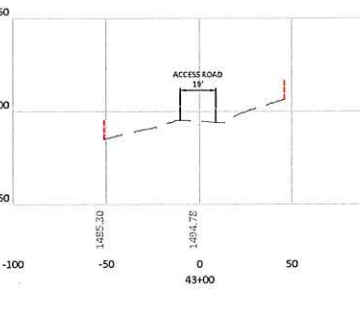
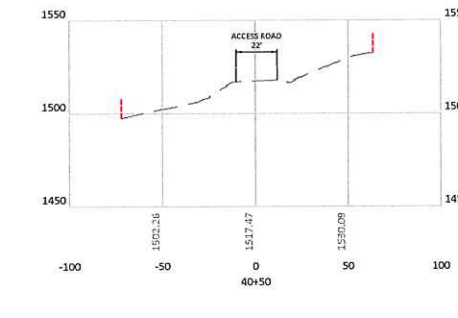
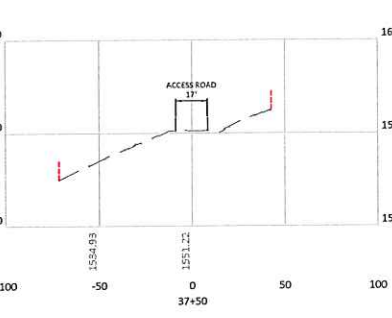
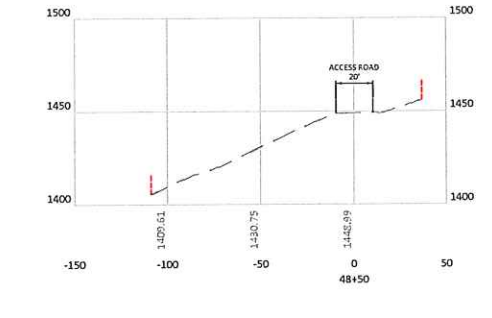
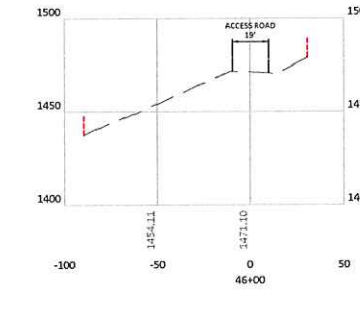
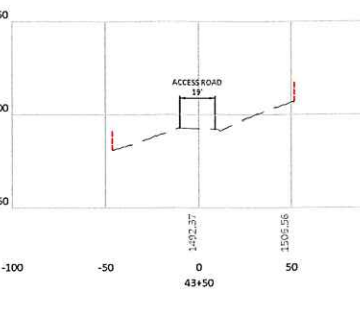
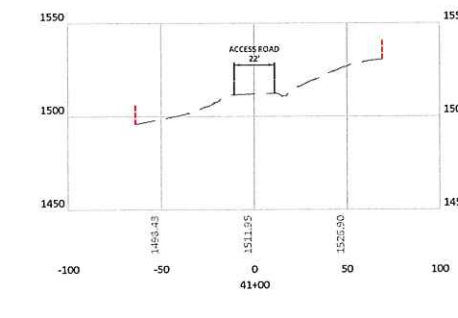
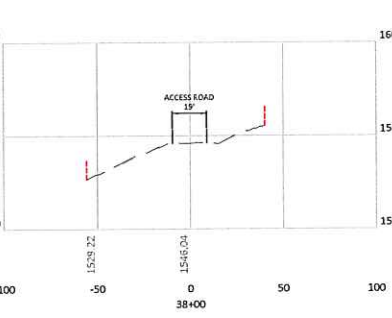


12/03/2021



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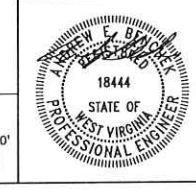
SHEET 20 OF 33

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Engineering, Surveying, Construction,
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Southpointe, PA 15317 Phone: 724-745-1055

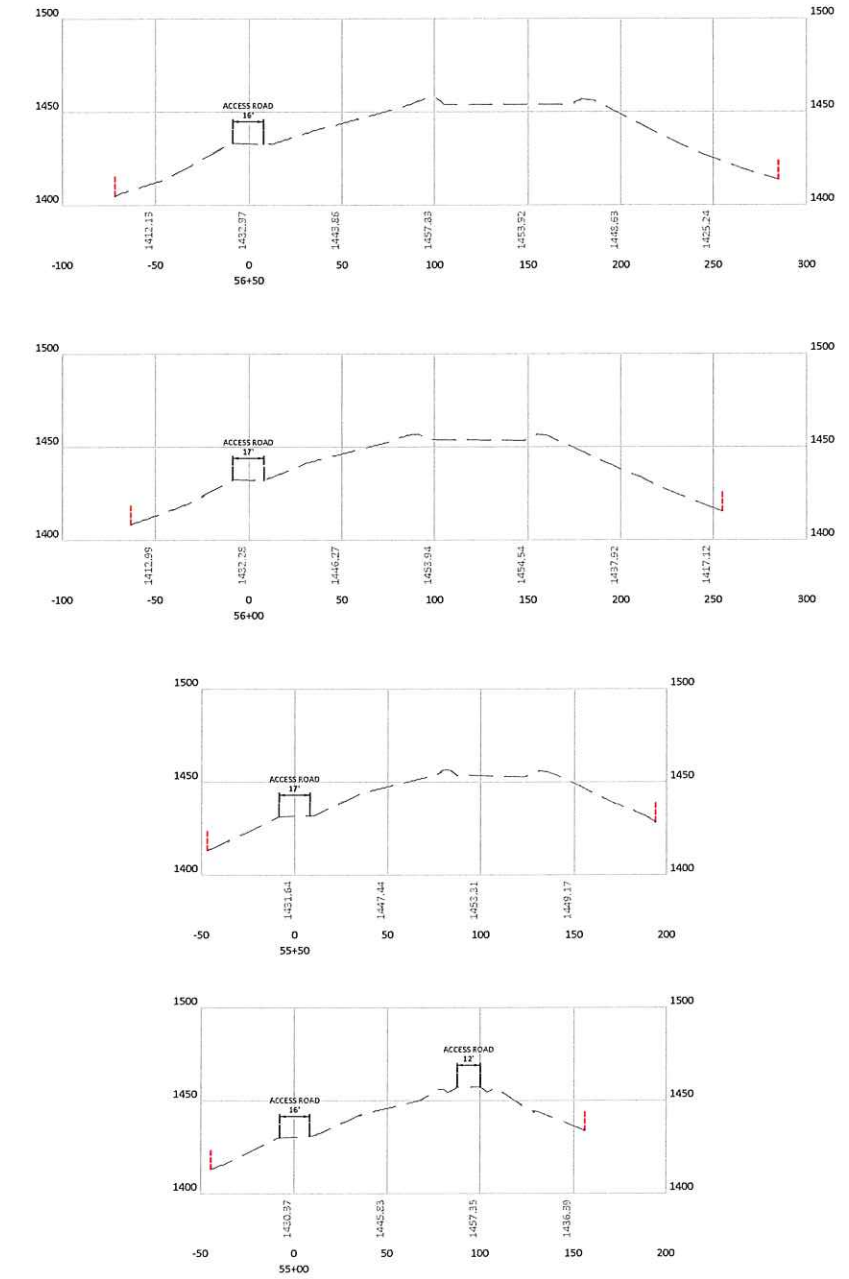
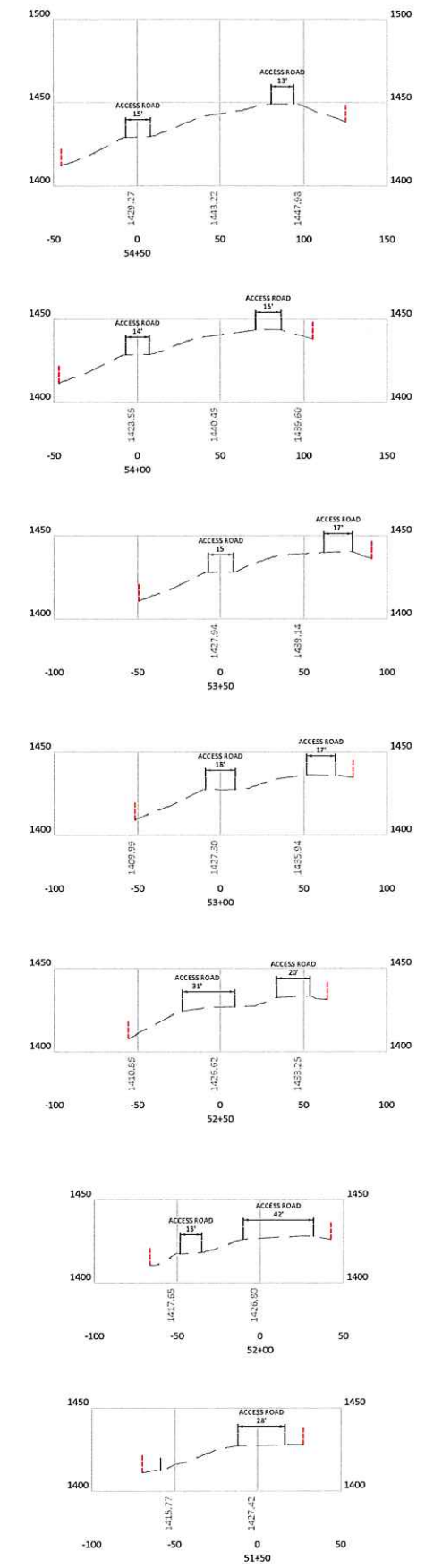
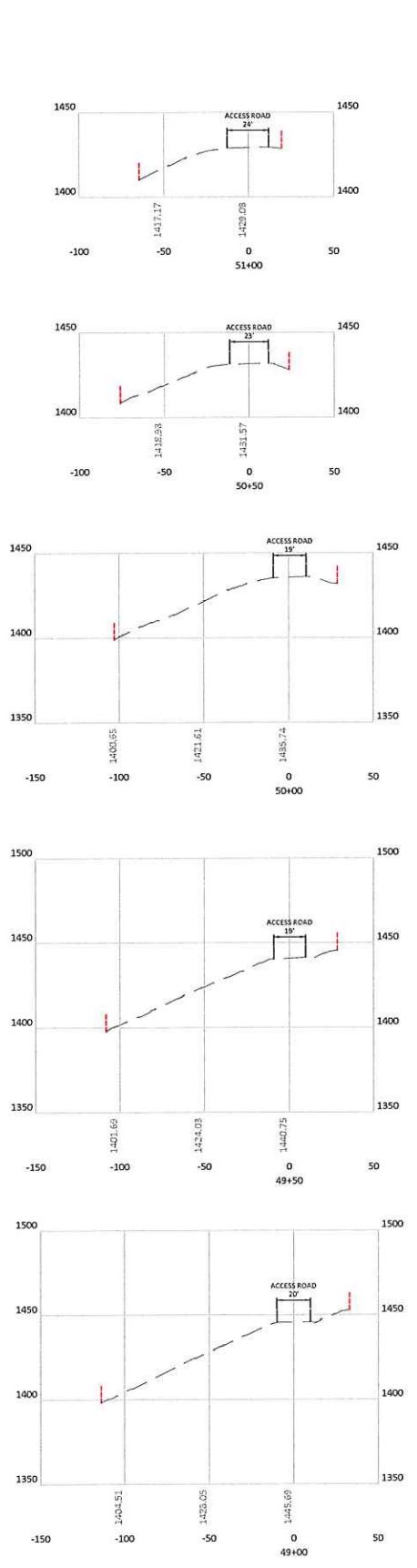
**YOST ACCESS ROAD
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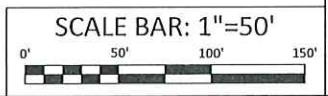


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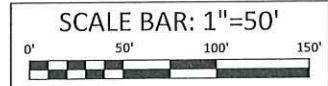
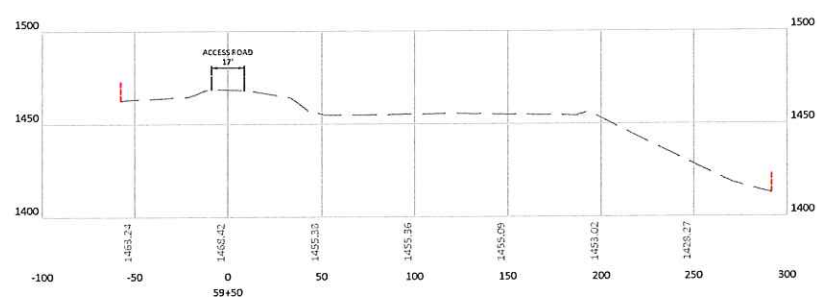
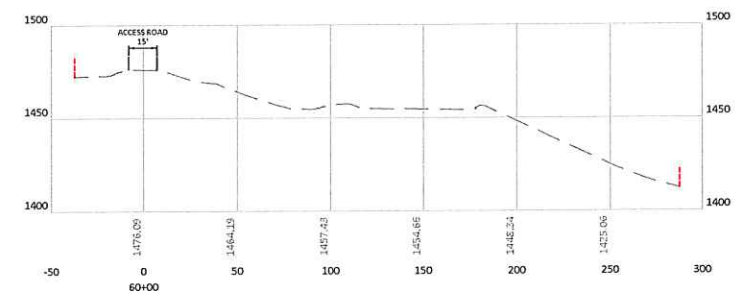
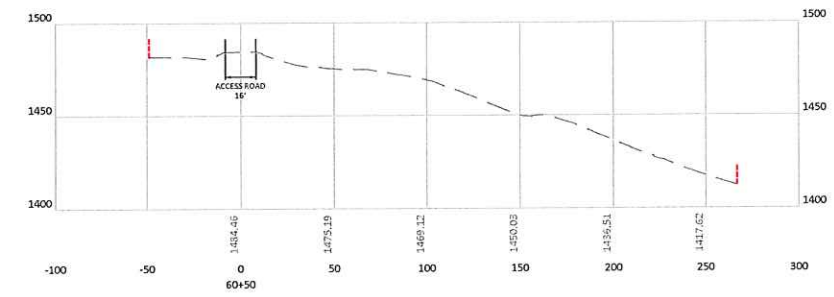
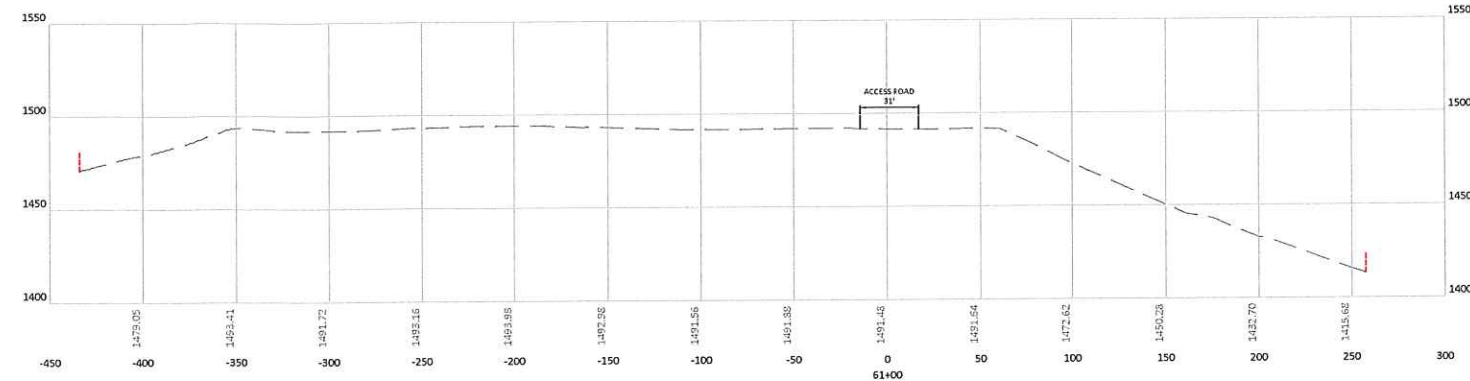
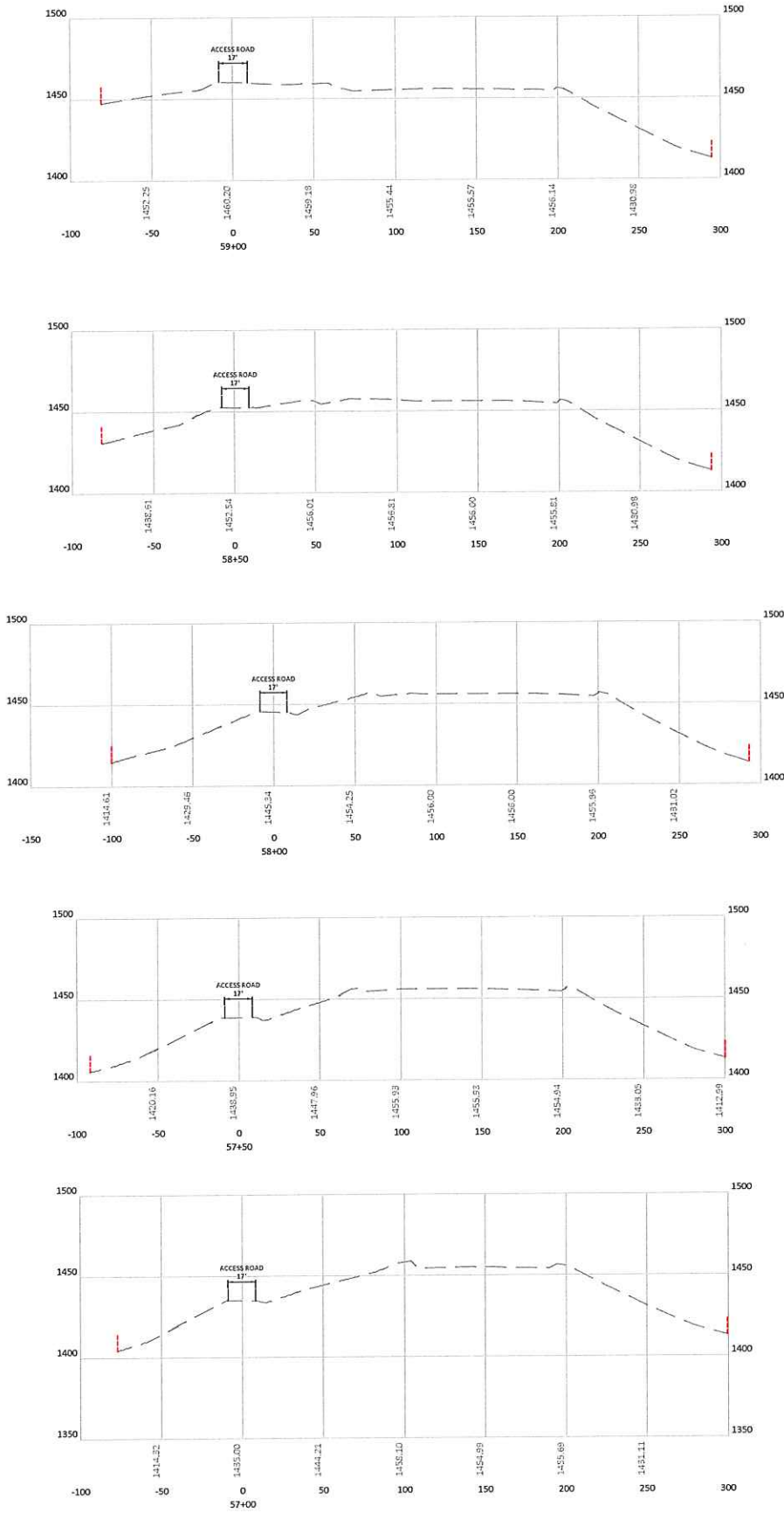
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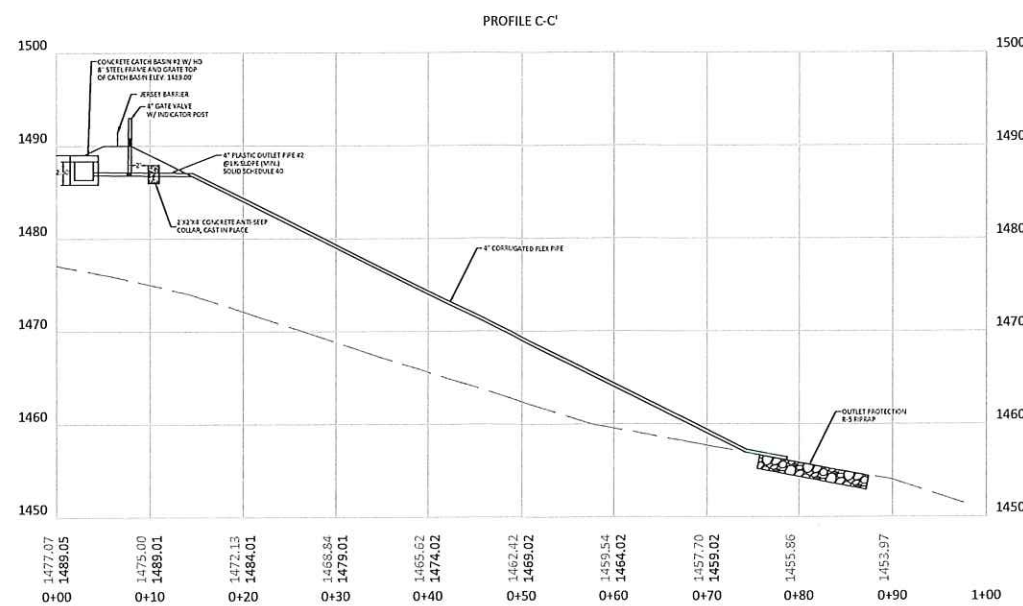
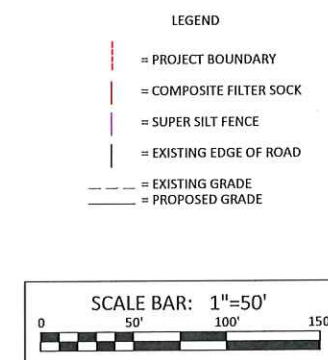
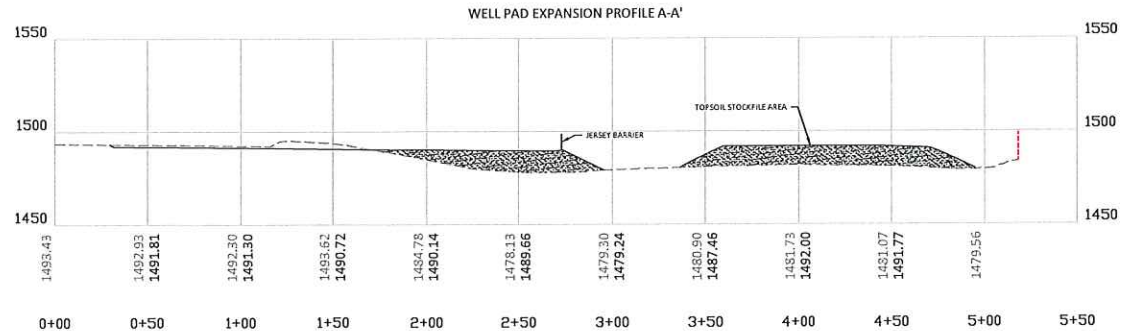
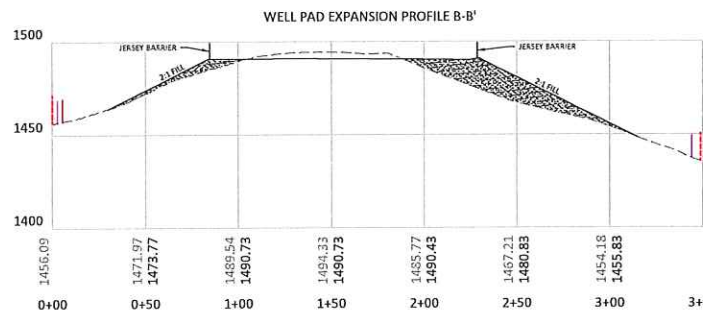
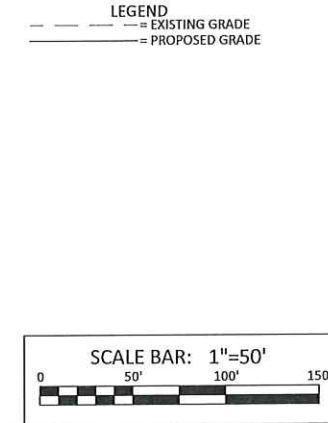
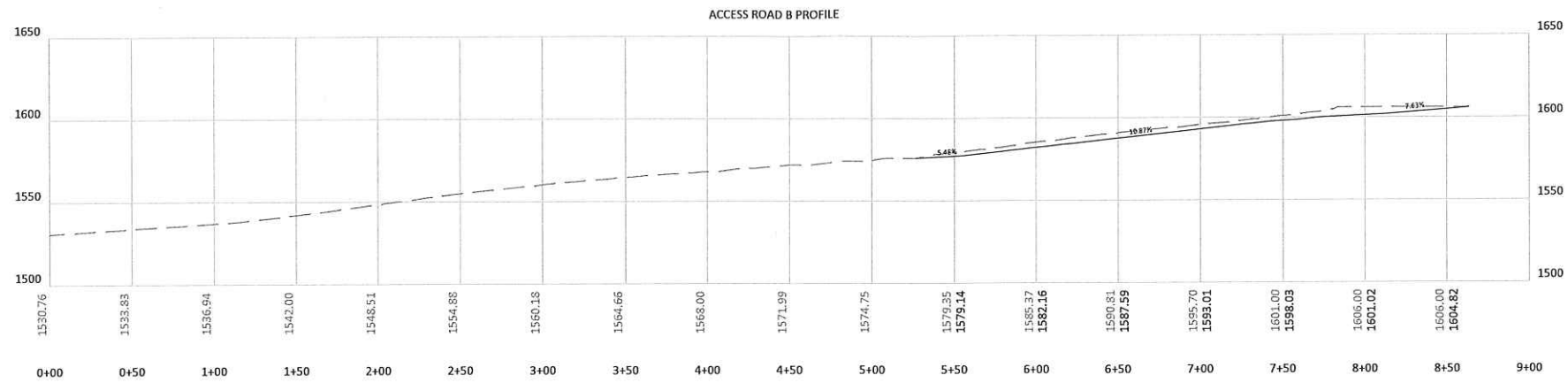
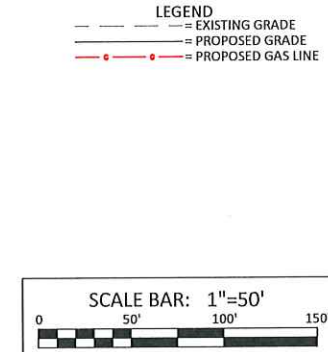
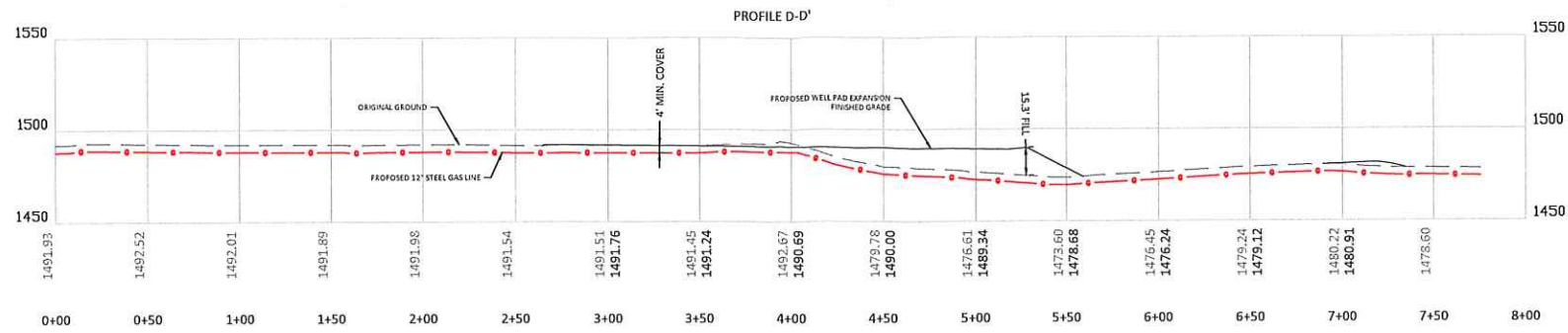
YOST ACCESS ROAD CROSS-SECTIONS
 THIS DOCUMENT WAS PREPARED BY:
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 JUNE 2021
 YOST WELL PAD EXPANSION
 CLAY DISTRICT,
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NOTES:
 - SEE DETAIL SHEET #27 FOR TOE/BONDING BENCH.
 - PLACE STRUCTURAL SOIL FILL IN 9 INCH LOOSE LIFTS. COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AND WITHIN 3 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE STANDARD PROCTOR (ASTM D-698). IN THE UPPER 2 FEET OF FILL, COMPACT TO A MINIMUM OF 98% OF THE MAXIMUM DRY DENSITY AND WITHIN 2 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE STANDARD PROCTOR (ASTM D-698).
 - NOTHING LARGER THAN 6" WILL BE USED IN THE SOIL LIFTS AND ROCK LIFTS SHALL BE NO MORE THAN 36".
 - NO ORGANIC, FROZEN, OBJECTIONABLE OR MATERIAL THAT IS TO WET TO BE PLACED IN FILL.

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ACCESS ROAD B, WELL PAD EXPANSION
 A-A', B-B', C-C' & D-D' PROFILES
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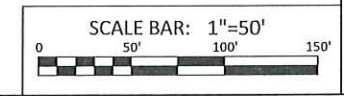
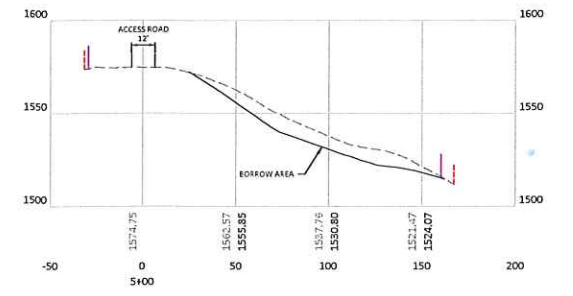
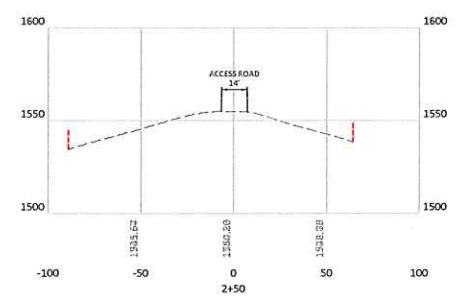
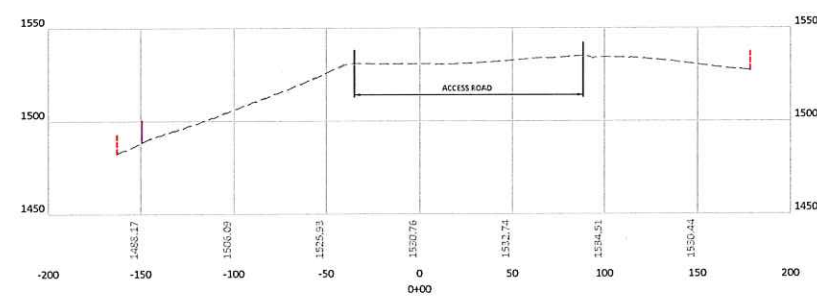
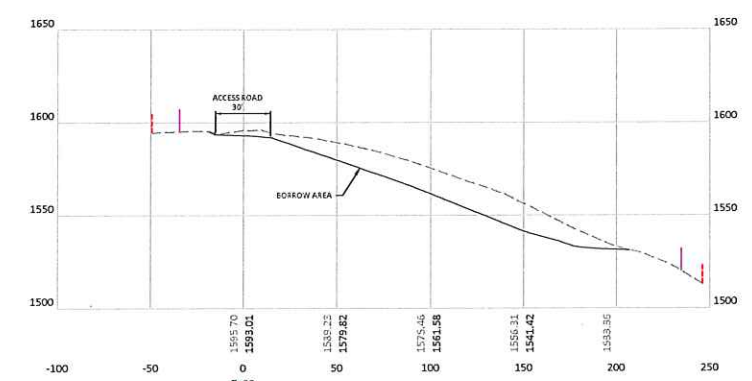
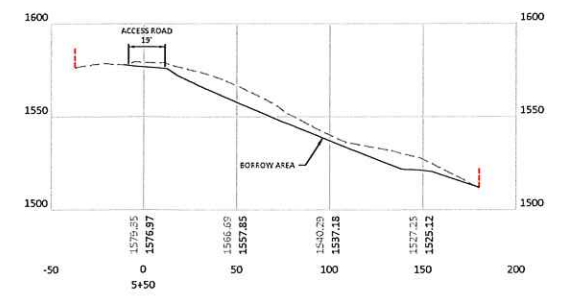
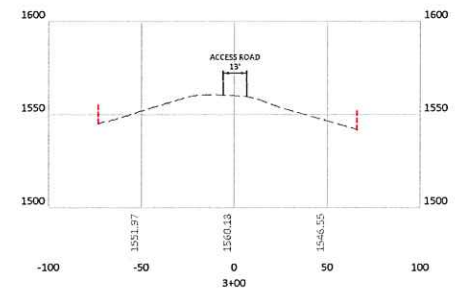
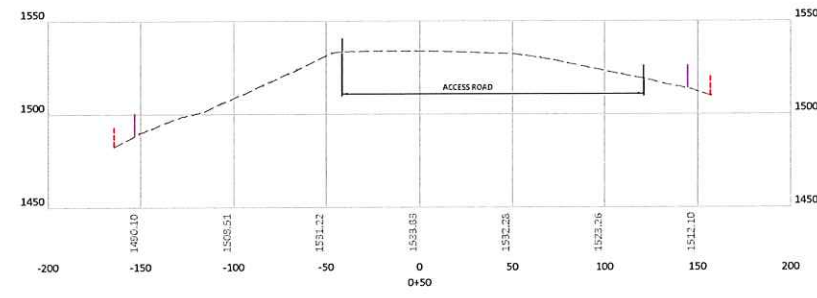
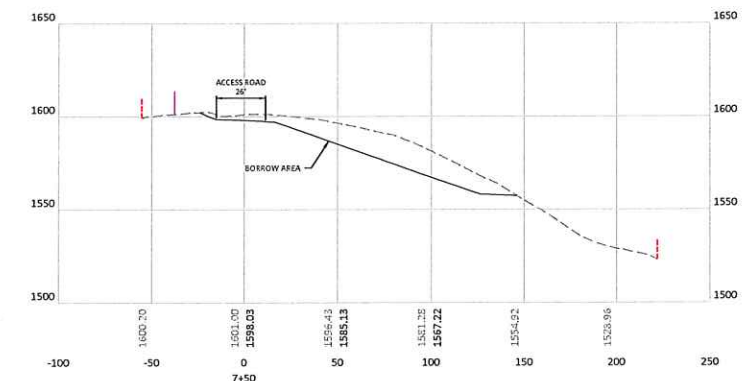
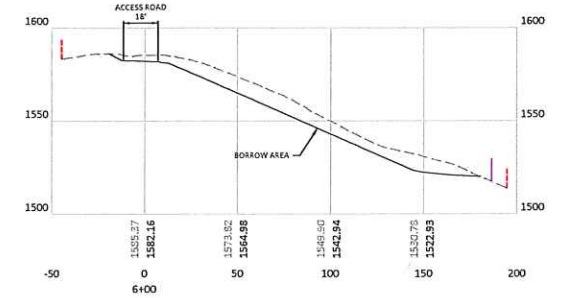
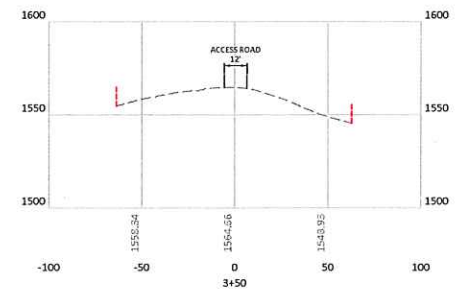
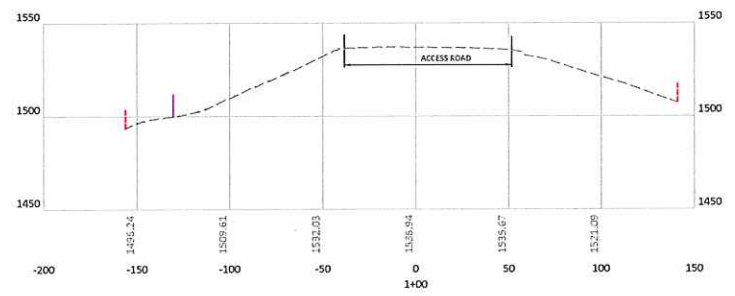
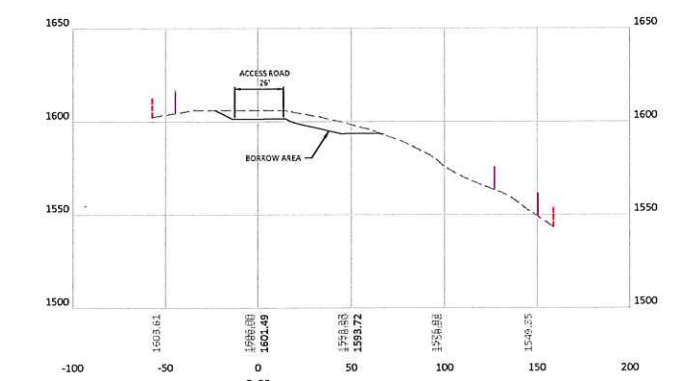
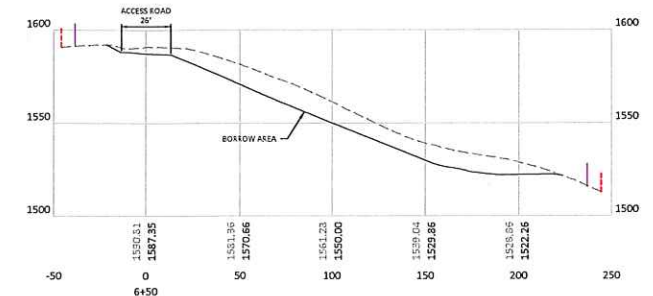
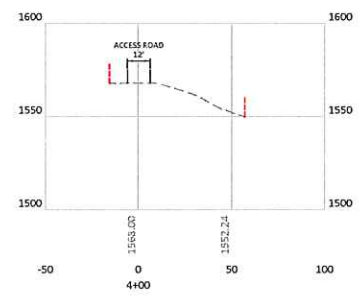
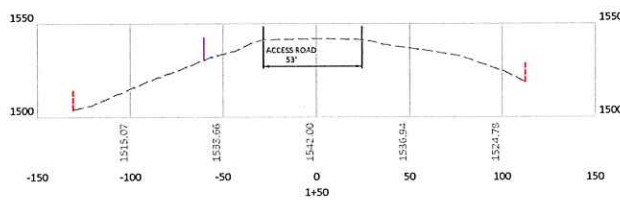
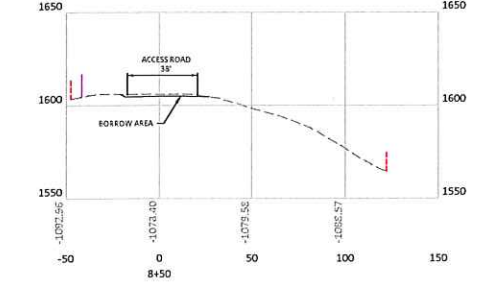
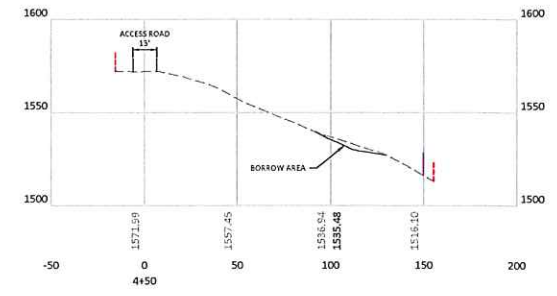
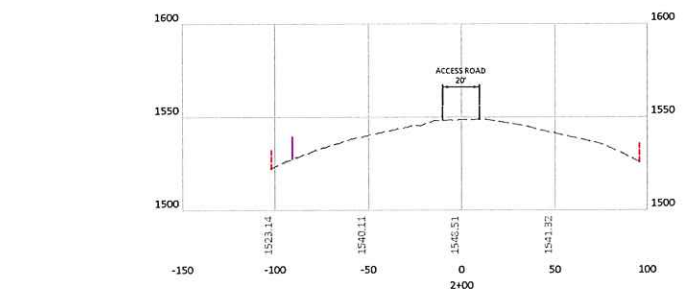
NO	DATE	REVISIONS	DESCRIPTION



12/03/2021

APPROVED
WVDEP OOG
 Modification
 12/1/2021

LEGEND
 - - - = PROJECT BOUNDARY
 - - - = SUPER SILT FENCE
 - - - = EXISTING EDGE OF ROAD
 - - - = EXISTING GRADE
 - - - = PROPOSED GRADE



BOORD, BENCHEK and ASSOC., INC.
 Engineering, Surveying, Construction,
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 Southpointe, PA 15317 Phone: 724-746-1055

**ACCESS ROAD B
 CROSS-SECTIONS**
 THIS DOCUMENT WAS PREPARED BY:
 BOORD, BENCHEK AND ASSOC., INC.
 FOR: NORTHEAST NATURAL ENERGY, LLC.

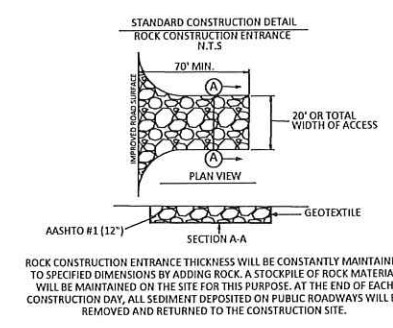
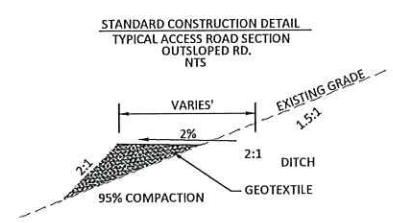
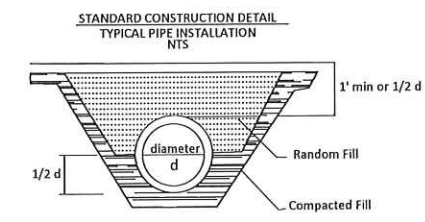
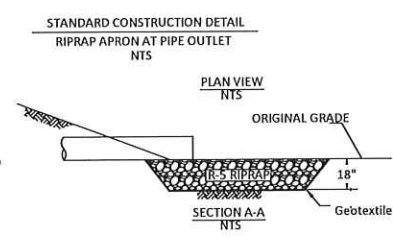
DATE:
 JUNE 2021
 YOST WELL PAD
 EXPANSION
 CLAY DISTRICT,
 MONONGALIA
 COUNTY, WV

NO	DATE	DESCRIPTION



12/03/2021

NO	DATE	REVISIONS	DESCRIPTION

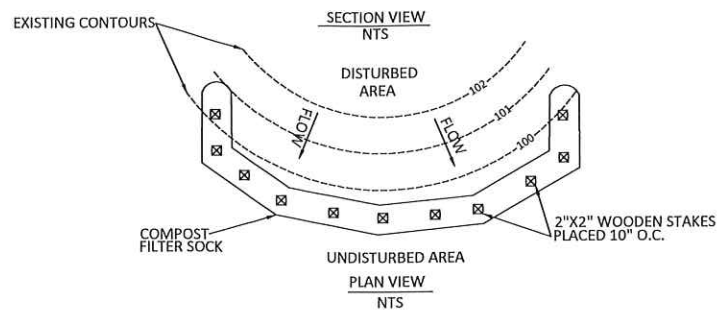
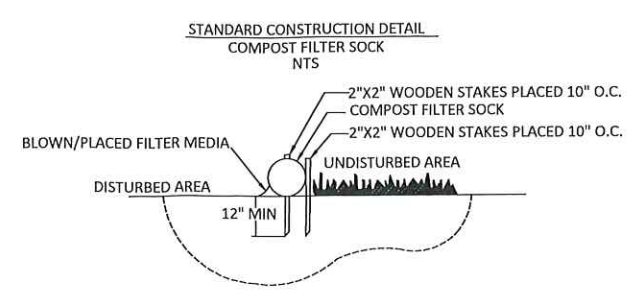


ROCK CONSTRUCTION ENTRANCE THICKNESS WILL BE CONSTANTLY MAINTAINED TO SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL WILL BE MAINTAINED ON THE SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PUBLIC ROADWAYS WILL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.

CONSTRUCTION SEQUENCE FOR YOST WELL PAD EXPANSION

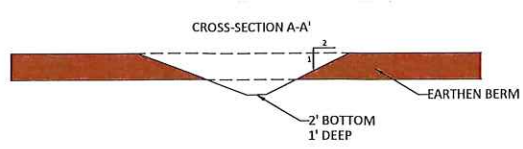
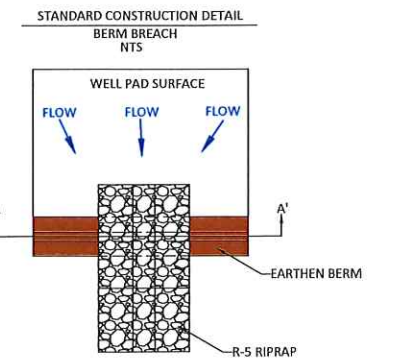
- 1) Install rock construction entrance from station 3+84.34 to station 4+54.34 at Yost Access Road B.
- 2) Install orange safety fence along Project Boundary near Wetland #1 as shown on Plan.
- 3) Install super silt fence (SSF) #1 - #30 along with compost filter sock (CFS) #1-#10.
- 4) Clear/grub and remove topsoil from proposed borrow area and well pad expansion area. Place topsoil and timber in designated areas.
- 5) Remove material from proposed borrow area and Construct well pad expansion.
- 6) Place geotextile material on Yost access road B sub-grade from end of rock construction entrance to station 8+63.
- 7) Place clean stone on Yost access road B from end of rock construction entrance to station 8+63.
- 8) Re-spread topsoil on borrow area and well pad expansion slopes.
- 9) Seed and mulch all disturbed areas including access road slopes and well pad expansion slopes.
- 10) Keep all erosion and sedimentation controls in place until there is 70% growth over the entire site.

*Contractor may deviate from the construction sequence if the design deems it appropriate and all the e&s through out the entire site. (e.g. borrow from well pad to finish building access road.)



Compost shall meet the following standards:

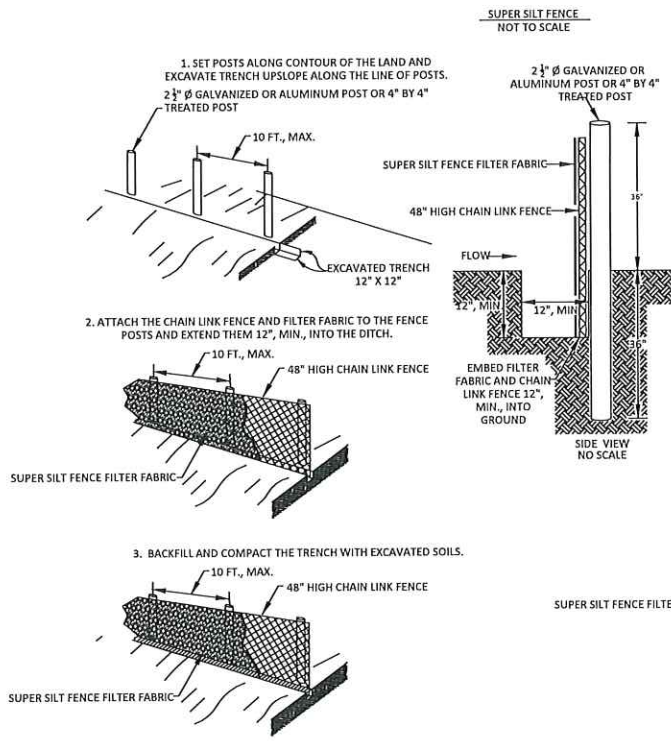
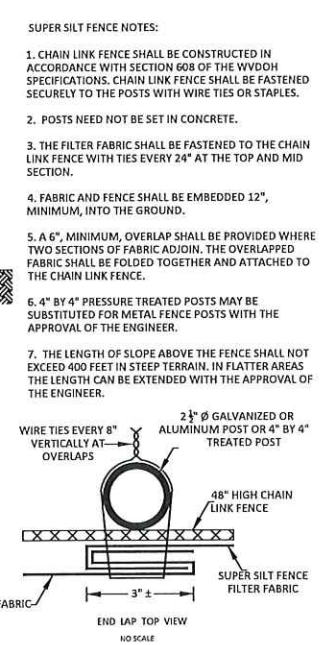
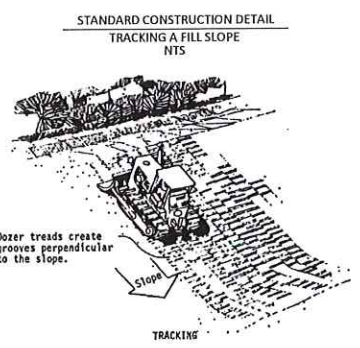
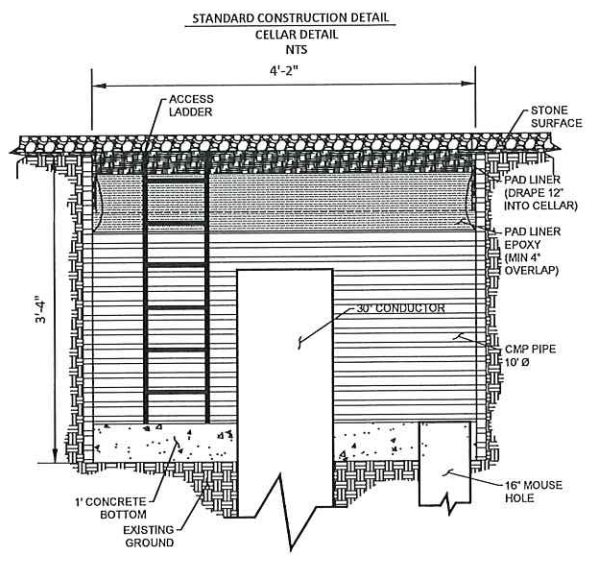
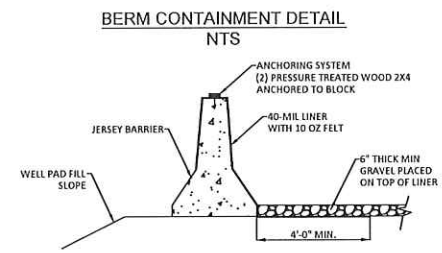
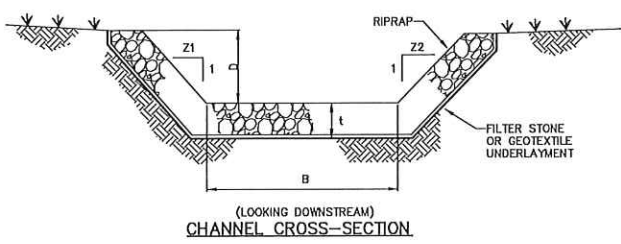
Organic Matter Content	80%-100% (dry weight basis)
Organic Portion	Fibrous and elongated
pH	5.5-8.0
Moisture Content	35% - 55%
Particle Size	98% pass through 1" screen
Soluble Salt Concentration	5.0 dS Maximum



STANDARD CONSTRUCTION DETAIL: RIPRAP CHANNEL

CHANNEL NO.	LENGTH	BOTTOM WIDTH B (FT)	DEPTH D (FT)	Z1 (FT)	Z2 (FT)	RIPRAP GRADATIO N (R-)	RIPRAP DEPTH (IN)
DC 1	86.96'	2	1	2	2	5	27

NOTES:
 FILTER STONE UNDERLAYMENT FOR BED SLOPES ≥ 0.10 FT/FT (10 %) SHALL BE USED.
 CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL AFTER ROCK PLACEMENT. CHANNEL MUST BE OVER-EXCAVATED A SUFFICIENT AMOUNT TO ALLOW FOR THE VOLUME OF ROCK PLACED WITHIN THE CHANNEL WHILE PROVIDING THE SPECIFIED FINISHED DIMENSIONS.
 CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION. SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE.
 DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.
 THE MINIMUM ROCK THICKNESS (t) SHALL BE 1.5 TIMES THE MAX ROCK SIZE.



INSTALLATION

Strictly comply with equipment manufacturer's installation instructions and recommendations. Use approved hydro-spraying machines with fan-type nozzle (50-degree tip). To achieve optimum soil surface coverage, apply HP-FGM from opposing directions to soil surface. Rough surfaces (rocky terrain, cat tracks and ripped soils) may require higher application rates to achieve 100% cover. Slope interruption devices or water diversion techniques are recommended when slope lengths exceed 100 feet (30m). Maximum slope length is for product applications on a 3H:1V slope. For application on steeper slopes, slope interruption lengths may need to be decreased based on actual site conditions. Not recommended for channels or areas with concentrated water flow. No chemical additives with the exception of fertilizer, liming and biostimulant materials should be added to this product. To ensure proper application rates, measure and stake area. For maximum performance, apply HP-FGM in a two-step process as follows:

1. Step One: Apply fertilizer with specified prescriptive agronomic formulations and 50% of seed with a small amount of HP-FGM for visual metering.
2. Step Two: Mix balance of seed and apply HP-FGM at a rate of 50 lb per 125 gallons (23kg/475 liters) of water over freshly seeded surfaces. Confirm loading rates with equipment manufacturer. Do not leave seeded surfaces unprotected, especially if precipitation is imminent.

APPLICATION RATES: These application rates are for standard conditions. Designers may wish to reduce rates to encourage faster vegetation establishment or may need to increase application rates on rough surfaces. Consult application and loading charts to determine number of bags to be added for desired area and application rate.

Table 4a. Permanent seeding mixtures suitable for establishment in WV.

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage Preference	pH Range
Crownvetch/ Tall Fescue	10 - 15 30	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Perennial Ryegrass	10 - 15 20	Well - Mod. Well	5.0 - 7.5
Flatpea or Perennial Pea/ Tall Fescue	20 15	Well - Mod. Well	4.0 - 8.0
Ladino Clover/ Serecia Lespedeza/ Tall Fescue	30 25 2	Well - Mod. Well	4.5 - 7.5
Tall Fescue/ Ladino Clover/ Redtop	40 3 3	Well - Mod. Well	5.0 - 7.5
Crownvetch/ Tall Fescue/ Redtop	10 20 3	Well - Mod. Well	5.0 - 7.5
Tall Fescue/ Birdsfoot Trefoil/ Redtop	40 10 3	Well - Mod. Well	5.0 - 7.5
Serecia Lespedeza/ Tall Fescue/ Redtop	25 30 3	Well - Mod. Well	4.5 - 7.5
Redtop/ Tall Fescue/ Creeping Red	30 3 50	Well - Mod. Well	5.0 - 7.5
Tall Fescue	50	Well - Poorly	4.5 - 7.5
Perennial Ryegrass/ Tall Fescue/ Lathco Flatpea *	10 15 20	Well - Poorly	5.0 - 8.0

Tables IV 1-4 taken from Natural Resources Conservation Service Manual Critical Area Planting

Table IV-1 Recommended seeding dates for permanent and temporary cover unless otherwise specified.

Planting Dates	Suitability
March 1 – April 15 and August 1 – October 1	Best seeding periods
April 15 – August 1	HIGH RISK - moisture stress likely
October 1 – Dec. 1	HIGH RISK - Freeze damage to young seedlings
Dec. 1 – March 1	Good seeding period. Dormant seeding.

Table 2. Acceptable fertilization recommendation in absence of a soil test.

Species	N (lbs/ac)	P2O5 (lbs/ac)	K2O(lbs/ac)	Example Rec. (per acre)
Cool Season Grass	40	80	80	400 lbs. 10-20-20
CS Grass & Legume	30	60	60	300 lbs. 10-20-20
Temporary Cover	40	40	40	200 lbs. 19-19-19

Table 3. Temporary cover suitable for establishment in West Virginia.

Species	Seeding Rate (lbs/acre)	Optimum Seeding Dates	Drainage	pH Range
Annual Ryegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Poorly	5.5 - 7.5
Field Bromegrass	40	3/1 - 6/15 or 8/15 - 9/15	Well - Mod. Well	6.0 - 7.0
Spring Oats	96	3/1 - 6/15	Well - Poorly	5.5 - 7.0
Sudangrass	40	5/15 - 8/15	Well - Poorly	5.5 - 7.5
Winter Rye	168	8/15 - 10/15	Well - Poorly	5.5 - 7.5
Winter Wheat	180	8/15 - 11/15	Well - Mod. Well	5.5 - 7.0
Japanese Millet	30	6/15 - 8/15	Well	4.5 - 7.0
Redtop	5	3/1 - 6/15	Well	4.0 - 7.5
Annual Ryegrass	26	3/1 - 6/15	Well - Poorly	5.5 - 7.5
Spring Oats	64	3/1 - 6/15	Well - Poorly	5.5 - 7.5

NOTE: These rates should be increased by 50% if planted April 15 – August 1 and October 1 – March 1.

Table 4b. Mixtures in the table below are more wildlife and farm friendly.

Species/Mixture	Seeding Rate (lbs/acre)	Soil Drainage Preference	pH Range
KY Bluegrass/ Redtop	20 3	Well - Mod. Well	5.5 - 7.5
Ladino Clover or Birdsfoot Trefoil	2/10		
Timothy/ Alfalfa	5 12	Well - Mod. Well	6.5 - 8.0
Timothy/ Birdsfoot Trefoil	8	Well - Poorly	6.5 - 7.5
Orchardgrass/ Ladino Clover/ Redtop	10 2 3	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Ladino Clover	10 2	Well - Mod. Well	5.5 - 7.5
Orchardgrass/ Perennial Ryegrass	20 10	Well - Mod. Well	5.5 - 7.5
Creeping Red Fescue/ Perennial Ryegrass	30 10	Well - Mod. Well	5.5 - 7.5
Orchardgrass or Kentucky Bluegrass	20	Well - Mod. Well	6.0 - 7.5
Birdsfoot Trefoil/ Redtop/ Orchardgrass	10 5 20	Well - Mod. Well	5.5 - 7.5
Lathco Flat Pea/ Perennial Ryegrass	30 20	Well - Mod. Well	5.5 - 7.5
Lathco Flat Pea/ Orchardgrass	30 20	Well - Mod. Well	5.5 - 7.5

Mixtures listed in bold are suitable for use in shaded woodland settings; those in italics are suitable for use in filter strips.
*Lathco Flatpea is generally poisonous to some livestock. All legumes should be planted with proper inoculants prior to seeding.
For unprepared seedbeds or seeding outside the optimum timeframe, add 50% more seed to the specified rate.

Table IV-5 Lime and Fertilizer Application Table

pH of Soil	Lime in Tons Per Acre	Fertilizer, Lbs., per Acre	10-20-20 or Equivalent
Above 6.0	2		500
5.0 to 6.0	3		500
Below 5.0	4		500

The pH can be determined with a portable pH testing kit or by sending the soil samples to a soil testing laboratory. When 4 tons of lime per acre are applied it must be incorporated into the soil by disking, backblading or tracking up and down the slope.

Table IV-6 Mulch Materials Rates and Uses

Material	Minimum Rates Per Acre	Coverage	Remarks
Hay or Straw	2 to 3 Tons 100 to 150 Bales	Cover 75% to 90% of Surface	Subject to Wind blowing or washing unless tied down
Wood Fiber Pulp Fiber	1000 to 1500 lbs	Cover all	For Hydroseeding
Wood-Celulose Recycled Paper		Disturbed Areas	

Mulching

1. General Organic Mulches

The application of straw, hay or other suitable materials to the soil surface to prevent erosion. Straw made from wheat or oats is the preferred mulch, the use of hay is permissible, but not encouraged due to the risk of spreading invasive species. Mulch must be applied to all temporary and permanent seeding on all disturbed areas. Depending on site conditions, in critical areas such as waterways, or steep slopes, additional or substitute soil protective measures may be used if deemed necessary. Examples include jute mesh, and soil stabilization blankets or erosion control matting.

Areas that have been temporarily or permanently seeded should be mulched immediately following seeding. Mulches conserve desirable soil properties, reduce soil moisture loss, prevent crusting and sealing of the soil surface and provide a suitable microclimate for seed germination.

Areas that cannot be seeded because of the season should be mulched to provide some protection to the soil surface. An organic mulch, straw or hay, should be used and the area then seeded as soon as weather or seasonal conditions permit. Do not use fiber mulch (cellulose-hydroseed) alone for this practice; at normal application rates it will not give the soil protection of other types of mulch.

Wood cellulose fiber mulch, is used in hydroseeding operations and applied as part of the slurry. It creates the best seed-soil contact when applied over top of (as a separate operation) newly seeded areas. Fiber mulch does not alone provide sufficient protection on highly erodible soils, or during less than favorable growing conditions. Fiber mulch should not be used alone during the dry summer months or when used for late fall mulch cover. Use straw mulch during these periods, and fiber mulch may be used to tack (anchor) the straw mulch. Fiber mulch is well suited for steep slopes, critical areas, and areas susceptible to wind.

Loading Chart for Profile's SMMs, BFM's, HP-FGMs and ET-FGM

Tank Size (gal)	# of 50-lb bales	(lb)	Displacement (gal)	2,500 lb/acre		3,000 lb/acre		3,500 lb/acre		4,000 lb/acre		4,500 lb/acre	
				Sq ft	Acres	Sq ft	Acres	Sq ft	Acres	Sq ft	Acres	Sq ft	Acres
250	2	100	280	1,742	0.040	1,452	0.033	1,245	0.029	1,089	0.025	968	0.022
500	4	200	560	3,485	0.080	2,904	0.067	2,489	0.057	2,178	0.050	1,936	0.044
750	6	300	840	5,227	0.120	4,356	0.100	3,734	0.086	3,267	0.075	2,904	0.067
1,000	8	400	1,120	6,970	0.160	5,808	0.133	4,978	0.114	4,356	0.100	3,872	0.089
1,500	12	600	1,680	10,454	0.240	8,712	0.200	7,467	0.171	6,534	0.150	5,808	0.133
2,000	16	800	2,240	13,939	0.320	11,616	0.267	9,957	0.229	8,712	0.200	7,744	0.178
2,500	20	1,000	2,800	17,424	0.400	14,820	0.333	12,446	0.286	10,890	0.250	9,680	0.222
3,000	24	1,200	3,360	20,909	0.480	17,424	0.400	14,935	0.343	13,068	0.300	11,616	0.267
3,500	28	1,400	3,920	24,394	0.560	20,328	0.467	17,424	0.400	15,246	0.350	13,552	0.311
4,000	32	1,600	4,480	27,878	0.640	23,232	0.533	19,913	0.457	17,424	0.400	15,488	0.356

Additional Notes:

- For horse applications, 35 lb/100 gal is recommended.
- Rough surfaces (rocky terrain, cat tracks, ripped soils, etc.) may require additional product to achieve 100% coverage.
- Be sure to allow for residual material in tank on subsequent applications.

Application Rates

Slope Condition	English	SI
≤ 4H to 1V	2500 lb/acre	2800 kg/hectare
> 4H to 1V and ≤ 3H to 1V	3000 lb/acre	3400 kg/hectare
> 3H to 1V and ≤ 2H to 1V ¹	3500 lb/acre	3900 kg/hectare
> 2H to 1V and ≤ 1H to 1V ²	4000 lb/acre	4500 kg/hectare
> 1H to 1V ³	4500 lb/acre	5100 kg/hectare
Below ECB or TRM	1500 lb/acre	1700 kg/hectare
As Infill for TRM ⁴	3500 lb/acre	3900 kg/hectare

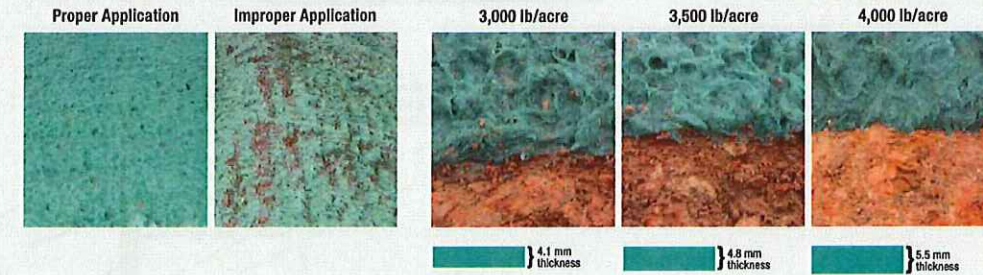
Slope Interruption Limits*

Product Category	Length (ft)	Length (m)
SMM	50	15
BFM	75	23
HP-FGM	100	30
ET-FGM	125	38

*Listed slope interruption limits are for product applications on a 3H:1V slope. For application on steeper slopes, slope interruption lengths may need to be decreased.

¹SMM not recommended for slopes greater than 2H:1V.
²BFM not recommended for slopes greater than 1H:1V.
³HP-FGM or ET-FGM recommended for slopes greater than 1H:1V.
⁴Use only approved and tested TRMs to create the GreenArmor System.

Visual Key for Proper Application
(Flexterra HP-FGM shown below)



FERTILIZER
1,000lbs./ACRES NUTRIENTS (23 lbs./1,000 SQ. FT.) 10-20-20

APPROVED
WVDEP OOG
Modification
12/1/2021

BOORD, BENCHEK and ASSOC., INC.
Engineering, Surveying, Construction,
and Mining Services

Southpointe, PA 15317 Phone: 724-746-1055

DETAIL SHEET

THIS DOCUMENT WAS PREPARED BY:
BOORD, BENCHEK AND ASSOC., INC.
FOR: NORTHEAST NATURAL ENERGY, LLC.

DATE:
JUNE 2021

YOST WELL PAD
EXPANSION

CLAY DISTRICT,
MONONGALIA
COUNTY, WV

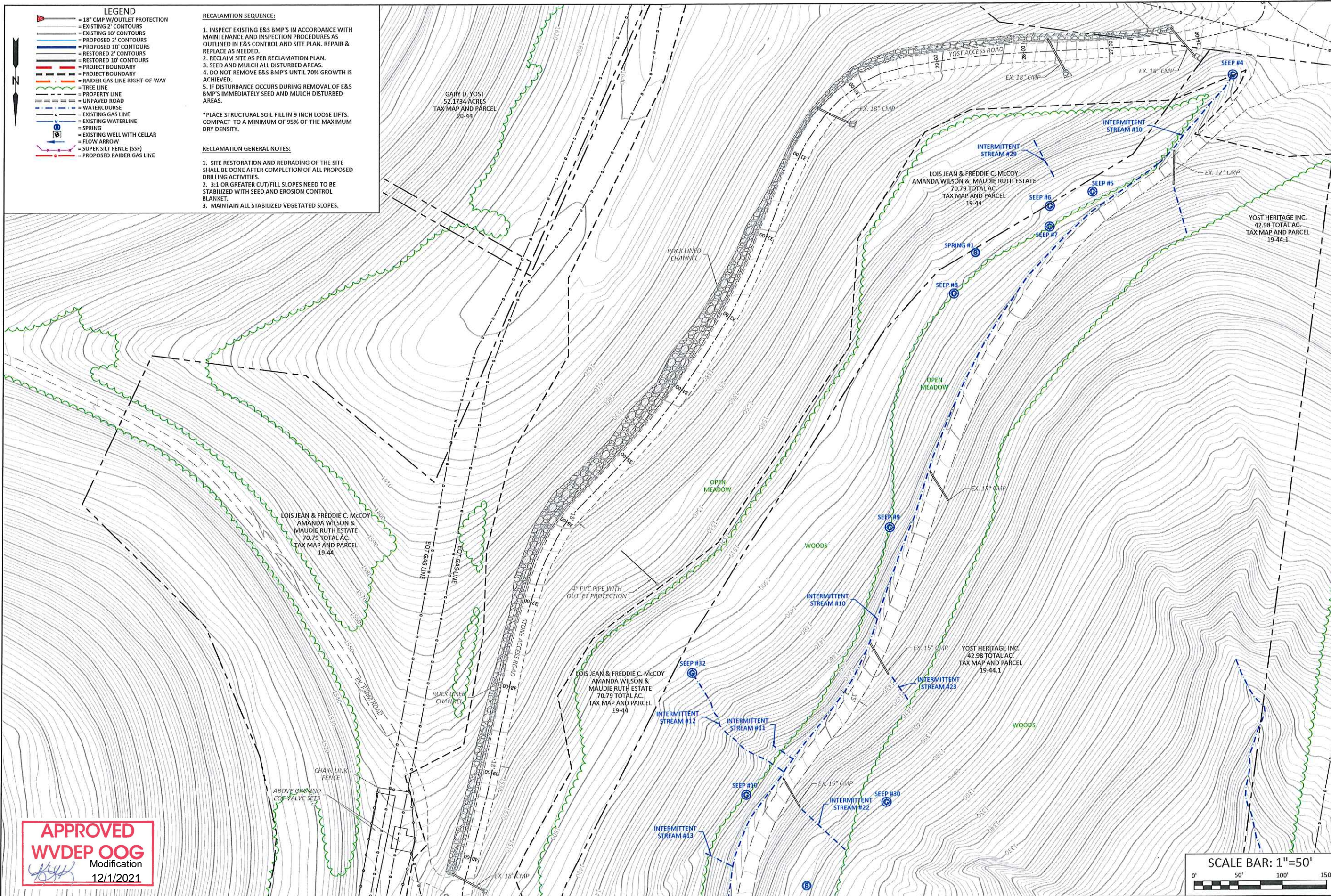
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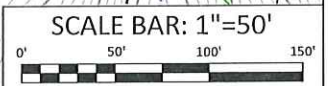
12/03/2021

- LEGEND**
- 18" CMP W/O UTILITY PROTECTION
 - EXISTING 2' CONTOURS
 - EXISTING 10' CONTOURS
 - PROPOSED 2' CONTOURS
 - PROPOSED 10' CONTOURS
 - RESTORED 2' CONTOURS
 - RESTORED 10' CONTOURS
 - PROJECT BOUNDARY
 - PROJECT BOUNDARY
 - RAIDER GAS LINE RIGHT-OF-WAY
 - TREE LINE
 - PROPERTY LINE
 - UNPAVED ROAD
 - WATERCOURSE
 - EXISTING GAS LINE
 - EXISTING WATERLINE
 - SPRING
 - EXISTING WELL WITH CELLAR
 - FLOW ARROW
 - SUPER SILT FENCE (SSF)
 - PROPOSED RAIDER GAS LINE

- RECLAMATION SEQUENCE:**
1. INSPECT EXISTING E&S BMP'S IN ACCORDANCE WITH MAINTENANCE AND INSPECTION PROCEDURES AS OUTLINED IN E&S CONTROL AND SITE PLAN. REPAIR & REPLACE AS NEEDED.
 2. RECLAIM SITE AS PER RECLAMATION PLAN.
 3. SEED AND MULCH ALL DISTURBED AREAS.
 4. DO NOT REMOVE E&S BMP'S UNTIL 70% GROWTH IS ACHIEVED.
 5. IF DISTURBANCE OCCURS DURING REMOVAL OF E&S BMP'S IMMEDIATELY SEED AND MULCH DISTURBED AREAS.
- *PLACE STRUCTURAL SOIL FILL IN 9 INCH LOOSE LIFTS. COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY.
- RECLAMATION GENERAL NOTES:**
1. SITE RESTORATION AND REDRADING OF THE SITE SHALL BE DONE AFTER COMPLETION OF ALL PROPOSED DRILLING ACTIVITIES.
 2. 3:1 OR GREATER CUT/FILL SLOPES NEED TO BE STABILIZED WITH SEED AND EROSION CONTROL BLANKET.
 3. MAINTAIN ALL STABILIZED VEGETATED SLOPES.



APPROVED
WVDEP OOG
 Modification
 12/1/2021



BOORD, BENCHEK and ASSOC., INC.
 Engineering, Surveying, Construction,
 and Mining Services
 Southpointe, PA 15317 Phone: 724-746-1055

SITE RECLAMATION PLAN

THIS DOCUMENT WAS PREPARED BY:
 BOORD, BENCHEK AND ASSOC., INC.
 FOR: NORTHEAST NATURAL ENERGY, LLC.

DATE:
 JUNE 2021

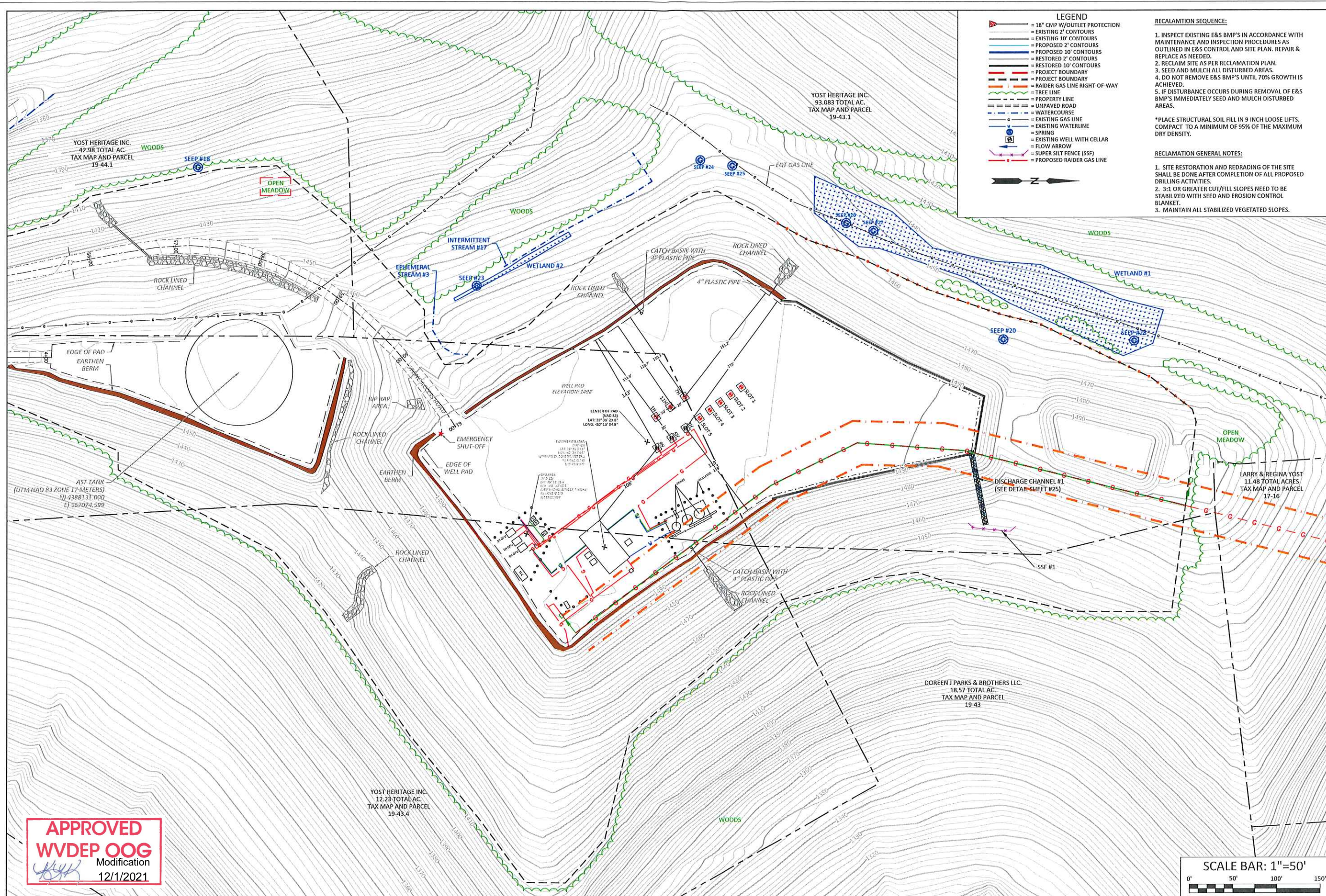
YOST WELL PAD
 EXPANSION

CLAY DISTRICT,
 MONONGALIA
 COUNTY, WV

NO	DATE	DESCRIPTION



12/03/2021



- LEGEND**
- = 18" CMP W/OUTLET PROTECTION
 - = EXISTING 2' CONTOURS
 - = EXISTING 10' CONTOURS
 - = PROPOSED 2' CONTOURS
 - = PROPOSED 10' CONTOURS
 - = RESTORED 2' CONTOURS
 - = RESTORED 10' CONTOURS
 - = PROJECT BOUNDARY
 - = RAIDER GAS LINE RIGHT-OF-WAY
 - = TREE LINE
 - = PROPERTY LINE
 - = UNPAVED ROAD
 - = WATERCOURSE
 - = EXISTING GAS LINE
 - = EXISTING WATERLINE
 - = SPRING
 - = EXISTING WELL WITH CELLAR
 - = FLOW ARROW
 - = SUPER SILT FENCE (SSF)
 - = PROPOSED RAIDER GAS LINE

- RECLAMATION SEQUENCE:**
1. INSPECT EXISTING E&S BMP'S IN ACCORDANCE WITH MAINTENANCE AND INSPECTION PROCEDURES AS OUTLINED IN E&S CONTROL AND SITE PLAN. REPAIR & REPLACE AS NEEDED.
 2. RECLAIM SITE AS PER RECLAMATION PLAN.
 3. SEED AND MULCH ALL DISTURBED AREAS.
 4. DO NOT REMOVE E&S BMP'S UNTIL 70% GROWTH IS ACHIEVED.
 5. IF DISTURBANCE OCCURS DURING REMOVAL OF E&S BMP'S IMMEDIATELY SEED AND MULCH DISTURBED AREAS.
- *PLACE STRUCTURAL SOIL FILL IN 9 INCH LOOSE LIFTS. COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY.**
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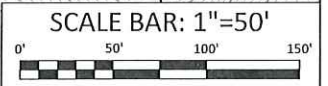
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