



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

Monday, December 9, 2019
WELL WORK PLUGGING PERMIT
Coal Bed Methane Well Plugging

CNX GAS COMPANY LLC
1000 CONSOL ENERGY DR

CANONSBURG, PA 15370

Re: Permit approval for L-53
47-061-01448-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Upon completion of the plugging well work, the above named operator will reclaim the site according to the provisions of WV Code 22-6-30. Please be advised that form WR-38, Affidavit of Plugging and Filling Well, is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number: L-53
Farm Name: RANGE RUN RETREAT LLC
U.S. WELL NUMBER: 47-061-01448-00-00
Coal Bed Methane Well Plugging
Date Issued: 12/9/2019

Promoting a healthy environment.

PERMIT CONDITIONS

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

CONDITIONS

1. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.

1) Date 11/18, 2019
2) Operator's
Well No. L-53
3) API Well No. 47-061 - 01448 P

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

APPLICATION FOR A PERMIT TO PLUG AND ABANDON

4) Well Type: Oil / Gas x / Liquid injection / Waste disposal /
(If "Gas, Production x or Underground storage) Deep / Shallowx

5) Location: Elevation 1260 Watershed Range Run
District Battelle County Monogalia Quadrangle Mannington

6) Well Operator CNX Gas Company LLC 7) Designated Agent Anthony Kendziora
Address 1000 Consol Energy Dr. Address 1000 Consol Energy Dr
Canonsburg, PA 15317 Canonsburg PA 15317

8) Oil and Gas Inspector to be notified 9) Plugging Contractor
Name Gayne Knitowski Name Coastal Drilling east LLC
Address P.O. Box 108 Address 70 gums Springs Road
Gormanian, WV 26720 Morgantown WV 26508

10) Work Order: The work order for the manner of plugging this well is as follows:

See attached

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WV Department of
Environmental Protection

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector Gayne Knitowski Date 11/19/2019

Well: L-53 (Bowsher)

API#: 47-061-01448

District: Battelle

County: Monongalia

Elevation: 1259' (E&S Plans)

L-53 Proposed Plugging and Abandonment Procedure

1. Run in and tag TD (~980') with wireline or small sandline tools. Confirm TD is inside slotted casing. (Make call to CNX if tagging high to come up with game plan)
2. Once TD has been reached in slotted casing proceed to fill slotted casing with pea gravel to 680'. (1 ton= ~20 Cu. Ft. fill)
3. Once pea gravel has been placed in slotted liner verify top of gravel is at or above top of slotted casing (680')
4. Once top of pea gravel has been verified TIH with tubing and prepare to cement
5. Place 50' cement plug (680'-630') on top of pea gravel
6. TOOH with cement string
7. Rig up wireline and tag cement plug at 630'
8. TOOH and prepare to run Bond Log on 5 ½" casing
9. Run Bond Log from 630' to surface to verify casing is cemented to surface. If cement top is found to not be at surface notify CNX and prepare to pull uncemented casing
10. If cement on 5 ½" is at surface or once uncemented has been pulled prepare to cement well to surface
11. TIH with work string to 630' and cement well to surface
12. TOOH w/ work string and top off well with cement
13. Install 6"x14' monument (10' below grade, 4' above grade). Monument must contain API#, Well Name, Company Name and Date Plugged

Note: All cement will be Class A. All spacers will be 6% gel

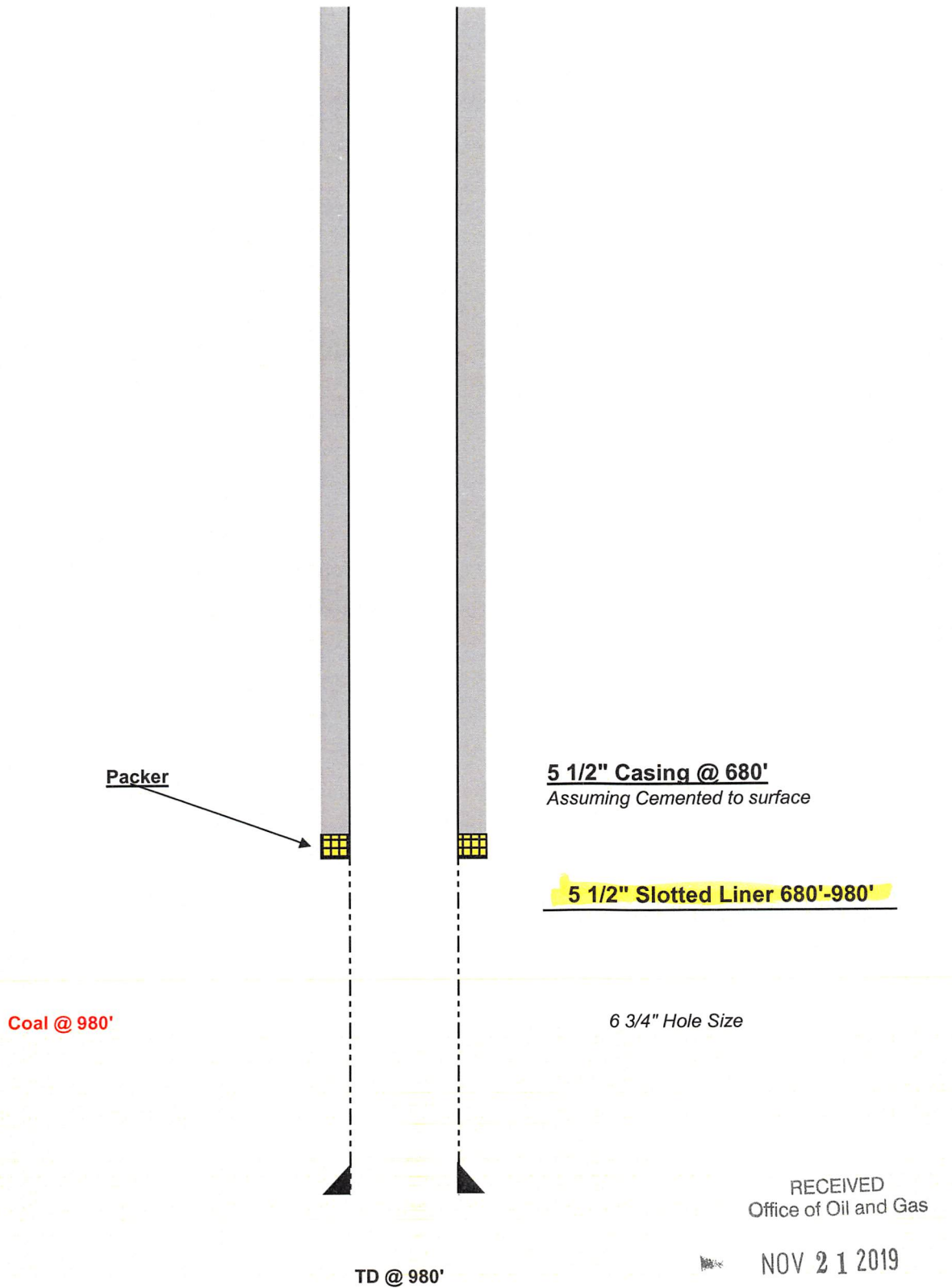
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Environmental Protection

MJK 11/19/2019

Bowsher L-53
Battelle District, Monongalia WV
Original Completion : ?
API #47-061-01448
Elevation = 1259' (From E&S Plans)



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WR-35

DATE: August 4, 2004
API#: 47-6101448

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas

Well Operator's Report of Well Work

Farm Name: Bowsher, Robert Operator Well No.: L-53

LOCATION: Elevation: 1242 Quadrangle: Mannington

District: Battelle County: Monongalia
Latitude: 314.1 Feet South of 39 Deg. 37 Min. 30 Sec.
Longitude: 2439.3 Feet West of 80 Deg. 20 Min. 00 Sec.

Company: CNX Gas Company LLC (North)

	Casing & Tubing	Used In Drilling	Left In Well	Cement Fill Up Cu. Ft.
Address: <u>1800 Washington Road</u> <u>Pittsburgh, PA 15241</u>				
Agent: <u>Edwin Merrifield</u>				
Inspector: <u>Randal Mick</u>				
Date Permit Issued: <u>9/17/2002</u>				
Date Well Work Commenced: <u>Existing Borehole</u>				
Date Well Work Completed: <u>Converted to well</u>				
Verbal Plugging:				
Date Permission granted on:				
Rotary Cable Rig				
Total Depth (feet): <u>980</u>				
Fresh Water Depth (ft.):				
Salt Water Depth (ft.):				
Is coal being mined in area (N/Y)? <u>No</u>				
Coal Depths (ft.): <u>980</u>				

OPEN FLOW DATA

Producing formation Pittsburgh Coal Seam Pay zone depth (ft) 980
Gas: Initial open flow 114 MCF/d Oil: Initial open flow 0 Bbl/d
Final open flow 114 MCF/d Final open flow 0 Bbl/d
Time of open flow between initial and final tests 0 Hours
Static rock pressure 1 psig (surface pressure) after - Hours

Second producing formation None Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock pressure _____ psig (surface pressure) after _____ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed: Joseph P. Aman
By: Joseph P. Aman

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Office of Chief
AUG 09 2004

MONONG

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47-061-01448 County Monogalia District Battelle
Quad Mannington Pad Name Bowsher L-53 Field/Pool Name _____
Farm name Bowsher, Robert Well Number L-53
Operator (as registered with the OOG) CNX Gas Company LLC
Address 1000 Consol Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 410571.79 Easting 1731318.49
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 1259 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)

Date permit issued 9/17/2002 Date drilling commenced _____ Date drilling ceased _____
Date completion activities began _____ Date completion activities ceased _____
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

DEC 9 2019

Freshwater depth(s) ft _____ Open mine(s) (Y/N) depths _____
Salt water depth(s) ft _____ Void(s) encountered (Y/N) depths _____
Coal depth(s) ft 980 Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) N

**WV Department of
Environmental Protection**

Reviewed by:

WR-35
Rev. 8/23/13

API 47-061 - 01448 Farm name Bowsher, Robert Well number L-53

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor							
Surface							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6.75	5.5	980				
Tubing							
Packer type and depth set		Formation Packer @ 680'					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production							
Tubing							

Drillers TD (ft) 980 Loggers TD (ft) _____
 Deepest formation penetrated Pittsburgh Coal Seam Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) _____

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

DEC 9 2019

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WV Department of
Environmental Protection

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
COALBED METHANE PERMIT APPLICATION

1457

1) Well Operator: CNX Gas Company, LLC (North) 2) Well Name St. Leo Gob Well No. L-53
3) Operator's Well Number L-53 4) Elevation 1242'

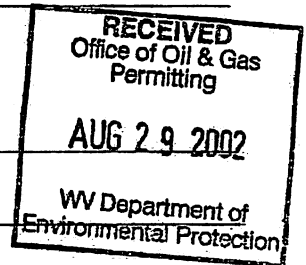
5) Well Type: (a) Oil / or Gas /
(b) If Gas: Production X / Underground Storage / CBM /
Deep / Shallow X /

6) Proposed Target Formation(s): Pittsburgh Coal Seam Mine Methane

7) Proposed Total Depth: 980 feet

8) Approximate Fresh Water Strata Depths: Not known

9) Approximate Salt Water Depths: Not known



10) Approximate Coal Seam Depths: Pittsburgh @ 980'

11) Does Land Contain Coal Seams Tributary to Active Mines? Yes X / No /

12) (a) Proposed Well Work: Convert an existing ventilation borehole (Well No. L-53) to a producing CBM gob well.

(b) If Stimulation Proposed, Describe Means to be Used to Stimulate Well: N/A

13) (a) Does the proposed operation plan to convert an existing well (as defined in W. Va. Code § 22-6-1) or a vertical ventilation hole to a coalbed methane well? Yes X / No /

(b) If yes, please attach to this Application a list of all formations from which production is anticipated and a description of any plans to plug any portion of the well. Pittsburgh Coal Only Via Existing Casing.

14) (a) Will the proposed coalbed methane well be completed in some but not all coal seams for production (except for a gob well or vent hole proposed to be converted to a well)? Yes / No / N/A

(b) If yes, please attach to this Application a plan and design for the well which will protect all workable coal seams which will be penetrated by the well.

15) (a) Does the proposed operation include horizontal drilling of a well commenced on the surface? Yes / No X /

(b) If yes, please attach to this Application a description of such operations, including both the vertical and horizontal alignment and extent of the well from the surface to total depth.

CASING AND TUBING PROGRAM

TYPE	SPECIFICATIONS		FOOTAGE INTERVALS		CEMENT	
	Size	Grade	Weight per ft.	For Drilling		Left in Well
Conductor						
Fresh Water						
Coal						
Intermediate						
Production						
Tubing						
Liners						

PACKERS:

PLEASE SEE ATTACHED WELL REPORT

SM
9-5-02

For Office of Oil and Gas Use Only

Fee(s) paid:
 Well Work Permit
 Reclamation Fund
 WPCP
 Plat
 WW-9
 WW-5B
 Bond _____
 Agent
(Type)

061-01448-C

CONSOLIDATION COAL COMPANY
1800 WASHINGTON ROAD
PITTSBURGH PA

WELL NUMBER L-53

MINE Loveridge

DATE STARTED ?

DATE COMPLETED ?

CONTRACTOR ?

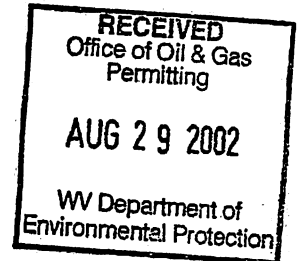
TOTAL DEPTH OF HOLE 980 (APPROX)
[In Feet]

CASING IN HOLE: SLOTTED 300
[In Feet]

5-1/2-INCH 980
8-INCH None

PACKER SIZE Formation packer collar

CEMENT ? [SKS]



1) Date: 11/18/19
2) Operator's Well Number
L-53
3) API Well No.: 47 - 061 - 01448

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL

4) Surface Owner(s) to be served:
(a) Name Range Run Retreat
Address 209 N Georgia Ave
Martinsburg, WV 25401
(b) Name _____
Address _____
(c) Name _____
Address _____
6) Inspector Gayne Knitowski
Address P.O. Box 108
Gorman, WV 26720
Telephone 304-546-8171

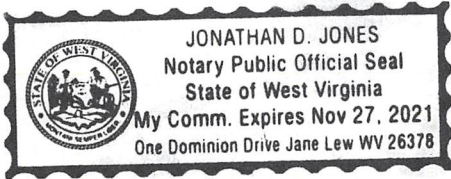
5) (a) Coal Operator
Name Consolidated Coal Company
Address 46226 National Road
Saint Clairsville, OH 43950
(b) Coal Owner(s) with Declaration
Name Curtis M Lemley
Address 186 Oak Drive
New Cumberland, WV 20047
Name Consolidated Coal Company
Address 46226 National Road
Saint Clairsville, OH 43950
(c) Coal Lessee with Declaration
Name _____
Address _____

TO THE PERSONS NAMED ABOVE: You should have received this Form and the following documents:

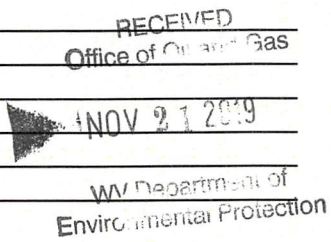
- (1) The application to Plug and Abandon a Well on Form WW-4B, which sets out the parties involved in the work and describes the well its and the plugging work order; and
- (2) The plat (surveyor's map) showing the well location on Form WW-6.

The reason you received these documents is that you have rights regarding the application which are summarized in the instructions on the reverses side. However, you are not required to take any action at all.

Take notice that under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery to the Chief.



Well Operator CNX Gas Company LLC
By: Raymond Hoon
Its: Senior Project Manager
Address 1000 Consol Energy Dr
Canonsburg, PA 15317
Telephone 724-485-4000



Subscribed and sworn before me this 18th day of November, 2019
Jonathan D. Jones Notary Public
My Commission Expires 11/27/2021

Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

WW-9
(5/16)

API Number 47 - 061 - 01448
Operator's Well No. L-53

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS
FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name CNX Gas Company, LLC OP Code 494458046

Watershed (HUC 10) Range Run Quadrangle Mannington

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

Will a pit be used? Yes No

If so, please describe anticipated pit waste: _____

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

Proposed Disposal Method For Treated Pit Wastes:

- Land Application (if selected provide a completed form WW-9-GPP)
- Underground Injection (UIC Permit Number _____)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Waste Management or Ryan Environmental will use Vacuum trucks and properly dispose of any fluid or waste return)

Will closed loop system be used? If so, describe: no

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. na

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

Additives to be used in drilling medium? na

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

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

-Landfill or offsite name/permit number? _____

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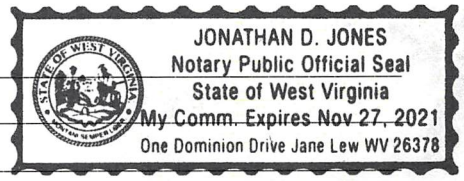
WV Department of
Environmental Protection

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on April 1, 2016, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

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

Company Official Signature *Raymond Hoon*
Company Official (Typed Name) Raymond Hoon
Company Official Title Senior Project Manager



Subscribed and sworn before me this 18th day of November, 2019

Jonathan D. Jones *[Signature]* Notary Public

My commission expires 11/27/2021

Proposed Revegetation Treatment: Acres Disturbed 1.95 acres Prevegetation pH _____

Lime 2-3 Tons/acre or to correct to pH _____

Fertilizer type 10-20-20 or equivalent

Fertilizer amount 500 lbs/acre

Mulch hay or straw 2 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Tall Fescue	40
Landino Clover	5

Seed Type	lbs/acre
Tall Fescue	40
Landino Clover	5

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, provide water volume, include dimensions (L, W, D) of the pit, and dimensions (L, W), and area in acres, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: _____

Gayne J. Kute

Comments: _____

Reclaim SITE ASAP.

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Office of Oil and Gas

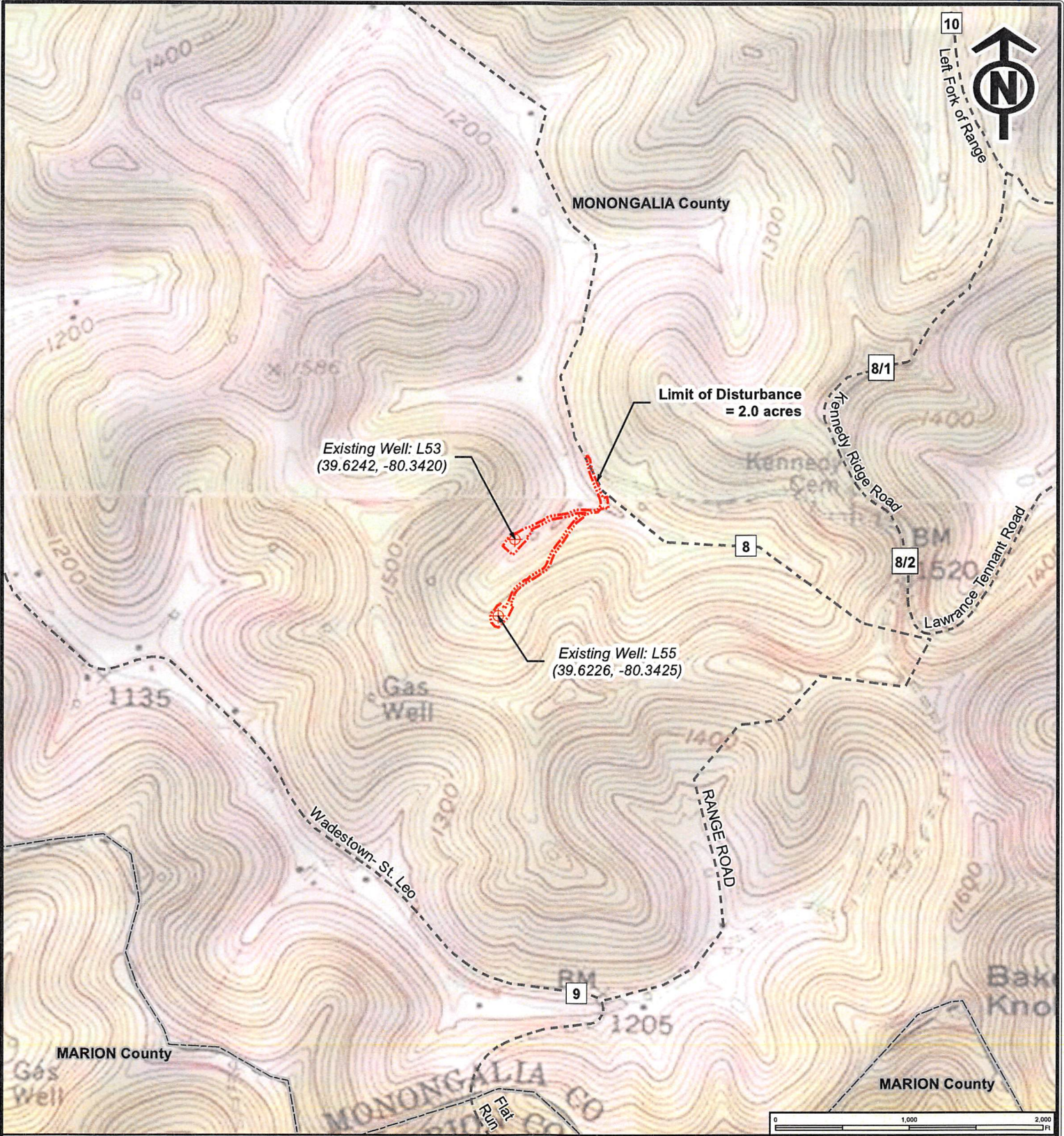
NOV 21 2019

WV Department of
Environmental Protection

Title: Inspector

Date: 11/12/2019

Field Reviewed? () Yes () No



LEGEND

- Existing Well
- Limit of Disturbance
- Road
- County Boundary

Prepared By: **KEYSTONE CONSULTANTS INC.**
www.keystoneconsultants.net 412-278-2100

REV	DESCRIPTION	DATE

DWN BY: AMW APR BY: STK DATE: 11/13/2019

**L53/L55 Well Plugging
Site Location Topographic Map**

Marion County, WV

DRAWING NUMBER: 001

SCALE: 1" = 1,000 feet SHEET: 1 OF 2

BASEMAP: USGS TOPOGRAPHIC QUADRANGLE WADESTOWN, MANNINGTON, WV
Roads: West Virginia Department of Transportation(WVDOT) <https://transportation.wv.gov>

WW-7
8-30-06



West Virginia Department of Environmental Protection
Office of Oil and Gas
WELL LOCATION FORM: GPS

API: 4704901448 WELL NO.: L53

FARM NAME: Bowsher

RESPONSIBLE PARTY NAME: CNX Gas Company

COUNTY: Monongalia DISTRICT: Battelle

QUADRANGLE: Mannington

SURFACE OWNER: Range Run Retreat LLC

ROYALTY OWNER: _____

UTM GPS NORTHING: 4386253.43

UTM GPS EASTING: 556469.45 GPS ELEVATION: 383.97m / 1259.76 ft

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

1. Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
2. Accuracy to Datum – 3.05 meters
3. Data Collection Method:

Survey grade GPS _____: Post Processed Differential _____

Real-Time Differential _____

Mapping Grade GPS X: Post Processed Differential X

Real-Time Differential _____

4. **Letter size copy of the topography map showing the well location.**

I the undersigned, hereby certify this data is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Office of Oil and Gas.

Raymond Allen
Signature

Project MANAGER
Title

12-4-19
Date

L53 / L55 WELL PLUGGING

BATTELLE DISTRICT, MONOGALIA COUNTY, WEST VIRGINIA

PREPARED FOR:

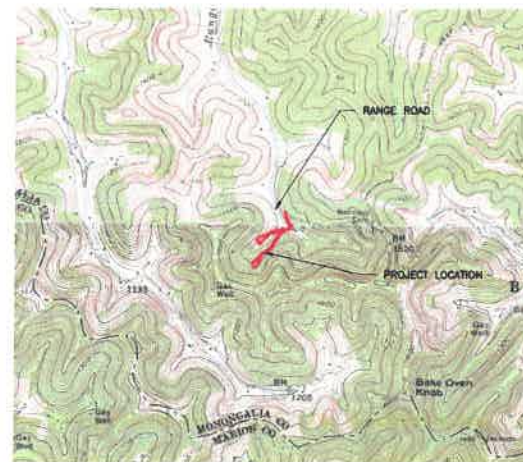
CNX GAS COMPANY, LLC

WELL LOCATION:
L53: LAT 39.62391
LONG -80.34226

L55: LAT 39.62262
LONG -80.34233

ACCESS ROAD LOCATION:
LAT 39.625896
LONG -80.340132

WATERSHED:
UNT TO RANGE RUN



REFERENCE

- USGS 7.5 MIN. TOPOGRAPHIC QUADRANGLE MANNINGTOWN, WV, DATED 1960, PHOTOREVISED 1976.
- USGS 7.5 MIN. TOPOGRAPHIC QUADRANGLE WADESTOWN, WV, DATED 1958, PHOTOREVISED 1976.

SCALE IN FEET
0 2000' 4000'

OCTOBER 2019

KEYSTONE CONSULTANTS, LLC

REVISIONS



CNX
CNX RESOURCES CORPORATION, LLC
1000 CONSOL ENERGY DRIVE
CANONSBURG, PA 15317

KEYSTONE
CONSULTANTS, LLC
32 EAST MAIN STREET
CARNEGIE, PA 15106
PH: 724.251.1000 FAX: 724.251.2126
WWW.KEYSTONECONSULTANTS.NET

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
000	COVER SHEET
001	GENERAL NOTES
900	INDEX SHEETS
901	EROSION AND SEDIMENTATION CONTROL PLAN
902	EROSION AND SEDIMENTATION CONTROL PLAN
903	EROSION AND SEDIMENTATION CONTROL PLAN
904	EROSION AND SEDIMENTATION CONTROL DETAILS
905	EROSION AND SEDIMENTATION CONTROL DETAILS
906	GRADING PLAN
907	GRADING PLAN
908	QUANTITIES
300	INDEX SHEET
301	SITE RESTORATION PLAN
302	SITE RESTORATION PLAN
303	SITE RESTORATION PLAN
304	SITE RESTORATION DETAILS

DESIGN	DLH	STK	EAZ	DATE	11/19/2019	AS SHOWN	WVBS-NFE	PROJECT	19039-005
CHECKED									
APPROVED									

L53 / L55 WELL PLUGGING
BATTELLE DISTRICT, MONOGALIA COUNTY, WEST VIRGINIA
COVER SHEET

DRAWING NUMBER
000
SHEET 01 of 14

SITE DATA:
TOTAL LIMIT OF DISTURBANCE = 1.95 ACRES

DEVELOPER: CNX GAS COMPANY, LLC
1000 CONSOL ENERGY DRIVE
SUITE 200
CANONSBURG, PA 15317

PLAN PREPARER: ELI A. ZINI, PE
KEYSTONE CONSULTANTS, LLC
32 EAST MAIN STREET
CARNEGIE, PA 15106

GENERAL NOTES

CRITICAL AREAS

CONTRACTOR SHALL INSPECT SITE FOR CRITICAL AREAS INCLUDING BUT NOT LIMITED TO STEEP SLOPES, STREAMS, WETLANDS, WATER WELLS/SPRINGS, SEEPS, SLIPS, AND AREAS OF CONCENTRATED FLOW. E&S CONTROL BMPs WILL BE UTILIZED TO REMOVE SEDIMENT FROM STORMWATER RUNOFF PRIOR TO DISCHARGE FROM THE SITE. ALSO, EROSION CONTROL BLANKET HAS BEEN SPECIFIED TO REDUCE EROSION AND STABILIZE SLOPES PRIOR TO THE ESTABLISHMENT OF PERMANENT VEGETATION. INSTALL TRENCH DRAINS ON STEEP SLOPES AND WHERE SLIPS MAY OCCUR. FOLLOW GUIDANCE IN ENVIRONMENTAL PERMITS FOR WATERBODY CROSSING BMPs.

MARK CLEARING LIMITS

PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES, CLEARLY MARK ALL CLEARING LIMITS, SENSITIVE AREAS AND THEIR BUFFERS, AND TREES THAT ARE TO BE PRESERVED WITHIN THE CONSTRUCTION AREA. THESE SHALL BE CLEARLY MARKED, BOTH IN THE FIELD AND ON THE PLANS, TO PREVENT DAMAGE AND OFFSITE IMPACTS.

SITE ACCESS

INSTALL STABILIZED CONSTRUCTION ENTRANCE AS SHOWN ON PLANS. AVOID EXCESSIVE RUTTING AND SEDIMENT CAUSING ACTIVITIES DURING SITE ACCESS.

NO SEDIMENT TRACKING ON THE ROADWAY IS ALLOWED. IN THE EVENT THAT SEDIMENT IS INADVERTENTLY TRACKED ONTO THE ROAD, THE ROAD SHALL BE CLEANED THOROUGHLY BY THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM ROADS BY SHOVELING OR PICKUP SWEEPING AND SHALL BE TRANSPORTED TO A CONTROLLED SEDIMENT DISPOSAL AREA. STREET WASHING OF SEDIMENT TO THE STORM DRAIN SYSTEM IS NOT ALLOWED. IF STREET WASH WASTEWATER CAN BE CONTROLLED FROM ENTERING THE STORM DRAINAGE SYSTEM, THEN IT SHALL BE PUMPED BACK ONTO THE SITE, CONTAINED, AND DISPOSED OF PROPERLY.

EROSION AND SEDIMENT CONTROL

E&S BMPs ARE TO BE INSTALLED PRIOR TO THE BEGINNING OF EARTH DISTURBANCE ON THE SITE. BMPs SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD DETAILS FROM THE WVDEP EROSION AND SEDIMENT CONTROL BMP MANUAL. CONTRACTOR SHALL PERFORM AN INSPECTION OF BMPs ONCE PER SEVEN CALENDAR DAYS AND AFTER EACH RAINFALL EVENT. INSPECTIONS SHALL BE LOGGED ON THE STANDARD INSPECTION FORM AND KEPT WITH ONSITE COPY OF E&S PLAN. PRIOR TO COMMENCEMENT OF CONSTRUCTION, SITE SUPERVISOR SHOULD REVIEW PROPER BMP INSTALLATION AND MAINTENANCE WITH CONSTRUCTION PERSONNEL.

STABILIZE SOILS

EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY APPLICATION OF EFFECTIVE BMPs THAT PROTECT THE SOIL FROM THE EROSION FORCES OF HANDROPS, FLOWING WATER, AND WIND. THE GENERAL PERMIT REQUIRES THAT ALL GRADED AREAS THAT ARE AT FINAL GRADE MUST BE SEEDING AND MULCHED WITHIN 7 DAYS, WHERE THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES OR IS PRECLUDED BY SNOW COVER. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS CONDITIONS ALLOW. WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (E.G., THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY HALTED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH DAY AFTER CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED.

LINEAR CONSTRUCTION ACTIVITIES SUCH AS RIGHT-OF-WAY AND EASEMENT CLEARING, ROADWAY DEVELOPMENT, PIPELINES AND TRENCHING FOR UTILITIES SHALL BE CONDUCTED TO MEET THE SOIL STABILIZATION TIMEFRAME REQUIREMENTS. CONTRACTORS SHALL INSTALL THE BEDDING MATERIALS, ROADBEDS, STRUCTURES, PIPELINES, OR UTILITIES AND RE-STABILIZE THE DISTURBED SOILS SO THAT THE 7-DAY REQUIREMENTS ARE MET.

CONVEY STORMWATER IN A NON-EROSIVE MANNER

POINTS OF DISCHARGE AND RECEIVING STREAMS SHALL BE PROTECTED FROM EROSION DUE TO INCREASES IN THE VOLUME, VELOCITY, AND PEAK FLOW RATE OF SURFACE WATER RUNOFF FROM THE PROJECT SITE.

BMP MAINTENANCE

WHENEVER A DEFICIENCY IN AN E&S BMP IS NOTED, THE CONTRACTOR SHALL REPAIR THE BMP IMMEDIATELY. BMPs SHOWN ON THE PLAN ARE A MINIMUM TO CONTROL EROSION AND SEDIMENT EXPECTED ONSITE. SHOULD CONDITIONS IN THE FIELD OCCUR WHERE BMP FAILURE IS NOTED, SITE SUPERVISOR SHALL INSTALL ADDITIONAL BMPs AS NECESSARY TO PREVENT RELEASE OF SEDIMENT FROM THE SITE. MINOR CHANGES SHOULD BE LOGGED ON THE ONSITE COPY OF THE PLAN FOR REFERENCE. ENVIRONMENTAL COORDINATOR SHOULD BE NOTIFIED OF ANY MAJOR E&S ISSUES.

CONTROL OTHER POLLUTANTS

GROUNDWATER PROTECTION BMPs SHOULD BE FOLLOWED TO PREVENT RISKS ASSOCIATED WITH FUELS, MATERIALS, AND CHEMICALS THAT ARE TO BE USED ON SITE. POLLUTANTS STORED ON SITE SHOULD BE KEPT COVERED AND WITHIN SECONDARY CONTAINMENT. CONTAINMENT SHOULD BE REGULARLY MONITORED FOR SIGNS OF LEAKS. EQUIPMENT SHOULD TAKE PLACE WITH ADEQUATE DRIP PROTECTION AND EQUIPMENT SHOULD BE REGULARLY INSPECTED FOR LEAKS. SPILLS AND LEAKS SHALL BE PROMPTLY CLEANED UP. IF A SPILL OCCURS THAT MAY CONTAMINATE SURFACE WATERS SUPERVISOR SHALL NOTIFY ENVIRONMENTAL COORDINATOR IMMEDIATELY AND THE WVDEP AND NATIONAL RESPONSE CENTER SHALL BE NOTIFIED AS NECESSARY.

ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS, THAT OCCUR ON SITE DURING CONSTRUCTION SHALL BE HANDLED AND DISPOSED OF IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF SURFACE WATER. WOODY DEBRIS MAY BE CHOPPED AND SPREAD ON SITE.

APPLICATION OF AGRICULTURAL CHEMICALS INCLUDING FERTILIZERS AND PESTICIDES SHALL BE CONDUCTED IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO SURFACE WATER RUNOFF. MANUFACTURERS' RECOMMENDATIONS FOR APPLICATION RATES AND PROCEDURES SHALL BE FOLLOWED.

MANAGING THE PROJECT

A COPY OF THE E&S PLAN IS TO REMAIN ON SITE AT ALL TIMES FOR THE DURATION OF THE PROJECT. THE E&S PLAN IS TO BE MODIFIED WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION OR MAINTENANCE OF BMPs.

TREE CLEARING SHALL BE MINIMIZED TO THE EXTENT NECESSARY AND COMPACTION OF EXISTING SOILS SHOULD BE MINIMIZED TO THE EXTENT PRACTICABLE.

INSPECTION AND MONITORING - ALL BMPs SHALL BE INSPECTED, MAINTAINED, AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. WHENEVER INSPECTION AND/OR MONITORING REVEALS THAT THE BMPs IDENTIFIED IN THE SCP ARE INADEQUATE, THE SCP SHALL BE MODIFIED, AS APPROPRIATE, IN A TIMELY MANNER.

REPORTING - REPORT SPILLAGE OR DISCHARGE OF POLLUTANTS WITHIN 24-HOURS.

EQUIPMENT MAINTENANCE - MAINTENANCE AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES INVOLVING OIL CHANGES, HYDRAULIC SYSTEM DRAIN DOWN, SOLVENT AND DE-GREASING CLEANING OPERATIONS, FUEL TANK DRAIN DOWN AND REMOVAL AND OTHER ACTIVITIES WHICH MAY RESULT IN DISCHARGE OR SPILLAGE OF POLLUTANTS TO THE GROUND OR INTO SURFACE WATER RUNOFF MUST BE CONDUCTED USING SPILL PREVENTION MEASURES, SUCH AS DRIP PANS. CONTAMINATED SURFACES SHALL BE CLEANED IMMEDIATELY FOLLOWING ANY DISCHARGE OR SPILL INCIDENT. CONTAMINATED SOIL MUST BE DISPOSED OF PROPERLY. EMERGENCY REPAIRS MAY BE PERFORMED ON-SITE USING TEMPORARY PLASTIC PLACED BENEATH AND, IF RAINING, OVER THE VEHICLE.

VEGETATIVE STABILIZATION

THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER COMPLETION. ESTABLISHMENT OF FINAL COVER 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.

NOTES:

- THIS PLAN IS FOR EROSION & SEDIMENT CONTROL AND SITE RESTORATION PURPOSES ONLY.
- EXISTING CONDITIONS AS DEPICTED ON THESE PLANS ARE GENERAL AND ILLUSTRATIVE IN NATURE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXAMINE THE SITE, AND BE FAMILIAR WITH EXISTING CONDITIONS PRIOR TO BIDDING ON THIS PROJECT. IF CONDITIONS ENCOUNTERED DURING EXAMINATION ARE SIGNIFICANTLY DIFFERENT THAN THOSE SHOWN, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.
- THE CONTRACTOR AND SUBCONTRACTORS SHALL BE RESPONSIBLE FOR COMPLYING WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS (INCLUDING EMPLOYEES) AND PROPERTY. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SUBCONTRACTORS TO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
- THE CONTRACTOR SHALL INDEMNIFY AND HOLD HARMLESS THE OWNER AND OWNER'S REPRESENTATIVE FOR ANY AND ALL INJURIES AND/OR DAMAGES TO PERSONNEL, EQUIPMENT AND/OR EXISTING FACILITIES OCCURRING IN THE COURSE OF THE CONSTRUCTION DESCRIBED IN THE PLANS AND SPECIFICATIONS.
- THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL CODES, OBTAIN ALL APPLICABLE PERMITS, AND PAY ALL REQUIRED FEES PRIOR TO BEGINNING WORK.
- CONTRACTOR SHALL REFER TO OTHER PLANS WITHIN THIS CONSTRUCTION SET FOR OTHER PERTINENT INFORMATION. IT IS NOT THE ENGINEER'S INTENT THAT ANY SINGLE PLAN SHEET IN THIS SET OF DOCUMENTS FULLY DEPICT ALL WORK ASSOCIATED WITH THE PROJECT.
- ANY DISTURBED AREA THAT HAS REACHED FINAL GRADE OR IS TO REMAIN IDLE FOR MORE THAN 21 DAYS IS TO BE TEMPORARILY SEEDING AND MULCHED WITHIN 7 DAYS.
- REFER TO THE STANDARD DETAILS FOR INSTALLATION AND MAINTENANCE GUIDELINES FOR PROPOSED BMPs.
- NO WETLAND OR STREAM CROSSING OTHER THAN THOSE PERMITTED IS AUTHORIZED WITHOUT PRIOR CONSULTATION WITH REVIEWING AGENCIES. LIMITS OF IMPACT TO WETLANDS AND WATERBODIES ARE SHOWN ON THE PLANS.

CONSTRUCTION WASTE RECYCLING/ DISPOSAL:

- CONSTRUCTION WASTES ARE REFUSE MATERIALS GENERATED DURING THE COURSE OF CONSTRUCTION AND INCLUDE, BUT ARE NOT LIMITED TO, PAPER, PLASTIC, WOOD, FOOD, TEXTILE, AND METAL PRODUCTS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING WASTE RECYCLING/DISPOSAL AREAS ON THE E&S PLAN ONCE THEY HAVE BEEN DETERMINED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL WASTE RECYCLING/DISPOSAL PERMITS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES.

CONSTRUCTION SEQUENCE

- THE CONTRACTOR SHALL PLACE A WEST VIRGINIA ONE CALL NO LATER THAN TWO (2) WORKING DAYS AND NO MORE THAN 10 WORKING DAYS PRIOR TO CONSTRUCTION.
- PRIOR TO COMMENCEMENT OF ANY EARTH DISTURBANCE ACTIVITY INCLUDING CLEARING AND GRUBBING, THE REGISTRANT SHALL CLEARLY DELINEATE SENSITIVE AREA, LIMIT OF DISTURBANCE, AND TREES THAT ARE TO BE CONSERVED WITHIN THE PROJECT SITE, AND SHALL INSTALL APPROPRIATE BARRIERS WHERE EQUIPMENT MAY NOT BE PARKED, STAGED, OPERATED OR LOCATED FOR ANY PURPOSE.
- INSTALL STABILIZED CONSTRUCTION ENTRANCE AS NECESSARY, AS SHOWN ON THE PLANS.
- UTILIZING THE STABILIZED CONSTRUCTION ENTRANCE FOR SITE ACCESS, INSTALL PERIMETER CONTROLS, SUCH AS FILTER SOCK, AS SHOWN ON THE PLANS.
- WITH PERIMETER E&S CONTROLS IMPLEMENTED, THE CONTRACTOR SHALL PERFORM ROAD MAINTENANCE AS NECESSARY AND COMMENCE WITH WELL PLUGGING AFTER PROJECT COMPLETION. DISTURBED AREAS SHALL BE RESTORED TO APPROXIMATE ORIGINAL CONTOURS AND PERMANENTLY SEEDING AND MULCHED. EROSION BLANKET SHALL BE APPLIED AS SHOWN ON THE PLANS.
- UPON ESTABLISHMENT OF UNIFORM 70% VEGETATIVE COVER, THE CONTRACTOR SHALL REMOVE E&S BMPs.



WEST VIRGINIA CODE CHAPTER 24C REQUIRES NO LESS THAN 2 WORKING DAYS NOTICE NOR MORE THAN 10 WORKING DAYS NOTICE FROM EXCAVATORS WHO ARE ABOUT TO DRILL, BORE, AUGER, BORE GRADE, TRENCH, OR DEMOLISH WHEN IN THE CONSTRUCTION PHASE. FOR LOCATION REQUESTS IN THE STATE OF WEST VIRGINIA, CALL TOLL FREE 1-800-245-4848. UNDERGROUND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE INFORMATION AND THE LOCATION MUST BE CONSIDERED APPROXIMATE. OTHER UNDERGROUND UTILITIES MAY EXIST WHICH ARE NOT SHOWN. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO ASCERTAIN ALL PHYSICAL LOCATIONS OF UTILITY LINES PRIOR TO THE TIME OF CONSTRUCTION. IN NO WAY SHALL THE CONTRACTOR HOLD THE SURVEYOR RESPONSIBLE FOR ANY UTILITY LOCATION SHOWN ON THIS PLAN.

REVISIONS



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DESIGN	DLH
CHECKED	STK
APPROVED	EAZ
DATE	11/13/2019
SCALE	
COORDINATE SYSTEM	WVRS-NF
PRIORITIES	19038-055

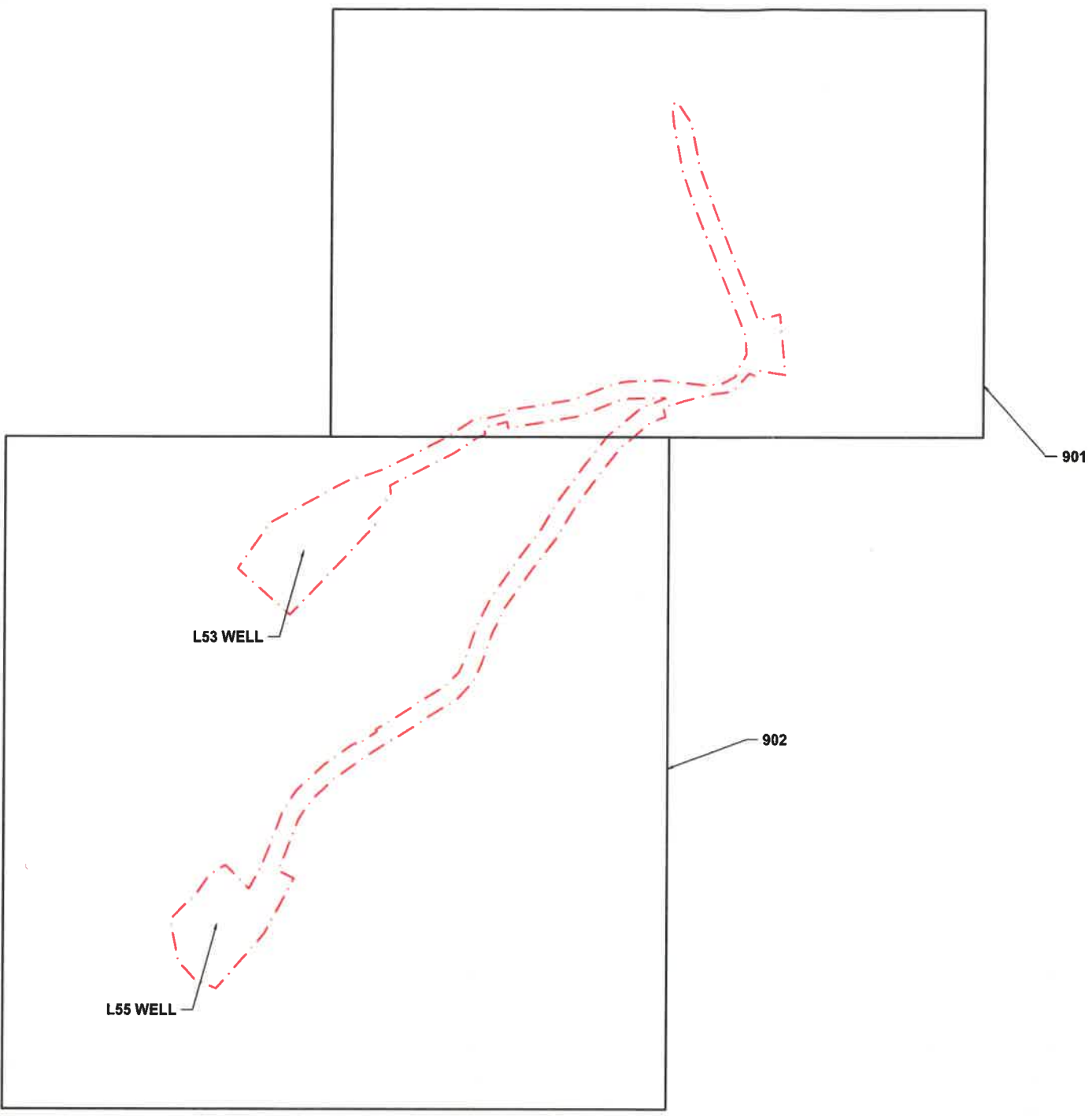
L53 / L55 WELL PLUGGING
BATTELLE DISTRICT, MONROGALIA COUNTY, WEST VIRGINIA

GENERAL NOTES

DRAWING NUMBER

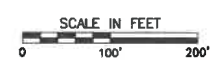
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SHEET 02 of 14



- LEGEND**
- EXISTING PROPERTY LINE
 - EXISTING INDEX CONTOUR
 - EXISTING INTERMEDIATE CONTOUR
 - EXISTING UNPAVED DRIVEWAY
 - EXISTING CULVERT
 - EXISTING WATERBODY AND STREAM (DELINEATED)
 - FLOODWAY BASED ON 50' OFFSET
 - EXISTING WETLAND
 - EXISTING OVERHEAD ELECTRIC LINE
 - EXISTING UTILITY POLE, LIGHT POLE, GUY WIRE
 - EXISTING GAS LINE
 - EXISTING SOIL TYPE
 - EXISTING TREELINE
 - EXISTING WELL HEAD
 - PROPOSED LIMIT OF DISTURBANCE
 - PROPOSED INDEX CONTOUR
 - PROPOSED INTERMEDIATE CONTOUR
 - PROPOSED PAD
 - PROPOSED COMPOST FILTER SOCK ID
 - PROPOSED 12" COMPOST FILTER SOCK
 - PROPOSED 32" COMPOST FILTER SOCK
 - PROPOSED ROCK CONSTRUCTION ENTRANCE
 - PROPOSED AGGREGATE STOCKPILE
 - PROPOSED 4'X16'X8" WETLAND CROSSING STABILIZATION
 - PROPOSED EROSION CONTROL BLANKET
 - PROPOSED 35'X10' AIR BRIDGE

- NOTES:**
- CONTRACTOR TO USE EXISTING ACCESS ROAD AND MAINTAIN AS NECESSARY.
 - CONTRACTOR TO PLACE GEO-TEXTILE AND AGGREGATE ON ACCESS ROAD AS NECESSARY. SEE DETAIL 5 ON PAGE 903.



PLAN
SCALE: 1" = 100'

REVISIONS



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DESIGN	DLI/LI
CHIEF	STK
APPROVED	EAZ
DATE	11/19/2019
SCALE	1" = 100'
COORDINATE SYSTEM	WV83-NF
PROJECT	19039-055

L53 / L55 WELL PLUGGING
BATTELLE DISTRICT, MONONGALIA COUNTY, WEST VIRGINIA

INDEX SHEET

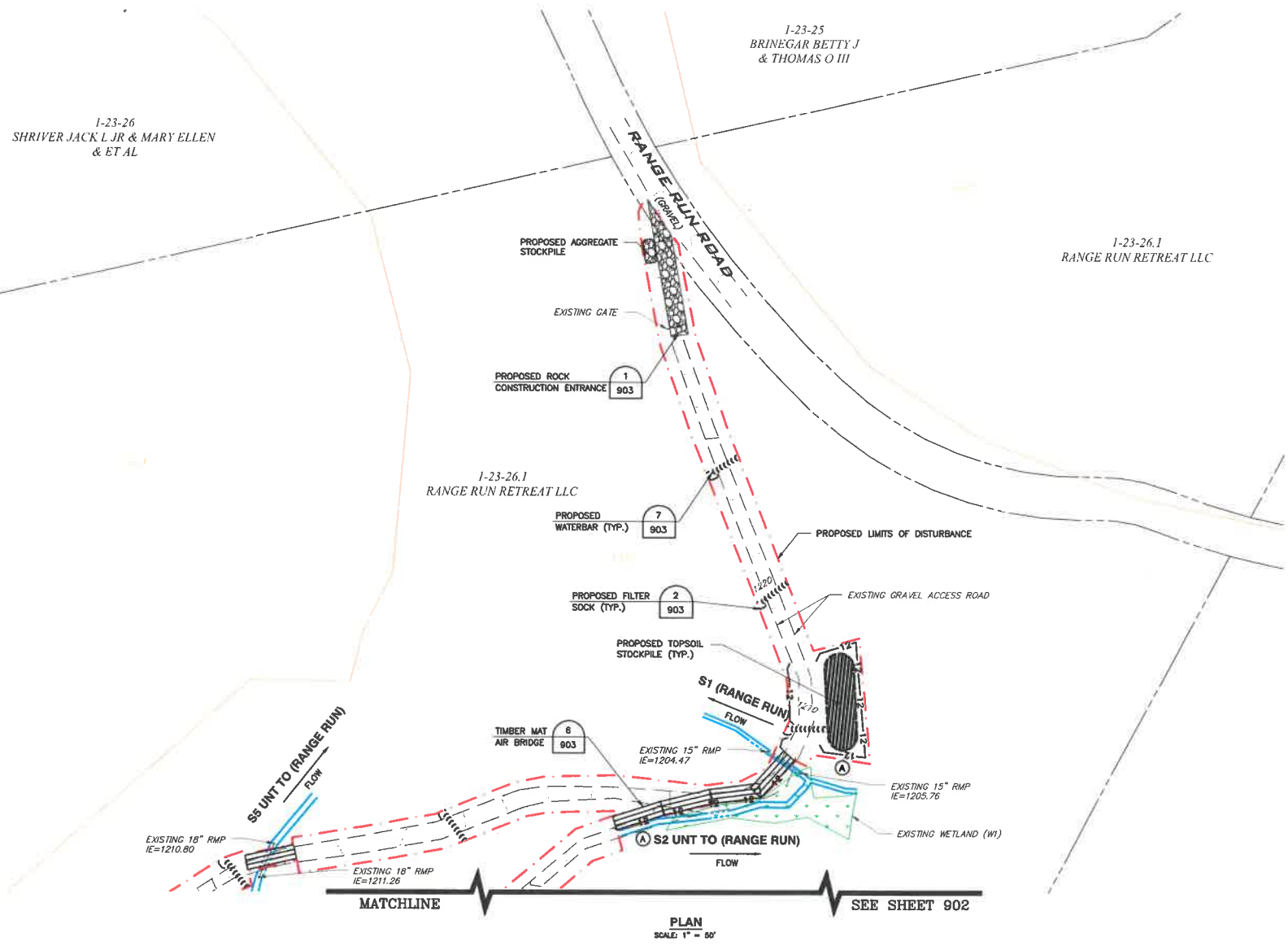
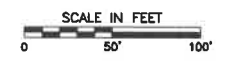
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- LEGEND**
- EXISTING PROPERTY LINE
 - - - - - EXISTING INDEX CONTOUR
 - - - - - EXISTING INTERMEDIATE CONTOUR
 - - - - - EXISTING UNPAVED DRIVEWAY
 - - - - - EXISTING CULVERT
 - EXISTING WATERBODY AND STREAM (DELINEATED)
 - - - - - FLOODWAY BASED ON 50' OFFSET
 - EXISTING WETLAND
 - OH/W EXISTING OVERHEAD ELECTRIC LINE
 - UP — GW EXISTING UTILITY POLE, LIGHT POLE, GUY WIRE
 - G EXISTING GAS LINE
 - EXISTING SOIL TYPE
 - EXISTING TREELINE
 - EXISTING WELL HEAD
 - - - - - PROPOSED LIMIT OF DISTURBANCE
 - - - - - PROPOSED INDEX CONTOUR
 - - - - - PROPOSED INTERMEDIATE CONTOUR
 - PROPOSED PAD
 - (A) PROPOSED COMPOST FILTER SOCK ID
 - 12 — 12 PROPOSED 12" COMPOST FILTER SOCK
 - 32 — 32 PROPOSED 32" COMPOST FILTER SOCK
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- NOTES:**
- CONTRACTOR TO USE EXISTING ACCESS ROAD AND MAINTAIN AS NECESSARY.
 - CONTRACTOR TO PLACE GEO-TEXTILE AND AGGREGATE ON ACCESS ROAD AS NECESSARY. SEE DETAIL 5 ON PAGE 903.

COMPOST FILTER SOCK SIZING TABLE		
LABEL	SIZE	DETAIL
(A)	12"	2 903

REVISIONS



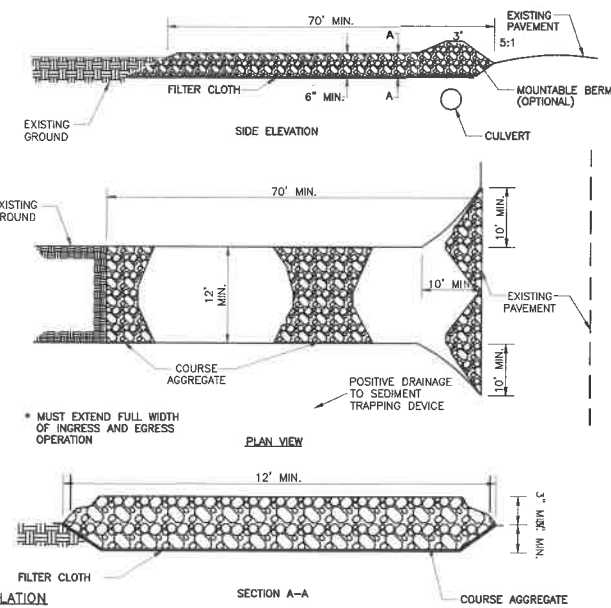
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DATE	BY	CHKD	APP'D	DLI
11/13/2019				STK
				EAZ
				1" = 50'
				COORDINATE SYSTEM
				WV83-NF
				PROJECT
				19039-050

LS3 / L55 WELL PLUGGING
 BATTLE DISTRICT, MONOGALIA COUNTY, WEST VIRGINIA
EROSION AND SEDIMENTATION CONTROL PLAN

DRAWING NUMBER
901
 SHEET 04 of 14



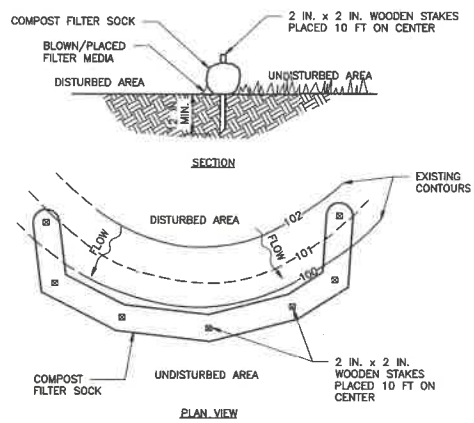
INSTALLATION

- USE LARGER STONE (4-6 INCH) FOR HEAVY USE OR MATERIAL DELIVERY ENTRANCES.
- LENGTH IS AS REQUIRED, BUT NOT LESS THAN 70 FEET (RICE TO BE PLACED JUST PAST THE LAST DWELLING TO PROVIDE RESIDENT A CLEAN PASSAGE WHERE A 70 FOOT MINIMUM LENGTH WOULD APPLY).
- THICKNESS SHOULD BE NOT LESS THAN 6 INCHES.
- THE WIDTH SHALL BE A MINIMUM OF 10 FEET, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
- GEOTEXTILE FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO THE PLACING OF STONE.
- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF A CULVERT IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES SHALL BE USED.
- IF NECESSARY, DIVERT ANY WATER RUNNING DOWN ACCESS ROAD TO A SUMP LOCATED ON EITHER SIDE OF THE STABILIZED CONSTRUCTION ENTRANCE.

MAINTENANCE

- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
- WHEELS ON ALL VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY.
- INSPECTION AND NEEDED MAINTENANCE SHOULD BE PROVIDED DAILY BUT AT A MINIMUM EVERY SEVEN DAYS AND AFTER EVERY RAIN OF 0.5 INCH OR GREATER.

**DETAIL 1
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE**



NOTES:

- SOCK FABRIC SHALL MEET THE REQUIREMENTS OF THE COMPOST FILTER SOCK MINIMUM SPECIFICATIONS TABLE. COMPOST SHALL MEET THE STANDARDS OF THE COMPOST STANDARDS TABLE.
- COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE BARRIER SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY BARRIER SHALL NOT EXCEED THAT SPECIFIED FOR THE SIZE OF THE SOCK AND THE SLOPE OF ITS TRIBUTARY AREA.
- TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
- ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE BARRIER AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
- COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
- BIODEGRADABLE COMPOST FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

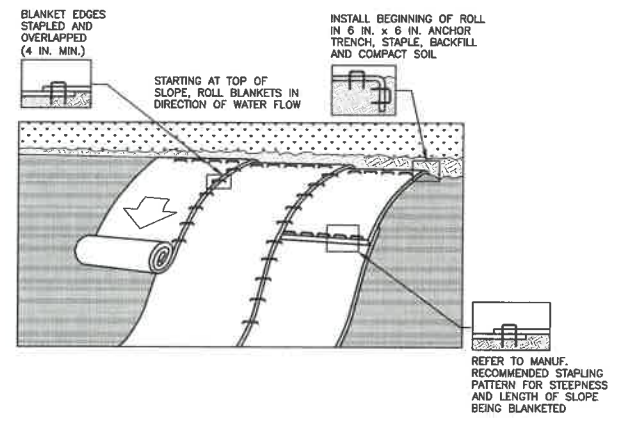
**DETAIL 2
COMPOST FILTER SOCK
NOT TO SCALE**

COMPOST FILTER SOCK MINIMUM SPECIFICATIONS

MATERIAL TYPE	3 MIL HDPE	5 MIL HDPE	5 MIL HDPE	MULTI-FILAMENT POLYPROPYLENE (MFPF) PHOTO DEGRADABLE	HEAVY DUTY MULTI-FILAMENT POLYPROPYLENE (HDMFPF) PHOTO DEGRADABLE
MATERIAL CHARACTERISTICS	PHOTO DEGRADABLE	PHOTO DEGRADABLE	BIO DEGRADABLE	PHOTO DEGRADABLE	PHOTO DEGRADABLE
SOCK DIAMETERS	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
MESH OPENING	3/8"	3/8"	3/8"	3/8"	3/8"
TENSILE STRENGTH		26 PSI	26 PSI	44 PSI	202 PSI
ULTRAVIOLET STABILITY % ORIGINAL STRENGTH (ASTM G-155)	23% AT 1000 HR.	23% AT 1000 HR.		100% AT 1000 HR.	100% AT 1000 HR.
MINIMAL FUNCTION LONGEVITY	6 MONTHS	9 MONTHS	6 MONTHS	1 YEAR	2 YEARS

COMPOST STANDARDS

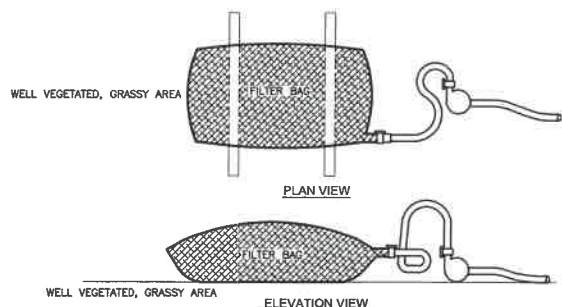
ORGANIC MATTER CONTENT	25%-100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5-8.5
MOISTURE CONTENT	30%-60%
PARTICLE SIZE	30% - 50% pass through 3/8" sieve
SOLUBLE SALT CONCENTRATION	5.0 dS/m (mmhos/cm) MAXIMUM



NOTES:

- SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
- PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
- SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
- BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
- THE BLANKET SHALL BE STAPLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.

**DETAIL 3
EROSION CONTROL BLANKET
NOT TO SCALE**

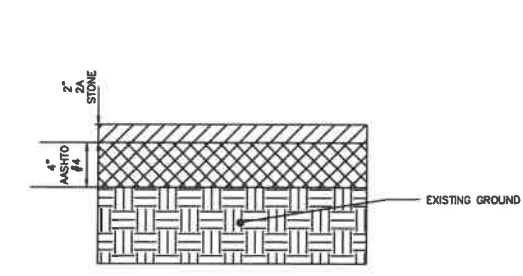


NOTE:
LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE SEAMS. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS SHALL BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

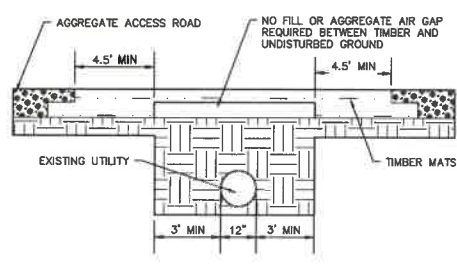
PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

- A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES SHALL BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS SHALL BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.
- BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.
- NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.
- THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.
- THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR 1/2 THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOTATING AND SCREENED.
- FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

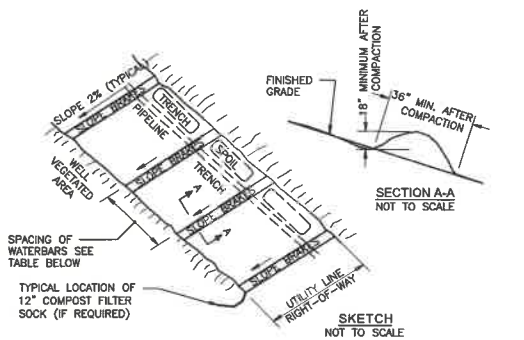
**DETAIL 4
PUMPED WATER FILTER BAG
NOT TO SCALE**



**DETAIL 5
TYPICAL GRAVEL SECTION
NOT TO SCALE**



**DETAIL 6
TIMBER MAT AIR BRIDGE
NOT TO SCALE**

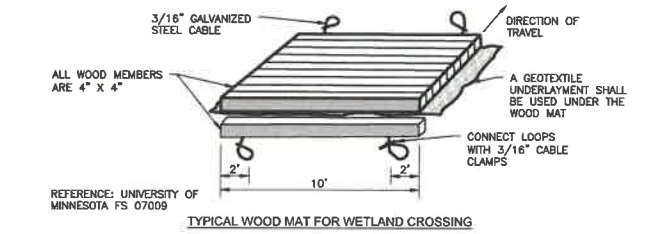
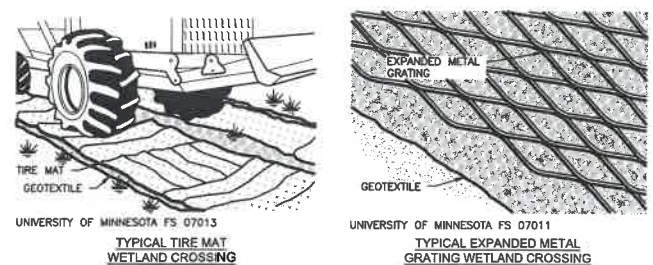


NOTES:

- WATERBARS SHALL DISCHARGE TO A STABLE AREA.
- WATERBARS SHALL BE INSPECTED WEEKLY (DAILY ON ACTIVE ROADS) AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.
- MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
- WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.
- SEE TABLE BELOW FOR WATERBAR SPACING.

MAXIMUM WATERBAR SPACING TABLE	
PERCENT SLOPE	SPACING (FT)
< 5	250
5 - 15	150
15 - 30	100
> 30	50

**DETAIL 7
TYPICAL WATERBAR INSTALLATION
NOT TO SCALE**



NOTES:

- WETLAND CROSSINGS ARE AVOIDED WHEREVER POSSIBLE. WHERE THAT IS NOT POSSIBLE, THE LOCATION OF THE CROSSING AND ITS ORIENTATION ARE SELECTED SO AS TO HAVE THE LEAST POSSIBLE IMPACT UPON THE WETLAND.
- ALL WETLAND CROSSINGS MUST CONFORM TO CHAPTER 105 PERMITTING REQUIREMENTS.
- TEMPORARY CROSSINGS SHOULD BE CONSTRUCTED FROM MATERIALS THAT CAN BE PLACED WITH A MINIMUM OF DISTURBANCE TO THE SOIL SURFACE AND COMPLETELY REMOVED WHEN NO LONGER NEEDED. SOME EXAMPLES OF STABILIZED CROSSING METHODS ARE ILLUSTRATED ABOVE.

**DETAIL 8
WETLAND CROSSING STABILIZATION
NOT TO SCALE**

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NO.	DATE	BY	DESCRIPTION
1	11/19/2019	ELI A. ZIM	NOT TO SCALE
2			WV83-AF
3			PROJECT

BATTELLE DISTRICT, MONONGALIA COUNTY, WEST VIRGINIA
EROSION AND SEDIMENTATION CONTROL DETAILS

DRAWING NUMBER
903
SHEET 06 OF 14

T:\2019\19039-053\Cadd\Drawings\19039-053 - plans - LP - 11/19/2019 9:45 AM

T:\2019\19039-053\Cadd\Drawings\19039-053 FE-01 PLANT SHEETS.dwg [04] LS (2019-11-13 - 8:49am) - LD: 11/13/2019 9:51 AM

TABLE 3.11.1 PERMANENT SEEDING

SEED MIX	PLANT NAMES		APPLICATION RATE LBS/ACRE
	COMMON	SCIENTIFIC	
A	KENTUCKY 31 FESCUE RED FESCUE BIRDSFOOT TREFLOIL	FESTUCA ARUNDINACEA FESTUCA RUBRA LOTUS CORNICULATUS	65 20 5
B	SWITCHGRASS PERENNIAL RYEGRASS REDTOP BIRDSFOOT TREFLOIL	PANICUM VIRGATUM LOLIUM PERENNE AGROSTIS ALBA LOTUS CORNICULATUS	15 20 5 15
C	RED FESCUE KENTUCKY BLUEGRASS MERION BLUEGRASS	FESTUCA RUBRA POA PRATENSIS POA PRATENSIS	20 40 30
D	KENTUCKY 31 FESCUE RED FESCUE KENTUCKY BLUEGRASS WHITE DUTCH CLOVER	FESTUCA ARUNDINACEA FESTUCA RUBRA POA PRATENSIS TRIFOLIUM REPENS	45 20 25 5
E	PERENNIAL RYEGRASS SWITCHGRASS CROWNWETCH OR PERENNIAL PEA	LOLIUM PERENNE PANICUM VIRGATUM CORNICILLA VARIA LATHYRUS LATIFOLIUS	30 15 20 30
F	ORCHARDGRASS LADINO CLOVER REDTOP	DACTYLIS GLOMERATA TRIFOLIUM REPENS AGROSTIS ALBA	20 5 5
G	BIRDSFOOT TREFLOIL WEEPING LOVERGRASS PERENNIAL RYEGRASS	LOTUS CORNICULATUS ERAGROSTIS CURVULA LOLIUM PERENNE	15 45 10
H	CROWNWETCH ORCHARDGRASS	CORNICILLA VARIA DACTYLIS GLOMERATA	25 30
I	CROWNWETCH PERENNIAL RYEGRASS	CORNICILLA VARIA LOLIUM PERENNE	25 30
J	PERENNIAL PEA ORCHARDGRASS	LATHYRUS LATIFOLIUS DACTYLIS GLOMERATA	30 30
K	DEERTONGUE BIRDSFOOT TREFLOIL WEEPING LOVERGRASS	PANICUM CLANDESTINUM LOTUS CORNICULATUS ERAGROSTIS CURVULA	30 15 5
L	ORCHARDGRASS SEREGIA LESPEDEZA LADINO CLOVER	DACTYLIS GLOMERATA LESPEDEZA CUNATA TRIFOLIUM REPENS	30 40 5
M	PERENNIAL RYEGRASS LADINO CLOVER REDTOP	LOLIUM PERENNE TRIFOLIUM REPENS AGROSTIS ALBA	50 5 5
N	CROWNWETCH ORCHARDGRASS REDTOP	CORNICILLA VARIA DACTYLIS GLOMERATA AGROSTIS ALBA	15 30 5
O	PERENNIAL RYEGRASS BIRDSFOOT TREFLOIL REDTOP	LOLIUM PERENNE LOTUS CORNICULATUS AGROSTIS ALBA	40 15 5
P	SEREGIA LESPEDEZA ORCHARDGRASS REDTOP	LESPEDEZA CUNATA DACTYLIS GLOMERATA AGROSTIS ALBA	40 30 5
Q	ORCHARDGRASS REED CANARYGRASS REDTOP LADINO CLOVER	DACTYLIS GLOMERATA PHALARIS ARUNDINACEA AGROSTIS ALBA TRIFOLIUM REPENS	25 30 5 5
R	KENTUCKY BLUEGRASS REDTOP WHITE CLOVER OR BIRDSFOOT TREFLOIL	POA PRATENSIS AGROSTIS ALBA TRIFOLIUM REPENS LOTUS CORNICULATUS	30 5 5 15
S	REED CANARYGRASS WEEPING LOVERGRASS	PHALARIS ARUNDINACEA ERAGROSTIS CURVULA	40 5
T	PERENNIAL RYEGRASS REED CANARYGRASS BIRDSFOOT TREFLOIL	LOLIUM PERENNE PHALARIS ARUNDINACEA LOTUS CORNICULATUS	30 15 5
U	TIMOTHY ALFALFA	PHLEUM PRATENSE MEDICAGO SATIVA	10 18
V	TIMOTHY BIRDSFOOT TREFLOIL	PHLEUM PRATENSE LOTUS CORNICULATUS	10 15
W	REDTOP PERENNIAL RYEGRASS ORCHARDGRASS	AGROSTIS ALBA LOLIUM PERENNE DACTYLIS GLOMERATA	5 30 25
X	REED CANARYGRASS BIRDSFOOT TREFLOIL REDTOP	PHALARIS ARUNDINACEA LOTUS CORNICULATUS	30 20 5
Y	SWITCHGRASS BIRDSFOOT TREFLOIL	PANICUM VIRGATUM LOTUS CORNICULATUS	30 20
Z	SWITCHGRASS SEREGIA LESPEDEZA	PANICUM VIRGATUM LESPEDEZA CUNATA	15 30
A-1	ORCHARDGRASS RED CLOVER	DACTYLIS GLOMERATA TRIFOLIUM PRATENSE	30 10
A-2	SWITCHGRASS BIG BLUESTEM INDIANGRASS LITTLE BLUESTEM SIDEOTS GRAMA ¹	PANICUM VIRGATUM ANDROPOGON GERARDI SORGHASTRUM NUTANS SCOPARIUS BOULEOUA CURTIPENDULA	15 5 5 5 5
A-3	SWITCHGRASS EASTERN GAMAGRASS ¹	PANICUM VIRGATUM TRIPSACUM DACTYLODES	20 15

NOTE: WHEN UTILIZING A PROPERLY PREPARED SEEDBED, THE RATE OF APPLICATION CAN BE REDUCED BY 30 PERCENT EXCEPT FOR SEED MIXES A-2 & A-3.
¹ REED CANARYGRASS SHALL NOT BE USED EAST OF I-79 AND/OR SOUTH OF CHARLESTON.
² USE NORTH AND EAST OF I-64 AND I-79.
³ USE SOUTH AND WEST OF I-64 AND I-79.

LIME AND FERTILIZER APPLICATION RATES

COVER TYPE	RATES (MIN.):		LIME/FERTILIZER TYPE
	PER ACRE	PER 1,000 SQ. FT.	
LIME	2 TONS	90 LBS	AGRICULTURAL GRADE ONLY
GRASSES AND LEGUMES	1,000 LBS	23 LBS	10-20-10 OR EQUIVALENT
LEGUME STANDS ONLY	1,000 LBS	23 LBS	5-20-10 PREFERRED; 10-20-10 ACCEPTABLE
GRASS STANDS ONLY	1,000 LBS	23 LBS	10-20-10 OR EQUIVALENT

LIME AND FERTILIZER NEEDS SHOULD BE DETERMINED BY SOIL TEST. IF SOIL TEST IS NOT OBTAINED THE ABOVE SOIL AMENDMENTS SHOULD BE APPLIED.

TEMPORARY SEED CHART

PLANT NAMES	COMMON	SCIENTIFIC	PLANTING DATES	APPLICATION RATE LBS/ACRE
ANNUAL RYEGRASS	LOLIUM	MULTIFLORUM	2/16 - 5/15 8/1 - 11/1	40
FIELD BROMEGRASS	BROMUS	CILIATUS	3/1 - 6/15 8/1 - 9/15	40
SPRING OATS	AVENA	SATIVA	3/1 - 6/15	100
WINTER RYE	SECALE	CEREALE	8/15 - 2/28	170
WINTER WHEAT	TRITICUM	AESTIVUM	8/15 - 2/28	180
JAPANESE MILLET	ECHINOCHLOA	CRUSGALLI	5/15 - 8/15	30
REDTOP	AGROSTIS	ALBA	3/1 - 6/15	10
ANNUAL RYEGRASS AND SPRING OATS	LOLIUM	MULTIFLORUM AVENA SATIVA	3/1 - 6/15	30 70
GERMAN/FOX TAIL MILLET	SETARIA	ITALICA	5/1 - 8/1	40
HAIRY VETCH	VICIA	VILLOSA	8/15 - 4/1	60

TABLE 3.11.2 NURSE CROPS

PLANT NAMES	COMMON	SCIENTIFIC	PLANTING DATES	APPLICATION RATE LBS/ACRE
ANNUAL RYEGRASS	LOLIUM	MULTIFLORUM	2/16 - 5/15 8/1 - 11/1	25
FIELD BROMEGRASS	BROMUS	CILIATUS	3/1 - 6/15 8/1 - 9/15	20
SPRING OATS	AVENA	SATIVA	3/1 - 6/15	50
WINTER RYE	SECALE	CEREALE	8/15 - 2/28	85
WINTER WHEAT	TRITICUM	AESTIVUM	8/15 - 2/28	90
JAPANESE MILLET	ECHINOCHLOA	CRUSGALLI	5/15 - 8/15	15
REDTOP	AGROSTIS	ALBA	3/1 - 6/15	10
ANNUAL RYEGRASS AND SPRING OATS	LOLIUM	MULTIFLORUM AVENA SATIVA	3/1 - 6/15	15 35
GERMAN/FOX TAIL MILLET	SETARIA	ITALICA	5/1 - 8/1	25
HAIRY VETCH	VICIA	VILLOSA	8/15 - 4/1	30

**DETAIL 9
TEMPORARY AND PERMANENT SEEDING MIXTURES, MULCHING, AND FERTILIZER**

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES	RATES (MIN.):		NOTES
	PER ACRE	PER 1,000 SQ. FT.	
STRAW OR HAY	1.5 - 2 TONS (MINIMUM 2 TONS FOR WINTER COVER)	70 - 90 LBS.	FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED. SPREAD WITH MULCH BLOWER OR BY HAND.
FIBER MULCH	MINIMUM 1,500 LBS.	35 LBS.	DO NOT USE AS MULCH FOR WINTER COVER OR DURING HOT, DRY PERIODS. * APPLY AS SLURRY.
CORNSTALKS	4 - 6 TONS	185 - 275 LBS.	CUT OR SHREDDED IN 4 - 6 LENGTHS. AIR-DRIED, DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER OR BY HAND.
WOOD CHIPS	4 - 6 TONS	185 - 275 LBS.	FREE OF COARSE MATTER. AIRDRIED. TREAT WITH 12 LBS. NITROGEN PER TON. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.
BARK CHIPS OR SHREDDED BARK	50 - 70 CU. YDS.	1 - 2 CU. YDS.	FREE OF COARSE MATTER. AIRDRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.

* WHEN FIBER MULCH IS THE ONLY AVAILABLE MULCH DURING PERIODS WHEN STRAW SHOULD BE USED, APPLY AT A MINIMUM RATE OF 2,000 LBS./AC. OR 45 LBS./1,000 SQ. FT.

TABLE 3.11.3 PERMANENT SEEDING REQUIREMENTS

SEED MIX	FINE LAWN	COARSE LAWN	LOW MAINT.	NO MAINT.	PASTURE	SENSITIVE NATURAL AREAS	PH RANGE	DRAINAGE	SHADE TOLERANCE	PREFERRED PLANTING DATES			
										3/1 - 6/15	6/16 - 8/14	8/15 - 9/15	9/16 - 2/28
A			X 1				6.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
B				X			5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
C	X 1						6.0 - 7.5	MOD.-WELL	FULL SUN	X		X	
D		X 1					6.0 - 7.5	MOD.-WELL	FULL SUN	X		X	
E				X 1			6.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
F			X	X	X		5.5 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
G				X	X		5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
H			X	X 1	X		5.0 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
I			X	X 1	X		5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
J			X	X 1	X		4.0 - 8.0	MOD.-WELL	TOLERANT	X	N	X	N
K				X			4.0 - 7.0	MOD.-WELL	FULL SUN	X	N	X	N
L			X				4.5 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
M			X	X	X		5.0 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
N			X	X 1	X		5.0 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
O			X	X	X		5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
P			X	X	X		4.5 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
Q			X	X	X		4.5 - 7.5	POOR - WELL	TOLERANT	X	N	X	N
R			X	X	X		5.5 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
S			X	X	X		4.5 - 7.5	POOR - WELL	FULL SUN	X	N	X	N
T					X		5.5 - 7.5	POOR - WELL	FULL SUN	X	N	X	N
U					X		6.5 - 8.0	MOD. - WELL	FULL SUN	X	N	X	N
V					X		5.5 - 7.5	POOR - WELL	FULL SUN	X	N	X	N
W			X	X	X		5.0 - 7.5	MOD. - WELL	TOLERANT	X	N	X	N
X					X		5.5 - 7.5	POOR - WELL	FULL SUN	X	N	X	N
Y			X	X	X		5.0 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
Z			X	X	X		5.0 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
A-1					X		4.5 - 7.5	MOD. - WELL	TOLERANT	X	N	X	N
A-2				X	X	X	5.0 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
A-3				X		X	5.0 - 7.5	POOR - WELL	FULL SUN	X	N	X	N

1 - URBAN AREAS ONLY
N - NURSE CROPS REQUIRED


VEGETATIVE STABILIZATION - WETLAND MIX

SEED:	SOIL AMENDMENT		RATE (LBS./ACRE)
	ERNMX-128 (OR EQUIVALENT) ¹	FOX SEDGE	
	CAREX VULPINOIDEA	JAPANESE MILLET	20%
	ECHINOCHLOA CRUSGALLI VAR. FRUMENTACEA	VIRGINIA WILD RYE	20%
	ETYMUS VIRGINICUS	PENNSYLVANIA SMARTWEED	19.5%
	POLYGONUM PENNSYLVANICUM	TICKLEGRASS (ROUGH BENTGRASS)	5%
	AGROSTIS SCABRA	SHELTER SWITCH GRASS	5%
	PANICUM VIRGATUM, SHELTER	AWL SEDGE	3%
	CAREX STIPATA	TIOGA DEER TONGUE	3%
	PANICUM CLANDESTINUM	BLUNT BROOM SEDGE	2.5%
	CAREX SCOPARIA	NODDING BUR MARGOLD MIX	1%
	BIDENS CERNUA MIX	PATH RUSH	1%
	JUNCUS TENUIS		
	MULCH: STRAW OR HAY		6,000


¹ERNMX-128 = ERNST CONSERVATION SEEDS SEASONALLY FLOODED SEED MIX

**DETAIL 10
VEGETATIVE STABILIZATION - WETLAND MIX**


REVISIONS



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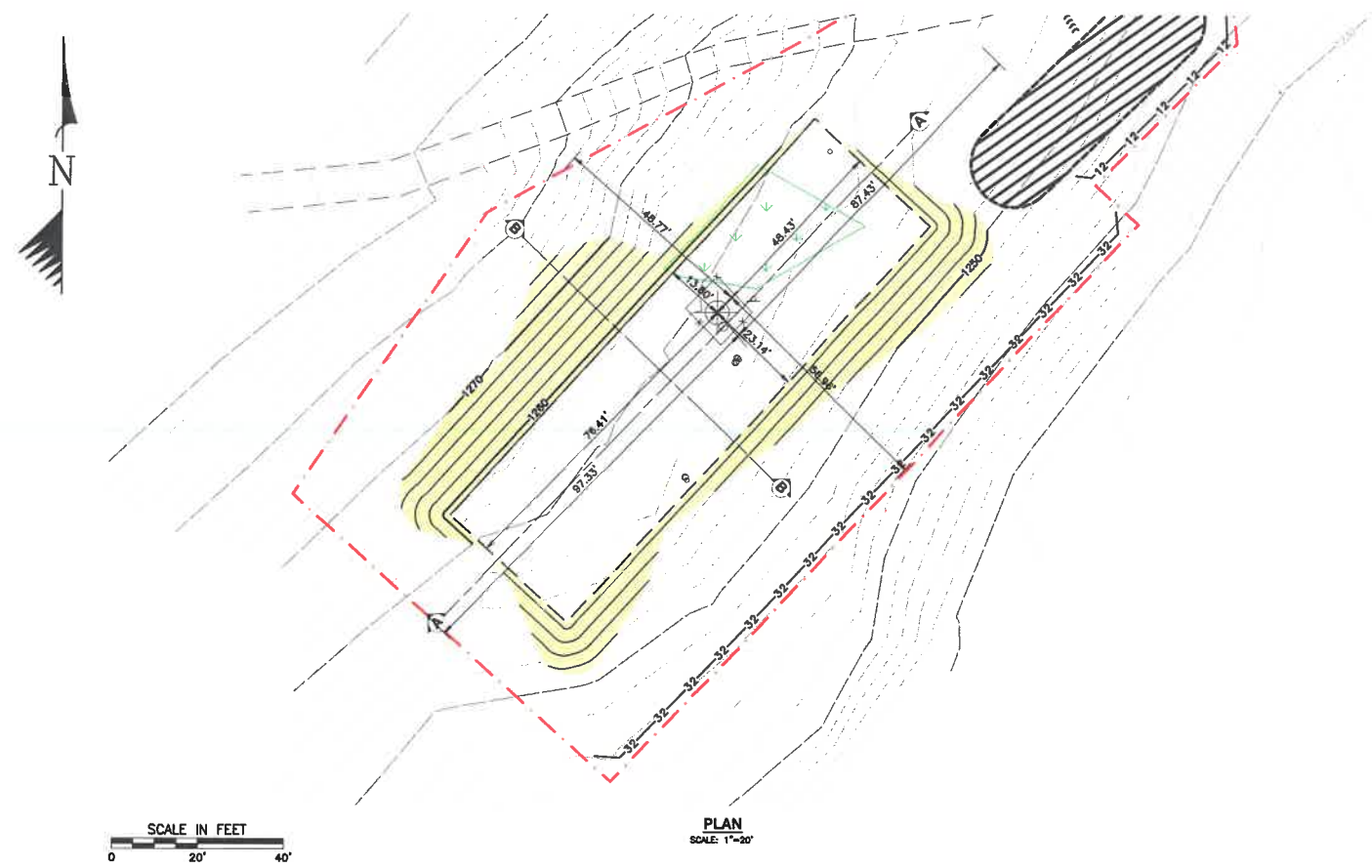
REVISION	DLH	STK	EJZ	DATE	SOIL SYSTEM	WAB3-NF	PROJECT
				11/13/2019			19039-053

1.5 / 1.5 WELL PLUGGING
BATTLE DISTRICT, MONOGALIA COUNTY, WEST VIRGINIA

EROSION AND SEDIMENTATION CONTROL DETAILS

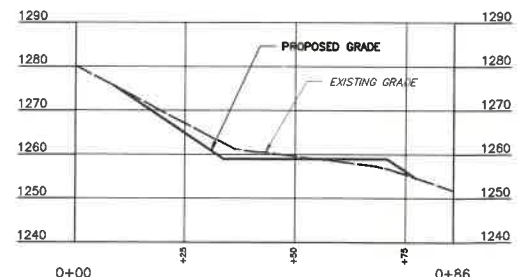
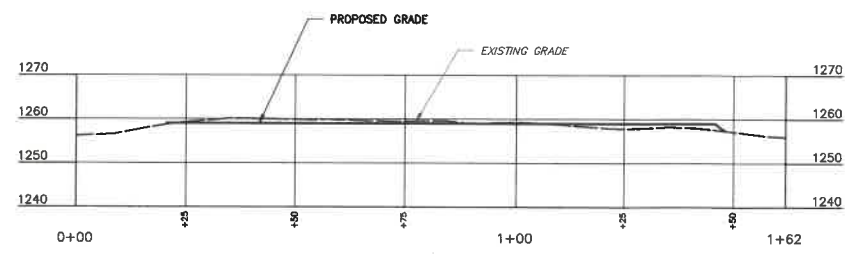
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SHEET 07 of 14

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- LEGEND**
- EXISTING PROPERTY LINE
 - EXISTING INDEX CONTOUR
 - EXISTING INTERMEDIATE CONTOUR
 - EXISTING UNPAVED DRIVEWAY
 - EXISTING CULVERT
 - EXISTING WATERBODY AND STREAM (DELINEATED)
 - FLOODWAY BASED ON 50' OFFSET
 - EXISTING WETLAND
 - EXISTING OVERHEAD ELECTRIC LINE
 - EXISTING UTILITY POLE, LIGHT POLE, GUY WIRE
 - EXISTING GAS LINE
 - EXISTING SOIL TYPE
 - EXISTING TREELINE
 - EXISTING WELL HEAD
 - PROPOSED LIMIT OF DISTURBANCE
 - PROPOSED INDEX CONTOUR
 - PROPOSED INTERMEDIATE CONTOUR
 - PROPOSED PAD
 - PROPOSED COMPOST FILTER SOCK ID
 - 12-12 PROPOSED 12" COMPOST FILTER SOCK
 - 32-32 PROPOSED 32" COMPOST FILTER SOCK
 - PROPOSED ROCK CONSTRUCTION ENTRANCE
 - PROPOSED AGGREGATE STOCKPILE
 - PROPOSED 4'X16'X8" WETLAND CROSSING STABILIZATION
 - PROPOSED EROSION CONTROL BLANKET
 - PROPOSED 35'X10' AIR BRIDGE

- NOTES:**
- * CONTRACTOR TO USE EXISTING ACCESS ROAD AND MAINTAIN AS NECESSARY.
 - * CONTRACTOR TO PLACE GEO-TEXTILE AND AGGREGATE ON ACCESS ROAD AS NECESSARY. SEE DETAIL 5 ON PAGE 903.



WELL L53 PLAN AND PROFILE

REVISIONS



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DATE	11/19/2019
SCALE	1" = 20'
COORDINATE SYSTEM	WV83-NF
PROJECT	19039-005

L53 / L55 WELL PLUGGING
BATTELLE DISTRICT, MONOGALIA COUNTY, WEST VIRGINIA

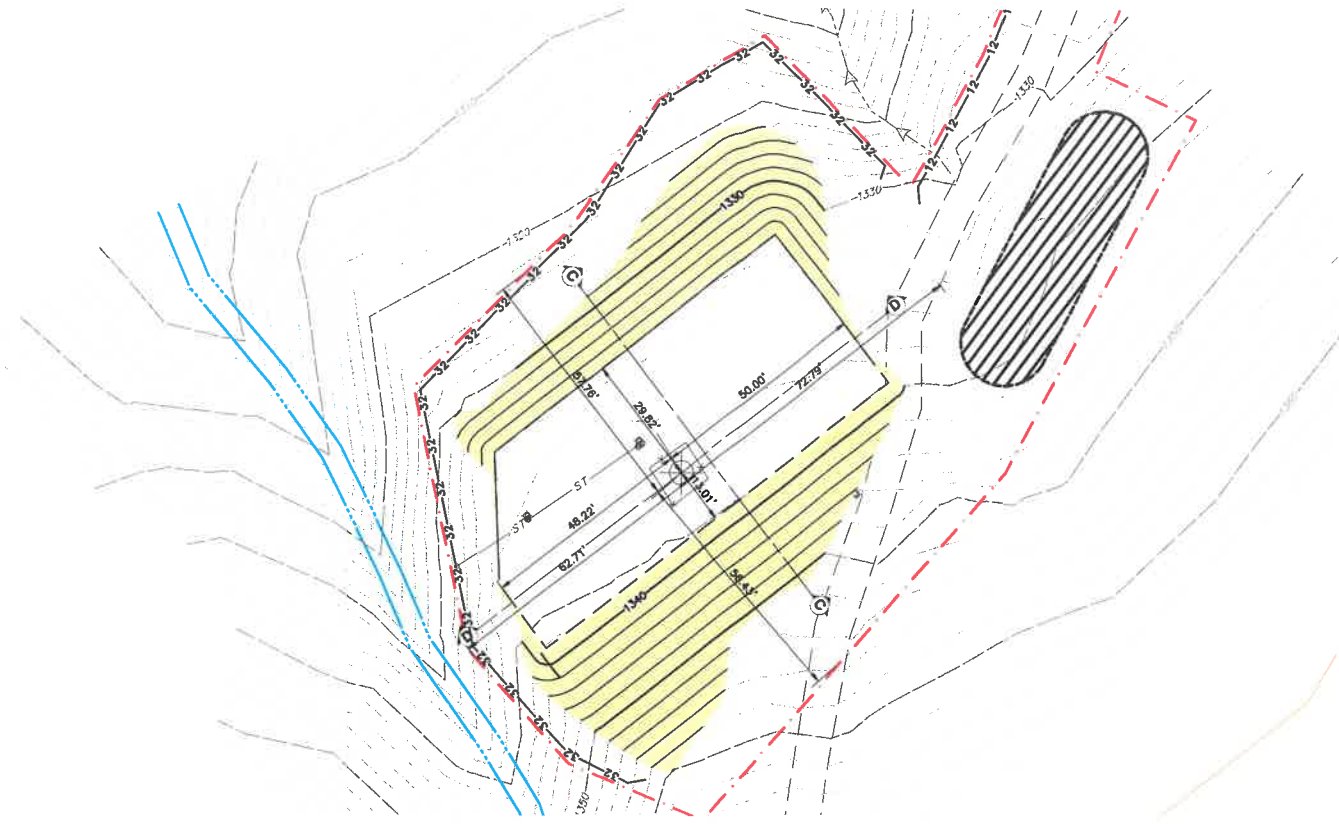
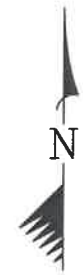
GRADING PLAN

DRAWING NUMBER

905

SHEET 08 OF 14

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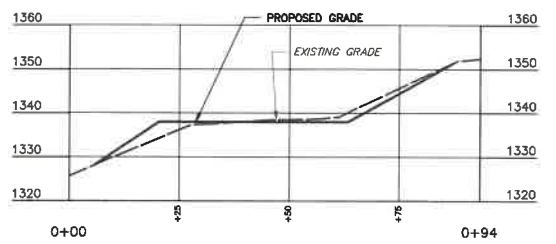
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PLAN
SCALE: 1"=20'

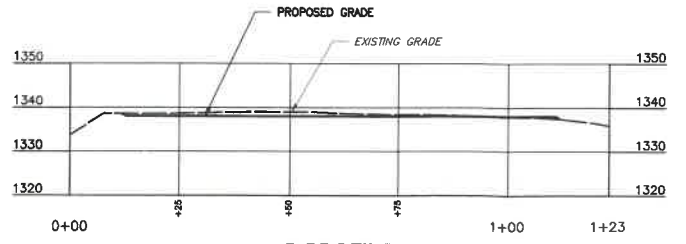
LEGEND

---	EXISTING PROPERTY LINE
- - -	EXISTING INDEX CONTOUR
- · - · -	EXISTING INTERMEDIATE CONTOUR
- - - - -	EXISTING UNPAVED DRIVEWAY
- · - · - · -	EXISTING CULVERT
---	EXISTING WATERBODY AND STREAM (DELINEATED)
---	FLOODWAY BASED ON 50' OFFSET
---	EXISTING WETLAND
---	EXISTING OVERHEAD ELECTRIC LINE
---	EXISTING UTILITY POLE, LIGHT POLE, GUY WIRE
---	EXISTING GAS LINE
---	EXISTING SOIL TYPE
---	EXISTING TREELINE
---	EXISTING WELL HEAD
---	PROPOSED LIMIT OF DISTURBANCE
---	PROPOSED INDEX CONTOUR
---	PROPOSED INTERMEDIATE CONTOUR
---	PROPOSED PAD
---	PROPOSED COMPOST FILTER SOCK ID
---	PROPOSED 12" COMPOST FILTER SOCK
---	PROPOSED 32" COMPOST FILTER SOCK
---	PROPOSED ROCK CONSTRUCTION ENTRANCE
---	PROPOSED AGGREGATE STOCKPILE
---	PROPOSED 4'X18'X8" WETLAND CROSSING STABILIZATION
---	PROPOSED EROSION CONTROL BLANKET
---	PROPOSED 35'X10' AIR BRIDGE

- NOTES:**
- CONTRACTOR TO USE EXISTING ACCESS ROAD AND MAINTAIN AS NECESSARY.
 - CONTRACTOR TO PLACE GEO-TEXTILE AND AGGREGATE ON ACCESS ROAD AS NECESSARY. SEE DETAIL 5 ON PAGE 903.



C PROFILE
SCALE H:1"=20'; V:1"=20'



D PROFILE
SCALE H:1"=20'; V:1"=20'

WELL L55 PLAN AND PROFILE

REVISIONS



CNX
CNX RESOURCES CORPORATION, LLC
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32 EAST MAIN STREET
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DATE	DLH
CHECKED	STK
APPROVED	EJZ
DATE	11/13/2019
SCALE	1"=20'
COORDINATE SYSTEM	WV83-NF
PROJECT	19039-055

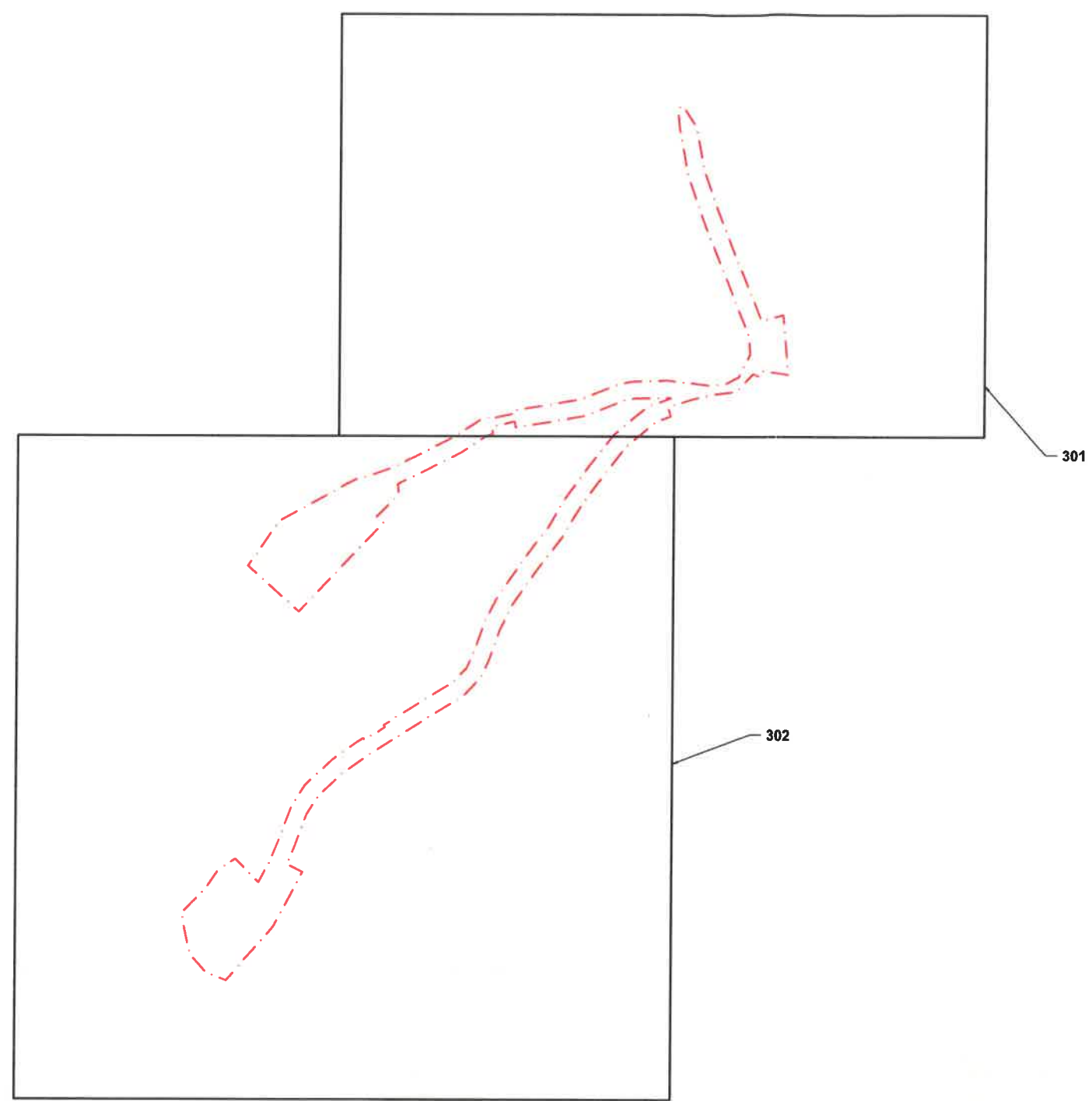
L55 / L55 WELL PLUGGING
BATTELLE DISTRICT, MONOGALIA COUNTY, WEST VIRGINIA

GRADING PLAN

DRAWING NUMBER

906

SHEET 09 of 14



LEGEND

- EXISTING PROPERTY LINE
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING UNPAVED DRIVEWAY
- EXISTING CULVERT
- EXISTING WATERBODY AND STREAM (DELINEATED)
- - - - - AREA TO BE RESTORED
- EXISTING GAS LINE
- EXISTING SOIL TYPE
- EXISTING TREELINE
- EXISTING WETLAND

CNX L53 WELL PLUGGING

Description	Units	Quantity
1. Erosion and Sedimentation Control		
A. Erosion and Sedimentation Control BMPs	LS	1.00
2. Grading - Earthwork		
A. Cut	CY	230.00
B. Fill	CY	230.00
C. Topsoil to be Replaced	CY	125.00
3. Finishing		
A. Permanent Seed and Mulch	AC	0.85

CNX L55 WELL PLUGGING

Description	Units	Quantity
1. Erosion and Sedimentation Control		
A. Erosion and Sedimentation Control BMPs	LS	1.00
2. Grading - Earthwork		
A. Cut	CY	240.00
B. Fill	CY	240.00
C. Topsoil to be Replaced	CY	250.00
3. Finishing		
A. Permanent Seed and Mulch	AC	1.10



PLAN
SCALE: 1" = 100'

REVISIONS



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DESIGN	DLH
CHECKED	STK
APPROVED	EAZ
DATE	11/13/2019
SCALE	1" = 100'
COORDINATE SYSTEM	WV83-NF
PROJECT	18039-055

L53 / L55 WELL PLUGGING
BATTELLE DISTRICT, MONONGALIA COUNTY, WEST VIRGINIA

INDEX SHEET

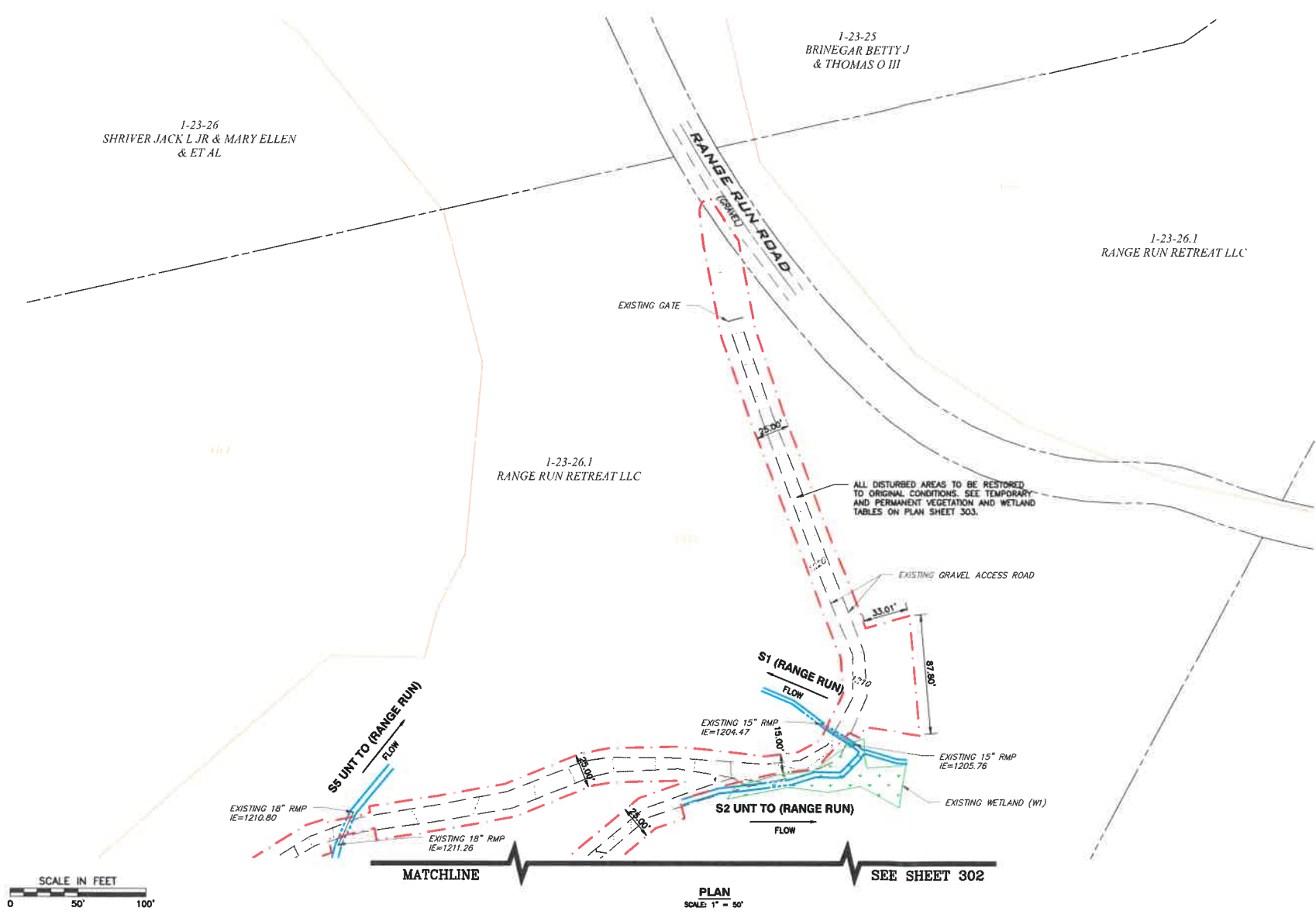
DRAWING NUMBER

300

SHEET 11 of 14

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Y:\2019\19039-055\Cadd\Drawings\19039-055_Plan_Sheets.dwg [301] LS(2019-11-13 - dterra) - LP: 11/13/2019 9:55 AM



- LEGEND**
- EXISTING PROPERTY LINE
 - - - 2.75' EXISTING INDEX CONTOUR
 - - - EXISTING INTERMEDIATE CONTOUR
 - - - EXISTING UNPAVED DRIVEWAY
 - - - EXISTING CULVERT
 - EXISTING WATERBODY AND STREAM (DELINEATED)
 - - - AREA TO BE RESTORED
 - - - EXISTING GAS LINE
 - EXISTING SOIL TYPE
 - EXISTING TREELINE
 - EXISTING WETLAND

REVISIONS



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 1000 CONSOL ENERGY DRIVE
 CANONSBURG, PA 15317

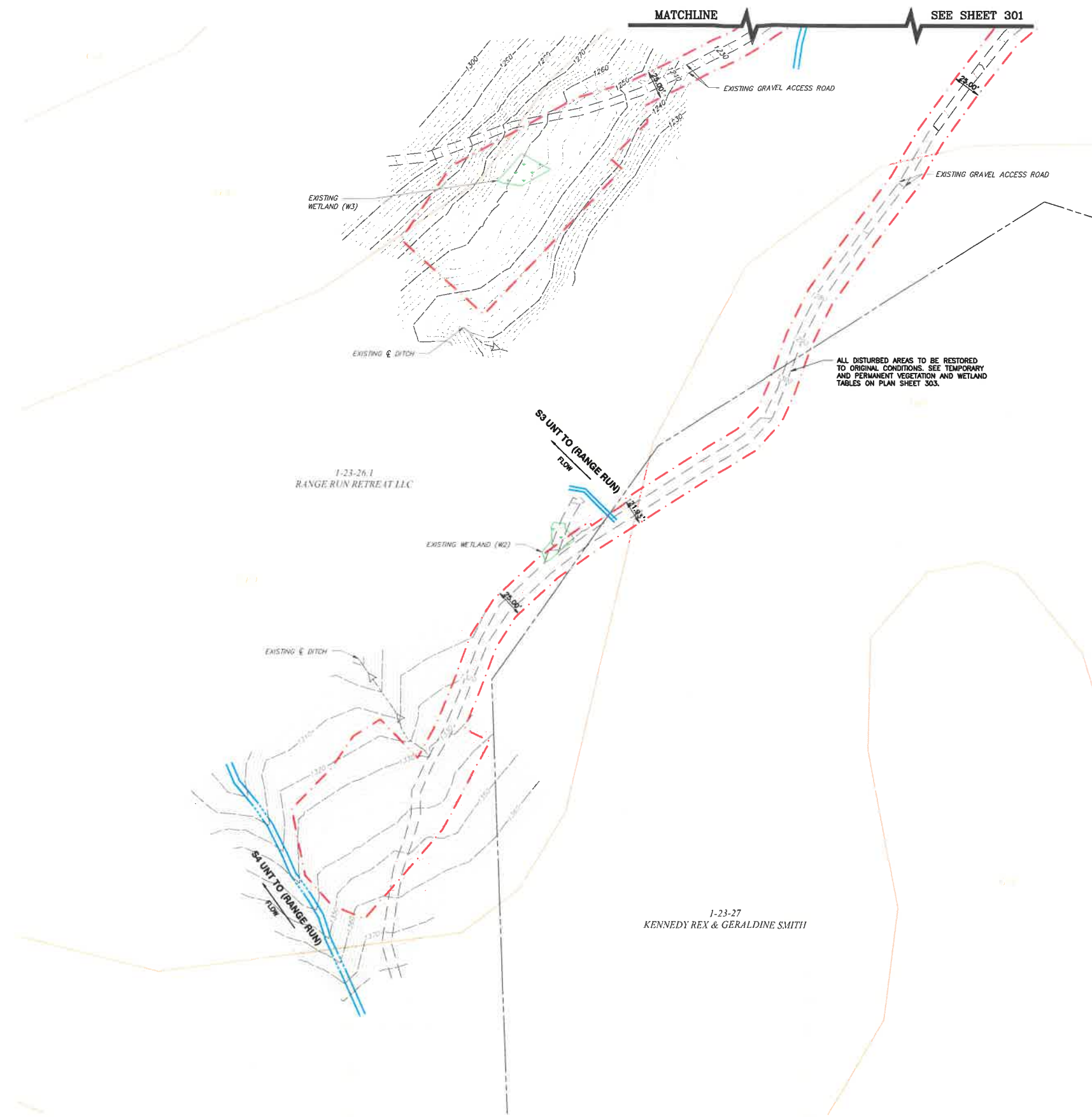
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DESIGN	DLJ	11/13/2019	1" = 50'	19039-055
CHECKED	STK			
APPROVED	EAZ			
DATE				
SOIL				
COORDINATE SYSTEM	WV83-NF			
PROJECT				

L53 / L55 WELL PLUGGING
 BATTELLE DISTRICT, MONONGALIA COUNTY, WEST VIRGINIA

SITE RESTORATION PLAN

DRAWING NUMBER
301
 SHEET 12 OF 14



- LEGEND**
- EXISTING PROPERTY LINE
 - - - - 870 EXISTING INDEX CONTOUR
 - - - - EXISTING INTERMEDIATE CONTOUR
 - - - - EXISTING UNPAVED DRIVEWAY
 - ==> EXISTING CULVERT
 - EXISTING WATERBODY AND STREAM (DELINEATED)
 - - - - AREA TO BE RESTORED
 - - - - EXISTING GAS LINE
 - DUF EXISTING SOIL TYPE
 - EXISTING TREE LINE
 - [Green Dotted Box] EXISTING WETLAND

ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITIONS. SEE TEMPORARY AND PERMANENT VEGETATION AND WETLAND TABLES ON PLAN SHEET 303.

SCALE IN FEET
0 50 100'

PLAN
SCALE 1" = 50'

T:\2019\19039-053\Cadd\Drawings\19039-053 PE-01 PLAN SHEETS.dwg[302] 15:2019-11-13 - shema) - LP: 11/13/2019 9:58 AM

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DATE	11/13/2019
SCALE	1" = 50'
COORDINATE SYSTEM	WV83-NF
PROJECT	19039-053

L53 / L55 WELL PLUGGING
BATTELLE DISTRICT, MONONGALIA COUNTY, WEST VIRGINIA

SITE RESTORATION PLAN

DRAWING NUMBER
302
SHEET 13 of 14

T:\2018\19039-003\Cadd\Drawings\19039-005 PE-01 PLAN SHEETS.dwg(201) LS(2018-11-13 - 09:57 AM) - LD: 11/13/2019 09:57 AM

TABLE 3.11.1 PERMANENT SEEDING

SEED MIX	PLANT NAMES		APPLICATION RATE LBS/ACRE
	COMMON	SCIENTIFIC	
A	KENTUCKY 31 FESCUE RED FESCUE BIRDSFOOT TREFLOIL	FESTUCA ARUNDINACEA FESTUCA RUBRA LOTUS CORNICULATUS	65 20 5
B	SWITCHGRASS PERENNIAL RYEGRASS REDTOP BIRDSFOOT TREFLOIL	PANICUM VIRGATUM LOLIUM PERENNE AGROSTIS ALBA LOTUS CORNICULATUS	15 20 5 15
C	RED FESCUE KENTUCKY BLUEGRASS MERION BLUEGRASS	FESTUCA RUBRA POA PRATENSIS POA PRATENSIS	20 25 30
D	KENTUCKY 31 FESCUE RED FESCUE KENTUCKY BLUEGRASS WHITE DUTCH CLOVER	FESTUCA ARUNDINACEA FESTUCA RUBRA TRIFOLIUM REPENS	45 20 25 5
E	PERENNIAL RYEGRASS SWITCHGRASS CROWNVEITCH OR PERENNIAL PEA	LOLIUM PERENNE PANICUM VIRGATUM CORONILLA VARIA LATHYRUS LATIFOLIUS	30 15 20 30
F	ORCHARDGRASS LADINO CLOVER REDTOP	DACTYLIS GLOMERATA TRIFOLIUM REPENS AGROSTIS ALBA	20 5 5
G	BIRDSFOOT TREFLOIL WEEPING LONGGRASS PERENNIAL RYEGRASS	LOTUS CORNICULATUS ERAGROSTIS CURVULA LOLIUM PERENNE	15 45 10
H	CROWNVEITCH ORCHARDGRASS	CORONILLA VARIA DACTYLIS GLOMERATA	25 40
I	CROWNVEITCH PERENNIAL RYEGRASS	CORONILLA VARIA LOLIUM PERENNE	25 30
J	PERENNIAL PEA ORCHARDGRASS	LATHYRUS LATIFOLIUS DACTYLIS GLOMERATA	30 30
K	DEERTONGUE BIRDSFOOT TREFLOIL WEEPING LOVERGRASS	PANICUM CLANDESTINUM LOTUS CORNICULATUS ERAGROSTIS CURVULA	30 15 5
L	ORCHARDGRASS SERECIA LESPEDEZA LADINO CLOVER	DACTYLIS GLOMERATA LESPEDEZA CUNATA TRIFOLIUM REPENS	30 40 5
M	PERENNIAL RYEGRASS LADINO CLOVER REDTOP	LOLIUM PERENNE TRIFOLIUM REPENS AGROSTIS ALBA	50 5 5
N	CROWNVEITCH ORCHARDGRASS REDTOP	CORONILLA VARIA DACTYLIS GLOMERATA AGROSTIS ALBA	15 30 5
O	PERENNIAL RYEGRASS BIRDSFOOT TREFLOIL REDTOP	LOLIUM PERENNE LOTUS CORNICULATUS AGROSTIS ALBA	40 15 5
P	SERECIA LESPEDEZA ORCHARDGRASS REDTOP	LESPEDEZA CUNATA DACTYLIS GLOMERATA AGROSTIS ALBA	40 30 5
Q	ORCHARDGRASS REED CANARYGRASS REDTOP LADINO CLOVER	DACTYLIS GLOMERATA PHALARIS ARUNDINACEA AGROSTIS ALBA TRIFOLIUM REPENS	25 30 5 5
R	KENTUCKY BLUEGRASS REDTOP WHITE CLOVER OR BIRDSFOOT TREFLOIL	POA PRATENSIS AGROSTIS ALBA TRIFOLIUM REPENS LOTUS CORNICULATUS	30 5 5 15
S	REED CANARYGRASS WEEPING LOVERGRASS	PHALARIS ARUNDINACEA ERAGROSTIS CURVULA	40 5
T	PERENNIAL RYEGRASS REED CANARYGRASS BIRDSFOOT TREFLOIL	LOLIUM PERENNE PHALARIS ARUNDINACEA LOTUS CORNICULATUS	30 15 5
U	TIMOTHY ALFALFA	PHLEUM PRATENSE MEDICAGO SATIVA	10 18
V	TIMOTHY BIRDSFOOT TREFLOIL	PHLEUM PRATENSE LOTUS CORNICULATUS	10 15
W	REDTOP PERENNIAL RYEGRASS ORCHARDGRASS	AGROSTIS ALBA LOLIUM PERENNE DACTYLIS GLOMERATA	5 30 25
X	REED CANARYGRASS BIRDSFOOT TREFLOIL REDTOP	PHALARIS ARUNDINACEA LOTUS CORNICULATUS	30 20 5
Y	SWITCHGRASS BIRDSFOOT TREFLOIL	PANICUM VIRGATUM LOTUS CORNICULATUS	30 20
Z	SWITCHGRASS SERECIA LESPEDEZA	PANICUM VIRGATUM LESPEDEZA CUNATA	15 30
A-1	ORCHARDGRASS RED CLOVER	DACTYLIS GLOMERATA TRIFOLIUM PRATENSE	30 15
A-2	SWITCHGRASS BIG BLUESTEM INDIANGRASS LITTLE BLUESTEM SIDEOTS GRAMA*	PANICUM VIRGATUM ANDROPOGON GERARDI SORGHASTRUM NUTANS SCOPARIUS BOUTELOUA CURTIPENDULA	15 5 5 5 5
A-3	SWITCHGRASS EASTERN GAMAGRASS*	PANICUM VIRGATUM TRIPSACIUM DACTYLODES	20 15

NOTE: WHEN UTILIZING A PROPERLY PREPARED SEEDBED, THE RATE OF APPLICATION CAN BE REDUCED BY 30 PERCENT EXCEPT FOR SEED MIXES A-2 & A-3.
*REED CANARYGRASS SHALL NOT BE USED EAST OF I-79 AND/OR SOUTH OF CHARLESTON.
* USE NORTH AND EAST OF I-64 AND I-79.
* USE SOUTH AND WEST OF I-64 AND I-79.

LIME AND FERTILIZER APPLICATION RATES

COVER TYPE	RATES (MIN.):		LIME/FERTILIZER TYPE
	PER ACRE	PER 1,000 SQ. FT.	
LIME	2 TONS	90 LBS	AGRICULTURAL GRADE ONLY
GRASSES AND LEGUMES	1,000 LBS	23 LBS	10-20-10 OR EQUIVALENT
LEGUME STANDS ONLY	1,000 LBS	23 LBS	5-20-10 PREFERRED; 10-20-10 ACCEPTABLE
GRASS STANDS ONLY	1,000 LBS	23 LBS	10-20-10 OR EQUIVALENT

LIME AND FERTILIZER NEEDS SHOULD BE DETERMINED BY SOIL TEST. IF SOIL TEST IS NOT OBTAINED THE ABOVE SOIL AMENDMENTS SHOULD BE APPLIED.

TEMPORARY SEED CHART

PLANT NAMES	PLANTING DATES	APPLICATION RATE LBS/ACRE
ANNUAL RYEGRASS	2/16 - 5/15 8/1 - 11/1	40
FIELD BROMEGRASS	3/1 - 6/15 8/1 - 9/15	40
SPRING OATS	3/1 - 6/15	100
WINTER RYE	8/15 - 2/28	170
WINTER WHEAT	8/15 - 2/28	180
JAPANESE MILLET	5/15 - 8/15	30
REDTOP	3/1 - 6/15	10
ANNUAL RYEGRASS AND SPRING OATS	3/1 - 6/15	30 70
GERMAN/FOX TAIL MILLET	5/1 - 8/1	40
HAIRY VETCH	8/15 - 4/1	60

TABLE 3.11.2 NURSE CROPS

PLANT NAMES	PLANTING DATES	APPLICATION RATE LBS/ACRE
ANNUAL RYEGRASS	2/16 - 5/15 8/1 - 11/1	25
FIELD BROMEGRASS	3/1 - 6/15 8/1 - 9/15	20
SPRING OATS	3/1 - 6/15	50
WINTER RYE	8/15 - 2/28	85
WINTER WHEAT	8/15 - 2/28	90
JAPANESE MILLET	5/15 - 8/15	15
REDTOP	3/1 - 6/15	10
ANNUAL RYEGRASS AND SPRING OATS	3/1 - 6/15	15 35
GERMAN/FOX TAIL MILLET	5/1 - 8/1	25
HAIRY VETCH	8/15 - 4/1	30

**DETAIL 1
TEMPORARY AND PERMANENT SEEDING MIXTURES, MULCHING, AND FERTILIZER**

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES	RATES (MIN.):		NOTES
	PER ACRE	PER 1,000 SQ. FT.	
STRAW OR HAY	1.5 - 2 TONS (MINIMUM 2 TONS FOR WINTER COVER)	70 - 90 LBS.	FREE FROM WEEDS AND COARSE MATTER. MUST BE ANCHORED. SPREAD WITH MULCH BLOWER OR BY HAND.
FIBER MULCH	MINIMUM 1,500 LBS.	35 LBS.	DO NOT USE AS MULCH FOR WINTER COVER OR DURING HOT, DRY PERIODS. * APPLY AS SLURRY.
CORNSTALKS	4 - 6 TONS	185 - 275 LBS.	CUT OR SHREDDED IN 4 - 6 LENGTHS. AIR-DRIED, DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER OR BY HAND.
WOOD CHIPS	4 - 6 TONS	185 - 275 LBS.	FREE OF COARSE MATTER. AIRDRIED. TREAT WITH 12 LBS. NITROGEN PER TON. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.
BARK CHIPS OR SHREDDED BARK	50 - 70 CU. YDS.	1 - 2 CU. YDS.	FREE OF COARSE MATTER. AIRDRIED. DO NOT USE IN FINE TURF AREAS. APPLY WITH MULCH BLOWER, CHIP HANDLER, OR BY HAND.

* WHEN FIBER MULCH IS THE ONLY AVAILABLE MULCH DURING PERIODS WHEN STRAW SHOULD BE USED, APPLY AT A MINIMUM RATE OF 2,000 LBS./AC. OR 45 LBS./1,000 SQ. FT.

TABLE 3.11.3 PERMANENT SEEDING REQUIREMENTS

SEED MIX	FINE LAWN	COARSE LAWN	LOW MAINT.	NO MAINT.	PASTURE	SENSITIVE NATURAL AREAS	PH RANGE	DRAINAGE	SHADE TOLERANCE	PREFERRED PLANTING DATES			
										3/1 - 6/15	6/16 - 8/14	8/15 - 9/15	9/16 - 2/28
A			X 1				6.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
B				X			5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
C	X 1						6.0 - 7.5	MOD.-WELL	FULL SUN	X		X	
D		X 1					6.0 - 7.5	MOD.-WELL	FULL SUN	X		X	
E				X 1			6.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
F			X	X	X		5.5 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
G				X	X		5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
H			X	X 1	X		5.0 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
I			X	X 1	X		5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
J			X	X 1	X		4.0 - 8.0	MOD.-WELL	TOLERANT	X	N	X	N
K				X			4.0 - 7.0	MOD.-WELL	FULL SUN	X	N	X	N
L			X				4.5 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
M			X	X	X		5.0 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
N			X	X 1	X		5.0 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
O			X	X	X		5.0 - 7.5	MOD.-WELL	FULL SUN	X	N	X	N
P			X	X	X		4.5 - 7.5	MOD.-WELL	TOLERANT	X	N	X	N
Q			X	X	X		4.5 - 7.5	POOR - WELL	TOLERANT	X	N	X	N
R			X	X	X		5.5 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
S			X	X	X		4.5 - 7.5	POOR - WELL	FULL SUN	X	N	X	N
T					X		5.5 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
U					X		6.5 - 8.0	MOD. - WELL	FULL SUN	X	N	X	N
V					X		5.5 - 7.5	POOR - WELL	FULL SUN	X	N	X	N
W			X	X	X		5.0 - 7.5	MOD. - WELL	TOLERANT	X	N	X	N
X					X		5.0 - 7.5	POOR - WELL	FULL SUN	X	N	X	N
Y			X	X	X		5.0 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
Z			X	X	X		5.0 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
A-1					X		4.5 - 7.5	MOD. - WELL	TOLERANT	X	N	X	N
A-2				X	X	X	5.0 - 7.5	MOD. - WELL	FULL SUN	X	N	X	N
A-3				X		X	5.0 - 7.5	POOR - WELL	FULL SUN	X	N	X	N

1 - URBAN AREAS ONLY
N - NURSE CROPS REQUIRED

VEGETATIVE STABILIZATION - WETLAND MIX

SEED:	SOIL AMENDMENT		RATE (LBS./ACRE)
	ERNMX-128 (OR EQUIVALENT)*	FOX SEDGE	
	CAREX VULPINOIDEA	FOX SEDGE	20%
	ECHINOCHLOA CRUSGALLI VAR. FRUMENTACEA	JAPANESE MILLET	20%
	LYMUS VIRGINICUS	VIRGINIA WILD RYE	20%
	POLYGONUM PENNSYLVANICUM	PENNSYLVANIA SMARTWEED (BENTGRASS)	19.5%
	AGROSTIS SCABRA	TICKLEGRASS (ROUGH BENTGRASS)	5%
	PANICUM VIRGATUM, SHELTER	SHELTER SWITCH GRASS	5%
	CAREX STIPATA	AHL SEDGE	3%
	PANICUM CLANDESTINUM	TIOGA DEER TONGUE	3%
	CAREX SCOPARIA	BLUNT BROOM SEDGE	2.5%
	BIDENS CERNUA MIX	NODDING BUR MARI GOLD MIX	1%
	JUNCUS TENUIS	PATH RUSH	1%
MULCH:	STRAW OR HAY		6,000
ERNMX-128 = ERNST CONSERVATION SEEDS SEASONALLY FLOODED SEED MIX			

**DETAIL 2
VEGETATIVE STABILIZATION - WETLAND MIX**



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DATE	11/19/2019
SCALE	AS SHOWN
PROJECT	W/63-AF
SYSTEM	19039-005

153 / 155 WELL PLUGGING
BATTLE DISTRICT, MONONGALIA COUNTY, WEST VIRGINIA
SITE RESTORATION PLAN DETAILS

DRAWING NUMBER
303
SHEET 14 OF 14