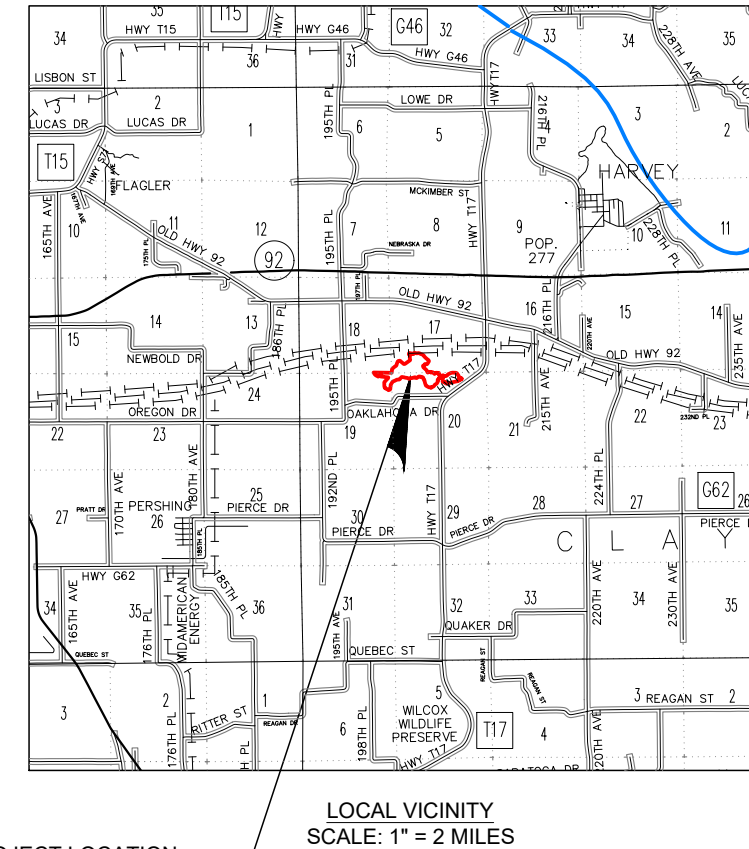
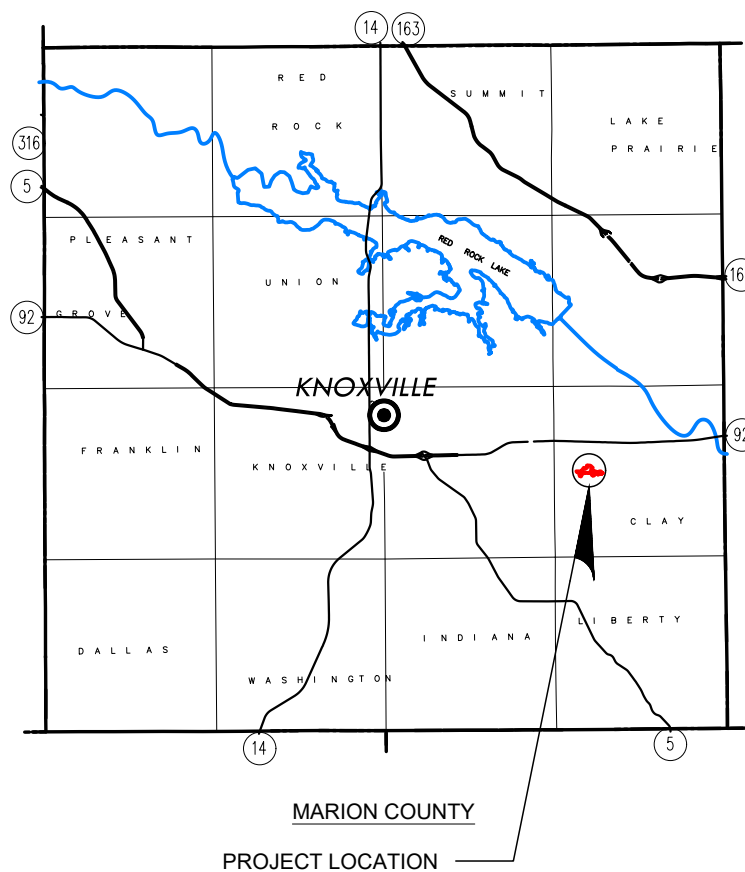
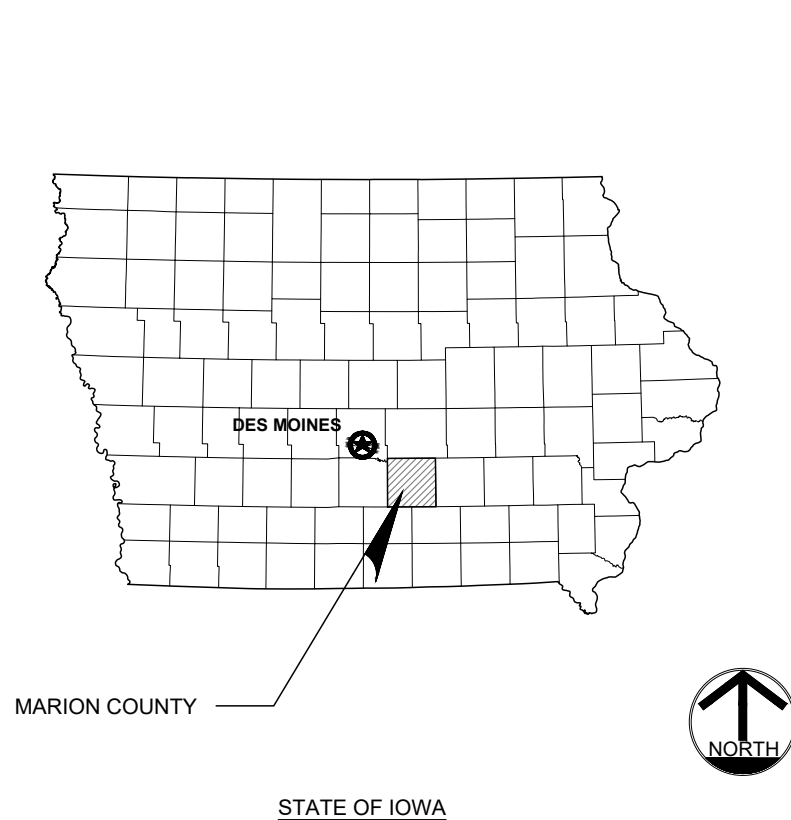


WAECHTER (IA-125) AML REPAIR PROJECT

SECTIONS 17 & 20, T-75N, R-18W, MARION COUNTY

IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY

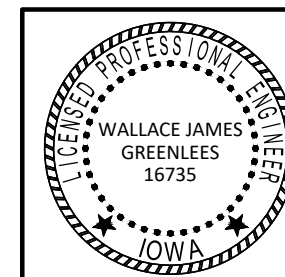
FUNDED BY:
U.S. DEPARTMENT OF THE INTERIOR
OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT
GRANT NO: S24AF00059



PREPARED FOR:
IOWA DEPARTMENT OF AGRICULTURE & LAND STEWARDSHIP
DIVISION OF SOIL CONSERVATION & WATER QUALITY
HENRY A. WALLACE BUILDING
502 E. 9TH STREET
DES MOINES, IOWA 50319
(515) 281-4246

ENGINEER:
WALLACE J. GREENLEES, P.E.
MINES & MINERALS BUREAU
TEL: (515)-281-5643
E-MAIL: wallace.greenlees@iowaagriculture.gov

- INDEX OF SHEETS:
- 1 COVER SHEET
 - 2 GENERAL NOTES AND QUANTITIES
 - 3 REPAIR AREA SITUATION PLAN
 - 4 AG LIME, ACID AREA APPLICATION RATE PLAN
 - 5 SEEDING AREA PLAN
 - 6 ROCK RIFFLE REPAIR DETAILS
 - 7 CHANNEL REPAIR DETAILS



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa

Signature: *Wallace J. Greenlees* Date: 10-15-2024

Name (printed or typed): WALLACE J. GREENLEES

License Number: 16735

My license renewal date is: December 31, 2024

Pages or sheets covered by this seal: ENTIRE DOCUMENT



| | | | | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------|--------------------|----------|--------------------------------|
| DESIGN BY: WJG | DRAWN BY: WJG | CHKD. BY: DS | ISSUED: 10/15/2024 | REVISED: | FILE: WAECHTER-REPAIR-PLAN.DWG |
| IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9TH STREET, DES MOINES, IOWA 50319 (515) 281-4246 | | | REVISION: | | |
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| WAECHTER AML REPAIR PROJECT | | | DESCRIPTION: | | |
| COVER SHEET | | | | | |

GENERAL NOTES:

1. REFERENCES TO "DIVISION" SHALL MEAN "DIVISION OF SOIL CONSERVATION & WATER QUALITY"
2. ALL IMPROVEMENTS SHOWN ON THESE PLANS SHALL COMPLY WITH THE GENERAL CONDITIONS, STANDARDS, AND SPECIFICATIONS SET FORTH IN PROJECT DOCUMENTS. SPECIFICATIONS OR STANDARDS INCORPORATED BY REFERENCE SHALL ALSO BE FOLLOWED.
3. OWNERSHIP: THIS DOCUMENT, AND THE IDEAS AND DESIGN CONTAINED IN THIS DOCUMENT, ARE AN INSTRUMENT OF PROFESSIONAL SERVICE, AND MAY NOT BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN CONSENT OF THE DIVISION.
4. REFERENCES TO PARTICULAR PRODUCTS, TRADENAMES, OR MANUFACTURERS ARE INTENDED FOR CLARITY ONLY AND DO NOT REPRESENT EXCLUSION OR ENDORSEMENT BY THE DIVISION OR THE STATE OF IOWA. EQUIVALENT PRODUCTS OR MATERIALS MAY BE SUITABLE, SUBJECT TO THE APPROVAL OF THE ENGINEER.
5. CONTRACTOR SHALL PROVIDE AT LEAST 48 HOURS NOTICE TO THE ENGINEER AND/OR DIVISION PRIOR TO COMMENCING CONSTRUCTION.

UTILITY NOTES:

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING PUBLIC AND/OR PRIVATE UTILITIES AND PUBLIC ROADWAYS, INCLUDING ANY NOT SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND NOTIFY THE ENGINEER IF ANY CONFLICTS WITH THE DRAWINGS OCCUR. ANY DAMAGE TO EXISTING UTILITIES AND/OR PUBLIC ROADWAYS CAUSED BY CONTRACTOR TRENCHING SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. UNDERGROUND FACILITIES STRUCTURES AND UTILITIES ARE PLOTTED FROM AVAILABLE SURVEYS, PUBLIC RECORDS, AND FIELD INVESTIGATION WHEN AVAILABLE. THEIR LOCATIONS SHALL BE CONSIDERED TO BE APPROXIMATE ONLY.

CONSTRUCTION SURVEYING NOTES:

1. THIS DRAWING IS SET TO THE NAD 1983 IOWA STATE PLANE, SOUTH ZONE COORDINATE SYSTEM. ELEVATION INFORMATION IS BASED UPON THE NAVD 1988.
2. EXISTING TOPOGRAPHY SHOWN ON THIS DRAWING WAS DEVELOPED FROM 3D DESIGN INFORMATION PROVIDED BY THE ORIGINAL ENGINEER
3. DURABLE CONTROL POINTS WERE ESTABLISHED FOR THE ORIGINAL RECLAMATION PROJECT. IF REQUIRED FOR THIS PROJECT DIVISION WILL PROVIDE LOCATIONS OF CONTROL POINTS AS NEEDED.
4. IF SIGNIFICANT DIFFERENCES EXIST BETWEEN THE ELEVATIONS SHOWN AND THOSE REPORTED BY SURVEYING EQUIPMENT, THE CONTRACTOR SHALL CALIBRATE THE SURVEYING INSTRUMENTS TO THE LIDAR INFORMATION IN CONSULTATION WITH THE DIVISION.

REQUIRED CONSTRUCTION STAKING:

1. REPAIR AREA BOUNDARIES
2. BOUNDARIES FOR HYDRO-MULCH APPLICATION

TABLE: BID QUANTITIES

| | ITEM | SECTION | QTY | UNIT |
|----|------------------------------------|---------|------|----------|
| 1 | MOBILIZATION | 02105 | 1 | LS |
| 2 | AG LIME, ACID AREAS | 02420 | 970 | TON ECCE |
| 3 | MULCH, ACID AREAS | 02420 | 18.5 | ACRE |
| 4 | ROCK RIFFLE REPAIR | 02420 | 1 | EA |
| 5 | GULLEY REPAIR, TYPE 1 | 02420 | 2224 | LF |
| 6 | GULLEY REPAIR, TYPE 2 | 02420 | 1706 | LF |
| 7 | AG LIME, SEEDING | 02720 | 56 | TON ECCE |
| 8 | NITROGEN, N | 02720 | 925 | LB |
| 9 | PHOSPHOROUS, P | 02720 | 2460 | LB |
| 10 | POTASSIUM, K | 02720 | 5950 | LB |
| 11 | SEEDBED PREPARATION | 02720 | 20.5 | ACRE |
| 12 | SEEDING, LOW DIVERSITY NATIVE MIX | 02720 | 11.8 | ACRE |
| 13 | SEEDING, HIGH DIVERSITY NATIVE MIX | 02720 | 4 | ACRE |
| 14 | SEEDING, WATERWAY MIX | 02720 | 4.7 | ACRE |
| 15 | MULCH, SEEDING | 02720 | 15.8 | ACRE |
| 16 | MBFM HYDRO-MULCH | 02720 | 4.7 | ACRE |

BID QUANTITY NOTES:

1. REPAIR/RE-SEEDING RUTS ON EXTERNAL ACCESS ROUTES IS INCIDENTAL TO MOBILIZATION UNLESS NOTED OTHERWISE.
2. REPAIR/RE-SEEDING OF INTERNAL ACCESS ROUTES BETWEEN IDENTIFIED REPAIR AREAS ARE INCLUDED IN BID QUANTITIES.
3. QUANTITY OF AG LIME FOR REPAIRING ACID AREAS IS SHOWN ON THESE PLANS.
4. QUANTITY OF AG LIME, APPLIED PRIOR TO SEEDING, WILL BE DETERMINED FROM SOIL SAMPLING.
5. MULCH SUBGRADE IS APPLIED AT 5 TON/ACRE TO THE IDENTIFIED ACID AREAS.
6. QUANTITY OF FERTILIZER (N-P-K) IS ESTIMATED TO BE 45-120-290 LB/ACRE. RATE WILL BE VERIFIED BY SOIL TESTING PRIOR TO SEEDING.
7. CONVENTIONAL MULCH, SEEDING IS APPLIED AT A RATE OF 2 TON/ACRE.
8. HYDRAULICALLY APPLIED MBFM MULCH IS APPLIED AT A RATE OF 3000 LB. ACRE

LEGEND

GLOSSARY OF COMMON ABBREVIATIONS:

1. FG = FORM GRADE ELEVATION; THE LOWEST INLET OPENING ELEVATION FOR A RISER OR STRUCTURE TO RECEIVE WATER FROM A POND OR CHANNEL
2. INV = INVERT; THE LOWEST FLOWLINE ELEVATION OF A CONDUIT, RISER TEE, OR STRUCTURE
3. SWPE = SINGLE-WALL CORRUGATED HIGH DENSITY POLYETHYLENE CONDUIT
4. DWPE = DUAL-WALL HIGH DENSITY POLYETHYLENE CORRUGATED CONDUIT MEETING ASTM 2648-07
5. PPHP = POLYPROPYLENE HIGH PERFORMANCE CORRUGATED DUAL-WALL PIPE MEETING ASTM 2736-10 FOR 12-30" DIA. (i.e. ADS N-12HP OR APPROVED EQUAL)
6. RCP = REINFORCED CONCRETE PIPE
7. CMP = CORRUGATED METAL PIPE
8. FES = FLARED END STRUCTURE OR PIPE APRON
9. RIM = ELEVATION OF A STRUCTURE LID OR HIGHEST EDGE OF A PLUNGE POOL
10. LF = LINEAL FEET
11. NP = NORMAL POOL ELEVATION.
12. HP = HIGH POINT ELEVATION, TYPICALLY IN A TERRACE FLOWLINE
13. CL = CENTERLINE
14. PC = POINT OF CURVATURE, TRANSITION FROM A STRAIGHT LINE TO A CURVE
15. PT = POINT OF TANGENCY, TRANSITION FROM A CURVE TO A STRAIGHT LINE
16. PI = POINT OF INTERSECTION OR BEND POINT ON A LINE
17. SHT. OR SHTS. = PLAN SET SHEET OR SHEETS

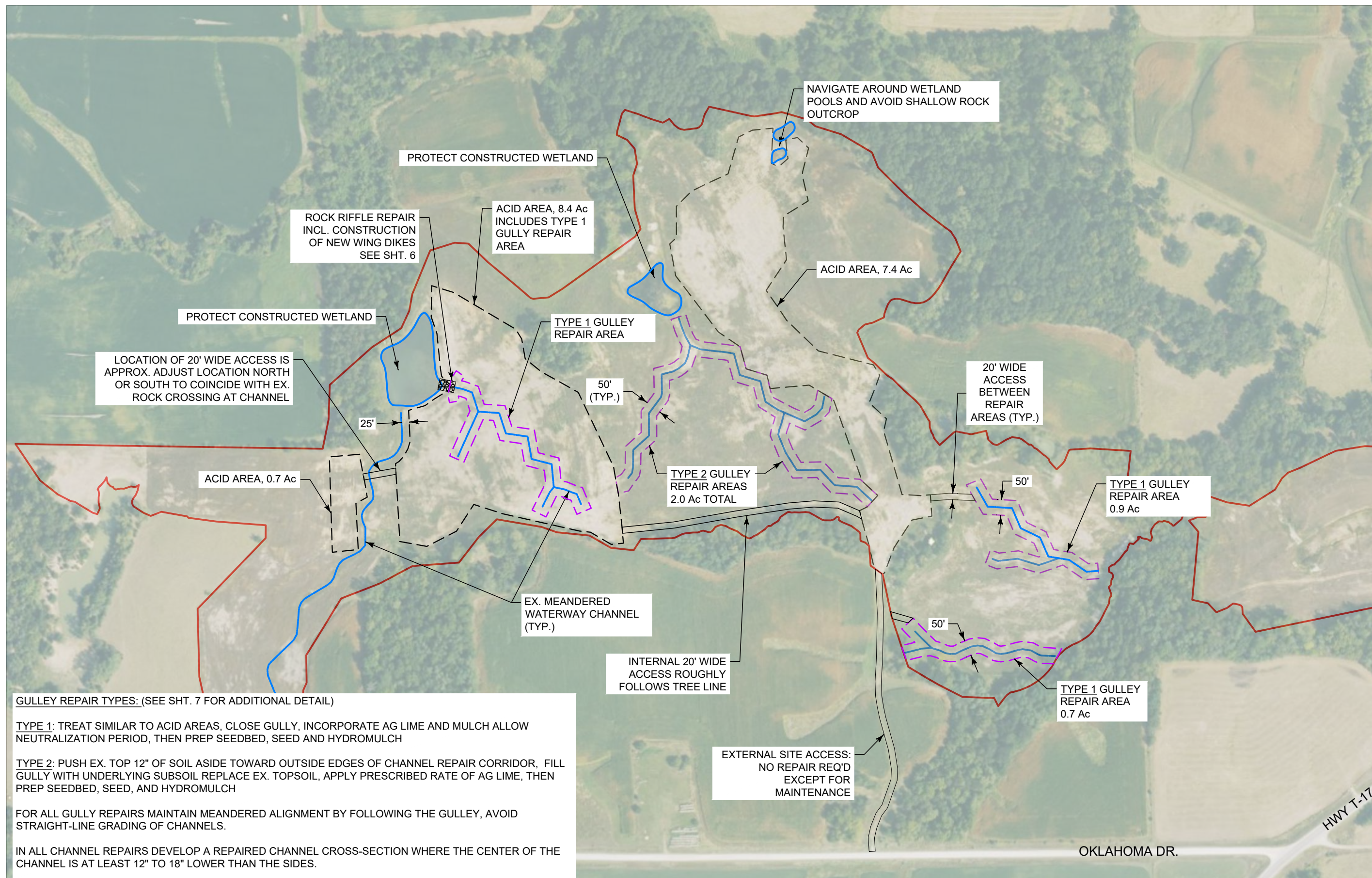
NOTE: THE LEGEND OF SYMBOLS, LINETYPES, AND LIST OF ABBREVIATIONS SHOWN ABOVE ARE GENERIC. NOT ALL SYMBOLS, LINETYPES, OR ABBREVIATIONS LISTED APPEAR ON THE ACCOMPANYING DRAWINGS FOR THIS PROJECT. SYMBOLS, LINETYPES, OR ABBREVIATIONS NOT LISTED HERE ARE SPECIFICALLY CALLED OUT WHERE NECESSARY.

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| DESIGN BY: WJG | DRAWN BY: WJG | CHKD. BY: DS | ISSUED: 10/15/2024 | REVISED: | FILE: WAECHTER-REPAIR-PLAN.DWG | DESCRIPTION: |
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IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP
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HENRY A. WALLACE BUILDING
502 E. 9th STREET, DES MOINES, IOWA 50319
(515) 281-4246

WAECHTER AML REPAIR PROJECT

GENERAL NOTES AND QUANTITIES



GULLY REPAIR TYPES: (SEE SHT. 7 FOR ADDITIONAL DETAIL)

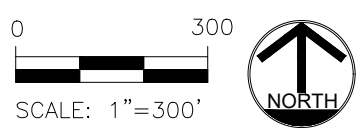
TYPE 1: TREAT SIMILAR TO ACID AREAS, CLOSE GULLY, INCORPORATE AG LIME AND MULCH ALLOW NEUTRALIZATION PERIOD, THEN PREP SEEDBED, SEED AND HYDROMULCH

TYPE 2: PUSH EX. TOP 12" OF SOIL ASIDE TOWARD OUTSIDE EDGES OF CHANNEL REPAIR CORRIDOR, FILL GULLY WITH UNDERLYING SUBSOIL REPLACE EX. TOPSOIL, APPLY PRESCRIBED RATE OF AG LIME, THEN PREP SEEDBED, SEED, AND HYDROMULCH

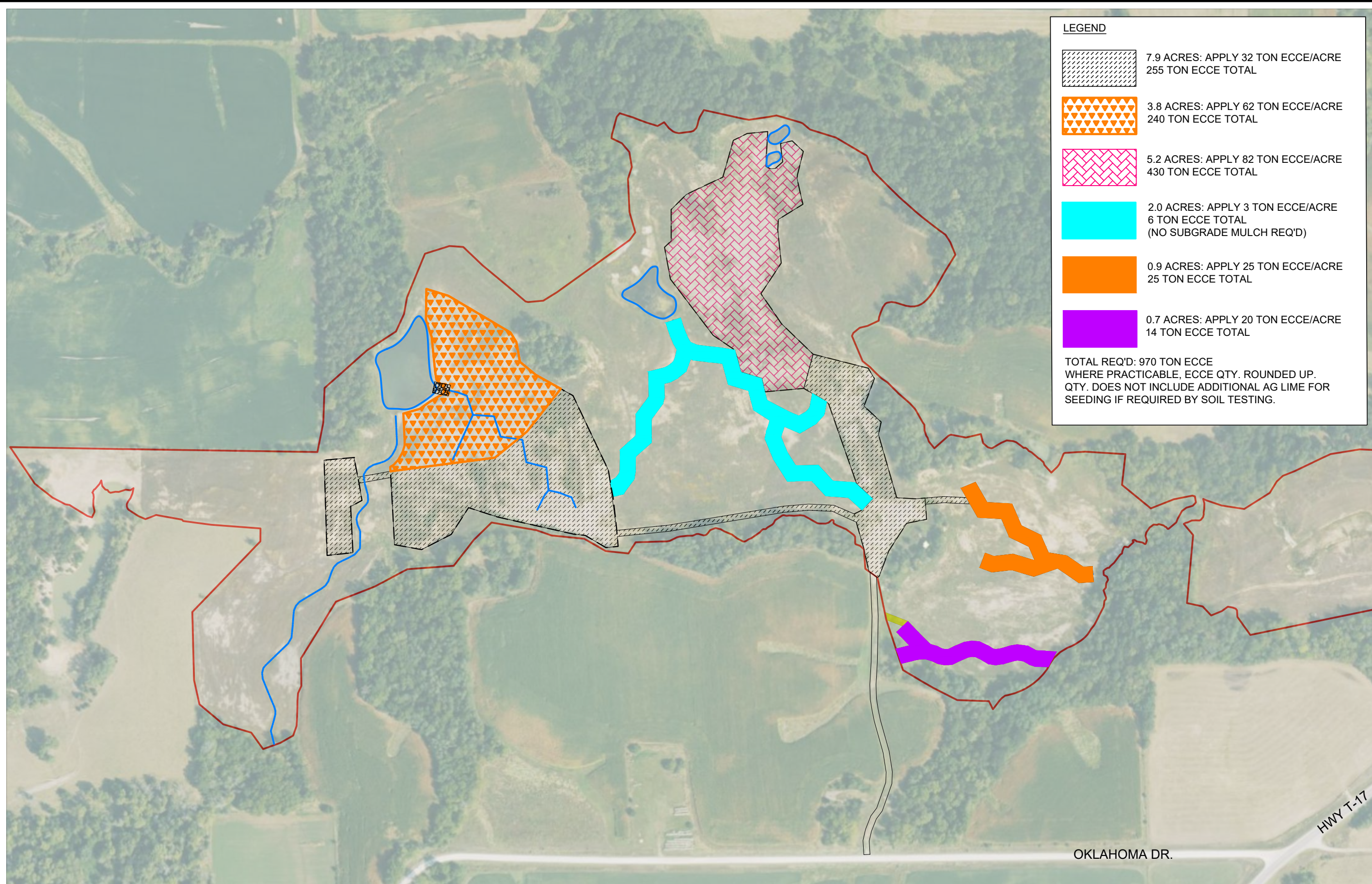
FOR ALL GULLY REPAIRS MAINTAIN MEANDERED ALIGNMENT BY FOLLOWING THE GULLY, AVOID STRAIGHT-LINE GRADING OF CHANNELS.

IN ALL CHANNEL REPAIRS DEVELOP A REPAIRED CHANNEL CROSS-SECTION WHERE THE CENTER OF THE CHANNEL IS AT LEAST 12" TO 18" LOWER THAN THE SIDES.

- NOTES THIS SHEET:**
1. AERIAL IMAGERY FROM 2023
 2. BOUNDARIES OF AREAS SHOWN ARE APPROXIMATE, ACTUAL BOUNDARIES MAY VARY BASED UPON FIELD VERIFICATION
 3. LOCATIONS AND ALIGNMENT OF EXISTING GULLY REPAIR AREAS MAY VARY FROM THOSE SHOWN. ACTUAL ALIGNMENTS WILL FOLLOW EXISTING GULLIES.



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| DESIGN BY: WJG DRAWN BY: WJG CHKD. BY: DS ISSUED: 10/15/2024 REVISED: FILE: WAECHTER-REPAIR-PLAN.DWG | REVISION: 1 DATE: | DESCRIPTION: |
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| <p> IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246 </p> | | |
| <p> WAECHTER AML REPAIR PROJECT REPAIR AREA SITUATION PLAN </p> | | |
| <p> SHEET 3 OF 7 </p> | | |

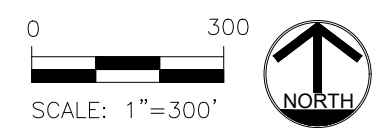


LEGEND

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| | 7.9 ACRES: APPLY 32 TON ECCE/ACRE 255 TON ECCE TOTAL |
| | 3.8 ACRES: APPLY 62 TON ECCE/ACRE 240 TON ECCE TOTAL |
| | 5.2 ACRES: APPLY 82 TON ECCE/ACRE 430 TON ECCE TOTAL |
| | 2.0 ACRES: APPLY 3 TON ECCE/ACRE 6 TON ECCE TOTAL (NO SUBGRADE MULCH REQ'D) |
| | 0.9 ACRES: APPLY 25 TON ECCE/ACRE 25 TON ECCE TOTAL |
| | 0.7 ACRES: APPLY 20 TON ECCE/ACRE 14 TON ECCE TOTAL |

TOTAL REQ'D: 970 TON ECCE
WHERE PRACTICABLE, ECCE QTY. ROUNDED UP.
QTY. DOES NOT INCLUDE ADDITIONAL AG LIME FOR SEEDING IF REQUIRED BY SOIL TESTING.

NOTES THIS SHEET:
 1. AERIAL IMAGERY FROM 2023
 2. BOUNDARY AREAS SHOWN ARE APPROXIMATE, ACTUAL BOUNDARIES MAY VARY

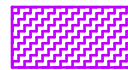


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| DESIGN BY: WJG | DRAWN BY: WJG | CHKD. BY: DS | ISSUED: 10/15/2024 | REVISED: | FILE: WAECHTER-REPAIR-PLAN.DWG | |
| WAECHTER AML REPAIR PROJECT AG LIME, ACID AREA APPLICATION RATE PLAN | | | IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246 | | | |
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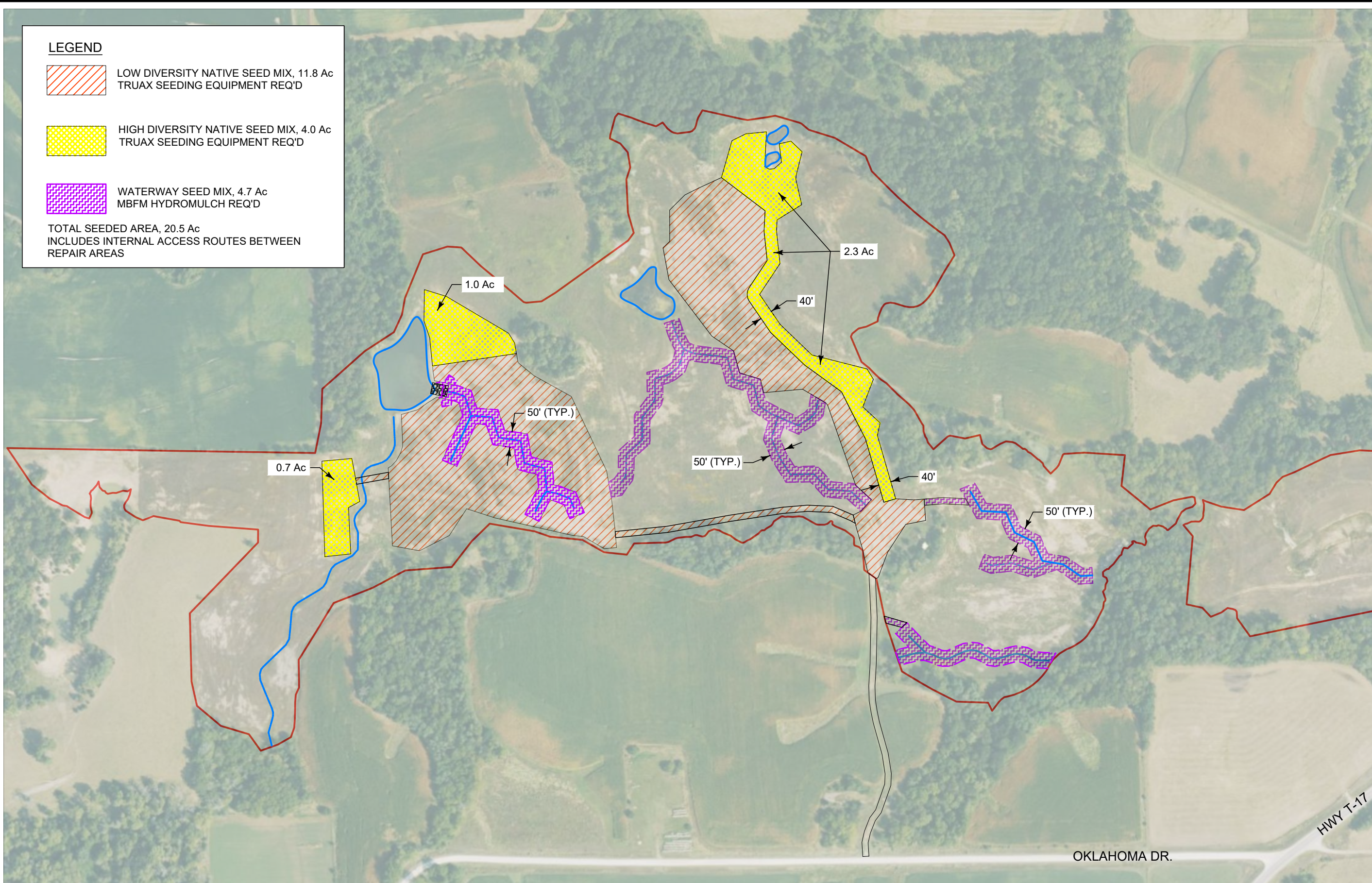
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 LOW DIVERSITY NATIVE SEED MIX, 11.8 Ac
TRUAX SEEDING EQUIPMENT REQ'D

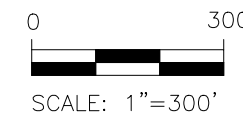
 HIGH DIVERSITY NATIVE SEED MIX, 4.0 Ac
TRUAX SEEDING EQUIPMENT REQ'D

 WATERWAY SEED MIX, 4.7 Ac
MBFM HYDROMULCH REQ'D

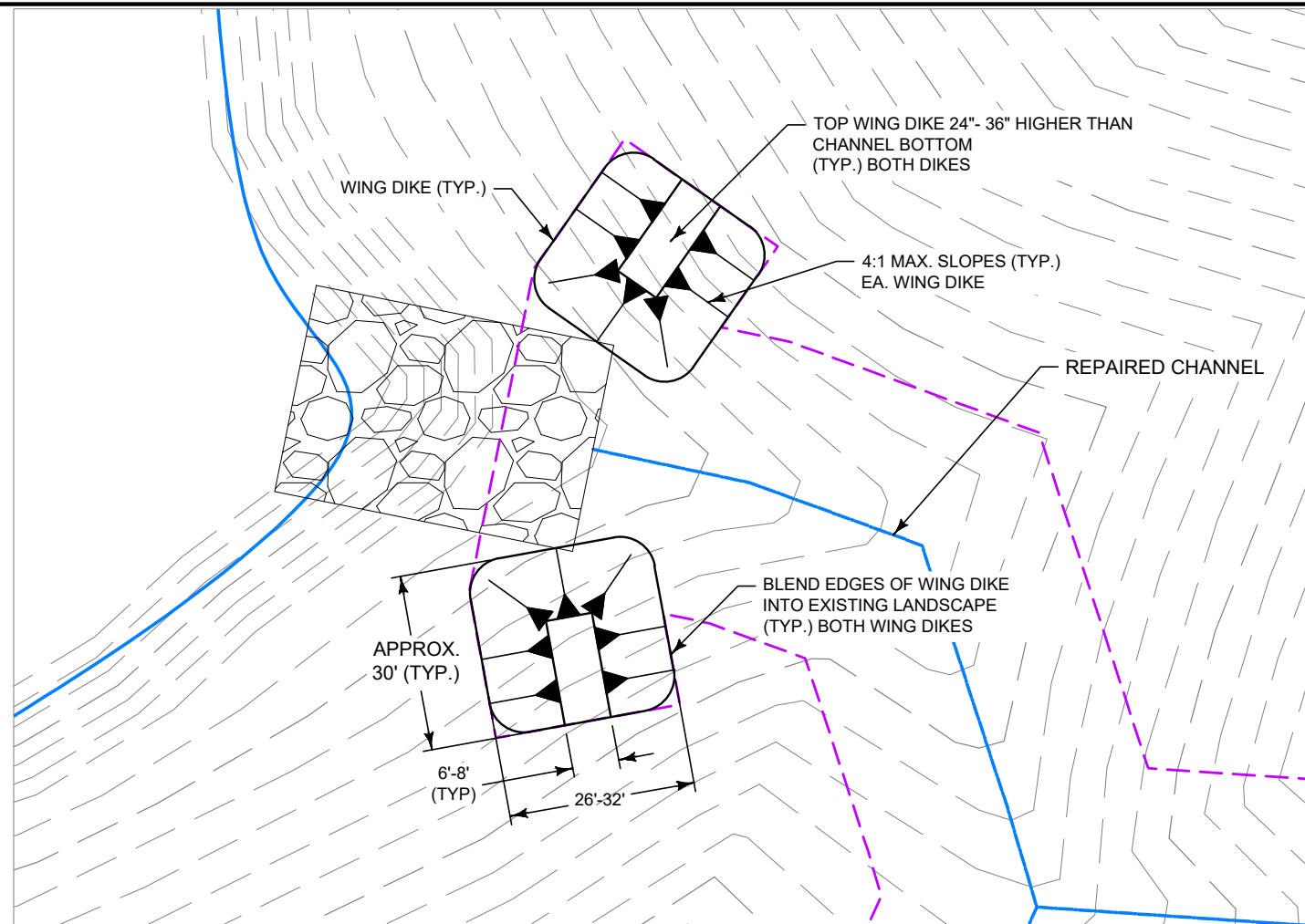
TOTAL SEEDED AREA, 20.5 Ac
INCLUDES INTERNAL ACCESS ROUTES BETWEEN
REPAIR AREAS



- NOTES THIS SHEET:
 1. AERIAL IMAGERY FROM 2023
 2. BOUNDARIES OF AREAS SHOWN ARE APPROXIMATE, ACTUAL BOUNDARY LOCATIONS MAY VARY

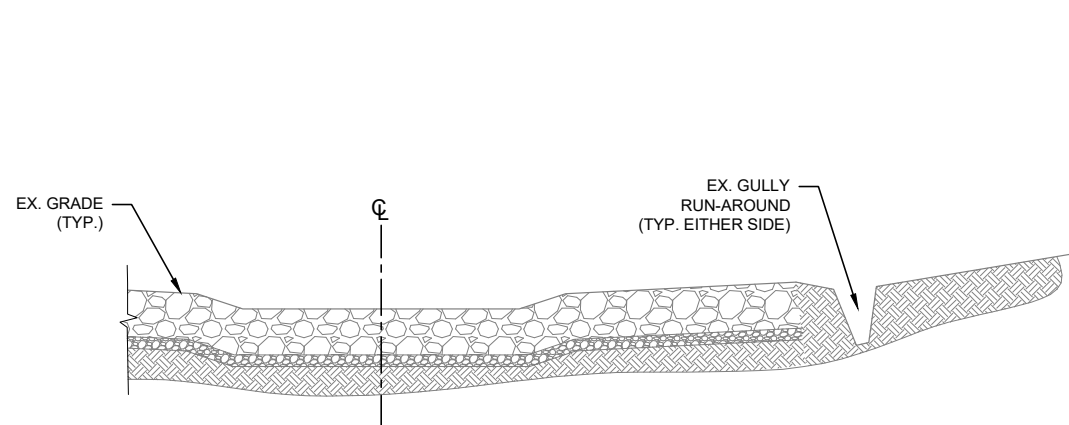


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| DESIGN BY: WJG | DRAWN BY: WJG | CHKD. BY: DS | ISSUED: 10/15/2024 | REVISED: | FILE: WAECHTER-REPAIR-PLAN.DWG |
| WAECHTER AML REPAIR PROJECT SEEDING AREA PLAN | | | IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP DIVISION OF SOIL CONSERVATION AND WATER QUALITY HENRY A. WALLACE BUILDING 502 E. 9th STREET, DES MOINES, IOWA 50319 (515) 281-4246 | | |
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| SHEET 5 OF 7 | | | | | |

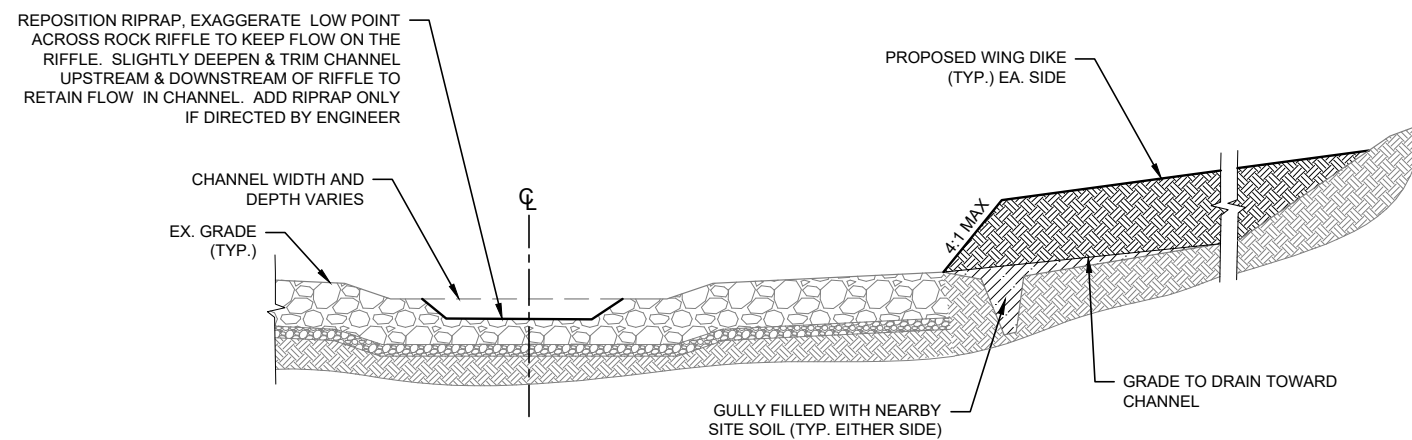


1 **ROCK RIFFLE WING DIKE PLAN DETAIL**

6 SCALE: APPROX. 1" = 30'
CONFORM TO PROVIDED DIMENSIONS TO EXTENT PRACTICABLE
MAKE FIELD ADJUSTMENTS AS NEEDED PER APPROVAL OF ENGINEER.



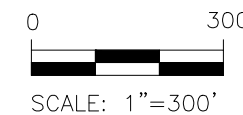
EXISTING SECTION AT RIPRAP RIFFLE (LOOKING DOWNSTREAM)



REPAIRED SECTION AT RIPRAP RIFFLE (LOOKING DOWNSTREAM)

2 **ROCK RIFFLE SECTION REPAIR DETAIL**

6 NOT TO SCALE



FILE: WAECHTER-REPAIR-PLAN.DWG

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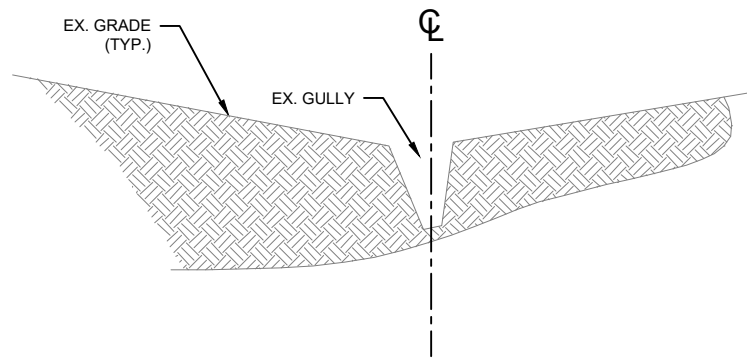
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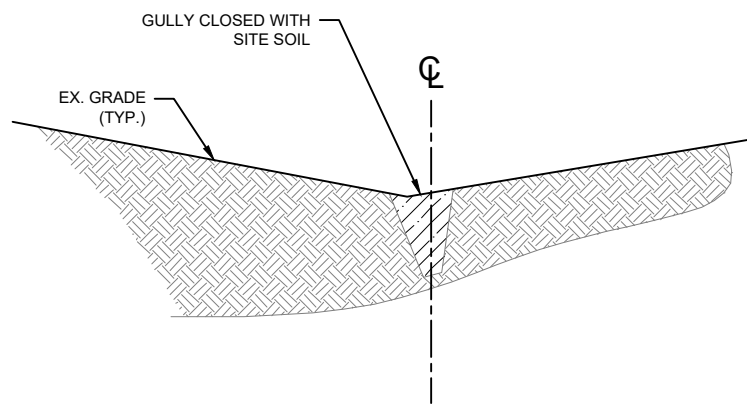


**WAECHTER
AML REPAIR PROJECT**

**ROCK RIFFLE
REPAIR DETAILS**

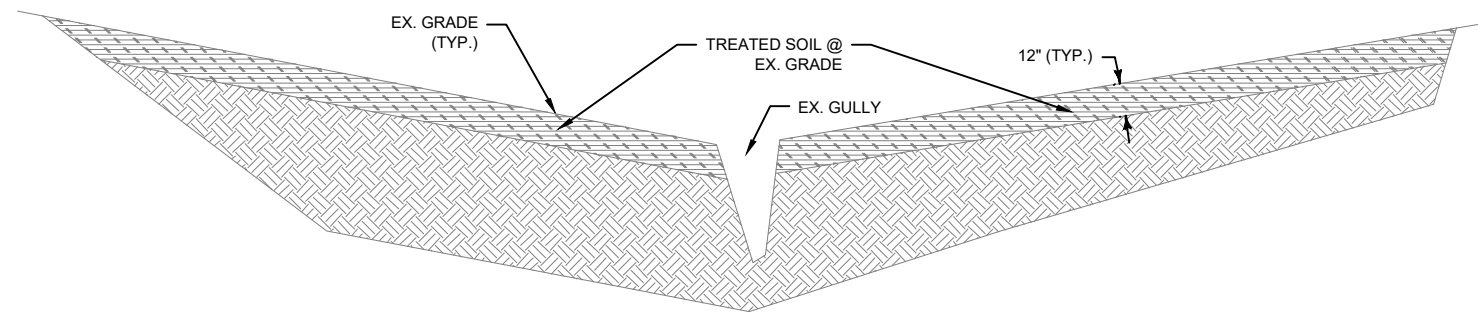


EXISTING SECTION

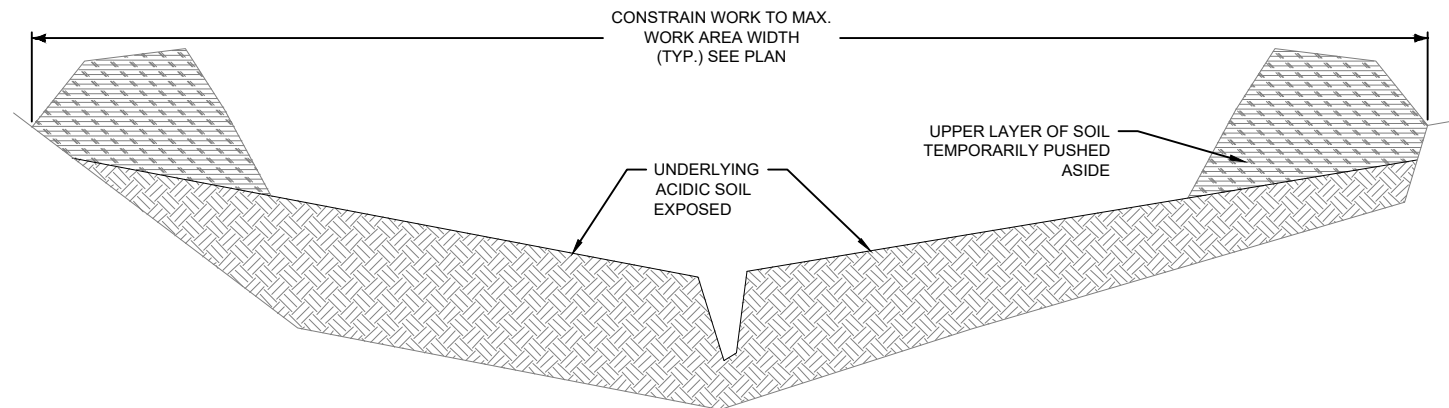


**REPAIRED SECTION
READY FOR ACID
AREA REPAIR**

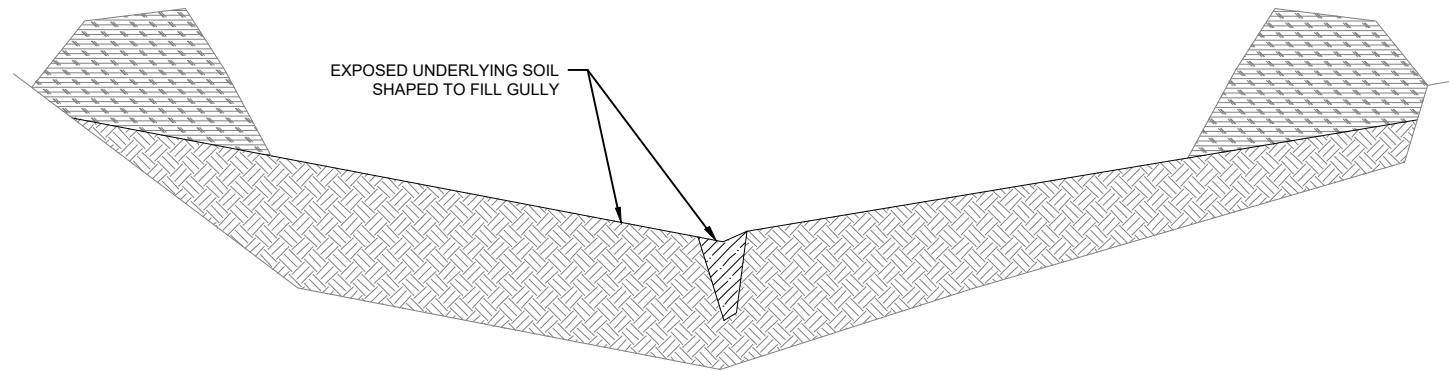
1 TYPE 1 GULLY REPAIR SECTION DETAIL
7 SCALE: NOT TO SCALE



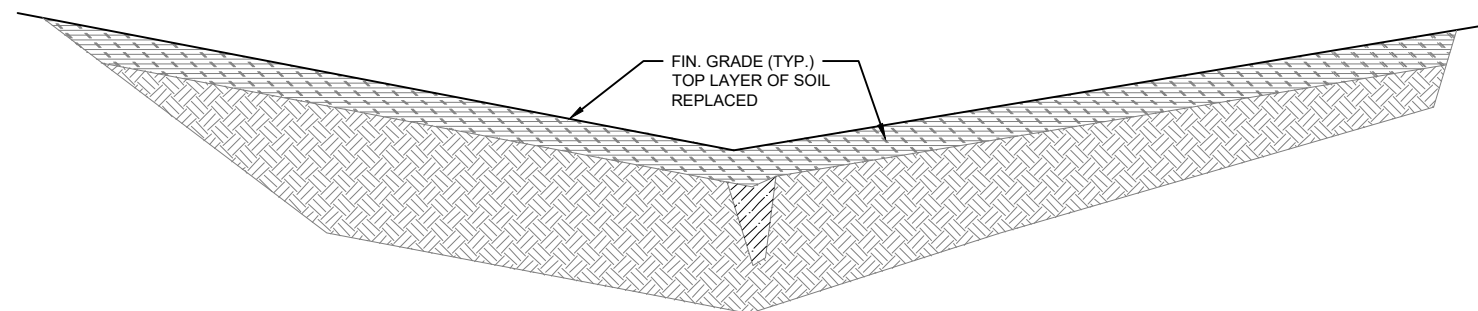
EXISTING SECTION CONDITION



UPPER SOIL DISPLACED



GULLY FILLED



REPAIR COMPLETE

2 TYPE 2 CHANNEL REPAIR SECTION DETAIL
7 NOT TO SCALE

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WAECHTER
AML REPAIR PROJECT

CHANNEL REPAIR
DETAILS

SHEET
7 OF 7