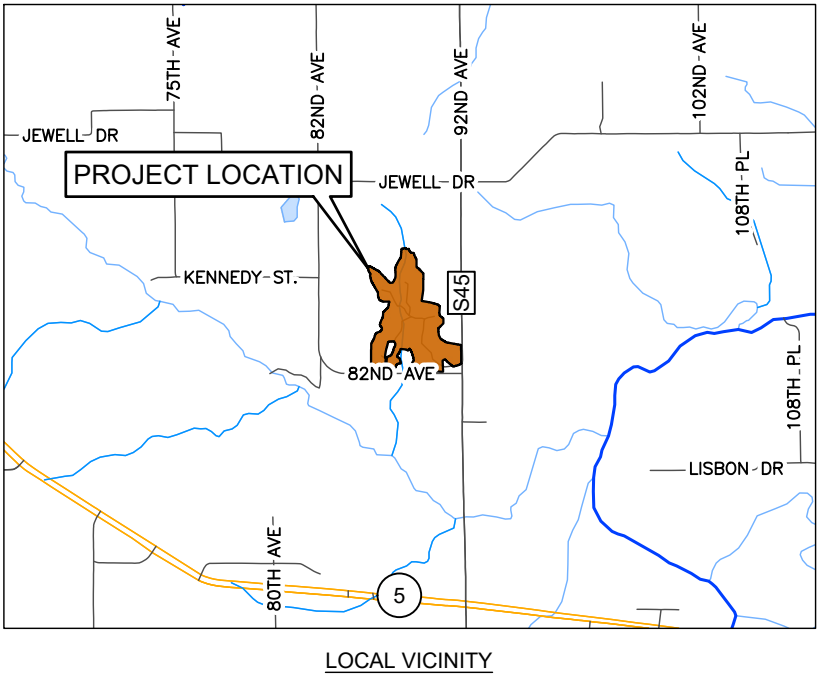
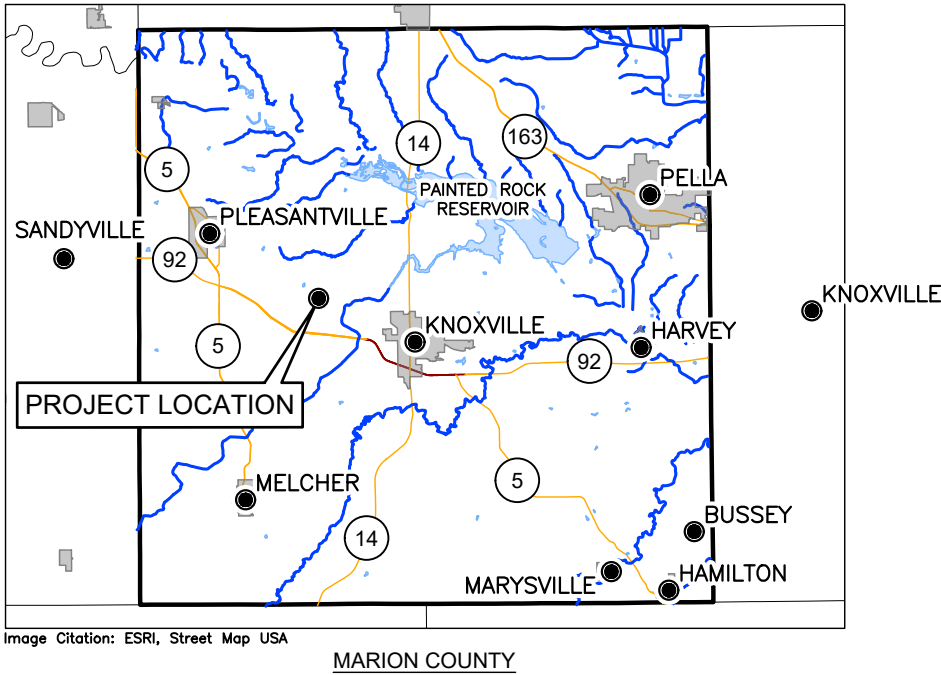
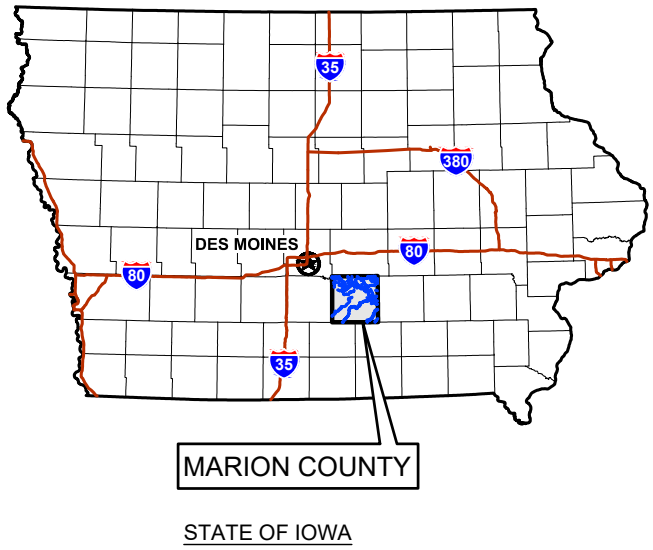


# KLOOTWYK (IA-031) AML RECLAMATION PROJECT

SECTION 32 AND 39, TOWNSHIP 76 NORTH, RANGE 20 WEST, MARION COUNTY, IOWA  
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: S24AF00083



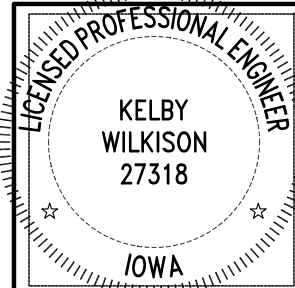
  
CALL 811 / 1-800-292-8989  
2 Working Days BEFORE YOU DIG  
IowaOneCall.com

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

ENGINEER:  
TRIHYDRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729

| #  | TITLE                                              |
|----|----------------------------------------------------|
| 1  | COVER SHEET                                        |
| 2  | PROJECT NOTES LEGEND AND QUANTITIES                |
| 3  | SITUATION AND SITE PREPARATION PLAN                |
| 4  | GRADING PLAN OVERVIEW                              |
| 5  | DRAINAGE PLAN OVERVIEW                             |
| 6  | NORTH - GRADING & DRAINAGE PLAN                    |
| 7  | SOUTH - GRADING & DRAINAGE PLAN                    |
| 8  | EARTHWORK REFERENCE SHEET                          |
| 9  | GRADING PLAN CUT-FILL ISOMAP                       |
| 10 | PROJECT SIGNAGE DETAILS & CONCRETE RISER STRUCTURE |
| 11 | IA DOT SW-513 STANDARD INTAKE STRUCTURE            |
| 12 | TYPICAL TERRACE DETAILS                            |
| 13 | ROCK LETDOWN, CHANNEL & WETLAND 2 OUTLET DETAILS   |
| 14 | CONCRETE BLOCK STREAM CROSSING DETAIL              |
| 15 | EARTHWORK PROFILE                                  |

|    |                                  |
|----|----------------------------------|
| 16 | EARTHWORK CROSS SECTION (1 OF 3) |
| 17 | EARTHWORK CROSS SECTION (2 OF 3) |
| 18 | EARTHWORK CROSS SECTION (3 OF 3) |
| 19 | MAIN CHANNEL PROFILES (1 of 2)   |
| 20 | MAIN CHANNEL PROFILES (2 of 2)   |
| 21 | SWPPP BMP PLAN                   |
| 22 | SWPPP NOTES                      |



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: *Kelby Wilkison* Date: 8/28/2025

Name (printed or typed): KELBY C. WILKISON

License Number: 27318

My license renewal date is: 12/31/2025

Pages or sheets covered by this seal: ENTIRE DOCUMENT

FILE: 1 COVER SHEET

#

REVISED:

ISSUED:

CHKD. BY:

DRAWN BY:

DESIGN BY:

IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION AND  
WATER QUALITY  
HOOVER BUILDING  
1305 E WALNUT ST. DES MOINES, IA 50319  
(515) 281-4246



KLOOTWYK (IA-031)  
AML RECLAMATION PROJECT

COVER SHEET

TRIHYDRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729



C:\USERS\WILLIAMSON\DC\ACCDGCS\TRIHYRO CORPORATION\IOWA AML\PROJECT FILES\PROJECTS\214-012\_KLOOTWYK\CADD\PLANS\214-012\_FINAL\DESIGN\2-PROJECT NOTES-LEGEND AND QUANTITIES

GENERAL NOTES:

1. ALL IMPROVEMENTS SHOWN ON THESE PLANS SHALL COMPLY WITH THE GENERAL CONDITIONS, STANDARDS, AND SPECIFICATIONS SET FORTH IN PROJECT DOCUMENTS. THESE INCLUDE STANDARD CONSTRUCTION SPECIFICATIONS SET FORTH BY THE DIVISION OF SOIL CONSERVATION AND WATER QUALITY (DIVISION) AS WELL AS THE SUPPLEMENTAL SPECIFICATIONS ESTABLISHED BY THE ENGINEER. SPECIFICATIONS OR STANDARDS INCORPORATED BY REFERENCE SHALL ALSO BE FOLLOWED.
2. 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.
3. REFERENCES TO PARTICULAR PRODUCTS, TRADENAMES, OR MANUFACTURERS IS INTENDED FOR CLARITY ONLY AND NOT TO REPRESENT EXCLUSION OR ENDORSEMENT BY THE STATE OF IOWA. EQUIVALENT PRODUCTS OR MATERIALS MAY BE SUITABLE, SUBJECT TO THE APPROVAL OF THE ENGINEER.
4. THE CONTRACTOR SHALL NOT DISTURB AREAS OUTSIDE THE CONSTRUCTION LIMITS. THE CONTRACTOR SHALL RECLAIM OR REPAIR ALL DISTURBANCES CREATED OUTSIDE THE CONSTRUCTION LIMITS BY THE CONTRACTOR'S EMPLOYEES OR SUBCONTRACTORS AT THE CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR SHALL ACCESS THE SITE FROM 82ND AVE. VIA THE LOCATION INDICATED ON THE PLANS FOR ALL EQUIPMENT, PERSONNEL, AND MATERIALS TRANSPORTATION. IF ANY NEW ACCESS OR HAUL ROADS ARE REQUIRED TO COMPLETE THE WORK, THEY SHALL FIRST BE APPROVED IN WRITING BY THE ENGINEER OR DIVISION, AND SHALL BE RECLAIMED ACCORDING TO THE SPECIFICATIONS AT THE COMPLETION OF THE PROJECT.
6. ALL TRASH AND DEBRIS GENERATED BY THE CONTRACTOR SHALL BE DISPOSED OF IN A LICENSED AND PERMITTED OFF-SITE LANDFILL. TRASH SHALL NOT BE BURIED ON-SITE.
7. EXISTING SITE TOPOGRAPHY WAS DEVELOPED USING ELEVATION DATA FROM THE STATE OF IOWA'S LIGHT DETECTION AND RANGING (LiDAR) PROGRAM, AND SUPPLEMENTED BY AN ADDITIONAL SURVEY COMPLETED BY SHIVE-HATTERY IN OCTOBER AND DECEMBER 2023 AND FEBRUARY 2024. THE DRAWINGS DO NOT PURPORT TO SHOW ALL OBJECTS EXISTING ON, ABOVE, OR AROUND THE SITE.

SAFETY NOTE:

THIS PROJECT REQUIRES CONSTRUCTION WORK IN THE VICINITY OF HISTORIC MINE SITES, HIGHWALLS, AND WATER BODIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INVESTIGATING THE SITE CONDITIONS AND SCHEDULING THEIR EQUIPMENT, OPERATIONS, PERSONNEL, AND SAFETY PROCEDURES TO PREVENT ACCIDENTS AND INJURIES. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE OSHA REGULATIONS.

SPECIAL NOTES:

1. THE SIZING OF RISERS AND ASSOCIATED TILE PIPE WILL BE COMPLETED IN THE FUTURE.
2. QUANTITIES OF FERTILIZER AND LIME ARE ESTIMATED FOR BIDDING PURPOSES.
3. ACTUAL QUANTITIES APPLIED WILL BE DETERMINED BY SOIL TESTS PERFORMED AT THE COMPLETION OF SITE GRADING WORK.

UTILITY NOTES:

1. THE CONTRACTOR SHALL CALL 800-292-8989 OR 811 PRIOR TO INTRUSIVE ACTIVITIES TO LOCATE ON-SITE UTILITIES. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES. THE ENGINEER DOES NOT MAKE ANY REPRESENTATIONS AS TO EXISTENCE OR NON-EXISTENCE OF UTILITIES WITHIN THE PROJECT AREA.
2. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES AND PUBLIC ROADWAYS, INCLUDING ANY NOT SHOWN ON THESE DRAWINGS. ANY DAMAGE TO EXISTING UTILITIES AND STREETS CAUSED BY TRENCHING AND GRADING OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

| ESTIMATED QUANTITIES                                         |                                           |          |            |
|--------------------------------------------------------------|-------------------------------------------|----------|------------|
| ITEM NO.                                                     | ITEM                                      | QUANTITY | UNIT       |
| SECTION 02100: MOBILIZATION, SITE CLEARING & PREPERATION     |                                           |          |            |
| 1                                                            | MOBILIZATION                              | 1        | LS         |
| 2                                                            | SITE CLEARING & PREPARATION               | 96       | ACRE       |
| 3                                                            | OFF-SITE WASTE DISPOSAL                   | 2        | TON        |
| SECTION 02110: IMPOUNDMENT                                   |                                           |          |            |
| 4                                                            | CAUSTIC SODA, LIQUID, 20-25%              | 150      | GALLONS    |
| 5                                                            | IMPOUNDMENT DISCHARGE                     | 12       | LS         |
| SECTION 02120: SEDIMENT & EROSION CONTROL                    |                                           |          |            |
| 6                                                            | WATTLES/SEDIMENT CONTROLS                 | 500      | LF         |
| 7                                                            | TIED CONCRETE BLOCK MAT                   | 11,835   | SF         |
| 8                                                            | EXCAVATOR BUCKET TRENCH                   | 450      | LF         |
| 9                                                            | STABILIZED CONSTRUCTION ENTRANCE          | 90       | TON        |
| SECTION 02200: EARTHWORK, ROUGH GRADING                      |                                           |          |            |
| 10                                                           | EXCAVATION                                | 850,496  | CY         |
| 11                                                           | FINISH GRADING                            | 107.2    | ACRE       |
| SECTION 02300: DRAINAGE SYSTEMS, GENERAL                     |                                           |          |            |
| 12                                                           | RIPRAP (CLASS E)                          | 2,169    | TON        |
| 13                                                           | GRANULAR SUBBASE                          | 1,112    | TON        |
| 14                                                           | TERRACE                                   | 14,345   | LF         |
| 15                                                           | RISER-TERRACE (10-INCH)                   | 33       | EACH       |
| 16                                                           | STRUCTURE - IA-DOT SW-513, MOD. 4'x4'     | 2        | EACH       |
| 17                                                           | STRUCTURE - CONCRETE RISER (48-INCH)      | 1        | EACH       |
| 18                                                           | PIPE, 10-INCH DUAL WALL, HDPE (DWPE)      | 5,481    | LF         |
| 19                                                           | PIPE, 12-INCH DUAL WALL, HDPE (DWPE)      | 3,717    | LF         |
| 20                                                           | PIPE, 15-INCH DUAL WALL, HDPE (DWPE)      | 448      | LF         |
| 21                                                           | PIPE, 18-INCH DUAL WALL, HDPE (DWPE)      | 581      | LF         |
| 22                                                           | PIPE OUTLET (10-INCH)                     | 11       | EACH       |
| 23                                                           | PIPE OUTLET (12-INCH)                     | 3        | EACH       |
| 24                                                           | PIPE OUTLET (15-INCH)                     | 1        | EACH       |
| 25                                                           | PIPE OUTLET (18-INCH)                     | 3        | EACH       |
| 26                                                           | PIPE OUTLET (24-INCH)                     | 1        | EACH       |
| 27                                                           | PIPE OUTLET (32-INCH)                     | 1        | EACH       |
| SECTION 02400: SUBGRADE PREPERATION (WITHOUT COVER MATERIAL) |                                           |          |            |
| 28                                                           | AG LIME, SUBGRADE, 40 TONS ECCE/ACRE      | 4,288    | TON (ECCE) |
| 29                                                           | MULCH, SUBGRADE, 5 TONS/AC                | 107.2    | ACRE       |
| 30                                                           | WETLAND FERTILIZER, 30 POUNDS/ACRE        | 216      | POUND      |
| 31                                                           | WETLAND UNDERCUT & REPLACEMENT            | 7        | ACRE       |
| SECTION 02500: FENCING                                       |                                           |          |            |
| 32                                                           | WOOD CORNER POSTS, FIELD FENCE - NO FENCE | 10       | EACH       |
| SECTION 02700: SEEDING                                       |                                           |          |            |
| 33                                                           | AG LIME, SEEDING, 10 TONS ECCE/AC         | 1,072    | TON (ECCE) |
| 34                                                           | NITROGEN (N)                              | 4,288    | POUND      |
| 35                                                           | PHOSPHOROUS (P)                           | 10,720   | POUND      |
| 36                                                           | POTASSIUM (K)                             | 17,152   | POUND      |
| 37                                                           | MULCH, SEEDING, 2 TONS/AC                 | 107.2    | ACRE       |
| 38                                                           | PASTURE MIX                               | 71.3     | ACRE       |
| 39                                                           | PASTURE MIX – RED CLOVER SUBSTITUTION     | 25.4     | ACRE       |
| 40                                                           | POLLINATOR SEED MIX                       | 0.9      | ACRE       |
| 41                                                           | WETLAND FRINGE SEEDING                    | 9.6      | ACRE       |

CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL NOT REMOVE OR DESTROY ANY SURVEY MONUMENTS WITHOUT PRIOR WRITTEN PERMISSION FROM THE ENGINEER.
2. THE CONTRACTOR IS REQUIRED TO CONSTRUCT THE RECLAMATION SURFACE AS DEPICTED ON THE PLANS. SITE GRADING SHALL BE COMPLETED TO ± 0.3 FEET OF DESIGN ELEVATIONS. THE CONTRACTOR SHALL PROVIDE A GRADE CHECK FOR SLOPE STAKING AND OFFSETS. THE USE OF GPS MACHINE MOUNTED GRADE CONTROL EQUIPMENT FOR FINISH GRADING IS RECOMMENDED.
3. PROPOSED CONTOURS AND GRADES DEPICT THE TOP OF THE FINISH GRADE.
4. IN AREAS WHERE PROPOSED GRADING DAYLIGHTS TO EXISTING GROUND, THE CONTRACTOR SHALL CONSTRUCT A SMOOTH TRANSITION BOTH VERTICALLY AND HORIZONTALLY.

CP1

UTILITY POLE

TILE RISER/INTAKE

TILE OUTLET

SIGN

INTERSTATE HIGHWAY

US HIGHWAY

STATE HIGHWAY

COUNTY ROAD

CULVERT

WETLAND WATER LEVEL

SURFACE CONTOURS (2' INTERVAL, 10' INDEX)

SURVEYED EXISTING SITE ROADWAY

TILE PIPE ALIGNMENT

PRIMARY STREAM

TRIBUTARY STREAM

OVERHEAD ELECTRICAL

PROPERTY LINE

SECTION LINE

WATER BODY

SITE ACCESS ROUTE

INDUSTRIAL/COMMERCIAL WASTE

WETLAND (NWI)

BUILDING OR OTHER STRUCTURE

EXISTING

PROPOSED

TILE RISER/INTAKE

TILE OUTLET AND POOL

SIGN POST

FENCE POST

UTILITY POLE (TO BE ABANDONED)

CONTOURS (2' INTERVAL, 10' INDEX)

MAIN CHANNEL

TERRACE FLOW LINE

TERRACE RIDGE LINE

TILE PIPE

EXISTING TILE PIPE EXTENSION

EARTHWORK SECTION/PROFILE

WATTLES

BURN LIMIT RADIUS

OVERHEAD ELECTRICAL (TO BE ABANDONED)

LOW-WATER CROSSING

RIPRAP STRUCTURES

STAGING AREA

STABILIZED CONSTRUCTION ENTRANCE

PROJECT LIMITS

GRADING LIMTS

SILO PROTECTION ZONE

POLLINATOR SEED MIX

PROPOSED WETLAND AREA

WETLAND FRINGE SEEDING AREA

ABBREVIATIONS

Ø

DIAMETER

AC.

ACRES

AMSL

ABOVE MEAN SEA LEVEL

CL

CENTER LINE

CF

CUBIC FEET

CP

CONTROL POINT

CMP

CORRUGATED METAL PIPE

CY

CUBIC YARDS

DIVISION

DIVISION OF SOIL CONSERVATION & WATER QUALITY

ECCE

EFFECTIVE CALCIUM CARBONATE EQUIVALENT

EL.

ELEVATION

FT.

FEET

H:V

HORIZONTAL TO VERTICAL

LF

LINEAR FEET

LiDAR

LIGHT DETECTION AND RANGING

LS

LUMP SUM

MAX.

MAXIMUM

MIN.

MINIMUM

NAD

NORTH AMERICAN DATUM

NAVD

NORTH AMERICAN VERTICAL DATUM

NO.

NUMBER

NWI

NATIONAL WETLAND INVENTORY

RCP

REINFORCED CONCRETE PIPE

SY

SQUARE YARDS

TYP.

TYPICAL

CFS

CUBIC FEET PER SECOND

WB

WATER BODY

IS

INTERMITTENT STREAM

CBSC

CONCRETE BLOCK STREAM CROSSING

FILE: 2 PROJECT NOTES LEGEND AND QUANTITIES

REVISED: 08/2025

ISSUED: 08/2025

CHKD. BY: KCW

DRAWN BY: CD

DESIGN BY: KCW

TRIHYRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729

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

KLOOTWYK (IA-031)  
AML RECLAMATION PROJECT

PROJECT NOTES LEGEND AND  
QUANTITIES

SHEET  
2 OF 26



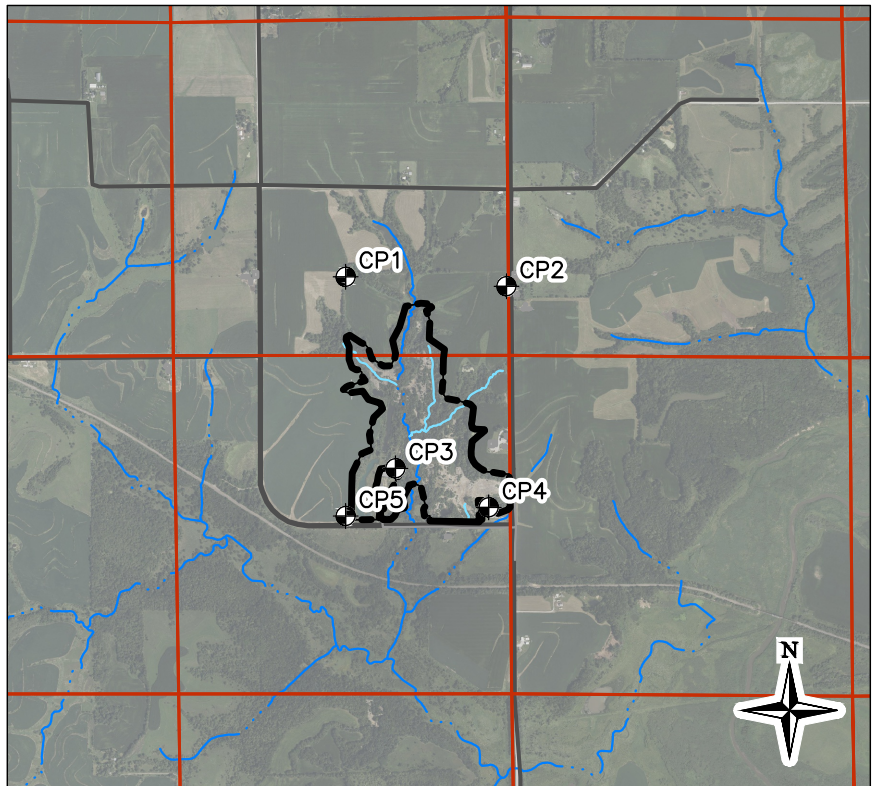


Image Citation: ©2022 Microsoft Corporation ©2022 DigitalGlobe ©CNES (2022) Distribution Airbus DS Bing Image

1 VICINITY MAP  
SCALE: 1" = 3,000'

0 3,000'

| EXISTING WETLAND SUMMARY |            |                      |
|--------------------------|------------|----------------------|
| ID                       | AREA (AC.) | FATE                 |
| NWI-1                    | 0.10       | BACKFILL AND REPLACE |
| NWI-2                    | 0.25       | BACKFILL AND REPLACE |
| NWI-3                    | 0.08       | BACKFILL AND REPLACE |
| NWI-4                    | 0.10       | BACKFILL AND REPLACE |
| NWI-5                    | 0.19       | BACKFILL AND REPLACE |
| NWI-6                    | 0.46       | BACKFILL AND REPLACE |
| TOTAL                    | 1.18       |                      |

| EXISTING STREAM SUMMARY |             |         |
|-------------------------|-------------|---------|
| ID                      | LENGTH (LF) | FATE    |
| STREAM 1                | 3,245       | REPLACE |
| TRIB 1                  | 946         | REPLACE |
| TRIB 2                  | 1,428       | REPLACE |
| TRIB 3                  | 1,165       | REPLACE |
| TOTAL                   | 6,784       |         |

NOTES:

- ALL STREAMS AND TRIBUTARIES ARE UNNAMED.

| EXISTING WATER-FILL PIT INFORMATION |           |                    |              |                       |                           |                       |                       |
|-------------------------------------|-----------|--------------------|--------------|-----------------------|---------------------------|-----------------------|-----------------------|
| PIT ID                              | SAMPLE ID | SURFACE AREA (AC.) | pH (7/18/23) | MAX WATER DEPTH (FT.) | MAX. MUCK THICKNESS (FT.) | ESTIMATED VOLUME (CY) | FATE                  |
| WB1                                 | SW-3      | 0.72               | 10.4         | 6.7                   | 5.5                       | 2,647                 | BACKFILL AND RE-GRADE |
| WB2                                 | SW-4      | 0.20               | 10.0         | 7.3                   | 3.5                       | 897                   | BACKFILL AND RE-GRADE |
| WB3                                 | SW-5      | 0.29               | 7.8          | 7.3                   | 9                         | 1,534                 | BACKFILL AND RE-GRADE |
| WB4                                 | SW-6      | 0.43               | 8.1          | 10.9                  | 6.2                       | 2,939                 | BACKFILL AND RE-GRADE |
| WB5                                 | SW-7      | 0.17               | 7.1          | 4.7                   | 7                         | 6                     | BACKFILL AND RE-GRADE |
| WB6                                 | SW-8      | 0.39               | 3.4          | 3.5                   | 10.5                      | 142                   | BACKFILL AND RE-GRADE |
| WB7                                 | SW-9      | 1.31               | 9.6          | 15.0                  | 4.2                       | 11,065                | BACKFILL AND RE-GRADE |
| WB8                                 | SW-10     | 0.11               | 6.7          | 7.9                   | 6                         | 528                   | BACKFILL AND RE-GRADE |
| WB9                                 | SW-11     | 1.14               | 3.0          | 19.7                  | 10.5                      | 13,498                | BACKFILL AND RE-GRADE |
| WB10                                | SW-12     | 3.35               | 4.5          | 24.7                  | 9.3                       | 45,703                | PARTIALLY BACKFILL    |
| WB11                                | SW-13     | 0.04               | 2.9          | 0.0                   | 0                         | 0                     | BACKFILL AND RE-GRADE |
| WB12                                | SW-14     | 0.39               | 10.2         | 5.4                   | 6                         | 1,652                 | BACKFILL AND RE-GRADE |

NOTES:

- UNKNOWN UTILITIES WITHIN CONSTRUCTION LIMITS. THE CONTRACTOR SHALL COMPLETE UTILITY LOCATES PRIOR TO COMMENCING CONSTRUCTION.
- CLEARING LIMITS ARE SHOWN AS THE PROPOSED CONSTRUCTION LIMITS.

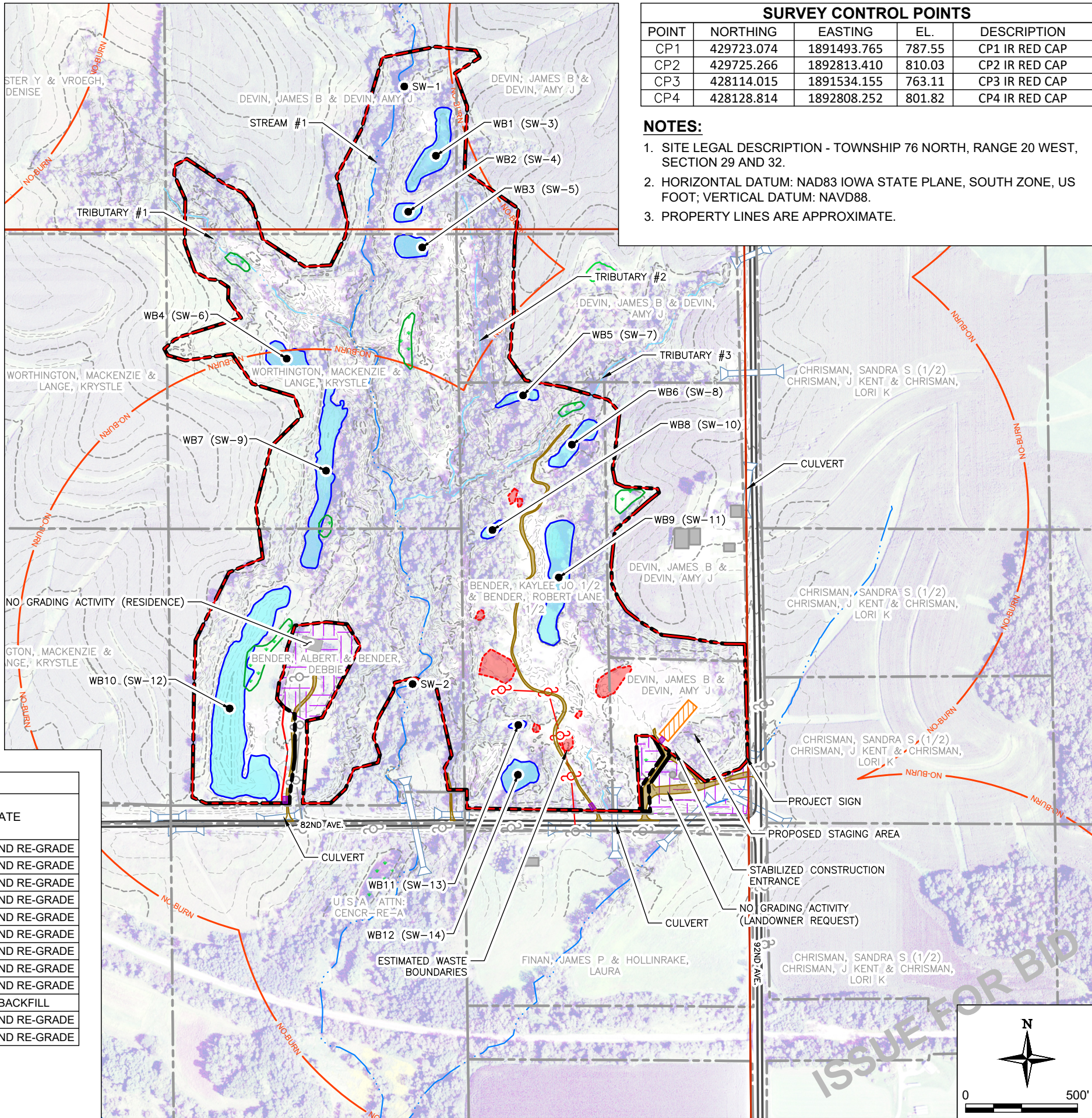


Image Cite: National Agriculture Imagery Program (NAIP) Colored Orthophoto, Mahaska County, Iowa, Publication: 2018

| SURVEY CONTROL POINTS |            |             |        |                |
|-----------------------|------------|-------------|--------|----------------|
| POINT                 | NORTHING   | EASTING     | EL.    | DESCRIPTION    |
| CP1                   | 429723.074 | 1891493.765 | 787.55 | CP1 IR RED CAP |
| CP2                   | 429725.266 | 1892813.410 | 810.03 | CP2 IR RED CAP |
| CP3                   | 428114.015 | 1891534.155 | 763.11 | CP3 IR RED CAP |
| CP4                   | 428128.814 | 1892808.252 | 801.82 | CP4 IR RED CAP |

NOTES:

- SITE LEGAL DESCRIPTION - TOWNSHIP 76 NORTH, RANGE 20 WEST, SECTION 29 AND 32.
- HORIZONTAL DATUM: NAD83 IOWA STATE PLANE, SOUTH ZONE, US FOOT; VERTICAL DATUM: NAVD88.
- PROPERTY LINES ARE APPROXIMATE.

FILE: 3 SITUATION AND SITE PREPARATION PLAN

REVISED:

08/2025

ISSUED:

CHKD. BY: KCW

DESIGN BY: PC

DRAWN BY: PC

TRIHYDRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729



IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION AND  
WATER QUALITY  
HOOVER BUILDING  
1305 E WALNUT ST. DES MOINES, IA 50319  
(515) 281-4246



KLOOTWYK (IA-031)

AML RECLAMATION PROJECT

SITUATION AND SITE PREPARATION PLAN

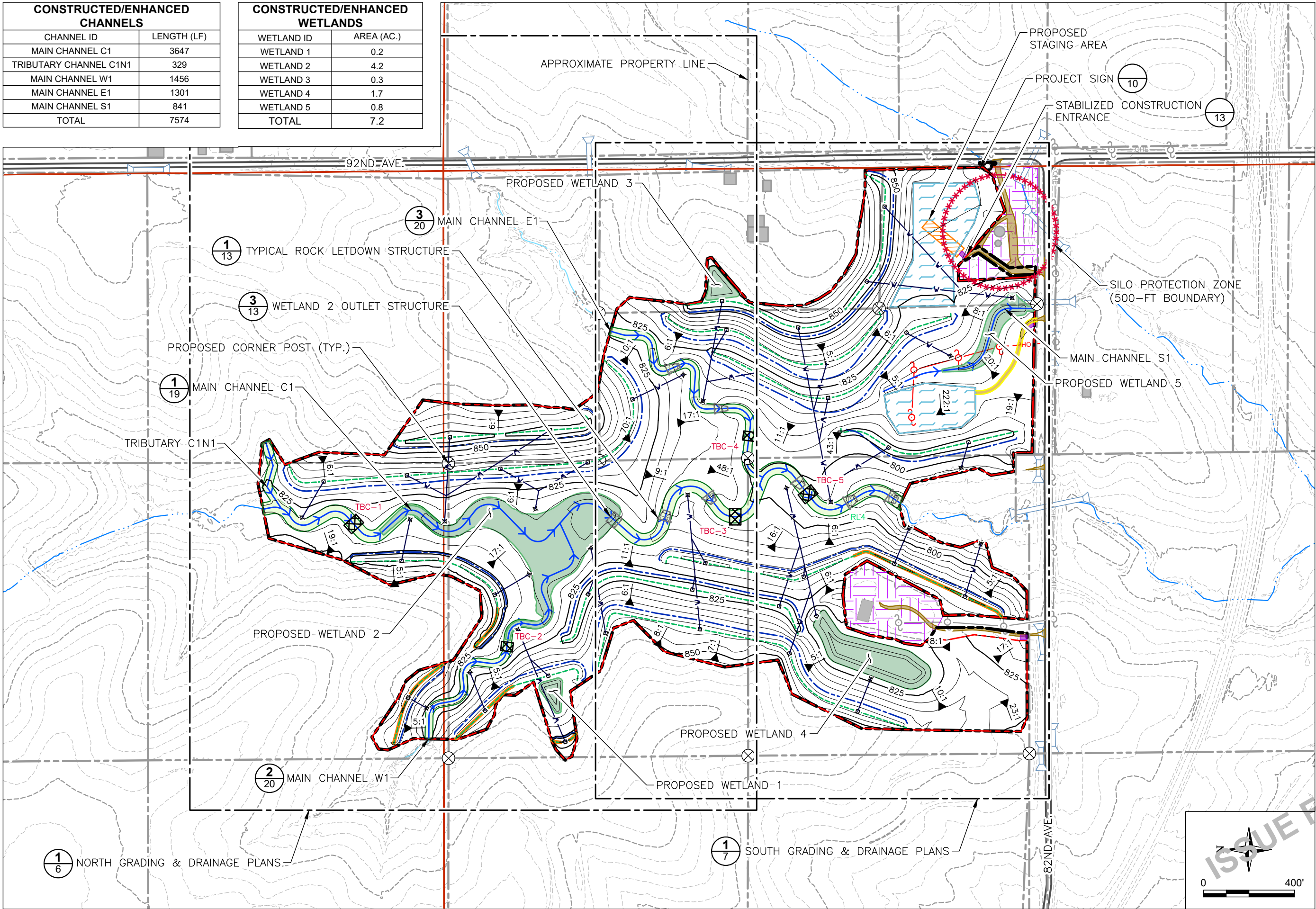
SHEET  
3 OF 22



C:\USERS\KWLKISON\DC\ACDDCS\TRIHYDRO CORPORATION\IOWA AML\PROJECT FILES\PROJECTS\214-012\_KLOOTWYK\ADD\PLANS\2--FINAL\DESIGN\4 GRADING PLAN OVERVIEW

| CONSTRUCTED/ENHANCED CHANNELS |             |
|-------------------------------|-------------|
| CHANNEL ID                    | LENGTH (LF) |
| MAIN CHANNEL C1               | 3647        |
| TRIBUTARY CHANNEL C1N1        | 329         |
| MAIN CHANNEL W1               | 1456        |
| MAIN CHANNEL E1               | 1301        |
| MAIN CHANNEL S1               | 841         |
| TOTAL                         | 7574        |

| CONSTRUCTED/ENHANCED WETLANDS |            |
|-------------------------------|------------|
| WETLAND ID                    | AREA (AC.) |
| WETLAND 1                     | 0.2        |
| WETLAND 2                     | 4.2        |
| WETLAND 3                     | 0.3        |
| WETLAND 4                     | 1.7        |
| WETLAND 5                     | 0.8        |
| TOTAL                         | 7.2        |



FILE: 4 GRADING PLAN OVERVIEW

REVISED:

ISSUED: 7/26/2024

CHKD. BY: KCW

DRAWN BY: PC

DESIGN BY: PC

IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION AND  
WATER QUALITY  
HOOVER BUILDING  
1305 E WALNUT ST. DES MOINES, IA 50319  
(515)281-4246



KLOOTWYK (IA-031)  
AML RECLAMATION PROJECT  
GRADING PLAN OVERVIEW

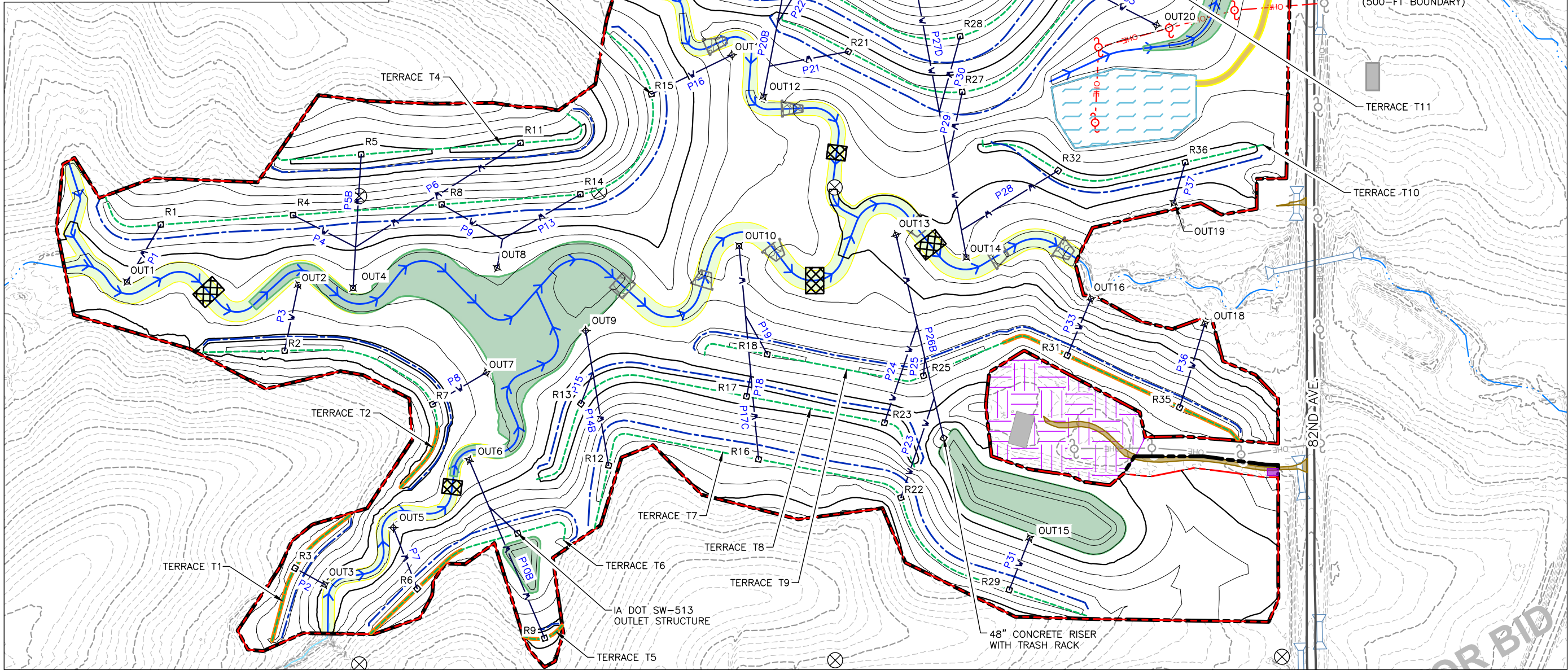
SHEET  
4 OF 22

TRIHYDRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729

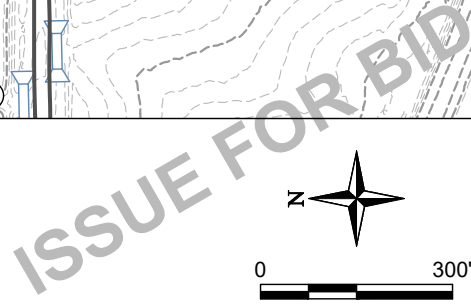




| TERRACE (T) SUMMARY |             |                    |                  |                   |                      |
|---------------------|-------------|--------------------|------------------|-------------------|----------------------|
| ID                  | LENGTH (LF) | CHANNEL WIDTH (FT) | RIDGE WIDTH (FT) | RIDGE HEIGHT (FT) | RIDGE ELEVATION (FT) |
| T1                  | 422         | 3                  | 6                | 5                 | 841.25               |
| T2                  | 952         | 12                 | 6                | 5                 | 825.50               |
| T3                  | 2179        | 12                 | 6                | 5                 | 834.20               |
| T4                  | 929         | 12                 | 6                | 5                 | 855.50               |
| T5                  | 120         | 3                  | 6                | 5                 | 850.20               |
| T6                  | 681         | 12                 | 6                | 5                 | 842.25               |
| T7                  | 1694        | 12                 | 6                | 5                 | 844.25               |
| T8                  | 1300        | 12                 | 6                | 5                 | 827.50               |
| T9                  | 1600        | 12                 | 6                | 5                 | 820.75               |
| T10                 | 810         | 12                 | 6                | 5                 | 808.50               |
| T11                 | 1271        | 12                 | 6                | 5                 | 824.50               |
| T12                 | 1140        | 12                 | 6                | 5                 | 834.50               |
| T13                 | 1443        | 12                 | 6                | 5                 | 852.50               |



| TERRACE DIMENSION SUMMARY |        |                   |                  |                   |
|---------------------------|--------|-------------------|------------------|-------------------|
| SYMBOL                    | TYPE   | RIDGE HEIGHT [FT] | RIDGE WIDTH [FT] | BOTTOM WIDTH [FT] |
|                           | TYPE A | 5                 | 6                | 3                 |
|                           | TYPE B | 5                 | 6                | 12                |



FILE: 5 DRAINAGE PLAN OVERVIEW

REVISED:

08/2025

ISSUED:

CHKD. BY: KCW

DRAWN BY: CD

DESIGN BY: KCW

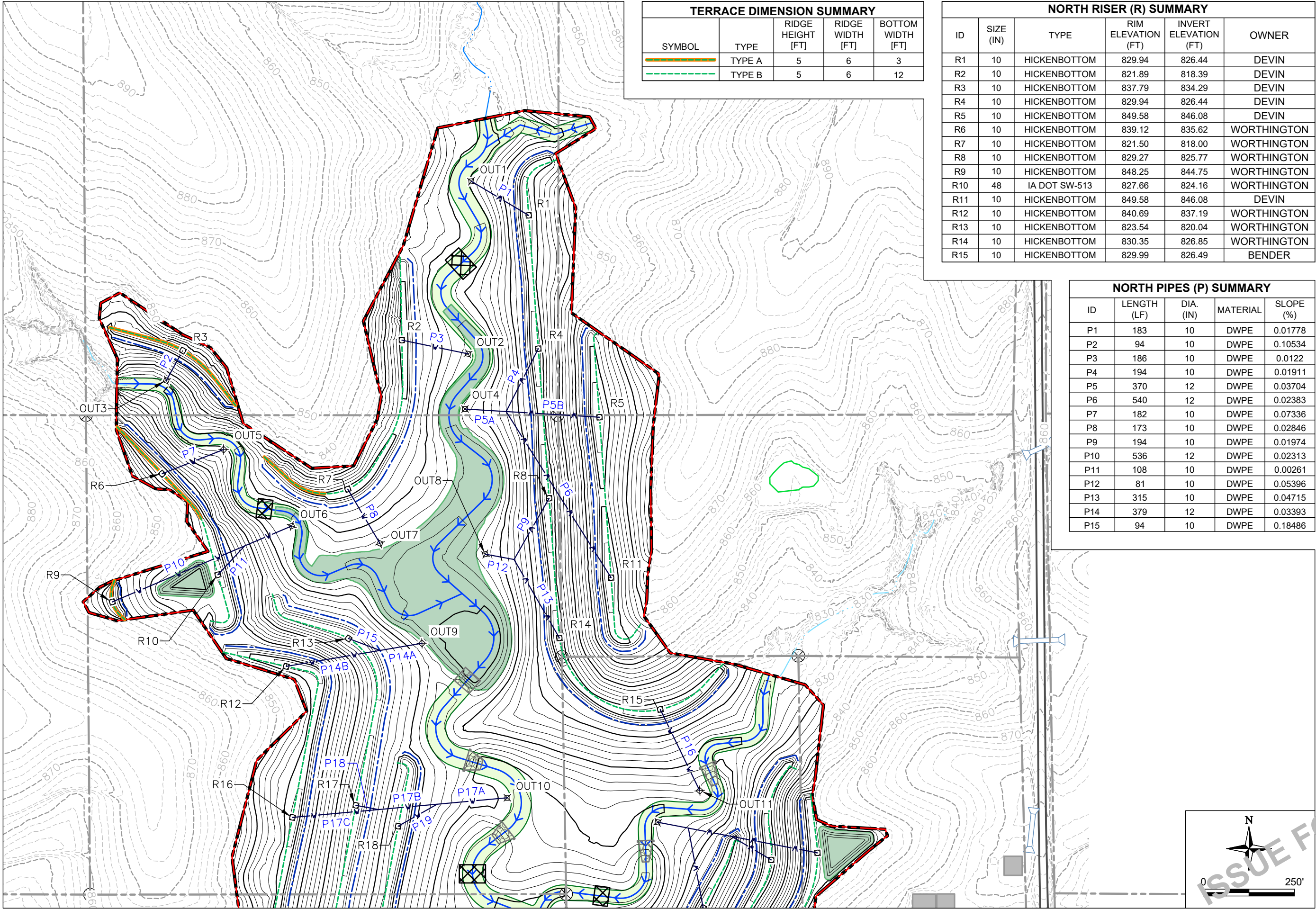
IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION AND  
WATER QUALITY  
HOOVER BUILDING  
1305 E WALNUT ST. DES MOINES, IA 50319  
(515)281-4246



KLOOTWYK (IA-031)  
AML RECLAMATION PROJECT  
DRAINAGE PLAN OVERVIEW



C:\USERS\KWLKSON\DC\ACCDOS\TRIHYDRO CORPORATION\IOWA AML\PROJECT FILES\PROJECTS\214-012\_KLOOTWYK\ADD\PLANS\SET 2--FINAL\DESIGN\7 SOUTH - GRADING & DRAINAGE PLAN



| TERRACE DIMENSION SUMMARY |        |                   |                  |                   |
|---------------------------|--------|-------------------|------------------|-------------------|
| SYMBOL                    | TYPE   | RIDGE HEIGHT [FT] | RIDGE WIDTH [FT] | BOTTOM WIDTH [FT] |
|                           | TYPE A | 5                 | 6                | 3                 |
|                           | TYPE B | 5                 | 6                | 12                |

| NORTH RISER (R) SUMMARY |           |               |                    |                       |             |
|-------------------------|-----------|---------------|--------------------|-----------------------|-------------|
| ID                      | SIZE (IN) | TYPE          | RIM ELEVATION (FT) | INVERT ELEVATION (FT) | OWNER       |
| R1                      | 10        | HICKENBOTTOM  | 829.94             | 826.44                | DEVIN       |
| R2                      | 10        | HICKENBOTTOM  | 821.89             | 818.39                | DEVIN       |
| R3                      | 10        | HICKENBOTTOM  | 837.79             | 834.29                | DEVIN       |
| R4                      | 10        | HICKENBOTTOM  | 829.94             | 826.44                | DEVIN       |
| R5                      | 10        | HICKENBOTTOM  | 849.58             | 846.08                | DEVIN       |
| R6                      | 10        | HICKENBOTTOM  | 839.12             | 835.62                | WORTHINGTON |
| R7                      | 10        | HICKENBOTTOM  | 821.50             | 818.00                | WORTHINGTON |
| R8                      | 10        | HICKENBOTTOM  | 829.27             | 825.77                | WORTHINGTON |
| R9                      | 10        | HICKENBOTTOM  | 848.25             | 844.75                | WORTHINGTON |
| R10                     | 48        | IA DOT SW-513 | 827.66             | 824.16                | WORTHINGTON |
| R11                     | 10        | HICKENBOTTOM  | 849.58             | 846.08                | DEVIN       |
| R12                     | 10        | HICKENBOTTOM  | 840.69             | 837.19                | WORTHINGTON |
| R13                     | 10        | HICKENBOTTOM  | 823.54             | 820.04                | WORTHINGTON |
| R14                     | 10        | HICKENBOTTOM  | 830.35             | 826.85                | WORTHINGTON |
| R15                     | 10        | HICKENBOTTOM  | 829.99             | 826.49                | BENDER      |

| NORTH PIPES (P) SUMMARY |             |           |          |           |
|-------------------------|-------------|-----------|----------|-----------|
| ID                      | LENGTH (LF) | DIA. (IN) | MATERIAL | SLOPE (%) |
| P1                      | 183         | 10        | DWPE     | 0.01778   |
| P2                      | 94          | 10        | DWPE     | 0.10534   |
| P3                      | 186         | 10        | DWPE     | 0.0122    |
| P4                      | 194         | 10        | DWPE     | 0.01911   |
| P5                      | 370         | 12        | DWPE     | 0.03704   |
| P6                      | 540         | 12        | DWPE     | 0.02383   |
| P7                      | 182         | 10        | DWPE     | 0.07336   |
| P8                      | 173         | 10        | DWPE     | 0.02846   |
| P9                      | 194         | 10        | DWPE     | 0.01974   |
| P10                     | 536         | 12        | DWPE     | 0.02313   |
| P11                     | 108         | 10        | DWPE     | 0.00261   |
| P12                     | 81          | 10        | DWPE     | 0.05396   |
| P13                     | 315         | 10        | DWPE     | 0.04715   |
| P14                     | 379         | 12        | DWPE     | 0.03393   |
| P15                     | 94          | 10        | DWPE     | 0.18486   |

FILE: 7 SOUTH - GRADING & DRAINAGE PLAN

REVISED:

7/26/2024

ISSUED: KCW

CHKD. BY: PC

DRAWN BY: PC

TRIHYDRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729



IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION AND  
WATER QUALITY  
HOOVER BUILDING  
1305 E WALNUT ST. DES MOINES, IA 50319  
(515)281-4246



K. KLOOTWYK (IA-031)  
AML RECLAMATION PROJECT

NORTH - GRADING &  
DRAINAGE PLAN

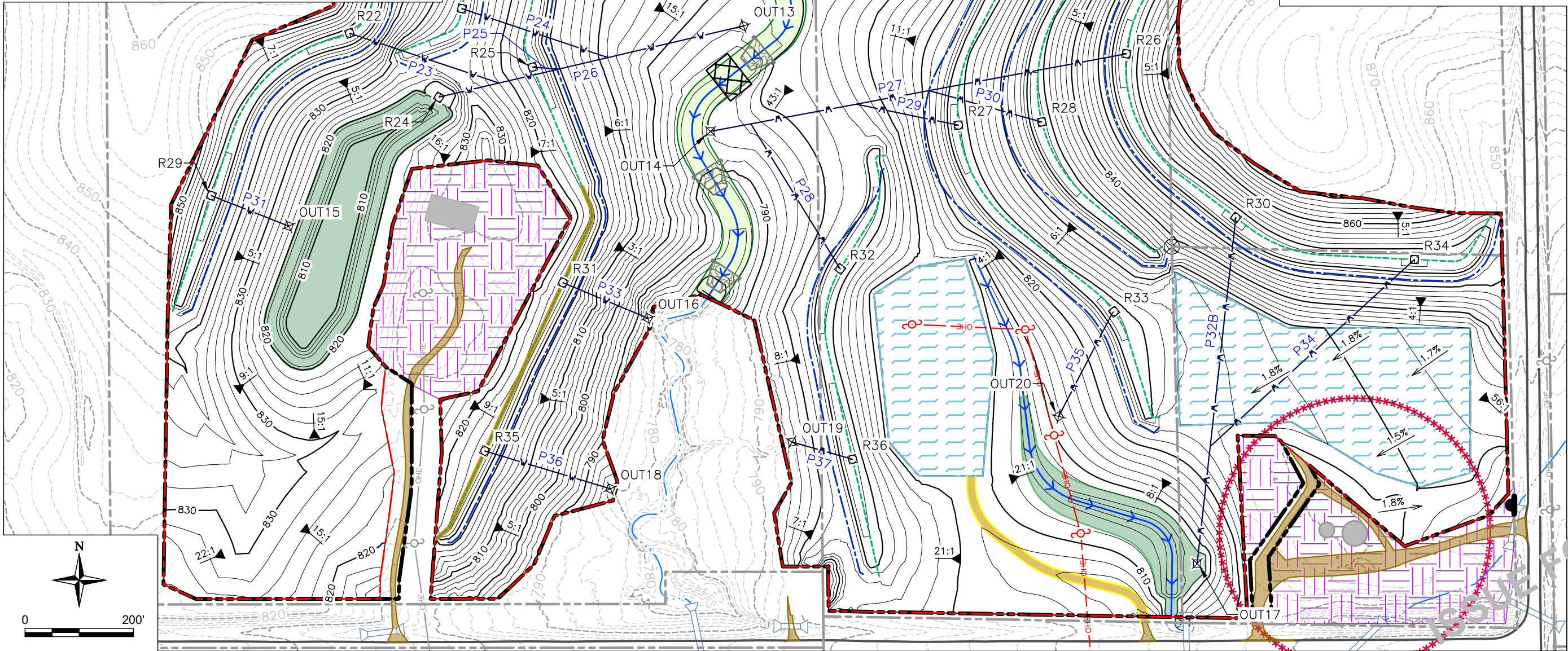


C:\USERS\KIMLISON\DC\ACCDOS\TRIHYDRO CORPORATION\IOWA AML\PROJECT FILES\PROJECTS\214-012\_KLOOTWYK\ADD PLANSETS\2-FINAL\DESIGN\7 SOUTH - GRADING & DRAINAGE PLAN

| SOUTH RISER (R) SUMMARY |           |               |                    |                       |             |
|-------------------------|-----------|---------------|--------------------|-----------------------|-------------|
| ID                      | SIZE (IN) | TYPE          | RIM ELEVATION (FT) | INVERT ELEVATION (FT) | OWNER       |
| R16                     | 10        | HICKENBOTTOM  | 840.69             | 837.19                | WORTHINGTON |
| R17                     | 10        | HICKENBOTTOM  | 823.54             | 820.04                | WORTHINGTON |
| R18                     | 10        | HICKENBOTTOM  | 817.43             | 813.93                | WORTHINGTON |
| R19                     | 10        | HICKENBOTTOM  | 830.23             | 826.73                | BENDER      |
| R20                     | 48        | IA DOT SW-513 | 849.53             | 846.03                | DEVIN       |
| R21                     | 10        | HICKENBOTTOM  | 820.93             | 817.43                | BENDER      |
| R22                     | 10        | HICKENBOTTOM  | 840.65             | 837.15                | BENDER      |
| R23                     | 10        | HICKENBOTTOM  | 824.58             | 821.08                | BENDER      |
| R24                     | 48        | 48" CONCRETE  | 818.05             | 814.55                | BENDER      |
| R25                     | 10        | HICKENBOTTOM  | 816.65             | 813.15                | BENDER      |
| R26                     | 10        | HICKENBOTTOM  | 848.89             | 845.39                | BENDER      |
| R27                     | 10        | HICKENBOTTOM  | 820.94             | 817.44                | BENDER      |
| R28                     | 10        | HICKENBOTTOM  | 830.23             | 826.73                | BENDER      |
| R29                     | 10        | HICKENBOTTOM  | 840.65             | 837.15                | BENDER      |
| R30                     | 10        | HICKENBOTTOM  | 849.26             | 845.76                | DEVIN       |
| R31                     | 10        | HICKENBOTTOM  | 817.54             | 814.04                | BENDER      |
| R32                     | 10        | HICKENBOTTOM  | 801.19             | 797.69                | BENDER      |
| R33                     | 10        | HICKENBOTTOM  | 820.93             | 817.43                | BENDER      |
| R34                     | 10        | HICKENBOTTOM  | 849.26             | 845.76                | DEVIN       |
| R35                     | 10        | HICKENBOTTOM  | 817.54             | 814.04                | BENDER      |
| R36                     | 10        | HICKENBOTTOM  | 801.19             | 797.69                | BENDER      |

| TERRACE DIMENSION SUMMARY                                                          |        |                   |                  |                   |
|------------------------------------------------------------------------------------|--------|-------------------|------------------|-------------------|
| SYMBOL                                                                             | TYPE   | RIDGE HEIGHT [FT] | RIDGE WIDTH [FT] | BOTTOM WIDTH [FT] |
|  | TYPE A | 5                 | 6                | 3                 |
|  | TYPE B | 5                 | 6                | 12                |

| SOUTH PIPES (P) SUMMARY |             |           |          |           |
|-------------------------|-------------|-----------|----------|-----------|
| ID                      | LENGTH (LF) | DIA. (IN) | MATERIAL | SLOPE (%) |
| P16                     | 189         | 10        | DWPE     | 4.39%     |
| P17                     | 593         | 12        | DWPE     | 1.00%     |
| P18                     | 63          | 10        | DWPE     | 10.70%    |
| P19                     | 125         | 10        | DWPE     | 19.04%    |
| P20                     | 448         | 15        | DWPE     | 5.00%     |
| P21                     | 225         | 10        | DWPE     | 15.21%    |
| P22                     | 127         | 10        | DWPE     | 7.89%     |
| P23                     | 291         | 10        | DWPE     | 2.35%     |
| P24                     | 284         | 10        | DWPE     | 2.35%     |
| P25                     | 58          | 10        | DWPE     | 15.14%    |
| P26                     | 576         | 18        | DWPE     | 1.15%     |
| P27                     | 782         | 12        | DWPE     | 2.63%     |
| P28                     | 315         | 10        | DWPE     | 5.69%     |
| P29                     | 207         | 10        | DWPE     | 17.62%    |
| P30                     | 240         | 10        | DWPE     | 4.63%     |
| P31                     | 155         | 10        | DWPE     | 13.99%    |
| P32                     | 643         | 10        | DWPE     | 0.01%     |
| P33                     | 173         | 10        | DWPE     | 18.53%    |
| P34                     | 512         | 12        | DWPE     | 5.97%     |
| P35                     | 215         | 10        | DWPE     | 0.01%     |
| P36                     | 243         | 10        | DWPE     | 8.66%     |
| P37                     | 122         | 10        | DWPE     | 3.70%     |



FILE: 7 SOUTH - GRADING & DRAINAGE PLAN

REVISED:

7/26/2024

ISSUED:

CHKD. BY: KCW

DRAWN BY: PC

DESIGN BY: PC

IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION AND  
WATER QUALITY  
HOOVER BUILDING  
1305 E WALNUT ST. DES MOINES, IA 50319  
(515)281-4246



KLOOTWYK (IA-031)  
AML RECLAMATION PROJECT

SOUTH - GRADING &  
DRAINAGE PLAN

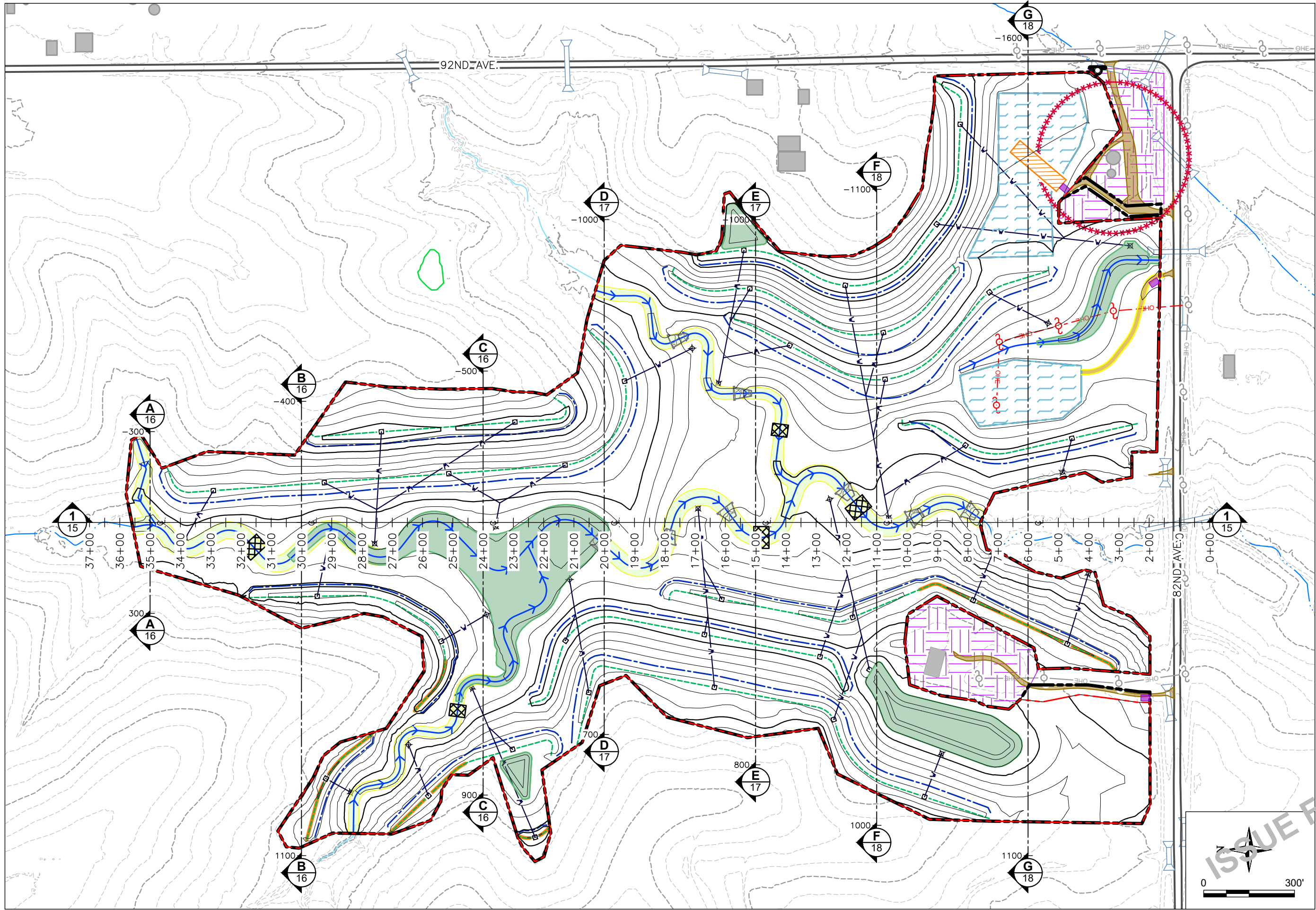
SHEET  
7 OF 22

TRIHYDRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729





C:\USERS\KILIKSON\DC\ACCDOS\TRIHYDRO CORPORATION\IOWA AML\PROJECT FILES\PROJECTS\214-012\_KLOOTWYK\CADD\PLANS\2--FINAL\DESIGN\8 EARTHWORK REFERENCE SHEET



FILE: 8 EARTHWORK REFERENCE SHEET

REVISED:

7/26/2024

CHKD. BY: KCW

DRAWN BY: PC

DESIGN BY: PC

IOWA DEPARTMENT OF AGRICULTURE  
AND LAND STEWARDSHIP  
DIVISION OF SOIL CONSERVATION AND  
WATER QUALITY  
HOOVER BUILDING  
1305 E WALNUT ST. DES MOINES, IA 50319  
(515)281-4246



FIGURE 1  
KLOOTWYK REHABILITATION PROJECT  
EXTRA SERVICES  
ADDITIONAL SURVEY

SHEET  
8 OF 22

TRIHYDRO CORPORATION  
1252 COMMERCE DRIVE  
LARAMIE, WYOMING 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729

