

WATER PERMIT NO. 8544-3

Name of Applicant: **Ducks Unlimited**

Address: **2525 River Rd, Bismarck ND 58503**

Phone: **701-355-3500**

Amount of Water Claimed: **100 AF**

Total Acres: **NA**

Source of Water Supply: **runoff**

Water to be used for: **fish & wildlife propagation**

County: **Clay**

Type of Waste Disposal System:

Location: **5 miles north of Vermillion**

PRIORITY Date Received: **8-20-21**

Application/License Fee: **\$ 700**

Corrected Application Received: **8-30-21**

Period of Annual Use: **January 1 – December 31**

Remarks:

Area of the project: **S 1/2 NW 1/4, SE 1/4 NE 1/4,
N 1/2 SW 1/4, W 1/2 SE 1/4 Sec 20-T93N-R51W**

Land to be Irrigated: **NA**

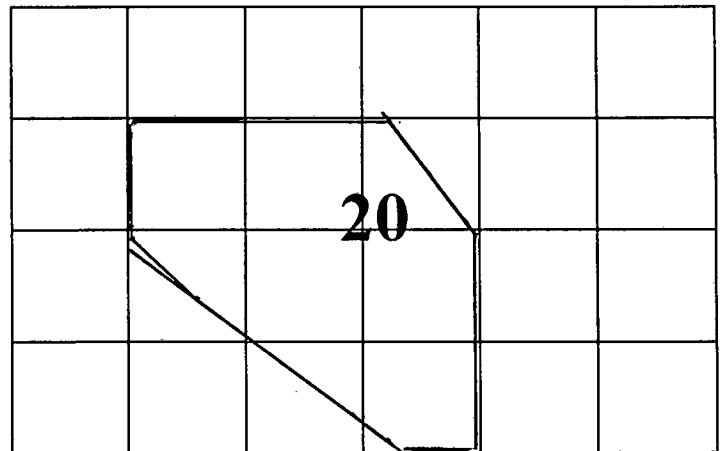
Depth of Well: **NA**

Well Driller:

Remarks:

Type of Map: **aerial**

Prepared by:



Reviewed and the Number Assigned on: **8-30-21**

By: **Karen Schlaak**

Notice of Hearing - date to intervene: _____

**SOUTH DAKOTA
WATER PERMIT NO. 8544-3**

Date of first receipt of application August 20, 2021.

The Chief Engineer, on behalf of the Water Management Board, issues Water Permit No. 8544-3 to Ducks Unlimited, 2525 River Rd, Bismarck ND 58503 authorizing the construction of the water use system and the placing of water to beneficial use subject to the following limitations, conditions and qualifications:

1. Water Permit No. 8544-3 authorizes impoundment of 100 acre-feet of water of surface water runoff by restoring several drained wetland areas within an approximately 250 acre area located in the S 1/2 NW 1/4, SW 1/4 NE 1/4, SE 1/4 SW 1/4, N 1/2 SW 1/4, W 1/2 SE 1/4 Section 20-T93N-R51W. The site contains historic floodplain wetlands that have been hydrologically-modified via constructed drainage ditches. The previously drained wetland areas are to be restored using linear ditch fills, embankments, excavations, and other enhancements to increase water retention for fish and wildlife propagation purposes. This site is located approximately 5 miles north of Vermillion SD.
2. The water appropriated shall be used for the purpose of fish and wildlife propagation and may not exceed the amount of water needed for beneficial use.
3. The water is to be used during the following described annual period: January 1 – December 31.
4. The date from which applicant may claim right is August 20, 2021.
5. The date of approval of Permit No. 8544-3 is November 22, 2021.
6. One-fifth of the construction is to be completed on or before May 22, 2024.
7. All construction is to be completed on or before November 22, 2026.
8. Water is to be put to beneficial use on or before November 22, 2030.
9. Water rights obtained in compliance with the laws of the State of South Dakota may not be unlawfully impaired by this appropriation.

QUALIFICATIONS

1. Water Permit No. 8544-3 authorizes storage of up to 100 acre-feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
3. The permit holder shall submit plans and specifications for the south wetland portion of this project pursuant to Administrative Rules of South Dakota Chapter 74:02:08 to the Chief Engineer of the Water Rights Program, SD DANR. Construction of the south wetland portion of the project may not begin without approval of the plans and specifications by the Chief Engineer.

WATER MANAGEMENT BOARD

By: Eric Gronlund
Eric Gronlund, Chief Engineer
Water Rights Program
Department of Agriculture and Natural Resources

1/20/2022
date



Mail to: DENR - Water Rights 523 E Capitol Ave Pierre, SD 57501-3182 ph. (605) 773-3352	No. <u>8544-3</u>	(office use only) Hydrologic Unit <u>10170102</u>
	Basin <u>Vermillion R.</u>	
	Newspaper <u>Plain Talk</u>	
	<u>Press & Dakotan</u>	

RECEIVED

AUG 20 2021

WATER RIGHTS
PROGRAM

Application For Permit To Appropriate Water Within The State Of South Dakota

Check use(s) of water:

☐ Municipal	☐ Water Distribution System	☐ Recreational	☐ Institutional
☐ Rural Water System	☐ Commercial	☒ Fish & Wildlife	☐ Geothermal
☐ Domestic (over 18 gpm)	☐ Industrial	☐ Other _____	

Type of Application:
(check one)

☒ New	☐ Vested Right (Use predates Mar 2, 1955)	☐ Future Use Reservation
☐ Place to Beneficial Use Water Reserved by Future Use Permit No. _____		
☐ Amendment/Correction to Permit No. _____		

Description of amendment/correction: (i.e. change diversion point(s), add diversion point(s), change use, etc.)

- Name to Appear on Water Permit Ducks Unlimited
Mailing Address 2525 River Rd. Bismarck ND 58503
(Address) (City) (State) (Zip Code)
Phone 701-355-3500 Mobile _____ Email juwilliams@ducks.org
- Amount of water claimed _____ *CFS or _____ **GPM and 100 ***AF or _____ Gallons
Flow rate and volume are both required. (*Cubic Feet per Second) (**Gallons per Minute) (***Acre Feet - storage capacity of dam/dugout or annual use)
- Source of water supply surface runoff (S 1/4 NW 1/4, SW 1/4 NE 1/4, N 1/2 SW 1/4, W 1/2 SE 1/4, SE 1/4 SW 1/4)
- Location of point of diversion Section 20, T 93 N, R 51 W County Clay
(example - 3 wells in SW 1/4 NE 1/4 section 12-T104N-R53W)
If not a public water supply (e.g. municipal), will water be used outside of the area described above? ☐ Yes ☒ No
If "Yes," where will water be used? _____
(example - NW 1/4 section 12-T104N-R53W)
- County or counties where water will be used Clay
- Annual period during which water is to be used Jan 1 - Dec 31
- Give a description of the project. When available include any preliminary engineering report or other reports or information that will help explain the project. (Attach sheet if more space is needed)

Ducks Unlimited Wetland Project - See attached.I, Justin Williams manager, the applicant, certify under
Name of Person Title (if applicable)

penalty of perjury that I have read this application, examined the attached map, and that the matters stated are true. I further certify, if acting on behalf of an entity or individual other than myself, that I am authorized to submit this application.

Supplemental Information

(type or print)

1. Well Information

(check one or both as applicable) ☐ Drilling new well(s) ☐ Using existing well(s)

a) If new wells, how many ____ Have test holes been drilled ☐ Yes ☐ No Drilled by ____
(if yes, please provide copies of logs)

b) If existing wells, how many ____ Provide copy of log(s), if available. Drilled by ____

For either Existing or Proposed Wells:

c) Well Depth (required) ____ Depth to Top of Water Bearing Material ____ Depth to Water from Surface ____

d) Distance to nearest domestic well on applicant's property ____ Property owned by others ____

2. Wastewater Disposal System Information

a) Type of System (i.e. septic tank, drain field) ____

b) System Capacity (gallons) ____ Year Constructed ____

c) Connected to the City of ____ Sanitary System

3. Dugout Information

a) Surface Dimensions ____ Depth ____

b) Depth to water (ground surface to water level) ____

4. Water Storage Dams

If the proposed water use system contains one or more storage dams, please furnish the information requested below for each dam. The locations of the dams need to be shown on the map submitted with the application.

a) If a private engineering firm or government agency was involved in the design of this dam, please give their name and address:

Ducks Unlimited
2121 N. Webb Rd.
Grand Island NE 68803

b) Freeboard ____

c) Crest Width ____

Crest Length ____

d) Height ____

e) Primary Outlet Capacity ____

If pipe, diameter ____

f) Secondary Spillway Capacity ____

Spillway Width ____

g) X & Y Slope (e.g. 3 to 1 is a typical slope)

Upstream ____

Downstream ____

h) Surface Area of Impoundment ____

i) Storage ____ Acre Feet

j) Drainage Area Above Dam ____ Acres

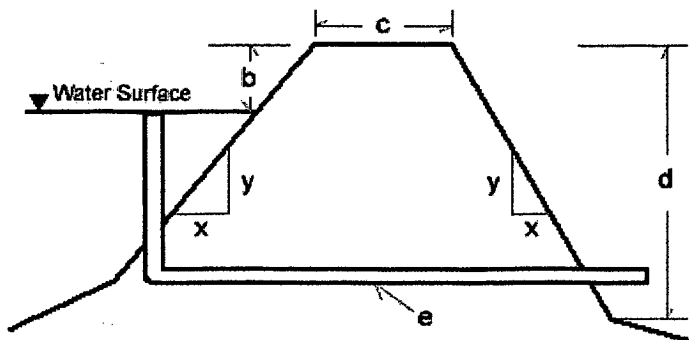


Table 1

Ducks Unlimited Project

Feature	Type	surface area (acres)	volume (AF)	notes
South Wetland	construct multiple embankments, ditch fills, and excavations	86.28	89.64	store water to elevation 1143.3, see Exhibit A
Excavation Area 1	remove drainage culvert, excavation	2.06	0.95	numbers based on addition excavation, not existing basin
Excavation Area 2	excavation only	7.7	7.07	numbers based on addition excavation, not existing basin



93N 51W
Section: 18

93N 51W
Section: 17

93N 51W
Section: 16

93N 51W
Section: 19

93N 51W
Section: 20

93N 51W
Section: 21

93N 51W
Section: 30

93N 51W
Section: 29

93N 51W
Section: 28





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WATER RIGHTS
PROGRAM

Great Plains Regional Office
2525 River Road
Bismarck, ND 58503-9011
(701) 355-3500; fax (701) 355-3575
www.ducks.org

August 9, 2021

To: South Dakota DENR
Water Rights
523 Capitol Ave
Pierre, SD 57501

RE: Ducks Unlimited Vermillion Project-Water Rights Application

Greetings,

Please see the enclosed information regarding the Ducks Unlimited Vermillion Project (DU Project# SD-560-2). We are requesting water rights for purposes of wetland restorations (wildlife habitat). We are requesting a total of 100 AF for beneficial wildlife habitat.

Ducks Unlimited (DU) is proposing to restore several drained wetland areas on land owned by Wetlands America Trust (a Ducks Unlimited subsidiary). The site contains historic floodplain wetlands that have been hydrologically modified via constructed drainage ditches. The approximately 250-acre property is located approximately 5 miles North of Vermillion in Clay County (Section 20, Township 93 North, Range 51 West).

The previously drained wetland areas would be restored using linear ditch fills, embankments, excavations, and other enhancements aimed at increasing water retention and other ecosystem benefits such as wildlife habitat. A new inlet structure would allow water to enter the south wetland area from the Old Vermillion Channel. The property would be planted with native plant species. Additional details for proposed improvements are provided in the attached forms.

Please call or email with any questions,
Thank You,

Justin Williams
Manager of Conservation Programs-Mitigation
701-202-7132
Juwilliams@ducks.org

Enclosures:

1. Application for Permit to Appropriate Water Within the State of South Dakota
2. Table 1-Wetland Area and Volume calculations
3. Preliminary Plan Set
4. Exhibit A-Map



DUCKS UNLIMITED

DUCKS UNLIMITED

PROJECT

SDILF-VERMILLION RIVER

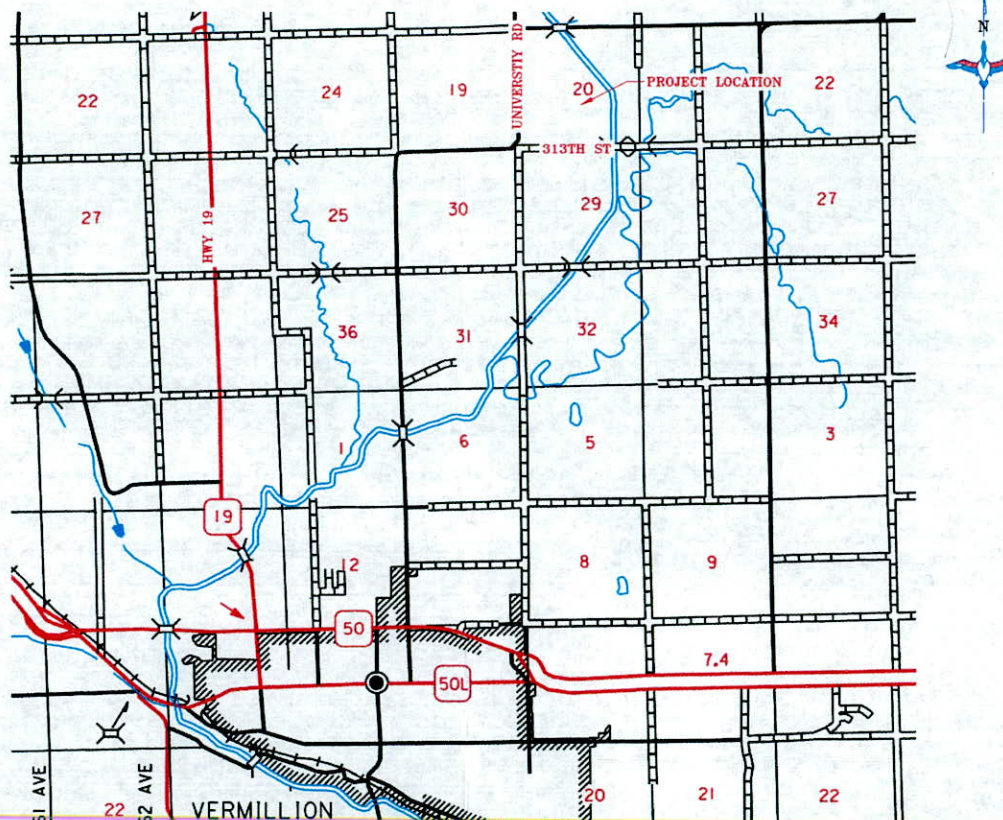
LOCATED IN SECTION 20,
TOWNSHIP 93N, RANGE 51W, 5TH P.M.
CLAY COUNTY, SOUTH DAKOTA

ESTIMATED QUANTITIES

MOBILIZATION	1 L.S.
SITE PREPARATION	1 L.S.
TREE REMOVAL	11 AC.
CULVERT REMOVAL	4 EA.
EXCAVATION*	
AREA 1	1,540 C.Y.-P**
AREA 2	11,420 C.Y.-P**
AREA 3	7,510 C.Y.-P**
AREA 4	2,240 C.Y.-P**
AREA 5	4,860 C.Y.-P**
TOTAL	27,570 C.Y.-P**
EMBANKMENTS	
EMBANKMENT NORTH	520 C.Y.-P**
EMBANKMENT SOUTH	1,430 C.Y.-P**
EMBANKMENT WEST	790 C.Y.-P**
LEVEE RESHAPING	580 C.Y.-P**
FLOW-OVER LEVEE NORTH	4,820 C.Y.-P**
FLOW-OVER LEVEE SOUTH	4,730 C.Y.-P**
TOTAL	12,870 C.Y.-P**
UNCOMPACTED FILL	
TERRACE NORTH	7,810 C.Y.-P**
TERRACE SOUTH	9,560 C.Y.-P**
DITCH FILL WEST	240 C.Y.-P**
DITCH FILL CENTER	1,230 C.Y.-P**
DITCH FILL EAST	1,130 C.Y.-P**
SPOIL EXCAVATION AREA 1	1,300 C.Y.-P**
SPOIL EXCAVATION AREA 2	3,610 C.Y.-P**
TOTAL	24,880 C.Y.-P**
CONSTRUCTED TOPOGRAPHY	
MAIN CHANNEL	5,218 L.F.-A***
CROSS DITCH	408 L.F.-A***
TOTAL	5,626 L.F.-A***
WATER	1 M-GAL***
36"Ø ALUMINUM CMP	140 L.F.
24"Ø ALUMINUM CMP	75 L.F.
36"Ø ALUMINUM FLAP-GATE	2 EA.
24"Ø ALUMINUM FLAP-GATE	1 EA.
DU CLASS III RIPRAP	200 C.Y.-P**

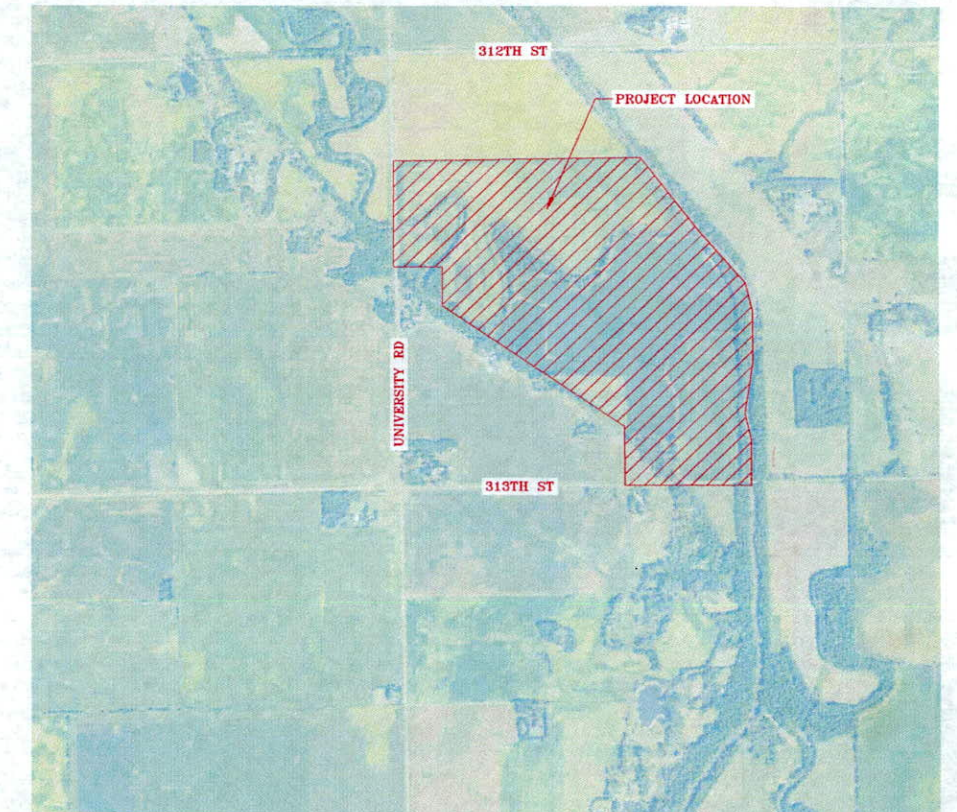
*QUANTITIES ARE FOR REFERENCE ONLY, SPOIL OF MATERIAL NOT USED FOR FILL SHALL BE CONSIDERED INCIDENTAL TO "SPOIL BID ITEMS"
**THE UNIT (CY-P) CUBIC YARDS-PLAN MEANS PAYMENT WILL BE BASED ON THE PLAN QUANTITY LISTED ABOVE.
***PAYMENT WILL BE BASED ON ACTUAL QUANTITY USED OR INSTALLED.

UTILITIES NOTE: BEFORE THE START OF CONSTRUCTION, THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR/CONTRACTOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "DIGGER'S HOTLINE" AT (800) 781-7474 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.



VICINITY MAP
NOT TO SCALE

ALL WRITTEN SCALES ARE ACCURATE ON 24x36 INCH SHEETS



LOCATION MAP
NOT TO SCALE

SPECIFICATIONS

- 101 GENERAL CONDITIONS
- 102 SUPPLEMENTAL CONDITIONS
- 201 MOBILIZATION
- 202 SITE PREPARATION
- 203 EXCAVATION
- 204 EMBANKMENT CONSTRUCTION
- 205 WATER
- 206 CONSTRUCTED TOPOGRAPHY
- 302 STRUCTURE AND CULVERT APPURTENANCES
- 303 CULVERT AND PIPE INSTALLATION
- 305 RIPRAP, REVETMENT & AGGREGATE PLACEMENT
- 311 REMOVAL OF EXISTING CULVERTS AND STRUCTURES
- SP405 UNCOMPACTED FILL

PLAN INDEX

- 1 LOCATION & VICINITY MAPS
- 2 OVERALL PLAN
- 3 EMBANKMENTS
- 4 FLOW-OVER LEVEES
- 5 TERRACES

PLAN INDEX CONT.

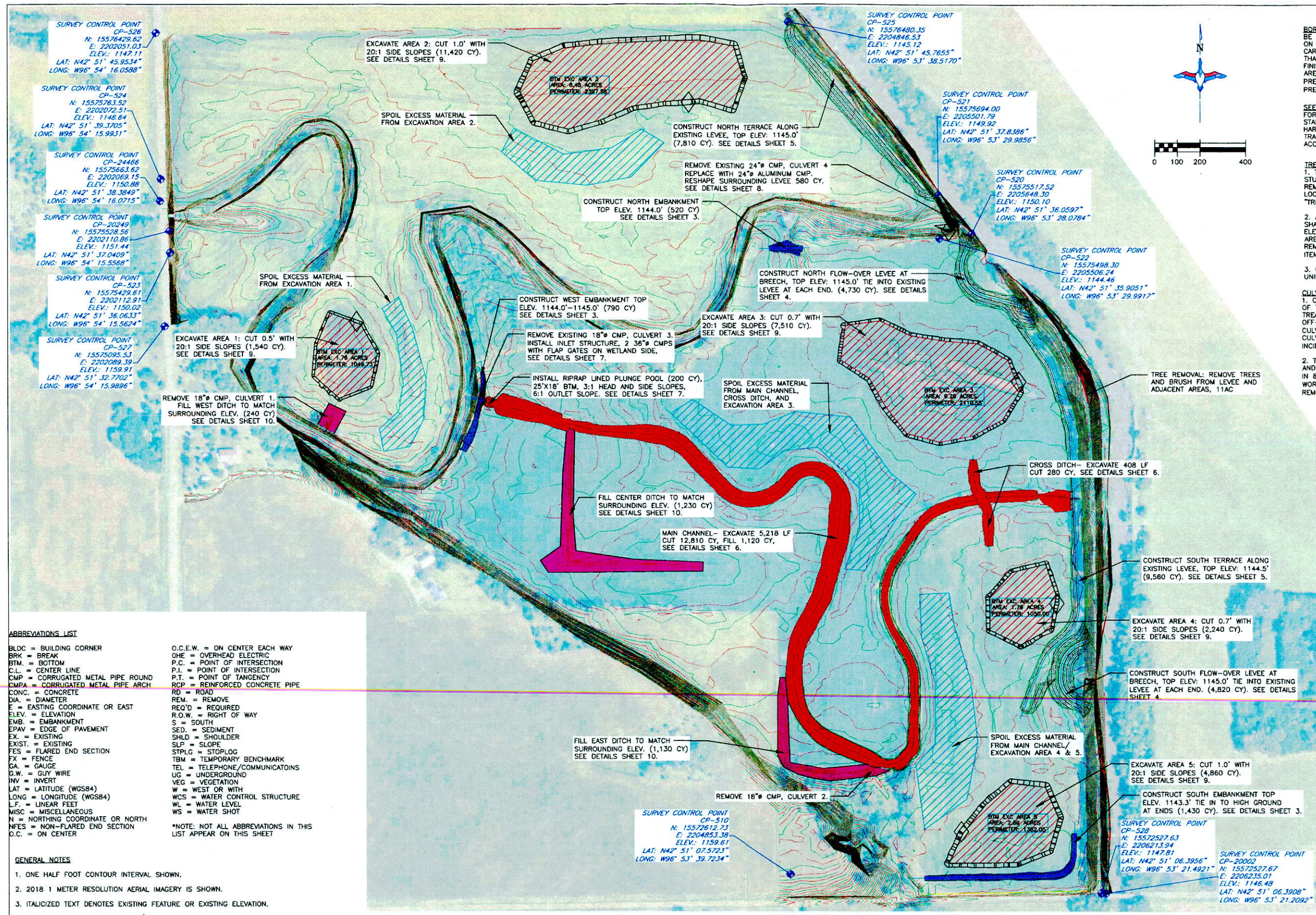
- 6 CHANNEL EXCAVATIONS
- 7 INLET STRUCTURE
- 8 CULVERT 4/LEVEE RESHAPING
- 9 EXCAVATION AREAS
- 10 DITCH FILLS

DU SENIOR REGIONAL ENGINEER:
MITCH MESSMER, P.E.
2121 N WEBB RD., SUITE 309
GRAND ISLAND, NE 68803
(308) 383-3086

DU REGIONAL ENGINEER:
CASEY CAMPBELL
2121 N WEBB RD., SUITE 309
GRAND ISLAND, NE 68803
(308) 385-8832

PRELIMINARY NOT FOR CONSTRUCTION

	PROJECT NO. SD-560-2	DESIGNED BY: CDC
	SDILF-VERMILLION RIVER	DRAWN BY: CDC
GREAT PLAINS REGIONAL OFFICE	LOCATION & VICINITY MAPS	SURVEYED BY: STOCK
DATE: 6/18/2021	SHEET NO. 1 OF 10	CHECKED BY: MIM
		APPROVED BY:



ABBREVIATIONS LIST

BLCK = BUILDING CORNER
BRK = BREAK
BTM = BOTTOM
C.L. = CENTER LINE
CMP = CORRUGATED METAL PIPE ROUND
CMPA = CORRUGATED METAL PIPE ARCH
CONC. = CONCRETE
DIA. = DIAMETER
E = EASTING COORDINATE OR EAST
ELEV. = ELEVATION
EMB. = EMBANKMENT
EPAV = EDGE OF PAVEMENT
EX. = EXISTING
EXIST. = EXISTING
FES = FLARED END SECTION
FX = FENCE
GA. = GAUGE
G.W. = GUY WIRE
INV. = INVERT
LAT = LATITUDE (WGS84)
LONG. = LONGITUDE (WGS84)
L.F. = LINEAR FEET
MISC. = MISCELLANEOUS
N = NORTHING COORDINATE OR NORTH
NFES = NON-FLARED END SECTION
O.C. = ON CENTER

O.C.E.W. = ON CENTER EACH WAY
OHE = OVERHEAD ELECTRIC
P.C. = POINT OF INTERSECTION
P.I. = POINT OF INTERSECTION
P.T. = POINT OF TANGENCY
RCP = REINFORCED CONCRETE PIPE
RD = ROAD
REM. = REMOVE
REQ'D = REQUIRED
R.O.W. = RIGHT OF WAY
S = SOUTH
SED. = SEDIMENT
SHLD = SHOULDER
SLP = SLOPE
STPLG = STOPLOG
TBM = TEMPORARY BENCHMARK
TEL. = TELEPHONE/COMMUNICATIONS
UG = UNDERGROUND
VEG. = VEGETATION
W = WEST OR WITH
WCS = WATER CONTROL STRUCTURE
WL = WATER LEVEL
WS = WATER SHOT

*NOTE: NOT ALL ABBREVIATIONS IN THIS LIST APPEAR ON THIS SHEET

GENERAL NOTES

- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
- 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
- ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
- SPOT ELEVATIONS INDICATED BY $\oplus$ XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

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HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION-- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD88. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.

OVERALL PLAN VIEW
SCALE 1" = ###'

BORROW AREA NOTE: SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

TREE REMOVAL NOTES:

1. TREE REMOVAL INCLUDES THE REMOVAL OF ROOT-BALLS, STUMPS, FALLEN TREES, AND BRUSH. ALL PRODUCTS OF TREE REMOVAL SHALL BE BURNED AND BURIED IN THE DESIGNATED LOCATIONS. THIS WORK IS CONSIDERED INCIDENTAL TO BID ITEM "TREE REMOVAL."

2. ALL HOLES RESULTING FROM THE REMOVAL OF ROOT-BALLS SHALL BE REFILLED TO MATCH THE SURROUNDING GROUND ELEVATION AND COMPACTED. ADDITIONAL SOIL FROM EXCAVATION AREAS MAY BE REQUIRED TO FILL HOLES LEFT FROM TREE REMOVAL. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "TREE REMOVAL."

3. ONCE TREE REMOVAL IS COMPLETE, THE LEVEE SHALL HAVE A UNIFORM SURFACE FREE OF RUTS AND WOODY DEBRIS.

CULVERT REMOVAL NOTES:

1. CULVERTS REMOVED FROM THE SITE SHALL BECOME PROPERTY OF THE CONTRACTOR. THIS INCLUDES ANY CULVERT END TREATMENT SUCH AS FLAP-GATES AND FLARED END SECTIONS. OFF-SITE DISPOSAL OF THE MATERIALS GENERATED FROM CULVERT REMOVAL IS THE CONTRACTOR'S RESPONSIBILITY. CULVERT REMOVAL AND DISPOSAL SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "CULVERT REMOVAL."

2. TRENCHES CREATED DURING THE REMOVAL OF CULVERTS 1 AND 2 SHALL BE FILLED WITH SOIL FROM THE EXCAVATION AREAS IN 8" LIFTS AND COMPACTED PRIOR TO SUBSEQUENT LIFTS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "CULVERT REMOVAL."

TREE REMOVAL: REMOVE TREES AND BRUSH FROM LEVEE AND ADJACENT AREAS, 11AC

CONSTRUCT SOUTH TERRACE ALONG EXISTING LEVEE, TOP ELEV. 1144.5' (9,560 CY). SEE DETAILS SHEET 5.

EXCAVATE AREA 4: CUT 0.7' WITH 20:1 SIDE SLOPES (2,240 CY). SEE DETAILS SHEET 9.

CONSTRUCT SOUTH FLOW-OVER LEVEE AT BREECH, TOP ELEV. 1145.0' TIE INTO EXISTING LEVEE AT EACH END. (4,820 CY). SEE DETAILS SHEET 4.

EXCAVATE AREA 5: CUT 1.0' WITH 20:1 SIDE SLOPES (4,860 CY). SEE DETAILS SHEET 9.

CONSTRUCT SOUTH EMBANKMENT TOP ELEV. 1143.3' TIE IN TO HIGH GROUND AT ENDS (1,430 CY). SEE DETAILS SHEET 3.

SURVEY CONTROL POINT CP-520

N: 15572527.63

E: 2206213.94

ELEV.: 1147.81

LAT: N42° 51' 06.3956"

LONG: W96° 53' 21.4921"

SURVEY CONTROL POINT CP-20002

N: 15572527.67

E: 2206213.01

ELEV.: 1146.48

LAT: N42° 51' 06.3908"

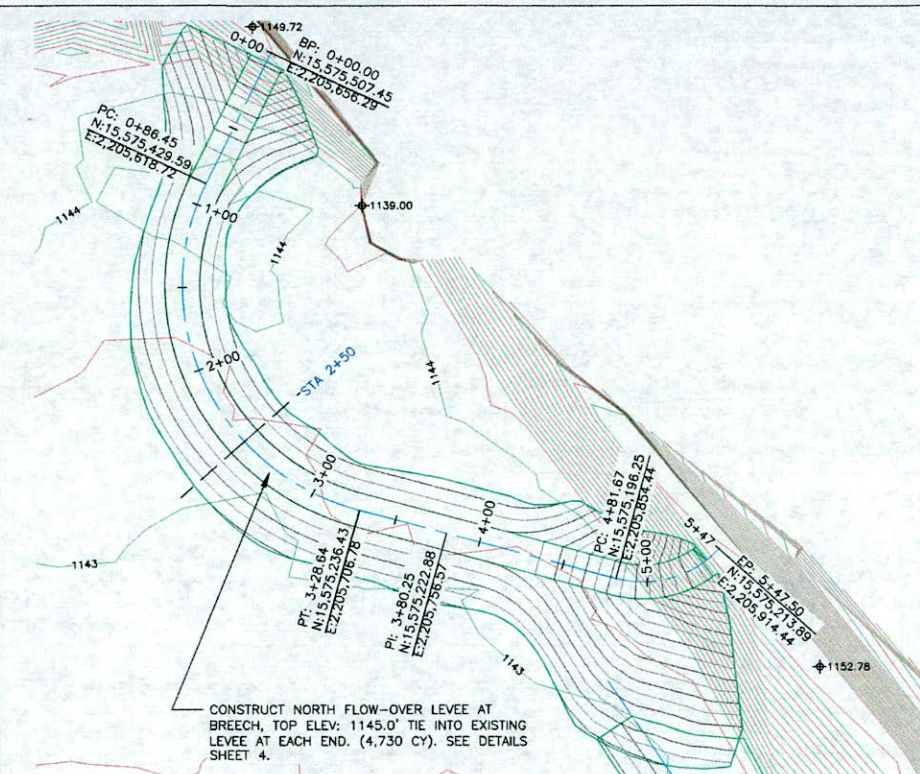
LONG: W96° 53' 21.2092"

PRELIMINARY NOT FOR CONSTRUCTION

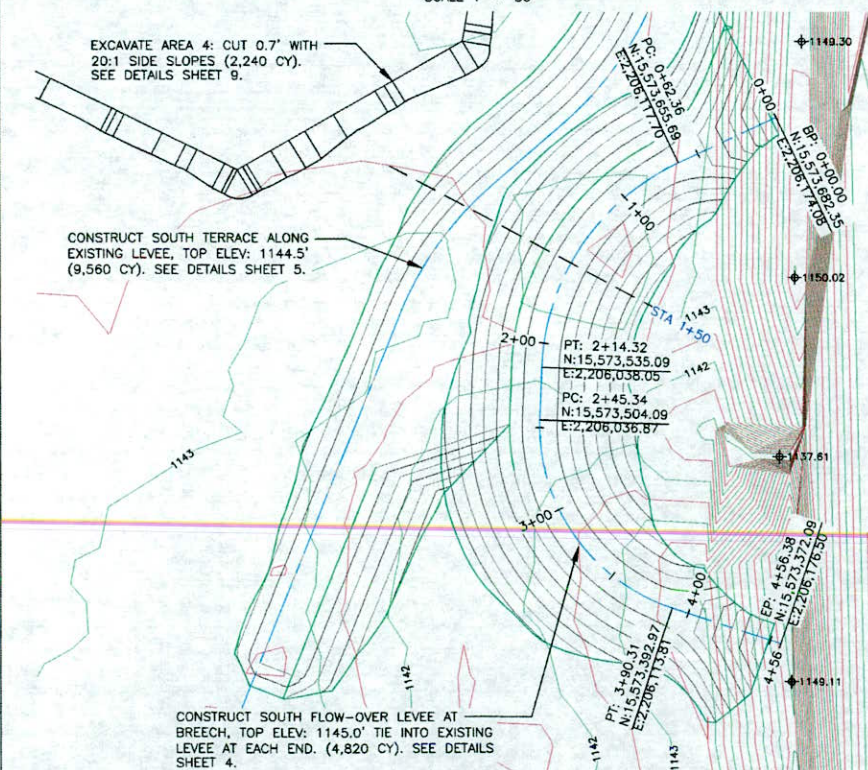
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PROJECT NO.	SD-560-2	DESIGNED BY:	CDC
	SDILF-VERMILLION RIVER	DRAWN BY:	CDC
	OVERALL PLAN	SURVEYED BY:	STOCK
		CHECKED BY:	MMW
DATE:	6/18/2021	APPROVED BY:	
SHEET NO.	2 OF 10	APPROVED BY:	



NORTH FLOW-OVER EMBANKMENT PLAN VIEW
SCALE 1" = 50'

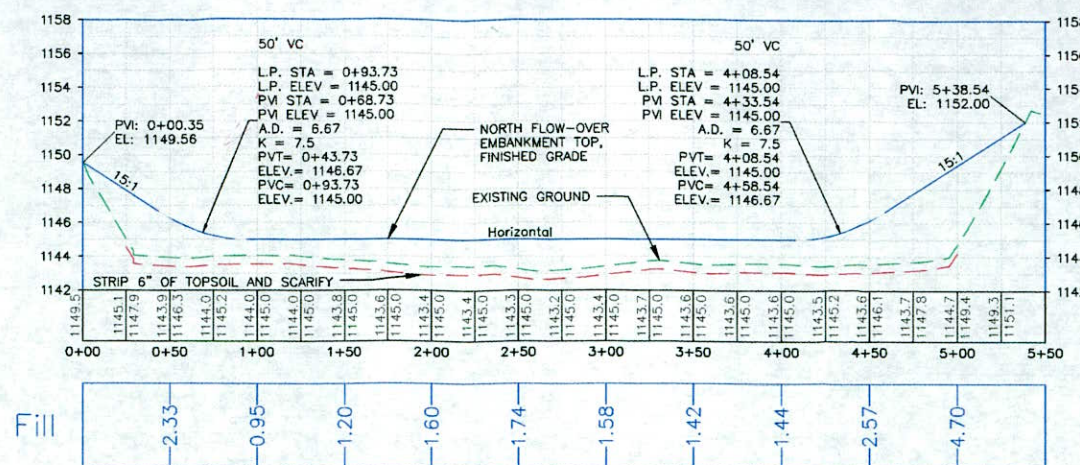


SOUTH FLOW-OVER EMBANKMENT PLAN VIEW
SCALE 1" = 50'

GENERAL NOTES

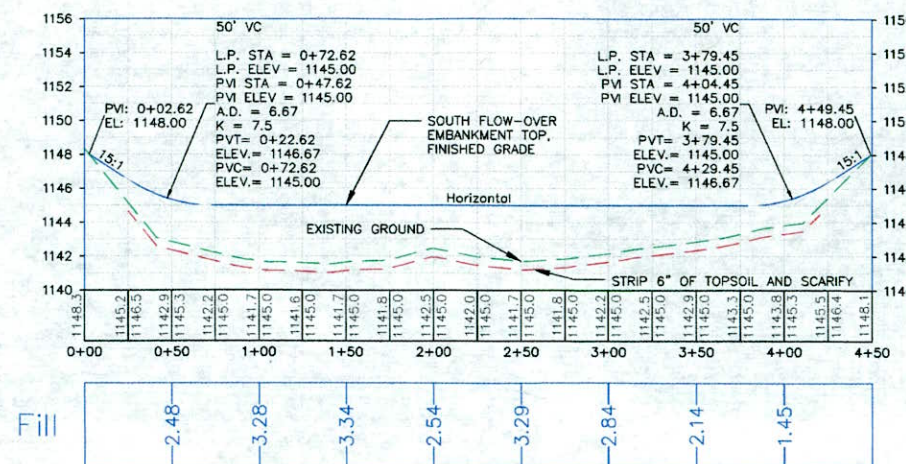
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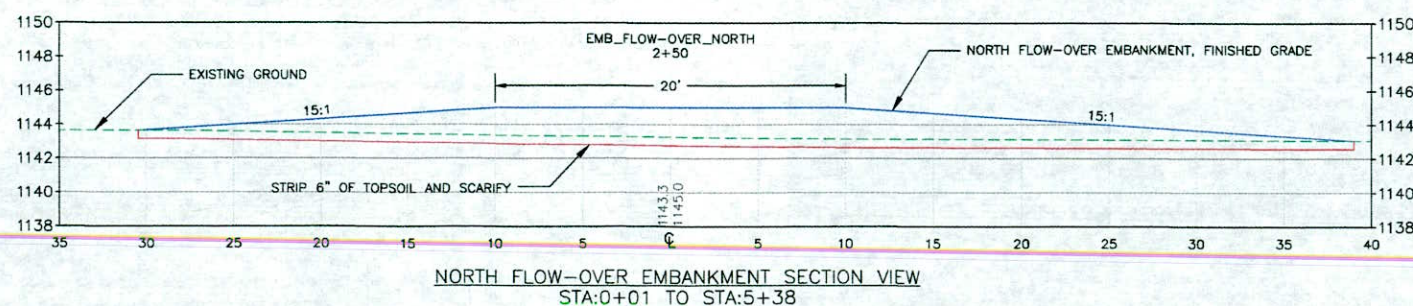
NORTH FLOW-OVER EMBANKMENT PROFILE VIEW

HORIZONTAL SCALE: 1" = 50'
VERTICAL EXAGGERATION: 10:1



SOUTH FLOW-OVER EMBANKMENT PROFILE VIEW

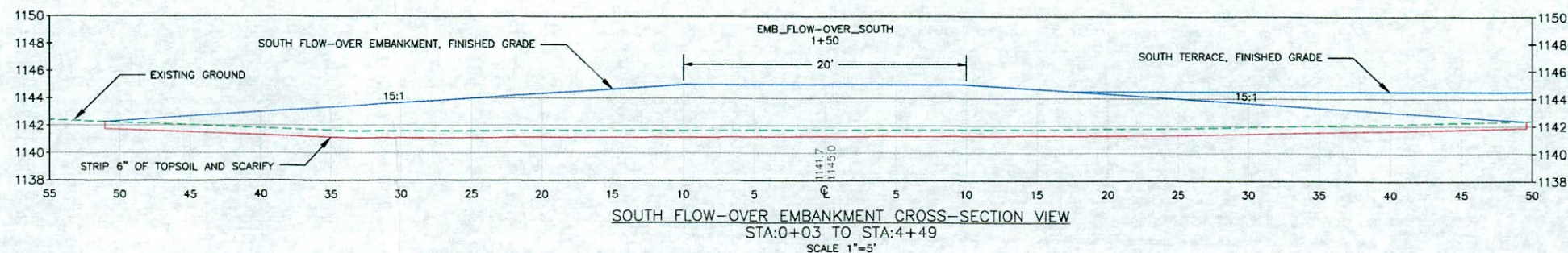
HORIZONTAL SCALE: 1" = 50'
VERTICAL EXAGGERATION: 10:1



NORTH FLOW-OVER EMBANKMENT SECTION VIEW

STA: 0+01 TO STA: 5+38

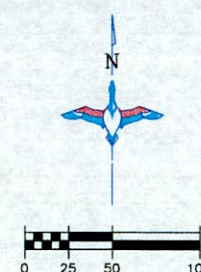
SCALE 1" = 5'



SOUTH FLOW-OVER EMBANKMENT CROSS-SECTION VIEW

STA: 0+03 TO STA: 4+49

SCALE 1" = 5'



BORROW AREA NOTE: SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

FLOW-OVER LEVEE CONSTRUCTION NOTES:

1. FLOW-OVER LEVEE CONSTRUCTION SHALL BE FROM COMPACTED EARTHEN MATERIAL CONTAINING MINIMAL ORGANIC MATERIAL AND SHALL COMPLY WITH SPECIFICATION SECTION 204 "EMBANKMENT CONSTRUCTION."

2. BEFORE CONSTRUCTING FLOW-OVER LEVEES, AREA MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. STRIPPING AND STOCKPILING OF 6" OF TOP SOIL IS ALSO REQUIRED. THE SOIL SHALL BE RESPREAD OVER THE SIDE SLOPES OF THE FLOW-OVER LEVEES AFTER FINISHED GRADES HAVE BEEN ACHIEVED. THIS WILL BE CONSIDERED INCIDENTAL TO "FLOW-OVER LEVEE" BID ITEMS.

3. BEFORE MATERIAL FOR FLOW-OVER LEVEES IS TAKEN FROM THE EXCAVATION AREAS, AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THE TOP 4" OF ANY EXCAVATION AREA MAY NOT BE USED FOR THE CONSTRUCTION OF FLOW-OVER LEVEES.

4. FLOW-OVER LEVEE FILL SHALL CONTAIN MINIMAL ORGANIC MATERIAL AND SHALL BE PLACED IN LIFTS OF NO MORE THAN 8" AND COMPACTED PRIOR TO PLACING SUBSEQUENT LIFTS.

5. HAUL ROUTES SHALL BE KEPT TO A MINIMUM TO AVOID UNNECESSARY SOIL AND VEGETATION DISTURBANCE. ALL HAUL ROUTES SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK AFTER PROJECT COMPLETION. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION."

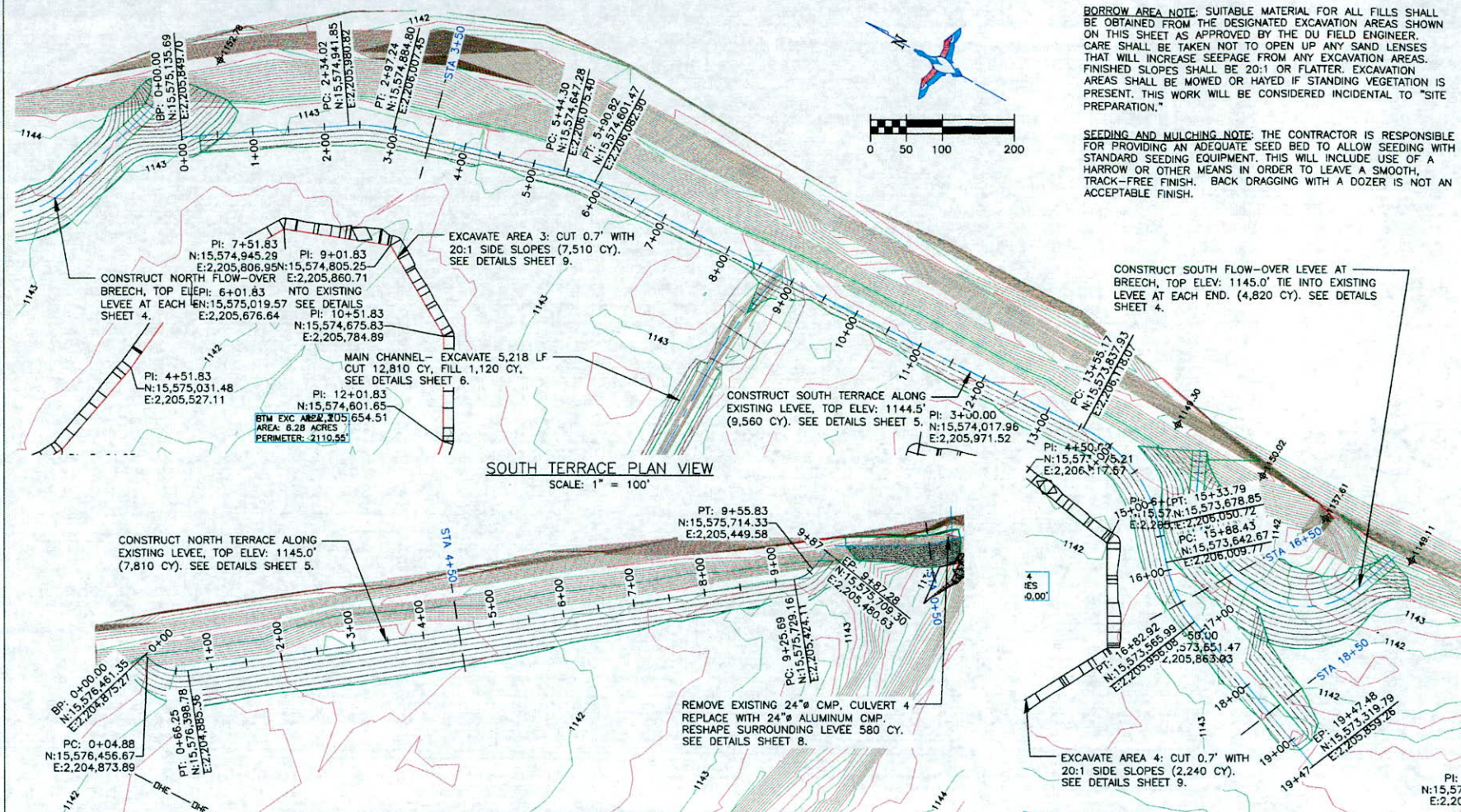
NORTH FLOW-OVER EMBANKMENT PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,575,507.4475	2,205,656.2944		
2+52.52	15,575,280.0257	2,205,546.5340	252.52'	S25°45'48"W
3+80.25	15,575,222.8785	2,205,556.5740	217.68'	S74°46'46"E
5+18.39	15,575,186.6122	2,205,889.8681	138.14'	S74°46'46"E
5+47.50	15,575,213.8929	2,205,914.4419	36.72'	N42°00'43"E

SOUTH FLOW-OVER EMBANKMENT PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,573,682.3505	2,206,174.0802		
1+46.90	15,573,619.5607	2,206,041.2758	146.90'	S64°41'43"W
3+29.84	15,573,419.6581	2,206,033.6455	200.05'	S2°11'09"W
4+56.38	15,573,372.0946	2,206,176.5016	150.57'	S71°35'06"E

PRELIMINARY NOT FOR CONSTRUCTION

K:\Land Projects SD\SD-560-2 Vermillion\Final\SD-560-2 Vermillion4.dwg

	PROJECT NO. SD-560-2	DESIGNED BY: CDC
	SDIF-VERMILLION RIVER	DRAWN BY: CDC
GREAT PLAINS REGIONAL OFFICE DATE: 6/18/2021	SHEET NO. 4 OF 10	SURVEYED BY: STOCK
	APPROVED BY:	CHECKED BY: MVM

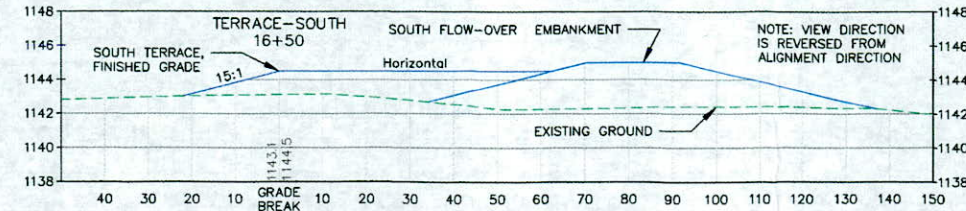
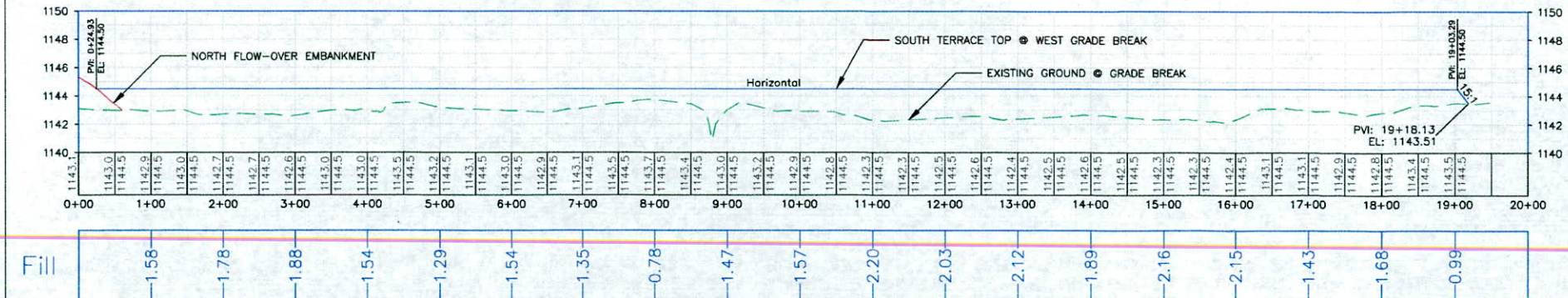
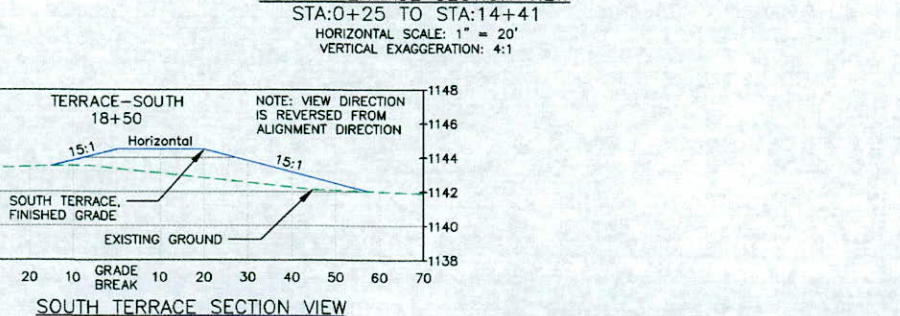
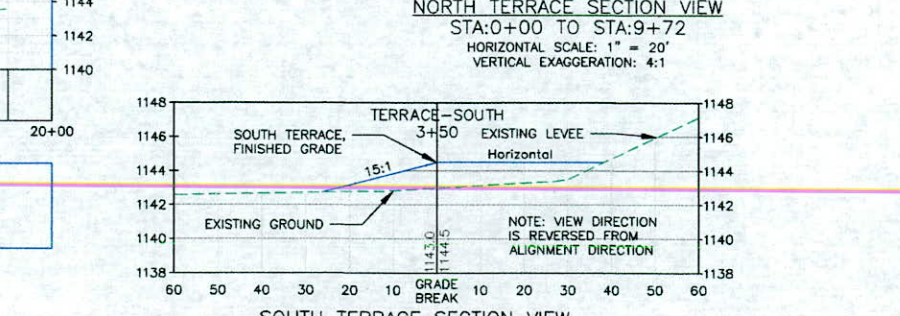
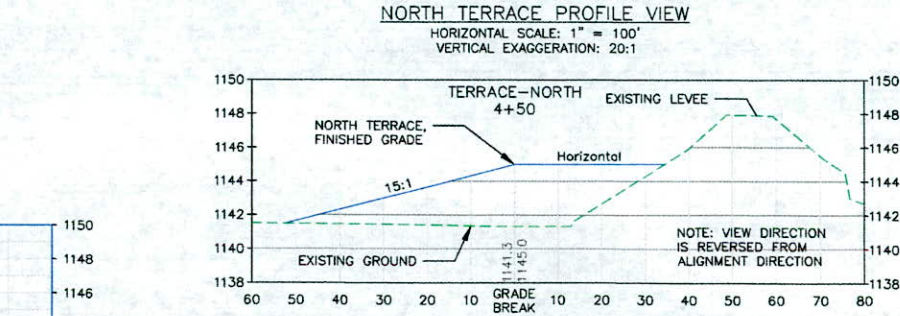
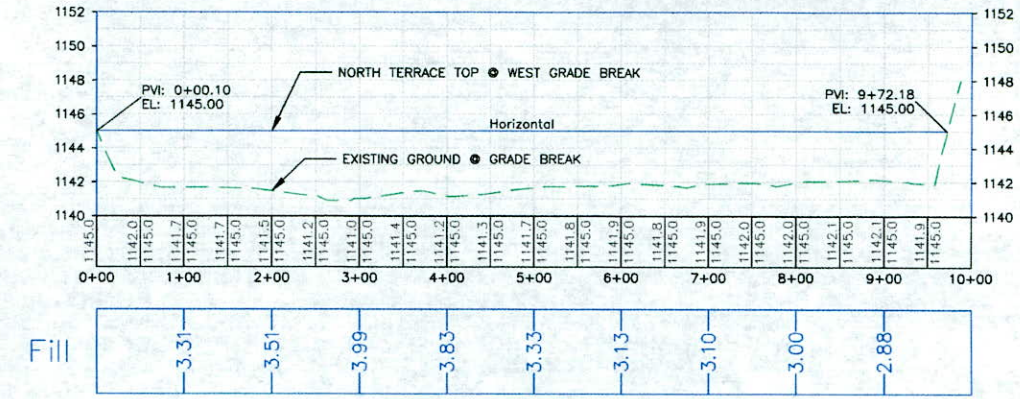


TERRACE CONSTRUCTION NOTES:

1. TERRACE CONSTRUCTION SHALL BE FROM COMPACTED EARTHEN MATERIAL CONTAINING MINIMAL ORGANIC MATERIAL AND SHALL COMPLY WITH SPECIFICATION SP405 "UNCOMPACTED FILL."
2. BEFORE CONSTRUCTING TERRACES, AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. STRIPPING AND STOCKPILING OF TOP SOIL IS NOT REQUIRED. THIS WILL BE CONSIDERED INCIDENTAL TO "TERRACE" BID ITEMS.
3. BEFORE MATERIAL FOR TERRACES IS TAKEN FROM THE EXCAVATION AREAS, AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "TERRACE" BID ITEMS.
4. HAUL ROUTES SHALL BE KEPT TO A MINIMUM TO AVOID UNNECESSARY SOIL AND VEGETATION DISTURBANCE. ALL HAUL ROUTES SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK AFTER PROJECT COMPLETION. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION."

NORTH TERRACE PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,576,461.3515'	2,204,875.2708'	38.18'	S16° 24' 30"W
0+38.18	15,576,424.7258'	2,204,864.4855'	908.53'	S38° 49' 07"E
9+41.47	15,575,716.8589'	2,205,434.0020'	47.24'	S80° 47' 32"E
9+87.28	15,575,709.3003'	2,205,480.6300'		

SOUTH TERRACE PI TABLE				
PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,575,135.6890'	2,205,849.6994'	265.90'	S34° 04' 34"E
2+65.90	15,574,915.4456'	2,205,998.6818'	302.29'	S15° 57' 53"E
5+67.66	15,574,624.8115'	2,206,081.8255'	883.48'	S2° 38' 15"E
14+50.93	15,573,742.2642'	2,206,122.4788'	198.55'	S48° 32' 07"W
16+36.57	15,573,610.7958'	2,205,973.6962'	312.70'	S21° 28' 02"W
19+47.48	15,573,319.7885'	2,205,859.2580'		



GENERAL NOTES

1. ONE HALF FOOT CONTOUR INTERVAL SHOWN.
2. 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
3. ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
4. SPOT ELEVATIONS INDICATED BY ϕ XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

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SOUTH TERRACE SECTION VIEW
STA:14+41 TO STA:17+44
HORIZONTAL SCALE: 1" = 20'
VERTICAL EXAGGERATION: 4:1

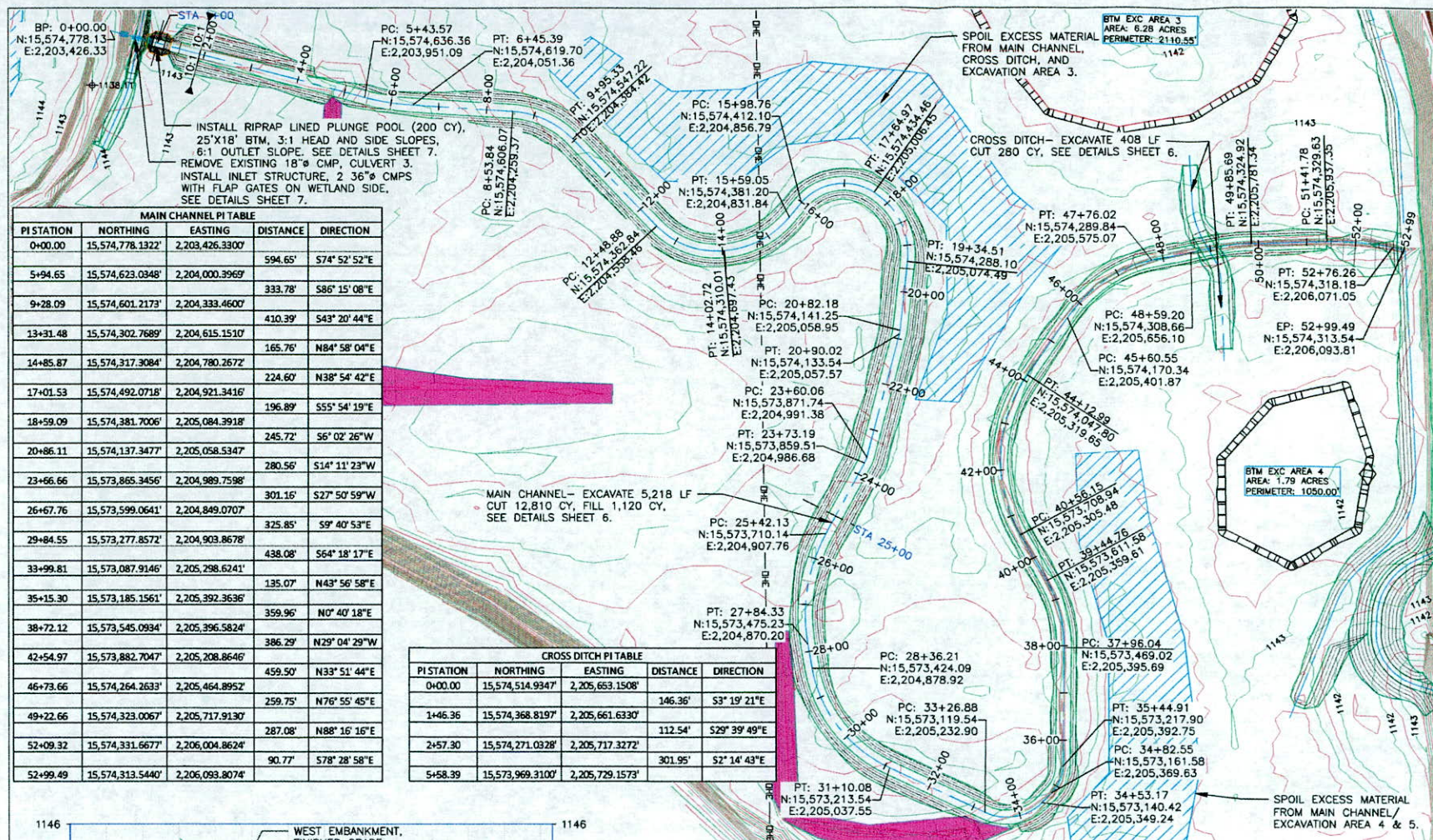
HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD83. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.

PRELIMINARY NOT FOR CONSTRUCTION

	PROJECT NO. SD-560-2	DESIGNED BY: CDC
	SOIL-VERMILLION RIVER	DRAWN BY: CDC
	TERRACES	SURVEYED BY: STOCK
		CHECKED BY: MMM

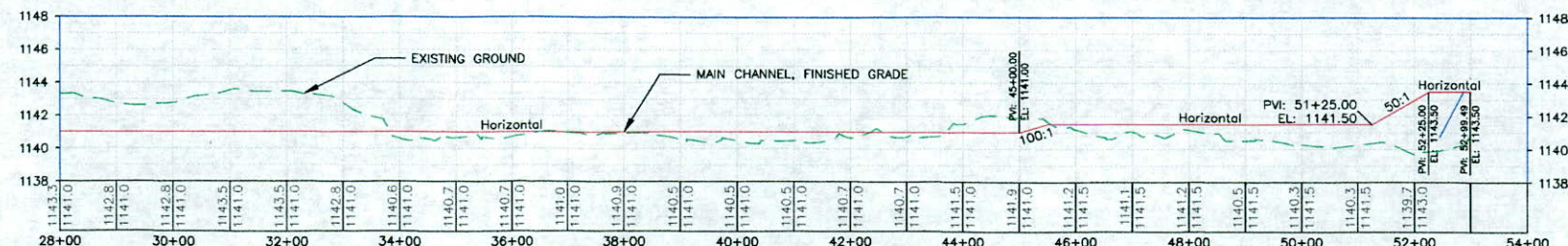
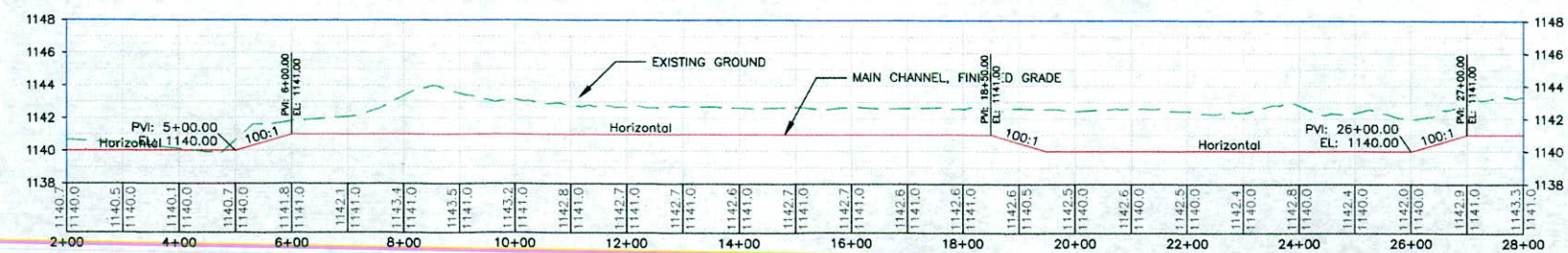
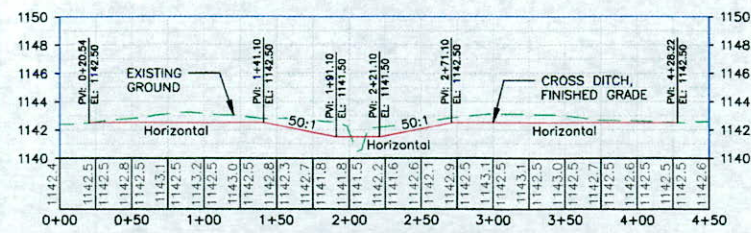
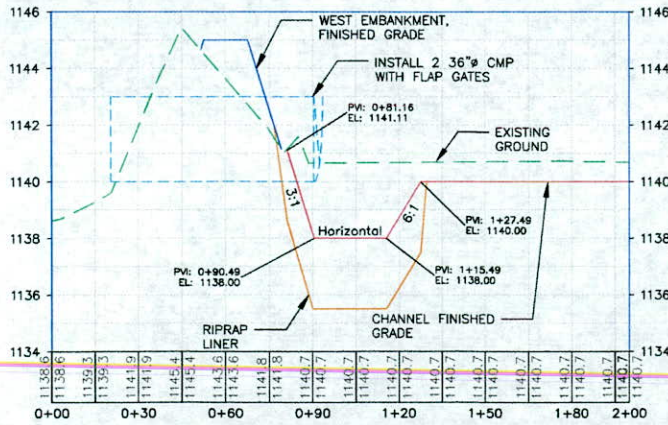
DATE: 6/18/2021	SHEET NO. 5 OF 10	APPROVED BY:	APPROVED BY:
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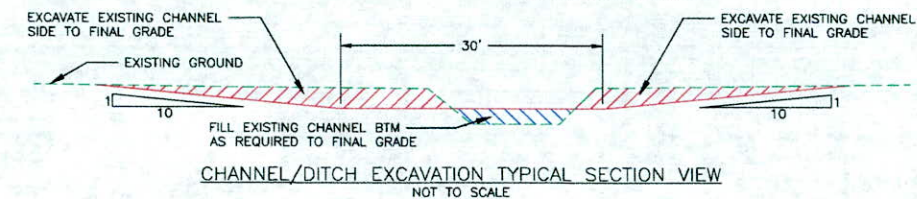


PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,574,934.77	2,205,663.1508	146.36'	S3°19'21"E
1+46.36	15,574,968.8197	2,205,661.6330	112.54'	S29°39'49"E
2+57.30	15,574,271.0328	2,205,717.3272	301.95'	S2°14'43"E
5+58.39	15,573,969.3107	2,205,729.1573		

PI STATION	NORTHING	EASTING	DISTANCE	DIRECTION
0+00.00	15,574,778.1322	2,203,426.3307	594.65'	S74°52'52"E
5+94.65	15,574,623.0348	2,204,000.3969	333.78'	S86°15'08"E
9+28.09	15,574,601.2173	2,204,333.4607	410.39'	S43°20'44"E
13+31.48	15,574,302.7689	2,204,615.1517	165.76'	N84°58'04"E
14+85.87	15,574,317.3084	2,204,780.2672	224.60'	N38°54'42"E
17+01.53	15,574,492.0718	2,204,921.3416	196.89'	S55°54'19"E
18+59.09	15,574,381.7006	2,205,084.3918	245.72'	S6°02'26"W
20+86.11	15,574,137.3477	2,205,058.5347	280.56'	S14°11'23"W
23+66.66	15,573,865.3456	2,204,989.7598	301.16'	S27°50'59"W
26+67.76	15,573,599.0641	2,204,849.0707	325.85'	S9°40'53"E
29+84.55	15,573,277.8572	2,204,903.8678	438.08'	S64°18'17"E
33+99.81	15,573,087.9146	2,205,298.6241	135.07'	N43°56'58"E
35+15.30	15,573,185.1561	2,205,392.3636	359.96'	N0°40'18"E
38+72.12	15,573,545.0934	2,205,396.5824	386.29'	N29°04'29"W
42+54.97	15,573,882.7047	2,205,208.8646	459.50'	N33°51'44"E
46+73.66	15,574,264.2633	2,205,464.8952	259.75'	N76°55'45"E
49+22.66	15,574,323.0067	2,205,717.9130	287.08'	N88°16'16"E
52+09.32	15,574,331.6677	2,206,004.8624	90.77'	S78°28'58"E
52+99.49	15,574,313.5440	2,206,093.8074		



CROSS DITCH PLAN VIEW
SCALE: 1" = 60'



PLUNGE POOL SECTION VIEW
HORIZONTAL SCALE: 1" = 10'
VERTICAL EXAGGERATION: 2:1

- GENERAL NOTES**
- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
 - 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
 - ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
 - SPOT ELEVATIONS INDICATED BY ϕ XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

CHANNEL EXCAVATION NOTES:

- BEFORE EXCAVATING CHANNELS, TREES MUST BE REMOVED AND AREA MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WILL BE CONSIDERED INCIDENTAL TO "CHANNEL EXCAVATION" BID ITEMS.
- CHANNEL EXCAVATIONS SHALL HAVE 30' BTM WIDTH WITH 10:1 OR FLATTER SIDE SLOPES. MATERIAL EXCAVATED FROM THE CHANNELS MAY BE USED FOR TERRACE CONSTRUCTION AND DITCH FILLS. MATERIAL EXCLUDING THE TOP 6" OF SOIL MAY BE USED FOR EMBANKMENT CONSTRUCTION. EXCESS MATERIAL SHALL BE SPOILED ADJACENT TO THE CHANNEL IN INDICATED AREAS.
- WHERE FILL IS REQUIRED TO MEET FINISHED GRADE, FILL SHALL MEET DU SPEC SP405 "UNCOMPACTED FILL." THIS WORK SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "MAIN CHANNEL EXCAVATION".
- HAUL ROUTES SHALL BE KEPT TO A MINIMUM TO AVOID UNNECESSARY SOIL AND VEGETATION DISTURBANCE. ALL HAUL ROUTES SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK AFTER PROJECT COMPLETION. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION".

BORROW AREA NOTE: SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION".

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

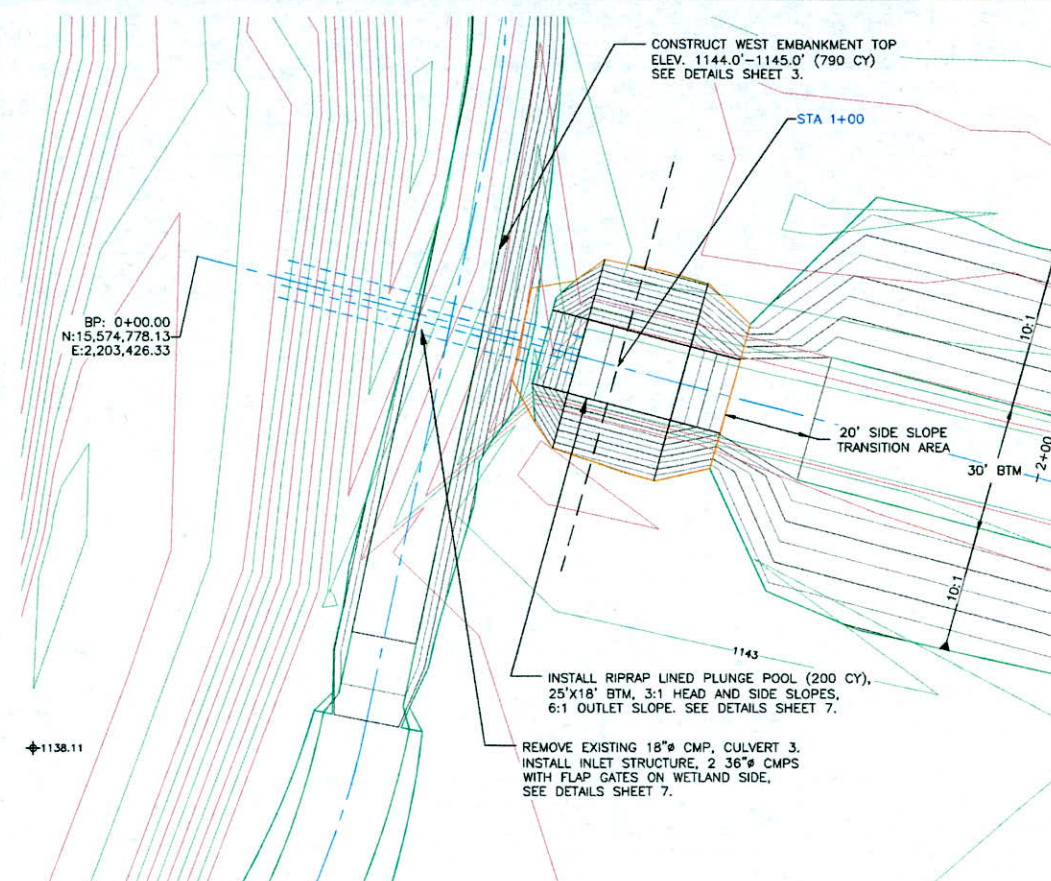
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HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD83. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.

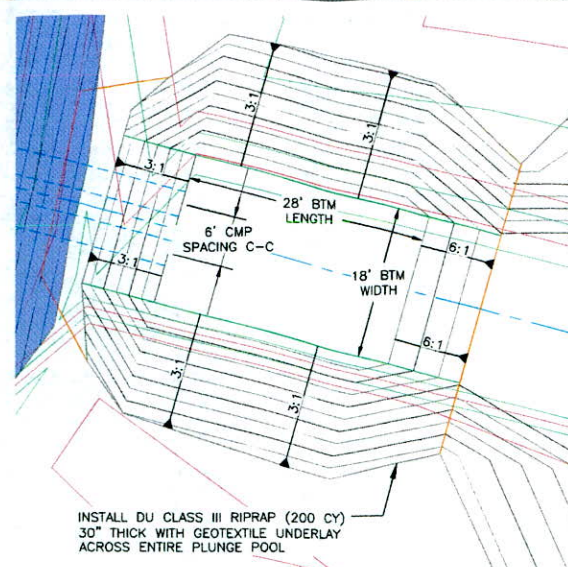
PRELIMINARY NOT FOR CONSTRUCTION

DUCKS UNLIMITED INC.
GREAT PLAINS REGIONAL OFFICE
DATE: 6/18/2021
SHEET NO. 6 OF 10

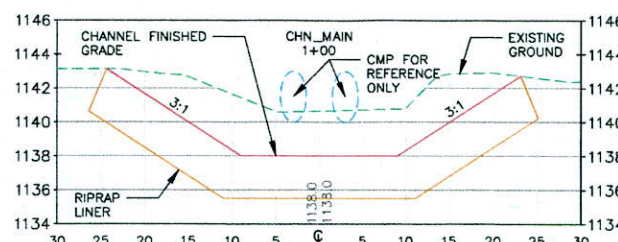
PROJECT NO. SD-560-2
SDILF-VERMILLION RIVER
CHANNEL EXCAVATIONS
DESIGNED BY: CDC
DRAWN BY: CDC
SURVEYED BY: STOCK
CHECKED BY: MMW
APPROVED BY: APPROVED BY:



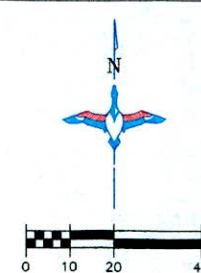
INLET STRUCTURE PLAN VIEW
SCALE: 1" = 20'



PLUNGE POOL PLAN VIEW
SCALE: 1" = 10'



PLUNGE POOL SECTION VIEW
HORIZONTAL SCALE: 1" = 10'
VERTICAL EXAGGERATION: 2:1



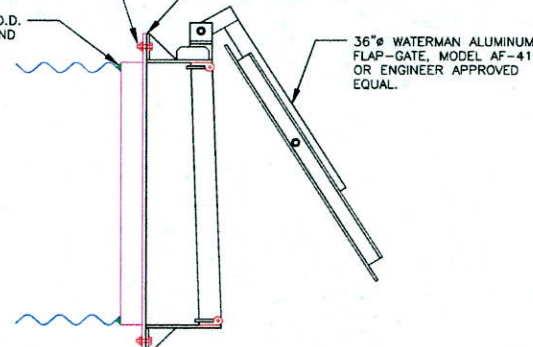
BORROW AREA NOTE: SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A NARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.

CONNECT PIPE TO FLAP-GATE WITH S.S. HARDWARE AS RECOMMENDED BY MANUFACTURER.

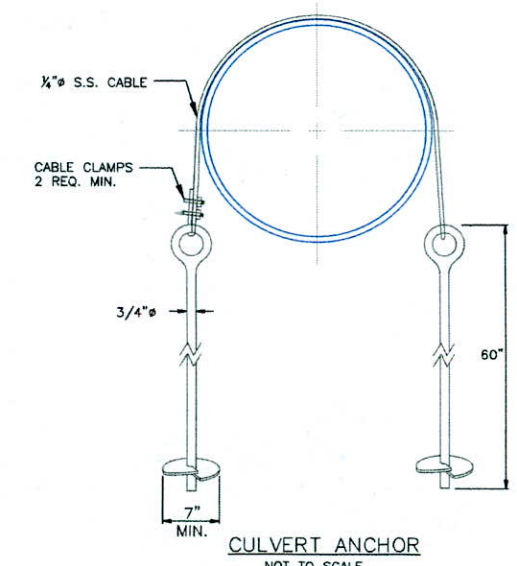
WELD PIPE FLANGE TO O.D. OF CMP, CONTINUOUS AND WATERTIGHT

APPLY GASKET OR MARINE GRADE SEALANT TO MATING FLANGE SURFACES.

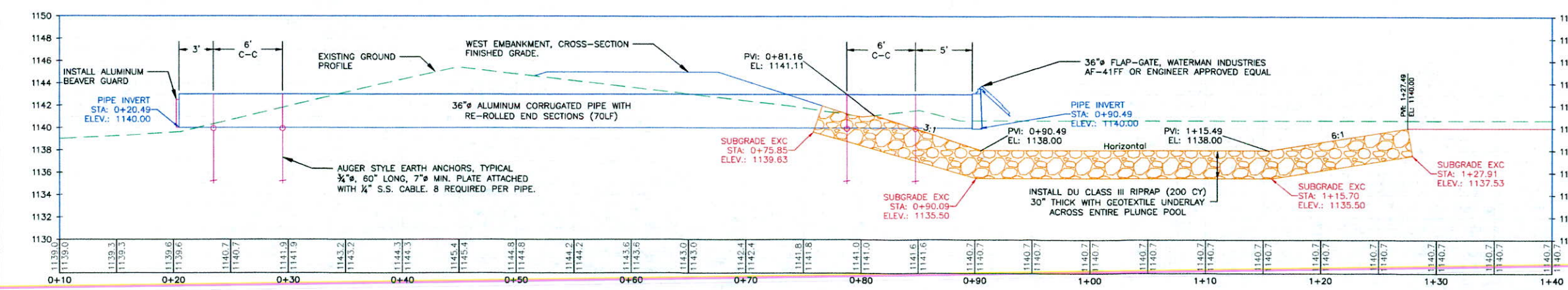


36"Ø FLAP-GATE DETAIL
NOT TO SCALE

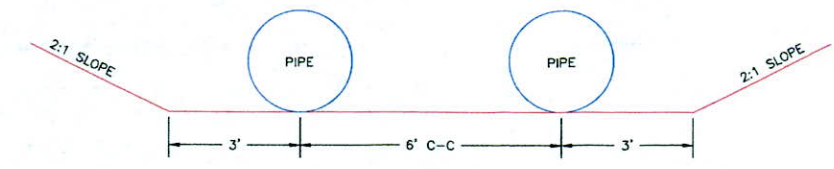
- INLET STRUCTURE INSTALLATION NOTES:**
1. PLACEMENT OF BACKFILL AROUND THE PIPES REQUIRES THAT THE TRENCH BE DRY. SOME MEANS OF DEWATERING MAY BE REQUIRED. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "36"Ø ALUMINUM CMP."
 2. BACKFILL SHALL BE PLACED AND COMPACTED IN A MANNER THAT IS CONSISTENT WITH DU SPEC. 204 "EMBANKMENT CONSTRUCTION."
 3. WHERE REQUIRED, ALUMINUM ANNUAL CONNECTING BANDS SHALL BE USED FOR PIPE CONNECTIONS. CONNECTING BANDS SHALL BE EITHER 24" WIDE OR HAVE A MINIMUM OF NINE (9) CORRUGATIONS. CLOSED CELL EXPANDED GASKETS SHALL BE USED IN CONJUNCTION WITH CONNECTING BANDS. SEE DU SPEC. 303 "CULVERT INSTALLATION."
 4. ALL CMPS SHALL HAVE A MINIMUM OF FOUR (4) RE-ROLLED ANNUAL CORRUGATIONS ON EACH END IN ORDER TO ACCOMMODATE BANDS AND FITTINGS.
 5. COSTS ASSOCIATED WITH FABRICATING AND INSTALLING FLANGES, ANCHORS, CONNECTING BANDS, AND BEAVER GUARDS SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "36"Ø ALUMINUM CMP."
 6. FLAP-GATES AND MOUNTING HARDWARE FOR THE FLAP-GATES SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "36"Ø ALUMINUM FLAP-GATE."



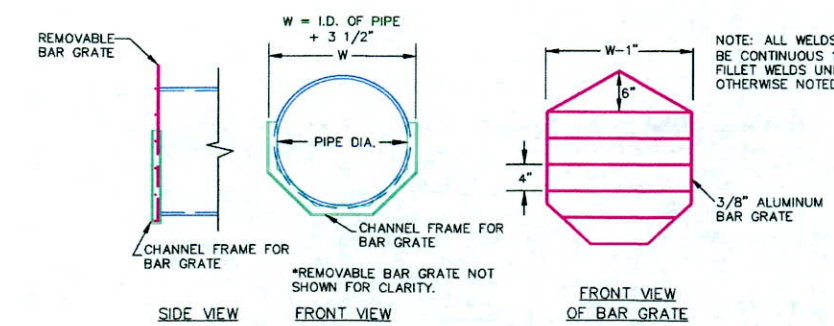
CULVERT ANCHOR
NOT TO SCALE



INLET STRUCTURE PROFILE VIEW
MAIN CHANNEL ALIGNMENT
HORIZONTAL SCALE: 1" = 5'
VERTICAL EXAGGERATION: 10:1



INLET PIPE TRENCH DETAIL
NOT TO SCALE



ALUMINUM BEAVER GUARD DETAILS
NOT TO SCALE

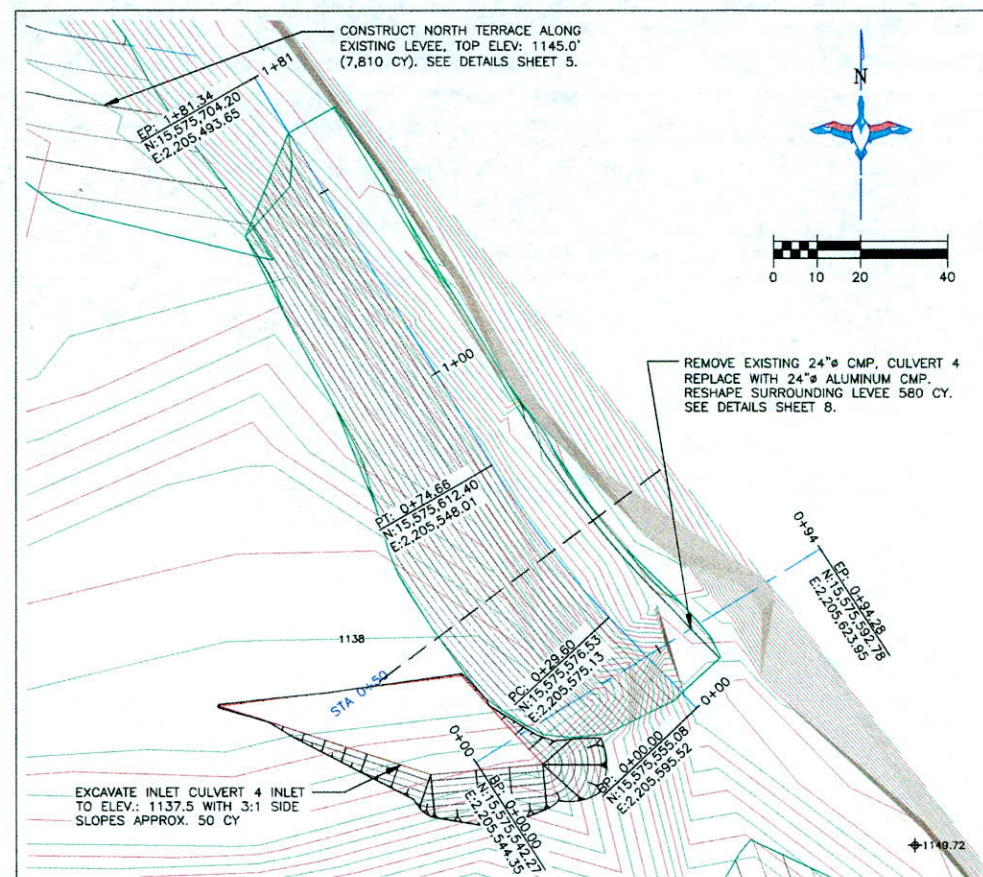
- GENERAL NOTES**
1. ONE HALF FOOT CONTOUR INTERVAL SHOWN.
 2. 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
 3. ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
 4. SPOT ELEVATIONS INDICATED BY ϕ XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

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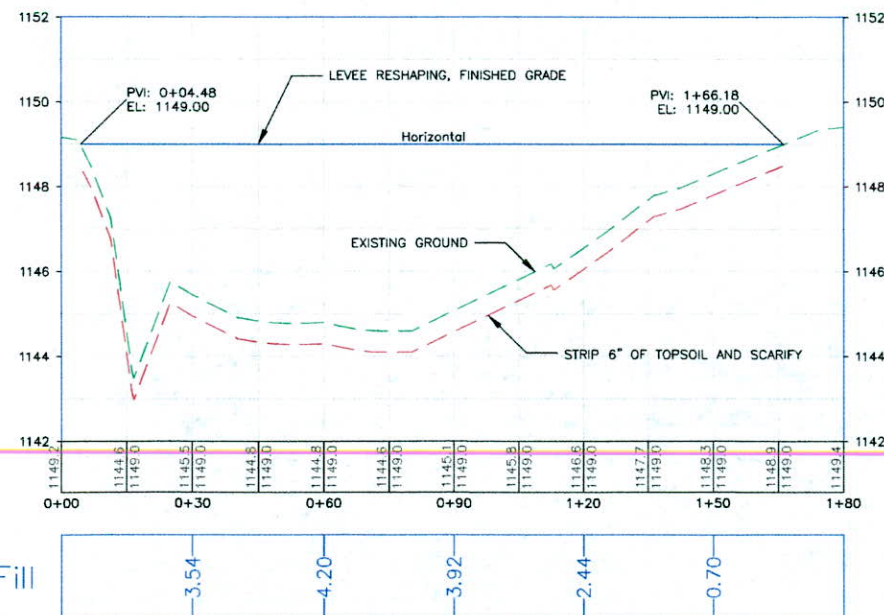
HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION-- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD83. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.

PRELIMINARY NOT FOR CONSTRUCTION

DUCKS UNLIMITED INC. GREAT PLAINS REGIONAL OFFICE DATE: 6/18/2021 SHEET NO. 7 OF 10	PROJECT NO. SD-560-2 SDLF-VERMILLION RIVER	DESIGNED BY: CDC DRAWN BY: CDC SURVEYED BY: STOCK CHECKED BY: MMM
	INLET STRUCTURE	
	APPROVED BY:	APPROVED BY:
	K:\Land Projects SD\SD-560-2 Vermillion\Final\SD-560-2 Vermillion4.dwg	



CULVERT 4 PLAN VIEW
SCALE: 1" = 20'



LEVEE RESHAPING PROFILE VIEW
WEST GRADE-BREAK ALIGNMENT
HORIZONTAL SCALE: 1" = 20'
VERTICAL EXAGGERATION: 10:1

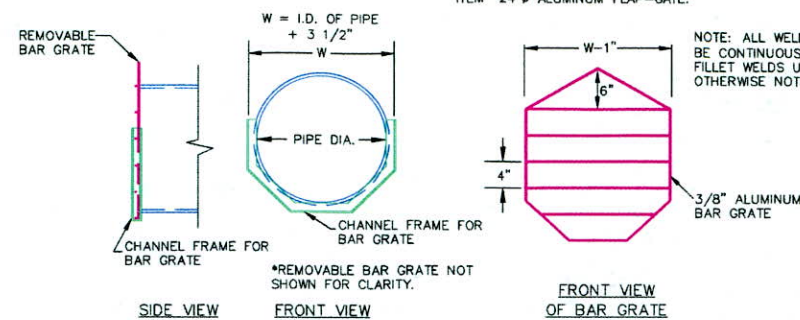
GENERAL NOTES

- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
- 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
- ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
- SPOT ELEVATIONS INDICATED BY ϕ XXXX.X ARE RANDOMLY LOCATED AND ARE BASED ON SURFACE MODEL ELEVATIONS.

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BORROW AREA NOTE: SUITABLE MATERIAL FOR ALL FILLS SHALL BE OBTAINED FROM THE DESIGNATED EXCAVATION AREAS SHOWN ON THIS SHEET AS APPROVED BY THE DU FIELD ENGINEER. CARE SHALL BE TAKEN NOT TO OPEN UP ANY SAND LENSES THAT WILL INCREASE SEEPAGE FROM ANY EXCAVATION AREAS. FINISHED SLOPES SHALL BE 20:1 OR FLATTER. EXCAVATION AREAS SHALL BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WORK WILL BE CONSIDERED INCIDENTAL TO "SITE PREPARATION."

SEEDING AND MULCHING NOTE: THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING AN ADEQUATE SEED BED TO ALLOW SEEDING WITH STANDARD SEEDING EQUIPMENT. THIS WILL INCLUDE USE OF A HARROW OR OTHER MEANS IN ORDER TO LEAVE A SMOOTH, TRACK-FREE FINISH. BACK DRAGGING WITH A DOZER IS NOT AN ACCEPTABLE FINISH.



ALUMINUM BEAVER GUARD DETAILS
NOT TO SCALE

CULVERT 4 REPLACEMENT NOTES:
1. PLACEMENT OF BACKFILL AROUND THE PIPE REQUIRES THAT THE TRENCH BE DRY. SOME MEANS OF DEWATERING MAY BE REQUIRED. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "24\"/>

2. BACKFILL SHALL BE PLACED AND COMPACTED IN A MANNER THAT IS CONSISTENT WITH DU SPEC. 204 "EMBANKMENT CONSTRUCTION."

3. WHERE REQUIRED, ALUMINUM ANNUAL CONNECTING BANDS SHALL BE USED FOR PIPE CONNECTIONS. CONNECTING BANDS SHALL BE EITHER 24\"/>

4. ALL CMPS SHALL HAVE A MINIMUM OF FOUR (4) RE-ROLLED ANNUAL CORRUGATIONS ON EACH END IN ORDER TO ACCOMMODATE BANDS AND FITTINGS.

5. COSTS ASSOCIATED WITH FABRICATING AND INSTALLING FLANGES, ANCHORS, CONNECTING BANDS, AND BEAVER GUARDS SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "24\"/>

6. FLAP-GATES AND MOUNTING HARDWARE FOR THE FLAP-GATES SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "24\"/>

LEVEE RESHAPING NOTES:
1. LEVEE RESHAPING SHALL BE FROM COMPACTED EARTHEN MATERIAL CONTAINING MINIMAL ORGANIC MATERIAL AND SHALL COMPLY WITH SPECIFICATION SECTION 204 "EMBANKMENT CONSTRUCTION."

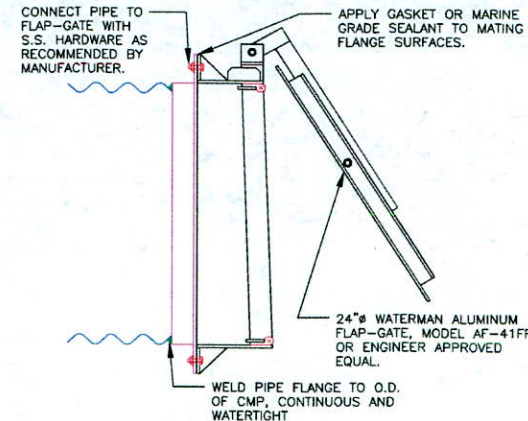
2. BEFORE RESHAPING LEVEE, AREA MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. STRIPPING AND STOCKPILING OF 6\"/>

3. BEFORE MATERIAL FOR LEVEE RESHAPING IS TAKEN FROM THE EXCAVATION AREAS, AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THE TOP 4\"/>

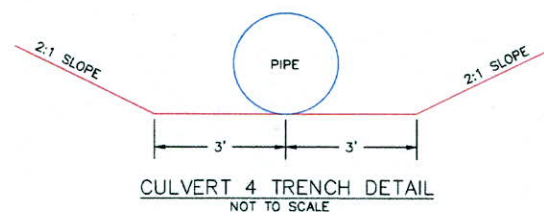
4. LEVEE RESHAPING FILL SHALL CONTAIN MINIMAL ORGANIC MATERIAL AND SHALL BE PLACED IN LIFTS OF NO MORE THAN 8\"/>

5. EXCAVATION OF CULVERT 4 INLET SHALL BE CONSIDERED INCIDENTAL TO BID ITEM "LEVEE RESHAPING." MATERIAL GENERATED SHALL BE USED AS FILL FOR THE NORTH TERRACE.

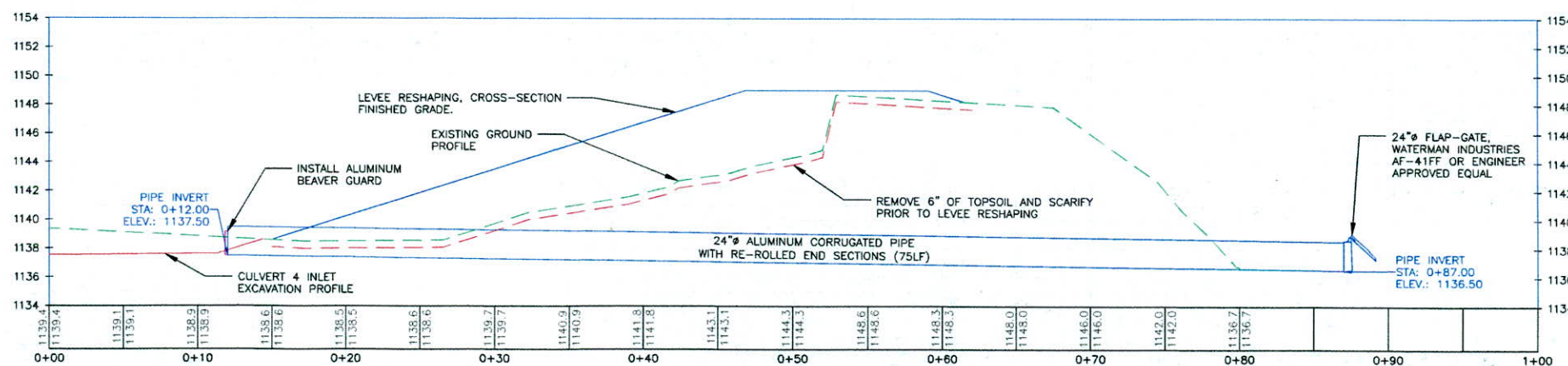
6. HAUL ROUTES SHALL BE KEPT TO A MINIMUM TO AVOID UNNECESSARY SOIL AND VEGETATION DISTURBANCE. ALL HAUL ROUTES SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK AFTER PROJECT COMPLETION. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION."



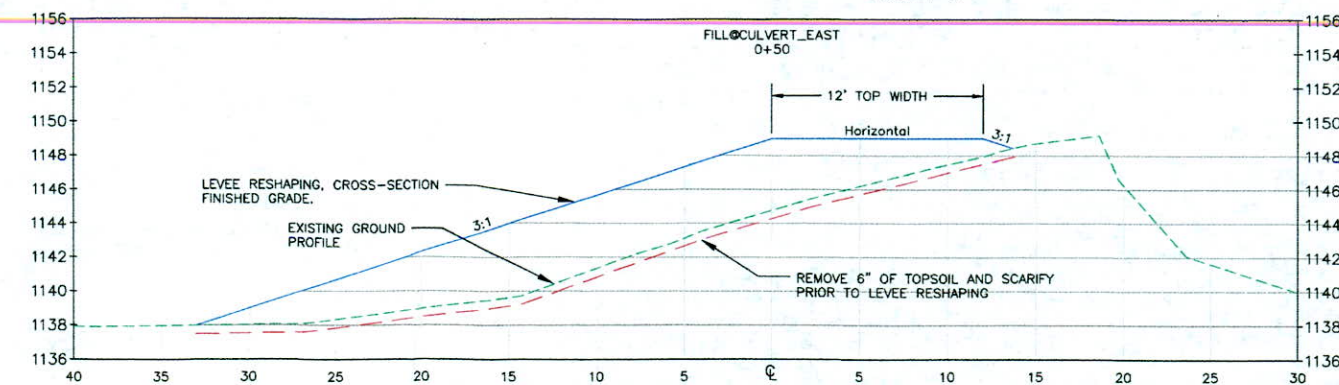
24"Ø FLAP-GATE DETAIL
NOT TO SCALE



CULVERT 4 TRENCH DETAIL
NOT TO SCALE



CULVERT 4 REPLACEMENT PROFILE VIEW
SCALE: 1" = 5'



LEVEE RESHAPING TYPICAL SECTION VIEW
SCALE: 1" = 5'

HORIZONTAL AND VERTICAL CONTROL OPUS SOLUTION- HORIZONTAL COORDINATES ARE UTM ZONE 14 GRID COORDINATES IN US FEET [NAD83]. VERTICAL CONTROL WAS ESTABLISHED USING GEOID 12A CONUS IN THE NAVD83. THE SITE SURVEY WAS CALIBRATED USING THE MIDSTATES VRS NETWORK WITH A TRIMBLE R10 SURVEY GRADE GPS RECEIVER USING RTK METHODS. THE SURVEY CONTROL REPORT IS ON FILE AT THE DUCKS UNLIMITED ENGINEERING DEPARTMENT IN GRAND ISLAND, NEBRASKA.

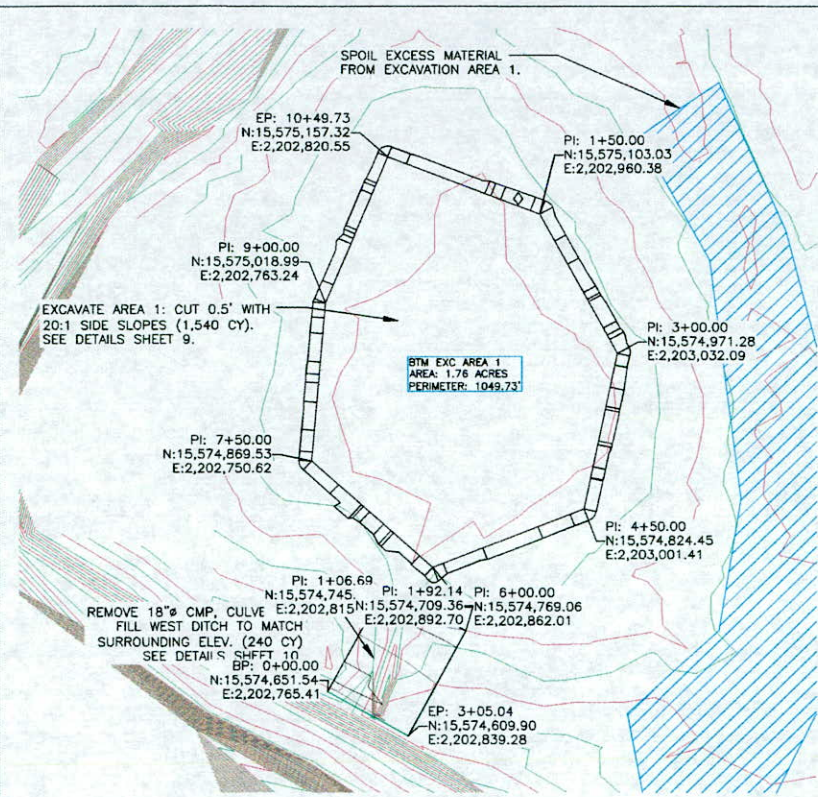
PRELIMINARY NOT FOR CONSTRUCTION



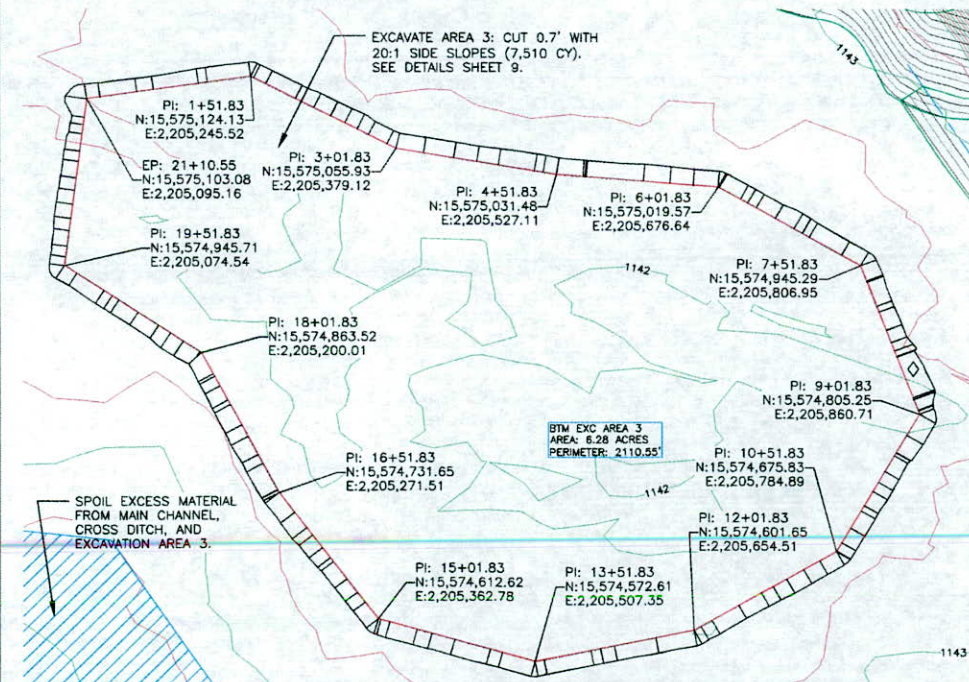
GREAT PLAINS REGIONAL OFFICE
DATE: 6/18/2021
SHEET NO. 8 OF 10

PROJECT NO. SD-560-2
SDIF-VERMILLION RIVER
CULVERT 4/LEVEE RESHAPING
APPROVED BY: ..

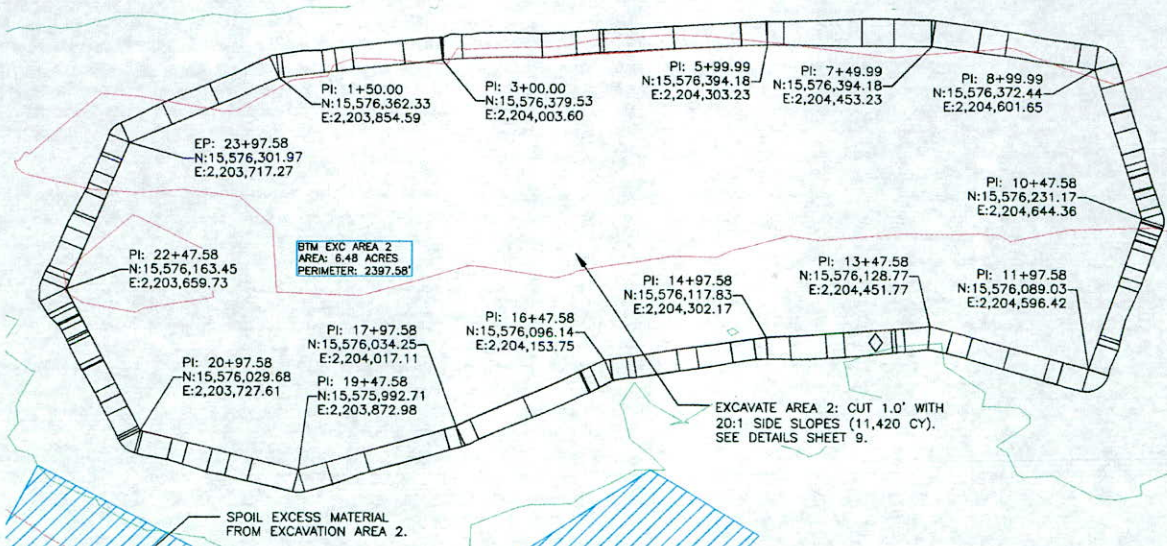
DESIGNED BY: CDC
DRAWN BY: CDC
SURVEYED BY: STOCK
CHECKED BY: MMM
APPROVED BY: ..



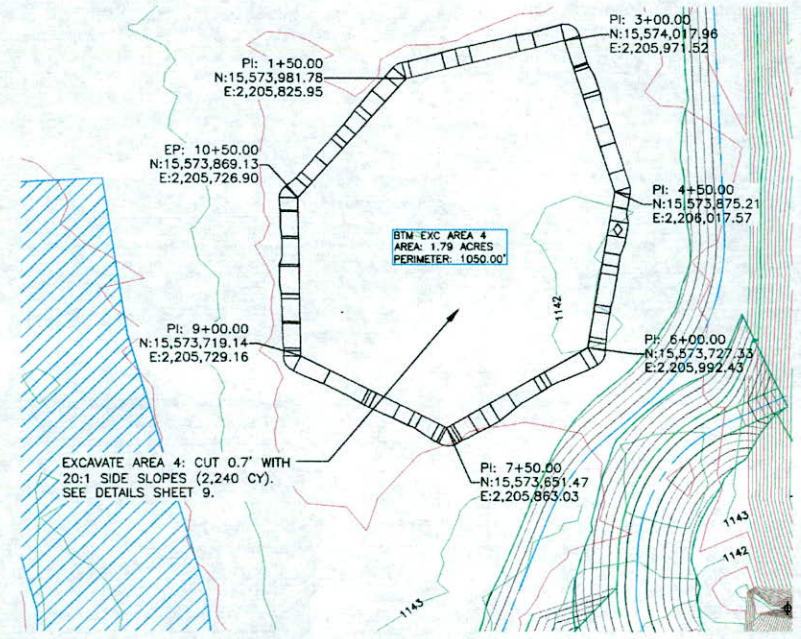
EXCAVATION AREA 1 PLAN VIEW
SCALE: 1" = 80'



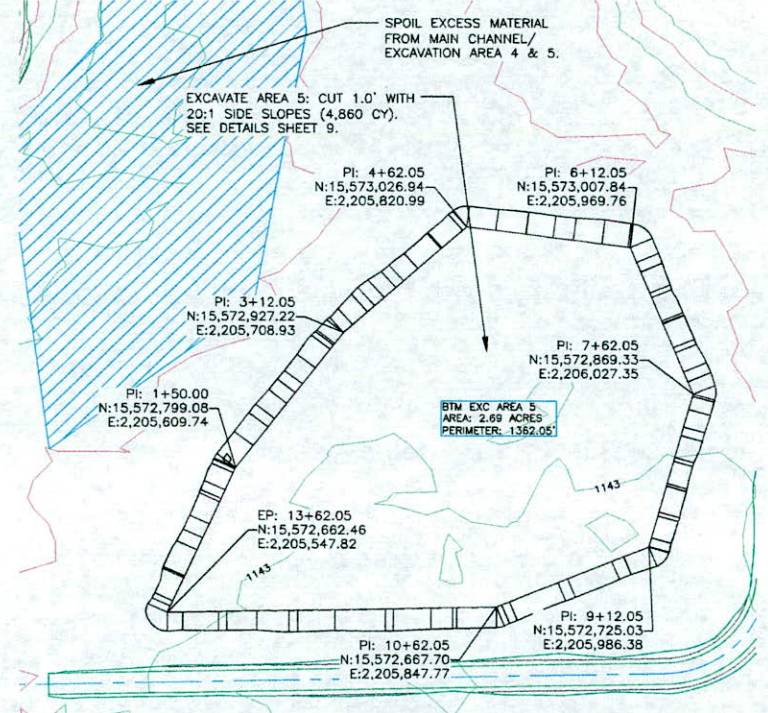
EXCAVATION AREA 3 PLAN VIEW
SCALE: 1" = 80'



EXCAVATION AREA 2 PLAN VIEW
SCALE: 1" = 80'



EXCAVATION AREA 4 PLAN VIEW
SCALE: 1" = 80'



EXCAVATION AREA 5 PLAN VIEW
SCALE: 1" = 80'

- EXCAVATION AREA NOTES:**
- EXCAVATION AREAS MUST BE MOWED OR HAYED IF STANDING VEGETATION IS PRESENT. THIS WILL BE CONSIDERED INCIDENTAL TO "EXCAVATION AREA" BID ITEMS.
 - MATERIAL CONTAINING VEGETATION AND EXCESS MATERIAL NOT USED IN THE CONSTRUCTION OF OTHER PROJECT COMPONENTS SHALL BE SPOILED IN THE DESIGNATED SPOIL AREA. PLACEMENT AND SHAPING OF SPOIL MATERIAL WILL BE CONSIDERED INCIDENTAL TO "EXCAVATION AREA" BID ITEMS.
 - SPOIL AREAS SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK ONCE ALL MATERIAL HAS BEEN PLACED AND SHAPED. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION."
 - HAUL ROUTES SHALL BE KEPT TO A MINIMUM TO AVOID UNNECESSARY SOIL AND VEGETATION DISTURBANCE. ALL HAUL ROUTES SHALL BE DISKED WITH ONE PASS OF A FINISHING DISK AFTER PROJECT COMPLETION. THIS WILL BE CONSIDERED INCIDENTAL TO BID ITEM "SITE PREPARATION."

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EXCAVATION AREA 1 TOE PI TABLE

PI Station	Northing	Easting
0+00.00	15,575,157.32	2,202,820.55
1+50.00	15,575,103.08	2,202,960.38
3+00.00	15,574,971.27	2,203,032.08
4+50.00	15,574,824.45	2,203,001.40
6+00.00	15,574,769.05	2,202,862.07
7+50.00	15,574,869.53	2,202,750.62
9+00.00	15,575,018.99	2,202,763.24
10+49.73	15,575,157.32	2,202,820.55

EXCAVATION AREA 2 TOE PI TABLE

PI Station	Northing	Easting
0+00.00	15,575,301.97	2,203,717.26
1+50.00	15,575,362.32	2,203,854.58
3+00.00	15,576,379.52	2,204,003.59
5+99.99	15,576,394.18	2,204,053.23
7+49.99	15,576,372.44	2,204,601.65
8+99.99	15,576,231.17	2,204,644.36
10+47.58	15,576,231.17	2,204,644.36
11+97.58	15,576,089.03	2,204,596.42
13+47.58	15,576,128.77	2,204,451.77
14+97.58	15,576,117.83	2,204,302.17
16+47.58	15,576,096.14	2,204,153.75
17+97.58	15,576,034.25	2,204,017.11
19+47.58	15,575,992.71	2,203,872.98
20+97.58	15,576,029.68	2,203,727.61
22+47.58	15,576,163.45	2,203,659.73
23+97.58	15,576,301.97	2,203,717.27

EXCAVATION AREA 3 TOE PI TABLE

PI Station	Northing	Easting
0+00.00	15,575,103.08	2,205,095.15
1+51.83	15,575,124.13	2,205,245.19
3+01.83	15,575,055.93	2,205,379.12
4+51.83	15,575,031.48	2,205,527.11
6+01.83	15,575,019.57	2,205,676.64
7+51.83	15,574,945.29	2,205,806.95
9+01.83	15,574,805.25	2,205,860.71
10+51.83	15,574,731.65	2,205,971.51
12+01.83	15,574,601.65	2,205,654.51
13+51.83	15,574,612.61	2,205,362.78
15+01.83	15,574,612.62	2,205,362.78
16+51.83	15,574,731.65	2,205,271.51
18+01.83	15,574,863.52	2,205,200.01
19+51.83	15,574,945.71	2,205,074.54
21+10.55	15,575,103.08	2,205,095.15

EXCAVATION AREA 4 TOE PI TABLE

PI Station	Northing	Easting
0+00.00	15,573,869.12	2,205,726.92
1+50.00	15,573,981.77	2,205,825.96
3+00.00	15,574,017.96	2,205,971.52
4+50.00	15,573,875.21	2,206,017.57
6+00.00	15,573,727.33	2,205,992.43
7+50.00	15,573,691.47	2,205,863.03
9+00.00	15,573,719.14	2,205,729.16
10+50.00	15,573,869.13	2,205,726.90

EXCAVATION AREA 5 TOE PI TABLE

PI Station	Northing	Easting
0+00.00	15,572,662.45	2,205,547.81
1+50.00	15,572,799.08	2,205,609.73
3+12.05	15,572,927.22	2,205,708.93
4+62.05	15,573,026.94	2,205,820.99
6+12.05	15,573,007.84	2,205,969.76
7+62.05	15,572,869.33	2,205,927.35
9+12.05	15,572,725.03	2,205,986.38
10+62.05	15,572,667.70	2,205,847.77
13+62.05	15,572,662.45	2,205,547.81

- GENERAL NOTES**
- ONE HALF FOOT CONTOUR INTERVAL SHOWN.
 - 2018 1 METER RESOLUTION AERIAL IMAGERY IS SHOWN.
 - ITALICIZED TEXT DENOTES EXISTING FEATURE OR EXISTING ELEVATION.
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PRELIMINARY NOT FOR CONSTRUCTION

DUCKS UNLIMITED INC.
GREAT PLAINS REGIONAL OFFICE

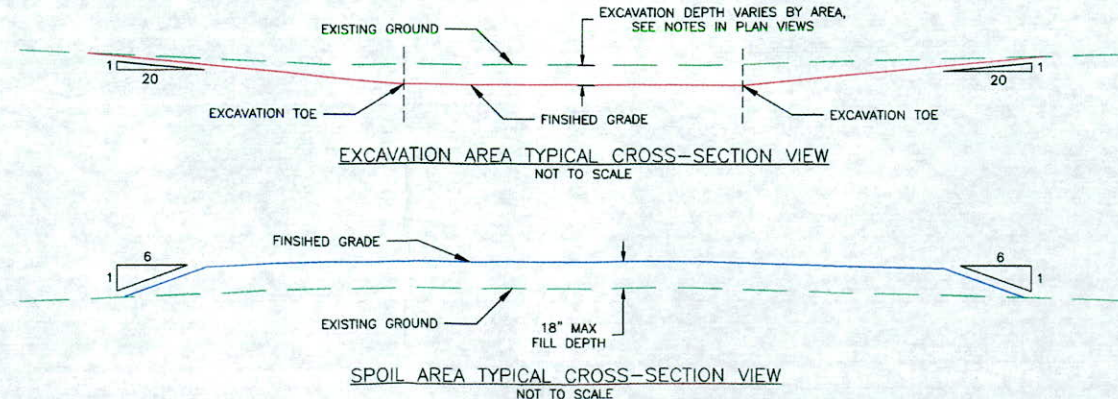
PROJECT NO. SD-560-2
SDLF-VERMILLION RIVER
EXCAVATION AREAS

DESIGNED BY: CDC
DRAWN BY: CDC
SURVEYED BY: STOCK
CHECKED BY: MMM

DATE: 6/18/2021

SHEET NO. 9 OF 10

APPROVED BY:



RECEIPT

WATER RIGHTS PROGRAM South Dakota Department of Agriculture and Natural Resources

Date August 30, 2021

RECEIVED OF Ducks Unlimited One Waterfowl Way Memphis TN 38120

The following amount in fees for services rendered as provided for by law:

Fee for Application for Permit No. <u>8544-3</u> to Appropriate Water, to construct and to put water to beneficial use	\$ <u>500.00</u>
Fee for Application for Permit No. _____ to Appropriate Water for Future use	\$ _____
Fee to retain Future Use Permit No. _____ after period of seven years.	\$ _____
Fee for Inspecting Constructed Works, confirming beneficial use and issuing Water License No. <u>8544-3</u>	\$ <u>200.00</u>
Fee for Filing Transfer Form _____	\$ _____
Fee for _____	\$ _____
Fee for Issuing New Well Driller's License No. _____	\$ _____
Fee for Renewal of Well Driller's License No. _____	\$ _____
Fee for Issuing Well Pump Installer's License No. _____	\$ _____
Fee for Renewal of Well Pump Installer's License No. _____	\$ _____
(Any Other Work Provided by Law)	
TOTAL	\$ <u>700.00</u>

By Eric Gronlund
Chief Engineer
vm



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**RECOMMENDATION OF CHIEF ENGINEER FOR WATER PERMIT
APPLICATION NO. 8544-3, Ducks Unlimited**

Pursuant to SDCL 46-2A-2, the following is the recommendation of the Chief Engineer, Water Rights Program, Department of Agriculture and Natural Resources concerning Water Permit Application No. 8544-3, Ducks Unlimited, c/o Justin Williams, 25225 River Road, Bismarck, ND 58503.

The Chief Engineer is recommending APPROVAL of Application No. 8544-3 because 1) there is reasonable probability that there is unappropriated water available for the applicant's proposed use, 2) the proposed diversion can be developed without unlawful impairment of existing domestic water uses and water rights, 3) the proposed use is a beneficial use and 4) it is in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board with the following qualifications:

1. Water Permit No. 8544-3 authorizes storage of up to 100 acre feet of water and sufficient water annually to maintain the water level to the outlet elevation.
2. Low flows as needed for downstream domestic use, including livestock water and prior water rights must be by-passed.
3. The permit holder shall submit plans and specifications for the south wetland portion of this project pursuant to Administrative Rules of South Dakota Chapter 74:02:08 to the Chief Engineer of the Water Rights Program, SD DANR. Construction of the south wetland portion of the project may not begin without approval of the plans and specifications by the Chief Engineer.

See report on application for additional information.

Eric Gronlund, Chief Engineer
November 2, 2021

Report to the Chief Engineer
Water Permit Application No. 8544-3
Ducks Unlimited

Water Permit Application No. 8544-3 by Duck Unlimited c/o Justin Williams proposes to appropriate and impound 100 acre-feet of surface water runoff by restoration of several drained wetland areas (within an approximately 250 acres area) located in the S ½ NW ¼, SW ¼ NE ¼, SE ¼ SW ¼, N ½ SW ¼, W ½ SE ¼ Section 20-T93N-R51W. The site contains historic floodplain wetlands that have been hydrologically modified by the construction of drainage ditches. As part of this project the previous drained wetland areas would be restored using linear ditch fills, embankments, excavations, and other enhancements. The project is also capable of capturing water from the Vermillion River for impoundment during higher flows in the Vermillion River. This site is located approximately five miles north of Vermillion, SD.

South Dakota Codified Laws (SDCL)

SDCL 46-2A-9

Pursuant to SDCL 46-2A-9, a permit to appropriate water may be issued only if there is a reasonable probability there is unappropriated water available for the applicant's proposed use, the proposed diversion can be developed without unlawful impairment of existing domestic water uses and water rights, and the proposed use is a beneficial use and in the public interest as it pertains to matters of public interest within the regulatory authority of the Water Management Board. This report will address availability of unappropriated water and potential for unlawful impairment to existing rights that are pertinent to this application.

Summary of Proposed Project

The purpose of this project is to restore wetland hydrology to an area of the Vermillion River flood plain that has been previously altered to facilitate faster drainage. Project features are excavation 1, excavation 2, and a south wetland; approximate locations are shown in Figure 1 and summarized in Table 1.

Table 1: Summary of Project Features			
Feature	Surface area (acres)	Volume (acre-feet)	Notes
Excavation 1	2.06	0.95	n/a
Excavation 2	7.7	7.07	n/a
South Wetland	86.28	89.64	at water elevation 1143.3 ftmsl



Figure 1: Map of the project area and key project features based on information provided by the applicant.

The proposed south wetland is an off-channel impoundment of water which would be bounded by river bluffs to the southwest, a south embankment between the wetland and 313 Street, a levee on the east side, and embankments and existing high ground to the north. The proposed inlet to the south wetland from an isolated remnant of the old Vermillion River channel consists of two 36 inch corrugated metal pipes (CMPs) with the pipe invert at an elevation of 1140 feet mean sea level (ftmsl). The primary outlet to the south wetland is by flow over the proposed south embankment between the wetland and 313 Street, which has a top of embankment elevation of 1143.3 ftmsl. Based on the preliminary plans for this application the south wetland also includes two flow-over levees that would allow inflow from the Vermillion River when the river exceeds elevation 1145 ftmsl or discharge to the river if the water level in the south wetland exceeds elevation 1145 ft. The proposed locations for the flow-over levees are two location where the existing levee is identified in the plans as being breached. The top elevation of the eastern levee along the south wetland outside of the proposed flow over locations is approximately at elevation 1148 ftmsl.

Review of the Water Sources

Water supply to excavation 1 and excavation 2 is incidental runoff, direct rainfall to the excavations, and retention of flood waters when the water level of the Vermillion River is high enough to flood the flood plain.

The drainage area upstream of the inlet structure into the south wetland from an isolated remnant of the old Vermillion River channel is approximately 4.84 square miles or 3097.6 acres (Ries, et al., 2017). The Natural Resources Conservation Service (NRCS) annual surface yield method for South Dakota was used to estimate annual surface yield for the drainage area upstream of the inlet into the southern wetland (USDA-NRCS, 1984). The method estimates the volume of runoff which can be expected for a twelve-month period a given percentage of time (USDA-NRCS, 1984). For example, the 80 percent occurrence estimate has an 80 percent chance of occurring each year. The annual surface yields for the drainage area at the percent chances of occurrence provided by the NRCS method are presented in Table 2.

Table 2: Estimated Total Annual Yield of Surface Runoff (USDA-NRCS, 1984)

Percent Chance of Occurrence	Total Runoff (acre inches per acre)	Total Runoff (acre-feet)
80	0.8	206.5
50	2.8	722.8
20	3.7	955.1
10	5.5	1419.7

Based on the preliminary project plans the inlet structure into the south wetland from an isolated remnant of the old Vermillion River channel is proposed to consist of two 36 inch CMPs. Outside of when the water level of the Vermillion River is high enough to flood the area, diversions into the south wetland should be limited by the capacity and invert elevation of the inlet structure. So, water can only be diverted to the south wetland if there is water there. The southern wetland will also receive water from direct rainfall on the wetland and some limited incidental runoff from the river buffs along the southwestern edge of the wetland.

Inflow into the project from the Vermillion River should only happen while the river is at higher stages or flooding, so water should be available whenever inflow to the project occurs from the Vermillion River. However, information on water availability for the Vermillion River will still be presented out of an abundance of caution. The United States Geological Survey (USGS) operates a streamflow gaging station on the Vermillion River approximately 3.9 miles downstream of the location for this project. USGS Stream Gage No. 06479010 Vermillion River near Vermillion South Dakota has been in operation since 1983 (USGS, 2021). Figure 2 presents the 10th, 25th, and 50th percentile daily discharge statistics for the gage.

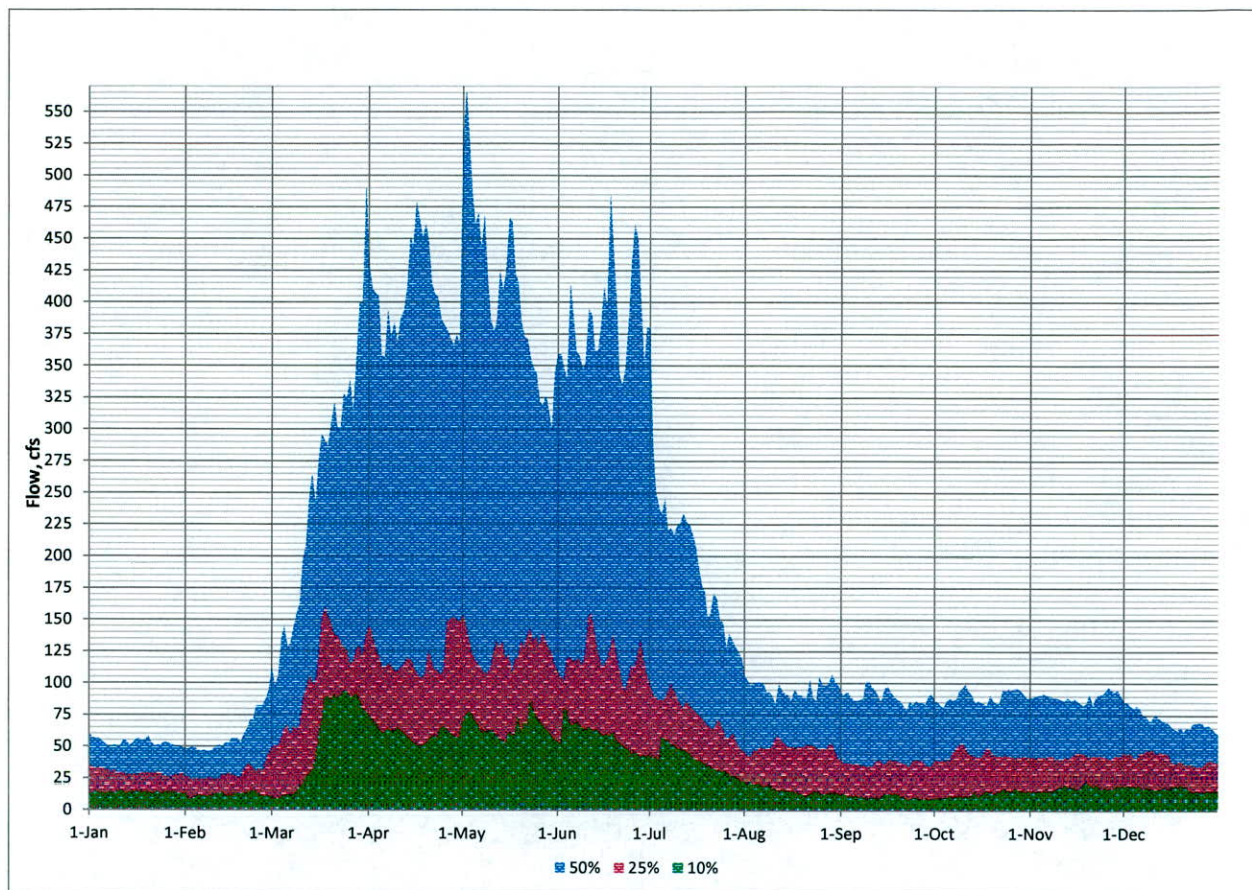


Figure 2: Daily percentile flow hydrographs for the USGS gage on the Vermillion River near Vermillion SD, 1983-2021, contributing drainage area 1,776 square miles (USGS, 2021)

Percentile values can be used to examine water availability. The 50th percentile shows the flow rate which is met or exceeded 1 out of every 2 years. The 25th percentile shows the flow rate which is met or exceeded 3 out of every 4 years. The 10th percentile shows the flow rate which is met or exceeded 9 out of every 10 years. At the 50th percentile, flows are around 50 cfs from January to mid-February before sharply increasing to approximately 300 cfs or above (up to approximately 550 cfs) by mid-March. Fiftieth percentile flows maintain these levels until July 1 where they decrease to fluctuating between approximately 75 to 100 cfs until the beginning of December. During December 50th percentile flows fluctuate between approximately 50 to 75 cfs. At the 10th percentile, flows from the beginning of August to mid-March are less than 25 cfs and flows from mid-March to the mid-July fluctuate between approximately 50 to 100 cfs.

Review of Existing Water Rights

There are six water rights/permits for the Vermillion River. These water rights/permits are summarized in Table 3. Of those six water rights/permits, the three water rights/permits in Clay County are downstream of the project location for this application and have a total diversion rate of 7.33 cfs. The nearest of these is Water Permit No. 6057-3 approximately 11 miles downstream of the location for this project located near the confluence of the Vermillion and Missouri Rivers.

Report on Water Permit Application 8544-3

Table 3: Summary of Vermillion River Water Rights/Permits (Water Rights, 2021a)

Permit No.	Name	County	Use	Status	Pump Rate (cfs)	Dam Storage (acre-feet)
145-3	DEPT OF GAME FISH & PARKS	MCCOOK	FISH AND WILDLIFE PROPAGATION, RECREATION	LICENSE	0	7,040
977A-3	FRANCIS HEINE	CLAY	IRRIGATION	LICENSE	3.64	n/a
977B-3	FRANCIS HEINE	CLAY	IRRIGATION	LICENSE	2.36	n/a
4951-3	BERNARD & MARY J DONELAN	MCCOOK	IRRIGATION	PERMIT	2	n/a
6057-3	FRANCIS HEINE	CLAY	IRRIGATION	PERMIT	1.33	n/a
6639-3	DEPT OF GAME FISH & PARKS	TURNER	RECREATION	PERMIT	0	38.8

Based on the available information for the water sources for this project and the proposed design for this project is only capturing water from the Vermillion River if it is when the river stage is above 1,145 ftmsl, there is a reasonable probability that water is available for the project proposed by this application.

The inlet from the remnant of the old Vermillion River channel into this project is approximately 0.7 channel miles from where the remnant channel outlets into the Vermillion River. There are no water rights/permit or location notices between the inlet into the south wetland and the Vermillion River (Water Rights, 2020a; Water Rights, 2020b). Based on information submitted with the application, the property boundary for the property where this project is to be located extends to the Vermillion River. The drainage area of the remnant of the old Vermillion River channel (4.84 square miles) is extremely small relative to the drainage area of the Vermillion River upstream of USGS Stream Gage No. 06479010 (1,776 square miles). Given the design of this project as to when water can enter the impounding areas, the proposed volume to be impounded, and the distance to other Vermillion River water rights/permits, this application, if approved, is not expected to unlawfully impair existing water rights/permits or domestic users.

Safety of Dams

South Dakota's Safety of Dams rules (Administrative Rules of South Dakota (ARSD) Chapter 74:02:08) are minimum standards for design and construction of dams; which in general are defined as artificial barriers that impound water which are either (1) greater or equal to 25 feet in height and has a maximum storage greater than 15 acre-feet or (2) greater than six feet in height and have a maximum storage of 50 acre-feet or more. The height of the dam is the difference in elevation between the natural bed of the watercourse or the lowest point on the toe of the dam, whichever is lower, and the crest elevation of the dam and the maximum storage capacity is the storage to the crest (top of the structure). As part of the South Dakota's Safety of Dams rules, structures that meet the definition of a dam under ARSD Chapter 74:02:08 are required to have the plans and specifications for the project approved by the Chief Engineer of the Water Rights Program prior to construction.

As part of the proposed project, if approved, water would be impounded in a location where water was not previously impounded. While the information in the provided preliminary plans is limited regarding the height of the eastern levee along the south wetland, what was provided indicates that it likely exceeds six feet. Based on the information provided by the applicant

Report on Water Permit Application 8544-3

storage in the south wetland at elevation 1143.3 ft is 89.64 acre-feet. Since the preliminary plans indicate the top of the eastern levee is approximately elevation 1148 ft, the maximum storage for the south wetland is in excess of 50 acre-feet. So, the section of the levee to be repaired along the east side of the south wetland will likely meet the definition of a dam under the South Dakota's Safety of Dams rules. Therefore, the final plans and specifications for the south wetland portion of this project will require approval by the Chief Engineer of the Water Rights Program prior to construction.

Conclusions

1. Water Permit Application No. 8544-3 by Duck Unlimited proposes to appropriate and impound 100 acre-feet of surface water runoff from a segment of the Old Vermillion River channel by restoration of several drained wetland areas located in the S $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$ Section 20-T93N-R51W. The site contains historic floodplain wetlands that have been hydrologically modified by the construction of drainage ditches. As part of this project the previous drained wetland areas would be restored using linear ditch fills, embankments, excavations, and other enhancements. The project is also capable of capturing water from the Vermillion River for impoundment during higher flows in the Vermillion River.
2. Since this project is designed to impound water only from nearby local runoff or during high flow events on the Vermillion River and based on the estimated annual surface runoff yields for the remnant of the old Vermillion River channel, there is a reasonable probability that unappropriated water is available for this application.
3. The diversion and impoundment of water as proposed by this application, if approved, is not expected to unlawfully impair existing water rights or domestic users.
4. Under South Dakota's Safety of Dams rules the south wetland will need plans and specifications approval by the Chief Engineer in addition to an approved water permit application prior to construction.


Whitney Kilts
SDDANR-Water Rights Program

Reviewed by:


Mark Rath
SDDANR-Water Rights Program

References

Ries, K.G., Newson J.K., Smith, M.J., Guthrie, J.D., Steeves, P.A., Haluska, T.L., Kolb, K.R., Thompson, R.F., Santoro, R.D., and Vraga, H.W., 2017, StreamStats, version 4: U.S. Geological Survey. < <https://streamstats.usgs.gov/ss/>>. Accessed October 15, 2021.

USDA-NRCS. 1984. Engineering Field Manual – Annual Surface Yield (Method A). US Department of Agriculture (USDA). Natural Resources Conservation Service (NRCS).

USDA-NRCS. 2021. United States Department of Agriculture. Web Soil Survey. <<http://websoilsurvey.sc.egov.usda.gov/>>. Accessed October 20, 2021.

USGS. 2021. United States Geological Survey. National Water Information System-Stream Gaging Station Network for South Dakota. <<https://maps.waterdata.usgs.gov/mapper/index.html>>. Accessed October 25, 2021.

Water Rights. 2021a. Water Right/Permit Files. SD DANR-Water Rights Program, Joe Foss Building, Pierre, South Dakota.

Water Rights. 2021b. Location Notices. SD DANR-Water Rights Program, Joe Foss Building, Pierre, South Dakota.

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, November 2, 2021 1:19 PM
To: 'juwilliams@ducks.org'
Subject: Water Permit Application No. 8544-3
Attachments: 2146.pdf

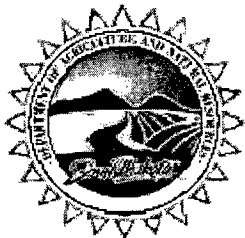
Attached is a copy of the report, chief engineer recommendation and information regarding the public notice for your water permit application. As stated in the letter, please contact the paper(s) as soon as possible to authorize publication and arrange for payment. This information is being mailed to you today.

Karen Schlaak

DANR - Water Rights Program

(605) 773-3352

Website: <https://danr.sd.gov>



AFFIDAVIT OF PUBLICATION

YANKTON DAILY PRESS AND DAKOTAN

RECEIVED

NOV 15 2021

WATER RIGHTS
PROGRAM

DUCKS UNLIMITED
2525 RIVER RD.
BISMARCK ND 58503

STATE OF SOUTH DAKOTA
COUNTY OF YANKTON

KELLY HERTZ, BEING FIRST DULY SWORN ON OATH DEPOSES
AND SAYS THAT (S)HE IS THE MANAGING EDITOR OF YANKTON
MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE
YANKTON DAILY PRESS AND DAKOTAN, A LEGAL DAILY NEWSPAPER
PUBLISHED AND CIRCULATED IN THE CITY OF YANKTON, SAID COUNTY
AND STATE, AND ONE OF THE OFFICIAL NEWSPAPERS OF THE SAID
COUNTY OF FACTS STATED IN THIS AFFIDAVIT; THAT THE ANNEXED
11 + 10 NOTICE OF APPLICATI

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE
NEWSPAPER ON THE 10th DAY OF November, 2021
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION
OF SAID NOTICE TO WIT \$37.69 ENSURES TO THE
BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO
AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS
BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF
HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 11/10/2021

FILED ON: 11/11/2021


SUBSCRIBED AND SWORN TO BEFORE ME THIS 11th DAY OF November, 2021


NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 07/04/2026

NOTICE OF APPLICATION NO. 8544-3 to Appropriate Water

Notice is given that Ducks Unlimited, c/o Justin Williams, 2525 River Rd, Bismarck ND 58503 has filed an application for a water permit to appropriate and impound 100 acre-feet of water of surface water runoff by restoring several drained wetland areas within an approximately 250 acre area located in the S 1/2 NW 1/4, SW 1/4 NE 1/4, SE 1/4 SW 1/4, N 1/2 SW 1/4, W 1/2 SE 1/4 Section 20-T93N-R51W. The site contains historic floodplain wetlands that have been hydrologically-modified via constructed drainage ditches. The previously drained wetland areas would be restored using linear ditch fills, embankments, excavations, and other enhancements to increase water retention for fish and wildlife propagation purposes. This site is located approximately 5 miles north of Vermillion SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8544-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineers recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

Any person interested in opposing this application or recommendation shall allege that the application, upon approval, will cause injury to the person that is unique from any injury suffered by the public in general. The injury must concern a matter either within the regulatory authority found in SDCL 46-2A-9 for approval or denial of the application, or other matter concerning the application within the regulatory authority of the board to act upon as defined by SDCL 46-2-9 and 46-2-11, or both. Any person meeting the petitioner requirements and wishing to be a party of record in a contested case hearing shall file a written petition to oppose the application with BOTH the applicant and Chief Engineer. A petition opposing the application shall be filed on a form provided by the Chief Engineer. The petition form is available online at <https://danr.sd.gov/public> or by contacting the Chief Engineer. The Chief Engineer's address is "Water Rights Program, Foss Building, 523 E Capitol, Pierre SD 57501 or call (605) 773-3352. The applicant's mailing address is given above. If contesting the Chief Engineer's recommendation, the applicant shall also file a petition. A petition filed by either an interested person or the applicant must be filed by November 22, 2021.

The petition shall include a statement describing the unique injury upon approval of the application on the petitioner, the petitioner's reasons for opposing the application, and the name and mailing address of the petitioner or the petitioner's legal counsel, if legal counsel is obtained.

Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by November 22, 2021.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published once at the total approximate cost of \$37.69.

AFFIDAVIT OF PUBLICATION

PLAIN TALK

RECEIVED

NOV 15 2021

WATER RIGHTS
PROGRAM

DUCKS UNLIMITED
2525 RIVER RD.
BISMARCK ND 58503

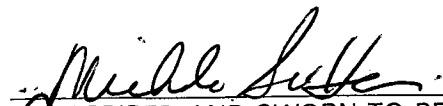
STATE OF SOUTH DAKOTA
COUNTY OF CLAY

MICHELE SCHIEVELBEIN, BEING FIRST DULY SWORN ON OATH DEPOSES AND SAYS THAT (S)HE IS THE ADVERTISING DIRECTOR OF YANKTON MEDIA INC, A CORPORATION, THE PRINTER AND THE PUBLISHER OF THE PLAIN TALK, A LEGAL WEEKLY NEWSPAPER PUBLISHED AND CIRCULATED IN THE CITY OF VERMILLION, SAID COUNTY AND STATE, AND ONE OF THE OFFICIAL NEWSPAPERS OF THE SAID COUNTY OF FACTS STATED IN THIS AFFIDAVIT; THAT THE ANNEXED NOTICE OF APPLICATION NO.

TAKEN FROM THE PAPER, IN WHICH IT WAS LAST PUBLISHED IN THE NEWSPAPER ON THE 12th DAY OF November, 2021
THAT THE FULL AMOUNT OF THE FEE CHARGED FOR THE PUBLICATION OF SAID NOTICE TO WIT. \$37.54 ENSURES TO THE BENEFITS OF THE PUBLISHER OF SAID NEWSPAPER AND THAT NO AGREEMENT AND UNDERSTANDING FOR THE DIVISION THEREOF HAS BEEN MADE WITH ANY OTHER PERSON, AND THAT NO PART THEREOF HAS BEEN AGREED TO BE PAID TO ANY PERSON WHOMSOEVER.

PUBLISHED ON: 11/12/2021

FILED ON: 11/12/2021



SUBSCRIBED AND SWORN TO BEFORE ME THIS 12th DAY OF November, 2021



NOTARY PUBLIC, SOUTH DAKOTA
MY COMMISSION EXPIRES 07/04/2026

Notice is given that Ducks Unlimited, c/o Justin Williams, 2525 River Rd, Bismarck ND 58503 has filed an application for a water permit to appropriate and impound 100 acre-feet of water of surface water runoff by restoring several drained wetland areas within an approximately 250 acre area located in the S 1/2 NW 1/4, SW 1/4 NE 1/4, SE 1/4 SW 1/4, N 1/2 SW 1/4, W 1/2 SE 1/4 Section 20-T93N-R51W. The site contains historic floodplain wetlands that have been hydrologically-modified via constructed drainage ditches. The previously drained wetland areas would be restored using linear ditch fills, embankments, excavations, and other enhancements to increase water retention for fish and wildlife propagation purposes. This site is located approximately 5 miles north of Vermillion SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8544-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineers recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

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If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published once at the total approximate cost of \$37.54.

Published November 12, 2021.

Schlaak, Karen

From: Schlaak, Karen
Sent: Tuesday, November 2, 2021 1:08 PM
To: Sam Berres
Subject: Water Permit No. 8544-3, Ducks Unlimited
Attachments: 8544-3public.short_final.docx; FORM8.FRM.doc

Attached is a notice to be published on November 10, 2021 in both the Plain Talk and the Press & Dakotan

Ducks Unlimited, c/o Justin Williams, 2525 River St, Bismarck ND 58503 (701 355-3500) has been notified to contact you to authorize publication and arrange for payment.

Please send the affidavit or return the attached Proof of Publication form ASAP to the Water Rights Program, 523 E Capitol, Pierre SD 57501.

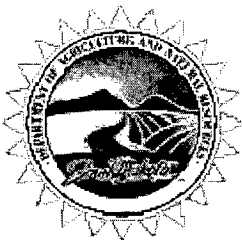
Let me know if you have questions. Please acknowledge receipt of this email.

Karen Schlaak

DANR - Water Rights Program

(605) 773-3352

Website: <https://danr.sd.gov>





**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

**NOTE: TO BE SURE OF PUBLICATION ON
THE CORRECT DATES, CONTACT
THE NEWSPAPERS RIGHT AWAY.**

November 2, 2021

Ducks Unlimited
c/o Justin Williams
2525 River Rd
Bismarck ND 58503

Dear Mr. Williams:

Water Permit Application No. 8544-3 for fish and wildlife propagation use have been examined and found to comply with the South Dakota Water Laws and applicable rules. A notice has been sent to the Plain Talk printed at Vermillion (Ph # 624-2695) and the Press & Dakota printed at Yankton (Ph # 665-7811). You will need to contact the newspapers and authorize publication of this notice. For your information, a copy of the notice, the recommendation of the Chief Engineer and report on the application are enclosed. Please review the notice prior to publication and notify this office, if you have any corrections or questions.

Be sure to contact the above newspapers to authorize publication of your Notice and to arrange for payment. Early contact with the papers can eliminate delays. Upon receiving authorization from you, the publishers have been instructed to publish your notice. The newspapers have also been instructed to send us the Proof of Publication. We must receive Proof of Publication before action can be taken on the application.

Sincerely,

Karen Schlaak

Karen Schlaak
Water Rights Program
(605) 773-3352

enclosures

NOTE: If you plan to contest any part of the Chief Engineer's recommendation, you must file a petition pursuant to the procedures outlined in the attached notice of hearing. The Water Management Board will then consider your concerns during a hearing on the application.

Instruction to Newspaper - Publish the Notice on November 10, 2021. The applicant is responsible for payment.

NOTICE OF APPLICATION NO. 8544-3 to Appropriate Water

Notice is given that Ducks Unlimited, c/o Justin Williams, 2525 River Rd, Bismarck ND 58503 has filed an application for a water permit to appropriate and impound 100 acre-feet of water of surface water runoff by restoring several drained wetland areas within an approximately 250 acre area located in the S 1/2 NW 1/4, SW 1/4 NE 1/4, SE 1/4 SW 1/4, N 1/2 SW 1/4, W 1/2 SE 1/4 Section 20-T93N-R51W. The site contains historic floodplain wetlands that have been hydrologically-modified via constructed drainage ditches. The previously drained wetland areas would be restored using linear ditch fills, embankments, excavations, and other enhancements to increase water retention for fish and wildlife propagation purposes. This site is located approximately 5 miles north of Vermillion SD.

Pursuant to SDCL 46-2A-2, the Chief Engineer recommends APPROVAL of Application No. 8544-3 with qualifications because 1) unappropriated water is available, 2) existing domestic water uses and water rights will not be unlawfully impaired, 3) it is a beneficial use of water, and 4) it is in the public interest as it pertains to matters within the regulatory authority of the Water Management Board. The Chief Engineer's recommendation with qualifications, the application, and staff report are available at <https://danr.sd.gov/public> or contact Ron Duvall for this information, or other information, at the Water Rights Program address provided below.

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Any interested person may file a comment on the application with the Chief Engineer. The comment shall be filed on a form provided by the Chief Engineer and is available online at <https://danr.sd.gov/public> or by calling (605) 773-3352 or writing the Chief Engineer at the address provided above. Filing a comment does not make the commenter a party of record or a participant in any hearing that may be held. Any comment must be filed by November 22, 2021.

If the applicant does not contest the recommendation of the Chief Engineer and no petition to oppose the application is received, the Chief Engineer shall act on the application pursuant to the recommendation with no hearing held before the Water Management Board. If a petition opposing the application or contesting the recommendation is filed, then a hearing will be scheduled, and the Water Management Board will consider this application. Notice of the hearing will be given to the applicant and any person filing a petition.

Published once at the total approximate cost of _



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

January 20, 2022

Ducks Unlimited
c/o Justin Williams, Manager
2525 River Rd
Bismarck ND 58503

Dear Mr. Williams:

Enclosed is Water Permit No. 8544-3 authorizing construction of the water diversion system and beneficial use of the water, not exceeding the limits as specified in the Water Permit.

Form 10, *Notice of Completion of Works and Application of Water to Beneficial Use*, is enclosed. Please return this completed form after you have finished the system and have put the water to beneficial use. An investigation can then be scheduled so the water license may be issued, thus completing the acquisition of a water right.

An informational sheet *Common Water Right Questions?* is also enclosed. This sheet is intended to answer some of the questions associated with obtaining and keeping a water right.

Sincerely,

Eric Gronlund
Eric Gronlund, Chief Engineer
Water Rights Program
(605) 773-3352

enclosures



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

March 21, 2024

Ducks Unlimited
Attn: Casey Campbell
2121 N Webb Rd., Suite 309
Grand Island, NE

Sent via email

Dear Mr. Campbell:

We have reviewed the plans and specifications prepared by Ducks Unlimited for the wetland reconstruction project for Water Permit No. 8544-3 located in Section 20-T93N-R51W in Clay County. The plans and specifications for the reconstruction of the dam are approved.

Our review was to determine compliance with the requirements of the Water Management Board Safety of Dams Rules, Chapter 74:02:08. Approval of these plans and specifications does not release the owner of the project from the responsibility for operating and maintaining the structures to ensure their safety.

Lower Booth Dam will be classified as a small size category 3, (low hazard dam) with a dam height of 7 feet and a normal storage capacity of 89.64 acre-feet. A category 3 dam is a low hazard dam whose failure may cause limited damage to agricultural lands or county or township roads or minimum economic loss. However, future downstream development could change this classification. Additionally, the Water Rights Program does not have an inspection program for federally owned low hazard dams, so the development of an inspection and maintenance routine to help ensure the long-term safety of the dam is encouraged.

If you have any questions, please feel free to contact the Water Rights Program at (605) 773-3352.

Sincerely,

Eric Gronlund, PE
Chief Engineer, Water Rights Program



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

JOE FOSS BUILDING
523 E. CAPITOL AVE
PIERRE SD 57501-3182
danr.sd.gov

July 20, 2026

8544-3

Ducks Unlimited
C/O Trenton Hieb
2525 River Road
Bismarck, ND 58503

Dear Mr. Hieb:

I am writing to acknowledge receipt of the "Notice of Completion of Works" form that you sent in to let us know that you are completed with your water use system.

The system is now ready for inspection. Inspections are done on a county-by-county basis as staff time permits. You have done everything you need to do and the intervening time between the completion of your project and the staff inspection has no bearing on your water permit.

Someone from our office will contact you prior to the inspection to set up a time that is convenient for you. If you have any questions, please contact me.

Sincerely,

Shannon Konst
Water Rights Program
(605) 773-3352
email: Shannon.konst@state.sd.us

JUL 20 2026

OFFICE OF
WATER

**NOTICE OF COMPLETION OF WORKS AND
APPLICATION OF WATER TO BENEFICIAL USE**

Date 7-1-26

TO: Water Rights Program, DANR
523 E. Capitol
Pierre, SD 57501-3181

FROM: Trenton Hieb / Ducks Unlimited
(name)
2525 River Road
(address)
Bismarck, ND, 58503 701-355-3573
(city, state, zip) (phone)

I have completed the construction of the water use system and I have put the water to beneficial use to the maximum extent it is going to be used.

Water Permit No. 8544-3 states that the water use system is to be constructed by
11-22-2026 , and water is to be put to beneficial use by 11-22-2030 .
(date) (date)

The water use system was completed on 5-31-2026 .
(date)

Applying the water to beneficial use was completed on 6-30-2026 .
(date)

You may schedule an investigation so that the water license may be issued.

Trenton Hieb
(signature)

