COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

November 21, 2024

Brent Scarbrough
Frontier Environmental Services
5350 Vivian St, Unit B
Arvada, CO 80002

Re: Activities Being Conducted at the Yocam Borrow Pit, Permit No. M-2018-020

Dear Mr. Scarbrough:

On November 14, 2024, the Division of Reclamation, Mining and Safety (Division/DRMS) performed a routine monitoring inspection of the Yocam Borrow Pit (M2018-020). During that inspection it was determined that Frontier Environmental Services was transporting material from a river restoration project to the Yocam permit area.

The activities observed at the site may require a reclamation permit. In order for the Division better evaluate whether or not a permit is required please complete and return the attached "Is It Mining" form.

Please respond to this letter within 30 days of the date on this letter, by **December 21, 2024**.

If you need additional information or have any questions, please contact me by email at patrick.lennberg@state.co.us or by phone at (720) 665-0836.

Sincerely,

Patrick Lennberg
Environmental Protection Specialist

Attachment: Is It Mining Form

cc: Jared Ebert; DRMS

ec: Brent Scarbrough, Frontier Environmental Services, brent@frontierenvironmental.net

Attachments

COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources

Date: 12/18/2024

RE: Need for State Reclamation Permit: "Is It Mining?"

Name: Ecosystem Investment Partners

Street Address:

Telephone: ( ) **Mobile:** (828) 243-2674

Email Address: kyle@ecosystempartners.com

Enclosed are pertinent sections of the Colorado Mined Land Reclamation Board (Board) Rules governing activities that do not require a reclamation permit. To determine if you need a permit for you proposed activity, first check Rule 1.2 which describes activities the Board has determined do not require state reclamation permits. If you find a match, you can proceed based on your interpretation of the rule, but at your own risk. If you are uncertain how the Rule may apply to your activity, you should answer the list of questions below with as much detail as possible. Please feel free to use additional paper, maps, and attachments to explain your project.

Please include in your determination request answers to the following questions:

1. Please provide the legal location of the proposed project and submit a site map that clearly delineates the location of the proposed extraction site and the location of the nearest city, town, and county location name.

Section: 14 **Township:** 4N **Range:** 60W **PM** 6th

Or NAD 27 GPS **X UTM** **Y UTM**

Direction and Miles to nearest town/city: 2 miles south of Orchard **County:** Morgan

2. Is the site of material extraction on public or privately owned property?

   Public ☑ Private ☐

3. What type(s) of material or metal is/are proposed to be extracted and describe the physical nature of the site i.e., river terrace, rocky knob, in-stream gravel deposit, etc.?

   This project is not mining. It it involves removal of floodplain sand and silt as part of a wetland restoration effort, with the primary goal of reestablishing wetlands to support a wetland mitigation bank.

4. What processing or extraction method(s) will be used on site? Include any equipment or chemical(s) that will be used in the processing and extraction of the materials.

   Conventional excavation. No chemical processing or extraction.

5. Will the extracted material be hauled offsite or used on the same parcel of property where the material is extracted?

   The floodplain sand and silt will be removed from the project site to the adjacent property. See figures in Appendix A.

6. How will the extracted material be used on site?

   The material is being placed within the former borrow site on the adjacent property. There is no intended use for the materials.

7. If the material is hauled offsite, where will it be hauled to and what it the intended use?

   The floodplain sand and silt are being removed as part of a wetland restoration effort, with the primary goal of reestablishing wetlands to support a wetland mitigation bank. All sand and silt are being hauled to adjacent property to the location of a former borrow site. There is no intended use for these materials.

8. What is the approximate areal extent of the proposed extraction in acres?

~100 acres

9. To what approximate depth will the extraction extend?

1-3 ft.

10. In cubic yards, approximately how much material will be removed:

320,000 CY

11. Will material extraction involve the use of explosives?

Yes ☐ No ☑

12. Will site of extraction result in the exposure of tributary ground water?

Yes ☐ No ☑

13. Will either the landowner or the mine site operator receive any type of compensation, i.e., monetary, in-kind, haulage fees, etc., from the proposed material extraction?

Yes ☐ No ☑

14. Please supply a copy of any documents that will ensure that the area of extraction will be reclaimed to some beneficial land use once extraction activities have been completed.

Enclosed copy of Mitigation Banking Instrument

15. Do you have permits for this activity from any other governmental agencies such as building, construction, or grading permits, and if so, what are they?

Yes- The site was approved by USACE as a Clean Water Act Section 404 Mitigation bank which required approvals from State and Federal agencies. Also acquired Clean Water Act permit and Stormwater permits

16. Are there state/federal/local agency participants in terms of funding?

Funding	Yes ☐	No ☑
Design	Yes ☐	No ☑

Percentages

State _____ Federal _____ Local Agency _____

17. What post mining land uses will be made of the extraction and why? (This question helps us determine the intent of the activity.)

The 100 acre site was approved by USACE for a wetland restoration project with the primary goal of reestablishing wetlands to support a wetland mitigation bank. The project site is preserved under a conservation easement.

18. What types and sizes of equipment will be used in the extraction?

Conventional 30 ton excavators and 40 ton off-road haul trucks.

Please send the completed questionnaire to the Division at the address above for review. The Board has directed the Division to make a decision based on the information you have supplied. We trust that the activities will be performed as represented. If we receive a complaint, we are required by law to conduct an inspection of the site. Which could result in a violation, a cease and desist order, and other corrective actions including submittal of a permit application.

If you have any questions, please contact the Division at (303)866-3567. Please feel free to visit our web site at: https://colorado.gov/drms for further access to the full Act and Rules governing extraction of metals, non-metals, and construction materials in the State of Colorado.

Sincerely,

Division of Reclamation, Mining and Safety Staff

Enclosure: Rule 1.2 excerpt for Hard Rock Metal Mines and Construction Materials
Rule 1.2 excerpt for Hard Rock/Metal Mining

1.2 SCOPE OF RULES AND ACTIVITIES THAT DO NOT REQUIRE A RECLAMATION PERMIT

1.2.1 Specified by Rule

The Board has determined that certain types of activities do not need reclamation permits either because the excavated substance is not a mineral as defined in Section 34-32-103(7), Colorado Revised Statutes 1984, as amended or because the activity is not a mining operation as defined by Section 34-32-103(8), C.R.S. 1984, as amended. Such activities include the following:

(a) the exploration and extraction of natural petroleum in a liquid or gaseous state by means of wells or pipe;

(b) the development or extraction of coal (refer to the Colorado Surface Coal Mining Reclamation Act Section 34-33-101, et seq., C.R.S. 1984, as amended);

(c) smelting, refining, cleaning, preparation, transportation, and other off site operations not conducted on affected land;

(d) a custom mill.

1.2 ACTIVITIES THAT DO NOT REQUIRE A RECLAMATION PERMIT

103(3) and (13)

1.2.1 Specified by Rule

The Board has determined that certain types of activities do not need reclamation permits either because the excavated substance is not a construction material as defined in Section 34-32.5-103(3}, Colorado Revised Statutes 1984, as amended or because the activity is not a mining operation as defined by Section 34-32.5-103(13), C.R.S. 1984, asamended. Such activities include the following:

(a) the exploration and extraction of natural petroleum in a liquid or gaseous state by means of wells or pipe:

(b) the development or extraction of coal (refer to the Colorado Surface Coal Mining Reclamation Act Section 34-33-101, et seq., C.R.S. 1984, as amended);

(c) cleaning, preparation, transportation, and other off-site operations not conducted on permitted land: and

(d) the extraction of geothermal or groundwater resources.

1.2.2 Reserved

1.2.3 Reserved

1.2.4 Extraction or Exploration on Federal Lands

Any person who Intends to extract or explore for construction materials on federal lands shall apply for a Mined Land Reclamation Board permit or submit a Notice of Intent to conduct exploration operations unless specifically exempted by the Board according to the provisions of this Subsection 1.2.

APPENDIX A

FIGURES

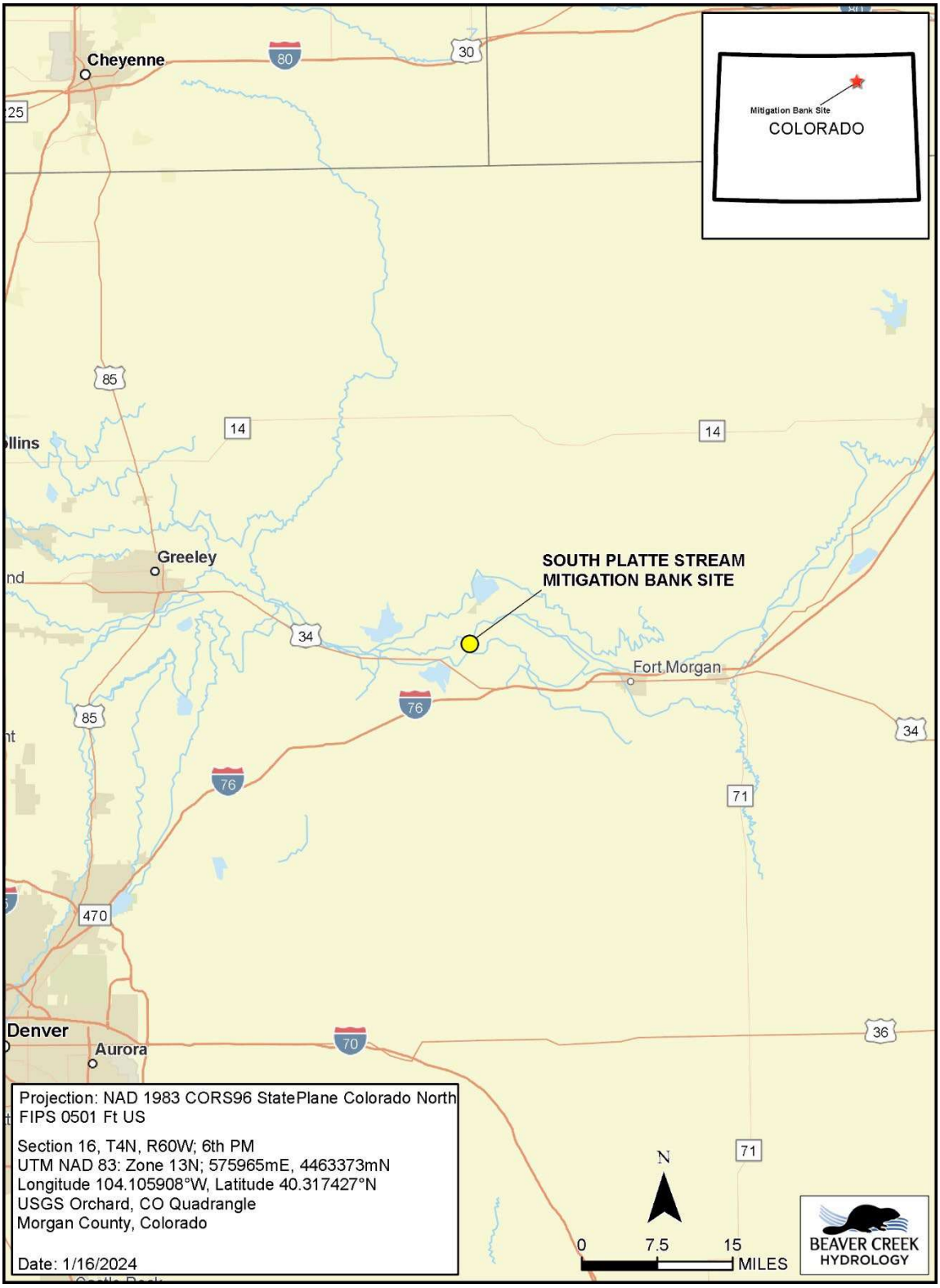


Figure 1. Vicinity Map.

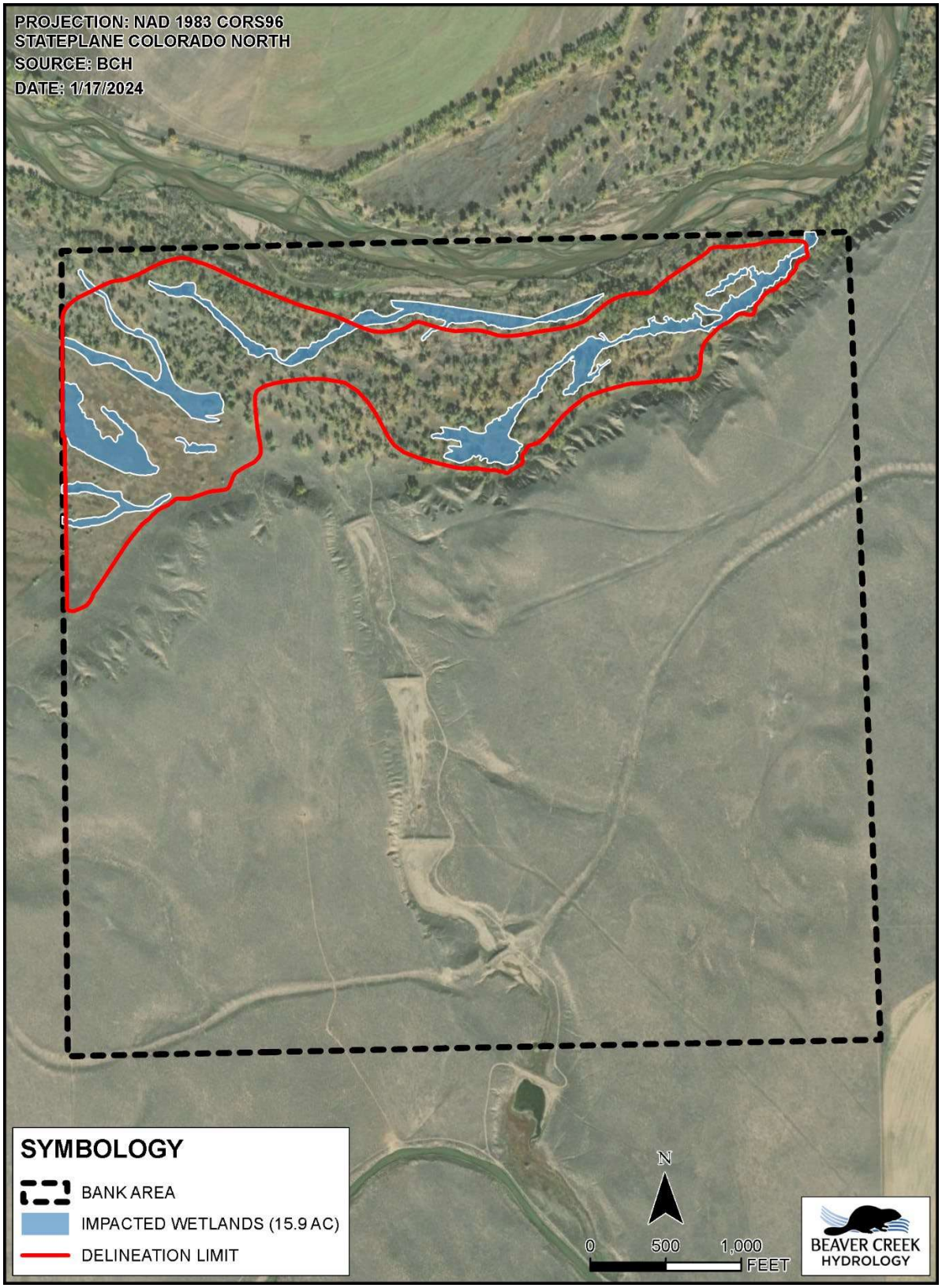


Figure 2. Existing Conditions.

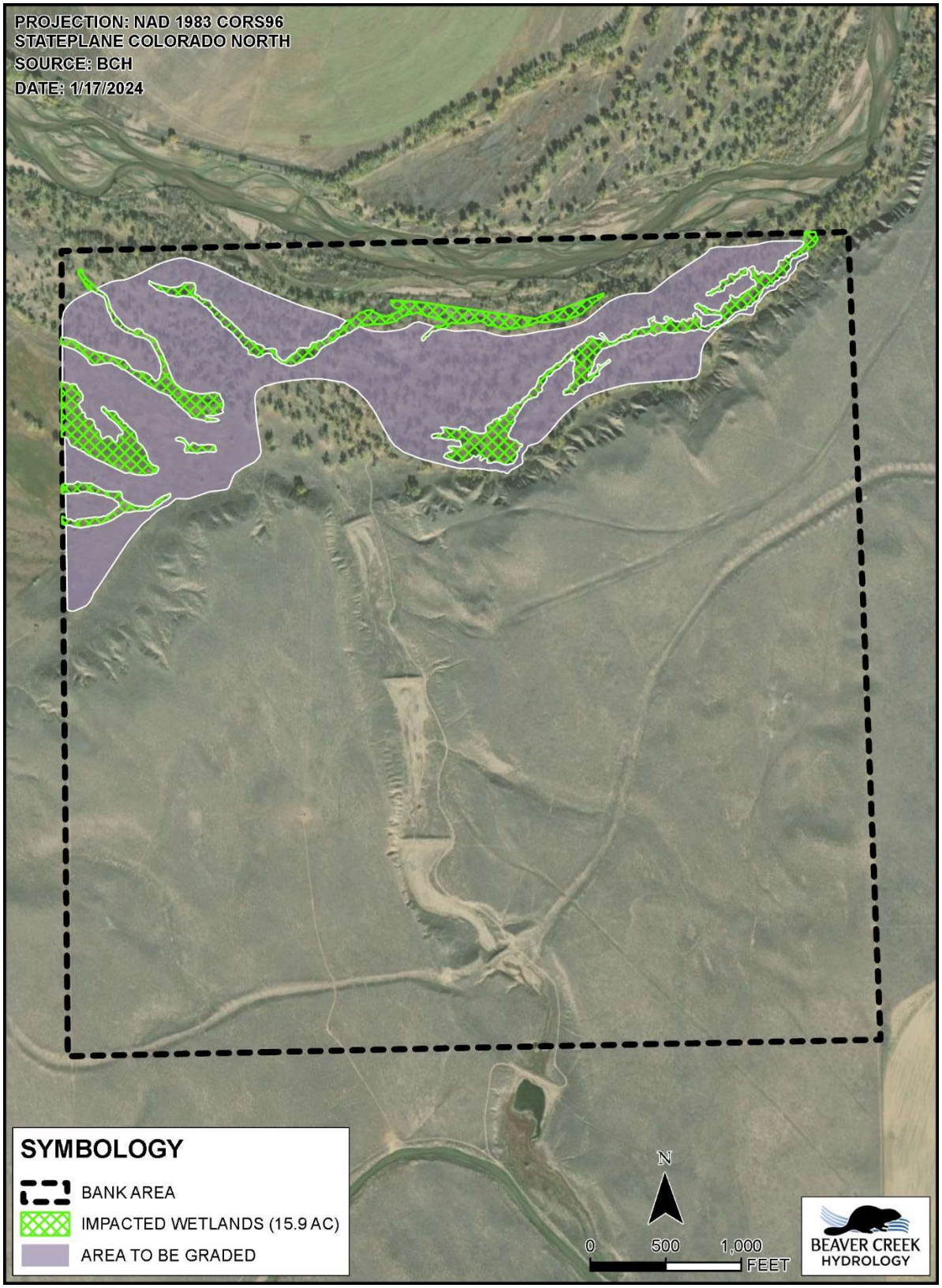
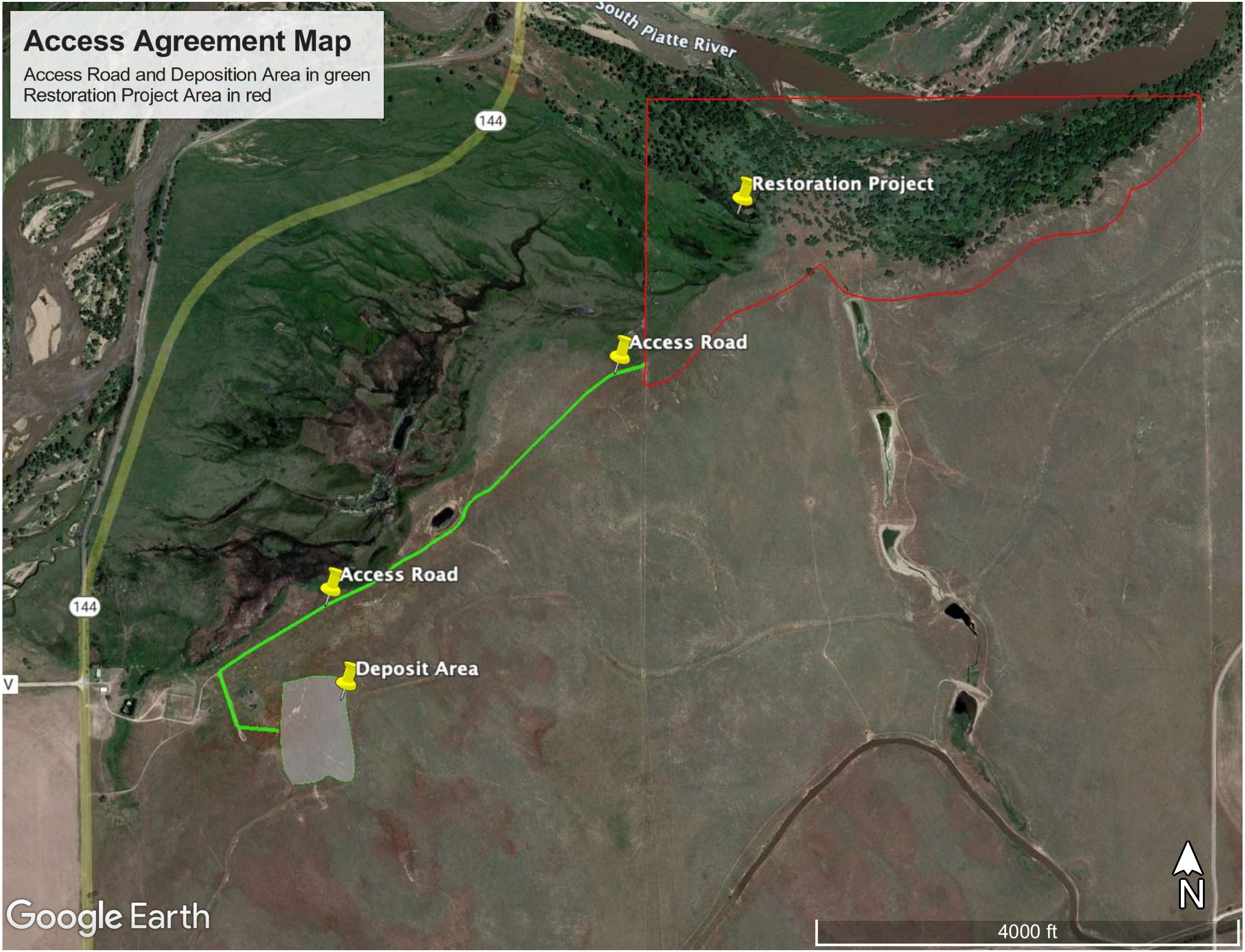


Figure 3. Proposed Impacts.


Access Agreement Map
Access Road and Deposition Area in green
Restoration Project Area in red
South Platte River
144
Restoration Project
Access Road
Access Road
144
V
Deposit Area
N
Google Earth
4000 ft

READ FIRST January 3, 2023

Please find complete South Platte Mitigation Bank Mitigation Banking Instrument Final with all associated documents

-The Mitigation Banking Instrument is the first document.
-All exhibits and appendices fall within the overall MBI, if confused please reference the Table of Contents on page 2 of the MBI
-All Exhibits belong to the MBI doc.
-All Appendices belong to Exhibit A BDP of the MBI.

Documents in DODSAFE

1. MBI SPMB DEC 2022 Final
2. EXHIBIT A BDP DEC 2022 Final
3. Appendix A: Vicinity Map Final
4. Appendix B: Water Rights Determination
5. Appendix C: Wetland Delineation Report
6. Appendix D: Hydrology and Soils Report
7. Appendix E: Habitat Assessment
8. Appendix F GSA Map
9. Appendix G SPMB Design Plan
10. Appendix H Functional Assessment of Wetlands (FACWet)
11. Appendix I Crediting Table Map
12. Exhibit B Long Term Management Plan
13. Exhibit C Adaptive Management Plan
14. Exhibit D Conservation Easement
15. Exhibit E Financial Assurances
16. Exhibit F Title Report
17. Exhibit G Maintenance and Monitoring Plan

Documents not belonging to the MBI
18. Signature Page Sponsor-Corps
19. Signature Page IRT-Corps
20. SPMB MBI Comment Matrix Responses updated December 20, 2022
READ FIRST- DODSAFE Table of Contents (Not numbered)

MITIGATION BANKING INSTRUMENT

South Platte Mitigation Bank

Located in
Morgan County, Colorado

IRT CHAIR:

U.S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT – DENVER REGULATORY OFFICE

BANK SPONSOR:

SCP CONSERVATION, LLC
Attn: Gray Stevens
677 1st Avenue North
Naples, FL 34102

Revised September 2023

EFFECTIVE DATE: [Date Corps sign INSTRUMENT]

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South Platte Mitigation Bank

Mitigation Banking Instrument

I. INTRODUCTION

This Mitigation Banking Instrument (Instrument or MBI) for the South Platte Mitigation Bank (SPMB or Bank) is an agreement among SCP Conservation, LLC (Bank Sponsor), a Colorado limited liability company and the U.S. Army Corps of Engineers (Corps or USACE) in consultation with the Interagency Review Team (IRT). The Bank Sponsor and the Corps are hereinafter referred to jointly as the "Parties." The attachments to the Instrument are incorporated herein by reference.

USACE approval of this Instrument constitutes the regulatory approval required for the SPMB to be used to provide compensatory mitigation for Department of the Army (DA) permits issued pursuant to Section 404 of the Clean Water Act (33 USC 1344) (CWA), and Section 10 of the Rivers and Harbors Act (33 USC 403). Credits under this Instrument can also be used to provide mitigation for Executive Order (EO) 11990 within the service area.

The Omaha District-Denver Regulatory Office of the Corps (NWO) will be the chair (Chair) of the IRT. IRT participation will include: the U.S. Environmental Protection Agency, Region VIII (EPA); U.S. Fish and Wildlife Service, Region VI (FWS); the Federal Highway Administration (FHWA); the Colorado Division of Water Resources (DWR); Colorado Department of Public Health and Environment (CDPHE); and Colorado Parks and Wildlife (CPW).

II. INSTRUMENT PURPOSE

This Instrument sets forth guidelines and responsibilities for the establishment, use, operation, protection, monitoring, and maintenance of the SPMB in accordance with 33 CFR 332 *et seq*. The Bank has been established to provide mitigation credits to compensate for unavoidable impacts to aquatic resources, including streams and wetlands, that result from activities authorized by DA permits issued pursuant to Section 404 of the Clean Water Act (33 USC 1344) (CWA), and Section 10 of the Rivers and Harbors Act (33 USC 403). Credits under this Instrument can also be used to provide mitigation for Executive Order (EO) 11990 within the service area. When deemed appropriate by the Corps, the mitigation credits may also be used to provide compensation for Corps Civil Works projects.

III. PROJECT SUMMARY

The South Platte Mitigation Bank project is located on approximately 200-acres (Bank Property) within a 640–acre parcel owned by the Colorado State Land Board (CSLB). The Bank Property is located within Section 16, Township 4N, and Range 60W in Morgan County, Colorado (Appendix A).

The Bank Project will develop the Bank as compensatory mitigation for unavoidable impacts authorized under Section 404 of the Clean Water Act and other impacts as authorized by the State. More specifically, the Bank Project will restore, enhance and permanently protect (a) 90.0-acres of restored (reestablishment) wetlands (b) 15.9-acres of enhanced wetlands, 65.2-acres of upland buffer enhancement and preservation under the guidance of the Compensatory Mitigation for Losses of Aquatic Resources, Final Rule, regulation 40 CFR Part 230 (USACE & USEPA 2008).

The Bank will be owned and operated by SCP as its Bank Sponsor. CSLB owns, and will continue to own, the underlying Bank Property in fee simple. SCP is operating under an agreement with CSLB to lease the Bank Property for the purpose of establishing, operating, and owning the Bank. The Bank Property is currently unprotected by conservation easement or similar instrument and is thus subject to full commercial development by the landowner. There are no mineral/subsurface reservations to third parties or other

similar Bank Property encumbrances that would interfere with Bank establishment and operation by the Bank Sponsor.

More complete details regarding the Bank Project and Bank Property are provided in the Exhibit A, Bank Development Plan.

IV. AUTHORITIES

The establishment, operation, and use of the Bank is carried out under the following authorities (not all inclusive):

A. Regulatory Programs of the United States Army Corps of Engineers (33 CFR 320-332);
B. Clean Water Act (33 USC 1251 *et. seq*.)
C. National Environmental Policy Act (42 USC § 4321 *et seq*.)
D. Executive Order 11990; Protection of Wetlands
E. Executive Order 11988; Floodplain Management
F. Rivers and Harbors Act (33 USC § 403)
G. Endangered Species Act (16 USC § 1531 *et seq*.)
H. National Historic Preservation Act (16 USC § 470)
I. U.S. Army Corps of Engineers Regulatory Guidance Letter 05-1, Guidance on Use of Financial Assurances, and Suggested Language for Special Conditions for Department of the Army Permits Requiring Performance Bonds (February 14, 2005)
J. U.S. Army Corps of Engineers Regulatory Guidance Letter 08-3, Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources (October 10, 2008)
K. Guidelines for Specification of Disposal Sites for Dredged and Fill Material (40 CFR 230)
L. Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army Concerning Determination of Mitigation Under the Clean Water Act, Section 404(b)(1) Guidelines (February 6, 1990)
M. Fish and Wildlife Coordination Act (16 USC § 661 *et seq*.)

V. VALIDITY AND AMENDMENTS; CONTROLLING LANGUAGE

This Instrument will become valid upon signatures by the U.S. Army Corps of Engineers and the Bank Sponsor, following which the initial credit releases of the Bank will occur as provided herein. This Instrument may be amended, altered, released, or revoked only by written agreement among the parties hereto or their heirs, assigns or successors-in-interest; the amendment must follow the appropriate procedures listed in 33 CFR 332.8 (d), unless the district engineer determines that the streamlined review process described in 33 CFR 332.8 (g) (2) is warranted.

The Parties intend the provisions of this Instrument, its exhibits and appendices, and each of the documents incorporated by reference in it to be consistent with each other, and for each document to be binding in accordance with its terms. To the fullest extent possible, these documents shall be interpreted in a manner that avoids or limits conflict between or among them. However, if and to the extent that specific language in this Instrument conflicts with specific language in any document that is incorporated into this Instrument by reference, the specific language within the Instrument shall be controlling. The captions and headings of this Instrument are for reference only, and shall not define or limit any of its terms or provisions. This Instrument constitutes the entire agreement between the parties hereto concerning the subject matter hereof and supersedes all prior agreement and undertakings.

VI. CONTACT INFORMATION

A. Bank Sponsor:
SCP Conservation, LLC
Attn: Gray Stevens
677 1st Avenue North
Naples, FL 34102
mgstevens@ameritech.net

B. Bank Property Owner:
Colorado State Land Board
Attn: Mindy Gottsegen
1127 Sherman Street, Suite 300
Denver, CO 80203
mindy.gottsegen@state.co.us

VII. BANK ESTABLISHMENT: MITIGATION PLAN

The twelve-element Bank Development Plan (BDP) for the development of the SPMB is provided in Exhibit A.

VIII. BANK OPERATIONS

A. MITIGATION SERVICE AREA

The Bank is authorized to provide mitigation to compensate for unavoidable impacts to aquatic resources of the U.S., including EO 11990. The authorized primary service area for the Bank's credits is defined as: 1) the entire 8-digit HUC within which the mitigation bank is located, and 2) any adjacent 8-digit HUC located within the same major river basin (6-digit HUC) located within the High Plains Level III Ecoregion. Use of the Bank credits for mitigation in all other areas maybe approved on a case-by-case basis by the Corps. A GSA Map can be found in Exhibit A, Appendix F.

Accordingly, the parties hereto agree that the above Service Area guidance is hereby authorized as follows:

Table 1: Service areas for the South Platte Mitigation Bank

Service Area	Basin Name	8-Digit Hydrologic Unit Code (HUC)
Primary *within the High Plains Ecoregion*	Middle South Platte - Cherry Creek	10190003
	Upper South Platte	10190002
	Clear	10190004
	St. Vrain	10190005
	Big Thompson	10190006
	Cache La Poudre	10190007
	Lone Tree-Owl	10190008
	Crow	10190009
	Kiowa	10190010
	Bijou	10190011
	Middle South Platte - Sterling	10190012

B. BANK CREDITING AND DEBITING

One type of credit is proposed for development of the South Platte Mitigation Bank: Wetland Credit.

Definitions of establishment, re-establishment, restoration, enhancement and preservation are found at 33 CFR 332.8(g). If in the future the crediting and debiting regulations or guidance changes from those currently in place, the Bank Sponsor reserves the right to amend the MBI to reflect such changes as they become available and approved for use by the Corps.

Wetland Credits. Pursuant to COMPv2.0, wetland credits for the Bank will be measured in acres utilizing ratios as follows: One acre of wetland restoration (re-establishment) will equal one wetland credit/acre. Three acres of wetland enhancement will equal one wetland credit/acre. Ten acres of buffer enhancement and/or preservation is equal to one wetland credit/acre. The most recent version of the Functional Assessment of Colorado Wetlands (FACWet) shall be utilized to measure the change in wetland functional condition to wetlands within the South Platte Mitigation Bank footprint.

The wetland crediting ratios are provided in EXHIBIT A and result in the Bank being authorized hereby to receive and sell 101.8 wetland credits that will be released as provided for herein. Wetland credits are allowed to be used to offset impacts for Section 404 and EO 11990.

C. CREDIT RELEASE SCHEDULE

Upon submittal of all appropriate documentation by the Bank Sponsor, and subsequent approval by the Corps, the Bank's credits shall be released to the Bank in accordance with the following schedule:

Table 2: Wetland credit release schedule

Credit Release Schedule September 2023	
Wetland Credit Release	Criteria
45%	•Approval of this MBI •Recordation of the Conservation Easement •Funding 100% of the long-term endowment •Establishing 110% Construction Financial Assurances •Establishing 110% maintenance and monitoring financial assurances
0%	•Submission of as-built plans •
10%	•Interim performance standards met for the growing season •
20%	•Interim performance standards met for the growing season
25%	•Final performance standards met

The above referenced Performance Standards are detailed in the Section 8.0 of Exhibit A Bank Development Plan.

D. ACCOUNTING PROCEDURES AND REPORTING

The Bank Sponsor shall be responsible for keeping a current ledger of its credit transactions within the Bank. The Bank Sponsor shall submit a copy of this ledger to the NWO annually. The annual ledger shall provide the following:

- Permittee Name
- Permit Number
- Date of transaction
- Total credits available at the beginning of the reporting period
- Number and types of credits debited on behalf of each permittee
- Total available credits remaining after debiting

The Corps maintains and operates the RIBITS website, which is the official ledger of the SPMB. All credit releases and debits shall be updated within RIBITS by the Corps. After each credit sale, the Bank Sponsor shall provide a notice of sale to the Corps. The receipt shall include the Corps I.D. Number, the number and type of credits sold, and a statement confirming that the Bank Sponsor has accepted the responsibility for providing the required compensatory mitigation related to such sale. The Bank Sponsor shall have the sole authority to negotiate the price and terms of each credit sale. Legal responsibility for providing the compensatory mitigation lies with the sponsor once a permittee secures credits from the sponsor.

E. PROVISIONS FOR DEFAULT

If the IRT Chair believes that the Bank is in default of, or out of compliance with, a material provision of the Instrument, written notice shall be provided to the Bank Sponsor, including a detailed description of the basis for the notice of such default. The Bank Sponsor shall submit a written corrective action plan to the IRT Chair for review and approval after receiving written notice of default. The corrective action plan shall, at a minimum, identify the cause of the non-compliance, the measures necessary to correct the non-compliance, and a timeline for implementing said measures and to come into compliance. The IRT Chair shall inspect and review the plan. To the extent practicable, the IRT Chair shall approve or reasonably amend the corrective action plan, provided that sufficient information and acceptable measures are contained within the plan. The Bank and the Bank Sponsor shall not be considered to be in default as long as the Bank Sponsor is taking reasonable steps to develop the Plan within the stated timeframes and come into compliance in accordance with the actions and timelines specified in the Plan. Failure of the Bank Sponsor to initiate efforts to remedy deficiencies in a reasonable time as provided in the Plan during the Suspension Period may result in termination of the Instrument. It should be noted that if the Sponsor is in non-compliance the Corps can suspend the sale of additional credits until the project is back in compliance.

F. PROVISIONS FOR BANK CLOSURE AND TERMINATION

The Bank shall close at the point when all Bank credits have been sold or relinquished; banking activity is voluntarily terminated with written notice from the Bank Sponsor to the IRT Chair as provided herein; or when the IRT Chair issues a Notice of Termination due to the Bank Sponsor's failure to initiate efforts to cure a default as outlined above (Bank Closure).

Upon Bank Closure, the Bank Sponsor shall provide the IRT Chair with a copy of the letter transferring the Long-Term Financial Assurance and the long-term management responsibilities of the Bank Property to CSLB as the long-term land stewardship entity (Land Manager). The Land Manager will be responsible for implementing the Long-Term Management Plan (Exhibit B) and for ensuring the Bank Property remains in compliance with the Conservation Easement and the Long-Term Management Plan.

The Bank Sponsor may at any time elect to voluntarily close and terminate the Bank's activity and the Instrument; provided however, prior to doing so the IRT Chair, in consultation with the IRT, will determine if the compensatory mitigation provided by the date of proposed closure is at or above those credits sold. Should it be determined that the Bank's credits sold have created a deficit in compensatory mitigation provided by the Bank at the time of the requested voluntary closure, the Bank Sponsor must provide enough compensatory mitigation to compensate for that deficit prior to such voluntary closure.

G. EXTRAORDINARY CIRCUMSTANCE CLAUSE

Nothing herein shall be construed to authorize proceedings against the Bank Sponsor for any damages to the Bank Property caused by unexpected and disruptive forces that are beyond what would be considered as normal or natural disturbances. Typically damages caused by floods, droughts, muskrat/geese and storms are not considered disruptive forces but will be determined on a case-by-case basis by the Project Manager with concurrence with appropriate District personnel.

H. TRANSFER OF BANK PROPERTY OWNERSHIP

Changes to Bank Property ownership and Bank ownership and sponsorship are permissible subject to modification to the Instrument under the provisions of 33 CFR 332.8(g). Any transfer of ownership with respect to the Bank Property is subject in all respects to the applicable provisions of the Conservation Easement that will continue to be monitored by the easement grantee as before any such transfer. Any change in the Bank Sponsor must be approved by the Corps.

IX. ESTABLISHMENT OF LAND MANAGEMENT STEWARD

Upon Bank Closure, CSLB will be the designated Land Management Steward (Land Manager) pursuant to the Long Term Management Plan (Exhibit B).

X. OTHER PROVISIONS

A. DISCLAIMER

This Instrument does not in any manner affect statutory authorities and responsibilities of the signatory parties.

B. NOTICE

Any notice required or permitted hereunder shall be deemed to have been given either (i) when delivered by hand or sent by electronic mail, or (ii) Ten (10) days following the date deposited in the United States mail, postage prepaid, by registered or certified mail, return receipt requested, or (iii) sent by Federal Express or similar next day nationwide delivery system, addressed as follows (or addressed in such other manner as the party being notified shall have requested by written notice to the other party).

C. DISPUTE RESOLUTION

The Parties agree to work together in good faith to resolve disputes concerning this MBI. Unless a Party has initiated legal action in connection with the particular dispute, any Party may elect (the “Electing Party”) to employ an informal dispute resolution process whereby:

1. The Electing Party shall notify all other Parties to this MBI of the dispute through a dispute notice. The dispute notice shall identify the Parties against which the Electing Party is commencing the informal dispute resolution process (“Implicated Parties”), the position of the Electing Party (including, if applicable, the basis for contending that a violation has occurred), and the resolution the Electing Party proposes.

2. Each Implicated Party shall have forty-five (45) calendar days after receipt of the dispute notice (or such other time as the Parties may mutually agree) to respond to the electing Party. During this time, any Party to this MBI that received the dispute notice may seek clarification of the dispute notice.

3. Within forty-five (45) calendar days after each Implicated Party’s response was provided or due, whichever is later, the Electing Party and the Implicated Parties shall confer and negotiate in good faith toward a mutually satisfactory resolution, or shall establish a specific process and timetable to seek such

resolution.

D. INVALID PROVISIONS

In the event any one or more of the provisions contained in this Instrument are held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality, or unenforceability will not affect any other provisions hereof, and this Instrument shall be construed as if such invalid, illegal, or unenforceable provisions had not been contained herein.

EXHIBIT A
12-Element BANK DEVELOPMENT PLAN
SOUTH PLATTE MITIGATION BANK

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LIST OF TABLES

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Introduction

The following is the 12-Element Bank Development Plan ("BDP") for the South Platte Mitigation Bank ("SPMB" or "Bank"). Unless otherwise indicated, capitalized terms herein are defined in the Mitigation Banking Instrument document ("MBI") to which this Exhibit A is attached.

1.0 Project Goals and Objectives

The primary goal of the South Platte Mitigation Bank project is to establish a wetland mitigation bank in the Middle South Platte-Cherry Creek (8-digit HUC) watershed in order to provide compensatory wetland mitigation credits for unavoidable impacts authorized under Section 404 of the Clean Water Act and other impacts, such as EO 11990, specifically wetland impacts within the Bank's service area as authorized by the Corps in the MBI. This will be accomplished through achieving the following objectives:

- Establishing a self-sustaining mitigation site that will result in net increases in aquatic resource functions and services;
- Restore (reestablishment) 90.0-acres of wetlands through reestablishing historic natural hydrological connections by grading and removal of sediment deposits;
- Enhance 15.9-acres of wetlands by removing extensive invasive species and adverse land management activities (such as cattle overgrazing, surface mining, etc.);
- Preserve 65.2 acres of upland buffer enhancement and preservation areas within the bank boundary. Upland buffers will be enhanced by removing extensive invasive species and adverse land management activities (such as cattle overgrazing, surface mining, etc.); and,
- Permanently protect, monitor, and manage the wetland and riparian habitat of the South Platte Mitigation Bank in perpetuity through an appropriately restrictive conservation easement and an adequately funded long term endowment.

2.0 Site Selection

The South Platte River is considered part of the headwaters of a major water basin and serves as a primary water source for eastern Colorado. The South Platte River originates in the Rocky Mountains in Fairplay and flows down from the Front Range of Colorado east into Nebraska where it conjoins with the North Platte River. From there it continues to flow east until it meets the Missouri River and then the Mississippi River, which flows south into the Gulf of Mexico. The SPMB is sited on a 200-acre parcel located directly on the South Platte River within Section 16, Township 4N, Range 60W, in Morgan County Colorado. Please see Appendix A for Vicinity Map.

The South Platte riparian corridors have been heavily impacted by anthropogenic activities which have resulted in the loss and degradation of historical wetland habitat. This habitat loss has in turn led to a reduction in aquatic functions and services provided by wetlands, including reduced flood attenuation, reductions in water quality, increased sediment loads, and the spread of invasive species. Located in Morgan County, Colorado, (Appendix A) the Bank Property is part of a large river system that has historically and hydrologically supported a vast mosaic of riparian wetlands adjacent to the river.

The Bank Sponsor's site selection efforts reviewed many potential parcels and focused only on those sites that (1) are negatively impacted, (2) have an ability to be restored, (3) are identified by other natural resource groups as valuable conservation areas, (4) are at risk for development, and (5) have an ability to

become a restoration project that is self-sustaining. The Bank Property was selected for the SPMB because each of these factors and its potential to provide improved habitat connectivity for flora and fauna of the South Platte River Basin. The targeted restoration, enhancement, and preservation activities have a high likelihood of success because the activities would be restoring the natural aquatic functions and services present on the site historically, ultimately resulting in a net increase of aquatic resource functions and services.

There is adequate demand for aquatic resource compensatory wetland mitigation credits within the South Platte River (6-digit HUC) basin as recent and projected growth and development in these areas create pressure to impact natural wetland resources, while available Bank wetland credits are limited. The SPMB will provide wetland credits to offset impacts in this region without a temporal loss to aquatic functions and services.

Table A-1: Summary information for the South Platte Mitigation Bank.

BACKGROUND INFORMATION		
Project Name	South Platte Mitigation Bank	
Project Sponsor	SCP Conservation, LLC	
Project Land Owner	Colorado State Land Board	
Site Location	Section 16, Township 4N, Range 60W	
HGM Classifications	Forested, Shrub-scrub, Emergent/Herbaceous, and unconsolidated bottom	
6-digit HUC	South Platte	101900
8-digit HUC	Middle South Platte - Cherry Creek	10190003
Primary Service Area **within the Level III High Plains Ecoregion*	Middle South Platte - Cherry Creek	10190003
	Upper South Platte	10190002
	Clear	10190004
	St. Vrain	10190005
	Big Thompson	10190006
	Cache La Poudre	10190007
	Lone Tree - Owl	10190008
	Crow	10190009
	Kiowa	10190010
	Bijou	10190011
	Middle South Platte - Sterling	10190012
Protection Mechanism	Conservation easement	
Monitoring Frequency	Annually	
Size of Project Area	~200 acres	
Wetland Restoration Areas	~90 acres	
Wetland Enhancement Areas	~15.9 acres	
Upland Buffer Enhancement and Preservation Areas	~65.2 acres	

2.1 Sufficient Water Rights

The Bank's restoration efforts will focus on restoring and enhancing the wetlands in the historical floodplain riparian areas of the South Platte River with a design plan that will result in no diversions, collections, or storage of stormwater or stream flow; do not expose ground water; and do not impede the flow of vested water rights. After a full review, the Colorado Division of Water Resources (DWR) concurred in a letter on February 26, 2021, that the activities as planned do not require a water right. (See Appendix B)

If the project is found to be in violation of state water rights laws or that the project would cause injury to other water rights then the Corps will be informed and may decide to suspend credit sales. Please see Appendix B for Water Rights Determination.

3.0 Site Protection Instrument

The Bank Sponsor will record a conservation easement (CE) on the Bank Property after the MBI signature, but prior to the release of any credits. A template of the CE is provided in EXHIBIT D. The CE will prohibit activities on the Bank Property that are inconsistent with preserving and protecting its aquatic resource functions and services in perpetuity. The CE will run with the Bank Property in perpetuity for any subsequent landowners. The CE will stipulate that the Bank Sponsor has entered into a plan with the IRT signatory agencies for the establishment of the Bank and that the Bank Sponsor has agreed to the provisions specified in this MBI. The Bank Property will be monitored annually to ensure that terms of the CE are followed.

Without the implementation of the mitigation bank and the CE, the Bank Property is subject to commercial development threats. Currently Colorado State Land Board has no active oil and gas or mining leases on the Bank Property. However, if in the future a lease should be permitted a No Surface Occupancy (NSO) rider would be used to prevent the lessee(s) from entering, accessing, disturbing, or using the surface of the Bank Property for any purpose.

4.0 Baseline Information

The US Department of Agriculture (USDA) maps the project area within the southern part of the Central High Plains Major Land Resource Areas (MLRA), which is characterized by a flat to gently rolling landscape formed by glacial drift material and sediment deposition from the Rocky Mountains (USDA, Natural Resources Conservation Service, 2006). This MLRA is part of the Colorado Piedmont section of the Great Plains physiographic province and ranges in elevation from 3,000 to 7,800 feet. The climate of the area is typical of mid-continental semiarid temperate zones, but the strong rain-shadow effect of the Southern Rocky Mountains makes the area somewhat drier. The average annual precipitation is between 12 and 18 inches, most of which occurs from April to September. The mean annual temperature is 45°F to 55°F, with the number of frost-free days ranging from 135 to 190.

The geology of the Flat to Rolling Plains ecoregion consists largely of silt and clay loams formed from eolian sediments, and the soils are characteristic of alluvial fans that occur along the base of the Front Range. Located within the South Platte River watershed of central Colorado, streams flow from west to east, out of the Front Range Mountains and foothills, or from southeast to northwest off the Palmer Divide and into the South Platte River. The South Platte River converges with the North Platte River just west of Ogallala, Nebraska to form the Platte River. The Platte River is tributary to the Missouri River, which eventually flows into the Mississippi River. Most of the tributaries that flow into the South Platte River watershed contain riparian corridors dominated by deciduous woodlands and transitional shrubs and grasslands.

Much of the ecoregion historically consisted of shortgrass and midgrass prairie. Most of the land use has or is currently undergoing a shift from rangeland to urban development. The development has resulted in a shift from native habitat to urban areas that contain a high number of manmade lakes and gravel pits, public infrastructure, buildings, and narrower riparian corridors along streams and rivers in the region. The southwestern portion of the project area consists of emergent wetlands within upland grasslands that are dominated by prairie cordgrass. The majority of the remaining project area consists of cottonwood riparian

forest within the South Platte River floodplain, with an overstory dominated by plains cottonwood and an understory dominated by prairie cordgrass and showy milkweed. Although fewer than present historically, wetlands still occur along the South Platte River and throughout the project area.

The wetlands in the project area are generally dominated by prairie cordgrass, foxtail barley (*Hordeum jubatum*), Baltic rush (*Juncus balticus*), common threesquare (*Schoenoplectus pungens*), Emory's sedge, and reed canarygrass (*Phalaris arundinacea*), with areas of scrub-shrub wetland dominated by narrowleaf willow (*Salix exigua*). Wetlands on the site are located within depressions or swales and appear to be fed by groundwater from and the flooding of the South Platte River. The uplands in the project area are dominated by tall wheatgrass, tall fescue (*Schedonorus arundinaceus*), switchgrass (*Panicum virgatum*), saltgrass (*Distichlis spicata*), leafy spurge, smooth brome, common reed (*Phragmites australis spp. americanus*) and Canada thistle. Please see Appendix C for Wetland Delineation Report.

The soils on the site are typical within floodplain wetlands along the South Platte River and are encouraging for restoration activities. The Natural Resource Conservation Service has mapped six primary soils in the project area: Wann fine sandy loam, saline (Wf); Wann clay loam, saline (Wc); Wet alluvial land (Wt); Cascajo soils and gravelly land (Ca); Riverwash (Rv); and Ellicott-Glenberg complex, 0 to 3 percent slopes, occasionally flooded (Bk) (USDA, NRCS 2020b). Wann fine sandy loam, saline and Wann clay loam, saline soils are somewhat poorly drained, associated with floodplains and stream terraces, are slightly to strongly saline, and are typically found in salt meadows. Wet alluvial land is poorly drained, associated with floodplains and streams, and is typically found in salt meadows. Cascajo soils and gravelly land is excessively drained, typically located on terraces, non-saline to very slightly saline, and typically associated with gravel breaks. Riverwash is associated with floodplains, low sand ridges, and arroyos. Details regarding the drainage class, maximum salinity, and ecological site is not given for Riverwash. Ellicott-Glenberg complex is somewhat excessively drained, associated with floodplains, nonsaline to very slightly saline, and typically associated with sandy bottomlands. Please see Appendix D for Hydrology and Soils Memo.

The Bank is composed of a mosaic of aquatic habitats including riparian forests, seasonal emergent wetlands, salt grass meadows, oxbows, sandbars, and shortgrass prairie upland. Although there may not be suitable habitat for any federally threatened or endangered species the area, in general has good habitat diversity and habitat corridors for summer and winter foraging fauna. Please see Appendix E for Habitat Assessment.

Table A-2: Common species occurring in the project area.

Commonly occurring plant species in the project area.

Common Name	Scientific Name	Wetland Indicator Status*
Herbaceous		
Alkali sacaton	*Sporobolus airoides*	Facultative
American common reed	*Phragmites australis spp. americanus*	Facultative Wetland
American licorice	*Glycyrrhiza lepidota*	Facultative Upland
Baltic rush	*Juncus balticus*	Facultative Wetland
Canada thistle	*Cirsium arvense*	Facultative Upland
Cheatgrass	*Bromus tectorum*	Upland
Common mullein	*Verbascum thapsus*	Upland
Common threesquare	*Schoenoplectus pungens*	Obligate
Emory's sedge	*Carex emoryi*	Obligate
Foxtail barley	*Hordeum jubatum*	Facultative Wetland
Fuller's teasel	*Dipsacus fullonum*	Facultative Upland
Leafy spurge	*Euphorbia esula*	Upland
Narrowleaf cattail	*Typha angustifolia*	Obligate Wetland
Poison hemlock	*Conium maculatum*	Facultative Wetland
Prairie cordgrass	*Spartina pectinata*	Facultative Wetland
Reed canarygrass	*Phalaris arundinacea*	Facultative Wetland
Saltgrass	*Distichlis spicata*	Facultative Wetland
Scotch cottonthistle	*Onopordium acanthium*	Upland
Showy milkweed	*Asclepias speciosa*	Facultative
Smooth brome	*Bromus inermis*	Upland
Softstem bulrush	*Schoenoplectus tabernaemontani*	Obligate Wetland
Swamp verbena	*Verbena hastata*	Facultative Wetland
Switchgrass	*Panicum virgatum*	Facultative
Tall fescue	*Schedonorus arundinaceus*	Facultative Upland
Tall wheatgrass	*Thinopyrum ponticum*	Upland
Thickspike wheatgrass	*Elymus lanceolatus*	Facultative Upland
Western goldentop	*Euthamia occidentalis*	Obligate Wetland
Western wheatgrass	*Pascopyrum smithii*	Facultative Upland
Shrubs		
Narrowleaf willow	*Salix exigua*	Facultative Wetland
Western snowberry	*Symphoricarpos occidentalis*	Upland
Woods' rose	*Rosa woodsii*	Facultative
Trees		
Black ash	*Fraxinus nigra*	Facultative Wetland
Green ash	*Fraxinus pennsylvanica*	Facultative
Plains cottonwood	*Populus deltoides* subsp. *monilifera*	Facultative
Russian olive	*Elaeagnus angustifolia*	Facultative Upland

*Obligate Wetland—Occurs with an estimated 99% probability in wetlands.
Facultative Wetland—Estimated 67%–99% probability of occurrence in wetlands.
Facultative—Equally likely to occur in wetlands and nonwetlands (34%–66% probability).
Facultative Upland—67%–99% probability in nonwetlands, 1%–33% in wetlands.
Upland—>99% probability in nonwetlands in this region.
NI—No Indicator or no information available.
Positive and negative signs are used to more specifically define frequency of occurrence in wetlands; a positive sign indicates a frequency toward the higher end of a category (more frequently found in wetlands), and a negative sign indicates a frequency toward the lower end of a category (less frequently found in wetlands).

Source: Ackerfield 2015; Corps 2018; USDA, NRCS 2020a; Weber and Wittmann 2012.

5.0 Determination of Credits

Definitions of establishment, re-establishment, restoration, enhancement and preservation are found at 33 CFR 332.8(g). The Bank will utilize Colorado Mitigation Procedures (COMP) v2.0 for crediting and debiting purposes which results in the Bank receiving 101.8 wetland credits as outlined in Table A-3 below. These credits can be used in approved mitigation service areas detailed in Section VIII.A. of the MBI. Please see Appendix F for Geographic Service Area Map.

Pursuant to COMPv2.0, wetland credits for the Bank will be measured in acres utilizing ratios as follows: One acre of wetland restoration (re-establishment) will equal one wetland credit/acre. Three acres of wetland enhancement will equal one wetland credit/acre. Ten acres of buffer enhancement and/or preservation is equal to one wetland credit/acre. The most recent version of the Functional Assessment of Colorado Wetlands (FACWet) shall be utilized to measure the change in wetland functional condition to wetlands within the South Platte Mitigation Bank footprint.

Table A-3: List of wetland types, associated acreage, and credit production.

Credit Activity Table			
	Acres	**Ratio**	**Wetland Credits**
Wetland Restoration (reestablishment)	90.0	1 to 1	90.0
Wetland Enhancement	15.9	3 to 1	5.3
Upland Buffer Enhancement and Preservation areas*	65.2	10 to 1	6.5
Total Wetland Credits			101.8

*Per USACE guidance, No more than 10% of total credit generation may come from Buffer Enhancement and Preservation

The most recent version of the Functional Assessment of Colorado Wetlands (FACWet) will be utilized to demonstrate improvement in wetland functional condition to wetlands within the South Platte Mitigation Bank footprint. If in the future the crediting and debiting regulations or guidance changes from those currently in place, the Bank Sponsor reserves the right to amend the MBI to reflect such changes as they become available and approved for use by the Corps.

6.0 Mitigation Work Plan

The objective of the following mitigation work plan is to restore, enhance, and preserve wetlands and buffer areas, and other aquatic resource functions and services on the Bank for use as compensatory mitigation for the unavoidable impacts to aquatic resources. Primary components of the work plan include restoration (reestablishment) of 90.0 acres of wetlands, enhancement of 15.9 acres of existing wetlands, and 65.2 acres of buffer enhancement and preservation areas. Please see detailed construction plan view maps provided in the South Platte Mitigation Bank Design Plan in Appendix G.

Wetland restoration and enhancement will be accomplished through targeted excavation of historic swales and paleo-channels to reestablish historic hydrology, removal of other impediments such as invasive species and cattle overgrazing, and replanting with native vegetation. The first stage of the work plan will entail site preparation clearing and removal of invasive species and their seed sources. The second stage of the work plan will entail soil excavation and grading to meet designed soil elevations. The third stage of the work plan will entail re-vegetating in a succession of native trees, shrubs, grasses, and forbs designed to represent the natural system and encourage ecological diversity.

Extensive wetlands were historically present on the site and were mainly supported through groundwater influenced by the elevation of the South Platte River. Likewise, the Bank project's restored and enhanced wetlands will be supported by groundwater. These restored and enhanced aquatic resources will functionally represent palustrine emergent wetlands that were formerly characteristic of the South Platte River floodplain but are now largely absent due to the local and regional effects of climatic events, gravel mining, urban development, water diversions, and historic and current cattle ranching operations.

6.1 General Construction

All work activities will be the most practicable as possible to prevent indirect impacts. At no point will the Bank project impair, obstruct, or slow flows within the unnamed tributary or South Platte River. The Bank Property currently has a series of access roads that cross the property. Grading activities will use heavy equipment to construct correct grades followed by revegetation using native species occurring naturally in the surrounding region and ecosystems. Nearby upland areas outside of the Bank will provide good staging areas for this work. The Bank project will develop and adhere to a Stormwater Management Plan (SWMP) as part of the final design. The SWMP will include Best Management Practices (BMPs) to reduce off-site sedimentation and erosion. The pre-approved limits of disturbance will be clearly marked in the field to contain construction-related equipment and vehicles. All construction activities will be appropriately supervised.

Invasive species will be cleared and treated prior to grading by using approved methodologies. These activities will entail both manual and chemical efforts with specific considerations to the effects on the Bank's natural resources.

Plantings of native vegetation will consist of graminoid, forb, and shrub material (seed, plug, or bareroot) that will be broadcast during the normal growing season. The seed mix will include an annual grass for quick stabilization during and post construction. The actual species planted will depend on the composition of available species. The seeds will be dispensed by appropriate broadcasting methods, i.e., hand or mechanical.

In the event the Bank Sponsor determines that modifications should be made to the restoration plan to ensure successful development of habitat within the Bank, the Bank Sponsor will submit a written request for such modification to the IRT chair for approval.

The following serve as guidance for general construction:

- Avoid and minimize disturbance to potential and existing habitat. Disturbed areas will be stabilized using appropriate BMPs.
- Preserve and protect high quality habitat areas while enhancing travel corridors and habitat linkages.
- Enhance appropriate areas of existing degraded habitat through weed control, and spot-seeding of native and high-quality forage species.
- All seed will be either hand broadcast or seed drilled and limited motorized equipment will be permitted in the area after planting/seeding.

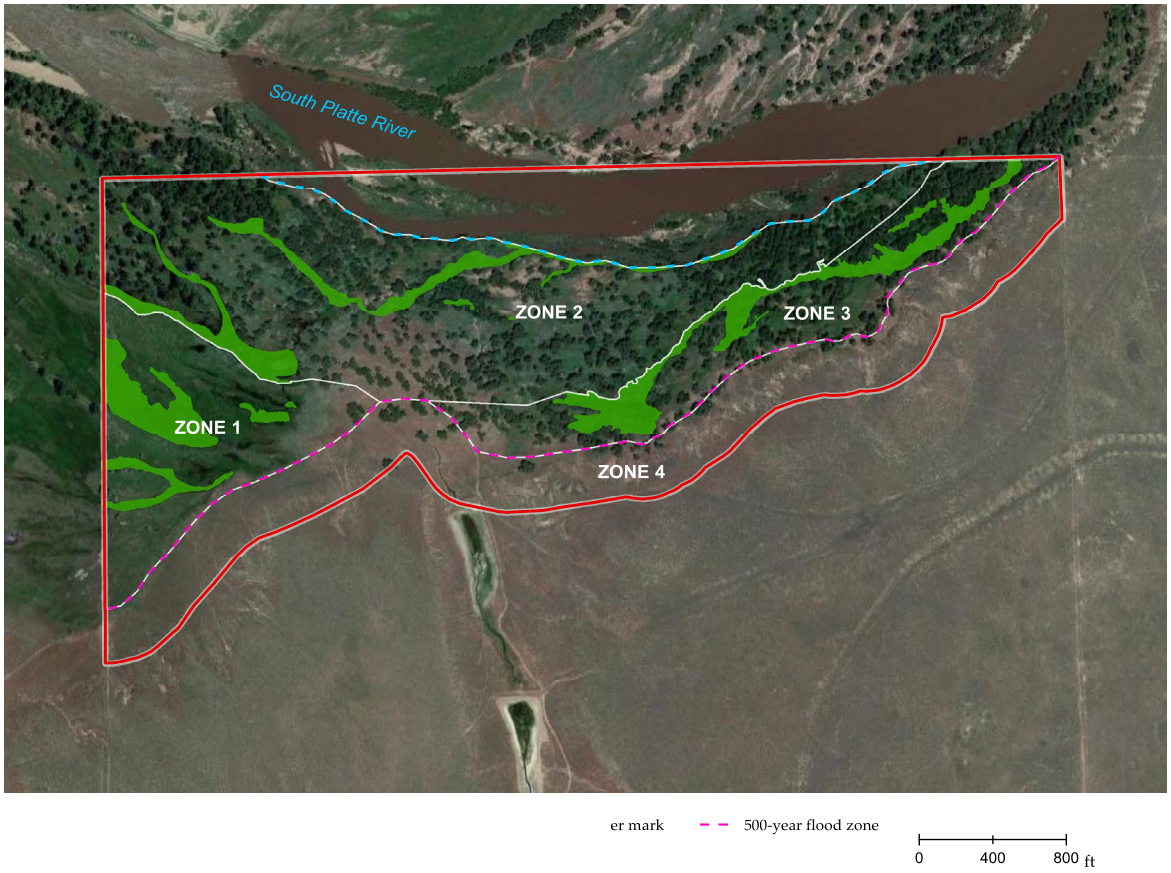
6.2 Wetlands

The design for the Bank includes the restoration (reestablishment) of 90.0-acres of wetlands, and enhancement of 15.9-acres of existing wetlands. There will be four main work zones (Figure 1), each with a suite of restoration activities targeted to the unique habitat and ecological needs of each zone, resulting in an improvement in overall aquatic resource functions and services for the entire Bank.

Zone 1 existing conditions consist of a degraded salt meadow (palustrine emergent wetlands) dominated by prairie cordgrass and surrounded by uplands comprised mostly of introduced pasture grasses like tall wheatgrass (*Thinopyrum ponticum*). The topographical depressions and wide swales are primarily groundwater driven but are also likely to be inundated during high floods in the South Platte River. Much of

the surrounding upland areas in Zone 1 are relic wetlands that have been impacted by sedimentation. The loss of natural wetland hydrology has led to the gradual conversion of these areas to uplands dominated by invasive species, including predominantly white top (*Cardaria draba*) and Canada thistle (*Cirsium arvense*). Restoration and enhancement activities in this zone will focus on grading to restore relict wetland hydrology, removal of invasive species, and replanting appropriate native vegetation.

Figure 1: South Platte Mitigation Bank boundary and wetland mitigation work zones map.



Zone 2 existing conditions consist of a cottonwood riparian forest with an herbaceous understory. The overstory is dominated by plains cottonwood (*Populus deltoides*) and green ash (*Fraxinus pennsylvanica*), as well as invasive trees including Russian olive. The understory is dominated by introduced perennial grasses such as smooth brome (*Bromus inermis*) as well as invasive species, such as leafy spurge (*Euphorbia esula*). Of the three restoration zones, Zone 2 is the most impacted by extreme flooding events. There are large deposits of alluvium that have buried and filled in former wetland swales, and are now uplands dominated by invasive species including, but not limited to Canada thistle, common mullein (*Verbascum thapsus*) and Scotch thistle (*Onopordum acanthium*). In addition, a large portion of wetland swales in Zone 2 were impacted by the formation of a small alluvial fan. This alluvial fan likely formed as a result of more recent erosion from local upstream activities. The sedimented areas have formed a disconnect between the western and eastern floodplain wetlands. Restoration and enhancement activities in this zone will focus on grading to restore relict wetland hydrology, removal of invasive species, and replanting appropriate native vegetation.

Zone 3 existing conditions consist of depressional wetlands within a cottonwood riparian forest likely associated with a backwater channel of the South Platte River. Historically the backwater channel would have flowed in from the northeast side of the property through wetland swales and most likely supported much of the historical wetlands within this zone. The understory vegetation in the zone is almost completely dominated by invasive species, which threaten the few remaining wetland pockets with native species such as Emory's sedge (Carex emoryi) and prairie cordgrass. Restoration and enhancement activities in this zone will consist of a "gentler" approach including light grading to restore a smaller amount of wetland areas (relative to Zones 1 and 2) surrounding existing wetlands, enhancing existing wetlands with native species plantings which can outcompete invasive species, and removing invasive species including smooth brome, reed canarygrass (Phalaris arundinacea) and perennial pepperweed (Lepidium latifolium).

Zone 4 is the 300-foot (65.2 acre) buffer that will be established directly adjacent to the wetland restoration areas, giving added protection to these riparian zones. Cessation of cattle ranching activities, removal of invasive species and inter-seeding with native species in this zone will reduce erosion and sedimentation on the site and provide a full natural buffer to the restored and enhanced areas of Zones 1, 2, and 3.

6.3 Functional Assessment

The aquatic resources have been assessed using CDOT's Functional Assessment of Colorado Wetlands (FACWet) method (version 3) (Johnson et al., 2013) for wetlands present at the proposed South Platte Mitigation Bank. To document success within each zone, the restored and enhanced wetlands will be measured post construction using the same methodology within each of the zones. Please find the full report of the Functional Assessment of Colorado Wetlands (FACWet) for South Platte Mitigation Bank is provided in Appendix H.

CORVUS Environmental Consulting, assessed wetland functions using CDOT's Functional Assessment of Colorado Wetlands (FACWet) method (version 3) (Johnson et al., 2013) for wetlands present at the proposed South Platte Mitigation Bank. Wetlands were previously delineated by ERO Resources Corporation in October 2020. CORVUS visited the Bank Property in 2021 and completed a FACWet analysis on the existing wetland functions there. As described above, the SPMB is divided into four work zones, including three zones (Zones 1 – 3) where wetland enhancement and re-establishment/restoration is proposed as well as an upland buffer zone. Zones 1-3 were each assessed as separate Assessment Areas (AAs) since the ecological function of each zone is different and the levels of proposed wetland enhancement and re-establishment/restoration activities vary per zone. AAs 1 - 3 correspond to these SPMB Zones 1 - 3, respectively.

The FACWet assessment conducted by CORVUS resulted in a Composite Functional Capacity Index (FCI) score for each AA. The condition of wetlands in AA 1, AA 2 and AA 3 is "Functioning Impaired" with a FCI score of 0.61, 0.60, and 0.63, respectively. This condition is due to the many stressors present on and surrounding the SPMB, the most critical of which are the dominance of non-native vegetation and noxious weeds, excessive sedimentation and sand accumulation resulting from flooding flows, such as the 2013 flood, which has resulted in wetlands being converted to uplands: and soil and groundwater salinity issues. Table A-7 summarizes the FACWet FCI and Composite FCI Scores for each of the three AAs.

Table A-4: FACWet Functional Capacity Index scores in three wetland zones.

FACWet Functional Capacity Indices	AA 1	AA 2	AA 3
Support of Characteristic Wildlife Habitat	0.56	0.58	0.59
Support of Characteristic Fish/Aquatic Habitat	0.67	0.66	0.68
Flood Attenuation	0.63	0.63	0.65
Short and Long-Term Water Storage	0.63	0.61	0.63
Nutrient/Toxicant Removal	0.61	0.61	0.63
Sediment Retention/Shoreline Stabilization	0.57	0.54	0.61
Production Export/Food Chain Support	0.58	0.57	0.60
Composite FCI Score	**0.61**	**0.60**	**0.63**

6.4 Plantings

ZONE 1 PLANTINGS

Table A-5: Zone 1 Planting list. Depending on availability, species to be planted at the Bank may include, but are not limited to, those selected from the CPW Native Plant Revegetation Guide (1998)

ZONE 1 - SEEDING				
0-2.5 FT (WETLAND)				
SCIENTIFIC NAME	**COMMON NAME**	**VARIETY**	**% IN MIX**	**LB/AC (PLS*)**
Beckmannia syzigachne	American sloughgrass	Native	15.0	0.4
Carex lanuginosa (syn: Carex pellita)	wooly sedge	Native	15.0	1.6
Carex nebrascensis	Nebraska sedge	Native	10.0	0.6
Distichlis stricta	Inland saltgrass	Native	10.0	0.6
Eleocharis palustris	common spikerush	Native	10.0	0.5
Glyceria striata	fowl mannagrass	Native	5.0	0.9
Juncus balticus	Baltic rush	Native	10.0	0.1
Juncus ensifolius	swordleaf rush	Native	10.0	0.1
Schoenoplectus tabernaemontani	softstem bulrush	Native	4.0	0.2
Spartina pectinata	prairie cordgrass	Native	10.0	1.7
Verbena hastata	blue verbena	Native	1.0	0.1
Total pounds PLS/acre			**100.0**	**6.9**
*PLS = Pure Live Seed – If broadcast seeding, double the rate				

ZONE 1 - PLANTING (PLUGS)				
0-2.5 FT (WETLAND)				
SCIENTIFIC NAME	**COMMON NAME**	**SIZE (CUBIC IN)**	**% OF PLANTS**	**SPACING (O.C.)**
Beckmannia syzigachne	American sloughgrass	10	5	18"
Carex emoryi	Emory's sedge	10	15	18"
Carex lanuginosa (syn: Carex pellita)	wooly sedge	10	15	18"
Carex nebrascensis	Nebraska sedge	10	5	18"
Eleocharis palustris	common spikerush	10	10	18"
Glyceria striata	fowl mannagrass	10	5	18"
Juncus balticus	Baltic rush	10	5	18"
Juncus ensifolius	swordleaf rush	10	5	18"
Leersia oryzoides	rice cutgrass	10	5	18"
Schoenoplectus pungens	common threesquare	10	10	18"
Schoenoplectus tabernaemontani	softstem bulrush	10	10	18"
Spartina pectinata	prairie cordgrass	10	10	18"
			100	

ZONE 2 PLANTINGS

Table A-6: Zone 2 Planting list. Depending on availability, species to be planted at the Bank may include, but are not limited to, those selected from the CPW Native Plant Revegetation Guide (1998)

ZONE 2 - SEEDING				
2.5-4 FT (ANNUAL FLUCTUATION ZONE)				
SCIENTIFIC NAME	**COMMON NAME**	**VARIETY**	**% IN MIX**	**LB/AC (PLS*)**
Achillea millefolium	yarrow	Native	1	0.1
Andropogon gerardii	big bluestem	Champ	15	2.3
Asclepias incarnata	swamp milkweed	Native	1	0.3
Asclepias speciosa	showy milkweed	Native	1	0.3
Buchloe dactyloides	Buffalograss	Texoca	15	0.4
Chondrosum gracile (syn: *Bouteloua gracilis*)	Blue grama	Lovington	5	1.8
Distichlis stricta	Inland saltgrass	Native	5	0.2
Elymus canadensis	Canada wildrye	Mandan	5	0.9
Elymus lancolatus	Streambank wheatgrass	Sodar	10	1.3
Panicum virgatum	switchgrass	Native	10	0.5
Pascopyrum smithii (syn: *Agropyron smithii*)	Western wheatgrass	Arriba	16	2.9
Sorghastrum avenaceum (syn: Sorghastrum nutans)	yellow Indiangrass	Holt	10	1.2
Spartina pectinata	prairie cordgrass	Native	5	0.5
Verbena hastata	blue verbena	Native	1	0.1
Total pounds PLS/acre			**100.0**	**12.4**
*PLS = Pure Live Seed – If broadcast seeding, double the rate				

ZONE 2 - PLANTING (STAKES)			
2.5-4 FT (ANNUAL FLUCTUATION ZONE)			
SCIENTIFIC NAME	**COMMON NAME**	**FORM**	**SPACING (O.C.)**
Salix amygdaloides	peach leaf willow	Stakes	10'
Salix exigua	sand bar willow	Stakes	3'

ZONE 3 PLANTINGS

Table A-7: Zone 3 Planting list. Depending on availability, species to be planted at the Bank may include, but are not limited to, those selected from the CPW Native Plant Revegetation Guide (1998)

ZONE 3 - SEEDING				
2.5-4 FT (ANNUAL FLUCTUATION ZONE)				
SCIENTIFIC NAME	**COMMON NAME**	**VARIETY**	**% IN MIX**	**LB/AC (PLS*)**
Achillea millefolium	yarrow	Native	1	0.1
Andropogon gerardii	big bluestem	Champ	15	2.3
Asclepias incarnata	swamp milkweed	Native	1	0.3
Asclepias speciosa	showy milkweed	Native	1	0.3
Buchloe dactyloides	Buffalograss	Texoca	15	0.4
Chondrosum gracile (syn: *Bouteloua gracilis*)	Blue grama	Lovington	5	1.8
Distichlis stricta	Inland saltgrass	Native	5	0.2
Elymus canadensis	Canada wildrye	Mandan	5	0.9
Elymus lancolatus	Streambank wheatgrass	Sodar	10	1.3
Panicum virgatum	switchgrass	Native	10	0.5
Pascopyrum smithii (syn: *Agropyron smithii*)	Western wheatgrass	Arriba	16	2.9
Sorghastrum avenaceum (syn: Sorghastrum nutans)	yellow Indiangrass	Holt	10	1.2
Spartina pectinata	prairie cordgrass	Native	5	0.5
Verbena hastata	blue verbena	Native	1	0.1
Total pounds PLS/acre			**100.0**	**12.4**
*PLS = Pure Live Seed – If broadcast seeding, double the rate				

ZONE 3 - PLANTING (STAKES)			
2.5-4 FT (ANNUAL FLUCTUATION ZONE)			
SCIENTIFIC NAME	**COMMON NAME**	**FORM**	**SPACING (O.C.)**
Salix amygdaloides	peach leaf willow	Stakes	10'
Salix exigua	sand bar willow	Stakes	3'

BUFFER ZONE PLANTINGS

Table A-8: Buffer Zone Planting list. Depending on availability, species to be planted at the Bank may include, but are not limited to, those selected from the CPW Native Plant Revegetation Guide (1998)

BUFFER ZONE - SEEDING				
4+ FT (UPLAND)				
SCIENTIFIC NAME	COMMON NAME	VARIETY	% IN MIX	LB/AC (PLS*)
Achnatherum hymenoides	Indian Ricegrass	Native	10	1.4
Andropogon hallii	Sand Bluestem	Native	5	0.9
Artemisia frigida	Fringed sage	Native	1	0.1
Artemisia ludoviciana	Prairie sage	Native	1	0.1
Bouteloua curtipendula	Sideoats grama	Butte	5	0.5
Buchloe dactyloides	Buffalograss	Texoka	15	5.3
Calamovilfa longifolia	Prairie sandreed	Goshen	5	0.4
Chondrosum gracile (syn: *Bouteloua gracilis*)	Blue grama	Lovington	15	0.4
Cleome serrulata	Rocky Mountain beeplant	Native	1	0.3
Elymus lancolatus	Streambank wheatgrass	Sodar	15	1.9
Machaeranthera tanacetifolia	Tansy aster	Native	1	0.1
Pascopyrum smithii (syn: *Agropyron smithii*)	Western wheatgrass	Arriba	15	2.7
Ratibida columnifera	Prairie coneflower	Native	1	0.1
Schizachyrium scoparium	Little bluestem	Cimarron	5	0.4
Sporobolus cryptandrus	Sand dropseed	Native	5	0.1
Total pounds PLS/acre			**100.0**	**14.5**
*PLS = Pure Live Seed – If broadcast seeding, double the rate				

7.0 Maintenance Plan

The mitigation area is designed to operate and function with little to no maintenance or human intervention after vegetation establishment. In addition to yearly monitoring, the restored wetland areas will be visited quarterly during the first two years of operation (including any major flooding events) to ensure the Bank is performing optimally and during the life of the Bank when necessary. Other periodic maintenance and adaptive management activities may include sediment removal, weed control, vegetation protection, and supplemental planting as necessary to meet project goals and objectives. Vegetation manipulations may include weed control, staking woody tree stems, and installing protective barriers around individual plants or portions of to provide protection from wildlife. It should be noted that the goal of the project is to encourage the natural vegetative and ecological succession cycle to the maximum extent practicable. This includes acceptance within the design for sediment to accumulate in some places while other areas become heavily vegetated, then allowing these areas to reshuffle after large flood events, per historical patterns.

A. Maintenance Provisions

The Bank Sponsor agrees to perform all necessary work to maintain the Bank consistent with the maintenance criteria contained within this BDP. The Bank Sponsor will continue with such maintenance activities until completion of the monitoring period. Deviation from the monitoring and maintenance provisions in the approved MBI will require review and written approval by the IRT.

B. Monitoring Provisions

The Bank Sponsor agrees to monitor the Bank to demonstrate compliance with the Performance Standards established in this BDP. The Bank Sponsor shall submit annual monitoring reports for the next five years or until such time that the Corps determines that the project has resulted in a net benefit to aquatic resource functions and services. Annual monitoring reports shall comply with enclosed "Annual Mitigation Monitoring Report Format Requirements". In each monitoring report the Bank Sponsor shall state how the proposed project has achieved each success criterion identified in Section 8.0 of the Bank Development Plan. The annual monitoring report will be submitted by December 31st of each year." Monitoring will be conducted

for a minimum of 5 years for emergent plant and forested communities, or until success criteria as determined by the Corps occurs. The monitoring provisions are detailed in Section 9.0 below.

C. Reports

The Bank Sponsor will submit reports to the US Army Corps of Engineers, Denver Regulatory Office (CENWO-OD-RCO) using the Annual Mitigation Monitoring Report Format provided by Denver Regulatory Office and following procedures described in RGL 08-03.

Monitoring Reports will be mailed to:

State Program Manager
Denver Regulatory Office
CENWO-OD-RCO
9307 S. Wadsworth Blvd.
Littleton, CO 80128-6901

8.0 Performance Standards

These interim wetland performance standards will follow guidelines from the USEPA and USACE (USACE 33 CFR 332) Compensatory Mitigation for Losses of Aquatic Resources, Final Rule, and approved by USACE, in consultation with the IRT.

Definitions of establishment, reestablishment, restoration, enhancement, and preservation are found at 33 CFR 332.2. The USEPA defines wetland reestablishment as “manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historical functions to a former wetland. Reestablishment results in rebuilding a former wetland and results in a gain in wetland acres” (USEPA 2018). Post-construction wetland performance standards are defined in Table A-9 below.

The Bank Sponsor will demonstrate the successful reestablishment and enhancement of wetlands by ensuring that these areas meet the definition of wetlands found at 33 CFR 328.3. “Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

To demonstrate an increase in wetland function for reestablished and enhanced wetlands in the interim, reestablished and enhanced wetlands on the site will be assessed using performance standards based on hydrology and wetland vegetation. These performance standards are focused on ensuring the three parameters required to be present for an area to be considered a wetland under Section 404 of the Clean Water Act are in fact developing on the Bank. Because hydric soils may take many years to develop, clear indicators of anaerobic conditions and sufficient hydrology will serve as the performance proxy for wetland soils.

The Interim Hydrology Performance Standard requires that, with the exception of drought years, hydrology in reestablished and enhanced wetlands will have a minimum of saturation within 12 inches of the ground surface for 2 weeks (14 days) or more during the growing season. We will use well data loggers to meet this criterion.

Wetland vegetation will be assessed through both hydrophytic vegetation indicators (i.e., dominance test) and noxious weed cover. The dominance test included in the Wetland Determination Data Form, Great

Plains Region, will be utilized to determine the percentage of plant species occurring in the vegetation stratum that, individually or collectively, comprise more than 50 percent of total coverage, plus any additional species that individually comprise 20 percent of the total. A rating of more than 50 percent of plant species as rated obligate, facultative wet, or facultative passes the wetland vegetation dominance test. The wetland delineation shall demonstrate at least 80 percent of the site is vegetated (as determined by ocular estimate of herbaceous cover).

Additionally, FACWet will be used in re-established wetlands to demonstrate a FCI score equal to or greater than a 0.7 to be considered a functioning score.

Credits will be released, upon: (1) meeting all four interim performance criteria in Table A-9 below, (2) submission of that year's monitoring report, and (3) approval of that report by the Corps. Monitoring will be conducted for a minimum of 5 years for PEM areas and 10 years in forested communities unless success criteria as determined by the Corps occurs earlier. If success criteria are met in any area, that area may be approved for credit release as long as the long-term endowment is fully funded as specified in the Credit Release Schedule detailed in Section C. of the MBI.

This MBI was developed to comply with the Colorado Mitigation Procedures (COMPs V 2.0, June 2020). However, given that crediting methodologies for wetlands are continually evolving and the status of regulations shift because of administration changes at the federal, state, and local levels, we reserve the right to amend the MBI to incorporate additional new crediting methodologies or metrics as they are developed.

The final credit release will also follow completion of a wetland delineation that will occur as part of meeting final performance standards. Upon completion of final delineation, as required by Bank final performance standards, total reestablished wetland acreage will be determined. Should reestablished wetland acreage be greater than planned, we will work with the USACE to adjust numbers appropriately and credit restored acres at a 1:1 ratio. Conversely, should reestablished wetland acreage measure less than planned, credited acres will be adjusted.

Table A-9: List of wetland performance standards for South Platte Mitigation Bank.

Performance Standard	Criteria
Hydrophytic Vegetation	At least 80 % (determined by ocular estimate of herbaceous and shrub foliar cover) of the mitigation site is vegetated, with at least 50% of the total number of dominant species present consisting of species rated as facultative (FAC) or wetter (FACW or OBL).
Hydrology	Saturation or inundation must occur within 12 inches of the surface for at least 5% of the growing season (14 consecutive days during the period of April 17 through October 19) during years with normal precipitation. This will be demonstrated based on monitoring well data or through primary or secondary indicators of such as sediment deposits, drift lines, drainage patters, water marks, etc.
Noxious Weeds	Invasive species cannot make up more than 10% of List A and List B of the Colorado Noxious Weeds List in order to meet performance standard. Sponsor can gather data from nearby reference sites to fine tune evaluation criteria. Effort must be coordinated with and approved by USACE. The coverage of species on the current Colorado Noxious Weed Inventory list shall be no more than 5% at bank closure.
Functional Lift	Sponsor will show ecological lift using FACWet. A FCI score equal to or greater than 0.7 will constitue a functioning score.

9.0 Monitoring Requirements

The Bank Sponsor shall submit annual monitoring reports for the next five years or until such time that the Corps determines that the project has resulted in a net benefit to aquatic resource functions and services. Annual monitoring reports shall comply with the Omaha District's "Annual Mitigation Monitoring Report Format Requirements". In each monitoring report the Bank Sponsor shall state how the proposed project has achieved each success criterion identified in Section 8.0 of the Bank Development Plan. The annual monitoring report will be submitted by December 31st of each year. Monitoring will be conducted for a minimum of 5 years for PEM areas and forested communities unless success criteria as determined by the Corps occurs earlier.

9.1 Access

The Bank Sponsor will allow, or otherwise provide for, access to the Property by members of the IRT, as reasonably necessary, for the purpose of inspection, compliance monitoring, and remediation consistent with the terms and conditions of this MBI throughout the period of Bank establishment, monitoring, and operation. IRT site visits will go through the Chair(s) of the IRT. Inspecting parties will not unreasonably disrupt or disturb activities on the Bank. Inspecting parties will provide reasonable written notice, of not less than 72 business hours, to the Bank Sponsor and landowner, prior to inspection of the Bank Property.

10.0 Long-term Management

Upon Bank Closure, the Land Manager will conduct and be responsible for the Bank's long term

management activities and implementing the Long-Term Management Plan (Exhibit B of the MBI). The Colorado State Land Board will be the designated Land Manager. The primary goal of the Bank is to create a self-sustaining natural aquatic system that achieves the intended level of aquatic ecosystem functionality with minimal human intervention, including long-term Bank maintenance. Natural changes to the vegetative community that occur after all Bank performance standards have been met are not expected to require remediation. During the long-term management period, if vegetative composition and densities require prescribed holistic grazing events as a management strategy, a comprehensive plan will be provided to USACE for approval.

11.0 Adaptive Management

In the event the IRT or the Bank Sponsor determines that the Bank project either (a) is not achieving its performance standards in restored and enhanced areas, (b) has failed to meet or will no longer meet targeted aquatic functions and services of this BDP or (c) has suffered an unanticipated event (natural or man-induced) that has adversely affected the SPMB's performance, then the IRT will be notified as soon as possible. Within 45 days of submittal of notice to the Corps, the Bank Sponsor will submit to the Corps a proposed adaptive management plan to address the specific deficiency for consideration.

A list of potential major stressors or drivers which may affect the mitigation project and could trigger adaptive management actions is provided in EXHIBIT C of the Adaptive Management Plan. The table does not attempt to explain all possible relationships of potential factors influencing the Bank; rather, presents only those relationships and factors deemed most relevant to obtaining the required success criteria, and may be modified, as necessary.

11.1 Default

If the Corps, in consultation with the IRT, believes that the Bank Project is in default, it must provide written notice to the Bank Sponsor, including a detailed description of the basis for the notice of default. The Bank Sponsor will submit a written corrective action plan to the Corps, in consultation with the IRT for review and approval within a reasonable time of receiving written notice of default. The corrective action plan will, at a minimum, identify the cause of the non-compliance, the measures necessary to correct the non-compliance, and a timeline for implementing said measures and to come into compliance. The Corps will inspect and review the plan in a reasonable time. To the extent practicable, the Corps, in consultation with the IRT will approve or reasonably amend the corrective action plan (Plan), provided that sufficient information and acceptable measures are contained within the plan. The Bank and the Bank Sponsor shall not be considered to be in default as long as the Bank Sponsor is taking reasonable steps to develop the Plan within the stated timeframes and come into compliance in accordance with the actions and timelines specified in the Plan. If the Bank Sponsor does not make responsible efforts to come into compliance, then credits may be suspended until Bank Sponsor does make such responsible efforts. Depending on the nature of the non-compliance, the Corps may suspend credits until such non-compliance is corrected.

12.0 Financial Assurances and Responsibilities

A. Construction Phase

Prior to the initial 45% credit release, the Bank Sponsor will provide the USACE with an approved financial

assurance mechanism for the construction, operation, monitoring, maintenance and remedial measures associated with the Bank ("Construction Assurance Mechanism"). The Construction Assurance Mechanism will be a USACE approved construction insurance policy, being 110% of estimated costs. The insurance policy documentation along with construction estimates will be provided as Exhibit E Financial Assurances prior to Bank Establishment. The full Construction Assurance Mechanism will be held until the final monitoring report is submitted and approved, performance standards are being met, and the Long Term Endowment is fully funded at which time this insurance will be released.

B. Maintenance and Monitoring Phase

After completion of Bank construction, the entire Construction Assurance Mechanism will be released and at this time the Bank Sponsor will furnish a USACE approved financial assurance mechanism for the monitoring and maintenance associated with the Bank (the "MM Assurance Mechanism"). The MM Assurance Mechanism will be an insurance policy. The insurance policy amount will be determined by covering 110% of the estimated annual monitoring and maintenance budget. The full MM Assurance Mechanism will be held until the final monitoring report is submitted and approved, performance standards are being met, and the Long Term Endowment is fully funded (see following paragraph) at which time this insurance will be released.

C. Long Term Management Phase

Prior to the initial 45% credit release of the Bank, the Bank Sponsor will fund 100% of the $144,667 total Long Term Endowment amount as calculated and set forth in Table 1 of the Long-Term Management Plan (EXHIBIT B). This amount is estimated to be adequate to generate the projected annual management costs associated with implementing the Long-Term Management Plan of the SPMB. The Long Term Endowment will be held in a separate, interest-bearing escrow account and will be further funded by the Bank Sponsor according to the timeframes set forth in the credit release schedule outlined in Table 2 of the MBI. Upon the transfer of the Long-Term Endowment and the long-term responsibility of the Bank Property to the CSLB as the Land Manager pursuant to Section IX of the MBI (and upon satisfaction of the remaining requirements for Bank Closure under Section VIII-F of the MBI), the Bank Sponsor will be relieved of all management responsibilities and all other obligations under the MBI with respect to SPMB. The long-term management phase does not begin until after either all credits have been sold or the Bank Sponsor agrees to discontinue selling credits.

D. Modification, Termination, Revocation, Amendment, or Partial Release

Written concurrence by the Corps must be obtained prior to any termination, revocation, modification, amendment, or partial release of the Construction Assurance Mechanism or MM Assurance Mechanism or the Long Term Endowment (collectively, the "Bank Assurance Mechanisms"). The Corps must be provided with written notice at least 120 days in advance of any termination or revocation of the Bank Assurance Mechanisms. The Corps must be provided written notice at least 60 days in advance of any modification, amendment, or partial release of the Bank Assurance Mechanisms. Termination, revocation, modification, amendment, or partial release of the Bank Assurance Mechanisms without the Corps' written concurrence may result in a determination that the SPMB is not in compliance with the Instrument.

13.0 References

Chapman, S.S., Griffith, G.E., Omernik, J.M., Price, A.B., Freeouf, J., and Schrupp, D.L., 2006, Ecoregions of Colorado (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,200,000)

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USACE (2005). The U.S. Army Corps of Engineers' Guidance for Compensatory Mitigation and Mitigation Banking in the Omaha District. August 2005.

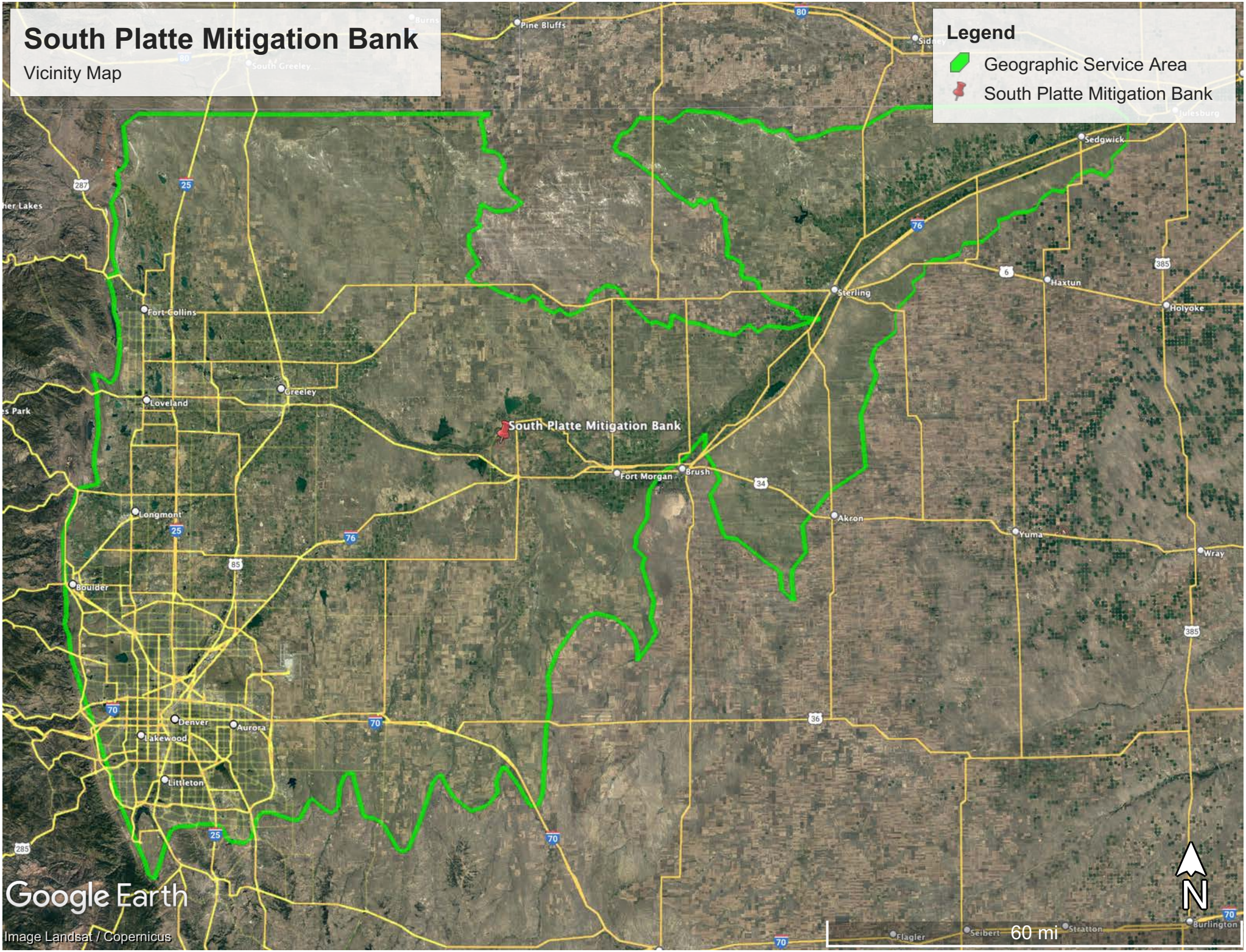
USACE (2008) Compensatory Mitigation for Losses of Aquatic Resources, Final Rule. Regulation 40CFR Part 230

USACE (2016) Implementing Financial Assurance for Mitigation Project Success Institute for Water Resources U.S. Army Corps of Engineers Alexandria, VA. March 2016

USACE (2015) Regional Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division. United States Army Corps of Engineers, January 12, 2015.

Appendix A

Vicinity Map
South Platte Mitigation Bank
December 2022


South Platte Mitigation Bank
Vicinity Map
Legend
Geographic Service Area
South Platte Mitigation Bank
Pine Bluffs
Sidney
Julesburg
Sedgwick
Fort Collins
Sterling
Haxtun
Holyoke
Greeley
Loveland
South Platte Mitigation Bank
Fort Morgan
Brush
Akron
Yuma
Wray
Longmont
Boulder
Denver
Aurora
Lakewood
Littleton
Flagler
Seibert
Stratton
Burlington
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Appendix B

Water Rights Determination
South Platte Mitigation Bank
December 2022

COLORADO
Division of Water Resources
Department of Natural Resources

July 16, 2021

Aaron Eilers
U.S. Army Corps of Engineers, Denver Regulatory Office
Transmission via email: Aaron.R.Eilers@usace.army.mil

Re: South Platte Mitigation Bank - Revised Prospectus
Application No. NWO-2020-02252-DEN
Section 16, Township 4 North, Range 60 West, 6th P.M., Morgan County
Water Division 1, Water District 1

Dear Mr. Eilers,

We have reviewed the revised prospectus dated June 10, 2021, for the South Platte Mitigation Bank ("Bank") submitted by SCP Conservation LLC ("SCP"), and a letter dated June 18, 2021 from Stephen Decker of Rocky Mountain Mitigation, LLC. The project site consists of a 140 acre parcel located adjacent to the South Platte River. The property is owned by the Colorado State Land Board, and it has historically been leased for agriculture and cattle grazing activities.

The proposed Bank would be a private, commercial wetland mitigation bank which is intended to be developed to allow the bank sponsor, SCP, to sell wetland mitigation credits within a defined service area. Wetland credits would be created through re-establishment of historical wetlands and restoration and enhancement of existing wetlands at the project site. The wetland mitigation credits could be used to offset compensatory mitigation requirements associated with impacts to waters of the United States, as authorized by Department of the Army permit requirements.

The objectives of the South Platte Mitigation Bank include:

- Restoration (reestablishment) of 77.2 acres of wetlands through the targeted excavation of historic swales and paleo-channels to reestablish historical hydrology;

- Enhancement of 16.6 acres of wetlands by removing invasive species and ceasing cattle ranching activities;

- Enhancement and preservation of 44.1 acres (300-foot buffer) of upland buffer by removing invasive species and ceasing cattle ranching activities.

The proposed restoration, enhancement, and preservation activities will occur in four work zones (as shown in Figure 4 of the prospectus) as further described below. The design approach activities will target the restoration of relict palustrine emergent and palustrine scrub-shrub wetlands which currently do not meet the defined criteria of Waters of the US. Areas targeted for restoration currently consist of relict channels or swales that occur in

low-lying areas as well as upland areas adjacent to existing wetlands. In addition, some wetlands will be restored through the excavation of excess sediment. Grades in these target areas will be restored to elevations at which the majority of the rooting zone of planted wetland species will be within the mean shallow groundwater elevations, as indicated by well monitoring data. A 50-foot no-grading zone along the existing natural berm between the river and wetland restoration activities will also protect the site.

Zone 1 is located on the west and southwest side of the property and consists of a degraded salt meadow (palustrine emergent wetlands) dominated by prairie cordgrass and surrounded by uplands comprised mostly of introduced pasture grasses like tall wheatgrass. The topographical depressions and wide swales are primarily groundwater driven, but are also likely to be inundated during high floods in the South Platte River. Much of the surrounding upland areas are relict wetlands that have been impacted by sedimentation. The loss of natural wetland hydrology has led to the gradual conversion of these areas to uplands dominated by invasive species, including predominantly white top and Canada thistle.

Proposed Zone 1 restoration activities:

- Grading of the soil surface to restore relict wetland hydrology
- Removing invasive species
- Planting of salt-tolerant native species
- Ceasing cattle ranching activities

Zone 2 is located directly abutting the South Platte River in the north central sections of the property and consists of cottonwood riparian forest with an herbaceous understory. The overstory is dominated by plains cottonwood and green ash, as well as invasive trees including Russian olive. The understory is dominated by introduced perennial grasses such as smooth brome as well as invasive species, such as leafy spurge. Of the three restoration zones, Zone 2 is the most impacted by extreme flooding events. There are large deposits of alluvium that have buried and filled in former wetland swales, and are now uplands dominated by invasive species including, but not limited to Canada thistle, common mullein and Scotch thistle. In addition, a large portion of wetland swales in Zone 2 were impacted by the formation of a small alluvial fan. This alluvial fan likely formed as a result of more recent erosion from local upstream activities. The sedimented areas have formed a disconnect between the western and eastern floodplain wetlands. These historical floodplain wetlands will also be restored.

Proposed Zone 2 restoration activities:

- Removing large sand deposits to restore relict hydrology
- Grading of the soil surface to restore wetland hydrology
- Removing invasive species
- Reestablishing diversity of native woody understory species
- Ceasing cattle grazing activities

Zone 3 is directly abutting the South Platte River on the east side of the property and consists of depressional wetlands within a cottonwood riparian forest likely associated with a backwater channel of the South Platte River. Historically the backwater channel would have

flowed in from the northeast side of the property through wetland swales and most likely supported much of the historical wetlands within this zone. The understory vegetation in the zone is almost completely dominated by invasive species, which threaten the few remaining wetland pockets with native species such as Emory's sedge and prairie cordgrass. Restoration activities in this zone will consist of a "gentler" approach including light grading to restore a smaller amount of wetland areas (relative to Zones 1 and 2) surrounding existing wetlands, enhancing existing wetlands with native species plantings which can outcompete invasive species, and removing invasive species including smooth brome, reed canarygrass and perennial pepperweed.

Proposed Zone 3 restoration activities:

- Removing invasive species
- Light grading of the soil surface to restore wetland hydrology
- Planting diverse native species
- Ceasing cattle grazing activities

Zone 4 is the 300-foot upland buffer that will be established directly adjacent to the wetland restoration areas, giving added protection to these riparian zones. Cessation of cattle ranching activities, removal of invasive species and inter-seeding with native species in this zone will reduce erosion and sedimentation on the site and provide a full natural buffer to the restored and enhanced areas of Zones 1, 2, and 3.

Based on the description of the project in the prospectus, the proposed project includes changes in land use practices, grading of the site to restore historical topography and hydrology, and the seeding/planting of a variety of native vegetation types. Areas targeted for restoration currently consist of relict channels or swales that occur in low-lying areas as well as upland areas adjacent to existing wetlands. In addition, some wetlands will be restored through the excavation of excess sediment. Grades in these target areas will be restored to elevations at which the majority of the rooting zone of planted wetland species will be within the mean shallow groundwater elevations, as indicated by well monitoring data. A 50-foot no-grading zone along the existing natural berm between the river and wetland restoration activities will be maintained.

As proposed, the grading, recontouring, excavation, and other above described work activities will not result in the diversion, collection, or storage of stormwater or streamflow; will not expose groundwater; and will not impede the flow of water to vested water rights. Therefore, the proposed actions are outside the administrative authority of the Division of Water Resources (DWR), and we do not object to the proposed project. As the project proceeds, the project applicant/operator should communicate project progress with the Water District 1 Water Commissioner to keep the Water Commissioner up to date on restoration, enhancement, and preservation activities at the site.

Although DWR does not object to this project, this does not protect the project from a claim of injury by the owner of a senior vested water right.

Should you have any questions, please let me know.

Sincerely,

Jeff Deatherage, P.E.
Water Supply Chief

Ec: Michael Hein, Michael.Hein@state.co.us , Lead Assistant Division One Engineer
Brent Schantz, Brent.Schantz@state.co.us , South Platte River Ops/Compact Commissioner, and Acting District 1 Water Commissioner
Sarah Brucker, Sarah.Brucker@state.co.us, Team Leader, Team 1-B

Appendix C

Wetland Delineation Report
South Platte Mitigation Bank
December 2022

ERO

Consultants in Natural Resources and the Environment

Wetland Delineation Report
Rocky Mountain Mitigation - Orchard Parcel
Morgan County, Colorado

Prepared for—

Mr. Gray Stevens
SCP Conservation, LLC
1030 3rd Avenue S. #304
Naples, Florida 34102

Prepared by—

ERO Resources Corporation
1842 Clarkson Street
Denver, Colorado 80218
(303) 830-1188
ERO Project #20-236

December 2, 2020

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Wetland Delineation Report
Rocky Mountain Mitigation - Orchard Parcel
Morgan County, Colorado

December 2, 2020

Introduction

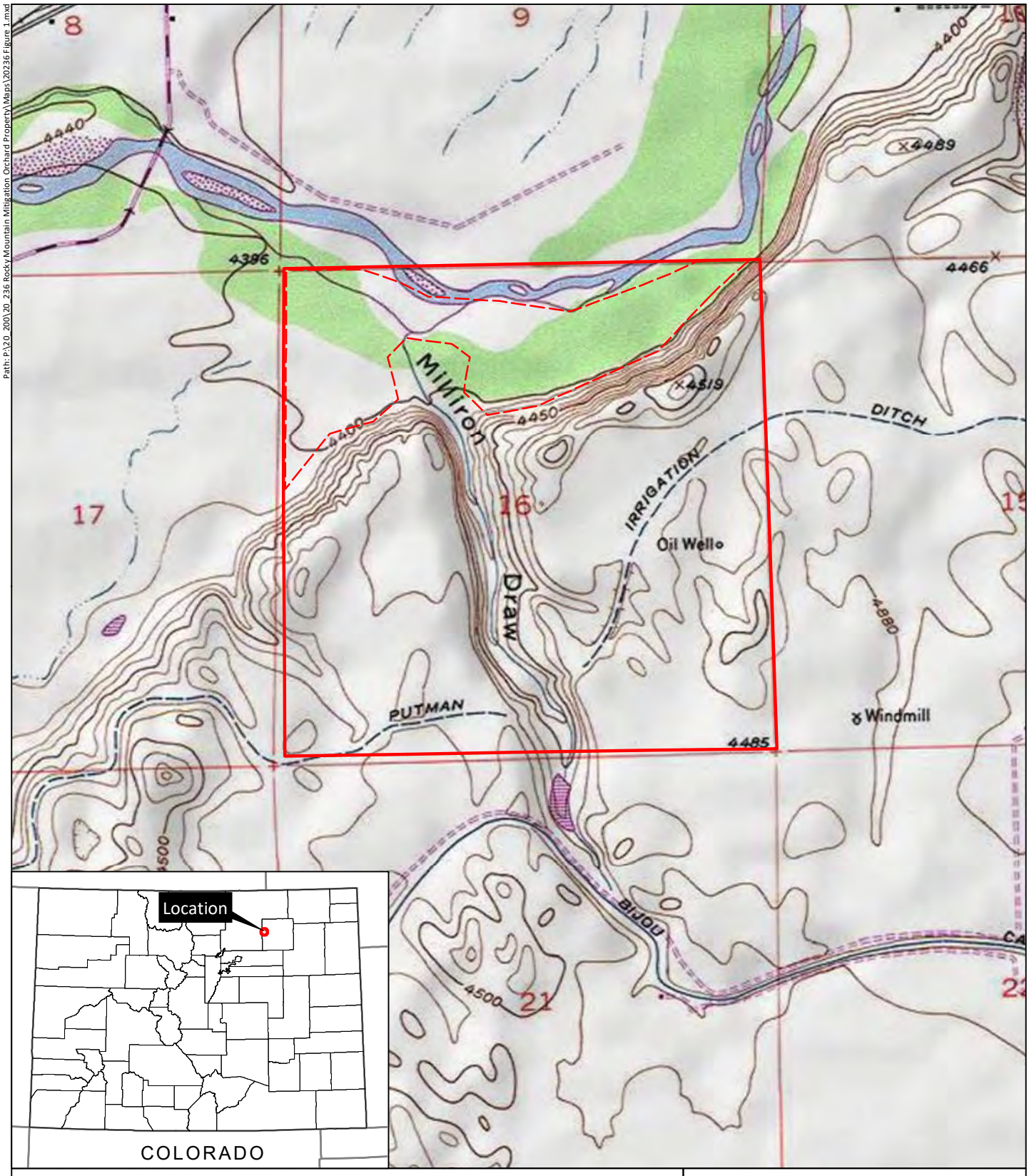
Rocky Mountain Mitigation (RMM) retained ERO Resources Corporation (ERO) to provide a wetland delineation along the south side of the South Platte River, east of Colorado Highway 144, and north of County Road U southeast of the city of Orchard in Morgan County, Colorado (project area/limits of delineation; Figure 1). RMM is proposing to develop a mitigation bank in the project area. ERO assessed the project area for potential isolated wetlands, jurisdictional wetlands, and other waters of the U.S.

The Clean Water Act (CWA) was passed by the U.S. Congress in 1972 to protect the chemical, physical, and biological quality of waters of the U.S. The U.S. Army Corps of Engineers' (Corps) Regulatory Program administers and enforces Section 404 of the CWA. Under Section 404, a Corps permit is required for the discharge of dredged or fill material into waters of the U.S., including wetlands. On June 22, 2020, the Environmental Protection Agency and Corps Navigable Waters Protection Rule: Definition of "Waters of the United States" became effective in 49 states and in all U.S. territories. A preliminary injunction has been granted for Colorado. Until further notice, jurisdiction of wetlands and other potential waters of the U.S. in Colorado will be determined using 2008 Rapanos guidance.

Under the Rapanos guidelines, the Corps considers traditionally navigable waters (TNWs), wetlands adjacent to a TNW, and tributaries to TNWs that are relatively permanent waters (RPWs) and their abutting wetlands jurisdictional waters. Other wetlands and waters that are not TNWs or RPWs will require a significant nexus evaluation to determine their jurisdiction. A significant nexus evaluation assesses the flow characteristics and functions of a tributary and its adjacent wetlands to determine if they significantly affect the chemical, physical, or biological integrity of downstream TNWs.

Location

The project area is in Section 16, Township 4 North, Range 60 West of the 6th Principal Meridian in Morgan County, Colorado (Figure 1). The UTM coordinates of the approximate center of the project area are 576214mE, 4462834mN of NAD 83 Zone 13N. The longitude/latitude of the project area is 104.103051°W/40.312548°N. The elevation of the project area is approximately 4,400 feet above sea level.



Orchard Parcel

Section 16, T4N, R60W; 6th PM

UTM NAD 83: Zone 13N; 576214mE, 4462834mN

Longitude 104.103051°W, Latitude 40.312548°N

USGS Orchard, CO Quadrangle

Morgan County, Colorado

Parcel Boundary

Limits of Delineation

0 750 1,500 feet

N

Figure 1
Vicinity Map

Prepared for: Rock Mountain Mitigation

File: 20236 Figure 1.mxd [dlH]

November 6, 2020

ERO Resources Corp.

Summary of Ecological Setting

The U.S. Department of Agriculture (USDA) maps the project area within the southern part of the Central High Plains Major Land Resource Area (MLRA), which is characterized by a flat to gently rolling landscape formed by glacial drift material and sediment deposition from the Rocky Mountains (USDA, Natural Resources Conservation Service (NRCS) 2006). This MLRA is part of the Colorado Piedmont section of the Great Plains physiographic province and ranges in elevation from 3,000 to 7,800 feet. The climate of the area is typical of mid-continental semiarid temperate zones, but the strong rain shadow effect of the Southern Rocky Mountains makes the area somewhat drier. The average annual precipitation is 12 to 18 inches, most of which occurs from April through September. The mean annual temperature is between 45°F and 55°F with the number of frost-free days ranging from 135 to 190.

The project area is further divided into the Rolling Sand Plains ecoregion of Colorado (Chapman et al. 2006). The geology of the Rolling Sand Plains ecoregion consists largely of sandy soils, formed from eolian deposits, and supports a sandsage prairie natural vegetation type. Located within the South Platte River watershed of central Colorado, streams flow from west to east, out of the Front Range Mountains and foothills or from southeast to northwest off the Palmer Divide and into the South Platte River. The South Platte River converges with the North Platte River just west of Ogallala, Nebraska to form the Platte River. The Platte River is tributary to the Missouri River, which eventually flows into the Mississippi River. Most of the tributaries that flow into the South Platte River watershed contain riparian corridors dominated by deciduous woodlands and transitional shrubs and grasslands.

The majority of the ecoregion historically consisted of shortgrass prairie. Most of the land use has or is currently undergoing a shift from rangeland, or other agricultural uses, to urban development. The development has resulted in a shift from native habitat to urban areas that contain a high number of manmade lakes and gravel pits, public infrastructure, buildings, and narrower riparian corridors along streams and rivers in the region.

Project Area Description

The project area is south of the South Platte River, east of Colorado Highway 144, and north of County Road U southeast of the city of Orchard in Morgan County, Colorado (Figure 1). The project area is surrounded by a mixture of rangeland and agricultural fields with minimal development and totals approximately 117.6 acres. Agricultural ditches and reservoirs crisscross the surrounding area with one canal located south of the project area boundary (Figure 1). Photo points of the project area are shown on Figure 2 and the photo log is in Appendix A.

South Platte River

Open Water 2
0.01 ac

Open Water 2
0.01 ac

Wetland J
0.19 ac

Open Water 1
0.03 ac

Wetland F
3.00 ac

Wetland E
2.65 ac

Wetland G
0.08 ac

Wetland H
0.01 ac

Wetland I
6.07 ac

Wetland B
3.47 ac

Wetland D
0.03 ac

Wetland C
0.29 ac

Wetland A
1.03 ac

Million Draw

DP-1
DP-2
DP-3
DP-4
DP-5
DP-6
DP-7
DP-8
DP-9
DP-10
DP-11
DP-12
DP-13
DP-14
DP-15
DP-16
DP-17
DP-18
DP-19
DP-20
DP-21
DP-22

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Orchard Parcel

Data Point

South Platte River Ordinary High Water Mark

Photo Point

Open Water (0.05 ac)

Wetland (15.23 ac)

Scrub/Shrub Wetland (1.59 ac)

Limits of Delineation

Parcel Boundary

0 175 350 feet

N

Figure 2
Wetland Delineation

Prepared for: Rocky Mountain Mitigation
File: 20236 Figure 2.mxd [dlH]
December 1, 2020

ERO Resources Corp.

The southwestern portion of the project area consists of emergent wetlands within upland grasslands that are dominated by prairie cordgrass (*Spartina pectinata*). The remaining majority of the project area consists of cottonwood forest within the South Platte River floodplain, with an overstory dominated by plains cottonwood (*Populus deltoides*) and green ash (*Fraxinus pennsylvanica*) trees and an understory dominated by prairie cordgrass and showy milkweed (*Asclepias speciosa*). Wetlands occur along the South Platte River and throughout the project area.

The wetlands in the project area are generally dominated by prairie cordgrass, foxtail barley (*Hordeum jubatum*), Baltic rush (*Juncus balticus*), common threesquare (*Schoenoplectus pungens*), Emory's sedge (*Carex emoryi*), and reed canarygrass (*Phalaris arundinacea*), with areas of scrub-shrub wetland dominated by narrowleaf willow (*Salix exigua*), reed canarygrass, and narrowleaf cattail (*Typha angustifolia*) (Photos 1, 2, 3, 5-8, 10-11, and 13). The wetlands are located within depressions or swales and appear to be fed by groundwater from and the flooding of the South Platte River. The uplands in the project area are dominated by plains cottonwood, green ash, Russian olive (*Elaeagnus angustifolia*), narrowleaf willow, prairie cordgrass, Baltic rush, tall wheatgrass (*Thinopyrum ponticum*), tall fescue (*Schedonorus arundinaceus*), switchgrass (*Panicum virgatum*), saltgrass (*Distichlis spicata*), leafy spurge (*Euphorbia esula*), smooth brome (*Bromus inermis*), common reed (*Phragmites australis* spp. *americanus*), reed canarygrass, Emory's sedge, and Canada thistle (*Cirsium arvense*) (Photos 1, 4, 9, and 12).

The NRCS has mapped six primary soils in the project area: Wann fine sandy loam, saline (Wf); Wann clay loam, saline (Wc); Wet alluvial land (Wt); Cascajo soils and gravelly land (Ca); Riverwash (Rv); and Ellicott-Glenberg complex, 0 to 3 percent slopes, occasionally flooded (Bk) (USDA, NRCS 2020b). Wann fine sandy loam, saline and Wann clay loam, saline soils are somewhat poorly drained, associated with floodplains and stream terraces, are slightly to strongly saline, and are typically found in salt meadows. Wet alluvial land is poorly drained, associated with floodplains and streams, and is typically found in salt meadows. Details about maximum salinity are not given for Wet alluvial land. Cascajo soils and gravelly land is excessively drained, typically located on terraces, nonsaline to very slightly saline, and typically associated with gravel breaks. Riverwash is associated with floodplains, low sand ridges, and arroyos. Details regarding the drainage class, maximum salinity, and ecological site is not given for Riverwash. Ellicott-Glenberg complex is somewhat excessively drained, associated with floodplains, nonsaline to very slightly saline, and typically associated with sandy bottomlands.

Methods

Wetland Delineation

On October 30, 2020, Anna Wistrom, Denise Larson, Heidi Gerstung, and Marie Russo with ERO surveyed the project area for potential isolated wetlands, jurisdictional wetlands, and other waters of the U.S. (2020 field survey). Prior to the 2020 field survey, ERO reviewed U.S. Geological Survey (USGS) quadrangle topographic maps and aerial photography to identify mapped streams and areas of open water that could indicate wetlands or waters of the U.S.

ERO conducted the wetland delineation following the methods for routine on-site wetland determinations in areas of less than 5 acres as described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and used methods in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0)* (Corps 2010), to record data on vegetation, soils, and hydrology on routine determination forms (Appendix B). The Corps defines wetlands as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 Code of Federal Regulations (CFR) 328.2(c)). Wetland boundaries were determined by a visible change in vegetation community, soils, topographic changes, and other visible distinctions between wetlands and uplands.

The wetland indicator status of plant species was identified using the *National Wetland Plant List* (Corps 2018), taxonomy was determined using *Flora of Colorado* (Ackerfield 2015) and *Colorado Flora: Eastern Slope* (Weber and Wittmann 2012), and nomenclature was determined using the *PLANTS Database* (USDA, NRCS 2020a). Commonly occurring plant species in the project area, including the wetland indicator status, are listed in Appendix C. If present, hydric soils were identified using field observation for hydric soil indicators accepted by the Corps. Soil data were not always collected if hydrophytic vegetation and hydrology was present and did not appear altered (Environmental Laboratory 1987). In addition, soil data were not collected in conditions where there was a clear lack of hydrology and hydrophytic vegetation indicators. Where soil data were collected, a Munsell soil color chart was used to determine soil color.

Intermittent, ephemeral, and perennial drainages with characteristics of a defined streambed, streambank, ordinary high water mark (OHWM), and other erosional features also were identified. The OHWM identifies the lateral jurisdictional limits of nonwetland waters of the U.S. Federal jurisdiction over nonwetland waters of the U.S. extends to the OHWM, defined in 33 CFR 328.3 as "the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." The Corps defines "stream bed" as "the substrate of the stream channel between the OHWMs. The substrate may be bedrock or inorganic particles that range in size from clay to boulders."

The boundaries of identified wetlands and other characteristics of potential waters of the U.S. were mapped using a Trimble Global Positioning System (GPS) unit. Data were differentially corrected using the CompassCom base station. All differential correction was completed using Trimble Pathfinder Office 5.9 software. GPS data were incorporated using ESRI® ArcGIS Desktop software. Additionally, where appropriate, wetlands were drawn on georectified aerials and then digitized.

Wetland Classification

Delineated wetlands were classified according to the U.S. Fish and Wildlife Service's (Service) Cowardin classification system (Cowardin et al. 1979) combined with a hydrogeomorphic (HGM) approach (Brinson 1993). The HGM approach assesses the chemical, physical, and biological functions of wetlands based on its geomorphic setting, water source, and hydrodynamics. HGM classes found in Colorado are mineral soil flats, organic soil flats, riverine, lacustrine fringe, slope, and depressional. The Cowardin classification uses a hierarchical structure of systems, subsystems, and classes to classify both wetlands and deepwater habitats. Wetlands with persistent or nonpersistent vegetation are classified in the Cowardin system as palustrine, which typically includes wetlands referred to as marshes, fens, wet meadows, and sloughs. The palustrine system also includes small, shallow, permanent, or intermittent water bodies such as ponds. Palustrine wetlands may be situated shoreward of lakes and river channels, on river floodplains, in isolated catchments, or on slopes (Cowardin et al. 1979). Under the palustrine system, wetlands are classified as emergent (erect, rooted, herbaceous, and usually perennial hydrophytes that remain standing until at least the next growing season); scrub-shrub (woody vegetation less than 20 feet tall); or forested (woody vegetation 20 feet or taller). In wetlands where more than one wetland type occurs, the wetland type of the largest area is used. For example, an area that is predominantly palustrine emergent (PEM) wetlands but also contains a small amount of palustrine scrub-shrub (PSS) wetlands would be categorized as PEM wetlands. Because of the limited occurrence of the smaller sized wetland types within the larger wetland polygons, these areas were not separated out within the delineated polygons.

The Cowardin riverine system includes wetlands and deepwater habitats contained within a channel, with the exception of wetlands dominated by trees, shrubs, and emergent vegetation. The riverine system usually contains flowing water and is bounded on the landward side by uplands, channel banks, or other wetlands. Within the riverine system, wetlands are divided into the tidal, lower perennial (low gradient and slow water), upper perennial (high gradient and fast water), and intermittent subsystems. Within these subsystems, riverine wetlands are further classified as unconsolidated bottom, aquatic bed, streambed, rocky shore, unconsolidated shore, and emergent wetland (nonpersistent). During the wetland delineation, ERO classified the wetlands as PEM and PSS and classified limited open waters (Open Water 1 and Open Water 2) and one perennial stream (South Platte River).

Jurisdictional Assessment

To assist the Corps in making a preliminary jurisdictional determination, ERO reviewed the proximity and potential surface water connection of wetlands to known jurisdictional waters of the U.S. using aerial photo interpretation, landowner information, and information from the wetland survey. Within the project area, wetlands were distinguished as isolated, abutting or adjacent to a TNW, or as abutting or adjacent to a tributary to a TNW. Abutting wetlands are not separated from a TNW or tributary by uplands, a berm, a dike, or similar feature. Adjacent wetlands are bordering, contiguous, or neighboring a TNW or tributary, and may be separated from a TNW or tributary by uplands, a berm, a dike, or similar feature. Wetlands or waters that have a surface water connection to the South Platte River may provide

more than a speculative or insubstantial effect on the chemical, physical, or biological integrity of a TNW. The following sections contain information on potential surface water connections of wetlands and other waters within the project area.

Description of Wetlands and Other Waters

ERO assessed the project area for wetlands and other waters as described below. Data were collected from various locations in the project area to document the characteristics of uplands and wetlands, and the transition areas between them. Each data point (DP) was given a label that corresponds to a location shown on Figure 2 and routine wetland determination dataforms in Appendix B. Table 1 provides a summary of the mapped areas, including Cowardin classification and HGM for each wetland. Approximately 4,200 linear feet of stream channel (1.27 acres) and 16.87 acres of wetlands, including open waters, occur within the project area (Figure 2).

Table 1. Wetland area, Cowardin classification and HGM.

Water/Wetland ID	Longitude	Latitude	Feature Size (acre)	Cowardin Classification*	HGM
Wetland A	-104.111168	40.315148	1.03	PEM	Riverine
Wetland B	-104.111518	40.316289	3.47	PEM	Riverine
Wetland C	-104.109263	40.316228	0.29	PEM	Riverine
Wetland D	-104.108832	40.316387	0.03	PEM	Riverine
Wetland E	-104.110148	40.317441	2.65	PEM	Riverine
Wetland F	-104.104143	40.318769	1.63	PEM	Riverine
			1.37	PSS	
Wetland G	-104.105266	40.317868	0.08	PEM	Riverine
Wetland H	-104.104525	40.317599	0.01	PEM	Riverine
Wetland I	-104.100295	40.317352	5.85	PEM	Riverine
			0.22	PSS	
Wetland J	-104.096582	40.319180	0.19	PEM	Riverine
Open Water 1	-104.101645	40.318429	0.03	PUB	Riverine
Open Water 2	-104.098941	40.319133	0.02	PUB	Riverine
South Platte River	-104.102122	40.319448	1.27	RUB	Riverine
Total Acres			**18.14**		

*PEM = palustrine emergent, PSS = palustrine scrub-shrub, PUB = palustrine unconsolidated bottom, RUB = riverine, unconsolidated bottom.

Streams and Open Water

The project area is within Milliron Draw-South Platte River Hydrologic Unit 101900031103. Milliron Draw and the South Platte River are shown as perennial streams on the USGS Orchard, Colorado topographic quadrangle (Figure 1). Within the project area, a channel for Milliron Draw was not observed. The OHWM of the South Platte River was mapped, and the channel of the South Platte River is more than 300 feet wide in the project area (Photo 14). Two areas of open water (Open Water 1 and Open Water 2), totaling 0.05 acre, were observed in the project area during the 2020 field survey. These open waters are located within former backwater channels of the South Platte River, and their hydrology and size are closely related to the water level in the South Platte River.

Wetlands

During the 2020 field survey, ERO mapped 16.82 acres of wetlands, 15.23 acres of PEM wetland and 1.59 acres of PSS wetland, within the project area (Figure 2). Wetlands occur throughout the project area. All wetlands are located within the 100-year floodplain of the South Platte River. Wetlands A, B, C, and D are in herbaceous grasslands within topographical depressions and wide swales. They appear to have a hydrological connection to groundwater and are also likely to be inundated during flooding of the South Platte River. Wetlands E and F are located within topographical channels that appear to be former backwater channels of the South Platte River. These wetlands are located within the plains cottonwood-dominated floodplain forest. They are likely connected to groundwater as well as inundated by flooding of the South Platte River. Wetlands G, H, I, and J are depressional wetlands that may have once been associated with backwater channels of the South Platte River. They are located within the plains cottonwood-dominated floodplain forest. These wetlands are connected to groundwater and would also be inundated during flooding of the South Platte River.

Palustrine Emergent, Riverine Wetlands

- **Vegetation** – The dominant species in these wetlands consists of foxtail barley (facultative wetland [FACW], DP-3); Baltic rush (FACW, DP-3); common threesquare (obligate [OBL], DP-4, DP-16, and DP-17); reed canarygrass (FACW, DP-19); black ash (*Fraxinus nigra* - FACW, DP-19); prairie cordgrass (FACW, DP-9); green ash (facultative [FAC], DP-9); false indigo bush (*Amorpha fruticosa* - FACW, DP-9); and Emory's sedge (OBL, DP-16 and DP-17).
- **Soils** – Data were collected from six locations (Figure 2) within the wetlands (DP-3, DP-4, DP-9, DP-16, DP-17, and DP-19). Wetland soils are indicated by a dark surface with redox concentrations in the top 12 inches of the soil (DP-3, DP-9, DP-17, and DP-19) and a depleted matrix and redox concentrations starting within 6 inches of the soil surface (DP-9). Soils at DP-4 and DP-16 were assumed hydric based on the dominance of hydrophytic plants and the positive presence of wetland hydrology indicators.
- **Hydrology** – Hydrology indicators at DP-3, DP-4, DP-9, DP-13, DP-16, DP-17, and DP-19 included oxidized rhizospheres on living roots, geomorphic position, and a successful FAC-neutral test. ERO observed a successful FAC-neutral test at DP-1, DP-5, DP-6, DP-7, DP-8, DP-10, DP-14, and DP-18. ERO did not observe any wetland hydrology indicators at DP-2, DP-20, or DP-21.

Palustrine Scrub-Shrub, Riverine Wetlands

- **Vegetation** – The scrub-shrub wetlands are dominated by narrowleaf willow shrubs (FACW, DP-12 and DP-15) with an understory of reed canarygrass (FACW, DP-12 and DP-15) or narrowleaf cattail (OBL, DP-15).
- **Soils** – Data were collected at two DPs (Figure 2) within wetlands (DP-12 and DP-15). Wetland soils are indicated by redox concentrations in the top 6 inches of the soil (DP-12) or a dark surface with redox concentrations in the top 12 inches of the soil (DP-15).
- **Hydrology** – Hydrology indicators at DP-12 and DP-15 included oxidized rhizospheres on living roots, geomorphic position, and a successful FAC-neutral test.

Uplands

Several paired DPs and many nonpaired DPs were taken to determine the wetland boundaries. In upland areas, the results of those DPs are described below.

- **Vegetation** – The dominant species within the uplands include prairie cordgrass (FACW, DP-1, DP-5, DP-6, DP-7, DP-8, DP-13, and DP-22); tall wheatgrass (upland [UPL], DP-2); Baltic rush (FACW, DP-2); tall fescue (facultative upland [FACU], DP-2); plains cottonwood (FAC, DP-5, DP-6, DP-7, DP-18, DP-20, DP-21, and DP-22); Russian olive (FACU, DP-5, DP-11, and DP-21); switchgrass (FAC, DP-7); saltgrass (FACW, DP-10); common reed (FACW, DP-13); green ash (FAC, DP-14); narrowleaf willow (FACW, DP-8, DP-11, DP-13, DP-18, DP-21, and DP-22); reed canarygrass (FACW, DP-14 and DP-18); smooth brome (UPL, DP-11 and DP-20); Emory's sedge (FACU, DP-21); Canada thistle (FACU, DP-21); and leafy spurge (UPL, DP-11).
- **Soils** – Data were collected at 14 DPs (Figure 2) within the uplands (DP-1, DP-2, DP-5, DP-6, DP-7, DP-8, DP-10, DP-11, DP-13, DP-14, DP-18, DP-20, DP-21, and DP-22) to document the characteristics of the upland communities. Soils at DP-10, DP-14, and DP-18 were indicated by dark surface with redox concentrations in the top 12 inches of the soil. Hydric soils indicators were not met at DP-1, DP-2, DP-5, DP-6, DP-7, DP-8, DP-11, DP-13, DP-20, DP-21, and DP-22.
- Hydrology indicators at DP-13 included geomorphic position and a successful FAC-neutral test. ERO observed a successful FAC-neutral test at DP-1, DP-5, DP-6, DP-7, DP-8, DP-10, DP-14, DP-18, and DP-22. ERO did not observe any wetland hydrology indicators at DP-2, DP-11, DP-20, and DP-21.

Although many of the upland DPs were dominated by hydrophytic vegetation, these locations did not meet other wetland indicators. The upland areas identified during the 2020 field survey total approximately 99.46 acres in the project area.

Jurisdictional Assessment Review

The USGS topographic map, USDA, NRCS soils data (2020b), and historical imagery indicate that the wetlands within the project area are persistent features. Additionally, they are all located within the 100-year floodplain of the South Platte River and, therefore, would likely be considered jurisdictional under the CWA. If impacts on Wetlands A through J are proposed, ERO recommends submitting a request for an approved jurisdictional determination to the Corps. If the features are determined jurisdictional, the impacts may be covered under one or more CWA Section 404 Nationwide Permits, depending on the activities proposed. If the features are determined nonjurisdictional or no work would occur in those areas, no further action would be necessary.

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Appendix A – Photo Log

Photo 1 - Overview of intermediate wetland/upland area in the western portion of the project area. View is to the southwest.

Photo 2 - Overview of DP3 and the southern lobe of Wetland A in the western portion of the project area. View is to the west.

Photo 3 - Overview of the eastern portion of Wetland B in the western portion of the project area. View is to the southeast.

Photo 4 - Overview of uplands adjacent to Wetland E in the western portion of the project area. View is to the north.

Photo 5 - Overview of the southern channel of Wetland E in the western portion of the project area. View is to the southeast.

Photo 6 - Overview of the northwestern portion of Wetland F in the western portion of the project area. View is to the northwest.

Photo 7 - Overview of the South Platte River side channel adjacent to the northern project area boundary. The channel appears to have dried up and is completely vegetated. View is to the east.

Photo 8 - Overview of the center portion of Wetland F in the center portion of the project area. View is to the northeast.

Photo 9 - Overview of upland area in the center portion of the project area. View is to the east.

Photo 10 - Overview of Wetland G in the center portion of the project area. View is to the east.

Photo 11 - Western portion of Wetland I in the south-central portion of the project area. View is to the east.

Photo 12 - Overview of upland woods in the eastern portion of the project area. View is to the east.

Photo 13 - Overview of the central portion of Wetland I in the eastern portion of the project area. View is to the west.

Photo 14 - Overview of the South Platte River. View is to the northeast.

Photo 15 - Overview of the eastern portion of Wetland I in the eastern portion of the project area. View is to the northeast.

Appendix B – Routine Wetland Determination Dataforms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP1

Investigator(s): DEL/AJW Section, Township, Range: Section 16, T4N, R60W

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): G Lat: 40.31483208°N Long: -104.110841552°W Datum:

Soil Map Unit Name: Wann fine sandy loam, saline NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [x] No [ ] (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes [x] No [ ]

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [x] No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [x]
Hydric Soil Present?	Yes [ ] No [x]	
Wetland Hydrology Present?	Yes [ ] No [x]	

Remarks:

Upper edge of floodplain

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Spartina pectinata	70	Y	FACW
2. Juncus balticus	10	N	FACW
3. Schoenoplectus pungens	5	N	OBL
4. Cirsium arvense	2	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	87 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 13

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	80	x 2 =	160
FAC species	0	x 3 =	0
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	87 (A)		173 (B)

Prevalence Index = B/A = 1.9

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [x] 2 - Dominance Test is >50%
- [x] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [x] No [ ]

Remarks:

SOIL

Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	98	10YR 4/3	2	C	M	Clay	
6-8	10YR 2/2	98	10YR 4/3	2	C	M	SiCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP2

Investigator(s): DEL/AJW Section, Township, Range: Section 16, T4N, R60W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): slightly concave Slope (%): 0-2

Subregion (LRR): G Lat: 40.31475691°N Long: -104.1108155°W Datum:

Soil Map Unit Name: Wann fine sandy loam, saline NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks:

Toe of hillslope (slightly above DP1)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Thinopyrum ponticum	20	Y	UPL
2. Juncus balticus	15	Y	FACW
3. Schedonorus arundinaceus	15	Y	FACU
4. Distichlis spicata	10	N	FACW
5. Bromus arvensis	10	N	FACU
6. Muhlenbergia asperifolia	5	N	FACW
7. Panicum virgatum	2	N	FAC
8.			
9.			
10.			
	77 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 23

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL

Sampling Point: DP2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100					LoSa	
4-10	10YR 5/2	15					Clay	
4-10	10YR 3/2	85					Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP3

Investigator(s): DEL/AJW Section, Township, Range: Section 16, T4N, R60W

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): slightly concave Slope (%): 0-2

Subregion (LRR): G Lat: 40.31498615°N Long: -104.1114297°W Datum:

Soil Map Unit Name: Wann fine sandy loam, saline NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

Cattle churned swale

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Hordeum jubatum	40	Y	FACW
2. Juncus balticus	40	Y	FACW
3. Carex nebrascensis	5	N	OBL
4. Dipsacus fullonum	2	N	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	87 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 13

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☒ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/1	95	7.5YR 4/4	5	C	M	ClLo	
2-10	10YR 3/2	93	7.5YR 4/4	7	C	M	ClLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 0"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP4

Investigator(s): DEL/AJW Section, Township, Range: Section 16, T4N, R60W

Landform (hillslope, terrace, etc.): swale Local relief (concave, convex, none): slightly concave Slope (%): 0-2

Subregion (LRR): G Lat: 40.31633426°N Long: -104.1119706°W Datum:

Soil Map Unit Name: Wet alluvial land NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

Wetland B

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Schoenoplectus pungens	55	Y	OBL
2. Schoenoplectus tabernaemontani	10	N	OBL
3. Juncus balticus	10	N	FACW
4. Verbena hastata	10	N	FACW
5. Typha angustifolia	5	N	OBL
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☒ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: DP4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Did not dig based on dominance of hydrophytic vegetation and geomorphology.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP5

Investigator(s): DEL/AJW Section, Township, Range: Section 16, T4N, R60W

Landform (hillslope, terrace, etc.): floodplain terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): G Lat: 40.31837828°N Long: -104.1111022°W Datum:

Soil Map Unit Name: Wet alluvial land NWI classification: PFOA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

Slight rise above side channels

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	60	Y	FAC
2.			
3.			
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Elaeagnus angustifolia	5	Y	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Spartina pectinata	60	Y	FACW
2. Cirsium arvense	15	N	FACU
3. Lepidium latifolium	5	N	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	125	x 2 =	250
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species		x 5 =	
Column Totals:	145 (A)		330 (B)

Prevalence Index = B/A = 2.3

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: DP5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-8	10YR 2/2	100					ClLo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP6

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) open woods Local relief (concave, convex, none): slightly concave Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31688087 Long: -104.103888 Datum: NAD83

Soil Map Unit Name: Bankard sand, 0 to 3 percent slopes NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	15 %	Y	FAC
2.	%		
3.	%		
4.	%		
	15 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	60 %	Y	FACW
2. *Panicum virgatum*	15 %	N	FAC
3. *Asclepias speciosa*	5 %	N	FAC
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	80 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 20 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☒ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The dominance test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	100					loamy sand	
6-15	10YR 3/3	90	7.5YR 3/4	10	C	M	loamy sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicator D5 is met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP7

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) open woods Local relief (concave, convex, none): none Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31714268 Long: -104.102589 Datum: NAD83

Soil Map Unit Name: Bankard sand, 0 to 3 percent slopes NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	35 %	Y	FAC
2.	%		
3.	%		
4.	%		
	35 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Panicum virgatum*	30 %	Y	FAC
2. *Spartina pectinata*	25 %	Y	FACW
3. *Asclepia speciosa*	5 %	N	FAC
4. *Cirsium arvense*	5 %	N	FACU
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	65 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 35 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☒ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The dominance test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-10	10YR 3/1	100					silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicator D5 is met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP8

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) slight depression Local relief (concave, convex, none): concave Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31787661 Long: -104.1010628 Datum: NAD83

Soil Map Unit Name: Bankard sand, 0 to 3 percent slopes NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	20 %	Y	FACW
2. *Symphoricarpos occidentalis*	3 %	N	UPL
3.	%		
4.	%		
5.	%		
	23 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	25 %	Y	FACW
2. *Asclepias speciosa*	5 %	N	FAC
3. *Nepeta cataria*	5 %	N	FACU
4. *Cirsium arvense*	5 %	N	FACU
5. *Equisetum laevigatum*	2 %	N	FAC
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	42 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 58 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The rapid test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features					
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2	100					silty clay loam	
2-10	10YR 5/3	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicator D5 is met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP9

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) depression Local relief (concave, convex, none): concave Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.3163935 Long: -104.1034477 Datum: NAD83

Soil Map Unit Name: Bankard sand, 0 to 3 percent slopes NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☒	☐
Is the Sampled Area within a Wetland?	☒	☐

Remarks: Wetland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	7 %	Y	FAC
2.	%		
3.	%		
4.	%		
	7 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Amorpha fruticosa*	10 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	10 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	85 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	85 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 15 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☒ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The dominance test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	10YR 2/1	95	7.5YR 3/4	5	C	M	silty clay loam	
6-12	10YR 4/1	88	7.5YR 3/4	12	C	M/PL	silty clay loam	
12-14	10YR 4/1	85	7.5YR 3/4	15	C	M/PL	silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil indicators F3 and F6 are met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☒ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☒	☐	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators C3, D2, and D5 are met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP10

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) open woods Local relief (concave, convex, none): none Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31653004 Long: -104.1035772 Datum: NAD83

Soil Map Unit Name: Bankard sand, 0 to 3 percent slopes NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Distichlis spicata*	75 %	Y	FACW
2. *Elymus lanceolatus*	10 %	N	FACU
3. *Glycyrrhiza lepidota*	5 %	N	FACU
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	90 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 10 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The rapid test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/1	80	10YR 9/1	12	D	M	silty clay loam	
			7.5YR 3/4	8	C	M		
4-6	10YR 6/3	90	7.5YR 4/6	10	C	M	sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: compact soil Depth (inches): 6

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil indicator F6 is met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicator D5 is met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP11

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) terrace Local relief (concave, convex, none): none Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31831028 Long: -104.1019071 Datum: NAD83

Soil Map Unit Name: Riverwash - Water NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☒	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☐	☒
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	5 %	Y	FAC
2. *Elaeagnus angustifolia*	5 %	Y	FACU
3.	%		
4.	%		
	10 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	15 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	15 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Euphorbia esula*	35 %	Y	UPL
2. *Bromus inermis*	15 %	Y	UPL
3. *Verbascum thapsis*	10 %	N	UPL
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	60 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 40 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 40% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☐ Yes ☒ No

Remarks: Indicators of hydrophytic vegetation are not met.

SOIL

Sampling Point: DP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-5	10YR 3/3	100					silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: Compacted soil Depth (inches): 5

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met. Soil could not be retrieved below a depth of 5 inches due to the presence of compaction.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators are not met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP12

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) streambank terrace Local relief (concave, convex, none): concave Slope (%): 1 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31837192 Long: -104.1018882 Datum: NAD83

Soil Map Unit Name: Riverwash - Water NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☒	☐
Is the Sampled Area within a Wetland?	☒	☐

Remarks: Wetland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	40 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	40 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Phalaris arundinacea*	35 %	Y	FACW
2. *Salix exigua*	10 %	Y	FACW
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	45 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 55 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The rapid test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					silty clay loam	
5-12	10YR 5/2	95	10YR 6/6	5	C	M	sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil indicator S5 is met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☒	☐	5
Wetland Hydrology Present?	☒	☐	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators D2 and D5 are met. Although saturation was present at a depth of 5 inches, an accompanying water table was not observed. Therefore, indicator A3 is not met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP13

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) swale Local relief (concave, convex, none): concave Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31835579 Long: -104.1002677 Datum: NAD83

Soil Map Unit Name: Bankard sand, 0 to 3 percent slopes NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☒	☐
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	7 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	7 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Phragmites australis spp. americanus*	45 %	Y	FACW
2. *Spartina pectinata*	20 %	Y	FACW
3. *Cirsium arvense*	5 %	N	FACU
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	70 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 30 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The rapid test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	10YR 3/1	100					silty clay loam	
6-12	10YR 5/3	87	10YR 3/1	10	C	M	sand	
			10YR 5/6	3	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☒	☐	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators D2 and D5 are met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP14

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) slight depression Local relief (concave, convex, none): concave Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31874964 Long: -104.097778 Datum: NAD83

Soil Map Unit Name: Wet alluvial land NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	25 %	Y	FAC
2. *Populus deltoides*	3 %	N	FAC
3.	%		
4.	%		
	28 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	2 %	N	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	2 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Phalaris arundinacea*	100 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	100 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 0 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☒ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The dominance test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-6	10YR 3/1	95	10YR 4/3	5	C	M	silty clay loam	
6-12	10YR 3/1	91	10YR 4/3	7	C	M	silty clay	
			7.5YR 4/6	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil indicator F6 is met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicator D5 is met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP15

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) depression Local relief (concave, convex, none): concave Slope (%): 1 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31846839 Long: -104.0972308 Datum: NAD83

Soil Map Unit Name: Wet alluvial land NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☒	☐
Is the Sampled Area within a Wetland?	☒	☐

Remarks: Wetland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	40 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	40 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Phalaris arundinacea*	10 %	Y	FACW
2. *Typha angustifolia*	5 %	Y	OBL
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	15 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 85 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The rapid test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-4	10YR 2/2	100					silty clay loam	
4-8	10YR 3/1	95	7.5YR 2.5/3	5	C	M	silty clay	
8-14	10YR 3/1	90	7.5YR 3/2	10	C	M/PL	silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil indicator F6 is met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☒ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☒	☐	13
Wetland Hydrology Present?	☒	☐	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators C3, D2, and D5. Although saturation was present at a depth of 13 inches, an accompanying water table was not observed. Therefore, indicator A3 is not met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard/Morgan Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP16

Investigator(s): H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): G Lat: 40.319314 Long: -104.096281 Datum: 83

Soil Map Unit Name: Wet alluvial land NWI classification: PFOA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [x] No [ ] (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes [x] No [ ]

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [x] No [ ]	**Is the Sampled Area within a Wetland?** Yes [x] No [ ]
Hydric Soil Present?	Yes [x] No [ ]	
Wetland Hydrology Present?	Yes [x] No [ ]	

Remarks:

Wetland depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Salix exigua	2	N	FACW
2.			
3.			
4.			
5.			
	2	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Schoenoplectus pungens	40	Y	OBL
2. Carex emoryi	35	Y	OBL
3. Cirsium arvense	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

[x] 1 - Rapid Test for Hydrophytic Vegetation

[ ] 2 - Dominance Test is >50%

[ ] 3 - Prevalence Index is ≤3.0[1]

[ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

[ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [x] No [ ]

Remarks:

leaf litter

SOIL

Sampling Point: HG3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

not sampled; same vegetation community as DP17.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

localized depression/concave position within floodplain

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard/Morgan Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP17

Investigator(s): H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): G Lat: 40.3192360 Long: -104.095840 Datum: 83

Soil Map Unit Name: Wet alluvial land NWI classification: PFOA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks:

Wetland depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Salix exigua	2	N	FACW
2.			
3.			
4.			
5.			
	2	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Schoenoplectus pungens	40	Y	OBL
2. Carex emoryi	35	Y	OBL
3. Cirsium arvense	5	N	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☒ 1 - Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

leaf litter

SOIL

Sampling Point: HG1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	98	7.5YR 2.5/3	2	C	M	Silty Clay	
3-8	10YR 3/2	90	5YR 3/4	10	C	M	Silty Clay	
8-15	10YR 3/2	80	5YR 3/4	20	C	M	Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

prominent redox features

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

localized depression/concave position within floodplain

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard/Morgan Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP18

Investigator(s): H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): slightly convex Slope (%): 0

Subregion (LRR): G Lat: 40.3192709 Long: -104.095762 Datum: 83

Soil Map Unit Name: Wet alluvial land NWI classification: PFOA

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [x] No [ ] (If no, explain in Remarks.)

Are Vegetation N, Soil N, or Hydrology N significantly disturbed? Are "Normal Circumstances" present? Yes [x] No [ ]

Are Vegetation N, Soil N, or Hydrology N naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [x] No [ ]	**Is the Sampled Area within a Wetland?** Yes [ ] No [x]
Hydric Soil Present?	Yes [x] No [ ]	
Wetland Hydrology Present?	Yes [ ] No [x]	

Remarks:

Upland adjacent to wetland depression

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus deltoides	35	Y	FAC
2.			
3.			
4.			
	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Salix exigua	5	Y	FACW
2.			
3.			
4.			
5.			
	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Phalaris arundinacea	92	Y	FACW
2. Cirsium arvense	3	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC–): 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] 1 - Rapid Test for Hydrophytic Vegetation
- [x] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [x] No [ ]

Remarks:

SOIL

Sampling Point: HG2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/1	100		0			Silty Clay	
3-8	10YR 3/2	98	7YR 3/4	2	C	M	Silty Clay	
8-15	10YR 3/2	90	7YR 3/4	10	C	M	Silty Clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

distinct redox features

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) (**LRR F**)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Indicator D5 is met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP19

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) depression Local relief (concave, convex, none): concave Slope (%): 1 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31993294 Long: -104.0947502 Datum: NAD83

Soil Map Unit Name: Wet alluvial land NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☒	☐
Is the Sampled Area within a Wetland?	☒	☐

Remarks: Wetland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus nigra*	5 %	Y	FACW
2.	%		
3.	%		
4.	%		
	5 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Phalaris arundinacea*	100 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	100 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 0 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The rapid test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-3	10YR 2/2	98	7.5YR 3/4	2	C	M	silty clay loam	
3-12	10YR 2/2	85	7.5YR 4/6	15	C	M/PL	silty clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil indicator F6 is met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☒ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☒	☐	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators C3, D2, and D5.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP20

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) hillslope Local relief (concave, convex, none): convex Slope (%): 3 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31976787 Long: -104.094525 Datum: NAD83

Soil Map Unit Name: Cascajo soil and gravelly land NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☐	☒
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	15 %	Y	FAC
2.	%		
3.	%		
4.	%		
	15 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Bromus inermis*	50 %	Y	UPL
2. *Euphorbia esula*	10 %	N	UPL
3. *Glycyrrhiza lepidota*	5 %	N	FACU
4. *Spartina pectinata*	5 %	N	FACW
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	70 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 30 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 % (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☐ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☐ Yes ☒ No

Remarks: Indicators of hydrophytic vegetation are not met.

SOIL

Sampling Point: DP20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-5	10YR 3/3	100					sand	
5-7	10YR 5/3	98	10YR 5/6	2	C	M	sand	
7-14	10YR 5/3	100					sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators are not met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP21

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) terrace Local relief (concave, convex, none): convex Slope (%): 1 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31982036 Long: -104.0949344 Datum: NAD83

Soil Map Unit Name: Wet alluvial land NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides*	35 %	Y	FAC
2. *Elaeagnus angustifolia*	10 %	Y	FACU
3.	%		
4.	%		
	45 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	20 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	20 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Carex emoryi*	40 %	Y	OBL
2. *Cirsium arvense*	25 %	Y	FACU
3. *Ascelpias speciosa*	10 %	N	FAC
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	75 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 25 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 60% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☒ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The dominance test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-12	10YR 3/1	95	10YR 3/2	5	C	M	clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicators are not met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Orchard Parcel City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020

Applicant/Owner: Rocky Mountain Mitigation State: CO Sampling Point: DP22

Investigator(s): K. Russo, H. Gerstung Section, Township, Range: S16, T4N, R60W

Landform (hillslope, terrace, etc.) terrace Local relief (concave, convex, none): convex Slope (%): 0 %

Subregion (LRR): Western Great Plains Range & Irrigated Region Lat: 40.31855327 Long: -104.0973155 Datum: NAD83

Soil Map Unit Name: Wet alluvial land NWI Classification: PFOA

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica*	20 %	Y	FAC
2. *Populus deltoides*	5 %	Y	FAC
3.	%		
4.	%		
	25 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft.)			
1. *Salix exigua*	5 %	Y	FACW
2.	%		
3.	%		
4.	%		
5.	%		
	5 %	= Total Cover	
Herb Stratum (Plot size: 5 ft.)			
1. *Spartina pectinata*	45 %	Y	FACW
2. *Cirsium arvense*	15 %	N	FACU
3. *Ascelpias speciosa*	15 %	N	FAC
4. *Euphorbia esula*	2 %	N	UPL
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
	77 %	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft.)			
1.	%		
2.	%		
	0 %	= Total Cover	

Bare Ground in Herb Stratum 23 %

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 % (A)		0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ 1 Rapid Test for Hydrophytic Vegetation

☒ 2 Dominance Test is >50%

☐ 3 Prevalence Index is ≤3.0[1]

☐ 4 Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks: The dominance test for hydrophytic vegetation is met.

SOIL

Sampling Point: DP22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-8	10YR 3/2	100					silty clay loam	
8-12	10YR 3/2	93	7.5YR 2.5/3	7	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR F**)
- ☐ 1 cm Muck (A9) (**LRR F, G, H**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ High Plains Depressions (F16) **(MLRA 72 & 73 of LRR H)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR I, J**)
- ☐ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ☐ Dark Surface (S7) (**LRR G**)
- ☐ High Plains Depressions (F16) **(LRR H outside of MLRA 72 & 73)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: Hydric soil indicators are not met.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Dry-Season Water Table (C2)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where not tilled)**
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Oxidized Rhizospheres on Living Roots (C3) **(where tilled)**
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)
- ☐ Frost-Heave Hummocks (D7) **(LRR F)**

Field Observations:	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Wetland hydrology indicator D5 is met.

Appendix C – Plant Species List

Commonly occurring plant species in the project area.

Common Name	Scientific Name	Wetland Indicator Status*
Herbaceous		
Alkali sacaton	*Sporobolus airoides*	Facultative
American common reed	*Phragmites australis spp. americanus*	Facultative Wetland
American licorice	*Glycyrrhiza lepidota*	Facultative Upland
Baltic rush	*Juncus balticus*	Facultative Wetland
Canada thistle	*Cirsium arvense*	Facultative Upland
Cheatgrass	*Bromus tectorum*	Upland
Common mullein	*Verbascum thapsus*	Upland
Common threesquare	*Schoenoplectus pungens*	Obligate
Emory's sedge	*Carex emoryi*	Obligate
Foxtail barley	*Hordeum jubatum*	Facultative Wetland
Fuller's teasel	*Dipsacus fullonum*	Facultative Upland
Leafy spurge	*Euphorbia esula*	Upland
Narrowleaf cattail	*Typha angustifolia*	Obligate Wetland
Poison hemlock	*Conium maculatum*	Facultative Wetland
Prairie cordgrass	*Spartina pectinata*	Facultative Wetland
Reed canarygrass	*Phalaris arundinacea*	Facultative Wetland
Saltgrass	*Distichlis spicata*	Facultative Wetland
Scotch cottonthistle	*Onopordium acanthium*	Upland
Showy milkweed	*Asclepias speciosa*	Facultative
Smooth brome	*Bromus inermis*	Upland
Softstem bulrush	*Schoenoplectus tabernaemontani*	Obligate Wetland
Swamp verbena	*Verbena hastata*	Facultative Wetland
Switchgrass	*Panicum virgatum*	Facultative
Tall fescue	*Schedonorus arundinaceus*	Facultative Upland
Tall wheatgrass	*Thinopyrum ponticum*	Upland
Thickspike wheatgrass	*Elymus lanceolatus*	Facultative Upland
Western goldentop	*Euthamia occidentalis*	Obligate Wetland
Western wheatgrass	*Pascopyrum smithii*	Facultative Upland
Shrubs		
Narrowleaf willow	*Salix exigua*	Facultative Wetland
Western snowberry	*Symphoricarpos occidentalis*	Upland
Woods' rose	*Rosa woodsii*	Facultative
Trees		
Black ash	*Fraxinus nigra*	Facultative Wetland
Green ash	*Fraxinus pennsylvanica*	Facultative
Plains cottonwood	*Populus deltoides* subsp. *monilifera*	Facultative
Russian olive	*Elaeagnus angustifolia*	Facultative Upland

*Obligate Wetland—Occurs with an estimated 99% probability in wetlands.
Facultative Wetland—Estimated 67%–99% probability of occurrence in wetlands.
Facultative—Equally likely to occur in wetlands and nonwetlands (34%–66% probability).
Facultative Upland—67%–99% probability in nonwetlands, 1%–33% in wetlands.
Upland—>99% probability in nonwetlands in this region.
NI—No Indicator or no information available.
Positive and negative signs are used to more specifically define frequency of occurrence in wetlands; a positive sign indicates a frequency toward the higher end of a category (more frequently found in wetlands), and a negative sign indicates a frequency toward the lower end of a category (less frequently found in wetlands).

Source: Ackerfield 2015; Corps 2018; USDA, NRCS 2020a; Weber and Wittmann 2012.

Appendix D

Hydrology and Soils Summary
South Platte Mitigation Bank
December 2022

Hydrology and Soils Summary

South Platte Mitigation Bank Prospectus additional material
April 4, 2021

This Summary is to provide additional research material pertaining to the IRT based on comments received in response to our submitted South Platte Mitigation Bank Prospectus submitted to the Corps on December 16, 2020. Specific and general comments expressed questions regarding site selection, groundwater, flood data, salinity and soils. Although these questions all overlap under the subject of mitigation project viability, our goal is to provide the IRT with sufficient information to address some of the questions that we can help answer at this time. We will continue to work with the IRT to submit additional studies and reports as necessary.

After this review, an IRT site visit, and perhaps a wetland delineation confirmation as well, we are happy to continue to provide the IRT with additional information to help address mitigation project risks. In an effort to answer specific questions, our responses in this Summary are broken into four categories: Site Selection, Hydrology, Soils, and Salinity. There are several Figures within this document.

Highlights from this Summary include:

- An in-depth Site Selection analysis was conducted
- Removal of sediment is not the primary restoration activity for the site
- We will use FACMs to assess the site's ecological resources at the appropriate time
- The installation and use of groundwater wells will be put into place as soon as possible

A. Site Selection

We conducted a robust site selection analysis in selection of the location for the South Platte Mitigation Bank (Bank Site). Our site selection process is a proprietary process and is not typical information to share with the agencies. Many factors are driven by the intent of the mitigation rule which is to identify and create appropriate compensatory mitigation offsets based on defined criteria. In our site selection efforts, we reviewed many potential parcels and focused only on those sites that (1) are negatively impacted, (2) have an ability to be restored, (3) are identified by other natural resource groups as valuable conservation areas, (4) are at risk for development, and (5) have an ability to become a restoration project that is self-sustaining. The site ultimately selected and presented in the Prospectus scored high on each of these five criteria.

A significant amount of the in-depth site information requested in the agency comments are not typically provided at the Prospectus stage and are instead conducted and provided if and when the site is deemed to have potential by the agencies. It is important to note that meaningful preliminary research was conducted and required in order to allow us to identify and select this particular site. These ideas were summarized in the Prospectus. We are confident that our extensive site selection process, our site investigations, and understanding of local restoration processes satisfy the highest standards of site selection. In addition, we are happy to provide the agencies with everything they need in order to feel comfortable with any site selection concerns.

Figure 1: Potential Wetland Conservation Areas Map from Colorado Natural Heritage Program (CNHP)

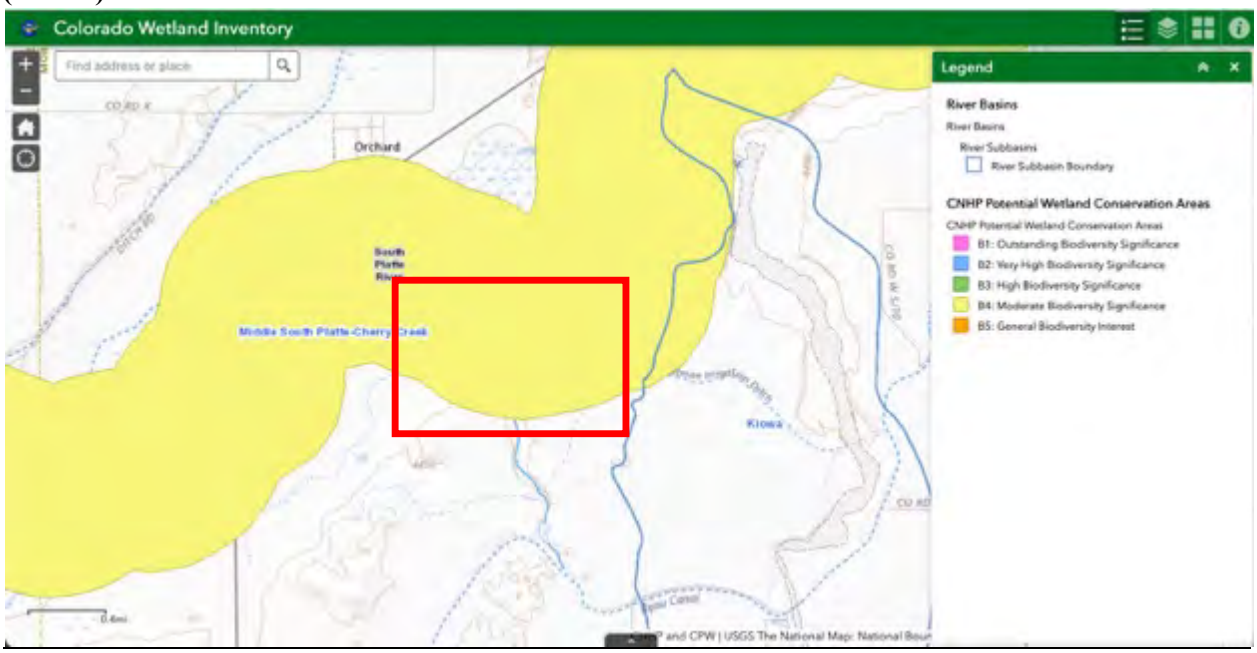

Figure 1 showing Colorado Natural Heritage Program designation of Moderate Biodiversity Significance designation of Potential Wetland Conservation Areas along the South Platte River at the location of our site. The red square outline is the approximate boundary of our stie.

During the 2020 field survey of the Bank Site, ERO mapped 16.82 acres of wetlands, 15.23 acres of PEM wetland and 1.59 acres of PSS wetland, within the project area. These wetlands occur throughout the project area. All wetlands are located within the 100-year floodplain of the South Platte River. (See FEMA Floodplain SPMB map and Stream Stats attached). In order for there to be wetlands, there must exist a hydric soil. Below, Figure 4 shows locations of where wetlands used to be within the Bank Site's 100-year floodplain. This is how we preliminarily can determine locations of where we would reasonably expect wetlands be on site. In contrast, the mapped area of actual wetlands on the Bank Site represents only a fraction of the former wetland areas.

Figure 2: Historical Topo map with existing wetlands within the 100-year floodplain

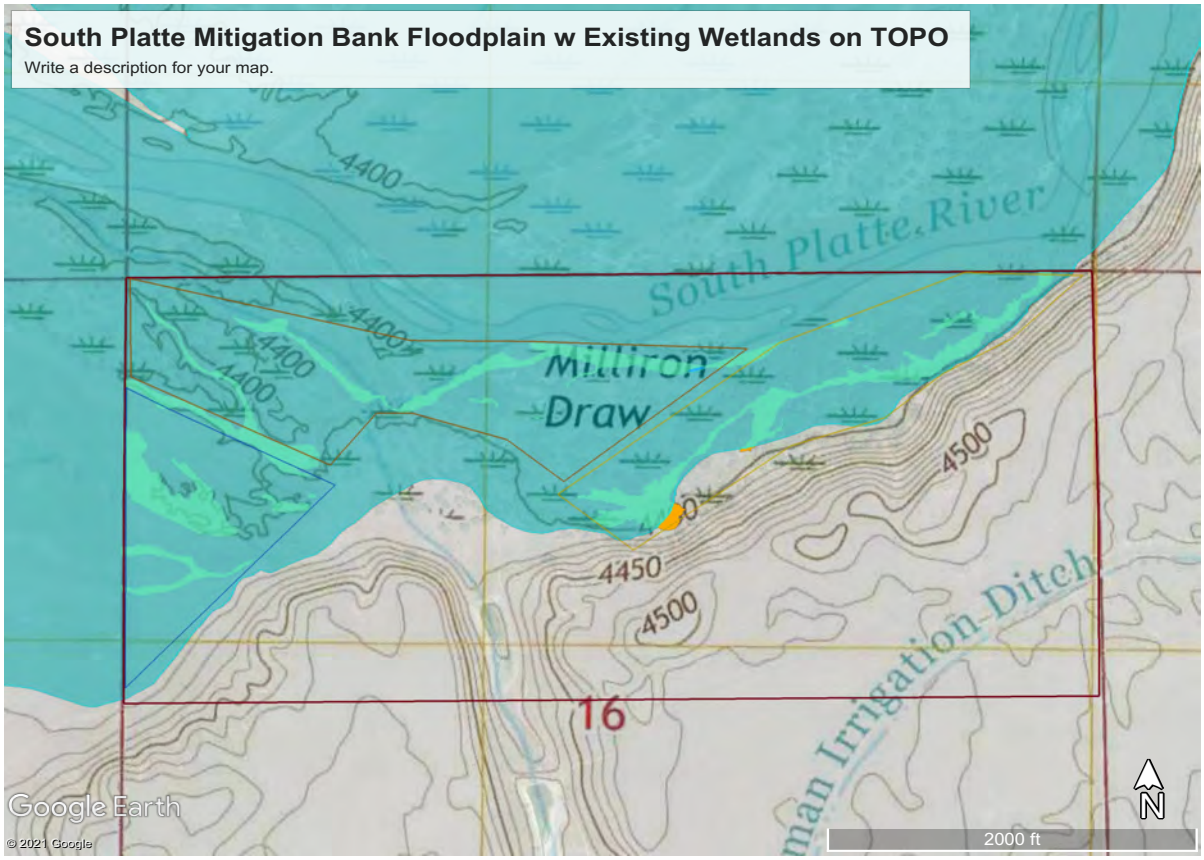

Figure 2 showing existing mapped wetlands in light green within a historical topo map within the 100-year floodplain shown in dark green. The historical topo map indicates locations of where wetlands used to be (correlating to the 100-year flood plain in dark green). In contrast, the mapped wetlands in light green are only a fraction of how many wetlands we would expect to be on site. The project Bank Site is bordered in red and zonal restoration areas are shaded in gray.

B. Hydrology

We appreciate the comments and concerns with portions of the conceptual design for the Mitigation Bank Project. in response, we are changing elements of the conceptual design in order to alleviate some of these concerns. Below is a series of figures that show in part our pre-prospectus site investigations. These highlight higher than normal peak flows and annual hydrographs in 2013 and 2015 that would have adversely affected the site. While we do not have site data before the flooding, landowner and leasee interviews verified that higher than normal flows negatively impacted and changed the site conditions.

- The figures below are a sequence of investigations that helped us determine impacts to the site and potential restoration to be conducted
- Aerial mapping allowed us to see what types of resources should be present on the site including flow paths
- Existing wetlands, reference wetlands, and soil profiles gave us insights into frequency and duration of hydrology
- Stream Gage data and aerial photography gave us a useful picture of frequency, durations, and flow paths

- Through a CWCB Flood Risk Assessment map, we identified the site as an area that needs flood risk mitigation

Figure 3: SOUTH PLATTE RIVER STREAM GAGE AT FORT MORGAN, CO 2005-2021

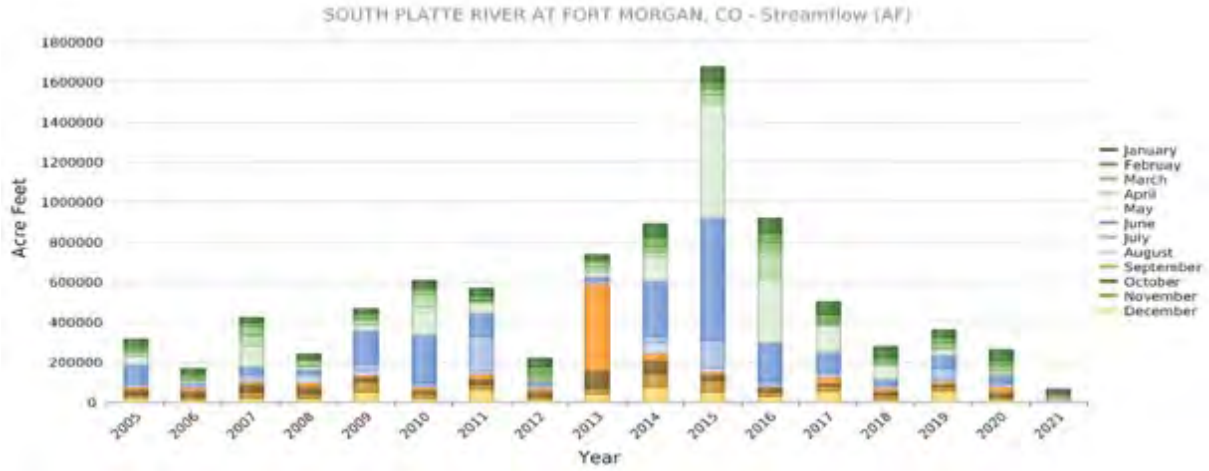

Figure 3 showing monthly and yearly accumulations of acre feet of water from the gage station on the South Platte at Fort Morgan from 2005-2021. What you can see is the statistically high acre feet in September 2013 and in all of 201 correlating to the flooding events in those years.5. This figure was created at: https://dwr.state.co.us/Tools/Stations/PLAMORCO?params=DISCHRG

Figure 4: SOUTH PLATTE RIVER STREAM GAGE AT FORT MORGAN, CO 2005-2021 PEAK FLOWS

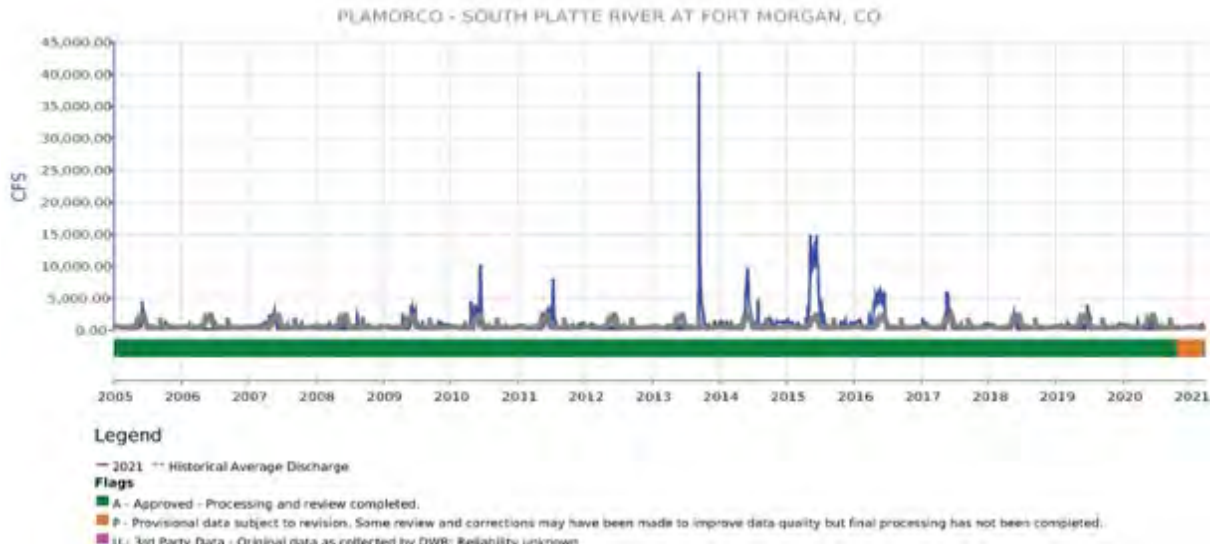

Figure 4 shows the peak Cubic Feet Per Second (CFS) water flows from the gage station on the South Platte at Fort Morgan from 2005-2021. As you can see the blue line peaks statistically high in 2013 and again in 2015 correlating to the flooding events in those years. This figure was created at: https://dwr.state.co.us/Tools/Stations/PLAMORCO?params=DISCHRG

Figure 5: South Platte Mitigation Bank CWCB Risk Assessment

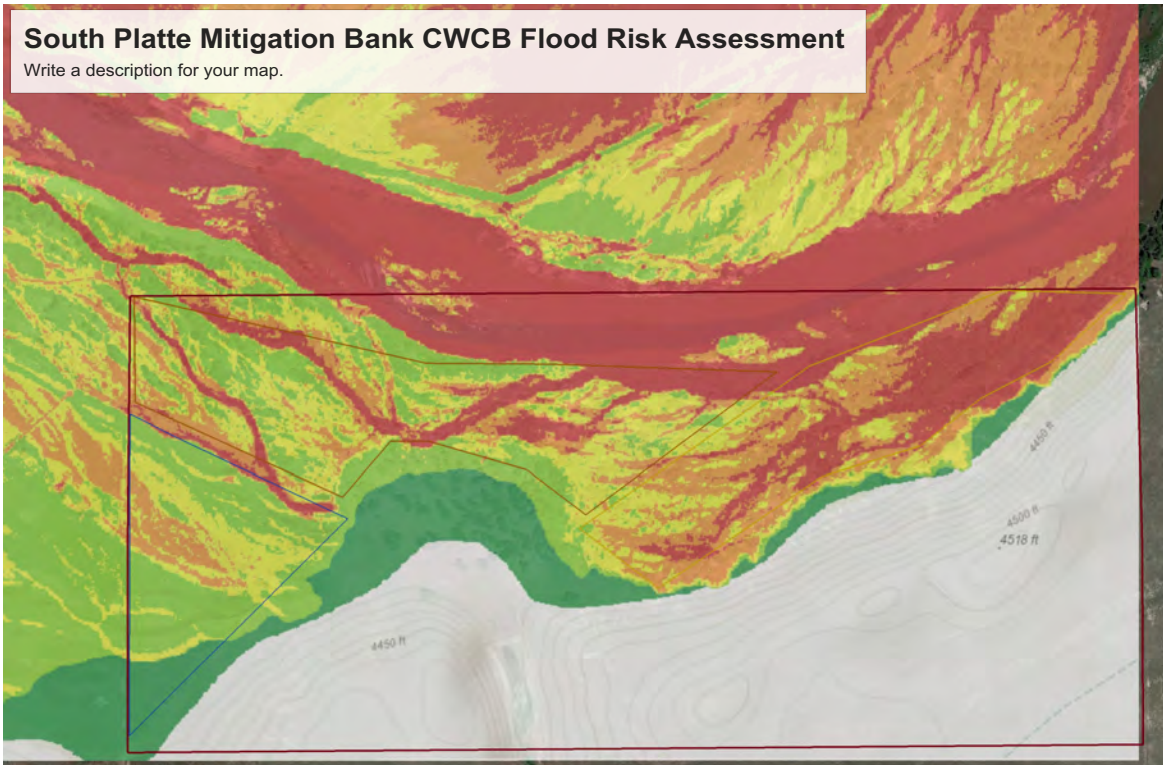

Figure 5 showing a CWCB elevation lidar map showing historical river base flow channels and overflow channels in red that, in turn indicate appropriate restoration areas.

C. Soils

The ERO report highlights several hydric soil profiles and evidence of existing high groundwater within the zones.

- In Zone 1 the report indicates that wetlands A, B, C, and D are in herbaceous grasslands within topographical depressions and wide swales. These wetlands appear to have a hydrological connection to groundwater and are also likely to be inundated during flooding of the South Platte River. Wetlands E and F are located within topographical channels that appear to be former backwater channels of the South Platte River. These wetlands are located within the plains cottonwood-dominated floodplain forest.

- These wetlands also appear connected to groundwater as well as inundated by flooding of the South Platte River.

- DP3-Saturation at surface. This is a primary indicator of hydrology (A3). There was no soil pit for DP-4 in Wetland B, but was also saturated at soil surface during field visit.

- ZONE 2: G and H, most impacted areas.

- ZONE 3: Wetlands G, H, I, and J are depressional wetlands that may have once been associated with backwater channels of the South Platte River. They are located within the plains cottonwood-dominated floodplain forest. These wetlands are connected to groundwater and would also be inundated during flooding of the South Platte River.

- Soils – Data were collected from six locations within the wetlands (DP-3, DP-4, DP-9, DP-16, DP-17, and DP-19). Wetland soils are indicated by a dark surface with redox concentrations in the top 12 inches of the soil (DP-3, DP-9, DP-15, DP-17, and DP-19) and a depleted matrix and redox concentrations starting within 6 inches of the soil surface (DP-9 & DP-12). Soils at DP-4 and DP-16 were assumed hydric based on the dominance of hydrophytic plants and the positive presence of wetland hydrology indicators.

- Hydrology – Hydrology indicators at DP-3, DP-4, DP-9, DP-12, DP-13, DP-15, DP-16, DP-17, and DP-19 included oxidized rhizospheres on living roots, geomorphic position, and a successful FAC-neutral test. Saturation was observed at the soil surface in DP-3 & DP-4. At DP-12 saturation was present at a depth of 5 inches. At DP-15, saturation was present at a depth of 13 inches.

Figure 6: South Platte Mitigation bank mapped wetlands highlighting specific hydric soils

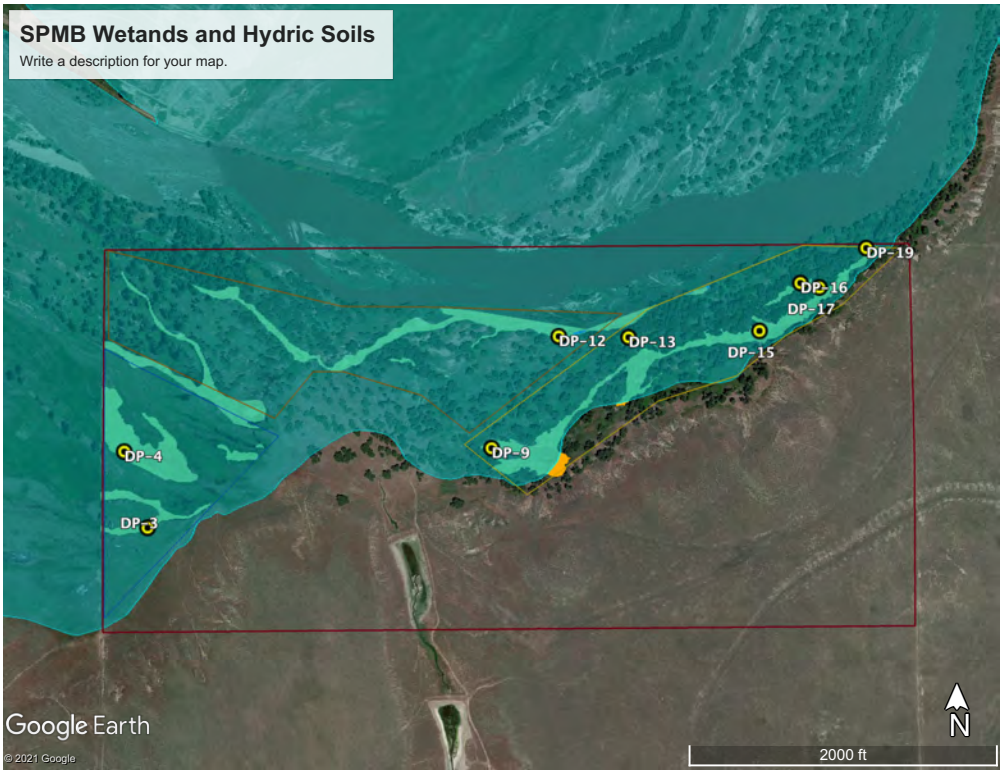

Figure 6 showing mapped wetlands (in light green) within the 100-year flood (in dark green) with specific mapped hydric soils types.

Figure 7: South Platte Mitigation Bank specific hydric soils mapped on CWCB flood zones.

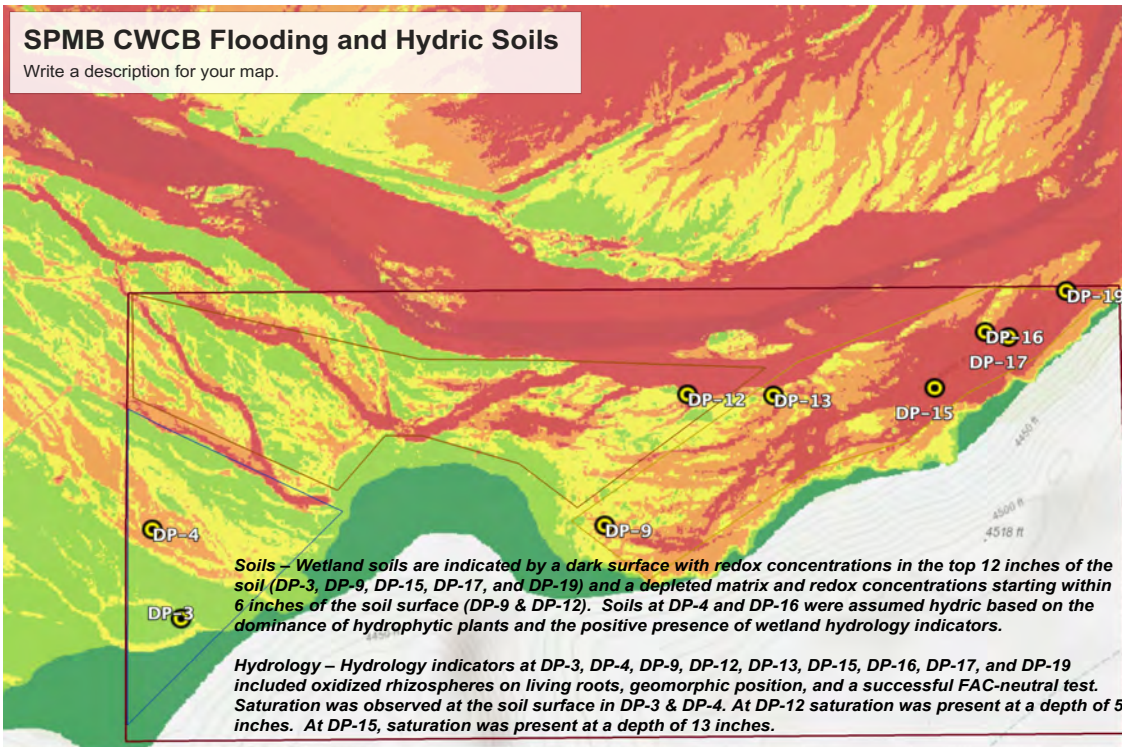

Figure 7 showing specific hydric soils within the CWCB flood risks zones. Contrast that with the lack of hydric soil indicators within the mapped channels in red. This is an indicator of target restoration areas.

D. Salinity

There is a well-acknowledged problem along the South Platte River, and the Colorado River as well, in which atypical hydrology, lack of healthy soils, and lack of native plants sustain high saline environments. Our Bank Site reflects this same high saline profile and the Bank's plan to address this environment is to restore natural processes of hydrology, soil, and vegetation. These natural processes attenuate salinity appropriately. We may be interested in monitoring these pre and post construction.

Figure 8: Salinity in the South Platte

Figure 8 showing salinity levels increasing along the South Platte River more and more as it flows east.

Please see attached USDA publication: "Plants for Saline to Sodic Soil Conditions," which addresses characterization of saline and sodic soils; effect of salinity on plants; management of salinity problems; planting in saline-sodic soils; and species selection for salt affected areas. Tables in this publication provide data on common plants that grow in salt affected areas, recommended species and seeding rates for saline-sodic soils, relative salt tolerance of selected grasses, forbs, legumes and rangeland shrubs and relative salt tolerance of selected windbreak and buffer planting(s) trees and shrubs.

In this publication the USDA states that “Soil salinity can affect plant growth both physically (osmotic effect) and chemically (nutritient and/or toxicity effect). As the salt content of the soil increases, it becomes more difficult for plants to take up water. Sensitive plants appear drought-stricken even at fairly low levels of salt concentration. There is usually a progressive decline in growth and yield (production) as salinity levels increase. The slower growth caused by salts may cause forage to be tougher and less palatable.”

As to management USDA says, "Soil salinity is strongly linked to water movement through the soil profile. When sub-soil moisture, containing salts, moves upward and evaporates, salts are precipitated at or near the soil surface. Soil salinity problems can result from improper land management practices. Dry cropland systems where crop-fallow is used to store soil moisture sometimes result in a condition known as saline seep where excess stored soil moisture is perched on an impermeable soil layer (commonly clay hardpans or shale subsoil) and then flows to an area where it surfaces and evaporates leaving salts behind on the soil surface. Improper irrigation water management can result in similar salinity problems. The solution to salinity problems lies in the prevention of upward salt movement. This may require cropping and management systems to capture and utilize excess soil moisture through perennial cropping rather than crop-fallow systems, selection of deep rooted crop species such as alfalfa or installation of drainage systems in order to prevent soil moisture and salt movement through the soil.”

There are also three relevant articles regarding South Platte River salinity published locally by Water Education Colorado that provide useful information on this topic:

Is the South Platte River too salty? New study to examine water quality amid concerns.
https://www.watereducationcolorado.org/fresh-water-news/is-the-south-platte-river-too-salty-new-study-to-examine-toxicity/

Evaluating Rising Salinity on the South Platte
https://www.watereducationcolorado.org/publications-and-radio/headwaters-magazine/summer-2019-no-decision-without-compromise/evaluating-rising-salinity-on-the-south-platte/

South Platte salinity is an unintended consequence of irrigated farming
https://www.journal-advocate.com/2020/01/16/south-platte-salinity-is-an-unintended-consequence-of-irrigated-farming/

Appendix E

Habitat Assessment
South Platte Mitigation Bank
December 2022

ERO Resources Corp.

December 10, 2020

Liisa Schmoele
U.S. Fish and Wildlife Service
Colorado Ecological Services
Denver Federal Center (MS 65412)
PO Box 25486
Denver, Colorado 80225

Re: Threatened and Endangered Species Habitat Assessment – Rocky Mountain Mitigation – Orchard Parcel, Morgan County, Colorado

Dear Ms. Schmoele,

ERO Resources Corporation (ERO), on behalf of Rocky Mountain Mitigation, is requesting Technical Assistance regarding threatened and endangered species for a property east of Colorado Highway 144, north of County Road U, and south of the South Platte River southeast of the city of Orchard in Morgan County, Colorado (project area/limits of delineation; Figure 1).

Federal Nexus

The wetlands and open waters located within the project area have a surface water connection to the South Platte River, a known water of the U.S. (Figure 1). If impacts on the open waters or other wetlands located in the project area are proposed, authorization under a U.S. Army Corps of Engineers (Corps) Section 404 permit would be required.

Rocky Mountain Mitigation retained ERO to assess the project area for the presence of habitat suitable for federally listed threatened, endangered, and candidate species and to assist with environmental permitting for the project. ERO has been authorized by the Corps Denver Regulatory Office as a nonfederal designee for Endangered Species Act (ESA) compliance.

Project Location

The project area is in Section 16, Township 4 North, Range 60 West of the 6th Principal Meridian southeast of the city of Orchard in Morgan County, Colorado (Figure 1). The UTM coordinates of the approximate center of the project area are 576214mE, 4462834mN of NAD 83 Zone 13N. The longitude/latitude of the project area is 104.103051°W/40.312548°N. The elevation of the project area is approximately 4,400 feet above sea level.

Denver
1842 Clarkson St.
Denver, CO 80218
303.830.1188

Durango
1015 ½ Main Avenue
Durango, CO 81301
970.422.2136

Hotchkiss
P.O. Box 932
161 South 2nd St.
Hotchkiss, CO 81419
970.872.3020

Idaho
4001 East Main Street
Emmett, ID 83617
208.365.7684

www.eroresources.com

Project Description

Rocky Mountain Mitigation is investigating the project area for a potential wetland mitigation bank. The proposed activities within the project area were unknown at the time of submittal of this letter.

Site Description

The project area is east of Colorado Highway 144, north of County Road U, and south of the South Platte River southeast of the city of Orchard in Morgan County, Colorado (Figure 1). The project area is surrounded by a mixture of rangeland and agricultural fields with minimal development. Agricultural ditches and reservoirs crisscross the surrounding area with one canal located south of the project area boundary (Figure 1). The project area consists primarily of plains cottonwood-dominated floodplain forest and a salt flat mosaic containing wetlands and uplands (Photos 1 and 12).

Wetlands occur throughout the project area (Figure 2). The southwestern portion of the project area consists of emergent wetlands within upland grasslands that are dominated by prairie cordgrass (*Spartina pectinata*). The remaining (majority) of the project area consists of cottonwood forest within the South Platte River floodplain, with an overstory dominated by plains cottonwood (*Populus deltoides*) and green ash (*Fraxinus pennsylvanica*) trees and an understory dominated by prairie cordgrass and showy milkweed (*Asclepias speciosa*). Wetlands occur along the South Platte River and throughout the project area. The wetlands in the project area are generally dominated by prairie cordgrass, foxtail barley (*Hordeum jubatum*), Baltic rush (*Juncus balticus*), common threesquare (*Schoenoplectus pungens*), Emory's sedge (*Carex emoryi*), and reed canarygrass (*Phalaris arundinacea*), with areas of scrub-shrub wetland dominated by narrowleaf willow (*Salix exigua*), reed canarygrass, and narrowleaf cattail (*Typha angustifolia*) (Photos 1, 2, 3, 5-8, 10-11, 13, and 15). The wetlands are located within depressions or swales and appear to be fed by groundwater from and the flooding of the South Platte River (Photo 14).

The uplands in the project area are dominated by plains cottonwood, green ash, Russian olive (*Elaeagnus angustifolia*), narrowleaf willow, prairie cordgrass, Baltic rush, tall wheatgrass (*Thinopyrum ponticum*), tall fescue (*Schedonorus arundinaceus*), switchgrass (*Panicum virgatum*), saltgrass (*Distichlis spicata*), leafy spurge (*Euphorbia esula*), smooth brome (*Bromus inermis*), common reed (*Phragmites australis* spp. *americanus*), reed canarygrass, Emory's sedge, and Canada thistle (*Cirsium arvense*) (Photos 1, 4, 9, and 12).

The U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has mapped six primary soils in the project area: Wann fine sandy loam, saline (Wf); Wann clay loam, saline (Wc); Wet alluvial land (Wt); Cascajo soils and gravelly land (Ca); Riverwash (Rv); and Ellicott-Glenberg complex, 0 to 3 percent slopes, occasionally flooded (Bk) (USDA, NRCS 2020). Wann fine sandy loam, saline and Wann clay loam, saline soils are somewhat

poorly drained, associated with floodplains and stream terraces, slightly to strongly saline, and typically found in salt meadows. Wet alluvial land is poorly drained, associated with floodplains and streams, and typically found in salt meadows. Details about maximum salinity are not given for Wet alluvial land. Cascajo soils and gravelly land is excessively drained, typically located on terraces, nonsaline to very slightly saline, and typically associated with gravel breaks. Riverwash is associated with floodplains, low sand ridges, and arroyos. Details regarding the drainage class, maximum salinity, and ecological site is not given for Riverwash. Ellicott-Glenberg complex is somewhat excessively drained, associated with floodplains, nonsaline to very slightly saline, and typically associated with sandy bottomlands.

Endangered Species Act Compliance

On October 30, 2020, Anna Wistrom, Denise Larson, Heidi Gerstung, and Marie Russo with ERO assessed the project area (2020 site visit) for suitable habitat for federally listed threatened and endangered species protected under the ESA of 1973, as amended (16 United States Code 1531 et seq.). The project area does not fall within U.S. Fish and Wildlife Service (Service) habitat or survey guidelines for the majority of the species listed by the Service as potentially occurring in Morgan County (Table 1). Because the project area falls within survey guidelines for Preble's meadow jumping mouse (*Zapus hudsonius preblei* or Preble's) and Ute ladies'-tresses orchid (*Spiranthes diluvialis* or ULTO), ERO assessed the project area for suitable habitat for these species.

Table 1. Federally threatened, endangered, and candidate species potentially found in Morgan County or potentially affected by projects in Morgan County.

Common Name	Scientific Name	Status*	Habitat	Suitable Habitat Present
Mammals				
Preble's meadow jumping mouse	*Zapus hudsonius preblei*	T	Shrub riparian/wet meadows	Potential
Birds				
Interior least tern**	*Sterna antillarum athalassos*	E	Sandy/pebble beaches on lakes, reservoirs, and rivers	No habitat; no depletions
Piping plover**	*Charadrius melodus*	T	Sandy lakeshore beaches and river sandbars	No habitat; no depletions
Whooping crane**	*Grus americana*	E	Mudflats around reservoirs and in agricultural areas	No habitat; no depletions
Fish				
Pallid sturgeon**	*Scaphirhynchus albus*	E	Large, turbid, free-flowing rivers with a strong current and gravel or sandy substrate	No habitat; no depletions

Common Name	Scientific Name	Status*	Habitat	Suitable Habitat Present
Plants				
Ute ladies'-tresses orchid	*Spiranthes diluvialis*	T	Moist to wet alluvial meadows, floodplains of perennial streams, and around springs and lakes below 7,800 feet in elevation	Potential
Western prairie fringed orchid**	*Platanthera praeclara*	T	Moist to wet prairies and meadows	No habitat; no depletions

*T = Federally Threatened Species, E = Federally Endangered Species.
**Water depletions in the South Platte River may affect the species and/or critical habitat in downstream reaches in other counties or states.
Source: Service 2020.

The interior least tern, piping plover, whooping crane, pallid sturgeon, and western prairie fringed orchid are species that are affected by continued or ongoing water depletions to the Platte River system. Based on ERO's understanding of the project, it is unlikely that project activities will cause depletions to the South Platte River.

Because of the association of Preble's and ULTO to wetland/riparian habitat, ERO evaluated the potential for these species to occur in the project area.

Rationale for Excluding the Project Area as Potential Preble's Habitat

ERO assessed the project area for potential Preble's habitat. The project area contains potential habitat as it has dense grasslands with a tree and shrub overstory that could be used by Preble's; however, the proposed project would not likely impact Preble's habitat because:

- **Distance from Known Populations:** The project area is isolated from known populations of Preble's by approximately 37 linear miles. The closest known population of Preble's is approximately 37 miles to the west, near Milliken, Colorado (Service 2014). In addition, a previous trapping survey conducted approximately 0.25 mile from the project area on the South Platte River yielded no Preble's captures (Service 2014).
- **Habitat Fragmentation and Human Disturbance:** The greater South Platte River watershed has been disturbed and fragmented by human activity such as construction of roads, agriculture, and residential and industrial facilities. A viable population of Preble's is unlikely to exist in the project area because the habitat in the project area is extremely distant from known populations and potential habitat is discontinuous between the project area and known populations.
- **Project Area is Not Identified as Critical Habitat:** The project area contains no designated critical habitat; the nearest Preble's critical habitat is approximately 62 miles northwest of the project area along Cedar Creek.

Given the above information, it is unlikely the project area supports a population of Preble's or that the continued existence of Preble's would be adversely affected by the proposed

project. ERO recommends that the proposed project be allowed to proceed without a trapping survey.

Rationale for Excluding the Project Area as Potential ULTO Habitat

Potential ULTO habitat was observed in the southeastern meadow and in limited locations within the plains cottonwood-dominated floodplain forest. ERO determined the project area is likely not conducive to the establishment of ULTO and differs from the criteria of the Service's November 1992 (Service 1992) *Interim Survey Requirements for Spiranthes diluvialis* for the following reasons:

- **Lack of Suitable Habitat:** ULTO is typically found associated with alluvial deposits of silty, sandy, gravelly, or cobbly soil. Soil textures found within the project area consist of silt, sand, loam, and clay. The soil types within the project area are primarily slightly to strongly saline. ULTO is not commonly found in heavy or tight clay soils or in saline or alkaline soils. Additionally, ULTO is typically found in habitats with low vegetative cover (Service 1995). The vegetation cover in the project area ranges between 75 and 100 percent cover, with limited areas of less cover, and is likely too dense to support ULTO.
- **Distance from Known Populations:** Although the project area is located within the Service's identified area in which surveys are required – within an area below 7,800 feet in elevation in the South Platte River 100-year floodplain from the Front Range to Brush in Morgan County, Colorado – the project area is near the easternmost edge of the Service's survey area (Service 1992), and ULTO has never been documented in Morgan County. The closest known population of ULTO is approximately 70 miles to the southwest along tributaries to the South Platte, such as Clear Creek in Boulder County (Colorado Natural Heritage Program 2014). Additional populations of ULTO have been documented in Wyoming and Nebraska.

Given the above information, it is unlikely the project area supports a population of ULTO or that the continued existence of ULTO would be adversely affected by the proposed project. ERO recommends that the proposed project be allowed to proceed without surveys.

Other Sensitive Species

In addition to species listed as threatened or endangered, ERO assessed the project area for potential habitat and the presence of species protected by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Migratory birds and eagles, as well as their eggs and active nests, are protected under the MBTA and BGEPA. Migratory bird nesting habitat typically includes trees and shrubs, but upland grasslands also are used. According to the Colorado Parks and Wildlife (CPW) Species Activity Mapping (CPW 2018, CPP 2020), the project area is located within a bald eagle nest buffer, roost site, winter concentration, summer forage, winter forage, and winter range. The project area provides suitable nesting and foraging habitat for migratory birds. A large inactive stick nest was observed in the northeast portion of the project area during the 2020 site visit (Photo 16;

Figure 2). Rocky Mountain Mitigation would work with CPW to identify best management practices and requirements for working within the bald eagle nest buffer area.

Raptor nesting surveys would be conducted prior to any construction activities during the raptor breeding season, typically between October 15 and July 31 for bald eagles and between February 15 and July 15 for other species (e.g., red-tailed hawk [*Buteo jamaicensis*]). Rocky Mountain Mitigation would comply with the MBTA by constructing the project or clearing any vegetation outside of the breeding season (during the winter months, typically from September through March).

Conclusions

There is limited potential habitat for federally threatened or endangered species in the project area. However, based on analyses of the potential habitat, it is unlikely that the proposed project would have an effect on federally listed species potentially present in Morgan County. Based on this habitat assessment and current knowledge of the proposed project, ERO, on behalf of Rocky Mountain Mitigation, requests that the Service confirm that it has no concerns related to threatened and endangered species. The project would comply with all MBTA and BGEPA requirements. Attached are photos and figures of the project area. After you review this information, ERO would appreciate a written determination of this request.

Please do not hesitate to contact me by phone at (720) 690-6654 or by email at mrusso@eroresources.com if you need additional information or have any questions. I look forward to hearing from you.

Sincerely,

K Marie Russo

Kristin Marie Russo
Biologist

Attachments: Figures 1 and 2; Photo Log

cc: Stephen Decker – Rocky Mountain Mitigation

Site Information

Location: Section 16, Township 4 North, Range 60 West of the 6th Principal Meridian in Morgan County, Colorado. .

Elevation: Approximately 4,400 feet above sea level.

Longitude/Latitude: 104.103051°W/40.312548°N.

UTM Coordinates: 576214mE, 4462834mN of NAD 83 Zone 13N.

Soils: Wann fine sandy loam, saline (Wf); Wann clay loam, saline (Wc); Wet alluvial land (Wt); Cascajo soils and gravelly land (Ca); Riverwash (Rv); and Ellicott-Glenberg complex, 0 to 3 percent slopes, occasionally flooded (Bk).

Site Hydrology: South Platte River, perennial stream

Qualifications of Surveyors

The qualifications and experience of Denise Larson have been previously submitted to the Service and are available upon request.

Qualifications of Marie Russo are available upon request. Marie Russo has a BS in biology from Illinois Wesleyan University and a MS in conservation biology and sustainable development from the University of Wisconsin at Madison. Marie has eight years of experience conducting protected species habitat assessments, biological inventories, and biographical mapping. Marie has one year of experience performing Preble's habitat assessments, is familiar with Preble's survey guidelines, and is receiving training in Preble's identification. Marie has two years of experience performing *Spiranthes diluvialis* habitat assessments and is familiar with *Spiranthes diluvialis* survey guidelines.

References

Colorado Natural Heritage Program. 2014. Colorado Rare Plant Guide; *Spiranthes diluvialis*. https://cnhp.colostate.edu/rareplants/guide.asp?id=17998. Last accessed December 2, 2020.

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Colorado Parks and Wildlife (CPW). 2020. Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors. https://cpw.state.co.us/Documents/WildlifeSpecies/LivingWithWildlife/Raptor-Buffer-Guidelines.pdf. Last accessed December 2, 2020.

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U.S. Fish and Wildlife Service (Service). 1995. Ute ladies'-tresses (*Spiranthes diluvialis*) recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado. 46 pp.

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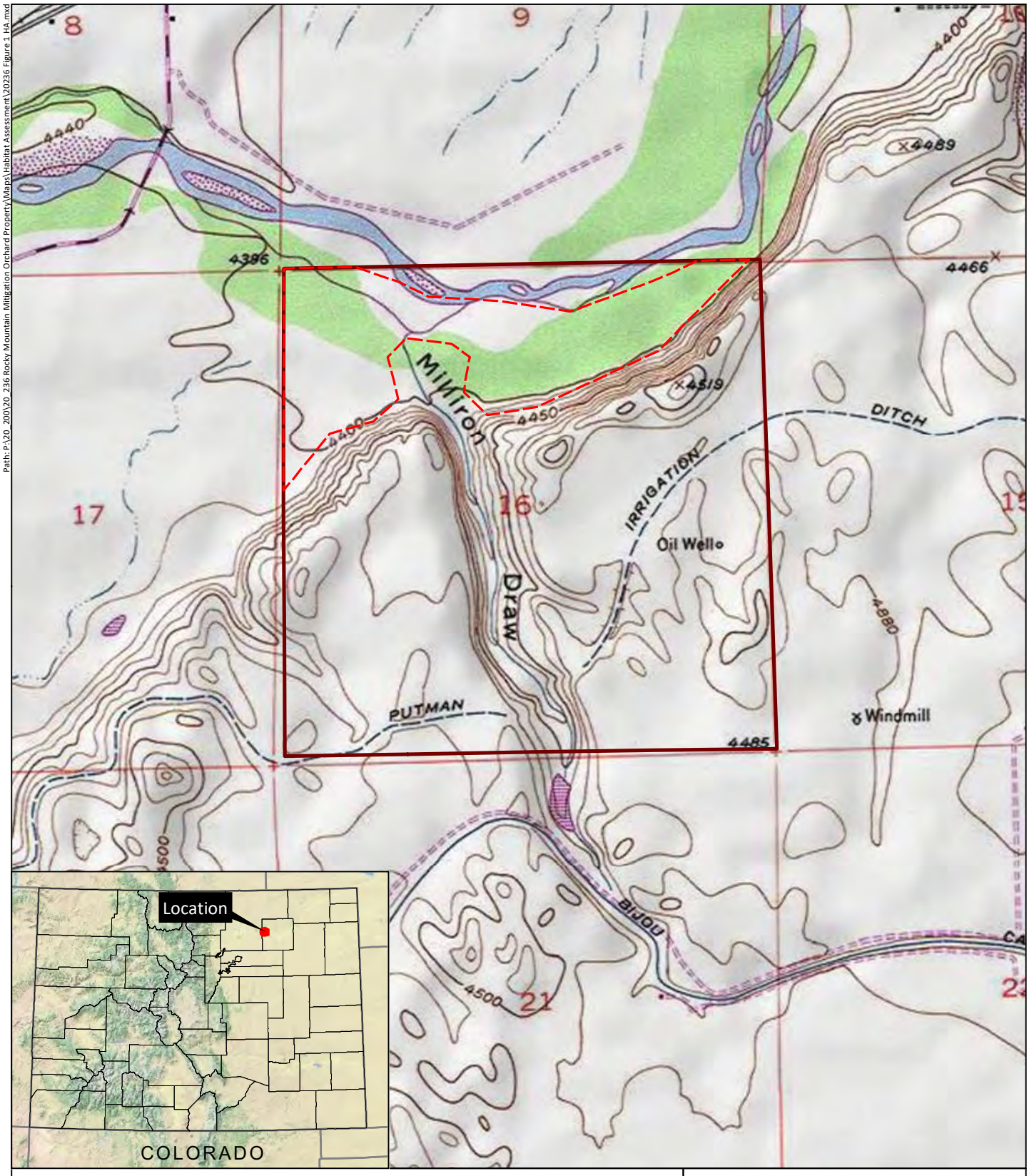


Orchard Parcel

Section 16, T4N, R60W; 6th PM

UTM NAD 83: Zone 13N; 576214mE, 4462834mN

Longitude 104.103051°W, Latitude 40.312548°N

USGS Orchard, CO Quadrangle

Morgan County, Colorado

Limits of Delineation

Parcel Boundary

0 750 1,500 feet

N

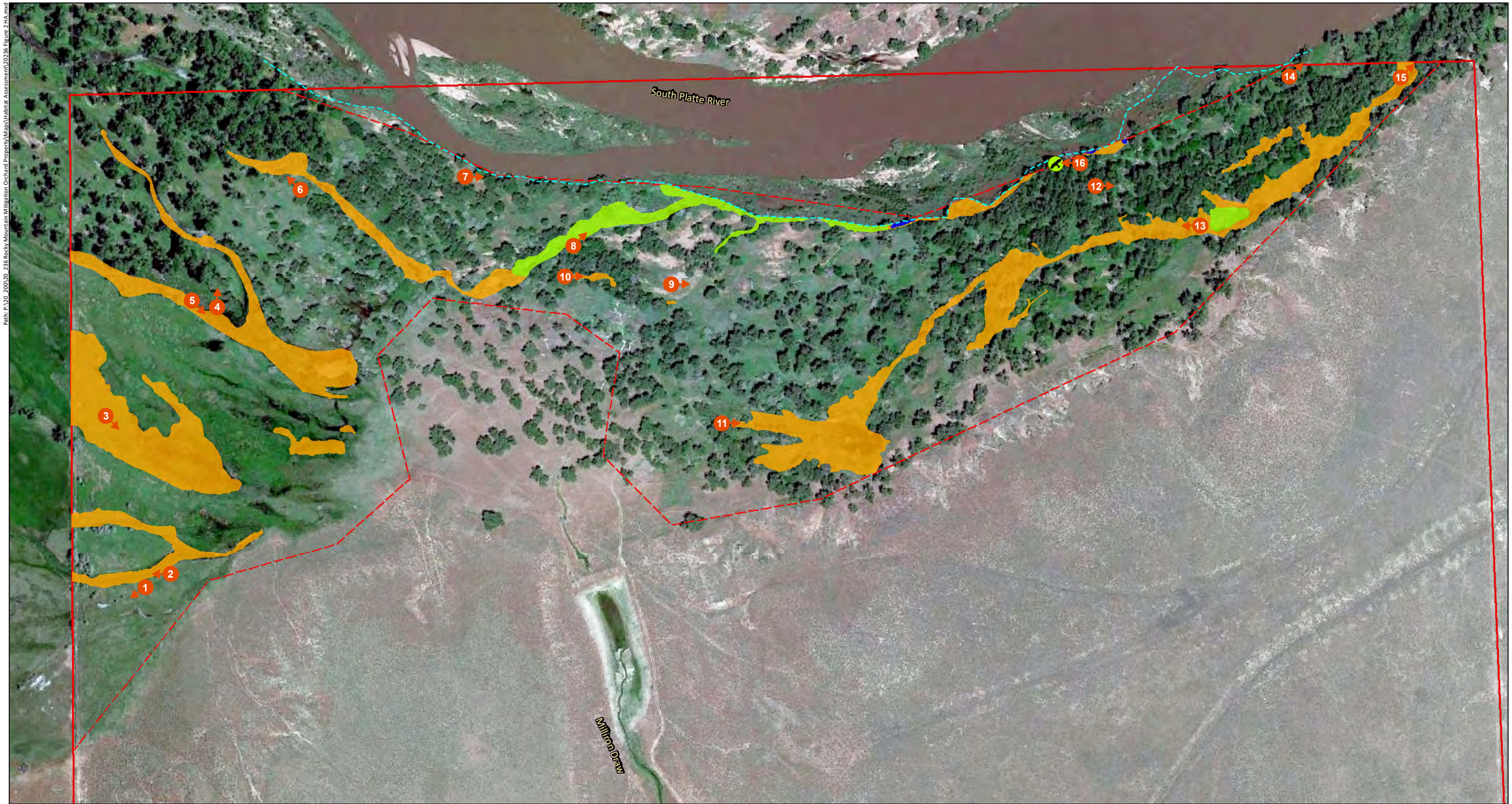
Figure 1
Vicinity Map

Prepared for: Rock Mountain Mitigation

File: 20236 Figure 1 HA.mxd [dlH]

December 3, 2020

ERO Resources Corp.



Orchard Parcel

- Limits of Delineation
- Parcel Boundary
- Stick Nest
- Photo Point
- South Platte River Ordinary High Water Mark
- Open Water (0.05 ac)
- Emergent Wetland (15.23 ac)
- Scrub/Shrub Wetland (1.59 ac)

0 175 350 feet

N

Figure 2
Existing Conditions

Prepared for: Rocky Mountain Mitigation
File: 20236 Figure 2 HA.mxd [dlH]
December 3, 2020

ERO Resources Corp.

Photo 1 - Overview of intermediate wetland/upland area in the western portion of the project area. View is to the southwest.

Photo 2 - Overview of DP3 and the southern lobe of Wetland A in the western portion of the project area. View is to the west.

Photo 3 - Overview of the eastern portion of Wetland B in the western portion of the project area. View is to the southeast.

Photo 4 - Overview of uplands adjacent to Wetland E in the western portion of the project area. View is to the north.

Photo 5 - Overview of the southern channel of Wetland E in the western portion of the project area. View is to the southeast.

Photo 6 - Overview of the northwestern portion of Wetland F in the western portion of the project area. View is to the northwest.

Photo 7 - Overview of the South Platte River side channel adjacent to the northern project area boundary. The channel appears to have dried up and is completely vegetated. View is to the east.

Photo 8 - Overview of the center portion of Wetland F in the center portion of the project area. View is to the northeast.

Photo 9 - Overview of upland area in the center portion of the project area. View is to the east.

Photo 10 - Overview of Wetland G in the center portion of the project area. View is to the east.

Photo 11 - Western portion of Wetland I in the south-central portion of the project area. View is to the east.

Photo 12 - Overview of upland woods in the eastern portion of the project area. View is to the east.

Photo 13 - Overview of the central portion of Wetland I in the eastern portion of the project area. View is to the west.

Photo 14 - Overview of the South Platte River. View is to the northeast.

Photo 15 - Overview of the eastern portion of Wetland I in the eastern portion of the project area. View is to the northeast.

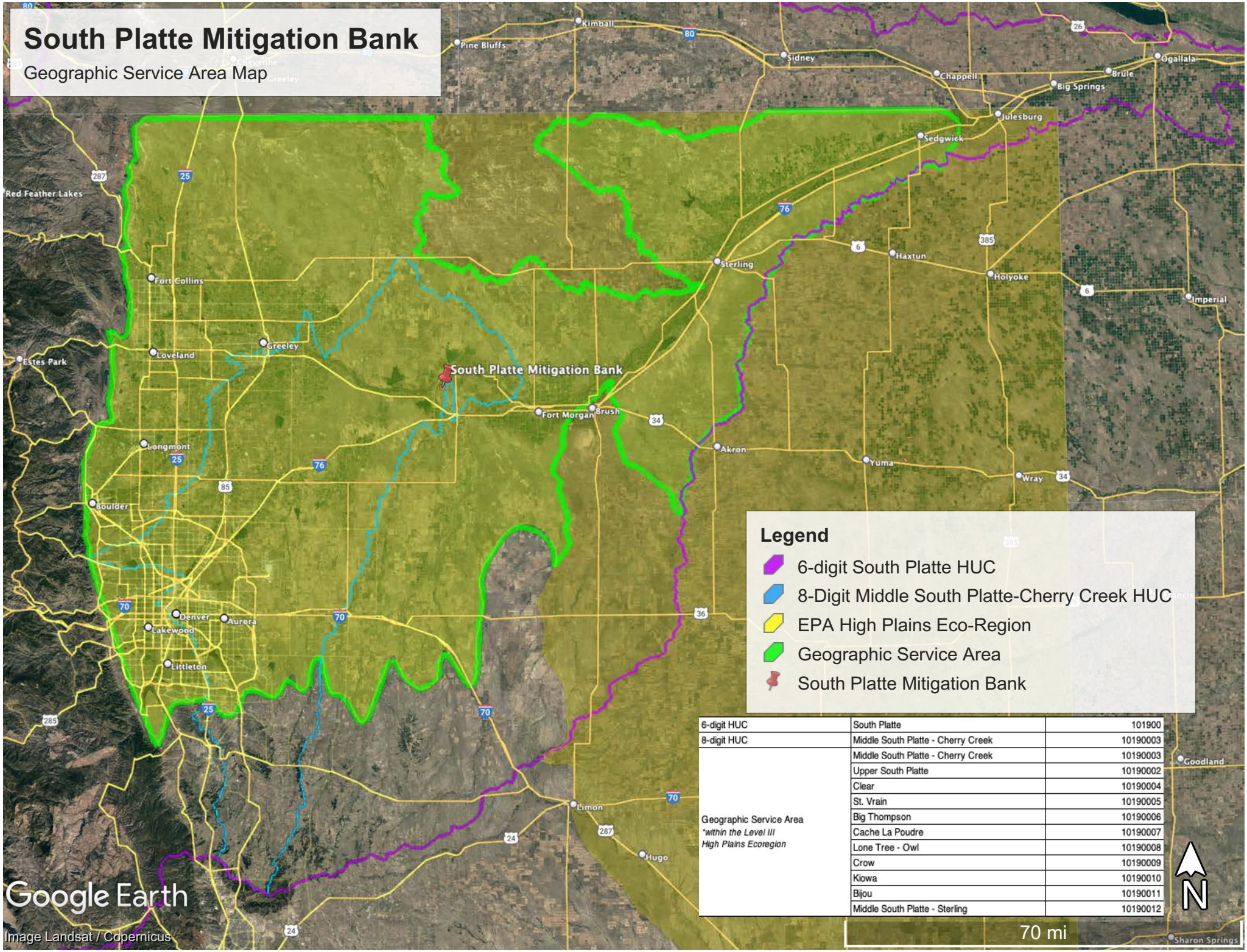
Photo 16 - Raptor stick nest. View is to the west.

Appendix F

GSA Map
South Platte Mitigation Bank
December 2022

South Platte Mitigation Bank

Geographic Service Area Map



Legend

- 6-digit South Platte HUC
- 8-Digit Middle South Platte-Cherry Creek HUC
- EPA High Plains Eco-Region
- Geographic Service Area
- South Platte Mitigation Bank

6-digit HUC	South Platte	101900
8-digit HUC	Middle South Platte - Cherry Creek	10190003
Geographic Service Area **within the Level III High Plains Ecoregion*	Middle South Platte - Cherry Creek	10190003
	Upper South Platte	10190002
	Clear	10190004
	St. Vrain	10190005
	Big Thompson	10190006
	Cache La Poudre	10190007
	Lone Tree - Owl	10190008
	Crow	10190009
	Kiowa	10190010
	Bijou	10190011
	Middle South Platte - Sterling	10190012

Appendix G

Design Plan
South Platte Mitigation Bank
December 2022

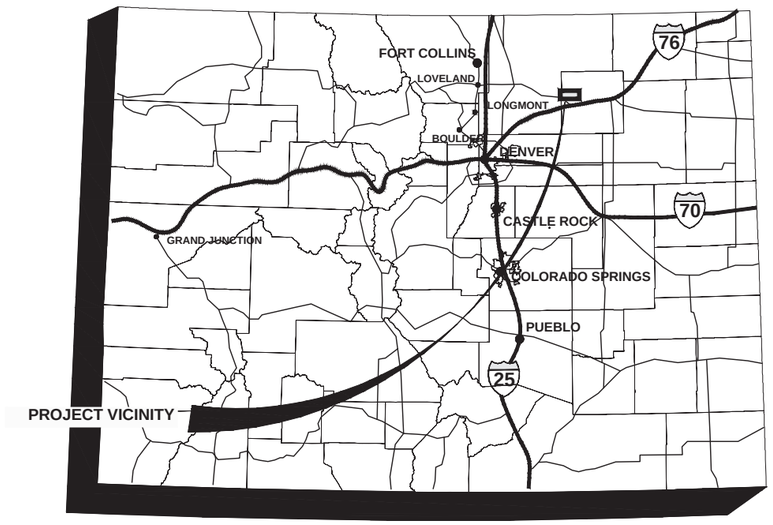
SOUTH PLATTE WETLAND RESTORATION AND REHABILITATION CREDIT
30% DESIGN PLANS
FOR
ROCKY MOUNTAIN MITIGATION

PREPARED FOR:

ROCKY MOUNTAIN MITIGATION, LLC
ATTN: STEPHEN DECKER

PREPARED BY:

ENGINUITY ENGINEERING SOLUTIONS
10106 WEST SAN JUAN WAY, SUITE 215
LITTLETON, COLORADO 80127



VICINITY MAP
NOT TO SCALE

SITE MAP
NOT TO SCALE

ENGINUITY ENGINEERING SOLUTIONS

Gerald Blackler, Ph.D, P.E., D.WRE Date

SHEET INDEX

30% PLANS
NOT FOR CONSTRUCTION

Know what's **below.**
Call before you dig.

PREPARED FOR: ROCKY MOUNTAIN MITIGATION, LLC

PROJECT SPONSOR: SCP CONSERVATION, LLC
1030 3RD AVE #306
NAPLES, FL 34102

PREPARED BY: Enginuity
ENGINUITY ENGINEERING SOLUTIONS
10106 WEST SAN JUAN WAY, SUITE 215
LITTLETON, COLORADO 80127
PH : 303-872-9112
FX : 303-872-9104

DESIGNED: GEB
DRAWN: GEB
CHECKED:
DATE:

REVISION	DESCRIPTION	BY	DATE
R--			
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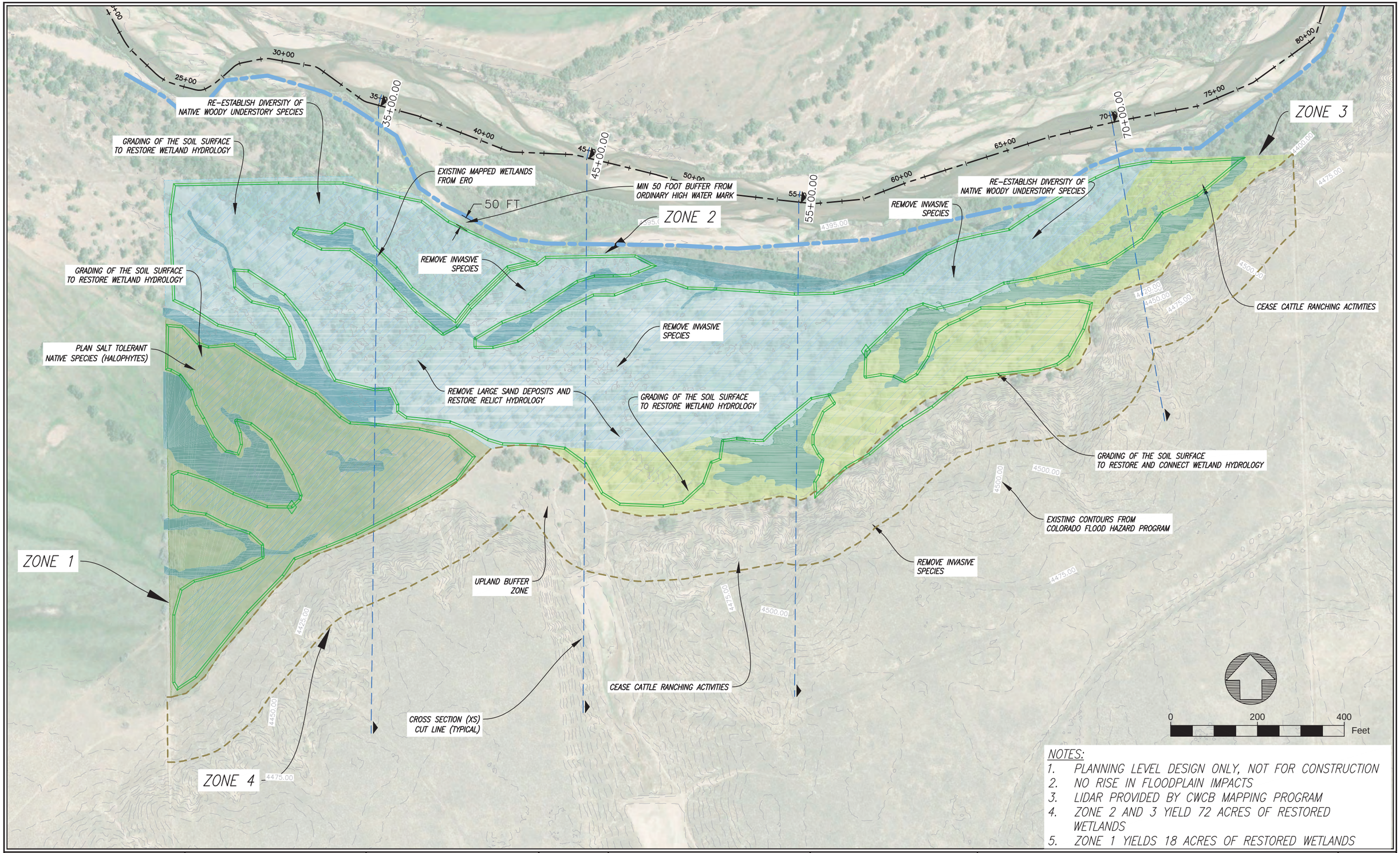
Cover

SHEET/REFERENCE NO. **G-01**



NOTES:

1. PLANNING LEVEL DESIGN ONLY, NOT FOR CONSTRUCTION
2. NO RISE IN FLOODPLAIN IMPACTS
3. LIDAR PROVIDED BY CWCB MAPPING PROGRAM
4. ZONE 2 AND 3 YIELD 72 ACRES OF RESTORED WETLANDS
5. ZONE 1 YIELDS 18 ACRES OF RESTORED WETLANDS

PREPARED FOR:
ROCKY MOUNTAIN MITIGATION, LLC

PROJECT SPONSOR:
SCP CONSERVATION, LLC
1030 3RD AVE #306
NAPLES, FL 34102

PREPARED BY:
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ENGINUITY ENGINEERING SOLUTIONS
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FX : 303-872-9104

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RMM MITIGATION BANK PLAN VIEW

SHEET/REFERENCE NO.
P-01

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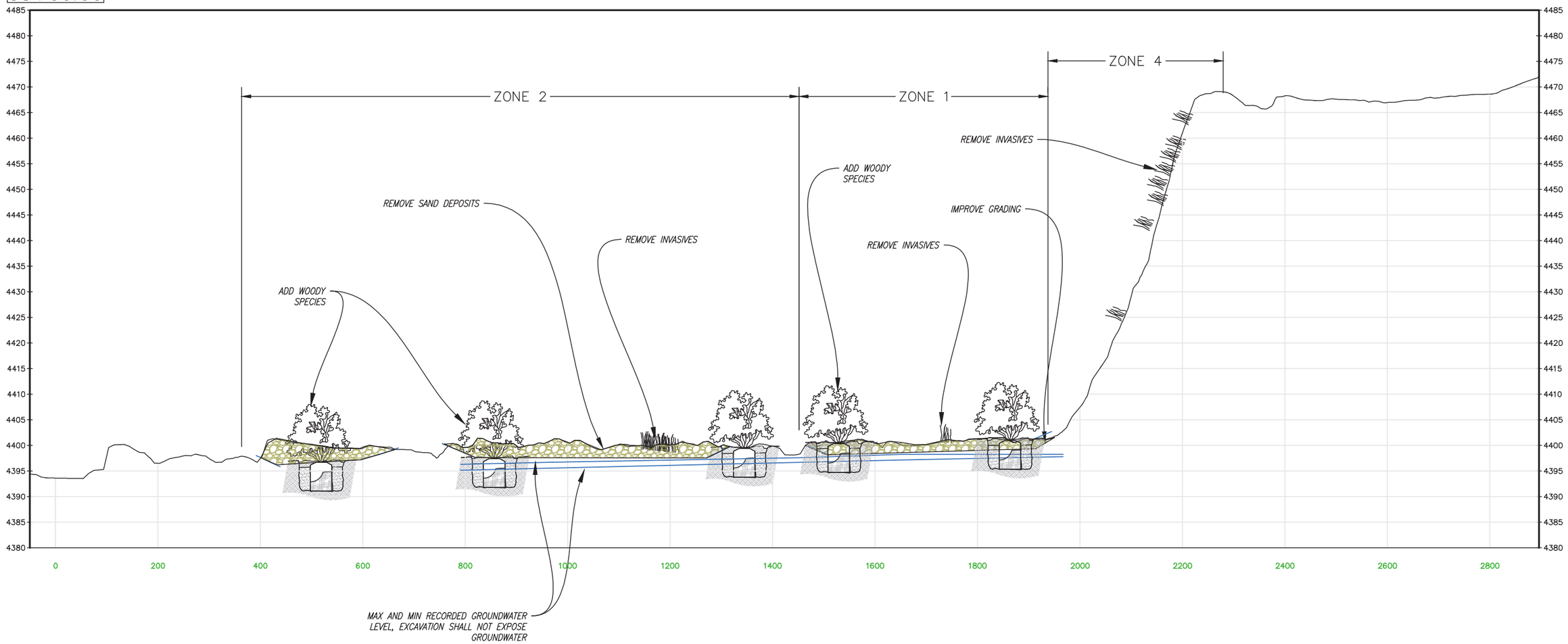

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NOTES:

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3. LIDAR PROVIDED BY CWCB MAPPING PROGRAM

PREPARED FOR: ROCKY MOUNTAIN MITIGATION, LLC	PROJECT SPONSOR: SCP CONSERVATION, LLC, 1030 3RD AVE #306, NAPLES, FL 34102	PREPARED BY: Enginuity, ENGINUITY ENGINEERING SOLUTIONS, 10106 WEST SAN JUAN WAY, SUITE 215, LITTLETON, COLORADO 80127, PH : 303-872-9112, FX : 303-872-9104	DESIGNED: GEB; DRAWN: GEB; CHECKED: ; DATE:	REVISION / DESCRIPTION / BY / DATE: R–	**RMM MITIGATION BANK SECTION VIEWS 35+00**	SHEET/REFERENCE NO. **XS-01**

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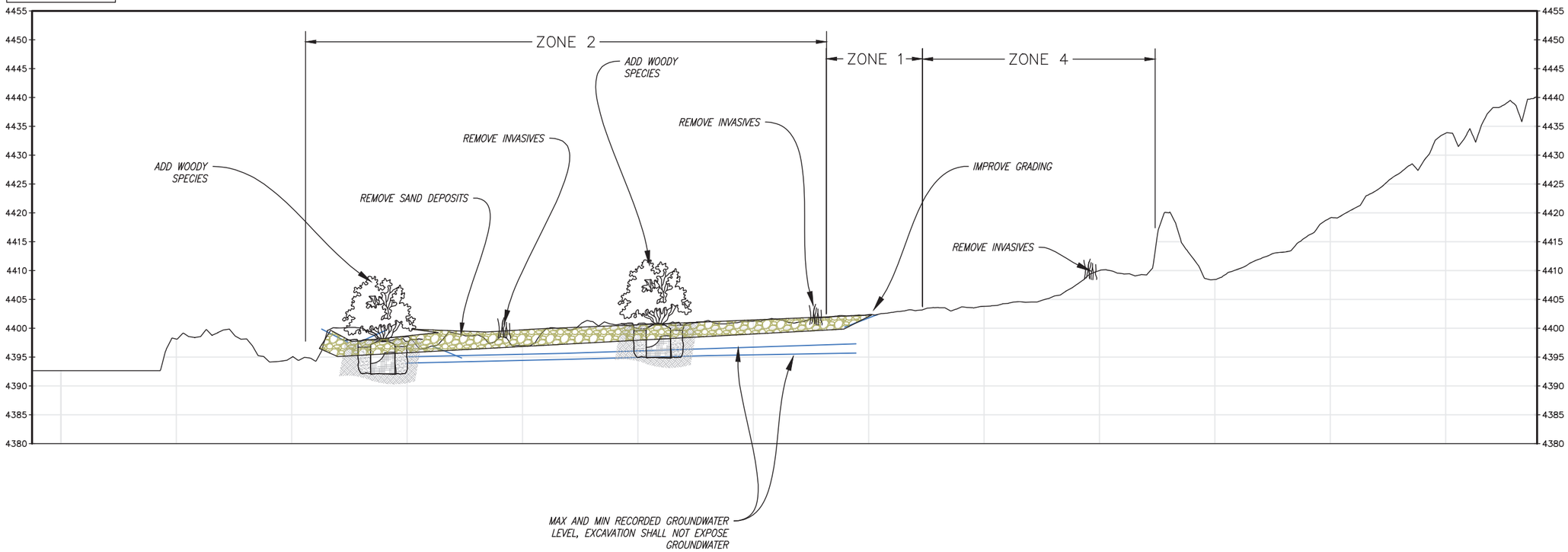

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RMM MITIGATION BANK SECTION VIEWS 45+00

SHEET/REFERENCE NO.
XS-02

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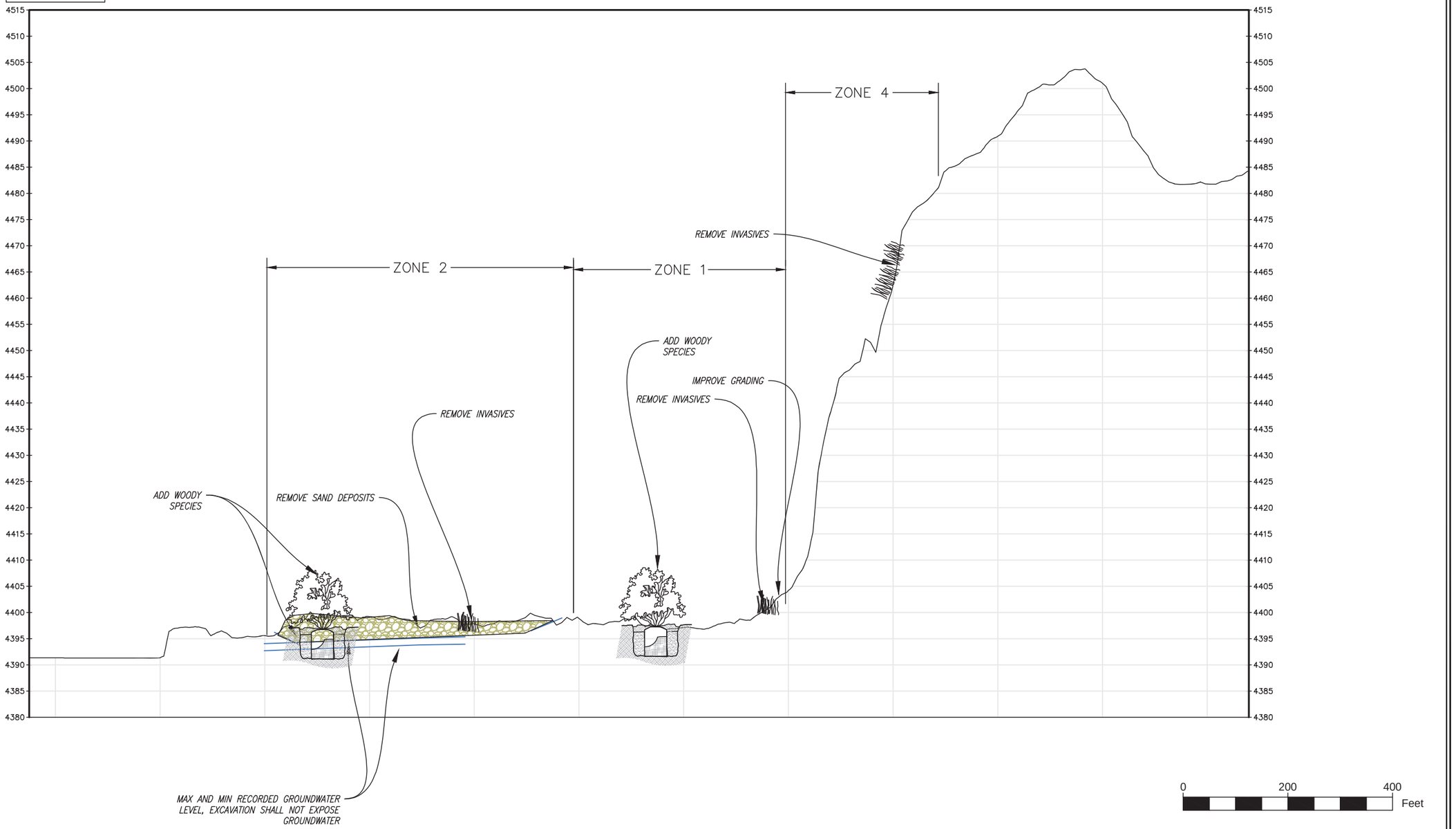

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NOTES:

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PREPARED FOR:
ROCKY MOUNTAIN MITIGATION, LLC

PROJECT SPONSOR:
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RMM MITIGATION BANK SECTION VIEWS
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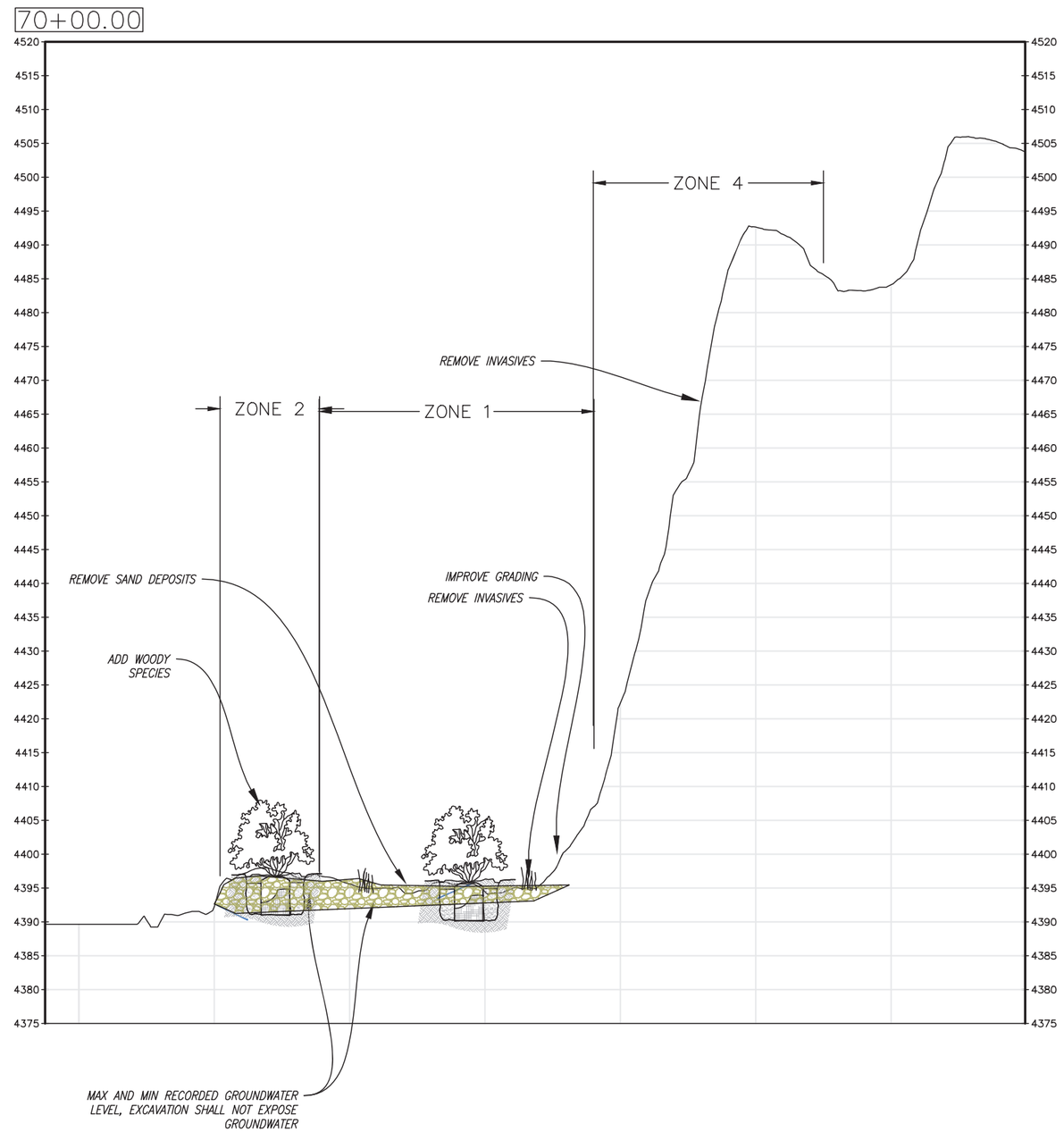
XS-03



0 200 400 Feet

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RMM MITIGATION BANK SECTION VIEWS
70+00

SHEET/REFERENCE NO.
XS-04

ZONE–1 WETLAND PLUGS–SEEDING

ZONE 1 - SEEDING 0-2.5 FT (WETLAND)				
SCIENTIFIC NAME	COMMON NAME	VARIETY	% IN MIX	LB/AC (PLS*)
Beckmannia syzigachne	American sloughgras	Native	15.0	0.4
Carex lanuginosa (syn: Carex pellita	wooly sedge	Native	15.0	1.6
Carex nebrascensis	Nebraska sedge	Native	10.0	0.6
Distichlis stricta	Inland saltgrass	Native	10.0	0.6
Eleocharis palustris	common spikerush	Native	10.0	0.5
Glyceria striata	fowl mannagrass	Native	5.0	0.9
Juncus balticus	Baltic rush	Native	10.0	0.1
Juncus ensifolius	swordleaf rush	Native	10.0	0.1
Schoenoplectus tabernaemontani	softstem bulrush	Native	4.0	0.2
Spartina pectinata	prairie cordgrass	Native	10.0	1.7
Verbena hastata	blue verbena	Native	1.0	0.1
Total pounds PLS/acre			**100.0**	**6.9**
*PLS = Pure Live Seed – If broadcast seeding, double the rate				

ZONE 1 - PLANTING (PLUGS) 0-2.5 FT (WETLAND)				
SCIENTIFIC NAME	COMMON NAME	SIZE (CUBIC IN)	% OF PLANTS	SPACING (O.C.)
Beckmannia syzigachne	American sloughgras	10	5	18"
Carex emoryi	Emory's sedge	10	15	18"
Carex lanuginosa (syn: Carex pellita	wooly sedge	10	15	18"
Carex nebrascensis	Nebraska sedge	10	5	18"
Eleocharis palustris	common spikerush	10	10	18"
Glyceria striata	fowl mannagrass	10	5	18"
Juncus balticus	Baltic rush	10	5	18"
Juncus ensifolius	swordleaf rush	10	5	18"
Leersia oryzoides	rice cutgrass	10	5	18"
Schoenoplectus pungens	common threesquare	10	10	18"
Schoenoplectus tabernaemontani	softstem bulrush	10	10	18"
Spartina pectinata	prairie cordgrass	10	10	18"
			100	

ZONE–2 ANNUAL FLUC SEEDING AND STAKING

ZONE 2 - SEEDING 2.5-4 FT (ANNUAL FLUCTUATION ZONE)				
SCIENTIFIC NAME	COMMON NAME	VARIETY	% IN MIX	LB/AC (PLS*)
Achillea millefolium	yarrow	Native	1	0.1
Andropogon gerardii	big bluestem	Champ	15	2.3
Asclepias incarnata	swamp milkweed	Native	1	0.3
Asclepias speciosa	showy milkweed	Native	1	0.3
Buchloe dactyloides	Buffalograss	Texoca	15	0.4
Chondrosum gracile (syn: *Bouteloua gracilis*)	Blue grama	Lovington	5	1.8
Distichlis stricta	Inland saltgrass	Native	5	0.2
Elymus canadensis	Canada wildrye	Mandan	5	0.9
Elymus lanceolatus	Streambank wheatgrass	Sodar	10	1.3
Panicum virgatum	switchgrass	Native	10	0.5
Pascopyrum smithii (syn: *Agropyron smithii*)	Western wheatgrass	Arriba	16	2.9
Sorghastrum avenaceum (syn: Sorghastrum nuta	yellow indiangrass	Holt	10	1.2
Spartina pectinata	prairie cordgrass	Native	5	0.5
Verbena hastata	blue verbena	Native	1	0.1
Total pounds PLS/acre			**100.0**	**12.4**
*PLS = Pure Live Seed – If broadcast seeding, double the rate				

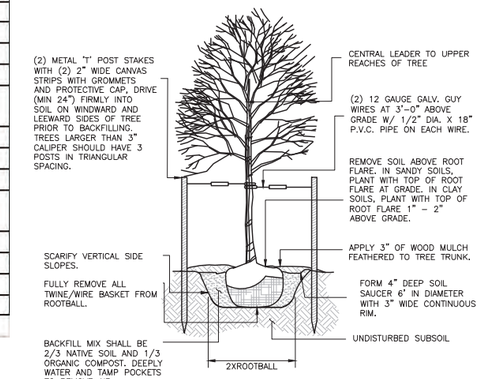
ZONE 2 - PLANTING (STAKES) 2.5-4 FT (ANNUAL FLUCTUATION ZONE)			
SCIENTIFIC NAME	COMMON NAME	FORM	SPACING (O.C.)
Salix amygdaloides	peach leaf willow	Stakes	10'
Salix exigua	sand bar willow	Stakes	3'

ZONE–3 UPLAND SEEDING

ZONE 3 - SEEDING 4+ FT (UPLAND)				
SCIENTIFIC NAME	COMMON NAME	VARIETY	% IN MIX	LB/AC (PLS*)
Achnatherum hymenoides	Indian Ricegrass	Native	10	1.4
Andropogon hallii	Sand Bluestem	Native	5	0.9
Artemisia frigida	Fringed sage	Native	1	0.1
Artemisia ludoviciana	Prairie sage	Native	1	0.1
Bouteloua curtipendula	Sideoats grama	Butte	5	0.5
Buchloe dactyloides	Buffalograss	Texoka	15	5.3
Calamovilfa longifolia	Prairie sandreed	Goshen	5	0.4
Chondrosum gracile (syn: *Bouteloua gracilis*)	Blue grama	Lovington	15	0.4
Cleome serrulata	Rocky Mountain beeplant	Native	1	0.3
Elymus lancolatus	Streambank wheatgrass	Sodar	15	1.9
Machaeranthera tanacetifolia	Tansy aster	Native	1	0.1
Pascopyrum smithii (syn: *Agropyron smithii*)	Western wheatgrass	Arriba	15	2.7
Ratibida columnifera	Prairie coneflower	Native	1	0.1
Schizachyrium scoparium	Little bluestem	Cimarron	5	0.4
Sporobolus cryptandrus	Sand dropseed	Native	5	0.1
Total pounds PLS/acre			**100.0**	**14.5**
*PLS= Pure Live Seed – If broadcast seeding, double the rate				

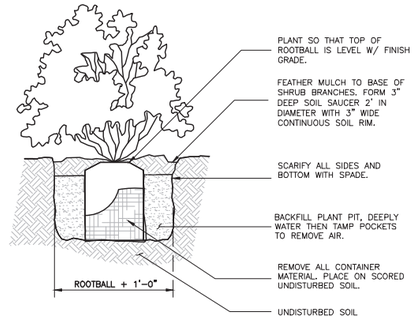
SHRUB AND TREE PLANTINGS

NOTES:
1. CHECK NATIVE SPECIES FOR ACCURACY PRIOR TO PLANTING.
2. KEEP PLANT MOIST AND SHADED IN MULCHED BEDS ON SITE UNTIL TIME OF PLANTING.
3. DO NOT DAMAGE OR CUT LEADER.
4. PRUNE ALL DAMAGED OR DEAD WOOD AFTER PLANTING, STAKING AND MULCHING.
5. KEEP CROWN SHAPE TYPICAL OF SPECIES. REMOVE ALL PLANTING TAGS, TAPE AND LABELS AFTER FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT OR ECOLOGIST.
6. PROVIDE WILDLIFE PROTECTION AS NEEDED.
7. CUT AND REMOVE ALL WIRE/TWINE WRAPPING AND BURLAP.



DECIDUOUS TREE

NOTES
1. KEEP PLANT MOIST AND SHADED IN MULCH BEDS ON SITE UNTIL TIME OF PLANTING.
2. FOR ROOT BOUND CONTAINER PLANTS, MAKE 4–5" DEEP VERTICAL CUTS INTO ROOT BALL EDGE AND PLANT IMMEDIATELY.
3. DO NOT CUT LEADER, PRUNE ALL DAMAGED OR DEAD WOOD AFTER PLANTING, STAKING AND MULCHING, KEEP CROWN SHAPE TYPICAL OF SPECIES, REMOVE ALL PLANTING TAGS, TAPE AND LABELS AFTER FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT OR ECOLOGIST.
4. PROVIDE WILDLIFE PROTECTION AROUND PLANTED SHRUB AS NEEDED.



SHRUB PLANTING CONTAINER

SHRUBS AND TREES				
GROWTH FORM	SCIENTIFIC NAME[1]	COMMON NAME	SIZE[2]	SPACING (O.C.)
Tree	*Acer negundo*	Box Elder	5-gal	10'
Shrub[4]	*Amorpha fruticosa*	Leadplant	60 ci	3'
Shrub[4]	*Cornus sericea*	Redosier Dogwood	60 ci	3'
Tree[3]	*Populus sargentii (syn. = P. deltoides ssp. monilifera)*	Native Plains Cottonwoo	2" B&B	10'
Tree[3]	*Populus sargentii (syn. = P. deltoides ssp. monilifera)*	Native Plains Cottonwoo	5-gal	6'
Tall Shrub[4]	*Prunus americana*	American Plum	60 ci	3'
Shrub[4]	*Prunus virginiana*	Chokecherry	60 ci	3'
Low Shrub[4]	*Ribes aurem*	Golden Currant	60 ci	3'
Low Shrub[4]	*Rosa woodsii*	Woods' Rose	60 ci	3'
Tree	*Salix amygdaloides*	Peachleaf Willow	5-gal	10'
Low Shrub[4]	*Symphoricarpos occidentalis*	Western Snowberry	60 ci	3'
1 table sorted by Scientific Name				
2 if using 1-gallon pots, can reduce number of 60ci containers.				
3 Plant cottonwoods 10' apart in groves				
4 Shrub spacing - in wetlands @ 3', in wet meadows @ 9'				

NOTES:
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RMM MITIGATION BANK
GENERAL DETAILS

SHEET/REFERENCE NO.: **D-01**

Appendix H

Functional Assessment
FACWet
South Platte Mitigation Bank
December 2022

Memorandum

Date: December 15, 2021

To: Stephen Decker, Rocky Mountain Mitigation

From: Carla DeMasters (CORVUS Environmental Consulting)

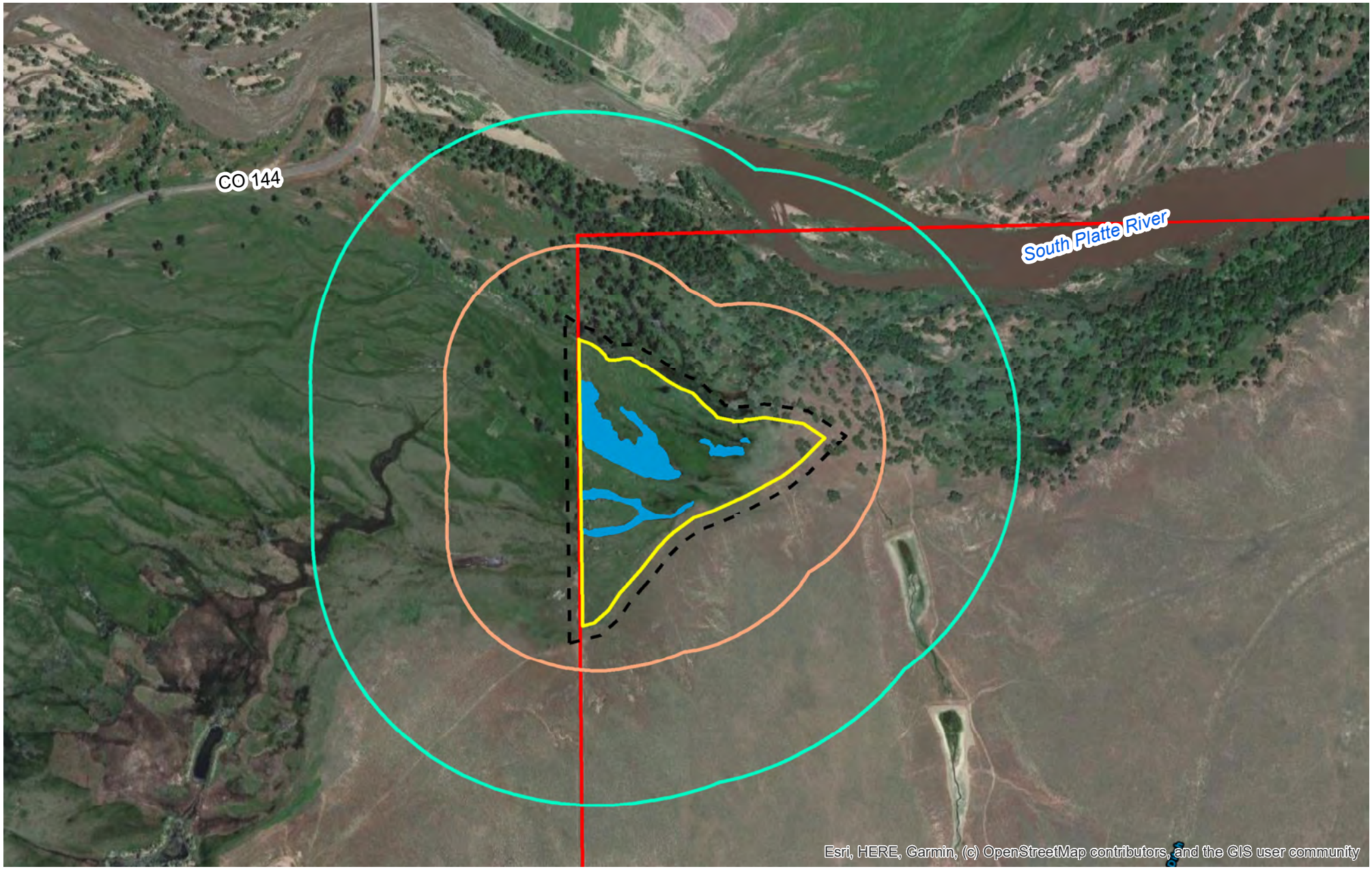
Regarding: Functional Assessment of Colorado Wetlands (FACWet) for South Platte Mitigation Bank

Carla DeMasters, Senior Ecologist and Professional Wetland Scientist (PWS) with CORVUS Environmental Consulting, assessed wetland functions using CDOT's Functional Assessment of Colorado Wetlands (FACWet) method (version 3) (Johnson et al., 2013) for wetlands present at the proposed South Platte Mitigation Bank. Wetlands were previously delineated by ERO Resources Corporation in October 2020. CORVUS visited the site in 2021 and completed a FACWet analysis on the existing wetland functions at the site. The SPMB is divided into four zones, including three zones (Zones 1 – 3) where wetland enhancement and re-establishment/restoration is proposed as well as an upland buffer zone. Zones 1-3 were assessed as separate Assessment Areas (AAs) since the ecological function of each zone is different and the level of proposed wetland enhancement and re-establishment/restoration activities variers per zone. AAs 1 - 3 correspond to these SPMB Zones 1 - 3, respectively.

The FACWet assessment conducted by CORVUS resulted in a Composite Functional Capacity Index (FCI) score for each AA. The condition of wetlands in AA 1, AA 2 and AA 3 is "Functioning Impaired" with an FCI score of <0.7 - 0.6. This condition is due to the many stressors present on and surrounding the SPMB site, the most critical of which are the dominance of vegetation by exotic species and noxious weeds; excessive sedimentation and sand accumulation resulting from flooding flows, such as the 2013 flood, which has resulted in wetlands being converted to uplands; and soil and groundwater salinity issues. Table 1 summarizes the FACWet FCI and Composite FCI Scores for each of the three AAs.

Table 1. FACWet Functional Capacity Indices Scorecard

FACWet Functional Capacity Indices	AA 1	AA 2	AA 3
Support of Characteristic Wildlife Habitat	0.56	0.58	0.59
Support of Characteristic Fish/Aquatic Habitat	0.67	0.66	0.68
Flood Attenuation	0.63	0.63	0.65
Short and Long-Term Water Storage	0.63	0.61	0.63
Nutrient/Toxicant Removal	0.61	0.61	0.63
Sediment Retention/Shoreline Stabilization	0.57	0.54	0.61
Production Export/Food Chain Support	0.58	0.57	0.60
Composite FCI Score	**0.61**	**0.60**	**0.63**



SOUTH PLATTE MITIGATION BANK

- SPMB Property Boundary
- Contributing Area
- HCE
- Assessment Area 1 (AA 1)
- 25m buffer
- AA 1 Wetlands

0 200 400 800 Feet

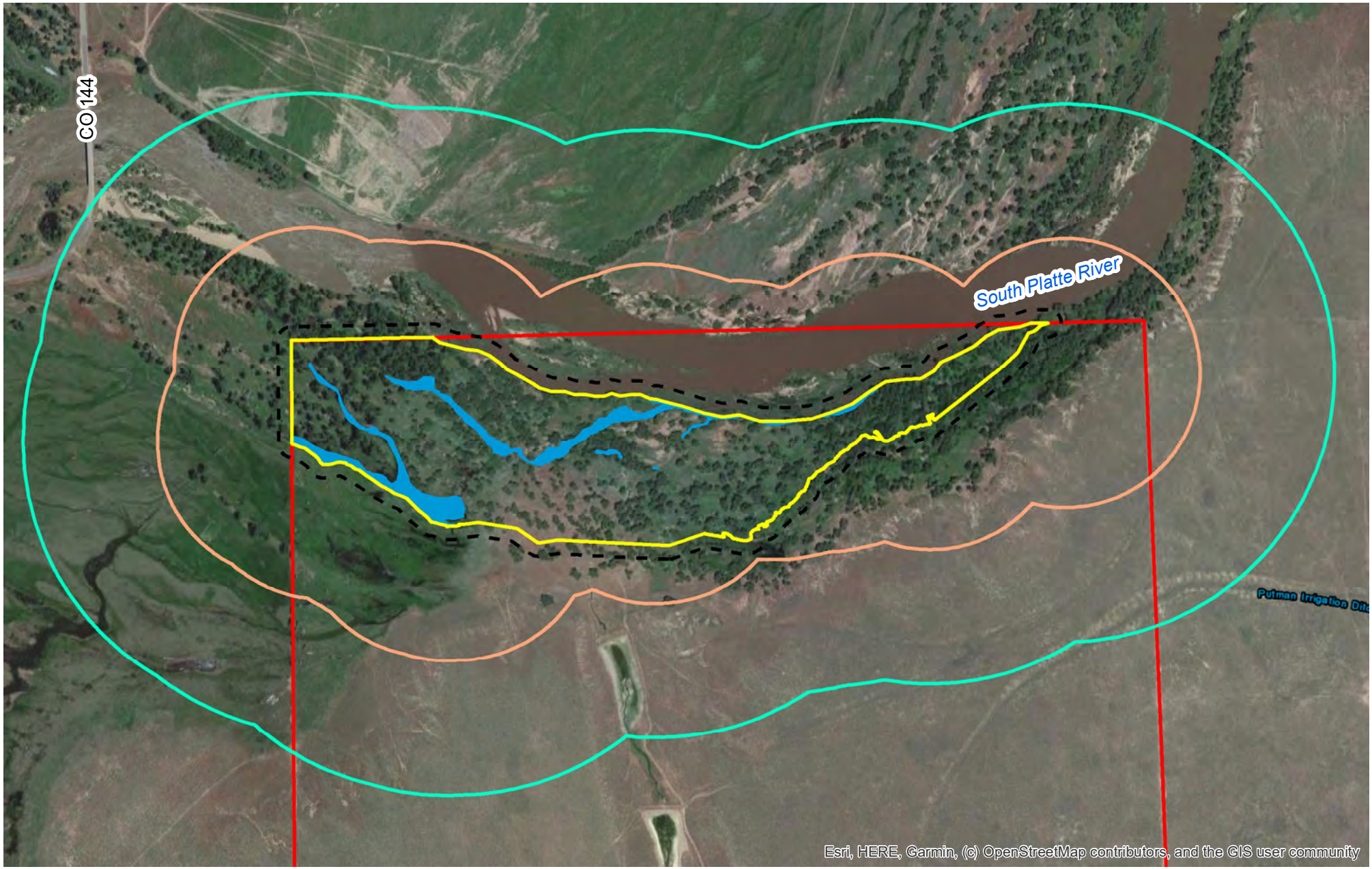
1 inch = 800 feet

FIGURE 1 - FACWet
ASSESSMENT AREA 1

CORVUS
Environmental Consulting LLC

Orchard, Weld County
Map Date: 12/15/2021

Service Layer Credits: Google Earth Aerial Imagery



SOUTH PLATTE MITIGATION BANK

- SPMB Property Boundary
- Contributing Area
- HCE
- Assessment Area 2 (AA 2)
- 25 m buffer
- AA 2 Wetlands

0 200 400 800 Feet

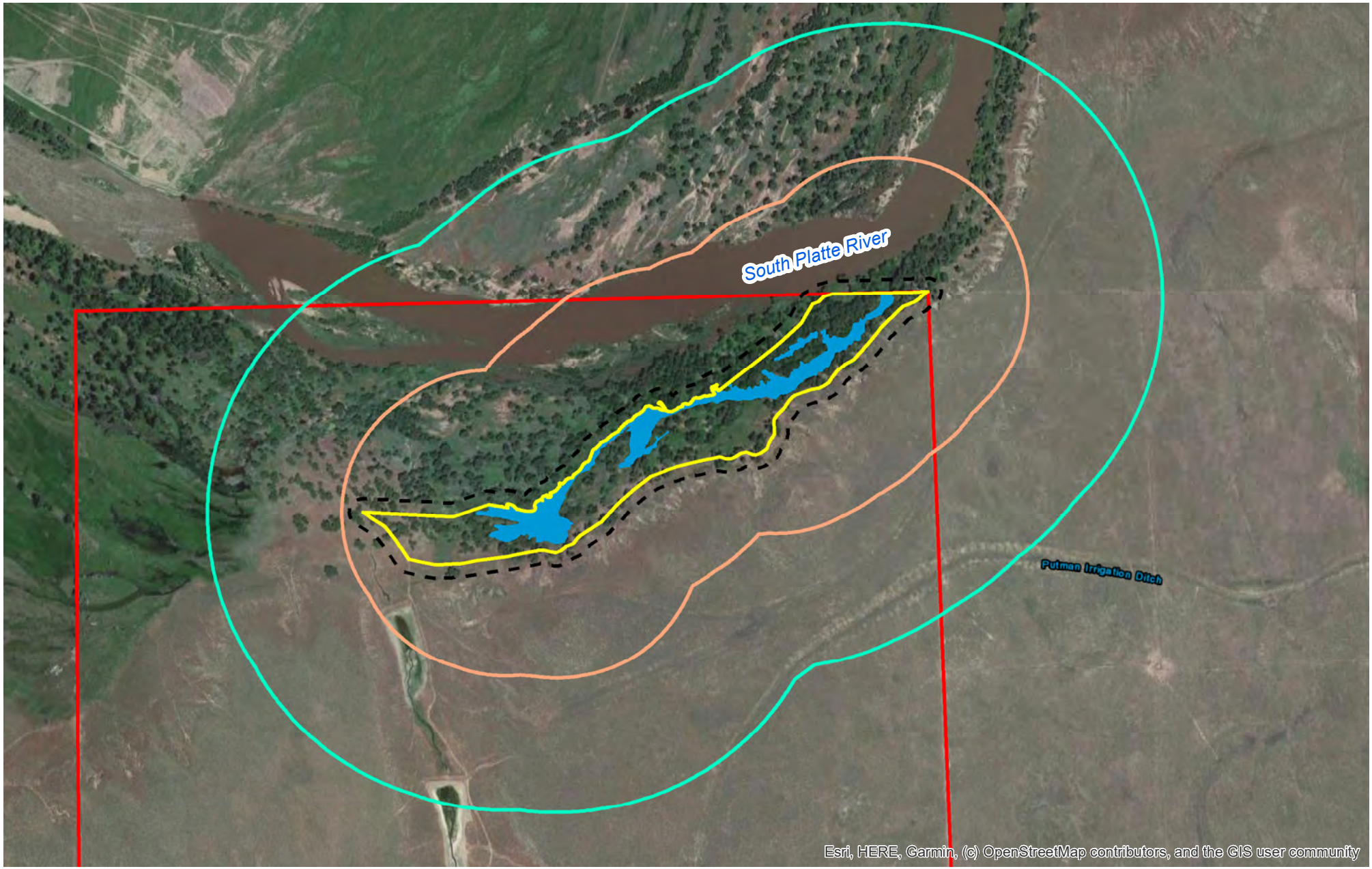
1 inch = 800 feet

FIGURE 1 - FACWet
ASSESSMENT AREA 2

CORVUS
Environmental Consulting LLC

Orchard, Weld County
Map Date: 12/15/2021

Service Layer Credits: Google Earth Aerial Imagery



SOUTH PLATTE MITIGATION BANK

- SPMB Property Boundary
- HCE
- Contributing Area
- Assessment Area 3 (AA 3)
- 25 m buffer
- AA 3 Wetlands

0 200 400 800 Feet

1 inch = 800 feet

FIGURE 1 - FACWet
ASSESSMENT AREA 3

CORVUS
Environmental Consulting LLC

Orchard, Weld County
Map Date: 12/15/2021

Service Layer Credits: Google Earth Aerial Imagery

ADMINISTRATIVE CHARACTERIZATION

General Information			
		Date of Evaluation:	12/13/2021
Site Name or ID:	Assessment Area 1	Project Name:	South Platte Mitigation Bank
404 or Other Permit Application #:	NWO-2020-02252-DEN	Applicant Name:	Stephen Decker, Rocky Mountain Mitigation
Evaluator Name(s):	Carla DeMasters, PWS	Evaluator's professional position and organization:	Senior Ecologist, CORVUS Environmental

Location Information:			
Site Coordinates (Decimal Degrees, e.g., 38.85, -104.96):	40.318659°N, -104.111162°W	Geographic Datum Used (NAD 83):	WGS 84
		Elevation	~4,400 ft
Location Information:	The site is in Morgan County, Colorado in the floodplain of the South Platte River and consists of a 140-acre parcel located adjacent to the South Platte River within Section 16, Township 4 North, Range 4 West. The site property is owned by the Colorado State Land Board.		
Associated stream/water body name	South Platte River	Stream Order:	6
USGS Quadrangle Map:	2019 USGS Orchard 7.5' topo quad, Morgan County, CO	Map Scale: (Circle one)	**1:24,000** 1:100,000 Other 1:
Sub basin Name (8 digit HUC):	Middle South Platte-Cherry Creek HUC 8 (10190003)	Wetland Ownership:	Colorado State Land Board

Project Information:			
This evaluation is being performed at: (Check applicable box)	[ ] *Project Wetland* [X] *Mitigation Site*	Purpose of Evaluation (check all applicable):	[ ] *Potentially Impacted Wetlands* [X] *Mitigation; Pre-construction* [ ] *Mitigation; Post-construction* [ ] *Monitoring* [ ] *Other (Describe)*
Intent of Project: *(Check all applicable)*	[■] Restoration (Re-establishment) [ ] [■] Enhancement [ ] Creation		
Total Size of Wetland Involved: (Record Area, Check and Describe Measurement Method Used)	4.6 ac.	[X] Measured in GIS [ ] Estimated	
Assessment Area (AA) Size (Record Area, check appropriate box. Additional spaces are used to record acreage when more than one AA is included in a single assessment)	4.6 ac.	[X] Measured [ ] Estimated	ac. ac. ac. ac. ac. ac. ac. ac.
Characteristics or Method used for AA boundary determination:	Assessment Area 1 is Mitigation Bank Zone 1, which includes wetland restoration (re-establishment) and enhancement. A total of 4.6 ac of existing wetlands are proposed for enhancement. In addition, 17.6 ac of historic wetlands are proposed for re-establishment/restoration.		

Notes:	*The AOI includes Zones 1-3 (AA 1-3) and the buffer area within the South Platte Mitigation Property Boundary as well as a 25m buffer on this area. Per the FACWet Manual page 47, "...the AOI may also include a number of AAs with any degree of interconnectedness….in general, the AOI should be extended at least 25m outward from the predicted extent of direct and indirect impacts."*

ECOLOGICAL DESCRIPTION 1

Special Concerns

Check all that apply

- [ ] Organic soils including Histosols or Histic Epipedons are present in the AA (i.e., AA includes core fen habitat).
- [ ] Project will directly impact organic soil portions of the AA including areas possessing either Histosol soils or histic epipedons.
- [ ] Organic soils are known to occur anywhere within the contiguous wetland of which the AA is part.
- [ ] The wetland is a habitat oasis in an otherwise dry or urbanized landscape?
- [ ] Federally threatened or endangered species are **KNOWN** to occur in the AA? List Below.
- [ ] Federally threatened or endangered species are **SUSPECTED** to occur in the AA?
- [X] Species of concern according to the Colorado Natural Heritage (CNHP) are known to occur in the AA?
- [X] The site is located within a potential conservation area or element occurrence buffer area as determined by CNHP?
- [ ] Other special concerns (please describe)

HYDROGEOMORPHIC SETTING

- [X] AA wetland maintains its fundamental natural hydrogeomorphic characteristics
- [ ] AA wetland has been subject to change in HGM classes as a result of anthropogenic modification
  If the above is checked, please describe the original wetland type if discernable using the table below.
- [ ] AA wetland was created from an upland setting.

Current Conditions

Describe the hydrogeomorphic setting of the wetland by circling all conditions that apply.

HGM Setting

Water source	Surface flow	**Groundwater**	Precipitation	Unknown		
Hydrodynamics	**Unidirectional**	Vertical	Bi-directional			
Wetland Gradient	**0 - 2%**	2-4%	4-10%	>10%		
# Surface Inlets	Over-bank	**0**	1	2	3	>3
# Surface Outlets		**0**	1	2	3	>3
Geomorphic Setting (Narrative Description. Include approx. stream order for riverine)	AA 1 is located on the former floodplain of the South Platte River and is bounded on the south by an escarpment. Historically, AA1 received overbank flows from the River. Only during extremely high flows does this area receive overbank flows. Most of AA1 is within the 100 year floodplain. All of AA1 is within the 500 year floodplain.					
HGM class	**Riverine**	Slope	Depressional	Lacustrine		

Historical Conditions

Previous wetland typology

Water source	**Surface flow**	**Groundwater**	Precipitation	Unknown	
Hydrodynamics	**Unidirectional**	Vertical			
Geomorphic Setting (Narrative Description)	Historically, AA1 likely received water from both frequent overbank flooding and the alluvial groundwater system from the South Platte River.				
Previous HGM Class	**Riverine**	Slope	Depressional	Lacustrine	

Notes (include information on the AA's HGM subclass and regional subclass): *In compliance with the Endangered Species Act, a preliminary determination has been made that the described work will not adversely affect species designated as threatened or endangered or adversely affect critical habitat.* A Species of concern is known to occur in project area according to the Colorado Natural Heritage (CNHP) - Bald Eagle (*Haliaeetus leucocephalus*). A PCA - South Platte River CNHP PCA B4: Moderate Biodiversity Significance occurs within 1 mile of project.

ECOLOGICAL DESCRIPTION 2

Vegetation Habitat Description

US FWS habitat classification according as reported in Cowardin et al. (1979).

System	Subsystem	Class	Subclass	Water Regime	Other Modifiers	% AA
Riverine (Rp1EM)	Lower Perennial	Emergent	Rooted vascular	A	0	50
Palustrine (PEM1A)	Palulstrine	Emergent	Rooted vascular	A	0	50

Lacustrine	Littoral; Limnoral	Rock Bot. (RB) Uncon Bottom(UB) Aquatic Bed(AB) Rocky Shore(RS) Uncon Shore(US) Emergent(EM) Shrub-scrub(SS) Forested (FO)	Floating vascular; Rooted vascular; Algal; Persistent; Non-Persistent; Broad-leaved deciduous; Needle-leaved evergreen; Cobble - gravel; Sand; Mud; Organic	**Examples** Temporarily flooded(A); Saturated(B); Seasonally flooded(C); Seas.-flood./sat.(E); Semi-Perm. flooded(F); Intermittently exposed(G); Artificially flooded(K); Sat./semiperm./Seas. (Y); Int. exposed/permenant(Z)	Hypersaline(7) ; Eusaline(8); Mixosaline(9); Fresh(0); Acid(a); Circumneutral(c); Alkaline/calcareous(i); Organic(g); Mineral(n); Beaver(b); Partially Drained/ditched(d); Farmed(f); Diked/impounded(h); Artificial Substrate(r); Spoil(s); Excavated(x)	
Palustrine	Palustrine					
Riverine	Lower perennial; Upper perennial; Intermittent					

Site Map

Scale: 1 sq. =

Draw a sketch map of the site including relevant portions of the wetland, AA boundary, structures, habitat classes, and other significant features.

See Figure 1

Variable 1: Habitat Connectivity

The Habitat Connectivity Variable is described by two sub-variables – Neighboring Wetland and Riparian Habitat Loss and Barriers to Migration and Dispersal. These sub-variables were treated as independent variables in FACWet Version 2.0. The merging of these variables makes their structure more consistent with that of other composite variables in FACWet. The new variable configuration also makes this landscape variable more accurately reflect the interactions amongst aquatic habitats in Colorado's agricultural and urbanized landscapes, which have a naturally low density of wetlands. The two Habitat Connectivity Sub-variables are scored in exactly the same manner as their FACWet 2.0 counterparts, as described below. The Habitat Connectivity Variable score is simply the arithmetic average of the two sub-variable scores which is entered on the second page of the Variable 1 data form. If there is little or no wetland or riparian habitat in the Habitat Connectivity Envelope (defined below), then Sub-variable 1.1 is not scored.

SV 1.1 - Neighboring Wetland and Riparian Habitat Loss
(Do not score if few or no wetlands naturally exist in the HCE)

This sub-variable is a measure of how isolated from other naturally-occurring wetlands or riparian habitat the AA has become as the result of habitat destruction. To score this sub-variable, estimate the percent of naturally-occurring wetland/riparian habitat that has been lost (by filling, draining, development, or whatever means) within the 500-meter-wide belt surrounding the AA. This zone is called the Habitat Connectivity Envelope (HCE). In most cases the evaluator must use best professional judgment to estimate the amount of natural wetland loss. Historical photographs, National Wetland Inventory (NWI) maps, hydric soil maps can be helpful in making these determinations. Floodplain maps are especially valuable in river-dominated regions, such as the Front Range urban corridor. Evaluation of landforms and habitat patterns in the context of perceivable land use change is used to steer estimates of the amount of wetland loss within the HCE.

Rules for Scoring:

1. On the aerial photo, create a 500 m perimeter around the AA.
2. The area within this perimeter is the **Habitat Connectivity Envelope (HCE)**.
3. Within the HCE, outline the current extent of naturally occurring wetland and riparian habitat. Do not include habitats such as excavated ponds or reservoir induced fringe wetlands.
4. Outline the historical extent of wetland and riparian habitats (i.e., existing natural wetlands plus those that have been destroyed).

- Use your knowledge of the history of the area and evident land use change to identify where habitat losses have occurred. Additional research can be utilized to increase the accuracy of this estimate including consideration of floodplain maps, historical aerial photographs, soil maps, etc.

5. Calculate the area of existing and historical wetlands. Divide the area of existing wetland by the total amount of existing and historical wetland and riparian habitat, and determine the variable score using the guidelines below. Enter sub-variable score at the bottom of p.2 of the Habitat Connectivity data form.

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Very little or no loss of wetlands in the HCEor negligible.
<0.9 - 0.8	***B*** *Highly Functioning*	More than 80% of historical wetland habitat area within the HCE is still present (less than 20% of habitat area lost).
<0.8 - 0.7	***C*** *Functioning*	80 to 60% of historical wetland habitat area within the HCE is still present (20% to 40% of habitat area lost).
<0.7 - 0.6	***D*** *Functioning Impaired*	Less than 60 to 25% of historical wetland habitat area within the HCE is still present (more than 40 to 75% of habitat area lost).
<0.6	***F*** ***Non-functioning***	**Less than 25% of the historical wetland habitat area within the HCE still in existence (more than 70% of habitat lost).**

Notes: Present wetlands ~41 ac. Historic wetlands ~199 ac. Because more than 70% of historical wetland habitat is lost, this variabel scored very low at a 0.3.

Variable 1: Habitat Connectivity p. 2

SV 1.2: Migration/Dispersal Barriers

This sub-variable is intended to rate the degree to which the AA has become isolated from existing neighboring wetland and riparian habitat by artificial barriers that inhibit migration or dispersal of organisms. On the aerial photograph, identify the man-made barriers within the HCE that intercede between the AA and surrounding wetlands and riparian areas, and identify them by type on the stressor list. Score this variable based on the barriers' impermeability to migration and dispersal and the amount of surrounding wetland/riparian habitat they affect.

Rules for Scoring:

1. On the aerial photo, outline **all** existing wetland and riparian habitat areas within the HCE. This includes naturally occurring habitats, as well as those purposefully created or induced by land use change.
2. Identify artificial barriers to dispersal and migration of organisms within the HCE that intercede between the AA and surrounding habitats. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.
3. Considering the composite effect of all of identified barriers to migration and dispersal (i.e., stressors), assign an overall variable score using the scoring guidelines.

Stressors = artificial barriers

✔	Stressors	Comments/description
	Major Highway	
	Secondary Highway	
	Tertiary Roadway	
	Railroad	
	Bike Path	
	Urban Development	
	Agricultural Development	
	Artificial Water Body	
X	Fence	North-south running fenceline
X	Ditch or Aqueduct	Agricultural return flow ditch
X	Aquatic Organism Barriers	Alluvial fan from watershed development cut off wetlands

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	No appreciable barriers exist between the AA and other wetland and riparian habitats in the HCE; or there are no other wetland and riparian areas in the HCE.
<0.9 - 0.8	***B*** *Highly Functioning*	Barriers impeding migration/dispersal between the AA and up to 33% of surrounding wetland/riparian habitat highly permeable and easily passed by most organisms. Examples could include gravel roads, minor levees, ditches or barbed-wire fences. More significant barriers (see "functioning category below) could affect migration to up to 10% of surrounding wetland/riparian habitat.
<0.8 - 0.7	***C*** *Functioning*	Barriers to migration and dispersal retard the ability of many organisms/propagules to pass between the AA and up to 66% of wetland/riparian habitat. Passage of organisms and propagules through such barriers is still possible, but it may be constrained to certain times of day, be slow, dangerous or require additional travel. Busy two-lane roads, culverted areas, small to medium artificial water bodies or small earthen dams would commonly rate a score in this range. More significant barriers (see "functioning impaired" category below) could affect migration to up to 10% of surrounding wetland/riparian
<0.7 - 0.6	***D*** *Functioning Impaired*	Barriers to migration and dispersal preclude the passage of some types of organisms/propagules between the AA and up to 66% of surrounding wetland/riparian habitat. Travel of those animals which can potential negotiate the barrier are strongly restricted and may include a high chance of mortality. Up to 33% of surrounding wetland/riparian habitat could be functionally isolated from the AA.
<0.6	***F*** *Non-functioning*	AA is essentially isolated from surrounding wetland/riparian habitat by impermeable migration and dispersal barriers. An interstate highway or concrete-lined water conveyance canal are examples of barriers which would generally create functional isolation between the AA and wetland/riparian habitat in the HCE.

SV 1.1 Score	0.30
SV 1.2 Score	0.70

Add SV 1.1 and 1.2 scores and divide by two to calculate variable score

Variable 1 Score 0.50

Variable 2: Contributing Area

The AA's Contributing Area is defined as the 250-meter-wide zone surrounding the perimeter of the AA. This variable is a measure of the capacity of that area to support characteristic functions of high quality wetland habitat. Depending on its condition, the contributing area can help maintain wetland condition or it can degrade it. Contributing Area condition is evaluated by considering the AA's Buffer and its Surrounding Land Use. Buffers are strips or patches of more-or-less natural upland and/or wetland habitat more than 5m wide. Buffers are contiguous with the AA boundary and they intercede between it and more intensively used lands. The AA Buffer is characterized with three sub-variables: Buffer Condition, Buffer Extent, and Average Buffer Width. The Surrounding Land Use Sub-variable considers changes within the Contributing Area that limit its capacity to support characteristic wetland functions. Many of the acute, on-site effects of land use change in the Contributing Area are specifically captured by Variables 3 - 8.

Rules for Scoring:

1. Delimit the Contributing Area on an aerial photograph as the zone within 250 meters of the outer boundary of the AA.
2. Evaluate and then rate the Buffer Condition sub-variable using the scoring guidelines. Record the score in the cell provided on the datasheet.
3. Indicate on the aerial photograph zones surrounding the AA which have ≥5m of buffer vegetation and those which do not.
4. Calculate the percentage of the AA which has a Buffer and record the value where indicated on the data sheet.
5. Rate the *Buffer Extent* Sub-variable using the scoring guidelines.
6.Determine the average Buffer width by drawing a line perpendicularly from the AA boundary to the outer extent of the buffer habitat. Measure line length and record its value on the data sheet. Repeat this process until a total of 8 lines have been sampled.
7. Calculate the average buffer width and record value on the data form. Then determine the sub-variable score using the scoring guidelines.
8.Score the Surrounding Land Use sub-variable by recording land use changes on the stressor list that affect the capacity of the landscape to support characteristic wetland functioning.
9. Enter the **lowest** of the three Buffer sub-variable scores along with the Surrounding Land Use Sub-variable score in the Contributing Area Variable scoring formula at the bottom of p. 2 of the data form. The Contributing Area Variable is the

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SV 2.1 - Buffer Condition

0.6 ***SV 2.1 - Buffer Condition Score***

Subvariable Score	Condition Grade	Buffer Condition Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Buffer vegetation is predominately native vegetation, human-caused disturbance of the substrate is not evident, and human visitation is minimal. Common examples: Wilderness areas, undeveloped forest and range lands.
<0.9 - 0.8	*Highly Functioning*	Buffer vegetation may have a mixed native-nonnative composition, but characteristic structure and complexity remain. Soils are mostly undisturbed or have recovered from past human disturbance. Little or only low-impact human visitation. Buffers with higher levels of substrate disturbance may be included here if the buffer is still able to maintain predominately native vegetation. Common examples: Dispursed camping areas in national forests, common in wildland parks (e.g. State Parks) and open spaces.
<0.8 - 0.7	*Functioning*	Buffer vegetation is substantially composed of non-native species. Vegetation structure may be somewhat altered, such as by brush clearing. Moderate substrate distrbance and compaction occurs, and small pockets of greater disturbance may exist. Common examples: City natural areas, mountain hay meadows.
<0.7 - 0.6	*Functioning Impaired*	Buffer vegetation is substantially composed of non-native species and vegetation structure has been strongly altered by the complete removal of one or more strata. Soil disturbance and the intensity of human visitation are generally high. Common examples: Open lands around resource extraction sites (e.g., gravel mines), clear cut logging areas, ski slopes.
<0.6	*Non-functioning*	Buffer is nearly or entirely absent.

SV 2.2 - Buffer Extent

100 Percent of AA with Buffer

0.90 ***SV 2.2 - Buffer Extent***

Subvariable Score	Condition Class	% Buffer Scoring Guidelines
1.0 - 0.9	*Reference Standard*	90 - 100% of AA with Buffer
<0.9 - 0.8	*Highly Functioning*	70-90% of AA with Buffer
<0.8 - 0.7	*Functioning*	51-69% of AA with Buffer
<0.7 - 0.6	*Functioning Impaired*	26-50% of AA with Buffer
<0.6	*Non-functioning*	0-25% of AA with Buffer

Variable 2: Contributing Area (p. 2)

SV 2.3 - Average Buffer Width

Record measured buffer widths in the spaces below and average.

Buffer Width (m)	250	250	250	250	250	250	250	250	250
Line #	1	2	3	4	5	6	7	8	**Avg. Buffer Width (m)**

0.9

SV 2.3 - Average Buffer Width Score

Subvariable Score	Condition Grade	Buffer Width Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Average Buffer width is 190-250m
<0.9 - 0.8	*Highly Functioning*	Average Buffer width is 101-189m
<0.8 - 0.7	*Functioning*	Average Buffer width is 31-100m
<0.7 - 0.6	*Functioning Impaired*	Average Buffer width is 6-30m
<0.6	*Non-functioning*	Average Buffer width is 0-5m

SV 2.4 - Surrounding Land Use

0.6

SV 2.4 - Surrounding Land Use Score

Catalog and characterize land use changes in the surrounding landscape and score.

Stressors = Land Use Changes

✔	Stressors	Comments/description
	Industrial/commercial	
	Urban	
	Residential	
	Rural	
	Dryland Farming	
X	Intensive Agriculture	Salinity issues, fertilizer rich waters
	Orchards or Nurseries	
X	Livestock Grazing	Cattle grazing
	Transportation Corridor	
	Urban Parklands	
	Dams/impoundments	
	Artificial Water body	
	Physical Resource Extraction	
	Biological Resource Extraction	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	No appreciable land use change has been imposed Surrounding Landscape.
<0.9 - 0.8	***B*** *Highly Functioning*	Some land use change has occurred in the Surrounding Landscape, but changes have minimal effect on the the landscape's capacity to support characteristic aquatic functioning, either because land use is not intensive, for example haying, light grazing, or low intensity silviculture, or more substantial changes occur in approximately less than 10% of the area.
<0.8 - 0.7	***C*** *Functioning*	Surrounding Landscape has been subjected to a marked shift in land use, however, the land retains much of its capacity to support natural wetland function and it is not an overt source of pollutants or sediment. Moderate-intensity land uses such as dry-land farming, urban "green" corridors, or moderate cattle grazing would commonly be placed within this scoring range.
<0.7 - 0.6	***D*** *Functioning Impaired*	Land use changes within the Surrounding Landscape has been substantial including the a moderate to high coverage (up to 50%) of impermeable surfaces, bare soil, or other artificial surfaces; considerable in-flow urban runoff or fertilizer-rich waters common. Supportive capacity of the land has been greatly diminished but not totally extinguished. Intensively logged areas, low-density urban developments, some urban parklands and many cropping situations would commonly rate a score within this range.
<0.6	***F*** *Non-functioning*	The Surrounding Landscape is essentially comletely developed or is otherwise a cause of severe ecological stress on wetland habitats. Commercial developments or highly urban landscapes generally rate a score of less than 0.6.

(	**Buffer Score (Lowest score)**	+	**Surrounding Land Use**	) ÷	2	=	**Variable 2 Score**
	0.6		0.6				0.60

Variable 3: Water Source

This variable is concerned with ***up-gradient*** *hydrologic connectivity. It is a measure of impacts to the AA's water source, including the quantity and timing of water delivery, and the ability of source water to perform work such as sediment transport, erosion, soil pore flushing, etc. To score this variable, identify stressors that alter the source of water to the AA, and record their presence on the stressor list. Stressors can impact water source by depletion, augmentation, or alteration of inflow timing or hydrodynamics. This variable is designed to assess water quantity, power and timing, not water quality. Water quality will be evaluated in Variable 7.*

Scoring rules:

1. Use the stressor list and knowledge of the watershed to catalog type-specific impairments of the AA's water source. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.

2. Considering the composite effect of stressors on the water source, rate the condition of this variable with the aid of the scoring guidelines.

✔	Stressors	Comments/description
	Ditches or Drains (tile, etc.)	
X	Dams	Empire Reservoir, Riverside Reservoir
X	Diversions	Bijou Canal
	Groundwater pumping	
	Draw-downs	
	Culverts or Constrictions	
X	Point Source (urban, ind., ag.)	Kersey feed lot
	Non-point Source	
	Increased Drainage Area	
	Storm Drain/Urban Runoff	
	Impermeable Surface Runoff	
	Irrigation Return Flows	
X	Mining/Natural Gas Extraction	gravel mining, natural gas exploration
	Transbasin Diversion	
	Actively Managed Hydrology	

Variable Score	Condition Grade	Depletion	Augmentation
1.0 - 0.9	***A*** *Reference Standard*	Unnatural drawdown events minor, rare or non-existent, very slight uniform depletion, or trivial alteration of hydrodynamics.	Unnatural high-water events minor, rare or non-existent, slight uniform increase in amount of inflow, or trivial alteration of hydrodynamics.
<0.9 - 0.8	***B*** *Highly Functioning*	Unnatural drawdown events occasional, short duration and/or mild; or uniform depletion up to 20%; or mild to moderate reduction of peak flows or capacity of water to perform work.	Occasional unnatural high-water events, short in duration and/or mild in intensity; or uniform augmentation up to 20%; or mild to moderate increase of peak flows or capacity of water to perform work.
<0.8 - 0.7	***C*** *Functioning*	Unnatural drawdown events common and of mild to moderate intensity and/or duration; or uniform depletion up to 50%; or moderate to substantial reduction of peak flows or capacity of water to perform work.	Common occurrence of unnatural high-water events, of a mild to moderate intensity and/or duration; or uniform augmentation up to 50%; or moderate to substantial increase of peak flows or capacity of water to perform work.
<0.7 - 0.6	***D*** *Functioning Impaired*	Unnatural drawdown events occur frequently with a moderate to high intensity and/or duration; or uniform depletion up to 75%; or substantial reduction of peak flows or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or lower.**	Common occurrence of unnatural high-water events, some of which may be severe in nature or exist for a substantial portion of the growing season; or uniform augmentation more than 50% or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or**
<0.6	***F*** *Non-functioning*	Water source diminished enough to threaten or extinguish wetland hydrology in the AA.	Frequency, duration or magnitude of unnaturally high-water great enough to change the fundamental characteristics of the wetland.

Variable 3 Score 0.8

Variable 4: Water Distribution

This variable is concerned with hydrologic connectivity ***within*** *the AA. It is a measure of alteration to the spatial distribution of surface and groundwater within the AA. These alterations are manifested as local changes to the hydrograph and generally result from geomorphic modifications within the AA. To score this variable, identify stressors within the AA that alter flow patterns and impact the hydrograph of the AA, including localized increases or decreases to the depth or duration of the water table or surface water.*

Because the wetland's ability to distribute water in a characteristic fashion is fundamentally dependent on the condition of its water source, ***in most cases the Water Source variable score will define the upper limit Water Distribution score****. For example, if the Water Source variable is rated at 0.85, the Water Distribution score will usually have the potential to attain a maximum score of 0.85. Additional stressors within or outside the lower end of the AA effecting water distribution (e.g., ditches and levees) will reduce the score from the maximum value.*

Scoring rules:

1. Identify impacts to the natural distribution of water throughout the AA and catalog them in the stressor table.

2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. In most cases, the Water Source variable score will set the upper limit for the Water Distribution score.

✓	Stressors	Comments/description
	Alteration of Water Source	
	Ditches	
	Ponding/Impoundment	
	Culverts	
	Road Grades	
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Enlarged Channel	
	Artificial Banks/Shoreline	
	Weirs	
	Dikes/Levees/Berms	
	Diversions	
X	Sediment/Fill Accumulation	Flooding flows such as 2013 floods have deposited sediments over wetlands.

Variable Score	Condition Grade	Non-riverine	Riverine
1.0 - 0.9	***A*** *Reference Standard*	Little or no alteration has been made to the way in which water is distributed throughout the wetland. AA maintains a natural hydrologic regime.	Natural active floodplain areas flood on a normal recurrence interval. No evidence of alteration of flooding and subirrigation duration and intensity.
<0.9 - 0.8	***B*** *Highly Functioning*	Less than 10% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in less than a 2 in. (5 cm) change in mean growing season water table elevation.	Channel-adjacent areas have occasional unnatural periods of drying or flooding; or uniform shift in the hydrograph less than typical root depth.
<0.8 - 0.7	***C*** *Functioning*	Between 10 and 33% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 4 in. (5 cm) or less change in mean growing season water table elevation.	In channel-adjacent area, periods of drying or flooding are common; or uniform shift in the hydrograph near root depth.
<0.7 - 0.6	***D*** *Functioning Impaired*	33 to 66% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 6 in. (15 cm) or less change in mean growing season water table elevation. Water table behavior must still meet jurisdictional criteria to merit this rating.	Adjacent to the channel, unnatural periods of drying or flooding are the norm; or uniform shift in the hydrograph greater than root depth.
<0.6	***F*** *Non-functioning*	More than 66% of the AA is affected by hydrologic alteration which changes the fundamental functioning of the wetland system, generally exhibited as a conversion to upland or deep water habitat.	Historical active floodplain areas are almost never wetted from overbank flooding, and/or groundwater infiltration is effectively cut off.

Variable 4 Score 0.6

Variable 5: Water Outflow

This variable is concerned with ***down-gradient*** *hydrologic connectivity and the flow of water and water-borne materials and energy out of the AA. In particular it illustrates the degree to which the AA can support the functioning of down-gradient habitats. It is a measure of impacts that affect the hydrologic outflow of water including the passage of water through its normal low- and high-flow surface outlets, infiltration/groundwater recharge, and the energetic characteristics of water delivered to dependent habitats. In some cases, alteration of evapotranspiration rates may be significant enough of a factor to consider in scoring. Score this variable by identifying stressors that impact the means by which water is exported from the AA. To evaluate this variable focus on how water, energy and associated materials are exported out of the AA and their ability it support down-gradient habitats in a manner consistent with their HGM (regional) subclass.*

Because the wetland's ability to export water and materials in a characteristic fashion is to a very large degree dependent the condition of its water source, as with the Water Distribution variable, ***in most cases the Water Source variable score will define the upper limit Water Outflow score****.*

Scoring rules:

1. Identify impacts to the natural outflow of water from the AA and catalog them in the stressor table.

2.Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. Take in to account the cumulative effect of stressors on the wetland's ability to export water and water-borne materials. In most cases the Water Source variable will set the upper limit for the Water Outflow score.

✔	Stressors	Comments/description
	Alteration of Water Source	
X	Ditches	Agricultural return flow ditch.
	Dikes/Levees	
	Road Grades	
	Culverts	
	Diversions	
X	Constrictions	Alluvial fan from watershed development cut off wetlands
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Artificial Stream Banks	
	Weirs	
	Confined Bridge Openings	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stressors have little to no effect on the magnitude, timing or hydrodynamics of the AA water outflow regime.
<0.9 - 0.8	***B*** *Highly Functioning*	High- or low-water outflows are mildly to moderately affected, but at intermediate ("normal") levels flow continues essentially unaltered in quantity or character.
<0.8 - 0.7	***C*** *Functioning*	High- or low-water outflows are moderately affected, mild alteration of intermediate level outflow occurs; or hydrodynamics moderately affected.
<0.7 - 0.6	***D*** *Functioning Impaired*	Outflow at all stages is moderately to highly impaired resulting in persistent flooding of portions of the AA or unnatural drainage; or outflow hydrodynamics severely disrupted.
<0.6	***F*** *Non-functioning*	The natural outflow regime is profoundly impaired. Down-gradient hydrologic connection severed or nearly so. Alterations may cause widespread unnatural persistent flooding or dewatering of the wetland system.

Variable 5 Score 0.6

Variable 6: Geomorphology

This variable is a measure of the degree to which the geomorphic setting has been altered within the AA. Changes to the surface configuration and natural topography constitute stressors. Such stressors may be observed in the form of fill, excavation, dikes, sedimentation due to absence of flushing floods, etc. In riverine systems, geomorphic changes to the stream channel should be considered if the channel is within the AA (i.e, small is size). Alterations may involve the bed and bank (substrate embeddedness or morphological changes), stream instability, and stream channel reconfiguration. Geomorphic changes are usually ultimately manifested as changes to wetland surface hydrology and water relations with vegetation. Geomorphic alterations can also directly affect soil properties, such as near-surface texture, and the wetland chemical environment such as the redox state or nutrient composition in the rooting zone. In rating this variable, ***do not*** *include these resultant effects of geomorphic change; rather focus on the physical impacts* ***within the footprint*** *of the alteration* ***within the AA*** *– For example, the width and depth of a ditch or the size of a levee* ***within the AA*** *would describe the extent of the stressors. The secondary effects of geomorphic change are addressed by other variables. All alterations to geomorphology should be evaluated including small-scale impacts such as pugging, hoof sheer, and sedimentation which*

Scoring Rules:

1. Identify impacts to geomorphological setting and topography within the AA and record them on the stressor checklist.
2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines.

✓		Stressors	Comments
	General	Dredging/Excavation/Mining	
		Fill, including dikes, road grades, etc	
		Grading	
		Compaction	
		Plowing/Disking	
X		Excessive Sedimentation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
		Dumping	
		Hoof Shear/Pugging	
		Aggregate or Mineral Mining	
X		Sand Accumulation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
	Channels Only	Channel Instability/Over Widening	
		Excessive Bank Erosion	
		Channelization	
		Reconfigured Stream Channels	
		Artificial Banks/Shoreline	
		Beaver Dam Removal	
		Substrate Embeddedness	
		Lack or Excess of Woody Debris	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Topography essentially unaltered from the natural state, or alterations appear to have a minimal effect on wetland functioning and condition. Patch or microtopographic complexity may be slightly altered, but native plant communities are still supported.
<0.9 - 0.8	***B*** *Highly Functioning*	Alterations to topography result in small but detectable changes to habitat conditions in some or all of the AA; or more severe impacts exist but affect less than 10% of the AA.
<0.8 - 0.7	***C*** *Functioning*	Changes to AA topography may be pervasive but generally mild to moderate in severity. May include patches of more significant habitat alteration; or more severe alterations affect up to 20 % of the AA.
<0.7 - 0.6	***D*** *Functioning Impaired*	At least one important surface type or landform has been eliminated or created; microtopography has been strongly impacted throughout most or all of the AA; or more severe alterations affect up to 50% of the AA. Evidence that widespread diminishment or alteration of native plant community exist due to physical habitat alterations. Most incidentally created wetland habitat such as that created by roadside ditches and the like would score in this range or lower.
<0.6	***F*** *Non-functioning*	Pervasive geomorphic alterations have caused a fundamental change in site character and functioning, commonly resulting in a conversion to upland or deepwater habitat.

Variable 6 Score 0.55

Variable 7: Water and Soil Chemical Environment

This variable concerns the chemical environment of the soil and water media within the AA, including pollutants, water and soil characteristics. The origin of pollutants may be within or outside the AA. Score this variable by listing indicators of chemical stress in the AA. Consider point source and non-point sources of pollution, as well as mechanical or hydrologic changes that alter the chemical environment. Because water quality frequently cannot be inferred directly, the presence of stressors is often identified by the presence of indirect indicators. Five sub-variables are used to describe the Water and Soil Chemical Environment: Nutrient Enrichment/Eutrophication/Oxygen; Sedimentation/Turbidity; Toxic Contamination/pH; Temperature; and Soil Chemistry and Redox Potential. Utilization of web-based data mining tools is highly recommended to help inform and support variable scores.

Scoring rules:

1. Stressors are grouped into sub-variables which have a similar signature or set of causes.
2. Use the indicator list to identify each stressor impacting the chemical environment of the AA.
3. For each sub-variable, determine its score using the scoring guideline table provided on the second page of the scoring sheet. Scoring sub-variables is carried out in exactly the same way as normal variable scoring.
 -If the AA is part of a water body that is recognized as impaired or recommended for TMDL development for one of the factors, then score that sub-variable 0.65 or lower.
4. Transcribe sub-variable scores to the following variable scoring page and compute the sum.
5. The lowest sub-variable score sets the letter grade range. The composite of sub-variables influences the score within that range.

Sub-variable	Stressor Indicator	✔	Comments	Sub-variable Score
SV 7.1 Nutrient Enrichment/ Eutrophication/ Oxygen (D.O.)	Livestock	X	cattle grazing	0.70
	Agricultural Runoff	X	Increased salinity from irrigation	
	Septic/Sewage			
	Excessive Algae or Aquatic Veg.			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.2 Sedimentation/ Turbidity	Excessive Erosion			0.70
	Excessive Deposition	X	e.g. 2013 flood	
	Fine Sediment Plumes			
	Agricultural Runoff	X	sedimentation	
	Excessive Turbidity			
	Nearby Construction Site			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.3 Toxic contamination/ pH	Recent Chemical Spills			0.70
	Nearby Industrial Sites			
	Road Drainage/Runoff			
	Livestock	X	cattle grazing	
	Agricultural Runoff	X	Increased salinity from irrigation	
	Storm Water Runoff			
	Fish/Wildlife Impacts			
	Vegetation Impacts			
	Cumulative Watershed NPS			
	Acid Mine Drainage			
	Point Source Discharge			
	CDPHE Impairment/TMDL List			
	Metal staining on rocks and veg.			
SV 7.4 Temperature	Excessive Temperature Regime			0.70
	Lack of Shading	X	Lack of canopy	
	Reservoir/Power Plant Discharge			
	Industrial Discharge			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.5 Soil chemistry/ Redox potential	Unnatural Saturation/Desaturation			0.70
	Mechanical Soil Disturbance			
	Dumping/introduced Soil			
	CDPHE Impairment/TMDL List			

Variable 7: Water and Soil Chemical Environment p.2

Sub-variable Scoring Guidelines

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stress indicators not present or trivial.
<0.9 - 0.8	***B*** *Highly Functioning*	Stress indicators scarcely present and mild, or otherwise not occurring in more than 10% of the AA.
<0.8 - 0.7	***C*** *Functioning*	Stress indicators present at mild to moderate levels, or otherwise not occurring in more than 33% of the AA.
<0.7 - 0.6	***D*** *Functioning Impaired*	Stress indicators present at moderate to high levels, or otherwise not occurring in more than 66% of the AA
<0.6	***F*** *Non-functioning*	Stress indicators strongly evident throughout the AA at levels which apparently alter the fundamental chemical environment of the wetland system

Input each sub-variable score from p. 1 of the V7 data form and calculate the sum.

Nutrient enrichment/ Eutrophication/ Oxygen (D.O.)		Sedimentation/ Turbidity		Toxic contamination/ pH		Temperature		Soil chemistry/ Redox potential		Sum of Sub-variable Scores
0.70	+	0.70	+	0.70	+	0.70	+	0.70	=	3.50

Use the table to score the Chemical Environment Variable circling the applicable scoring rules.

Variable Score	Condition Grade	Scoring Rules		
		Single Factor		**Composite Score**
1.0 - 0.9	***A*** *Reference Standard*	No single factor scores < 0.9		The factor scores sum > 4.5
<0.9 - 0.8	***B*** *Highly Functioning*	Any single factor scores ≥ 0.8 but < 0.9		The factor scores sum >4.0 but ≤4.5
<0.8 - 0.7	***C*** *Functioning*	Any single factor scores ≥ 7.0 but < 0.8		The factor scores sum >3.5 but ≤ 4.0
<0.7 - 0.6	***D*** *Functioning Impaired*	Any single factor scores ≥ 0.6 but <0.7	X	The factor scores sum >3.0 but ≤3.5
< 0.6	***F*** *Non-functioning*	Any single factor scores < 0.6		The factor scores sum < 3.0

Variable 7 Score 0.7

Variable 8: Vegetation Structure and Complexity

This variable is a measure of the condition of the wetland's vegetation relative to its native state. It particularly focuses on the wetland's ability to perform higher-order functions such as support of wildlife populations, and influence primary functions such as flood-flow attenuation, channel stabilization and sediment retention. Score this variable by listing stressors that have affected the structure, diversity, composition and cover of each vegetation stratum that would normally be present in the HGM (regional) subclass being assessed. For this variable, stressor severity is a measure of how much each vegetation stratum differs functionally from its natural condition or from the natural range of variability exhibited the HGM subclass or regional subclass. This variable has four sub-variables, each corresponding to a stratum of vegetation: Tree Canopy; Shrub Layer; Herbaceous Layer; and Aquatics.

Rules for Scoring:

1. Determine the number and types of vegetation layers present within the AA. Make a judgment as to whether additional layers were historically present using direct evidence such as stumps, root wads or historical photographs. Indirect evidence such as local knowledge and expert opinion can also be used in this determination.

2. Do not score vegetation layers that would not normally be present in the wetland type being assessed.

3. Estimate and record the current coverage of each vegetation layer at the top of the table.

4. Record the Reference Standard or expected percent coverage of each vegetation layer to create the sub-variable weighting factor. The condition of predominant vegetation layers has a greater influence on the variable score than do minor components.

5. Enter the percent cover values as decimals in the row of the stressor table labeled " Reference/expected Percent Cover of Layer". Note, percentages will often sum to more than 100% (1.0).

6. Determine the severity of stressors acting on each individual canopy layers, indicating their presence with checks in the appropriate boxes of the stressor table. The difference between the expected and observed stratum coverages is one measure of stratum alteration.

7. Determine the sub-variable score for each valid vegetation layer using the scoring guidelines on the second page of the scoring sheet. Enter each sub-variable score in the appropriate cell of the row labeled "Veg. Layer Sub-variable Score". If a stratum has been wholly removed score it as 0.5.

8. Multiply each layer's *Reference Percent Cover of Layer* score by its Veg. Layer Sub-variable scores and enter the products in the labled cells. These are the weighted sub-variable scores. Individually sum the *Reference Percent Cover of Layer* and *Weighted Sub-variables scores.*

9. Divide the sum of "Veg. Layer Sub-variable Scores" by the total coverage of all layers scored. This product is the Variable 8 score. Enter this number in the labeled box at the bottom of this page.

	Vegetation Layers				
Current % Coverage of Layer	5	0	90	0	
Stressor	**Tree**	**Shrub**	**Herb**	**Aquatic**	**Comments**
Noxious Weeds	X		X		Abundant noxious weeds, Russian olive, white top.
Exotic/Invasive spp.	X		X		Abundant exotics, pasture grasses.
Tree Harvest					
Brush Cutting/Shrub Removal					
Livestock Grazing	X	X	X		Cattle grazing
Excessive Herbivory					
Mowing/Haying	X	X	X		Mowing/haying activities have discouraged woody plants
Herbicide					
Loss of Zonation/Homogenization					
Dewatering			X		Changes to groundwater levels favor noxious/invasive spp
Over Saturation					
DIFFERENCE BETWEEN CURRENT COVERAGE AND REFERENCE/EXPECTED	-5	-50	10		Presence of Russian Olive trees unnatural.

Reference/Expected % Cover of Layer	10.00	+	50.00	+	80.00	+	0.00	=	140
	x		x		x		x		
Veg. Layer Sub-variable Score	0.6		0.5		0.6		0.7		÷
	=		=		=		=		
Weighted Sub-variable Score	6.00	+	25.00	+	48.00	+	0.00	=	79

See sub-variable scoring guidelines on following page

Variable 8 Score 0.56

Variable 8: Vegetation Structure and Complexity p. 2

Sub-variable 8 Scoring Guidelines:

Based on the list of stressors identified above, rate the severity of their cumulative effect on vegetation structure and complexity for each vegetation layer.

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stressors not present or with an intensity low enough as to not detectably affect the structure, diversity or composition of the vegetation layer.
<0.9 - 0.8	***B*** *Highly Functioning*	Stressors present at intensity levels sufficient to cause detectable, but minor, changes in layer composition. Stress related change should generally be less than 10% for any given attribute (e.g., 10% cover of invasive, 10% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as high as 33% for a given attribute if stressors are confined to patches comprising less than 10% of the wetland.
<0.8 - 0.7	***C*** *Functioning*	Stressors present with enough intensity to cause significant changes in the character of vegetation, including alteration of layer coverage, structural complexity and species composition. The vegetation layer retains its essential character though. AA's with a high proportion of non-native grasses will commonly fall in this class. Stress related change should generally be less than 33% for any given attribute (e.g., 33% cover of invasive, 33% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 66% for a given attribute if stressors are confined to patches comprising less than 25% of the wetland.
<0.7 - 0.6	***D*** *Functioning Impaired*	Stressor intensity severe enough to cause profound changes to the fundamental character of the vegetation layer. Stress-related change should generally be less than 66% for any given attribute (e.g., 66% cover of invasive, 66% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 80% of a given attribute if stressors are confined to patches comprising less than 50% of the wetland.
<0.6	***F*** *Non-functioning*	Vegetation layer has been completely removed or altered to the extent that is no longer comparable to the natural structure, diversity and composition.

FACWet Score Card

Scoring Procedure:

1. Transcribe variable scores from each variable data sheet to the corresponding cell in the variable score table.
2. In each Functional Capacity Index (FCI) equation, enter the corresponding variable scores in the equation cells. Do not enter values in the crossed cells lacking labels.
3. Add the variable scores to calculate the total functional points achieved for each function.
4. Divide the total functional points achieved by the functional points possible. The typical number of total points possible is provided, however, if a variable is added or subtracted to FCI equation the total possible points must be adjusted
5. Calculate the Composite FCI, by adding the FCI scores and dividing by the total number of functions scored (usually 7).
6. If scoring is done directly in the Excel spreadsheet, all values will be transferred and calculated automatically.

VARIABLE SCORE TABLE

Buffer & Landscape Context	**Variable 1:**	**Habitat Connectivity (Connect)**	0.50
	Variable 2:	**Contributing Area (CA)**	0.60
Hydrology	**Variable 3:**	**Water Source (Source)**	0.80
	Variable 4:	**Water Distribution (Dist)**	0.60
	Variable 5:	**Water Outflow (Outflow)**	0.60
Abiotic and Biotic Habitat	**Variable 6:**	**Geomorphology (Geom)**	0.55
	Variable 7:	**Chemical Environment (Chem)**	0.70
	Variable 8:	**Vegetation Structure and Complexity (Veg)**	0.56

Functional Capacity Indices

Function 1 -- Support of Characteristic Wildlife Habitat

$V1_{connect}$	+ $V2_{CA}$	+ (2 x $V8_{veg}$)				= Total Functional Points	÷	FCI
0.50	+ 0.60	+ 1.13	+	+	+	= 2.23	÷ 4	= 0.56

Function 2 -- Support of Characteristic Fish/aquatic Habitat

(3 x $V3_{source}$)	+ (2 x $V4_{dist}$)	+ (2 x $V5_{outflow}$)	+ $V6_{geom}$	+ $V7_{chem}$				
2.40	+ 1.20	+ 1.20	+ 0.55	+ 0.70	+	= 6.05	÷ 9	= 0.67

Function 3 -- Flood Attenuation

$V2_{CA}$	+ (2 x $V3_{source}$)	+ (2 x $V4_{dist}$)	+ (2 x $V5_{outflow}$)	+ $V6_{geom}$	+ $V8_{veg}$			
0.60	+ 1.60	+ 1.20	+ 1.20	+ 0.55	+ 0.56	= 5.71	÷ 9	= 0.63

Function 4 -- Short- and Long-term Water Storage

$V3_{source}$	+ (2 x $V4_{dist}$)	+ (2 x $V5_{outflow}$)	$V6_{geom}$					
0.80	+ 1.20	+ 1.20	+ 0.55	+	+	= 3.75	÷ 6	= 0.63

Function 5 -- Nutrient/Toxicant Removal

(2 x $V2_{CA}$)	+ (2 x $V4_{dist}$)	+ $V6_{geom}$	$V7_{chem}$					
1.20	+ 1.20	+ 0.55	+ 0.70	+	+	= 3.65	÷ 6	= 0.61

Function 6 -- Sediment Retention/Shoreline Stabilization

$V2_{CA}$	+ (2 x $V6_{geom}$)	+ (2 x $V8_{veg}$)						
0.60	+ 1.10	+ 1.13	+	+	+	= 2.83	÷ 5	= 0.57

Function 7 -- Production Export/Food Chain Support

$V1_{connect}$	+ (2 x $V5_{outflow}$)	+ $V6_{geom}$	+ $V7_{chem}$	+ (2 x $V8_{veg}$)				
0.50	+ 1.20	+ 0.55	+ 0.70	+ 1.13	+	= 4.08	÷ 7	= 0.58

Sum of Individual FCI Scores 4.25

Divide by the Number of Functions Scored ÷ 7

Composite FCI Score 0.61

ADMINISTRATIVE CHARACTERIZATION

General Information			
		Date of Evaluation:	12/13/2021
Site Name or ID:	Assessment Area 2	Project Name:	South Platte Mitigation Bank
404 or Other Permit Application #:	NWO-2020-02252-DEN	Applicant Name:	Stephen Decker, Rocky Mountain Mitigation
Evaluator Name(s):	Carla DeMasters, PWS	Evaluator's professional position and organization:	Senior Ecologist, CORVUS Environmental

Location Information:			
Site Coordinates (Decimal Degrees, e.g., 38.85, -104.96):	40.318659°N, -104.111162°W	Geographic Datum Used (NAD 83):	WGS 84
		Elevation	~4,400 ft
Location Information:	The site is in Morgan County, Colorado in the floodplain of the South Platte River and consists of a 140-acre parcel located adjacent to the South Platte River within Section 16, Township 4 North, Range 4 West. The site property is owned by the Colorado State Land Board.		
Associated stream/water body name	South Platte River	Stream Order:	6
USGS Quadrangle Map:	2019 USGS Orchard 7.5' topo quad, Morgan County, CO	Map Scale: (Circle one)	**1:24,000** 1:100,000 Other 1:
Sub basin Name (8 digit HUC):	Middle South Platte-Cherry Creek HUC 8 (10190003)	Wetland Ownership:	Colorado State Land Board

Project Information:			
This evaluation is being performed at: (Check applicable box)	[ ] Project Wetland [X] Mitigation Site	Purpose of Evaluation (check all applicable):	[ ] Potentially Impacted Wetlands [X] Mitigation; Pre-construction [ ] Mitigation; Post-construction [ ] Monitoring [ ] Other (Describe)
Intent of Project: (Check all applicable)	[ ] Restoration (Re-establishment)	[ ]	[ ] Enhancement
	[ ] Creation		

Total Size of Wetland Involved: (Record Area, Check and Describe Measurement Method Used)	5.5 ac.	[X]	Measured in GIS				
		[ ]	Estimated				
Assessment Area (AA) Size (Record Area, check appropriate box. Additional spaces are used to record acreage when more than one AA is included in a single assessment)	5.5 ac.	[X]	Measured	ac.	ac.	ac.	ac.
		[ ]	Estimated	ac.	ac.	ac.	ac.
Characteristics or Method used for AA boundary determination:	Assessment Area 2 is Mitigation Bank Zone 2, which includes wetland restoration (re-establishment) and enhancement. A total of 5.5 ac of existing wetlands are proposed for enhancement. In addition, 50.4 ac of historic wetlands are proposed for re-establishment/restoration.						

Notes:	
	The AOI includes Zones 1-3 (AA 1-3) and the buffer area within the South Platte Mitigation Property Boundary as well as a 25m buffer on this area. Per the FACWet Manual page 47, "...the AOI may also include a number of AAs with any degree of interconnectedness….in general, the AOI should be extended at least 25m outward from the predicted extent of direct and indirect impacts."

ECOLOGICAL DESCRIPTION 1

Special Concerns

Check all that apply

- [ ] Organic soils including Histosols or Histic Epipedons are present in the AA (i.e., AA includes core fen habitat).
- [ ] Project will directly impact organic soil portions of the AA including areas possessing either Histosol soils or histic epipedons.
- [ ] Organic soils are known to occur anywhere within the contiguous wetland of which the AA is part.
- [ ] The wetland is a habitat oasis in an otherwise dry or urbanized landscape?
- [ ] Federally threatened or endangered species are **KNOWN** to occur in the AA? List Below.
- [ ] Federally threatened or endangered species are **SUSPECTED** to occur in the AA?
- [X] Species of concern according to the Colorado Natural Heritage (CNHP) are known to occur in the AA?
- [X] The site is located within a potential conservation area or element occurrence buffer area as determined by CNHP?
- [ ] Other special concerns (please describe)

HYDROGEOMORPHIC SETTING

- [X] AA wetland maintains its fundamental natural hydrogeomorphic characteristics
- [ ] AA wetland has been subject to change in HGM classes as a result of anthropogenic modification
  If the above is checked, please describe the original wetland type if discernable using the table below.
- [ ] AA wetland was created from an upland setting.

Current Conditions

Describe the hydrogeomorphic setting of the wetland by circling all conditions that apply.

HGM Setting

Water source	Surface flow	**Groundwater**	Precipitation	Unknown		
Hydrodynamics	**Unidirectional**	Vertical	Bi-directional			
Wetland Gradient	**0 - 2%**	2-4%	4-10%	>10%		
# Surface Inlets	Over-bank	**0**	1	2	3	>3
# Surface Outlets		**0**	1	2	3	>3
Geomorphic Setting (Narrative Description. Include approx. stream order for riverine)	AA 2 is located on the former floodplain of the South Platte River and is bounded on the south by an escarpment. Historically, AA2 received overbank flows from the River. Currently, the water source is primarily alluvial groundwater. Only during extremely high flows does this area receive overbank flows. AA2 is within the 100 year floodplain.					
HGM class	**Riverine**	Slope	Depressional	Lacustrine		

Historical Conditions

Previous wetland typology

Water source	**Surface flow**	**Groundwater**	Precipitation	Unknown
Hydrodynamics	**Unidirectional**	Vertical		
Geomorphic Setting (Narrative Description)	Historically, AA2 likely received water from both frequent overbank flooding and the alluvial groundwater system from the South Platte River.			
Previous HGM Class	**Riverine**	Slope	Depressional	Lacustrine

Notes (include information on the AA's HGM subclass and regional subclass): *In compliance with the Endangered Species Act, a preliminary determination has been made that the described work will not adversely affect species designated as threatened or endangered or adversely affect critical habitat.* A Species of concern is known to occur in project area according to the Colorado Natural Heritage (CNHP) - Bald Eagle (*Haliaeetus leucocephalus*). A PCA - South Platte River CNHP PCA B4: Moderate Biodiversity Significance occurs within 1 mile of project. **See CNHP Codex report.**

ECOLOGICAL DESCRIPTION 2

Vegetation Habitat Description

US FWS habitat classification according as reported in Cowardin et al. (1979).

System	Subsystem	Class	Subclass	Water Regime	Other Modifiers	% AA
Palustrine (PFOA)	Lower Perennial	Forested	Rooted vascular	A	0	100

Lacustrine	Littoral; Limnoral	Rock Bot. (RB) Uncon Bottom(UB) Aquatic Bed(AB) Rocky Shore(RS) Uncon Shore(US) Emergent(EM) Shrub-scrub(SS) Forested (FO)	Floating vascular; Rooted vascular; Algal; Persistent; Non-Persistent; Broad-leaved deciduous; Needle-leaved evergreen; Cobble - gravel; Sand; Mud; Organic	**Examples** Temporarily flooded(A); Saturated(B); Seasonally flooded(C); Seas.-flood./sat.(E); Semi-Perm. flooded(F); Intermittently exposed(G); Artificially flooded(K); Sat./semiperm./Seas. (Y); Int. exposed/permenant(Z)	Hypersaline(7) ; Eusaline(8); Mixosaline(9); Fresh(0); Acid(a); Circumneutral(c); Alkaline/calcareous(i); Organic(g); Mineral(n); Beaver(b); Partially Drained/ditched(d); Farmed(f); Diked/impounded(h); Artificial Substrate(r); Spoil(s); Excavated(x)	
Palustrine	Palustrine					
Riverine	Lower perennial; Upper perennial; Intermittent					

Site Map

Scale: 1 sq. =

Draw a sketch map of the site including relevant portions of the wetland, AA boundary, structures, habitat classes, and other significant features.

See Figure 1

Variable 1: Habitat Connectivity

The Habitat Connectivity Variable is described by two sub-variables – Neighboring Wetland and Riparian Habitat Loss and Barriers to Migration and Dispersal. These sub-variables were treated as independent variables in FACWet Version 2.0. The merging of these variables makes their structure more consistent with that of other composite variables in FACWet. The new variable configuration also makes this landscape variable more accurately reflect the interactions amongst aquatic habitats in Colorado's agricultural and urbanized landscapes, which have a naturally low density of wetlands. The two Habitat Connectivity Sub-variables are scored in exactly the same manner as their FACWet 2.0 counterparts, as described below. The Habitat Connectivity Variable score is simply the arithmetic average of the two sub-variable scores which is entered on the second page of the Variable 1 data form. If there is little or no wetland or riparian habitat in the Habitat Connectivity Envelope (defined below), then Sub-variable 1.1 is not scored.

SV 1.1 - Neighboring Wetland and Riparian Habitat Loss
(Do not score if few or no wetlands naturally exist in the HCE)

This sub-variable is a measure of how isolated from other naturally-occurring wetlands or riparian habitat the AA has become as the result of habitat destruction. To score this sub-variable, estimate the percent of naturally-occurring wetland/riparian habitat that has been lost (by filling, draining, development, or whatever means) within the 500-meter-wide belt surrounding the AA. This zone is called the Habitat Connectivity Envelope (HCE). In most cases the evaluator must use best professional judgment to estimate the amount of natural wetland loss. Historical photographs, National Wetland Inventory (NWI) maps, hydric soil maps can be helpful in making these determinations. Floodplain maps are especially valuable in river-dominated regions, such as the Front Range urban corridor. Evaluation of landforms and habitat patterns in the context of perceivable land use change is used to steer estimates of the amount of wetland loss within the HCE.

Rules for Scoring:

1. On the aerial photo, create a 500 m perimeter around the AA.
2. The area within this perimeter is the **Habitat Connectivity Envelope (HCE)**.
3. Within the HCE, outline the current extent of naturally occurring wetland and riparian habitat. Do not include habitats such as excavated ponds or reservoir induced fringe wetlands.
4. Outline the historical extent of wetland and riparian habitats (i.e., existing natural wetlands plus those that have been destroyed).

- Use your knowledge of the history of the area and evident land use change to identify where habitat losses have occurred. Additional research can be utilized to increase the accuracy of this estimate including consideration of floodplain maps, historical aerial photographs, soil maps, etc.

5. Calculate the area of existing and historical wetlands. Divide the area of existing wetland by the total amount of existing and historical wetland and riparian habitat, and determine the variable score using the guidelines below. Enter sub-variable score at the bottom of p.2 of the Habitat Connectivity data form.

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Very little or no loss of wetlands in the HCEor negligible.
<0.9 - 0.8	***B*** *Highly Functioning*	More than 80% of historical wetland habitat area within the HCE is still present (less than 20% of habitat area lost).
<0.8 - 0.7	***C*** *Functioning*	80 to 60% of historical wetland habitat area within the HCE is still present (20% to 40% of habitat area lost).
<0.7 - 0.6	***D*** *Functioning Impaired*	Less than 60 to 25% of historical wetland habitat area within the HCE is still present (more than 40 to 75% of habitat area lost).
<0.6	***F*** ***Non-functioning***	**Less than 25% of the historical wetland habitat area within the HCE still in existence (more than 70% of habitat lost).**

Notes: Present wetlands in HCE ~58 ac. Historic wetlands ~361 ac. Because more than 70% of historical wetland habitat is lost, this variabel scored very low at a 0.3.

Variable 1: Habitat Connectivity p. 2

SV 1.2: Migration/Dispersal Barriers

This sub-variable is intended to rate the degree to which the AA has become isolated from existing neighboring wetland and riparian habitat by artificial barriers that inhibit migration or dispersal of organisms. On the aerial photograph, identify the man-made barriers within the HCE that intercede between the AA and surrounding wetlands and riparian areas, and identify them by type on the stressor list. Score this variable based on the barriers' impermeability to migration and dispersal and the amount of surrounding wetland/riparian habitat they affect.

Rules for Scoring:

1. On the aerial photo, outline **all** existing wetland and riparian habitat areas within the HCE. This includes naturally occurring habitats, as well as those purposefully created or induced by land use change.
2. Identify artificial barriers to dispersal and migration of organisms within the HCE that intercede between the AA and surrounding habitats. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.
3. Considering the composite effect of all of identified barriers to migration and dispersal (i.e., stressors), assign an overall variable score using the scoring guidelines.

Stressors = artificial barriers

✔	Stressors	Comments/description
	Major Highway	
	Secondary Highway	
	Tertiary Roadway	
	Railroad	
	Bike Path	
	Urban Development	
X	Agricultural Development	Berm on north side of S Platte River
	Artificial Water Body	
X	Fence	North-south running fencelines
X	Ditch or Aqueduct	Agricultural return flow ditch
X	Aquatic Organism Barriers	Alluvial fan from watershed development cut off wetlands

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	No appreciable barriers exist between the AA and other wetland and riparian habitats in the HCE; or there are no other wetland and riparian areas in the HCE.
<0.9 - 0.8	***B*** *Highly Functioning*	Barriers impeding migration/dispersal between the AA and up to 33% of surrounding wetland/riparian habitat highly permeable and easily passed by most organisms. Examples could include gravel roads, minor levees, ditches or barbed-wire fences. More significant barriers (see "functioning category below) could affect migration to up to 10% of surrounding wetland/riparian habitat.
<0.8 - 0.7	***C*** *Functioning*	Barriers to migration and dispersal retard the ability of many organisms/propagules to pass between the AA and up to 66% of wetland/riparian habitat. Passage of organisms and propagules through such barriers is still possible, but it may be constrained to certain times of day, be slow, dangerous or require additional travel. Busy two-lane roads, culverted areas, small to medium artificial water bodies or small earthen dams would commonly rate a score in this range. More significant barriers (see "functioning impaired" category below) could affect migration to up to 10% of surrounding wetland/riparian
<0.7 - 0.6	***D*** *Functioning Impaired*	Barriers to migration and dispersal preclude the passage of some types of organisms/propagules between the AA and up to 66% of surrounding wetland/riparian habitat. Travel of those animals which can potential negotiate the barrier are strongly restricted and may include a high chance of mortality. Up to 33% of surrounding wetland/riparian habitat could be functionally isolated from the AA.
<0.6	***F*** *Non-functioning*	AA is essentially isolated from surrounding wetland/riparian habitat by impermeable migration and dispersal barriers. An interstate highway or concrete-lined water conveyance canal are examples of barriers which would generally create functional isolation between the AA and wetland/riparian habitat in the HCE.

SV 1.1 Score	0.30
SV 1.2 Score	0.70

Add SV 1.1 and 1.2 scores and divide by two to calculate variable score

Variable 1 Score 0.50

Variable 2: Contributing Area

The AA's Contributing Area is defined as the 250-meter-wide zone surrounding the perimeter of the AA. This variable is a measure of the capacity of that area to support characteristic functions of high quality wetland habitat. Depending on its condition, the contributing area can help maintain wetland condition or it can degrade it. Contributing Area condition is evaluated by considering the AA's Buffer and its Surrounding Land Use. Buffers are strips or patches of more-or-less natural upland and/or wetland habitat more than 5m wide. Buffers are contiguous with the AA boundary and they intercede between it and more intensively used lands. The AA Buffer is characterized with three sub-variables: Buffer Condition, Buffer Extent, and Average Buffer Width. The Surrounding Land Use Sub-variable considers changes within the Contributing Area that limit its capacity to support characteristic wetland functions. Many of the acute, on-site effects of land use change in the Contributing Area are specifically captured by Variables 3 - 8.

Rules for Scoring:

1. Delimit the Contributing Area on an aerial photograph as the zone within 250 meters of the outer boundary of the AA.
2. Evaluate and then rate the Buffer Condition sub-variable using the scoring guidelines. Record the score in the cell provided on the datasheet.
3. Indicate on the aerial photograph zones surrounding the AA which have ≥5m of buffer vegetation and those which do not.
4. Calculate the percentage of the AA which has a Buffer and record the value where indicated on the data sheet.
5. Rate the *Buffer Extent* Sub-variable using the scoring guidelines.
6.Determine the average Buffer width by drawing a line perpendicularly from the AA boundary to the outer extent of the buffer habitat. Measure line length and record its value on the data sheet. Repeat this process until a total of 8 lines have been sampled.
7. Calculate the average buffer width and record value on the data form. Then determine the sub-variable score using the scoring guidelines.
8.Score the Surrounding Land Use sub-variable by recording land use changes on the stressor list that affect the capacity of the landscape to support characteristic wetland functioning.
9. Enter the **lowest** of the three Buffer sub-variable scores along with the Surrounding Land Use Sub-variable score in the Contributing Area Variable scoring formula at the bottom of p. 2 of the data form. The Contributing Area Variable is the

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SV 2.1 - Buffer Condition

0.6 ***SV 2.1 - Buffer Condition Score***

Subvariable Score	Condition Grade	Buffer Condition Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Buffer vegetation is predominately native vegetation, human-caused disturbance of the substrate is not evident, and human visitation is minimal. Common examples: Wilderness areas, undeveloped forest and range lands.
<0.9 - 0.8	*Highly Functioning*	Buffer vegetation may have a mixed native-nonnative composition, but characteristic structure and complexity remain. Soils are mostly undisturbed or have recovered from past human disturbance. Little or only low-impact human visitation. Buffers with higher levels of substrate disturbance may be included here if the buffer is still able to maintain predominately native vegetation. Common examples: Dispursed camping areas in national forests, common in wildland parks (e.g. State Parks) and open spaces.
<0.8 - 0.7	*Functioning*	Buffer vegetation is substantially composed of non-native species. Vegetation structure may be somewhat altered, such as by brush clearing. Moderate substrate distrbance and compaction occurs, and small pockets of greater disturbance may exist. Common examples: City natural areas, mountain hay meadows.
<0.7 - 0.6	*Functioning Impaired*	Buffer vegetation is substantially composed of non-native species and vegetation structure has been strongly altered by the complete removal of one or more strata. Soil disturbance and the intensity of human visitation are generally high. Common examples: Open lands around resource extraction sites (e.g., gravel mines), clear cut logging areas, ski slopes.
<0.6	*Non-functioning*	Buffer is nearly or entirely absent.

SV 2.2 - Buffer Extent

100 Percent of AA with Buffer

0.90 ***SV 2.2 - Buffer Extent***

Subvariable Score	Condition Class	% Buffer Scoring Guidelines
1.0 - 0.9	*Reference Standard*	90 - 100% of AA with Buffer
<0.9 - 0.8	*Highly Functioning*	70-90% of AA with Buffer
<0.8 - 0.7	*Functioning*	51-69% of AA with Buffer
<0.7 - 0.6	*Functioning Impaired*	26-50% of AA with Buffer
<0.6	*Non-functioning*	0-25% of AA with Buffer

Variable 2: Contributing Area (p. 2)

SV 2.3 - Average Buffer Width

Record measured buffer widths in the spaces below and average.

Buffer Width (m)	82	250	221	250	250	250	250	250	225
Line #	1	2	3	4	5	6	7	8	**Avg. Buffer Width (m)**

0.9

SV 2.3 - Average Buffer Width Score

Subvariable Score	Condition Grade	Buffer Width Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Average Buffer width is 190-250m
<0.9 - 0.8	*Highly Functioning*	Average Buffer width is 101-189m
<0.8 - 0.7	*Functioning*	Average Buffer width is 31-100m
<0.7 - 0.6	*Functioning Impaired*	Average Buffer width is 6-30m
<0.6	*Non-functioning*	Average Buffer width is 0-5m

SV 2.4 - Surrounding Land Use

0.7

SV 2.4 - Surrounding Land Use Score

Catalog and characterize land use changes in the surrounding landscape and score.

Stressors = Land Use Changes

✔	Stressors	Comments/description
	Industrial/commercial	
	Urban	
	Residential	
	Rural	
	Dryland Farming	
	Intensive Agriculture	
	Orchards or Nurseries	
X	Livestock Grazing	Cattle grazing
	Transportation Corridor	
	Urban Parklands	
	Dams/impoundments	
	Artificial Water body	
	Physical Resource Extraction	
	Biological Resource Extraction	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	No appreciable land use change has been imposed Surrounding Landscape.
<0.9 - 0.8	***B*** *Highly Functioning*	Some land use change has occurred in the Surrounding Landscape, but changes have minimal effect on the the landscape's capacity to support characteristic aquatic functioning, either because land use is not intensive, for example haying, light grazing, or low intensity silviculture, or more substantial changes occur in approximately less than 10% of the area.
<0.8 - 0.7	***C*** *Functioning*	Surrounding Landscape has been subjected to a marked shift in land use, however, the land retains much of its capacity to support natural wetland function and it is not an overt source of pollutants or sediment. Moderate-intensity land uses such as dry-land farming, urban "green" corridors, or moderate cattle grazing would commonly be placed within this scoring range.
<0.7 - 0.6	***D*** *Functioning Impaired*	Land use changes within the Surrounding Landscape has been substantial including the a moderate to high coverage (up to 50%) of impermeable surfaces, bare soil, or other artificial surfaces; considerable in-flow urban runoff or fertilizer-rich waters common. Supportive capacity of the land has been greatly diminished but not totally extinguished. Intensively logged areas, low-density urban developments, some urban parklands and many cropping situations would commonly rate a score within this range.
<0.6	***F*** *Non-functioning*	The Surrounding Landscape is essentially comletely developed or is otherwise a cause of severe ecological stress on wetland habitats. Commercial developments or highly urban landscapes generally rate a score of less than 0.6.

	Buffer Score (Lowest score)		**Surrounding Land Use**				
(	0.6	+	0.7	) ÷	2	=	**Variable 2 Score** 0.65

Variable 3: Water Source

This variable is concerned with ***up-gradient*** *hydrologic connectivity. It is a measure of impacts to the AA's water source, including the quantity and timing of water delivery, and the ability of source water to perform work such as sediment transport, erosion, soil pore flushing, etc. To score this variable, identify stressors that alter the source of water to the AA, and record their presence on the stressor list. Stressors can impact water source by depletion, augmentation, or alteration of inflow timing or hydrodynamics. This variable is designed to assess water quantity, power and timing, not water quality. Water quality will be evaluated in Variable 7.*

Scoring rules:

1. Use the stressor list and knowledge of the watershed to catalog type-specific impairments of the AA's water source. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.

2. Considering the composite effect of stressors on the water source, rate the condition of this variable with the aid of the scoring guidelines.

✔	Stressors	Comments/description
	Ditches or Drains (tile, etc.)	
X	Dams	Empire Reservoir, Riverside Reservoir
X	Diversions	Bijou Canal
	Groundwater pumping	
	Draw-downs	
	Culverts or Constrictions	
X	Point Source (urban, ind., ag.)	Kersey feed lot
	Non-point Source	
	Increased Drainage Area	
	Storm Drain/Urban Runoff	
	Impermeable Surface Runoff	
	Irrigation Return Flows	
X	Mining/Natural Gas Extraction	gravel mining, natural gas exploration
	Transbasin Diversion	
	Actively Managed Hydrology	

Variable Score	Condition Grade	Depletion	Augmentation
1.0 - 0.9	***A*** *Reference Standard*	Unnatural drawdown events minor, rare or non-existent, very slight uniform depletion, or trivial alteration of hydrodynamics.	Unnatural high-water events minor, rare or non-existent, slight uniform increase in amount of inflow, or trivial alteration of hydrodynamics.
<0.9 - 0.8	***B*** *Highly Functioning*	Unnatural drawdown events occasional, short duration and/or mild; or uniform depletion up to 20%; or mild to moderate reduction of peak flows or capacity of water to perform work.	Occasional unnatural high-water events, short in duration and/or mild in intensity; or uniform augmentation up to 20%; or mild to moderate increase of peak flows or capacity of water to perform work.
<0.8 - 0.7	***C*** *Functioning*	Unnatural drawdown events common and of mild to moderate intensity and/or duration; or uniform depletion up to 50%; or moderate to substantial reduction of peak flows or capacity of water to perform work.	Common occurrence of unnatural high-water events, of a mild to moderate intensity and/or duration; or uniform augmentation up to 50%; or moderate to substantial increase of peak flows or capacity of water to perform work.
<0.7 - 0.6	***D*** *Functioning Impaired*	Unnatural drawdown events occur frequently with a moderate to high intensity and/or duration; or uniform depletion up to 75%; or substantial reduction of peak flows or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or lower.**	Common occurrence of unnatural high-water events, some of which may be severe in nature or exist for a substantial portion of the growing season; or uniform augmentation more than 50% or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or**
<0.6	***F*** *Non-functioning*	Water source diminished enough to threaten or extinguish wetland hydrology in the AA.	Frequency, duration or magnitude of unnaturally high-water great enough to change the fundamental characteristics of the wetland.

Variable 3 Score 0.8

Variable 4: Water Distribution

This variable is concerned with hydrologic connectivity ***within*** *the AA. It is a measure of alteration to the spatial distribution of surface and groundwater within the AA. These alterations are manifested as local changes to the hydrograph and generally result from geomorphic modifications within the AA. To score this variable, identify stressors within the AA that alter flow patterns and impact the hydrograph of the AA, including localized increases or decreases to the depth or duration of the water table or surface water.*

Because the wetland's ability to distribute water in a characteristic fashion is fundamentally dependent on the condition of its water source, ***in most cases the Water Source variable score will define the upper limit Water Distribution score****. For example, if the Water Source variable is rated at 0.85, the Water Distribution score will usually have the potential to attain a maximum score of 0.85. Additional stressors within or outside the lower end of the AA effecting water distribution (e.g., ditches and levees) will reduce the score from the maximum value.*

Scoring rules:

1. Identify impacts to the natural distribution of water throughout the AA and catalog them in the stressor table.

2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. In most cases, the Water Source variable score will set the upper limit for the Water Distribution score.

✓	Stressors	Comments/description
	Alteration of Water Source	
	Ditches	
	Ponding/Impoundment	
	Culverts	
	Road Grades	
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Enlarged Channel	
	Artificial Banks/Shoreline	
	Weirs	
	Dikes/Levees/Berms	
	Diversions	
X	Sediment/Fill Accumulation	Flooding flows such as 2013 floods have deposited sediments over wetlands.

Variable Score	Condition Grade	Non-riverine	Riverine
1.0 - 0.9	***A*** *Reference Standard*	Little or no alteration has been made to the way in which water is distributed throughout the wetland. AA maintains a natural hydrologic regime.	Natural active floodplain areas flood on a normal recurrence interval. No evidence of alteration of flooding and subirrigation duration and intensity.
<0.9 - 0.8	***B*** *Highly Functioning*	Less than 10% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in less than a 2 in. (5 cm) change in mean growing season water table elevation.	Channel-adjacent areas have occasional unnatural periods of drying or flooding; or uniform shift in the hydrograph less than typical root depth.
<0.8 - 0.7	***C*** *Functioning*	Between 10 and 33% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 4 in. (5 cm) or less change in mean growing season water table elevation.	In channel-adjacent area, periods of drying or flooding are common; or uniform shift in the hydrograph near root depth.
<0.7 - 0.6	***D*** *Functioning Impaired*	33 to 66% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 6 in. (15 cm) or less change in mean growing season water table elevation. Water table behavior must still meet jurisdictional criteria to merit this rating.	Adjacent to the channel, unnatural periods of drying or flooding are the norm; or uniform shift in the hydrograph greater than root depth.
<0.6	***F*** *Non-functioning*	More than 66% of the AA is affected by hydrologic alteration which changes the fundamental functioning of the wetland system, generally exhibited as a conversion to upland or deep water habitat.	Historical active floodplain areas are almost never wetted from overbank flooding, and/or groundwater infiltration is effectively cut off.

Variable 4 Score 0.6

Variable 5: Water Outflow

This variable is concerned with ***down-gradient*** *hydrologic connectivity and the flow of water and water-borne materials and energy out of the AA. In particular it illustrates the degree to which the AA can support the functioning of down-gradient habitats. It is a measure of impacts that affect the hydrologic outflow of water including the passage of water through its normal low- and high-flow surface outlets, infiltration/groundwater recharge, and the energetic characteristics of water delivered to dependent habitats. In some cases, alteration of evapotranspiration rates may be significant enough of a factor to consider in scoring. Score this variable by identifying stressors that impact the means by which water is exported from the AA. To evaluate this variable focus on how water, energy and associated materials are exported out of the AA and their ability it support down-gradient habitats in a manner consistent with their HGM (regional) subclass.*

Because the wetland's ability to export water and materials in a characteristic fashion is to a very large degree dependent the condition of its water source, as with the Water Distribution variable, ***in most cases the Water Source variable score will define the upper limit Water Outflow score****.*

Scoring rules:

1. Identify impacts to the natural outflow of water from the AA and catalog them in the stressor table.

2.Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. Take in to account the cumulative effect of stressors on the wetland's ability to export water and water-borne materials. In most cases the Water Source variable will set the upper limit for the Water Outflow score.

✔	Stressors	Comments/description
	Alteration of Water Source	
X	Ditches	Agricultural return flow ditch.
	Dikes/Levees	
	Road Grades	
	Culverts	
	Diversions	
X	Constrictions	Alluvial fan from watershed development cut off wetlands
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Artificial Stream Banks	
	Weirs	
	Confined Bridge Openings	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stressors have little to no effect on the magnitude, timing or hydrodynamics of the AA water outflow regime.
<0.9 - 0.8	***B*** *Highly Functioning*	High- or low-water outflows are mildly to moderately affected, but at intermediate ("normal") levels flow continues essentially unaltered in quantity or character.
<0.8 - 0.7	***C*** *Functioning*	High- or low-water outflows are moderately affected, mild alteration of intermediate level outflow occurs; or hydrodynamics moderately affected.
<0.7 - 0.6	***D*** *Functioning Impaired*	Outflow at all stages is moderately to highly impaired resulting in persistent flooding of portions of the AA or unnatural drainage; or outflow hydrodynamics severely disrupted.
<0.6	***F*** *Non-functioning*	The natural outflow regime is profoundly impaired. Down-gradient hydrologic connection severed or nearly so. Alterations may cause widespread unnatural persistent flooding or dewatering of the wetland system.

Variable 5 Score 0.6

Variable 6: Geomorphology

This variable is a measure of the degree to which the geomorphic setting has been altered within the AA. Changes to the surface configuration and natural topography constitute stressors. Such stressors may be observed in the form of fill, excavation, dikes, sedimentation due to absence of flushing floods, etc. In riverine systems, geomorphic changes to the stream channel should be considered if the channel is within the AA (i.e, small is size). Alterations may involve the bed and bank (substrate embeddedness or morphological changes), stream instability, and stream channel reconfiguration. Geomorphic changes are usually ultimately manifested as changes to wetland surface hydrology and water relations with vegetation. Geomorphic alterations can also directly affect soil properties, such as near-surface texture, and the wetland chemical environment such as the redox state or nutrient composition in the rooting zone. In rating this variable, ***do not*** *include these resultant effects of geomorphic change; rather focus on the physical impacts* ***within the footprint*** *of the alteration* ***within the AA*** *– For example, the width and depth of a ditch or the size of a levee* ***within the AA*** *would describe the extent of the stressors. The secondary effects of geomorphic change are addressed by other variables. All alterations to geomorphology should be evaluated including small-scale impacts such as pugging, hoof sheer, and sedimentation which*

Scoring Rules:

1. Identify impacts to geomorphological setting and topography within the AA and record them on the stressor checklist.
2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines.

✓		Stressors	Comments
	General	Dredging/Excavation/Mining	
		Fill, including dikes, road grades, etc	
		Grading	
		Compaction	
		Plowing/Disking	
X		Excessive Sedimentation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
		Dumping	
		Hoof Shear/Pugging	
		Aggregate or Mineral Mining	
X		Sand Accumulation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
	Channels Only	Channel Instability/Over Widening	
		Excessive Bank Erosion	
		Channelization	
		Reconfigured Stream Channels	
		Artificial Banks/Shoreline	
		Beaver Dam Removal	
		Substrate Embeddedness	
		Lack or Excess of Woody Debris	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Topography essentially unaltered from the natural state, or alterations appear to have a minimal effect on wetland functioning and condition. Patch or microtopographic complexity may be slightly altered, but native plant communities are still supported.
<0.9 - 0.8	***B*** *Highly Functioning*	Alterations to topography result in small but detectable changes to habitat conditions in some or all of the AA; or more severe impacts exist but affect less than 10% of the AA.
<0.8 - 0.7	***C*** *Functioning*	Changes to AA topography may be pervasive but generally mild to moderate in severity. May include patches of more significant habitat alteration; or more severe alterations affect up to 20 % of the AA.
<0.7 - 0.6	***D*** *Functioning Impaired*	At least one important surface type or landform has been eliminated or created; microtopography has been strongly impacted throughout most or all of the AA; or more severe alterations affect up to 50% of the AA. Evidence that widespread diminishment or alteration of native plant community exist due to physical habitat alterations. Most incidentally created wetland habitat such as that created by roadside ditches and the like would score in this range or lower.
<0.6	***F*** *Non-functioning*	Pervasive geomorphic alterations have caused a fundamental change in site character and functioning, commonly resulting in a conversion to upland or deepwater habitat.

Variable 6 Score 0.45

Variable 7: Water and Soil Chemical Environment

This variable concerns the chemical environment of the soil and water media within the AA, including pollutants, water and soil characteristics. The origin of pollutants may be within or outside the AA. Score this variable by listing indicators of chemical stress in the AA. Consider point source and non-point sources of pollution, as well as mechanical or hydrologic changes that alter the chemical environment. Because water quality frequently cannot be inferred directly, the presence of stressors is often identified by the presence of indirect indicators. Five sub-variables are used to describe the Water and Soil Chemical Environment: Nutrient Enrichment/Eutrophication/Oxygen; Sedimentation/Turbidity; Toxic Contamination/pH; Temperature; and Soil Chemistry and Redox Potential. Utilization of web-based data mining tools is highly recommended to help inform and support variable scores.

Scoring rules:

1. Stressors are grouped into sub-variables which have a similar signature or set of causes.
2. Use the indicator list to identify each stressor impacting the chemical environment of the AA.
3. For each sub-variable, determine its score using the scoring guideline table provided on the second page of the scoring sheet. Scoring sub-variables is carried out in exactly the same way as normal variable scoring.
 -If the AA is part of a water body that is recognized as impaired or recommended for TMDL development for one of the factors, then score that sub-variable 0.65 or lower.
4. Transcribe sub-variable scores to the following variable scoring page and compute the sum.
5. The lowest sub-variable score sets the letter grade range. The composite of sub-variables influences the score within that range.

Sub-variable	Stressor Indicator	✔	Comments	Sub-variable Score
SV 7.1 Nutrient Enrichment/ Eutrophication/ Oxygen (D.O.)	Livestock	X	cattle grazing	0.70
	Agricultural Runoff	X	Increased salinity from irrigation	
	Septic/Sewage			
	Excessive Algae or Aquatic Veg.			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.2 Sedimentation/ Turbidity	Excessive Erosion			0.70
	Excessive Deposition	X	e.g. 2013 flood	
	Fine Sediment Plumes			
	Agricultural Runoff	X	sedimentation	
	Excessive Turbidity			
	Nearby Construction Site			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.3 Toxic contamination/ pH	Recent Chemical Spills			0.70
	Nearby Industrial Sites			
	Road Drainage/Runoff			
	Livestock	X	cattle grazing	
	Agricultural Runoff	X	Increased salinity from irrigation	
	Storm Water Runoff			
	Fish/Wildlife Impacts			
	Vegetation Impacts			
	Cumulative Watershed NPS			
	Acid Mine Drainage			
	Point Source Discharge			
	CDPHE Impairment/TMDL List			
	Metal staining on rocks and veg.			
SV 7.4 Temperature	Excessive Temperature Regime			0.70
	Lack of Shading			
	Reservoir/Power Plant Discharge			
	Industrial Discharge			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.5 Soil chemistry/ Redox potential	Unnatural Saturation/Desaturation			0.70
	Mechanical Soil Disturbance			
	Dumping/introduced Soil			
	CDPHE Impairment/TMDL List			

Variable 7: Water and Soil Chemical Environment p.2

Sub-variable Scoring Guidelines

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stress indicators not present or trivial.
<0.9 - 0.8	***B*** *Highly Functioning*	Stress indicators scarcely present and mild, or otherwise not occurring in more than 10% of the AA.
<0.8 - 0.7	***C*** *Functioning*	Stress indicators present at mild to moderate levels, or otherwise not occurring in more than 33% of the AA.
<0.7 - 0.6	***D*** *Functioning Impaired*	Stress indicators present at moderate to high levels, or otherwise not occurring in more than 66% of the AA
<0.6	***F*** *Non-functioning*	Stress indicators strongly evident throughout the AA at levels which apparently alter the fundamental chemical environment of the wetland system

Input each sub-variable score from p. 1 of the V7 data form and calculate the sum.

Nutrient enrichment/ Eutrophication/ Oxygen (D.O.)		Sedimentation/ Turbidity		Toxic contamination/ pH		Temperature		Soil chemistry/ Redox potential		Sum of Sub-variable Scores
0.70	+	0.70	+	0.70	+	0.70	+	0.70	=	3.50

Use the table to score the Chemical Environment Variable circling the applicable scoring rules.

Variable Score	Condition Grade	Scoring Rules		
		Single Factor		**Composite Score**
1.0 - 0.9	***A*** *Reference Standard*	No single factor scores < 0.9		The factor scores sum > 4.5
<0.9 - 0.8	***B*** *Highly Functioning*	Any single factor scores ≥ 0.8 but < 0.9		The factor scores sum >4.0 but ≤4.5
<0.8 - 0.7	***C*** *Functioning*	Any single factor scores ≥ 7.0 but < 0.8		The factor scores sum >3.5 but ≤ 4.0
<0.7 - 0.6	***D*** *Functioning Impaired*	Any single factor scores ≥ 0.6 but <0.7	X	The factor scores sum >3.0 but ≤3.5
< 0.6	***F*** *Non-functioning*	Any single factor scores < 0.6		The factor scores sum < 3.0

Variable 7 Score 0.7

Variable 8: Vegetation Structure and Complexity

This variable is a measure of the condition of the wetland's vegetation relative to its native state. It particularly focuses on the wetland's ability to perform higher-order functions such as support of wildlife populations, and influence primary functions such as flood-flow attenuation, channel stabilization and sediment retention. Score this variable by listing stressors that have affected the structure, diversity, composition and cover of each vegetation stratum that would normally be present in the HGM (regional) subclass being assessed. For this variable, stressor severity is a measure of how much each vegetation stratum differs functionally from its natural condition or from the natural range of variability exhibited the HGM subclass or regional subclass. This variable has four sub-variables, each corresponding to a stratum of vegetation: Tree Canopy; Shrub Layer; Herbaceous Layer; and Aquatics.

Rules for Scoring:

1. Determine the number and types of vegetation layers present within the AA. Make a judgment as to whether additional layers were historically present using direct evidence such as stumps, root wads or historical photographs. Indirect evidence such as local knowledge and expert opinion can also be used in this determination.

2. Do not score vegetation layers that would not normally be present in the wetland type being assessed.

3. Estimate and record the current coverage of each vegetation layer at the top of the table.

4. Record the Reference Standard or expected percent coverage of each vegetation layer to create the sub-variable weighting factor. The condition of predominant vegetation layers has a greater influence on the variable score than do minor components.

5. Enter the percent cover values as decimals in the row of the stressor table labeled " Reference/expected Percent Cover of Layer". Note, percentages will often sum to more than 100% (1.0).

6. Determine the severity of stressors acting on each individual canopy layers, indicating their presence with checks in the appropriate boxes of the stressor table. The difference between the expected and observed stratum coverages is one measure of stratum alteration.

7. Determine the sub-variable score for each valid vegetation layer using the scoring guidelines on the second page of the scoring sheet. Enter each sub-variable score in the appropriate cell of the row labeled "Veg. Layer Sub-variable Score". If a stratum has been wholly removed score it as 0.5.

8. Multiply each layer's *Reference Percent Cover of Layer* score by its Veg. Layer Sub-variable scores and enter the products in the labled cells. These are the weighted sub-variable scores. Individually sum the *Reference Percent Cover of Layer* and *Weighted Sub-variables scores.*

9. Divide the sum of "Veg. Layer Sub-variable Scores" by the total coverage of all layers scored. This product is the Variable 8 score. Enter this number in the labeled box at the bottom of this page.

	Vegetation Layers				
Current % Coverage of Layer	75	10	50	0	
Stressor	**Tree**	**Shrub**	**Herb**	**Aquatic**	**Comments**
Noxious Weeds	X	X	X		Abundant noxious weeds, Russian olive, white top.
Exotic/Invasive spp.	X	X	X		Abundant exotics, pasture grasses.
Tree Harvest					
Brush Cutting/Shrub Removal					
Livestock Grazing	X	X	X		Cattle grazing
Excessive Herbivory					
Mowing/Haying					
Herbicide					
Loss of Zonation/Homogenization					
Dewatering	X	X	X		Changes to groundwater levels favor noxious/invasive spp
Over Saturation					
DIFFERENCE BETWEEN CURRENT COVERAGE AND REFERENCE/EXPECTED	-25	-65	0		No cottonwood regeneration, few willows, high invasive and noxious species like Russian Olive.

Reference/Expected % Cover of Layer	50.00	+	75.00	+	50.00	+	0.00	=	175
	x		x		x		x		
Veg. Layer Sub-variable Score	0.7		0.5		0.6		0.7		÷
	=		=		=		=		
Weighted Sub-variable Score	35.00	+	37.50	+	30.00	+	0.00	=	102.5

See sub-variable scoring guidelines on following page

Variable 8 Score 0.59

Variable 8: Vegetation Structure and Complexity p. 2

Sub-variable 8 Scoring Guidelines:

Based on the list of stressors identified above, rate the severity of their cumulative effect on vegetation structure and complexity for each vegetation layer.

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stressors not present or with an intensity low enough as to not detectably affect the structure, diversity or composition of the vegetation layer.
<0.9 - 0.8	***B*** *Highly Functioning*	Stressors present at intensity levels sufficient to cause detectable, but minor, changes in layer composition. Stress related change should generally be less than 10% for any given attribute (e.g., 10% cover of invasive, 10% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as high as 33% for a given attribute if stressors are confined to patches comprising less than 10% of the wetland.
<0.8 - 0.7	***C*** *Functioning*	Stressors present with enough intensity to cause significant changes in the character of vegetation, including alteration of layer coverage, structural complexity and species composition. The vegetation layer retains its essential character though. AA's with a high proportion of non-native grasses will commonly fall in this class. Stress related change should generally be less than 33% for any given attribute (e.g., 33% cover of invasive, 33% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 66% for a given attribute if stressors are confined to patches comprising less than 25% of the wetland.
<0.7 - 0.6	***D*** *Functioning Impaired*	Stressor intensity severe enough to cause profound changes to the fundamental character of the vegetation layer. Stress-related change should generally be less than 66% for any given attribute (e.g., 66% cover of invasive, 66% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 80% of a given attribute if stressors are confined to patches comprising less than 50% of the wetland.
<0.6	***F*** *Non-functioning*	Vegetation layer has been completely removed or altered to the extent that is no longer comparable to the natural structure, diversity and composition.

FACWet Score Card

Scoring Procedure:

1. Transcribe variable scores from each variable data sheet to the corresponding cell in the variable score table.
2. In each Functional Capacity Index (FCI) equation, enter the corresponding variable scores in the equation cells. Do not enter values in the crossed cells lacking labels.
3. Add the variable scores to calculate the total functional points achieved for each function.
4. Divide the total functional points achieved by the functional points possible. The typical number of total points possible is provided, however, if a variable is added or subtracted to FCI equation the total possible points must be adjusted
5. Calculate the Composite FCI, by adding the FCI scores and dividing by the total number of functions scored (usually 7).
6. If scoring is done directly in the Excel spreadsheet, all values will be transferred and calculated automatically.

VARIABLE SCORE TABLE

Buffer & Landscape Context	**Variable 1:**	**Habitat Connectivity (Connect)**	0.50
	Variable 2:	**Contributing Area (CA)**	0.65
Hydrology	**Variable 3:**	**Water Source (Source)**	0.80
	Variable 4:	**Water Distribution (Dist)**	0.60
	Variable 5:	**Water Outflow (Outflow)**	0.60
Abiotic and Biotic Habitat	**Variable 6:**	**Geomorphology (Geom)**	0.45
	Variable 7:	**Chemical Environment (Chem)**	0.70
	Variable 8:	**Vegetation Structure and Complexity (Veg)**	0.59

Functional Capacity Indices

Function 1 -- Support of Characteristic Wildlife Habitat

$V1_{connect}$	+	$V2_{CA}$	+	$(2 \times V8_{veg})$	+		+		+		=	Total Functional Points	÷ 4	=	FCI
0.50	+	0.65	+	1.17	+		+		+		=	2.32	÷ 4	=	0.58

Function 2 -- Support of Characteristic Fish/aquatic Habitat

$(3 \times V3_{source})$	+	$(2 \times V4_{dist})$	+	$(2 \times V5_{outflow})$	+	$V6_{geom}$	+	$V7_{chem}$	+		=		÷ 9	=	
2.40	+	1.20	+	1.20	+	0.45	+	0.70	+		=	5.95	÷ 9	=	0.66

Function 3 -- Flood Attenuation

$V2_{CA}$	+	$(2 \times V3_{source})$	+	$(2 \times V4_{dist})$	+	$(2 \times V5_{outflow})$	+	$V6_{geom}$	+	$V8_{veg}$	=		÷ 9	=	
0.65	+	1.60	+	1.20	+	1.20	+	0.45	+	0.59	=	5.69	÷ 9	=	0.63

Function 4 -- Short- and Long-term Water Storage

$V3_{source}$	+	$(2 \times V4_{dist})$	+	$(2 \times V5_{outflow})$	+	$V6_{geom}$	+		+		=		÷ 6	=	
0.80	+	1.20	+	1.20	+	0.45	+		+		=	3.65	÷ 6	=	0.61

Function 5 -- Nutrient/Toxicant Removal

$(2 \times V2_{CA})$	+	$(2 \times V4_{dist})$	+	$V6_{geom}$	+	$V7_{chem}$	+		+		=		÷ 6	=	
1.30	+	1.20	+	0.45	+	0.70	+		+		=	3.65	÷ 6	=	0.61

Function 6 -- Sediment Retention/Shoreline Stabilization

$V2_{CA}$	+	$(2 \times V6_{geom})$	+	$(2 \times V8_{veg})$	+		+		+		=		÷ 5	=	
0.65	+	0.90	+	1.17	+		+		+		=	2.72	÷ 5	=	0.54

Function 7 -- Production Export/Food Chain Support

$V1_{connect}$	+	$(2 \times V5_{outflow})$	+	$V6_{geom}$	+	$V7_{chem}$	+	$(2 \times V8_{veg})$	+		=		÷ 7	=	
0.50	+	1.20	+	0.45	+	0.70	+	1.17	+		=	4.02	÷ 7	=	0.57

Sum of Individual FCI Scores 4.21

Divide by the Number of Functions Scored ÷ 7

Composite FCI Score 0.60

ADMINISTRATIVE CHARACTERIZATION

General Information			
		Date of Evaluation:	12/13/2021
Site Name or ID:	Assessment Area 3	Project Name:	South Platte Mitigation Bank
404 or Other Permit Application #:	NWO-2020-02252-DEN	Applicant Name:	Stephen Decker, Rocky Mountain Mitigation
Evaluator Name(s):	Carla DeMasters, PWS	Evaluator's professional position and organization:	Senior Ecologist, CORVUS Environmental

Location Information:			
Site Coordinates (Decimal Degrees, e.g., 38.85, -104.96):	40.318659°N, -104.111162°W	Geographic Datum Used (NAD 83):	WGS 84
		Elevation	~4,400 ft
Location Information:	The site is in Morgan County, Colorado in the floodplain of the South Platte River and consists of a 140-acre parcel located adjacent to the South Platte River within Section 16, Township 4 North, Range 4 West. The site property is owned by the Colorado State Land Board.		
Associated stream/water body name	South Platte River	Stream Order:	6
USGS Quadrangle Map:	2019 USGS Orchard 7.5' topo quad, Morgan County, CO	Map Scale: (Circle one)	1:24,000 1:100,000 Other 1:
Sub basin Name (8 digit HUC):	Middle South Platte-Cherry Creek HUC 8 (10190003)	Wetland Ownership:	Colorado State Land Board

Project Information:			
This evaluation is being performed at: (Check applicable box)	[ ] Project Wetland [X] Mitigation Site	Purpose of Evaluation (check all applicable):	[ ] Potentially Impacted Wetlands [X] Mitigation; Pre-construction [ ] Mitigation; Post-construction [ ] Monitoring [ ] Other (Describe)
Intent of Project: (Check all applicable)	[■] Restoration (Re-establishment) [ ]	[■] Enhancement	[ ] Creation
Total Size of Wetland Involved: (Record Area, Check and Describe Measurement Method Used)	6.3 ac.	[X] Measured in GIS [ ] Estimated	
Assessment Area (AA) Size (Record Area, check appropriate box. Additional spaces are used to record acreage when more than one AA is included in a single assessment)	6.3 ac.	[X] Measured [ ] Estimated	ac. ac. ac. ac. ac. ac. ac. ac.
Characteristics or Method used for AA boundary determination:	Assessment Area 3 is Mitigation Bank Zone 3, which includes wetland restoration (re-establishment) and enhancement. A total of 6.3 ac of existing wetlands are proposed for enhancement. In addition, 9.3 ac of historic wetlands are proposed for re-establishment/restoration.		

Notes:	*The AOI includes Zones 1-3 (AA 1-3) and the buffer area within the South Platte Mitigation Property Boundary as well as a 25m buffer on this area. Per the FACWet Manual page 47, "...the AOI may also include a number of AAs with any degree of interconnectedness….in general, the AOI should be extended at least 25m outward from the predicted extent of direct and indirect impacts."*

ECOLOGICAL DESCRIPTION 1

Special Concerns

Check all that apply

- [ ] Organic soils including Histosols or Histic Epipedons are present in the AA (i.e., AA includes core fen habitat).
- [ ] Project will directly impact organic soil portions of the AA including areas possessing either Histosol soils or histic epipedons.
- [ ] Organic soils are known to occur anywhere within the contiguous wetland of which the AA is part.
- [ ] The wetland is a habitat oasis in an otherwise dry or urbanized landscape?
- [ ] Federally threatened or endangered species are **KNOWN** to occur in the AA? List Below.
- [ ] Federally threatened or endangered species are **SUSPECTED** to occur in the AA?
- [X] Species of concern according to the Colorado Natural Heritage (CNHP) are known to occur in the AA?
- [X] The site is located within a potential conservation area or element occurrence buffer area as determined by CNHP?
- [ ] Other special concerns (please describe)

HYDROGEOMORPHIC SETTING

- [X] AA wetland maintains its fundamental natural hydrogeomorphic characteristics
- [ ] AA wetland has been subject to change in HGM classes as a result of anthropogenic modification
  If the above is checked, please describe the original wetland type if discernable using the table below.
- [ ] AA wetland was created from an upland setting.

Current Conditions

Describe the hydrogeomorphic setting of the wetland by circling all conditions that apply.

HGM Setting

Water source	Surface flow	**Groundwater**	Precipitation	Unknown		
Hydrodynamics	**Unidirectional**	Vertical	Bi-directional			
Wetland Gradient	**0 - 2%**	2-4%	4-10%	>10%		
# Surface Inlets	Over-bank	**0**	1	2	3	>3
# Surface Outlets		**0**	1	2	3	>3
Geomorphic Setting (Narrative Description. Include approx. stream order for riverine)	AA 3 is located on the former floodplain of the South Platte River and is bounded on the south by an escarpment. Historically, AA3 received overbank flows from the River. Currently, the water source is primarily alluvial groundwater. Only during extremely high flows does this area receive overbank flows. AA3 is within 100 year floodplain.					
HGM class	**Riverine**	Slope	Depressional	Lacustrine		

Historical Conditions

Previous wetland typology

Water source	**Surface flow**	**Groundwater**	Precipitation	Unknown
Hydrodynamics	**Unidirectional**	Vertical		
Geomorphic Setting (Narrative Description)	Historically, AA3 likely received water from both frequent overbank flooding and the alluvial groundwater system from the South Platte River.			
Previous HGM Class	**Riverine**	Slope	Depressional	Lacustrine

Notes (include information on the AA's HGM subclass and regional subclass): *In compliance with the Endangered Species Act, a preliminary determination has been made that the described work will not adversely affect species designated as threatened or endangered or adversely affect critical habitat.* A Species of concern is known to occur in project area according to the Colorado Natural Heritage (CNHP) - Bald Eagle (*Haliaeetus leucocephalus*). A PCA - South Platte River CNHP PCA B4: Moderate Biodiversity Significance occurs within 1 mile of project. **See CNHP Codex report.**

ECOLOGICAL DESCRIPTION 2

Vegetation Habitat Description

US FWS habitat classification according as reported in Cowardin et al. (1979).

System	Subsystem	Class	Subclass	Water Regime	Other Modifiers	% AA
Palustrine (PFOA)	Lower Perennial	Forested	Rooted vascular	A	0	100

Lacustrine	Littoral; Limnoral	Rock Bot. (RB) Uncon Bottom(UB) Aquatic Bed(AB) Rocky Shore(RS) Uncon Shore(US) Emergent(EM) Shrub-scrub(SS) Forested (FO)	Floating vascular; Rooted vascular; Algal; Persistent; Non-Persistent; Broad-leaved deciduous; Needle-leaved evergreen; Cobble - gravel; Sand; Mud; Organic	**Examples** Temporarily flooded(A); Saturated(B); Seasonally flooded(C); Seas.-flood./sat.(E); Semi-Perm. flooded(F); Intermittently exposed(G); Artificially flooded(K); Sat./semiperm./Seas. (Y); Int. exposed/permenant(Z)	Hypersaline(7) ; Eusaline(8); Mixosaline(9); Fresh(0); Acid(a); Circumneutral(c); Alkaline/calcareous(i); Organic(g); Mineral(n); Beaver(b); Partially Drained/ditched(d); Farmed(f); Diked/impounded(h); Artificial Substrate(r); Spoil(s); Excavated(x)	
Palustrine	Palustrine					
Riverine	Lower perennial; Upper perennial; Intermittent					

Site Map

Scale: 1 sq. =

Draw a sketch map of the site including relevant portions of the wetland, AA boundary, structures, habitat classes, and other significant features.

See Figure 1

Variable 1: Habitat Connectivity

The Habitat Connectivity Variable is described by two sub-variables – Neighboring Wetland and Riparian Habitat Loss and Barriers to Migration and Dispersal. These sub-variables were treated as independent variables in FACWet Version 2.0. The merging of these variables makes their structure more consistent with that of other composite variables in FACWet. The new variable configuration also makes this landscape variable more accurately reflect the interactions amongst aquatic habitats in Colorado's agricultural and urbanized landscapes, which have a naturally low density of wetlands. The two Habitat Connectivity Sub-variables are scored in exactly the same manner as their FACWet 2.0 counterparts, as described below. The Habitat Connectivity Variable score is simply the arithmetic average of the two sub-variable scores which is entered on the second page of the Variable 1 data form. If there is little or no wetland or riparian habitat in the Habitat Connectivity Envelope (defined below), then Sub-variable 1.1 is not scored.

SV 1.1 - Neighboring Wetland and Riparian Habitat Loss
(Do not score if few or no wetlands naturally exist in the HCE)

This sub-variable is a measure of how isolated from other naturally-occurring wetlands or riparian habitat the AA has become as the result of habitat destruction. To score this sub-variable, estimate the percent of naturally-occurring wetland/riparian habitat that has been lost (by filling, draining, development, or whatever means) within the 500-meter-wide belt surrounding the AA. This zone is called the Habitat Connectivity Envelope (HCE). In most cases the evaluator must use best professional judgment to estimate the amount of natural wetland loss. Historical photographs, National Wetland Inventory (NWI) maps, hydric soil maps can be helpful in making these determinations. Floodplain maps are especially valuable in river-dominated regions, such as the Front Range urban corridor. Evaluation of landforms and habitat patterns in the context of perceivable land use change is used to steer estimates of the amount of wetland loss within the HCE.

Rules for Scoring:

1. On the aerial photo, create a 500 m perimeter around the AA.
2. The area within this perimeter is the **Habitat Connectivity Envelope (HCE)**.
3. Within the HCE, outline the current extent of naturally occurring wetland and riparian habitat. Do not include habitats such as excavated ponds or reservoir induced fringe wetlands.
4. Outline the historical extent of wetland and riparian habitats (i.e., existing natural wetlands plus those that have been destroyed).

- Use your knowledge of the history of the area and evident land use change to identify where habitat losses have occurred. Additional research can be utilized to increase the accuracy of this estimate including consideration of floodplain maps, historical aerial photographs, soil maps, etc.

5. Calculate the area of existing and historical wetlands. Divide the area of existing wetland by the total amount of existing and historical wetland and riparian habitat, and determine the variable score using the guidelines below. Enter sub-variable score at the bottom of p.2 of the Habitat Connectivity data form.

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Very little or no loss of wetlands in the HCEor negligible.
<0.9 - 0.8	***B*** *Highly Functioning*	More than 80% of historical wetland habitat area within the HCE is still present (less than 20% of habitat area lost).
<0.8 - 0.7	***C*** *Functioning*	80 to 60% of historical wetland habitat area within the HCE is still present (20% to 40% of habitat area lost).
<0.7 - 0.6	***D*** *Functioning Impaired*	Less than 60 to 25% of historical wetland habitat area within the HCE is still present (more than 40 to 75% of habitat area lost).
<0.6	***F*** ***Non-functioning***	**Less than 25% of the historical wetland habitat area within the HCE still in existence (more than 70% of habitat lost).**

Notes: Present wetlands in HCE ~19 ac. Historic wetlands ~170 ac. Because more than 70% of historical wetland habitat is lost, this variabel scored very low at a 0.3.

Variable 1: Habitat Connectivity p. 2

SV 1.2: Migration/Dispersal Barriers

This sub-variable is intended to rate the degree to which the AA has become isolated from existing neighboring wetland and riparian habitat by artificial barriers that inhibit migration or dispersal of organisms. On the aerial photograph, identify the man-made barriers within the HCE that intercede between the AA and surrounding wetlands and riparian areas, and identify them by type on the stressor list. Score this variable based on the barriers' impermeability to migration and dispersal and the amount of surrounding wetland/riparian habitat they affect.

Rules for Scoring:

1. On the aerial photo, outline **all** existing wetland and riparian habitat areas within the HCE. This includes naturally occurring habitats, as well as those purposefully created or induced by land use change.
2. Identify artificial barriers to dispersal and migration of organisms within the HCE that intercede between the AA and surrounding habitats. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.
3. Considering the composite effect of all of identified barriers to migration and dispersal (i.e., stressors), assign an overall variable score using the scoring guidelines.

Stressors = artificial barriers

✔	Stressors	Comments/description
	Major Highway	
	Secondary Highway	
	Tertiary Roadway	
	Railroad	
	Bike Path	
	Urban Development	
X	Agricultural Development	Berm on north side of S Platte River
	Artificial Water Body	
X	Fence	North-south running fencelines
X	Ditch or Aqueduct	Agricultural return flow ditch
X	Aquatic Organism Barriers	Alluvial fan from watershed development cut off wetlands

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	No appreciable barriers exist between the AA and other wetland and riparian habitats in the HCE; or there are no other wetland and riparian areas in the HCE.
<0.9 - 0.8	***B*** *Highly Functioning*	Barriers impeding migration/dispersal between the AA and up to 33% of surrounding wetland/riparian habitat highly permeable and easily passed by most organisms. Examples could include gravel roads, minor levees, ditches or barbed-wire fences. More significant barriers (see "functioning category below) could affect migration to up to 10% of surrounding wetland/riparian habitat.
<0.8 - 0.7	***C*** *Functioning*	Barriers to migration and dispersal retard the ability of many organisms/propagules to pass between the AA and up to 66% of wetland/riparian habitat. Passage of organisms and propagules through such barriers is still possible, but it may be constrained to certain times of day, be slow, dangerous or require additional travel. Busy two-lane roads, culverted areas, small to medium artificial water bodies or small earthen dams would commonly rate a score in this range. More significant barriers (see "functioning impaired" category below) could affect migration to up to 10% of surrounding wetland/riparian
<0.7 - 0.6	***D*** *Functioning Impaired*	Barriers to migration and dispersal preclude the passage of some types of organisms/propagules between the AA and up to 66% of surrounding wetland/riparian habitat. Travel of those animals which can potential negotiate the barrier are strongly restricted and may include a high chance of mortality. Up to 33% of surrounding wetland/riparian habitat could be functionally isolated from the AA.
<0.6	***F*** *Non-functioning*	AA is essentially isolated from surrounding wetland/riparian habitat by impermeable migration and dispersal barriers. An interstate highway or concrete-lined water conveyance canal are examples of barriers which would generally create functional isolation between the AA and wetland/riparian habitat in the HCE.

SV 1.1 Score	0.30
SV 1.2 Score	0.70

Add SV 1.1 and 1.2 scores and divide by two to calculate variable score

Variable 1 Score 0.50

Variable 2: Contributing Area

The AA's Contributing Area is defined as the 250-meter-wide zone surrounding the perimeter of the AA. This variable is a measure of the capacity of that area to support characteristic functions of high quality wetland habitat. Depending on its condition, the contributing area can help maintain wetland condition or it can degrade it. Contributing Area condition is evaluated by considering the AA's Buffer and its Surrounding Land Use. Buffers are strips or patches of more-or-less natural upland and/or wetland habitat more than 5m wide. Buffers are contiguous with the AA boundary and they intercede between it and more intensively used lands. The AA Buffer is characterized with three sub-variables: Buffer Condition, Buffer Extent, and Average Buffer Width. The Surrounding Land Use Sub-variable considers changes within the Contributing Area that limit its capacity to support characteristic wetland functions. Many of the acute, on-site effects of land use change in the Contributing Area are specifically captured by Variables 3 - 8.

Rules for Scoring:

1. Delimit the Contributing Area on an aerial photograph as the zone within 250 meters of the outer boundary of the AA.
2. Evaluate and then rate the Buffer Condition sub-variable using the scoring guidelines. Record the score in the cell provided on the datasheet.
3. Indicate on the aerial photograph zones surrounding the AA which have ≥5m of buffer vegetation and those which do not.
4. Calculate the percentage of the AA which has a Buffer and record the value where indicated on the data sheet.
5. Rate the *Buffer Extent* Sub-variable using the scoring guidelines.
6.Determine the average Buffer width by drawing a line perpendicularly from the AA boundary to the outer extent of the buffer habitat. Measure line length and record its value on the data sheet. Repeat this process until a total of 8 lines have been sampled.
7. Calculate the average buffer width and record value on the data form. Then determine the sub-variable score using the scoring guidelines.
8.Score the Surrounding Land Use sub-variable by recording land use changes on the stressor list that affect the capacity of the landscape to support characteristic wetland functioning.
9. Enter the **lowest** of the three Buffer sub-variable scores along with the Surrounding Land Use Sub-variable score in the Contributing Area Variable scoring formula at the bottom of p. 2 of the data form. The Contributing Area Variable is the

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SV 2.1 - Buffer Condition

0.6 ***SV 2.1 - Buffer Condition Score***

Subvariable Score	Condition Grade	Buffer Condition Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Buffer vegetation is predominately native vegetation, human-caused disturbance of the substrate is not evident, and human visitation is minimal. Common examples: Wilderness areas, undeveloped forest and range lands.
<0.9 - 0.8	*Highly Functioning*	Buffer vegetation may have a mixed native-nonnative composition, but characteristic structure and complexity remain. Soils are mostly undisturbed or have recovered from past human disturbance. Little or only low-impact human visitation. Buffers with higher levels of substrate disturbance may be included here if the buffer is still able to maintain predominately native vegetation. Common examples: Dispursed camping areas in national forests, common in wildland parks (e.g. State Parks) and open spaces.
<0.8 - 0.7	*Functioning*	Buffer vegetation is substantially composed of non-native species. Vegetation structure may be somewhat altered, such as by brush clearing. Moderate substrate distrbance and compaction occurs, and small pockets of greater disturbance may exist. Common examples: City natural areas, mountain hay meadows.
<0.7 - 0.6	*Functioning Impaired*	Buffer vegetation is substantially composed of non-native species and vegetation structure has been strongly altered by the complete removal of one or more strata. Soil disturbance and the intensity of human visitation are generally high. Common examples: Open lands around resource extraction sites (e.g., gravel mines), clear cut logging areas, ski slopes.
<0.6	*Non-functioning*	Buffer is nearly or entirely absent.

SV 2.2 - Buffer Extent

100 Percent of AA with Buffer

0.90 ***SV 2.2 - Buffer Extent***

Subvariable Score	Condition Class	% Buffer Scoring Guidelines
1.0 - 0.9	*Reference Standard*	90 - 100% of AA with Buffer
<0.9 - 0.8	*Highly Functioning*	70-90% of AA with Buffer
<0.8 - 0.7	*Functioning*	51-69% of AA with Buffer
<0.7 - 0.6	*Functioning Impaired*	26-50% of AA with Buffer
<0.6	*Non-functioning*	0-25% of AA with Buffer

Variable 2: Contributing Area (p. 2)

SV 2.3 - Average Buffer Width

Record measured buffer widths in the spaces below and average.

Buffer Width (m)	250	250	160	250	250	250	250	250	239
Line #	1	2	3	4	5	6	7	8	**Avg. Buffer Width (m)**

0.9

SV 2.3 - Average Buffer Width Score

Subvariable Score	Condition Grade	Buffer Width Scoring Guidelines
1.0 - 0.9	*Reference Standard*	Average Buffer width is 190-250m
<0.9 - 0.8	*Highly Functioning*	Average Buffer width is 101-189m
<0.8 - 0.7	*Functioning*	Average Buffer width is 31-100m
<0.7 - 0.6	*Functioning Impaired*	Average Buffer width is 6-30m
<0.6	*Non-functioning*	Average Buffer width is 0-5m

SV 2.4 - Surrounding Land Use

0.7

SV 2.4 - Surrounding Land Use Score

Catalog and characterize land use changes in the surrounding landscape and score.

Stressors = Land Use Changes

✔	Stressors	Comments/description
	Industrial/commercial	
	Urban	
	Residential	
	Rural	
	Dryland Farming	
	Intensive Agriculture	
	Orchards or Nurseries	
X	Livestock Grazing	Cattle grazing
	Transportation Corridor	
	Urban Parklands	
	Dams/impoundments	
	Artificial Water body	
	Physical Resource Extraction	
	Biological Resource Extraction	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	No appreciable land use change has been imposed Surrounding Landscape.
<0.9 - 0.8	***B*** *Highly Functioning*	Some land use change has occurred in the Surrounding Landscape, but changes have minimal effect on the the landscape's capacity to support characteristic aquatic functioning, either because land use is not intensive, for example haying, light grazing, or low intensity silviculture, or more substantial changes occur in approximately less than 10% of the area.
<0.8 - 0.7	***C*** *Functioning*	Surrounding Landscape has been subjected to a marked shift in land use, however, the land retains much of its capacity to support natural wetland function and it is not an overt source of pollutants or sediment. Moderate-intensity land uses such as dry-land farming, urban "green" corridors, or moderate cattle grazing would commonly be placed within this scoring range.
<0.7 - 0.6	***D*** *Functioning Impaired*	Land use changes within the Surrounding Landscape has been substantial including the a moderate to high coverage (up to 50%) of impermeable surfaces, bare soil, or other artificial surfaces; considerable in-flow urban runoff or fertilizer-rich waters common. Supportive capacity of the land has been greatly diminished but not totally extinguished. Intensively logged areas, low-density urban developments, some urban parklands and many cropping situations would commonly rate a score within this range.
<0.6	***F*** *Non-functioning*	The Surrounding Landscape is essentially comletely developed or is otherwise a cause of severe ecological stress on wetland habitats. Commercial developments or highly urban landscapes generally rate a score of less than 0.6.

	Buffer Score (Lowest score)		**Surrounding Land Use**				
(	0.6	+	0.7	) ÷	2	=	**Variable 2 Score** 0.65

Variable 3: Water Source

This variable is concerned with ***up-gradient*** *hydrologic connectivity. It is a measure of impacts to the AA's water source, including the quantity and timing of water delivery, and the ability of source water to perform work such as sediment transport, erosion, soil pore flushing, etc. To score this variable, identify stressors that alter the source of water to the AA, and record their presence on the stressor list. Stressors can impact water source by depletion, augmentation, or alteration of inflow timing or hydrodynamics. This variable is designed to assess water quantity, power and timing, not water quality. Water quality will be evaluated in Variable 7.*

Scoring rules:

1. Use the stressor list and knowledge of the watershed to catalog type-specific impairments of the AA's water source. Mark the stressors present with a check in the first column and describe the general nature, severity and extent of each. List additional stressors in empty rows at the bottom of the table and explain.

2. Considering the composite effect of stressors on the water source, rate the condition of this variable with the aid of the scoring guidelines.

✔	Stressors	Comments/description
	Ditches or Drains (tile, etc.)	
X	Dams	Empire Reservoir, Riverside Reservoir
X	Diversions	Bijou Canal
	Groundwater pumping	
	Draw-downs	
	Culverts or Constrictions	
X	Point Source (urban, ind., ag.)	Kersey feed lot
	Non-point Source	
	Increased Drainage Area	
	Storm Drain/Urban Runoff	
	Impermeable Surface Runoff	
	Irrigation Return Flows	
X	Mining/Natural Gas Extraction	gravel mining, natural gas exploration
	Transbasin Diversion	
	Actively Managed Hydrology	

Variable Score	Condition Grade	Depletion	Augmentation
1.0 - 0.9	***A*** *Reference Standard*	Unnatural drawdown events minor, rare or non-existent, very slight uniform depletion, or trivial alteration of hydrodynamics.	Unnatural high-water events minor, rare or non-existent, slight uniform increase in amount of inflow, or trivial alteration of hydrodynamics.
<0.9 - 0.8	***B*** *Highly Functioning*	Unnatural drawdown events occasional, short duration and/or mild; or uniform depletion up to 20%; or mild to moderate reduction of peak flows or capacity of water to perform work.	Occasional unnatural high-water events, short in duration and/or mild in intensity; or uniform augmentation up to 20%; or mild to moderate increase of peak flows or capacity of water to perform work.
<0.8 - 0.7	***C*** *Functioning*	Unnatural drawdown events common and of mild to moderate intensity and/or duration; or uniform depletion up to 50%; or moderate to substantial reduction of peak flows or capacity of water to perform work.	Common occurrence of unnatural high-water events, of a mild to moderate intensity and/or duration; or uniform augmentation up to 50%; or moderate to substantial increase of peak flows or capacity of water to perform work.
<0.7 - 0.6	***D*** *Functioning Impaired*	Unnatural drawdown events occur frequently with a moderate to high intensity and/or duration; or uniform depletion up to 75%; or substantial reduction of peak flows or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or lower.**	Common occurrence of unnatural high-water events, some of which may be severe in nature or exist for a substantial portion of the growing season; or uniform augmentation more than 50% or capacity of water to perform work. **Wetlands with actively managed or wholly artificial hydrology will usually score in this range or**
<0.6	***F*** *Non-functioning*	Water source diminished enough to threaten or extinguish wetland hydrology in the AA.	Frequency, duration or magnitude of unnaturally high-water great enough to change the fundamental characteristics of the wetland.

Variable 3 Score 0.8

Variable 4: Water Distribution

This variable is concerned with hydrologic connectivity ***within*** *the AA. It is a measure of alteration to the spatial distribution of surface and groundwater within the AA. These alterations are manifested as local changes to the hydrograph and generally result from geomorphic modifications within the AA. To score this variable, identify stressors within the AA that alter flow patterns and impact the hydrograph of the AA, including localized increases or decreases to the depth or duration of the water table or surface water.*

Because the wetland's ability to distribute water in a characteristic fashion is fundamentally dependent on the condition of its water source, ***in most cases the Water Source variable score will define the upper limit Water Distribution score****. For example, if the Water Source variable is rated at 0.85, the Water Distribution score will usually have the potential to attain a maximum score of 0.85. Additional stressors within or outside the lower end of the AA effecting water distribution (e.g., ditches and levees) will reduce the score from the maximum value.*

Scoring rules:

1. Identify impacts to the natural distribution of water throughout the AA and catalog them in the stressor table.

2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. In most cases, the Water Source variable score will set the upper limit for the Water Distribution score.

✓	Stressors	Comments/description
	Alteration of Water Source	
	Ditches	
	Ponding/Impoundment	
	Culverts	
	Road Grades	
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Enlarged Channel	
	Artificial Banks/Shoreline	
	Weirs	
	Dikes/Levees/Berms	
	Diversions	
X	Sediment/Fill Accumulation	Flooding flows such as 2013 floods have deposited sediments over wetlands.

Variable Score	Condition Grade	Non-riverine	Riverine
1.0 - 0.9	***A*** *Reference Standard*	Little or no alteration has been made to the way in which water is distributed throughout the wetland. AA maintains a natural hydrologic regime.	Natural active floodplain areas flood on a normal recurrence interval. No evidence of alteration of flooding and subirrigation duration and intensity.
<0.9 - 0.8	***B*** *Highly Functioning*	Less than 10% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in less than a 2 in. (5 cm) change in mean growing season water table elevation.	Channel-adjacent areas have occasional unnatural periods of drying or flooding; or uniform shift in the hydrograph less than typical root depth.
<0.8 - 0.7	***C*** *Functioning*	Between 10 and 33% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 4 in. (5 cm) or less change in mean growing season water table elevation.	In channel-adjacent area, periods of drying or flooding are common; or uniform shift in the hydrograph near root depth.
<0.7 - 0.6	***D*** *Functioning Impaired*	33 to 66% of the AA is affected by *in situ* hydrologic alteration; or more widespread impacts result in a 6 in. (15 cm) or less change in mean growing season water table elevation. Water table behavior must still meet jurisdictional criteria to merit this rating.	Adjacent to the channel, unnatural periods of drying or flooding are the norm; or uniform shift in the hydrograph greater than root depth.
<0.6	***F*** *Non-functioning*	More than 66% of the AA is affected by hydrologic alteration which changes the fundamental functioning of the wetland system, generally exhibited as a conversion to upland or deep water habitat.	Historical active floodplain areas are almost never wetted from overbank flooding, and/or groundwater infiltration is effectively cut off.

Variable 4 Score 0.6

Variable 5: Water Outflow

This variable is concerned with ***down-gradient*** *hydrologic connectivity and the flow of water and water-borne materials and energy out of the AA. In particular it illustrates the degree to which the AA can support the functioning of down-gradient habitats. It is a measure of impacts that affect the hydrologic outflow of water including the passage of water through its normal low- and high-flow surface outlets, infiltration/groundwater recharge, and the energetic characteristics of water delivered to dependent habitats. In some cases, alteration of evapotranspiration rates may be significant enough of a factor to consider in scoring. Score this variable by identifying stressors that impact the means by which water is exported from the AA. To evaluate this variable focus on how water, energy and associated materials are exported out of the AA and their ability it support down-gradient habitats in a manner consistent with their HGM (regional) subclass.*

Because the wetland's ability to export water and materials in a characteristic fashion is to a very large degree dependent the condition of its water source, as with the Water Distribution variable, ***in most cases the Water Source variable score will define the upper limit Water Outflow score****.*

Scoring rules:

1. Identify impacts to the natural outflow of water from the AA and catalog them in the stressor table.

2.Considering all of the stressors identified, assign an overall variable score using the scoring guidelines. Take in to account the cumulative effect of stressors on the wetland's ability to export water and water-borne materials. In most cases the Water Source variable will set the upper limit for the Water Outflow score.

✓	Stressors	Comments/description
	Alteration of Water Source	
X	Ditches	Agricultural return flow ditch.
	Dikes/Levees	
	Road Grades	
	Culverts	
	Diversions	
X	Constrictions	Note human-caused alluvial fan deposits constrict and disconnect wetlands.
	Channel Incision/Entrenchment	
	Hardened/Engineered Channel	
	Artificial Stream Banks	
	Weirs	
	Confined Bridge Openings	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stressors have little to no effect on the magnitude, timing or hydrodynamics of the AA water outflow regime.
<0.9 - 0.8	***B*** *Highly Functioning*	High- or low-water outflows are mildly to moderately affected, but at intermediate ("normal") levels flow continues essentially unaltered in quantity or character.
<0.8 - 0.7	***C*** *Functioning*	High- or low-water outflows are moderately affected, mild alteration of intermediate level outflow occurs; or hydrodynamics moderately affected.
<0.7 - 0.6	***D*** *Functioning Impaired*	Outflow at all stages is moderately to highly impaired resulting in persistent flooding of portions of the AA or unnatural drainage; or outflow hydrodynamics severely disrupted.
<0.6	***F*** *Non-functioning*	The natural outflow regime is profoundly impaired. Down-gradient hydrologic connection severed or nearly so. Alterations may cause widespread unnatural persistent flooding or dewatering of the wetland system.

Variable 5 Score 0.6

Variable 6: Geomorphology

This variable is a measure of the degree to which the geomorphic setting has been altered within the AA. Changes to the surface configuration and natural topography constitute stressors. Such stressors may be observed in the form of fill, excavation, dikes, sedimentation due to absence of flushing floods, etc. In riverine systems, geomorphic changes to the stream channel should be considered if the channel is within the AA (i.e, small is size). Alterations may involve the bed and bank (substrate embeddedness or morphological changes), stream instability, and stream channel reconfiguration. Geomorphic changes are usually ultimately manifested as changes to wetland surface hydrology and water relations with vegetation. Geomorphic alterations can also directly affect soil properties, such as near-surface texture, and the wetland chemical environment such as the redox state or nutrient composition in the rooting zone. In rating this variable, ***do not*** *include these resultant effects of geomorphic change; rather focus on the physical impacts* ***within the footprint*** *of the alteration* ***within the AA*** *– For example, the width and depth of a ditch or the size of a levee* ***within the AA*** *would describe the extent of the stressors. The secondary effects of geomorphic change are addressed by other variables. All alterations to geomorphology should be evaluated including small-scale impacts such as pugging, hoof sheer, and sedimentation which*

Scoring Rules:

1. Identify impacts to geomorphological setting and topography within the AA and record them on the stressor checklist.
2. Considering all of the stressors identified, assign an overall variable score using the scoring guidelines.

✓		Stressors	Comments
	General	Dredging/Excavation/Mining	
		Fill, including dikes, road grades, etc	
		Grading	
		Compaction	
		Plowing/Disking	
X		Excessive Sedimentation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
		Dumping	
		Hoof Shear/Pugging	
		Aggregate or Mineral Mining	
X		Sand Accumulation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
	Channels Only	Channel Instability/Over Widening	
		Excessive Bank Erosion	
		Channelization	
		Reconfigured Stream Channels	
		Artificial Banks/Shoreline	
		Beaver Dam Removal	
		Substrate Embeddedness	
		Lack or Excess of Woody Debris	

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Topography essentially unaltered from the natural state, or alterations appear to have a minimal effect on wetland functioning and condition. Patch or microtopographic complexity may be slightly altered, but native plant communities are still supported.
<0.9 - 0.8	***B*** *Highly Functioning*	Alterations to topography result in small but detectable changes to habitat conditions in some or all of the AA; or more severe impacts exist but affect less than 10% of the AA.
<0.8 - 0.7	***C*** *Functioning*	Changes to AA topography may be pervasive but generally mild to moderate in severity. May include patches of more significant habitat alteration; or more severe alterations affect up to 20 % of the AA.
<0.7 - 0.6	***D*** *Functioning Impaired*	At least one important surface type or landform has been eliminated or created; microtopography has been strongly impacted throughout most or all of the AA; or more severe alterations affect up to 50% of the AA. Evidence that widespread diminishment or alteration of native plant community exist due to physical habitat alterations. Most incidentally created wetland habitat such as that created by roadside ditches and the like would score in this range or lower.
<0.6	***F*** *Non-functioning*	Pervasive geomorphic alterations have caused a fundamental change in site character and functioning, commonly resulting in a conversion to upland or deepwater habitat.

Variable 6 Score 0.59

Variable 7: Water and Soil Chemical Environment

This variable concerns the chemical environment of the soil and water media within the AA, including pollutants, water and soil characteristics. The origin of pollutants may be within or outside the AA. Score this variable by listing indicators of chemical stress in the AA. Consider point source and non-point sources of pollution, as well as mechanical or hydrologic changes that alter the chemical environment. Because water quality frequently cannot be inferred directly, the presence of stressors is often identified by the presence of indirect indicators. Five sub-variables are used to describe the Water and Soil Chemical Environment: Nutrient Enrichment/Eutrophication/Oxygen; Sedimentation/Turbidity; Toxic Contamination/pH; Temperature; and Soil Chemistry and Redox Potential. Utilization of web-based data mining tools is highly recommended to help inform and support variable scores.

Scoring rules:

1. Stressors are grouped into sub-variables which have a similar signature or set of causes.
2. Use the indicator list to identify each stressor impacting the chemical environment of the AA.
3. For each sub-variable, determine its score using the scoring guideline table provided on the second page of the scoring sheet. Scoring sub-variables is carried out in exactly the same way as normal variable scoring.
 -If the AA is part of a water body that is recognized as impaired or recommended for TMDL development for one of the factors, then score that sub-variable 0.65 or lower.
4. Transcribe sub-variable scores to the following variable scoring page and compute the sum.
5. The lowest sub-variable score sets the letter grade range. The composite of sub-variables influences the score within that range.

Sub-variable	Stressor Indicator	✔	Comments	Sub-variable Score
SV 7.1 Nutrient Enrichment/ Eutrophication/ Oxygen (D.O.)	Livestock	X	cattle grazing	0.70
	Agricultural Runoff	X	Increased salinity from irrigation	
	Septic/Sewage			
	Excessive Algae or Aquatic Veg.			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.2 Sedimentation/ Turbidity	Excessive Erosion			0.70
	Excessive Deposition	X	e.g. 2013 flood	
	Fine Sediment Plumes			
	Agricultural Runoff	X	sedimentation	
	Excessive Turbidity			
	Nearby Construction Site			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.3 Toxic contamination/ pH	Recent Chemical Spills			0.70
	Nearby Industrial Sites			
	Road Drainage/Runoff			
	Livestock	X	cattle grazing	
	Agricultural Runoff	X	Increased salinity from irrigation	
	Storm Water Runoff			
	Fish/Wildlife Impacts			
	Vegetation Impacts			
	Cumulative Watershed NPS			
	Acid Mine Drainage			
	Point Source Discharge			
	CDPHE Impairment/TMDL List			
	Metal staining on rocks and veg.			
SV 7.4 Temperature	Excessive Temperature Regime			0.70
	Lack of Shading			
	Reservoir/Power Plant Discharge			
	Industrial Discharge			
	Cumulative Watershed NPS			
	CDPHE Impairment/TMDL List			
SV 7.5 Soil chemistry/ Redox potential	Unnatural Saturation/Desaturation			0.70
	Mechanical Soil Disturbance			
	Dumping/introduced Soil			
	CDPHE Impairment/TMDL List			

Variable 7: Water and Soil Chemical Environment p.2

Sub-variable Scoring Guidelines

Variable Score	Condition Class	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stress indicators not present or trivial.
<0.9 - 0.8	***B*** *Highly Functioning*	Stress indicators scarcely present and mild, or otherwise not occurring in more than 10% of the AA.
<0.8 - 0.7	***C*** *Functioning*	Stress indicators present at mild to moderate levels, or otherwise not occurring in more than 33% of the AA.
<0.7 - 0.6	***D*** *Functioning Impaired*	Stress indicators present at moderate to high levels, or otherwise not occurring in more than 66% of the AA
<0.6	***F*** *Non-functioning*	Stress indicators strongly evident throughout the AA at levels which apparently alter the fundamental chemical environment of the wetland system

Input each sub-variable score from p. 1 of the V7 data form and calculate the sum.

Nutrient enrichment/ Eutrophication/ Oxygen (D.O.)		Sedimentation/ Turbidity		Toxic contamination/ pH		Temperature		Soil chemistry/ Redox potential		Sum of Sub-variable Scores
0.70	+	0.70	+	0.70	+	0.70	+	0.70	=	3.50

Use the table to score the Chemical Environment Variable circling the applicable scoring rules.

Variable Score	Condition Grade	Scoring Rules		
		Single Factor		**Composite Score**
1.0 - 0.9	***A*** *Reference Standard*	No single factor scores < 0.9		The factor scores sum > 4.5
<0.9 - 0.8	***B*** *Highly Functioning*	Any single factor scores ≥ 0.8 but < 0.9		The factor scores sum >4.0 but ≤4.5
<0.8 - 0.7	***C*** *Functioning*	Any single factor scores ≥ 7.0 but < 0.8		The factor scores sum >3.5 but ≤ 4.0
<0.7 - 0.6	***D*** *Functioning Impaired*	Any single factor scores ≥ 0.6 but <0.7	X	The factor scores sum >3.0 but ≤3.5
< 0.6	***F*** *Non-functioning*	Any single factor scores < 0.6		The factor scores sum < 3.0

Variable 7 Score 0.7

Variable 8: Vegetation Structure and Complexity

This variable is a measure of the condition of the wetland's vegetation relative to its native state. It particularly focuses on the wetland's ability to perform higher-order functions such as support of wildlife populations, and influence primary functions such as flood-flow attenuation, channel stabilization and sediment retention. Score this variable by listing stressors that have affected the structure, diversity, composition and cover of each vegetation stratum that would normally be present in the HGM (regional) subclass being assessed. For this variable, stressor severity is a measure of how much each vegetation stratum differs functionally from its natural condition or from the natural range of variability exhibited the HGM subclass or regional subclass. This variable has four sub-variables, each corresponding to a stratum of vegetation: Tree Canopy; Shrub Layer; Herbaceous Layer; and Aquatics.

Rules for Scoring:

1. Determine the number and types of vegetation layers present within the AA. Make a judgment as to whether additional layers were historically present using direct evidence such as stumps, root wads or historical photographs. Indirect evidence such as local knowledge and expert opinion can also be used in this determination.

2. Do not score vegetation layers that would not normally be present in the wetland type being assessed.

3. Estimate and record the current coverage of each vegetation layer at the top of the table.

4. Record the Reference Standard or expected percent coverage of each vegetation layer to create the sub-variable weighting factor. The condition of predominant vegetation layers has a greater influence on the variable score than do minor components.

5. Enter the percent cover values as decimals in the row of the stressor table labeled " Reference/expected Percent Cover of Layer". Note, percentages will often sum to more than 100% (1.0).

6. Determine the severity of stressors acting on each individual canopy layers, indicating their presence with checks in the appropriate boxes of the stressor table. The difference between the expected and observed stratum coverages is one measure of stratum alteration.

7. Determine the sub-variable score for each valid vegetation layer using the scoring guidelines on the second page of the scoring sheet. Enter each sub-variable score in the appropriate cell of the row labeled "Veg. Layer Sub-variable Score". If a stratum has been wholly removed score it as 0.5.

8. Multiply each layer's *Reference Percent Cover of Layer* score by its Veg. Layer Sub-variable scores and enter the products in the labled cells. These are the weighted sub-variable scores. Individually sum the *Reference Percent Cover of Layer* and *Weighted Sub-variables scores.*

9. Divide the sum of "Veg. Layer Sub-variable Scores" by the total coverage of all layers scored. This product is the Variable 8 score. Enter this number in the labeled box at the bottom of this page.

	Vegetation Layers				
Current % Coverage of Layer	50	10	50	0	
Stressor	**Tree**	**Shrub**	**Herb**	**Aquatic**	**Comments**
Noxious Weeds	X	X	X		Abundant noxious weeds, Russian olive, white top.
Exotic/Invasive spp.	X	X	X		Abundant exotics, pasture grasses.
Tree Harvest					
Brush Cutting/Shrub Removal					
Livestock Grazing	X	X	X		Cattle grazing
Excessive Herbivory					
Mowing/Haying					
Herbicide					
Loss of Zonation/Homogenization					
Dewatering	X	X	X		Changes to groundwater levels favor noxious/invasive spp
Over Saturation					
DIFFERENCE BETWEEN CURRENT COVERAGE AND REFERENCE/EXPECTED	-25	-65	0		No cottonwood regeneration, few willows, high invasive and noxious species like Russian Olive.

Reference/Expected % Cover of Layer	75.00	+	75.00	+	50.00	+	0.00	=	200
	x		x		x		x		
Veg. Layer Sub-variable Score	0.7		0.5		0.6		0.7		÷
	=		=		=		=		
Weighted Sub-variable Score	52.50	+	37.50	+	30.00	+	0.00	=	120

See sub-variable scoring guidelines on following page

Variable 8 Score 0.60

Variable 8: Vegetation Structure and Complexity p. 2

Sub-variable 8 Scoring Guidelines:

Based on the list of stressors identified above, rate the severity of their cumulative effect on vegetation structure and complexity for each vegetation layer.

Variable Score	Condition Grade	Scoring Guidelines
1.0 - 0.9	***A*** *Reference Standard*	Stressors not present or with an intensity low enough as to not detectably affect the structure, diversity or composition of the vegetation layer.
<0.9 - 0.8	***B*** *Highly Functioning*	Stressors present at intensity levels sufficient to cause detectable, but minor, changes in layer composition. Stress related change should generally be less than 10% for any given attribute (e.g., 10% cover of invasive, 10% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as high as 33% for a given attribute if stressors are confined to patches comprising less than 10% of the wetland.
<0.8 - 0.7	***C*** *Functioning*	Stressors present with enough intensity to cause significant changes in the character of vegetation, including alteration of layer coverage, structural complexity and species composition. The vegetation layer retains its essential character though. AA's with a high proportion of non-native grasses will commonly fall in this class. Stress related change should generally be less than 33% for any given attribute (e.g., 33% cover of invasive, 33% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 66% for a given attribute if stressors are confined to patches comprising less than 25% of the wetland.
<0.7 - 0.6	***D*** *Functioning Impaired*	Stressor intensity severe enough to cause profound changes to the fundamental character of the vegetation layer. Stress-related change should generally be less than 66% for any given attribute (e.g., 66% cover of invasive, 66% reduction in richness or cover) if the stressor is evenly distributed throughout the wetland. Stress related change could be as much as 80% of a given attribute if stressors are confined to patches comprising less than 50% of the wetland.
<0.6	***F*** *Non-functioning*	Vegetation layer has been completely removed or altered to the extent that is no longer comparable to the natural structure, diversity and composition.

FACWet Score Card

Scoring Procedure:

1. Transcribe variable scores from each variable data sheet to the corresponding cell in the variable score table.
2. In each Functional Capacity Index (FCI) equation, enter the corresponding variable scores in the equation cells. Do not enter values in the crossed cells lacking labels.
3. Add the variable scores to calculate the total functional points achieved for each function.
4. Divide the total functional points achieved by the functional points possible. The typical number of total points possible is provided, however, if a variable is added or subtracted to FCI equation the total possible points must be adjusted
5. Calculate the Composite FCI, by adding the FCI scores and dividing by the total number of functions scored (usually 7).
6. If scoring is done directly in the Excel spreadsheet, all values will be transferred and calculated automatically.

VARIABLE SCORE TABLE

Buffer & Landscape Context	**Variable 1:**	**Habitat Connectivity (Connect)**	0.50
	Variable 2:	**Contributing Area (CA)**	0.65
Hydrology	**Variable 3:**	**Water Source (Source)**	0.80
	Variable 4:	**Water Distribution (Dist)**	0.60
	Variable 5:	**Water Outflow (Outflow)**	0.60
Abiotic and Biotic Habitat	**Variable 6:**	**Geomorphology (Geom)**	0.59
	Variable 7:	**Chemical Environment (Chem)**	0.70
	Variable 8:	**Vegetation Structure and Complexity (Veg)**	0.60

Functional Capacity Indices

Function 1 -- Support of Characteristic Wildlife Habitat

$V1_{connect}$	+ $V2_{CA}$	+ (2 x $V8_{veg}$)				= Total Functional Points	÷ 4	= FCI
0.50	+ 0.65	+ 1.20	+	+	+	= 2.35	÷ 4	= 0.59

Function 2 -- Support of Characteristic Fish/aquatic Habitat

(3 x $V3_{source}$)	+ (2 x $V4_{dist}$)	+ (2 x $V5_{outflow}$)	+ $V6_{geom}$	+ $V7_{chem}$				
2.40	+ 1.20	+ 1.20	+ 0.59	+ 0.70	+	= 6.09	÷ 9	= 0.68

Function 3 -- Flood Attenuation

$V2_{CA}$	+ (2 x $V3_{source}$)	+ (2 x $V4_{dist}$)	+ (2 x $V5_{outflow}$)	+ $V6_{geom}$	+ $V8_{veg}$			
0.65	+ 1.60	+ 1.20	+ 1.20	+ 0.59	+ 0.60	= 5.84	÷ 9	= 0.65

Function 4 -- Short- and Long-term Water Storage

$V3_{source}$	+ (2 x $V4_{dist}$)	+ (2 x $V5_{outflow}$)	$V6_{geom}$					
0.80	+ 1.20	+ 1.20	+ 0.59	+	+	= 3.79	÷ 6	= 0.63

Function 5 -- Nutrient/Toxicant Removal

(2 x $V2_{CA}$)	+ (2 x $V4_{dist}$)	+ $V6_{geom}$	$V7_{chem}$					
1.30	+ 1.20	+ 0.59	+ 0.70	+	+	= 3.79	÷ 6	= 0.63

Function 6 -- Sediment Retention/Shoreline Stabilization

$V2_{CA}$	+ (2 x $V6_{geom}$)	+ (2 x $V8_{veg}$)						
0.65	+ 1.18	+ 1.20	+	+	+	= 3.03	÷ 5	= 0.61

Function 7 -- Production Export/Food Chain Support

$V1_{connect}$	+ (2 x $V5_{outflow}$)	+ $V6_{geom}$	+ $V7_{chem}$	+ (2 x $V8_{veg}$)				
0.50	+ 1.20	+ 0.59	+ 0.70	+ 1.20	+	= 4.19	÷ 7	= 0.60

Sum of Individual FCI Scores 4.38

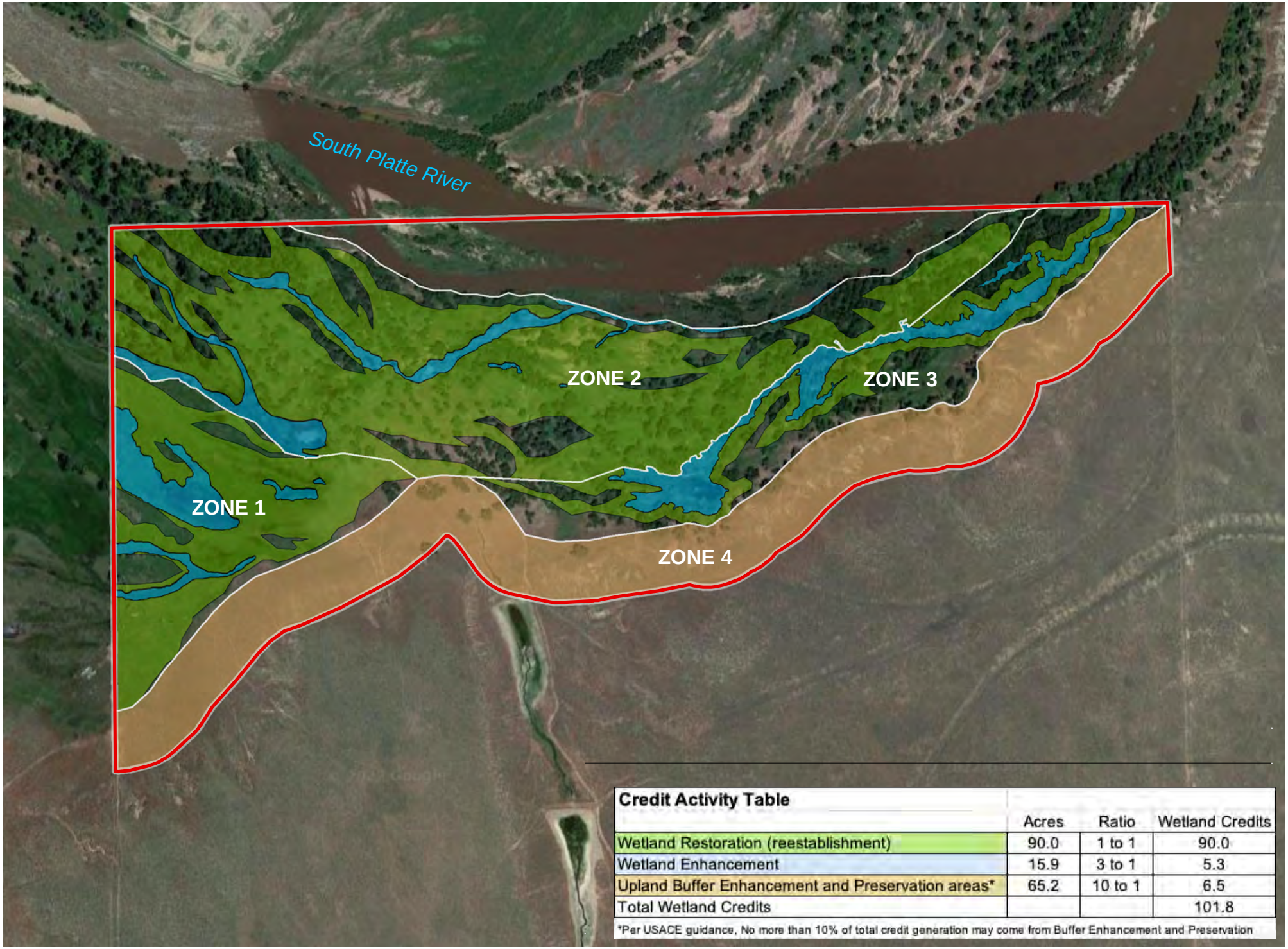
Divide by the Number of Functions Scored ÷ 7

Composite FCI Score 0.63

Appendix I

Crediting Table Map

December 2022



Credit Activity Table	Acres	Ratio	Wetland Credits
Wetland Restoration (reestablishment)	90.0	1 to 1	90.0
Wetland Enhancement	15.9	3 to 1	5.3
Upland Buffer Enhancement and Preservation areas*	65.2	10 to 1	6.5
Total Wetland Credits			101.8

*Per USACE guidance, No more than 10% of total credit generation may come from Buffer Enhancement and Preservation

Exhibit B
Long-term Management Plan
for the South Platte Mitigation Bank

Introduction

A. Purpose of Establishment

The South Platte Mitigation Bank ("Bank") was established by the Mitigation Banking Instrument ("MBI") to compensate for unavoidable impacts to, and to conserve and to protect, aquatic resources. The Bank property (Bank Property) totals 200-acres including 15.9 acres of existing wetlands. The MBI Signatory Agency is the Omaha District of the U.S. Army Corps of Engineers (USACE or Corps). Other agencies listed below comprise and are referred to jointly as the Interagency Review Team ("IRT"): the Environmental Protection Agency, Region VIII (EPA); the U.S. Fish and Wildlife Service, Region VI (FWS); the Colorado Division of Water Resources (DWR); Colorado Department of Public Health and Environment (CDPHE); and Colorado Parks and Wildlife (CPW). Terms used in this management plan have the same meaning as defined in the MBI.

B. Purpose of this Long-term Management Plan

The purpose of this long-term management plan (LTMP) is to plan for the Bank Property to be managed, monitored, and maintained in perpetuity following Bank closure. This long-term management plan establishes objectives, priorities, and tasks to monitor, manage, maintain, and report on the aquatic resources, covered species, and covered habitats on the Bank Property and is a binding and enforceable instrument, ensured by the conservation easement covering the Bank Property.

C. Long Term Land Manager and Responsibilities

The long term land manager (Land Manager) is the Colorado State Land Board (CSLB). The Land Manager, and subsequent Land Managers upon any authorized transfer, shall implement this LTMP, managing and monitoring the Bank Property in perpetuity to preserve its habitat and conservation values in accordance with the Bank's MBI and the conservation easement. LTMP tasks will be funded from the returns of the Endowment Fund. The Land Manager will be responsible for providing an annual report to the USACE detailing the time period covered, an itemized account of the management tasks and total amount expended. Any subsequent grading, or alteration of the site's hydrology and/or topography by the Land Manager or its representatives must be approved by the USACE and the necessary permits, such as a Section 404 permit, must be obtained if required.

II. Property Description

A. Setting and Location

The Bank Property is located within Section 16, Township 4N, Range 60W, directly adjacent to the South Platte River in Morgan County, Colorado. The Bank Property is shown on the general vicinity map in Exhibit A of the MBI. The general vicinity map shows the Bank location in relation to cities, towns, or major roads, and other distinguishable landmarks.

B. History and Land Use

The South Platte riparian corridors have been heavily impacted by anthropogenic activities which have resulted in the loss and degradation of historical wetland habitat. This habitat loss has in turn led to a reduction in aquatic functions and services provided by wetlands, including reduced flood attenuation, reductions in water quality, increased sediment loads, and the spread of invasive species. Located in Morgan County, Colorado, (Figure 1) the Bank Property is part of a large river system that has historically and hydrologically supported a vast mosaic of riparian wetlands adjacent to the river.

Prior to bank development, the bank site was used for livestock grazing and hunting.

C. Hydrology and Topography

The South Platte River is part of the headwaters of a major water basin and serves as a primary water source for eastern Colorado. The South Platte River originates in the Rocky Mountains near Fairplay and flows down from the Front Range of Colorado east into Nebraska where it conjoins with the North Platte River. From there it flows east until it meets the Missouri River and then into the Mississippi River, which flows south into the Gulf of Mexico. The US Department of Agriculture (USDA) maps the project area within the southern part of the Central High Plains Major Land Resource Areas (MLRA), which is characterized by a flat to gently rolling landscape formed by glacial drift material and sediment deposition from the Rocky Mountains (USDA, Natural Resources Conservation Service, 2006). This MLRA is part of the Colorado Piedmont section of the Great Plains physiographic province and ranges in elevation from 3,000 to 7,800 feet. The climate of the area is typical of mid-continental semiarid temperate zones, but the strong rain-shadow effect of the Southern Rocky Mountains makes the area somewhat drier. The average annual precipitation is between 12 and 18 inches, most of which occurs from April to September. The mean annual temperature is 45°F to 55°F, with the number of frost-free days ranging from 135 to 190.

D. Existing Easements and Leases

The Bank Property carries no third-party surface or subsurface rights restricting any parts of the Bank project. If in the future, the CSLB issues an oil and gas lease with respect to the Bank Property, a No Surface Occupancy (NSO) stipulation will be included in the lease language to prevent the future development of well pads or any other surface impacts to the Bank Property. NSOs are frequently used to limit the surface disturbance activities of oil, gas, and mineral lessees who have the right to extract subsurface resources from a property.

Two existing leases affect the Bank Property:

1. Recreation (Hunting) lease: This lease allows walk-in hunting access during the legal hunting season. Hunting under the LTMP will be subject to the Recreational Hunting Management Plan (Attachment A).

2. Grazing Lease: Livestock grazing will be prohibited during the Interim Management Period, and only permitted during the Long Term Management period if authorized in writing by the Corps, and in accordance with a Corps-approved grazing management plan. The Bank Sponsor or Land Manager may submit a grazing management plan, or other land management plans for consideration and potential approval by the Corps.

E. Adjacent Land Uses

The Bank Property is bounded by the South Platte River to the north, and rangeland and agricultural land to the south, east and west.

F. Biological Resources Survey of Bank

The Bank's Habitat Assessment and Wetland Delineation Reports are found in the Bank Development Plan's Appendix E and C respectively.

III. Management and Monitoring

A. Aquatic Resources

The goal of the LTMP is to foster the long term viability of the Bank's aquatic resources and buffer areas. Accumulation of native vegetation (grasses, forbs, shrubs, and trees) without naturally occurring disturbance actions (periodic grass disturbance whether through grazing or mowing) and woody material management (whether through wildfire or thinning) threatens the long-term health and diversity of native vegetative species over time. Routine monitoring and minor maintenance tasks are intended to support the viability of the Bank Property in perpetuity. The Land Manager for the Bank Property shall implement the following:

Element A.1 Aquatic Resources

Objective: Monitor, conserve and maintain the overall Bank Property's wetland and other aquatic resources. Limit any impacts to aquatic resources from vehicular travel or other adverse activities. Monitoring, photos, and compilation of notes will provide short term and long term understanding of ongoing positive site conditions and highlight any potential upcoming challenges.

Task: At least one annual walk-through survey will be conducted during the growing season to qualitatively monitor the general condition of these habitats but can occur more often if warranted. General topographic conditions, hydrology, general vegetation cover and composition, presence of noxious weeds and other invasive species, soil deposition, and erosion, will be noted evaluated and mapped. Observations will also include a list of opportunistic species encountered, general extent of wetlands, and any occurrences of erosion.

Task: Establish photo-monitoring locations and prepare a site map showing these reference sites. Photo-monitoring points should be established and mapped prior during interim bank management period. Monitoring photographs will be taken of the overall wetland mosaic at least every five years from the beginning of the long-term management, with selected reference photos taken on the ground more frequently. Additional photo monitoring points may be added if deemed appropriate during the annual survey.

Element A.2 Vegetation Management and Enhancement

Objective: Adaptively manage vegetation based on site conditions and data acquired through monitoring to maintain biological values.

Task: Establish vegetation management needs and objectives based on annual reporting.

Task: Implement vegetation management techniques, if determined beneficial and as funding allows, to maintain desired aquatic resource functions and services. Vegetation management techniques may include, but not limited to, prescribed grazing, prescribed fire, supplemental seeding and planting, and mowing.

Element A.3 Invasive Plant Management

Invasive plant species threaten the diversity or abundance of native species through competition for resources or causing physical or chemical changes to the invaded habitat. The Long Term Manager will track and address any potential challenges with invasive species. During construction, invasive species on site will be eradicated completely and ongoing management will continue under this long term management plan.

Objective: Monitor and manage invasive plant species that negatively impact the aquatic resource habitats for which the bank was established. Treatment of invasive plant species shall occur subject to the available funds provided by the Endowment Fund. The Land Manager shall consult the Colorado Noxious Weeds List for guidance on priorities. what species may threaten the site and on management of those species.

Task: Mapping up to twice a year of non-native invasive vegetative species cover or presence shall occur during the first five years of the long term management plan establishment to establish a baseline. Mapping shall be accomplished through use of available technologies, such as GIS and aerial photography.

Task: Each year's annual walk-through survey (or a supplemental survey) will include a qualitative assessment (e.g. visual estimate of cover) of potential or observed noxious weeds or other non-native species invasions, primarily in or around the wetlands. Additional actions to control invasive species will be evaluated and prioritized. Depending on mapping and evaluation, a variety of techniques may be applied to best address any current challenges. Table 1. indicates spot treatment by hand in two person teams twice a year, but that can vary depending upon evaluation and needs.

B. Security, Safety, and Public Access

The Bank Property shall have no public access, nor any regular public or private use except for hunting, foot access only, allowed by a private recreational lease by the Property Owner. Potential wildfire fuels may be reduced as needed by mowing or prescribed burning in accordance with C.R.S. 24-33.5-1203 and as provided in the Colorado Prescribed Fire Planning and Implementation Policy Guide in areas where approved by USACE. Hunting will only be allowed subject to the Recreational Hunting Management Plan. Research and/or other educational programs or efforts may be allowed on the Bank Property as appropriate but are not specifically funded or included in this LTMP.

Element B.1 Trash and trespass

Objective: Monitor sources of trash and trespass up to twice per year depending on challenges.

Objective: Collect and remove trash, repair vandalized structures, and rectify trespass impacts.

Task: During each site visit, record occurrences of trash and/or trespass. Record type, location, and management or mitigation recommendations to address trash and/or trespass impact.

Task: At least once yearly collect and remove trash and repair and rectify any vandalism and trespass impacts.

Element B.2 Fences, Signage, and/or Gates

Objective: Monitor conditions of fences, signage, gates used to prevent casual trespass, and/or manage livestock. As indicated in Table 1 fencing can be replaced at once, or in spots over a 30-year replacement period as needed. Gate replacement can be replaced every 15 years as needed.

Objective: Monitor conditions of fences, signage, gates used to prevent casual trespass, and/or manage livestock.

Task: During each site visit, record condition of fences, signage, and/or gates. Record type, location, type, and recommendations to implement repairs or replacement, if applicable.

Task: Maintain fences, signage, and/or gates as necessary by replacing posts, wire, signage, and/or gates. Replace, as necessary, and as funding allows.

C. Reporting and Administration

Element C.1 Annual Report

Objective: Provide annual report on all management tasks conducted and general site conditions to USACE and any other appropriate parties.

Task: Prepare annual report for the previous calendar year and any other additional documentation. Include a summary. Complete and circulate to the USACE by February 15 of each year.

Task: Make recommendations with regard to (1) any habitat enhancement measures deemed to be warranted, (2) any problems that need near short and long-term attention (e.g., weed removal, fence repair, erosion control), and (3) any changes in the monitoring or management program that appear to be warranted based on monitoring results to date.

IV. Transfer, Replacement, Amendments, and Notices

A. Transfer

After Bank Closure, any subsequent transfer of responsibilities under this LTMP to a different land manager shall be requested by the Land Manager in writing to the USACE, shall require written approval by the USACE, and shall be incorporated into this LTMP by amendment. Any subsequent Property Owner assumes land manager responsibilities described in this LTMP and as required in the Conservation Easement, unless otherwise amended in writing by the USACE.

B. Replacement

If the Land Manager fails to implement the tasks described in this LTMP and is notified of such failure in writing by any of USACE, Land Manager shall have 120 days to cure such failure. If failure is not cured within 120 days, Land Manager may request a meeting with the USACE to resolve the failure. Such meeting shall occur within 60 days or a longer period if approved by the USACE. Based on the outcome of the meeting, or if no meeting is requested, the USACE may designate, with written approval of the Property Owner, a replacement land manager in writing by amendment of this LTMP. If Land Manager fails to designate a replacement land manager, then such public or private land or resource management organization acceptable to and as directed by the USACE may enter onto the Bank Property in order to fulfill the purposes of this LTMP.

C. Amendments

The Land Manager**,** Property Owner**,** and the USACE may meet and confer from time to time, upon the request of any one of them, to revise the LTMP to better meet management objectives and preserve the habitat and conservation values of the Bank Property. Any proposed changes to the LTMP shall be discussed with the USACE and the Land Manager. Any proposed changes will be designed with input from all parties, including the easement holder. Amendments to the LTMP shall be approved by the USACE in writing shall be required management components and shall be implemented by the Land Manager.

D. Notices

Any notices regarding this Long Term Management Plan shall be directed as follows:

Land Manager / Property Owner
Colorado State Land Board
Attn: Director
1127 Sherman Street, Suite 300
Denver, CO 80203

Easement Holder
Colorado Open Lands
Attn: Director
1546 Cole Blvd. #200
Lakewood, CO 80401

V. Funding and Task Prioritization

A. Funding

Table 1 summarizes the anticipated costs of long-term management for the Bank Property. These costs include estimates of time and funding needed to conduct the basic monitoring site visits and reporting and other long term management activities that may include but not be limited to: weed management, trash removal, sediment removal from extreme events, and casual trespass prevention such as fence, signage, and/or gate repair and maintenance. The total annual average expected funding calculated is $6,510; therefore, at the annual estimated capitalization rate of 4.5% the total endowment amount required to be funded as scheduled in the MBI will be $144,667.

The endowment principal and interest monies will be held in a non-wasting account whose returns will be used to fund the long-term management activities consistent with this LTMP.

B. Task Prioritization

Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, may be necessary if insufficient funding is available to accomplish all tasks. The Land Manager and USACE shall discuss task priorities and funding availability to determine which tasks will be implemented. In general, tasks are prioritized in this order: 1) required by a local, state, or federal agency; 2) tasks necessary to maintain or remediate habitat quality; and 3) tasks that monitor resources, particularly if past monitoring has not shown downward trends. Equipment and materials necessary to implement priority tasks will also be considered priorities. Final determination of task priorities in any given year of insufficient funding will be determined in consultation with USACE and as authorized by the MBI and USACE in writing.

Table 1. Bank Management and Monitoring Activities, Level of Effort, Frequency and Cost.

General Bank Management & Monitoring Activities		Description	Level of Effort / hrs	Cost per Unit $/hr	Cost	Frequency	Schedule	Annual Cost
Element A.1 Aquatic Resources								
	Monitor aquatic resources	Walking survey; notes, photos	3	$40	$120	2-3 surveys/ year	growing season	$360
	Reference photography	Compile and present	4	$40	$160	once per year	growing season	$160
Element A.2 Wetland Monitoring								
	Monitoring	Walking survey; notes, photos	3	$100	$300	once per year	any time	$300
Element A.3 Invasive Species								
	Assess weed growth, extent	Walking survey, map; research	2	$80	$160	1-2 times per year	spring/ summer	$320
	Weed removal- (Estimated spot treatment by 2 person team @$100/hr)	Mechanical and chemical treatment	14	$100	$1,400	as needed (generally 2x/year)	late spring, summer	$2,800
Element B.1 Trash and Trespass								
	Trash and trespass monitoring	Walking surveys	2	$40	$80	2 times per year	as appropriate	$160
	Trash removal and cleanup and disposal	Hand labor	4	$40	$160	as needed	as needed	$160
Element B.2 Fences and Gates								
	Survey & assess fences	Walk; document conditions	6	$40	$240	1-2 times per year	as needed	$240
	Repair fencing	Hand labor	8	$40	$320	as needed	as needed	$320
	Replace fencing (feet)	Materials and labor	6500	$3.00	$19,500	replace as needed / every 30 yr	ongoing	$650
	Gate replacement	Materials and labor	2	$300	$600	replace every 15 yr	as needed	$40
Element C.1 Annual Report								
	Annual report	Analyze & report; maps, photos	8	$100	$800	once per year	due at year end	$800
	Vehicles and supplies			$200				$200
	Totals							$6,510
	Current annual capitalization							4.5%
	TOTAL ENDOWMENT							**$144,667**

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Attachement A

SOUTH PLATTE MITIGATION BANK
RECREATIONAL HUNTING MANAGEMENT PLAN (RHMP)

Recreational hunting may occur on the South Platte Mitigation Bank Property subject to an active hunting lease with the Property Owner, and approval of the Land Manager, if different entities. The following stipulations apply to hunting activity within the Bank Property and shall constitute the RHMP:

a. Hunting may only occur during legal hunting season.

b. Walk in access only; no motorized vehicles are allowed within the Bank Property.

d. A maximum of 4 individuals (hunters and guests) are allowed at any one time.

e. Handcarts are allowed to pack out harvested game.

f. Hunters to adhere to all applicable hunting regulations.

g. No overnight camping or fires allowed.

h. Hunters shall not remove, cut, destroy, or harvest any vegetation and shall avoid disturbing creek banks and structures.

I. Hunters shall not burn or leave their trash on the Bank Property.

j. The Hunting Lessee shall immediately report any violations of this RHMP to the Land Manager.

EXHIBIT C

SPMB Adaptive Management Plan

December 2022

SCP CONSERVATION, LLC
Attn: Gray Stevens
677 1st Avenue North
Naples, FL 34102

1.0. Introduction

This Adaptive Management (AM) Plan for the South Platte Mitigation Bank (SPMB) provides a framework for the implementation of remediation activities associated with the aquatic functions and services provided by the SPMB. It is important to distinguish between an adaptive management approach and maintenance of a project. Adaptive management is a process applied to the mitigation project to improve the likelihood of success of meeting performance standards. Maintenance is a series of ongoing operations carried out as remedies to specific situations during the interim monitoring phase. The purpose of the AM Plan is to ensure the Bank remains on track for meeting performance standards should deficiencies arise during this interim monitoring phase. The AM Plan serves as a supplement to the Bank Development Plan (MBI Appendix A) and the Maintenance and Monitoring Plan (MBI Appendix G).

2.0. Adaptive Management Planning

Adaptive management is an iterative and structured process which reduces ecological and other uncertainties that could prevent successful mitigation implementation and performance. AM establishes a framework for decision making which utilizes monitoring results and other information, as it becomes available, as a feedback mechanism used to update project knowledge and adjust management and mitigation actions to better achieve sustained aquatic functions and services.

3.0. Uncertainties in Management Decisions

A fundamental tenet underlying adaptive management is decision making and achieving desired project outcomes in the face of uncertainties. Although these systems are designed to be self-sustaining, however if uncertainty becomes present, here is a thoughtful list of examples that may arise, but are not limited to:

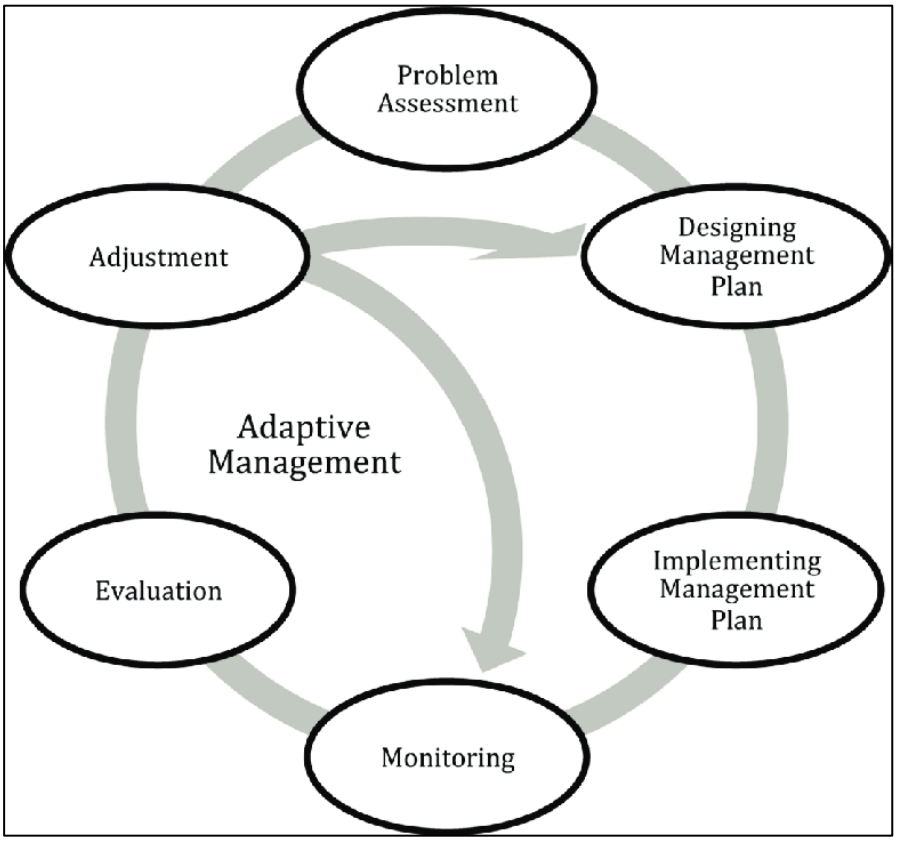
A. Drought conditions, and variability of intense storm frequency, extreme sediment deposition, intensity, and timing associated with climate change
B. Loss rate of vegetative plantings due to herbivory
C. Variability in growth rates and plant succession
D. Overall uncertainty relative to achieving ecological success

4.0 Decisions and Analysis

The overall goal of the adaptive management process is to design, construct, monitor and assess the responses of the ecological system to implementation of the project relative to stated targets, goals, objectives and project success criteria.

The Sponsor will use the following 6 Steps to Successful Adaptive Management:

1. Problem Assessment – Define goals and identify key uncertainties
2. Design Management Plan - Evaluate management options and develop appropriate Plan
3. Implementing Management Plan
4. Monitoring - Develop a monitoring and evaluation program that can answer questions to reduce uncertainty
5. Evaluation - Evaluate monitoring data and incorporate it into decisions to improve the design
6. Adjustment



Conrad, Steven & Olson, Erica & Raucher, Robert & Spry, Joel. (2013). Opportunities for Managing Climate Change by Applying Adaptive Management. TY - BOOK

5.0 Triggers for Adaptive Management

In the event the IRT or the Sponsor determines that the project either (a) is not achieving its performance standards in restored and enhanced areas, (b) has failed to meet or will no longer meet targeted aquatic functions and services of this BDP or (c) has suffered an unanticipated

event (natural or man-induced) that has adversely affected the SPMB's performance, then the IRT will be notified as soon as possible. Within 45 days of submittal to the Corps of notice, the Sponsor will submit to the Corps a proposed adaptive management plan to address the specific deficiency for consideration.

A list was developed to identify the potential major stressors or drivers which may affect the mitigation project and could trigger adaptive management (Table 1). The table does not attempt to explain all possible relationships of potential factors influencing the mitigation site; rather, presents only those relationships and factors deemed most relevant to obtaining the required success criteria, and may be modified, as necessary.

Table 1: Potential adaptive management triggers and action items

	AM Stressor or Driver	Recommended Action Items
Wetlands	1) Planted species mortality	Analyze hydrology, replant, and augment species species composition if necessary.
	2) Vegetative invasive species	Remove invasive species and augment planting composition if necessary
	3) Hydrology	Analyze data, review design, and adjust site conditions accordingly
	4) Add'l wetland creation	Conduct a FACWet analysis, consult with USACE and adjust wetland credit production if necessary

6.0 Hydrology

The Bank's restoration efforts will focus on restoring and enhancing the wetlands in the historical floodplain riparian areas of the South Platte River with a design plan that will result in no diversions, collections, or storage of stormwater or stream flow; do not expose ground water; and do not impede the flow of vested water rights. After a full review, the Colorado Division of Water Resources (DWR) concurred in a letter on February 26, 2021, that the activities as planned do not require a water right. (See Appendix B of the BDP)

EXHIBIT G

Maintenance and Monitoring Plan

SOUTH PLATTE MITIGATION BANK

December 2022

BANK SPONSOR:

SCP CONSERVATION, LLC

Attn: Gray Stevens

677 1st Avenue North

Naples, FL 34102

Maintenance and Monitoring Plan
for the South Platte Mitigation Bank

I. Introduction

The purpose of this Maintenance and Monitoring Plan (Plan) for the South Platte Mitigation Bank (SPMB) is to outline activities for the management, monitoring, and maintenance of the Bank Site during the period between Bank Establishment and Bank Closure. The Maintenance Plan is a description and schedule of maintenance requirements to ensure the continued viability of the mitigation resources from MBI approval to Bank closure and Long-Term Management. The Sponsor will continue with such maintenance activities until the Bank is closed. This interim monitoring phase will continue until performance standards have been met, the Bank has closed, and all financial assurances are in place according to the Provisions of Bank Closure identified in Section VIII.F of the Mitigation Banking Instrument (MBI). The interim land manager (Interim Land Manager) is the Bank Sponsor, SCP Conservation. Prior to Bank closure, the Interim Land Manager shall implement the managing and monitoring of the Bank Site to ensure that performance standards are being met and to preserve its aquatic habitat and conservation values in accordance with the Bank's MBI and the terms of the conservation easement. Following Bank closure, the Long Term Management Plan (Exhibit B) will be initiated. At this time, the landowner, Colorado State Land Board (CSLB), will be the Land Manager and assume the necessary roles and responsibilities.

The Sponsor shall maintain the Bank consistent with the directives outlined in the MBI during operation of the Bank, including this Maintenance Plan, including construction, monitoring, and adaptive management. Deviation from the maintenance provisions in the approved MBI requires review and written approval from the Chairs in consultation with the IRT.

II. Responsibilities

1. The Colorado State Land Board (CSLB) will remain the Property owner of the Bank Property and will participate in regular site visits as necessary to guarantee compliance with the conservation easement and mitigation goals. Upon Bank closure, the CSLB will become the Land Management steward and will follow the Long Term Management Plan outlined in Section IX of the MBI.

2. As Interim Land Manager, SCP Conservation will conduct the maintenance and monitoring activities associated with this Plan and will submit annual reports to USACE for distribution to the IRT (Interagency Review Team). The following maintenance plan focuses on documenting the restored ecological functions of SPMB, the adjacent wetland areas, and the associated riparian and buffer zones. The Interim Land Manager shall implement the following activities that include, but are not limited to;

- Site visits quarterly during the first two years post construction;
- Annual wetland monitoring and reporting;
- Ensuring conservation easement requirements are being met.

Additional administrative activities include posting all of the financial assurances, endowments, and properly documenting and reporting credit sales. The following regular maintenance and bookkeeping will be conducted by the Sponsor:

- Maintain a Bank activities ledger, which describes the date, purpose, description of activities performed, and outcome of each maintenance visit. This ledger is not required to be submitted on a regular basis, but may be requested by the IRT at any time;

- Conduct regular inspections of all mitigation areas, particularly during non-reporting years of Bank operation (annual inspections recommended, at a minimum);
- Maintain and repair all mitigation areas to meet or exceed the objectives and functions of the Bank, including all mitigation-related structures and plantings;
- Make efforts to prevent trespass, illegal dumping, or trash accumulation on the Bank property;
- Post and repair Bank/property limit, limited access, and conservation easement signs;
- Maintain, repair, and/or replace gates and fences, as necessary;
- Maintain and repair direct access roads, as necessary;
- Other maintenance responsibilities to Bank operation and adaptive management.

3. Colorado Open Lands (COL) will be the grantee of the conservation easement. COL will be responsible for compliance with the conservation easement and submitting annual reports to the Bank Sponsor, Land Manager, CSLB, and USACE. The reports will document compliance with the terms of the conservation easement. COLS will also coordinate with the CSLB and the Sponsor should any issues arise resulting in non-compliance.

A. Access

The Bank Sponsor will allow, or otherwise provide for, access to the Bank Property by members of the IRT, as reasonably necessary, for the purpose of inspection, compliance monitoring, and remediation consistent with the terms and conditions of this MBI throughout the period of Bank establishment, monitoring, and operation. IRT site visits will go through the Chair(s) of the IRT. Inspecting parties will not unreasonably disrupt or disturb activities on the Bank Property. Inspective parties will provide reasonable written notice, of not less than 72 business hours, to the Bank Sponsor and landowner, prior to inspection of the Bank Property.

III. Monitoring

The Bank Sponsor agrees to monitor the Bank, to demonstrate compliance with the monitoring requirements established in the MBI, and to submit annual monitoring reports for the next five years to years, or until such time that the Corps determines that the project has resulted in a net benefit to aquatic resource functions and services. Annual monitoring reports shall comply with the "Annual Mitigation Monitoring Report Format Requirements". In each monitoring report the Bank Sponsor shall state how the proposed project has achieved each success criterion identified in Section 8.0 of EXHIBIT A, Bank Development Plan. The annual monitoring report will be submitted by December 31st of each year. Monitoring will be conducted for a minimum of 5 years for emergent plant and 10 years for forested communities unless success criteria as determined by the Corps occurs earlier. The monitoring provisions are detailed in Section 9.0 below.

The objectives of the project are to restore and enhance the aquatic resources on the Bank Site. These activities include improving existing riparian and upland habitat through cattle removal, native plantings, and invasive species removal and control; and, permanently protect, monitor, and manage the resulting in increased aquatic functions and services. Annual monitoring will validate the success criteria associated with these objectives. Monitoring will begin during the first growing season after construction and continue until final performance standards are met, or until waived by the Corps.

The interim management monitoring phase will begin during the first growing season following construction and will continue until final performance standards are met and the long-term endowment has been funded in full. Additional years may be added or monitoring extended if necessary to achieve final performance standards.

IV. Maintenance Plan

The mitigation area is designed to operate and function with minimal or no required maintenance or human intervention after vegetation establishment. In addition to yearly monitoring, the restored wetland areas will be visited quarterly during the first two years of operation to ensure the site is performing optimally and when necessary. Other periodic maintenance and adaptive management activities may include weed control, vegetation protection, and supplemental planting as necessary to meet project goals and objectives. Vegetation manipulations may include weed control, staking woody tree stems, and installing protective barriers around individual plants or portions of sites to provide protection from wildlife.

The Bank Sponsor agrees to perform all necessary work to maintain the Bank consistent with the maintenance criteria of the Bank Development Plan (EXHIBIT A - MBI). The Bank Sponsor will continue with these maintenance activities until completion of the monitoring period. Deviation from the monitoring and maintenance provisions in the approved MBI requires review and written approval by the IRT.

A. Wetland Resources

The goal of the interim Management Plan is the achievement of performance standards of the Bank Property's aquatic functions and services. Primary components of the bank development plan include reconnecting degraded and disconnected hydrology and subsequent wetland functions, restoration of riparian vegetation, and exotic species eradication. The re-vegetated wetlands and riparian buffers of the Bank Property will be maintained in a succession of native trees, shrubs, grasses, and forbs designed to represent the natural system and encourage ecological diversity. Routine monitoring and minor maintenance tasks are intended to attain performance standards and ensure viability of the Bank Property in perpetuity.

1. Wetland Performance Standards

To demonstrate an increase in wetland function for reestablished and enhanced wetlands in the interim, reestablished and enhanced wetlands on the site will be assessed using performance standards based on hydrology and wetland vegetation. These performance standards are focused on ensuring the three parameters required to be present for an area to be considered a wetland under Section 404 of the Clean Water Act are in fact developing on the Bank. Because hydric soils may take many years to develop, clear indicators of anaerobic conditions and sufficient hydrology will serve as the performance proxy for wetland soils.

The Interim Hydrology Performance Standard requires that, with the exception of drought years, hydrology in reestablished and enhanced wetlands will have a minimum of saturation within 12 inches of the ground surface for 2 weeks (14 days) or more during the growing season. We will use well data loggers to meet this criterion.

Wetland vegetation will be assessed through both hydrophytic vegetation indicators (i.e., dominance test) and noxious weed cover. The dominance test included in the Wetland Determination Data Form, Great Plains Region, will be utilized to determine the percentage of plant species occurring in the vegetation

stratum that, individually or collectively, comprise more than 50 percent of total coverage, plus any additional species that individually comprise 20 percent of the total. A rating of more than 50 percent of plant species as rated obligate, facultative wet, or facultative passes the wetland vegetation dominance test. The wetland delineation shall demonstrate at least 80 percent of the site is vegetated (as determined by ocular estimate of herbaceous cover).

Additionally, FACWet will be used in re-established wetlands to demonstrate a FCI score equal to or greater than a 0.7 to be considered a functioning score.

Credits will be released, upon: (1) meeting all four interim performance criteria in Table A-9 below, (2) submission of that year's monitoring report, and (3) approval of that report by the Corps. Monitoring will be conducted for a minimum of 5 years for PEM areas and 10 years in forested communities unless success criteria as determined by the Corps occurs earlier. If success criteria are met in any area, that area may be approved for credit release as long as the long-term endowment is fully funded as specified in the Credit Release Schedule detailed in Section C. of the MBI.

This MBI was developed to comply with the Colorado Mitigation Procedures (COMPs V 2.0, June 2020). However, given that crediting methodologies for wetlands are continually evolving and the status of regulations shift because of administration changes at the federal, state, and local levels, we reserve the right to amend the MBI to incorporate additional new crediting methodologies or metrics as they are developed.

The final credit release will also follow completion of a wetland delineation that will occur as part of meeting final performance standards. Upon completion of final delineation, as required by Bank final performance standards, total reestablished wetland acreage will be determined. Should reestablished wetland acreage be greater than planned, we will work with the USACE to adjust numbers appropriately and credit restored acres at a 1:1 ratio. Conversely, should reestablished wetland acreage measure less than planned, credited acres will be adjusted.

At least one annual walk-through survey will be conducted to qualitatively monitor the general condition of these habitats. General topographic conditions, hydrology, general vegetation cover and composition, invasive species, erosion, will be noted, evaluated and mapped during a site examination in the spring. Notes to be made will include observations of species encountered, water quality, general extent of wetlands, and any occurrences of erosion, and weed invasion.

Photographic reference sites will be established, and a site map prepared showing the reference sites for the Bank file during the interim monitoring period. Once performance standards are met and long-term management phase begins, reference photographs will be taken of the overall wetland mosaic at least every five years, with selected reference photos taken on the ground more frequently.

B. Noxious Weeds

Invasive species threaten the diversity or abundance of native species through competition for resources, predation, parasitism, interbreeding with native populations, transmitting diseases, or causing physical or chemical changes to the invaded habitat. The objective is to monitor and maintain control over non-native invasive species, including but not limited to noxious weeds, that diminish site quality for which the Bank was established. The Interim Land Manager shall consult the Colorado Noxious Weeds List for guidance

on what species may threaten the site and the management of those species. Within the wetlands and mesic areas, the most prevalent noxious weeds observed were Russian olive (*Elaeagnus angustifolia* – List B). Canada thistle (*Cirsium arvense* – List B), and musk thistle (*Carduus nutans* – List B). In both the mesic areas and uplands, common mullein (*Verbascum thapsus* – List C) and cheatgrass (*Bromus tectorum* – List C) were present.

Mapping of non-native invasive species cover, or presence shall occur during the first five years of bank management, to establish a baseline and use of available technologies, such as GIS and aerial photography. Each year's annual walk-through survey (or a supplemental survey) will include a qualitative assessment (e.g. visual estimate of cover) of potential or observed noxious weeds or other non-native species invasions, primarily in or around the wetlands. Additional actions to control invasive species will be evaluated and prioritized. Per state law, List-A noxious weeds will be eliminated.

Table 1: List of wetland performance standards for South Platte Mitigation Bank.

Performance Standard	Criteria
Hydrophytic Vegetation	At least 80 % (determined by ocular estimate of herbaceous and shrub foliar cover) of the mitigation site is vegetated, with at least 50% of the total number of dominant species present consisting of species rated as facultative (FAC) or wetter (FACW or OBL).
Hydrology	Saturation or inundation must occur within 12 inches of the surface for at least 5% of the growing season (14 consecutive days during the period of April 17 through October 19) during years with normal precipitation. This will be demonstrated based on monitoring well data or through primary or secondary indicators of such as sediment deposits, drift lines, drainage patters, water marks, etc.
Noxious Weeds	Invasive species cannot make up more than 10% of List A and List B of the Colorado Noxious Weeds List in order to meet performance standard. Sponsor can gather data from nearby reference sites to fine tune evaluation criteria. Effort must be coordinated with and approved by USACE. The coverage of species on the current Colorado Noxious Weed Inventory list shall be no more than 5% at bank closure.
Functional Lift	Sponsor will show ecological lift using FACWet. A FCI score equal to or greater than 0.7 will constitue a functioning score.

V. Additional Monitoring

A. Security, Safety, and Public Access

The Bank Property will provide no general public access, nor any regular public or private use except for landowner approved recreational hunting in accordance with the Corps-approved Recreational Hunting Management Plan attached as Exhibit A. The Interim Land Manager will post no trespass signage at Bank Property perimeter. Research and/or other educational programs or efforts may be allowed on the Bank

Property as deemed appropriate by USACE but are not specifically funded or a part of this interim management plan.

B. Trash, Signage and Trespass

The interim Land Manager will monitor the Bank Property quarterly to collect and remove trash and to assess and maintain perimeter no trespass signage as needed. Frequency of routine maintenance may vary based on necessity. During each site visit, occurrences of trash and/or trespass will be recorded. Management recommendations to avoid, minimize, or rectify a trash and/or trespass impact will also be identified and implemented.

VI. Annual Reporting and Administration

The Sponsor shall submit annual monitoring reports for the next five years or until such time that the Corps determines that the project has resulted in a net benefit to aquatic resource functions and services. In each monitoring report the Sponsor shall state how the proposed project has achieved each success criterion identified in Section 8.0 of the Bank Development Plan. The annual monitoring report will be submitted by December 31st of each year. Monitoring will be conducted for a minimum of 5 years for any wetland improvements, 5+ years for PEM and forested communities, or until success criteria are met and the Corps waives further monitoring for each specific area.

The Bank Sponsor will submit such annual reports to the Denver Regulatory Office (CENWO-OD-RCO) using the Annual Mitigation Monitoring Report Format provided by the Denver Regulatory Office following procedures described in RGL 08-03 (USACE 2008). The reporting period will begin the first year after construction and continue until the long-term management phase is initiated.

The report will include information on the maintenance and management tasks conducted during the previous year. Results from the FACWet assessments will be presented. The Sponsor will also make recommendations with regard to:

- any habitat enhancement measures deemed to be warranted,
- any area that has achieved required success criteria
- any problems that need near short and long-term attention (e.g., noxious weed control, erosion control),
- any changes in the monitoring or management program that appear to be warranted based on monitoring results to date, and,
- any additional wetland areas created by the reconnection to the floodplain.

Monitoring Reports will be mailed to:

State Program Manager
Denver Regulatory Office
CENWO-OD-RCO
9307 S. Wadsworth Blvd.
Littleton, CO 80128-6901

VII. Adaptive Management

In the event the IRT or the Sponsor determines that the project either (a) is not achieving its performance standards in restored and enhanced areas, (b) has failed to meet or will no longer meet targeted aquatic functions and services of this BDP or (c) has suffered an unanticipated event (natural or man-induced) that has adversely affected the SPMB's performance, then the IRT will be notified as soon as possible. Within 45 days of submittal of notice to the Corps, the Sponsor will either submit to the Corps a proposed adaptive management plan to address the specific deficiency for consideration.

References

USACE (2020). U.S. Army Corps of Engineers. 2020. Colorado Stream Quantification Tool (CSQT) User Manual and Spreadsheets. Version 1.0. U.S. Army Corps of Engineers, Albuquerque District, Pueblo Regulatory Office.

USACE (2008) Compensatory Mitigation for Losses of Aquatic Resources, Final Rule. Regulation 40CFR Part 230

South Platte Mitigation Bank Signature Page

This agreement, entered into by SCP Conservation, LLC and the US Army Corps of Engineers (COE), is for the purpose of establishing the South Platte Mitigation Bank (Bank). The Bank will be used to mitigate for unavoidable wetland and stream impacts approved through the COE, who is responsible for administering Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (Section 404/10). Approved credits can be utilized to offset impacts to aquatic resources regulated by local, state, and other federal agencies as long as it complies with this Agreement/Instrument. The creation, operation, and use of the Bank will be in accordance with the South Platte Mitigation Banking Instrument, attached to this agreement.

The Interagency Review Team (IRT) that provided technical support to the COE includes the following agencies: U.S. Environmental Protection Agency, Region VIII; U.S. Fish and Wildlife Service, Region VI; the State of Colorado Division of Water Resources; the State of Colorado Department of Public Health and Environment (CDPHE); the Federal Highway Administration (FHA); and, Colorado Parks and Wildlife (CPW)., etc. These agencies sign in support of the creation of this Mitigation Bank.

The objective of the Bank is to restore, enhance and permanently protect (a) 90.0-acres of restored (reestablishment) wetlands (b) 15.9-acres of enhanced wetlands, 65.2 acres of upland buffer enhancement and preservation. As a result of these activities, approximately 101.8 wetland credits will be generated. The goal of the bank is to establish a self-sustaining mitigation site that will result in net increases in aquatic resource functions and services.

The primary geographical service area for this bank will encompass 1) the entire 8-digit HUC within which the mitigation bank is located, and 2) any adjacent 8-digit HUC located within the same major river basin (6-digit HUC) located within the High Plains Level III Ecoregion, which includes all of the Middle South Platte-Cherry Creek 8-digit HUC 10190003, including any adjacent 8-digit HUC located within the same major river basin, South Platte 6-digit HUC 6 101900. At the discretion of the COE, Section 404/10 credits may be approved outside of the primary geographic service area.

COE approval of this Instrument constitutes the regulatory approval required for the South Platte Mitigation Bank to be used to provide compensatory mitigation for Department of the Army permits pursuant to 33 CFR 332.8(a)(1). This Instrument is not a contract between the Sponsor or Property Owners and the COE or any other agency of state or federal government which may be signatory hereto. Any dispute arising under this Instrument will not give rise to any claim by the Sponsor or Property Owners for monetary damages. This provision is controlling notwithstanding any other provision or statement in the Instrument to the contrary.

_____ Date Signed: 1/24/23

Stephanie DeJong
Manager, Clean Water Branch
Environmental Protection Agency, Region 8

South Platte Mitigation Bank Signature Page

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Gray Stevens, Manager

Gray Stevens, SCP Conservation, LLC

Date Signed: 1.24.23

Date Signed: 7 MAR 2023

Eric A. Laux
Chief, Regulatory Branch
U.S. Army Corps of Engineers, Omaha District