

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 <u>patrick.lennberg@state.co.us</u> 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, <a href="mailto:brent@frontierenvironmental.net">brent@frontierenvironmental.net</a>



Attachments



Date: 12/18/2024

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

Name:	Ecosyster	Ecosystem Investment Partners			
Street Address:					
Telephone:	( )	Mobile:	(828) 243-2674		
Email Address:	kyle@eco	systempartne	rs.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	<sup>e:</sup> <u>4N</u> <sup>Range:</sup>	60W PM	6th	
Or NAD GPS	27	X UTM	Y	UTM		_
Direction nearest to		Miles to ty:	2 miles south of	Orchard C	ounty:	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.

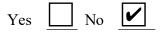
- 8. What is the approximate areal extent of the proposed extraction in acres?
   ~100 acres
- 9. To what approximate depth will the extraction extend?

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?



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



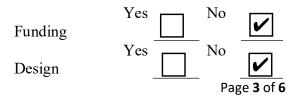
13. Will either the landowner or the mine site operator receive any type of compensation, i.e., monetary, in-kind, haulage fees, etc., from the proposed material extraction?



- 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?



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.

<u>Please send the completed questionnaire to the Division at the address above for review.</u> 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: <u>https://colorado.gov/drms</u> 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

#### 1.2.1 Specified by Rule

103(3) and

(13)

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

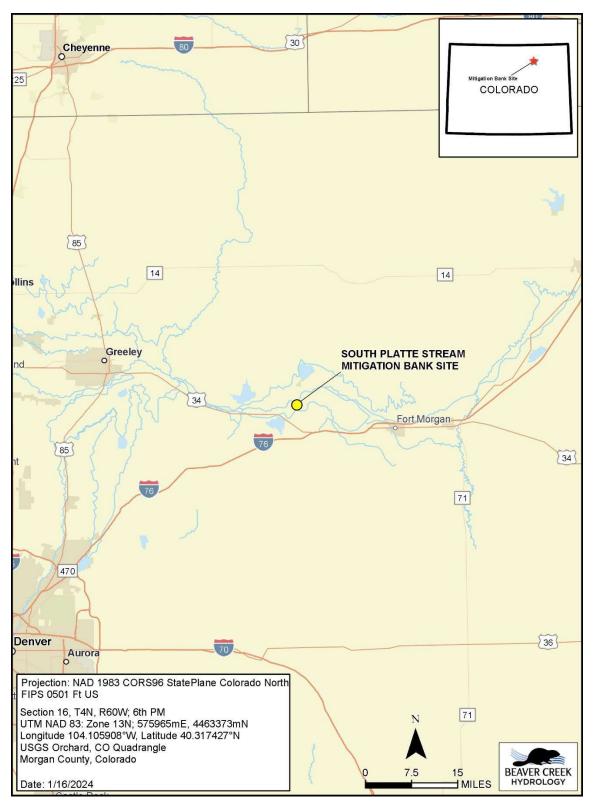


Figure 1. Vicinity Map.

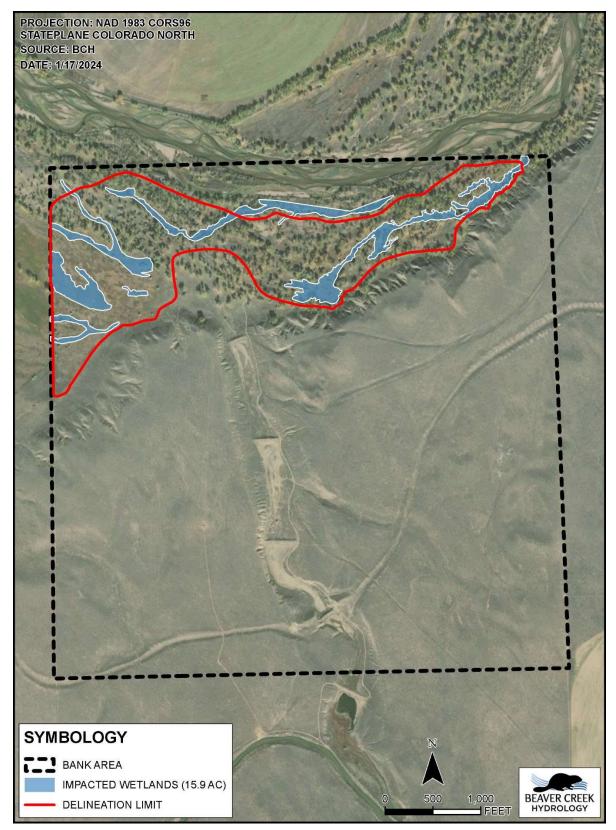


Figure 2. Existing Conditions.

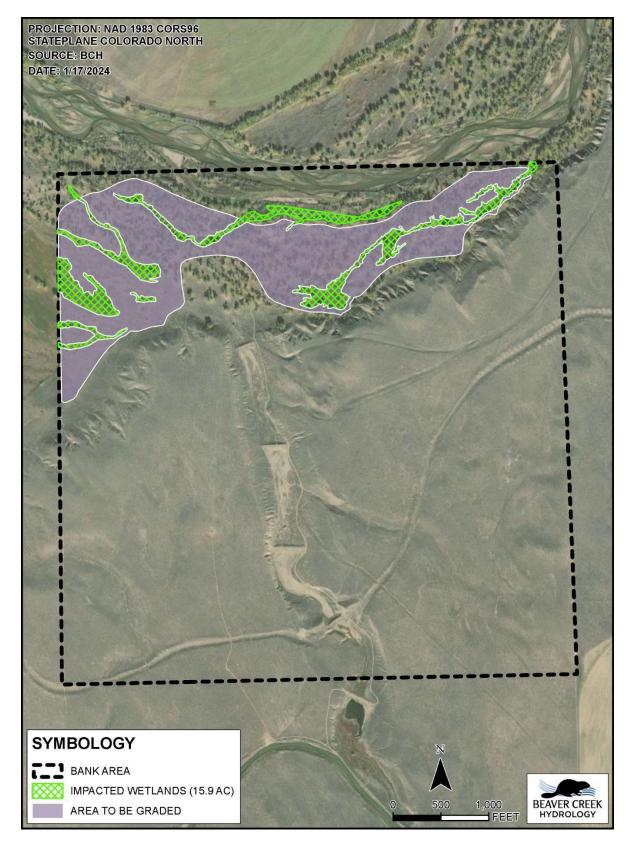
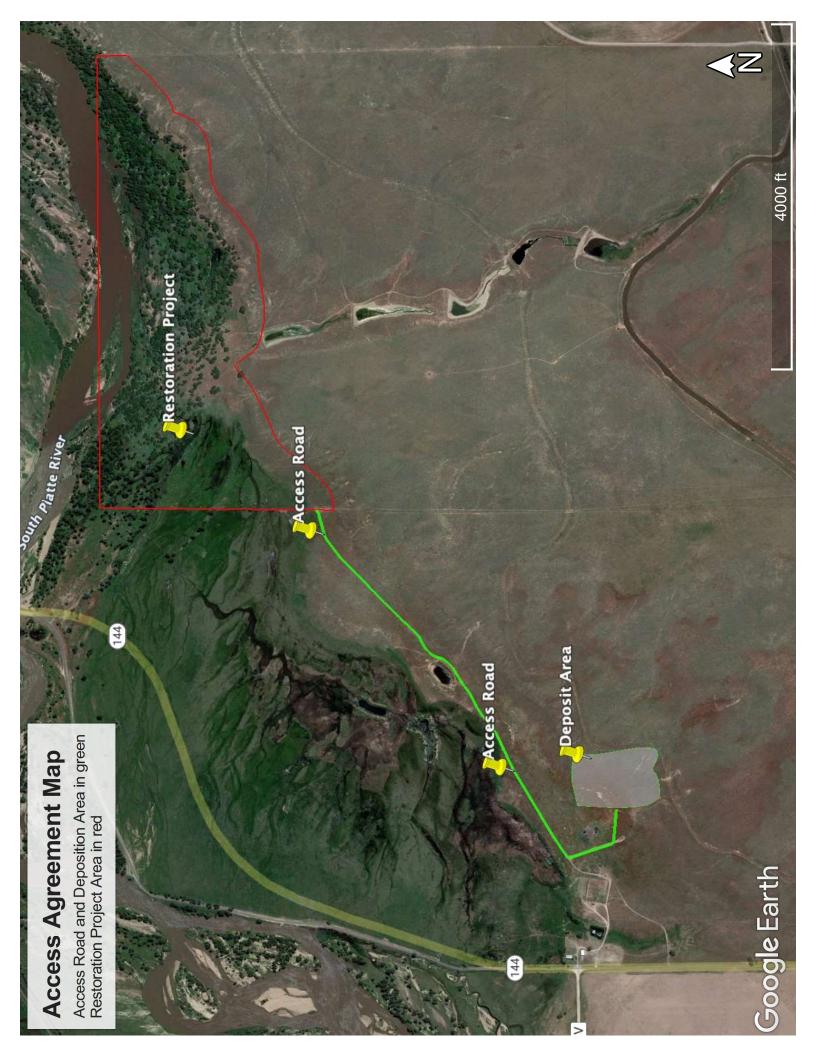


Figure 3. Proposed Impacts.



## **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 1<sup>st</sup> Avenue North Naples, FL 34102

**Revised September 2023** 

EFFECTIVE DATE: [Date Corps sign INSTRUMENT]

## TABLE OF CONTENTS

I.	INTRODUCTION	1
	INSTRUMENT PURPOSE	
	PROJECT SUMMARY	
	AUTHORITIES	
V.	VALIDITY AND AMENDMENTS; CONTROLLING LANGUAGE	2
VI.	CONTACT INFORMATION	
	BANK ESTABLISHMENT: MITIGATION PLAN	
VIII.	BANK OPERATIONS	
A		
В	. BANK CREDITING AND DEBITING	4
С		
D	ACCOUNTING PROCEDURES AND REPORTING	4
E	. PROVISIONS FOR DEFAULT	5
F	. PROVISIONS FOR BANK CLOSURE AND TERMINATION	5
G		
Н		
IX.	ESTABLISHMENT OF LAND MANAGEMENT STEWARD	6
Х.	OTHER PROVISIONS	7
A	DISCLAIMER	7
В		-
В		
С	INVALID PROVISIONS	7
XI.	SIGNATORIES	-

#### EXHIBIT A: BANK DEVELOPMENT PLAN

Appendix A: Vicinity Map

Appendix B: Water Rights Determination

Appendix C: Wetland Delineation Report

Appendix D: Hydrology and Soils Memo

Appendix E: Habitat Assessment

Appendix F: Geographic Service Area Map

Appendix G: South Platte Mitigation Bank Design Plan

Appendix H: Functional Assessment of Colorado Wetlands (FACWet)

Appendix I: Crediting Table Map

EXHIBIT B: LONG TERM MANAGEMENT PLAN

EXHIBIT C: ADAPTIVE MANAGEMENT PLAN

EXHIBIT D: CONSERVATION EASEMENT

EXHIBIT E: FINANCIAL ASSURANCES

EXHIBIT F: TITLE REPORT

.

EXHIBIT G: MAINTENANCE AND MONITORING PLAN

# South Platte Mitigation Bank

# Mitigation Banking Instrument

## 1 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 caprice area.

11 within the service area.

12 The Omaha District-Denver Regulatory Office of the Corps (NWO) will be the chair (Chair) of the IRT. IRT 13 participation will include: the U.S. Environmental Protection Agency, Region VIII (EPA); U.S. Fish and 14 Wildlife Service, Region VI (FWS); the Federal Highway Administration (FHWA); the Colorado Division of

15 Water Resources (DWR); Colorado Department of Public Health and Environment (CDPHE); and Colorado

16 Parks and Wildlife (CPW).

#### 17 II. INSTRUMENT PURPOSE

18 This Instrument sets forth guidelines and responsibilities for the establishment, use, operation, protection, 19 monitoring, and maintenance of the SPMB in accordance with 33 CFR 332 et seq. The Bank has been 20 established to provide mitigation credits to compensate for unavoidable impacts to aquatic resources, 21 including streams and wetlands, that result from activities authorized by DA permits issued pursuant to 22 Section 404 of the Clean Water Act (33 USC 1344) (CWA), and Section 10 of the Rivers and Harbors Act 23 (33 USC 403). Credits under this Instrument can also be used to provide mitigation for Executive Order 24 (EO) 11990 within the service area. When deemed appropriate by the Corps, the mitigation credits may 25 also be used to provide compensation for Corps Civil Works projects.

#### 26 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

40 development by the landowner. There are no mineral/subsurface reservations to third parties or other

- 41 similar Bank Property encumbrances that would interfere with Bank establishment and operation by the
- 42 Bank Sponsor.
- 43 More complete details regarding the Bank Project and Bank Property are provided in the Exhibit A, Bank 44 Development Plan.

#### 45 IV. AUTHORITIES

- The establishment, operation, and use of the Bank is carried out under the following authorities (not all inclusive):
- 48 A. Regulatory Programs of the United States Army Corps of Engineers (33 CFR 320-332);
- 49 B. Clean Water Act (33 USC 1251 et. seq.)
- 50 C. National Environmental Policy Act (42 USC § 4321 et seq.)
- 51 D. Executive Order 11990; Protection of Wetlands
- 52 E. Executive Order 11988; Floodplain Management
- 53 F. Rivers and Harbors Act (33 USC § 403)
- 54 G. Endangered Species Act (16 USC § 1531 et seq.)
- 55 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)
- 59 J. U.S. Army Corps of Engineers Regulatory Guidance Letter 08-3, Minimum Monitoring Requirements for
- 60 Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of 61 Aquatic Resources (October 10, 2008)
- 62 K. Guidelines for Specification of Disposal Sites for Dredged and Fill Material (40 CFR 230)
- 63 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)
- 66 M. Fish and Wildlife Coordination Act (16 USC § 661 et seq.)

## 67 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
- 70 may be amended, altered, released, or revoked only by written agreement among the parties hereto or their 71 heirs, assigns or successors-in-interest; the amendment must follow the appropriate procedures listed in
- 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
- 73 33 CFR 332.8 (g) (2) is warranted.
- 74 The Parties intend the provisions of this Instrument, its exhibits and appendices, and each of the documents 75 incorporated by reference in it to be consistent with each other, and for each document to be binding in 76 accordance with its terms. To the fullest extent possible, these documents shall be interpreted in a manner 77 that avoids or limits conflict between or among them. However, if and to the extent that specific language 78 in this Instrument conflicts with specific language in any document that is incorporated into this Instrument 79 by reference, the specific language within the Instrument shall be controlling. The captions and headings 80 of this Instrument are for reference only, and shall not define or limit any of its terms or provisions. This 81 Instrument constitutes the entire agreement between the parties hereto concerning the subject matter
- 82 hereof and supersedes all prior agreement and undertakings.

- 83 VI. CONTACT INFORMATION
- 84 A. Bank Sponsor: 85 SCP Conservation, LLC 86 Attn: Grav Stevens 87 677 1st Avenue North Naples, FL 34102 88 89 mgstevens@ameritech.net 90 Bank Property Owner: Β. Colorado State Land Board 91 92 Attn: Mindy Gottsegen 93 1127 Sherman Street, Suite 300 Denver, CO 80203 94
- 95 mindy.gottsegen@state.co.us
- 96 VII. BANK ESTABLISHMENT: MITIGATION PLAN

97 The twelve-element Bank Development Plan (BDP) for the development of the SPMB is provided in Exhibit98 A.

- 99 VIII. BANK OPERATIONS
- 100 A. MITIGATION SERVICE AREA

101 The Bank is authorized to provide mitigation to compensate for unavoidable impacts to aquatic resources 102 of the U.S., including EO 11990. The authorized primary service area for the Bank's credits is defined as: 103 1) the entire 8-digit HUC within which the mitigation bank is located, and 2) any adjacent 8-digit HUC located 104 within the same major river basin (6-digit HUC) located within the High Plains Level III Ecoregion. Use of 105 the Bank credits for mitigation in all other areas maybe approved on a case-by-case basis by the Corps. A

106 GSA Map can be found in Exhibit A, Appendix F.

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

108

#### Table 1: Service areas for the South Platte Mitigation Bank

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

#### 109 B. BANK CREDITING AND DEBITING

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

- 111 Definitions of establishment, re-establishment, restoration, enhancement and preservation are found at 33
- 112 CFR 332.8(g). If in the future the crediting and debiting regulations or guidance changes from those 113 currently in place, the Bank Sponsor reserves the right to amend the MBI to reflect such changes as they 114 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
- 120 condition to wetlands within the South Platte Mitigation Bank footprint.
- 121 The wetland crediting ratios are provided in EXHIBIT A and result in the Bank being authorized hereby to 122 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.
- 124 C. CREDIT RELEASE SCHEDULE
- 125 Upon submittal of all appropriate documentation by the Bank Sponsor, and subsequent approval by the 126 Corps, the Bank's credits shall be released to the Bank in accordance with the following schedule:

#### 127 **Table 2:** Wetland credit release schedule

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

128 The above referenced Performance Standards are detailed in the Section 8.0 of Exhibit A Bank 129 Development Plan.

- 130 131
- D. ACCOUNTING PROCEDURES AND REPORTING

132The Bank Sponsor shall be responsible for keeping a current ledger of its credit transactions within the133Bank. The Bank Sponsor shall submit a copy of this ledger to the NWO annually. The annual ledger shall

134 provide the following:

135

136

140

141

- 137 Permittee Name
- Permit Number
- 139 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.

150 E. PROVISIONS FOR DEFAULT

151 If the IRT Chair believes that the Bank is in default of, or out of compliance with, a material provision of the 152 Instrument, written notice shall be provided to the Bank Sponsor, including a detailed description of the 153 basis for the notice of such default. The Bank Sponsor shall submit a written corrective action plan to the 154 IRT Chair for review and approval after receiving written notice of default. The corrective action plan shall, 155 at a minimum, identify the cause of the non-compliance, the measures necessary to correct the non-156 compliance, and a timeline for implementing said measures and to come into compliance. The IRT Chair 157 shall inspect and review the plan. To the extent practicable, the IRT Chair shall approve or reasonably 158 amend the corrective action plan, provided that sufficient information and acceptable measures are 159 contained within the plan. The Bank and the Bank Sponsor shall not be considered to be in default as long 160 as the Bank Sponsor is taking reasonable steps to develop the Plan within the stated timeframes and come 161 into compliance in accordance with the actions and timelines specified in the Plan. Failure of the Bank 162 Sponsor to initiate efforts to remedy deficiencies in a reasonable time as provided in the Plan during the 163 Suspension Period may result in termination of the Instrument. It should be noted that if the Sponsor is in 164 non-compliance the Corps can suspend the sale of additional credits until the project is back in compliance.

#### 165 F. PROVISIONS FOR BANK CLOSURE AND TERMINATION

166 The Bank shall close at the point when all Bank credits have been sold or relinquished; banking activity is 167 voluntarily terminated with written notice from the Bank Sponsor to the IRT Chair as provided herein; or 168 when the IRT Chair issues a Notice of Termination due to the Bank Sponsor's failure to initiate efforts to 169 cure a default as outlined above (Bank Closure).

170 Upon Bank Closure, the Bank Sponsor shall provide the IRT Chair with a copy of the letter transferring the 171 Long-Term Financial Assurance and the long-term management responsibilities of the Bank Property to 172 CSLB as the long-term land stewardship entity (Land Manager). The Land Manager will be responsible for 173 implementing the Long-Term Management Plan (Exhibit B) and for ensuring the Bank Property remains in 174 compliance with the Concernational Science Term Management Plan.

174 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.

#### 181 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.

#### 182 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.

## 188 IX. ESTABLISHMENT OF LAND MANAGEMENT STEWARD

189 Upon Bank Closure, CSLB will be the designated Land Management Steward (Land Manager) pursuant to190 the Long Term Management Plan (Exhibit B).

- 191 X. OTHER PROVISIONS
- 192 A. DISCLAIMER
- 193 This Instrument does not in any manner affect statutory authorities and responsibilities of the signatory 194 parties.
- 195 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).

201 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:

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.

209 2. Each Implicated Party shall have forty-five (45) calendar days after receipt of the dispute notice (or
 210 such other time as the Parties may mutually agree) to respond to the electing Party. During this time, any
 211 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 215 resolution.

#### 216 D. INVALID PROVISIONS

217 In the event any one or more of the provisions contained in this Instrument are held to be invalid, illegal or

218 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

220 not been contained herein.

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

TABLE OF CONTENTS

Introduction	Error! Bookmark not defined.
1.0 Project Goals and Objectives	Error! Bookmark not defined.
2.0 Site Selection	Error! Bookmark not defined.
2.1 Sufficient Water Rights	5
3.0 Site Protection Instrument	5
4.0 Baseline Information	5
5.0 Determination of Credits	
6.0 Mitigation Work Plan	8
6.1 General Construction	
6.2 Wetlands	
6.3 Functional Assessment	11
6.4 Plantings	12
7.0 Maintenance Plan	14
8.0 Performance Standards	15
9.0 Monitoring Requirements	17
9.1 Access	17
10.0 Long-term Management	18
11.0 Adaptive Management	18
11.1 Default	18
12.0 Financial Assurances and Responsibilities	19
13.0 References	21

#### LIST OF FIGURES

Figure 1: South Platte Mitigation Bank boundary and wetland mitigation work zones map------10

#### LIST OF TABLES

Table A-1: Summary information for the South Platte Mitigation Bank	4
Table A-2: Common species occurring in the project area	7
Table A-3: List of wetland types, associated acreage, and credit production	8
Table A-4: FACWet Functional Capacity Index scores in three wetland zones	12
Table A-5: Zone 1 Planting list	12
Table A-6: Zone 2 Planting list	13
Table A-7: Zone 3 Planting list	13
Table A-8: Buffer Zone Planting list	14
Table A-9: List of wetland performance standards for South Platte Mitigation Bank	17

## LIST OF ATTACHMENTS

Appendix A: Vicinity Map

Appendix B: Water Rights Determination

Appendix C: Wetland Delineation Report

Appendix D: Hydrology and Soils Memo

Appendix E: Habitat Assessment

Appendix F: Geographic Service Area Map

Appendix G: South Platte Mitigation Bank Design Plan

Appendix H: Functional Assessment of Colorado Wetlands (FACWet) for South Platte Mitigation Bank Appendix I: Crediting Table Map

## 12-Element BANK DEVELOPMENT PLAN SOUTH PLATTE MITIGATION BANK

#### 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.

#### 4 1.0 Project Goals and Objectives

5

6 The primary goal of the South Platte Mitigation Bank project is to establish a wetland mitigation bank in the 7 Middle South Platte-Cherry Creek (8-digit HUC) watershed in order to provide compensatory wetland 8 mitigation credits for unavoidable impacts authorized under Section 404 of the Clean Water Act and other 9 impacts, such as EO 11990, specifically wetland impacts within the Bank's service area as authorized by 10 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.

#### 25 2.0 Site Selection

26

18

19 20

21

22

23

24

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.

34

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,

- 38 reductions in water quality, increased sediment loads, and the spread of invasive species. Located in 39 Morgan County, Colorado, (Appendix A) the Bank Property is part of a large river system that has 40 historically and hydrologically supported a vast mosaic of riparian wetlands adjacent to the river.
- 41

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

44 resource groups as valuable conservation areas, (4) are at risk for development, and (5) have an ability to

45 become a restoration project that is self-sustaining. The Bank Property was selected for the SPMB because

46 each of these factors and its potential to provide improved habitat connectivity for flora and fauna of the

- 47 South Platte River Basin. The targeted restoration, enhancement, and preservation activities have a high
- 48 likelihood of success because the activities would be restoring the natural aquatic functions and services 49 present on the site historically, ultimately resulting in a net increase of aquatic resource functions and
- 49 present on the site historically,50 services.
- 51

52 There is adequate demand for aquatic resource compensatory wetland mitigation credits within the South 53 Platte River (6-digit HUC) basin as recent and projected growth and development in these areas create 54 pressure to impact natural wetland resources, while available Bank wetland credits are limited. The SPMB 55 will provide wetland credits to offset impacts in this region without a temporal loss to aquatic functions and

- 56 services.
- 57 58

59

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

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

#### 61 2.1 Sufficient Water Rights

62

63 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

66 water rights. After a full review, the Colorado Division of Water Resources (DWR) concurred in a letter on

67 February 26, 2021, that the activities as planned do not require a water right. (See Appendix B)

#### 68

69 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

71 Appendix B for Water Rights Determination.

### 72 **3.0 Site Protection Instrument**

73

74 The Bank Sponsor will record a conservation easement (CE) on the Bank Property after the MBI signature, 75 but prior to the release of any credits. A template of the CE is provided in EXHIBIT D. The CE will prohibit 76 activities on the Bank Property that are inconsistent with preserving and protecting its aquatic resource 77 functions and services in perpetuity. The CE will run with the Bank Property in perpetuity for any subsequent 78 landowners. The CE will stipulate that the Bank Sponsor has entered into a plan with the IRT signatory 79 agencies for the establishment of the Bank and that the Bank Sponsor has agreed to the provisions 80 specified in this MBI. The Bank Property will be monitored annually to ensure that terms of the CE are 81 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.

87

## 88 4.0 Baseline Information

89

90 The US Department of Agriculture (USDA) maps the project area within the southern part of the Central 91 High Plains Major Land Resource Areas (MLRA), which is characterized by a flat to gently rolling landscape 92 formed by glacial drift material and sediment deposition from the Rocky Mountains (USDA, Natural 93 Resources Conservation Service, 2006). This MLRA is part of the Colorado Piedmont section of the Great 94 Plains physiographic province and ranges in elevation from 3,000 to 7,800 feet. The climate of the area is 95 typical of mid-continental semiarid temperate zones, but the strong rain-shadow effect of the Southern 96 Rocky Mountains makes the area somewhat drier. The average annual precipitation is between 12 and 18 97 inches, most of which occurs from April to September. The mean annual temperature is 45°F to 55°F, with 98 the number of frost-free days ranging from 135 to 190.

99

100 The geology of the Flat to Rolling Plains ecoregion consists largely of silt and clay loams formed from eolian 101 sediments, and the soils are characteristic of alluvial fans that occur along the base of the Front Range. 102 Located within the South Platte River watershed of central Colorado, streams flow from west to east, out of 103 the Front Range Mountains and foothills, or from southeast to northwest off the Palmer Divide and into the 104 South Platte River. The South Platte River converges with the North Platte River just west of Ogallala, 105 Nebraska to form the Platte River. The Platte River is tributary to the Missouri River, which eventually flows 106 into the Mississippi River. Most of the tributaries that flow into the South Platte River watershed contain 107 riparian corridors dominated by deciduous woodlands and transitional shrubs and grasslands.

108

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.

118

119 The wetlands in the project area are generally dominated by prairie cordgrass, foxtail barley (Hordeum 120 jubatum), Baltic rush (Juncus balticus), common threesquare (Schoenoplectus pungens), Emory's sedge, 121 and reed canarygrass (Phalaris arundinacea), with areas of scrub-shrub wetland dominated by narrowleaf 122 willow (Salix exigua). Wetlands on the site are located within depressions or swales and appear to be fed 123 by groundwater from and the flooding of the South Platte River. The uplands in the project area are 124 dominated by tall wheatgrass, tall fescue (Schedonorus arundinaceus), switchgrass (Panicum virgatum), 125 saltgrass (Distichlis spicata), leafy spurge, smooth brome, common reed (Phragmites australis spp. 126 americanus) and Canada thistle. Please see Appendix C for Wetland Delineation Report.

127

128 The soils on the site are typical within floodplain wetlands along the South Platte River and are encouraging 129 for restoration activities. The Natural Resource Conservation Service has mapped six primary soils in the 130 project area: Wann fine sandy loam, saline (Wf); Wann clay loam, saline (Wc); Wet alluvial land (Wt); 131 Cascajo soils and gravelly land (Ca); Riverwash (Rv); and Ellicott-Glenberg complex, 0 to 3 percent slopes, 132 occasionally flooded (Bk) (USDA, NRCS 2020b). Wann fine sandy loam, saline and Wann clay loam, saline 133 soils are somewhat poorly drained, associated with floodplains and stream terraces, are slightly to strongly 134 saline, and are typically found in salt meadows. Wet alluvial land is poorly drained, associated with 135 floodplains and streams, and is typically found in salt meadows. Cascajo soils and gravelly land is 136 excessively drained, typically located on terraces, non-saline to very slightly saline, and typically associated 137 with gravel breaks. Riverwash is associated with floodplains, low sand ridges, and arroyos. Details 138 regarding the drainage class, maximum salinity, and ecological site is not given for Riverwash. Ellicott-139 Glenberg complex is somewhat excessively drained, associated with floodplains, nonsaline to very slightly 140 saline, and typically associated with sandy bottomlands. Please see Appendix D for Hydrology and Soils 141 Memo.

142

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.

- 148
- 149
- 150
- 151

**Table A-2:** Common species occurring 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			

#### Commonly occurring plant species in the project area.

<sup>\*</sup>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.

153 154

#### 155 5.0 Determination of Credits

156

157 Definitions of establishment, re-establishment, restoration, enhancement and preservation are found at 33

158 CFR 332.8(g). The Bank will utilize Colorado Mitigation Procedures (COMP) v2.0 for crediting and debiting

159 purposes which results in the Bank receiving 101.8 wetland credits as outlined in Table A-3 below. These

160 credits can be used in approved mitigation service areas detailed in Section VIII.A. of the MBI. Please see

161 Appendix F for Geographic Service Area Map.

162 Pursuant to COMPv2.0, wetland credits for the Bank will be measured in acres utilizing ratios as follows:

163 One acre of wetland restoration (re-establishment) will equal one wetland credit/acre. Three acres of 164 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 165

166 Colorado Wetlands (FACWet) shall be utilized to measure the change in wetland functional condition to

- 167 wetlands within the South Platte Mitigation Bank footprint.
- 168 169
- 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

170

171 The most recent version of the Functional Assessment of Colorado Wetlands (FACWet) will be utilized to

172 demonstrate improvement in wetland functional condition to wetlands within the South Platte Mitigation 173 Bank footprint. If in the future the crediting and debiting regulations or guidance changes from those

174 currently in place, the Bank Sponsor reserves the right to amend the MBI to reflect such changes as they

175 become available and approved for use by the Corps.

#### 6.0 Mitigation Work Plan

176

177 The objective of the following mitigation work plan is to restore, enhance, and preserve wetlands and buffer 178 areas, and other aquatic resource functions and services on the Bank for use as compensatory mitigation 179 for the unavoidable impacts to aquatic resources. Primary components of the work plan include restoration 180 (reestablishment) of 90.0 acres of wetlands, enhancement of 15.9 acres of existing wetlands, and 65.2 181 acres of buffer enhancement and preservation areas. Please see detailed construction plan view maps 182 provided in the South Platte Mitigation Bank Design Plan in Appendix G.

183

184 Wetland restoration and enhancement will be accomplished through targeted excavation of historic swales 185 and paleo-channels to reestablish historic hydrology, removal of other impediments such as invasive 186 species and cattle overgrazing, and replanting with native vegetation. The first stage of the work plan will 187 entail site preparation clearing and removal of invasive species and their seed sources. The second stage 188 of the work plan will entail soil excavation and grading to meet designed soil elevations. The third stage of 189 the work plan will entail re-vegetating in a succession of native trees, shrubs, grasses, and forbs designed 190 to represent the natural system and encourage ecological diversity.

191

192 Extensive wetlands were historically present on the site and were mainly supported through groundwater 193 influenced by the elevation of the South Platte River. Likewise, the Bank project's restored and enhanced 194 wetlands will be supported by groundwater. These restored and enhanced aquatic resources will 195 functionally represent palustrine emergent wetlands that were formerly characteristic of the South Platte 196 River floodplain but are now largely absent due to the local and regional effects of climatic events, gravel 197 mining, urban development, water diversions, and historic and current cattle ranching operations.

198

199 6.1 **General Construction** 

200

201 All work activities will be the most practicable as possible to prevent indirect impacts. At no point will the 202 Bank project impair, obstruct, or slow flows within the unnamed tributary or South Platte River. The Bank 203 Property currently has a series of access roads that cross the property. Grading activities will use heavy 204 equipment to construct correct grades followed by revegetation using native species occurring naturally in 205 the surrounding region and ecosystems. Nearby upland areas outside of the Bank will provide good staging 206 areas for this work. The Bank project will develop and adhere to a Stormwater Management Plan (SWMP) 207 as part of the final design. The SWMP will include Best Management Practices (BMPs) to reduce off-site 208 sedimentation and erosion. The pre-approved limits of disturbance will be clearly marked in the field to 209 contain construction-related equipment and vehicles. All construction activities will be appropriately 210 supervised. 211 212 Invasive species will be cleared and treated prior to grading by using approved methodologies. These 213 activities will entail both manual and chemical efforts with specific considerations to the effects on the Bank's 214 natural resources. 215 216 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.
- 221

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.

225

230

231

232

233 234

235 236

237

238

226 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.
- 239 6.2 Wetlands
- 240

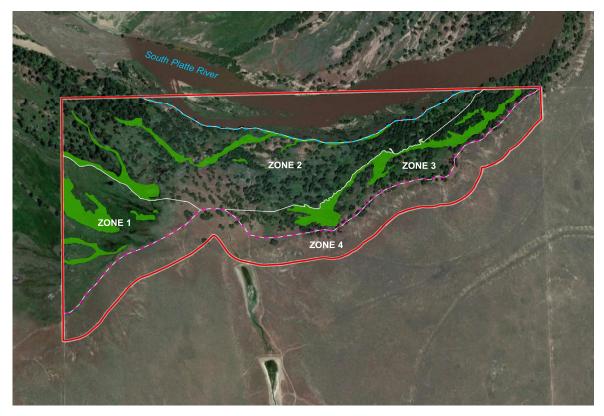
The design for the Bank includes the restoration (reestablishment) of 90.0-acres of wetlands, and enhancement of 15.9-acres of existing wetlands. There will be four main work zones (Figure 1), each with a suite of restoration activities targeted to the unique habitat and ecological needs of each zone,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

245

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.



er mark – – 500-year flood zone

400

800 ft

255 256

257 Zone 2 existing conditions consist of a cottonwood riparian forest with an herbaceous understory. The 258 overstory is dominated by plains cottonwood (Populus deltoides) and green ash (Fraxinus pennsylvanica), 259 as well as invasive trees including Russian olive. The understory is dominated by introduced perennial 260 grasses such as smooth brome (Bromus inermis) as well as invasive species, such as leafy spurge 261 (Euphorbia esula). Of the three restoration zones, Zone 2 is the most impacted by extreme flooding events. 262 There are large deposits of alluvium that have buried and filled in former wetland swales, and are now 263 uplands dominated by invasive species including, but not limited to Canada thistle, common mullein 264 (Verbascum thapsus) and Scotch thistle (Onopordum acanthium). In addition, a large portion of wetland 265 swales in Zone 2 were impacted by the formation of a small alluvial fan. This alluvial fan likely formed as a 266 result of more recent erosion from local upstream activities. The sedimented areas have formed a 267 disconnect between the western and eastern floodplain wetlands. Restoration and enhancement activities 268 in this zone will focus on grading to restore relict wetland hydrology, removal of invasive species, and 269 replanting appropriate native vegetation.

270

271 Zone 3 existing conditions consist of depressional wetlands within a cottonwood riparian forest likely 272 associated with a backwater channel of the South Platte River. Historically the backwater channel would 273 have flowed in from the northeast side of the property through wetland swales and most likely supported 274 much of the historical wetlands within this zone. The understory vegetation in the zone is almost completely 275 dominated by invasive species, which threaten the few remaining wetland pockets with native species such 276 as Emory's sedge (Carex emoryi) and prairie cordgrass. Restoration and enhancement activities in this 277 zone will consist of a "gentler" approach including light grading to restore a smaller amount of wetland areas 278 (relative to Zones 1 and 2) surrounding existing wetlands, enhancing existing wetlands with native species 279 plantings which can outcompete invasive species, and removing invasive species including smooth brome, 280 reed canarygrass (Phalaris arundinacea) and perennial pepperweed (Lepidium latifolium). 281

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.

286

#### 287 6.3 Functional Assessment

288

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.

295

296 CORVUS Environmental Consulting, assessed wetland functions using CDOT's Functional Assessment of 297 Colorado Wetlands (FACWet) method (version 3) (Johnson et al., 2013) for wetlands present at the 298 proposed South Platte Mitigation Bank. Wetlands were previously delineated by ERO Resources 299 Corporation in October 2020. CORVUS visited the Bank Property in 2021 and completed a FACWet 300 analysis on the existing wetland functions there. As described above, the SPMB is divided into four work 301 zones, including three zones (Zones 1-3) where wetland enhancement and re-establishment/restoration 302 is proposed as well as an upland buffer zone. Zones 1-3 were each assessed as separate Assessment 303 Areas (AAs) since the ecological function of each zone is different and the levels of proposed wetland 304 enhancement and re-establishment/restoration activities vary per zone. AAs 1 - 3 correspond to these 305 SPMB Zones 1 - 3, respectively.

306

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** 

#### 

#### ZONE 1 PLANTINGS

**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 - SEE	DING		
	0-2.5 FT (WETI	AND)		
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 seed	ling, double the rate			
	ZONE 1 - PLANTIN	G (PLUGS)		
	0-2.5 FT (WETI	AND)		
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	swordleafrush	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	

#### 

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 PLANTINGS** 

	ZONE 2 - SEEDING			
2.5	-4 FT (ANNUAL FLUCTUATION Z	ONE)		
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 )	Bluegrama	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	ate			
ZONE 2	- PLANTING (STAKES)			
2.5-4 FT (AN	NUAL FLUCTUATION ZONE)			
		50014	SPACING	
SCIENTIFIC NAME	COMMON NAME	FORM	(O.C.)	

## 327

#### 328

#### 329 ZONE 3 PLANTINGS

Salix amygdaloides

Salix exigua

#### 330

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)

peach leaf willow

sand bar willow

Stakes

Stakes

10'

3'

	ZONE 3 - SEEDING			
2.	5-4 FT (ANNUAL FLUCTUATION ZO	ONE)		
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 )	Bluegrama	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 (AN	INUAL FLUCTUATION ZONE)			
SCIENTIFIC NAME	COMMON NAME	FORM	SPACING (O.C.)	
Salix amygdaloides	peach leaf willow	Stakes	10'	
Salix exigua	sand bar willow	Stakes	3'	

#### 333 334

335

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)	Bluegrama	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, doubl	e the rate	· ·		•	

338

#### 339 7.0 Maintenance Plan

340

341 The mitigation area is designed to operate and function with little to no maintenance or human intervention 342 after vegetation establishment. In addition to yearly monitoring, the restored wetland areas will be visited 343 quarterly during the first two years of operation (including any major flooding events) to ensure the Bank is 344 performing optimally and during the life of the Bank when necessary. Other periodic maintenance and 345 adaptive management activities may include sediment removal, weed control, vegetation protection, and 346 supplemental planting as necessary to meet project goals and objectives. Vegetation manipulations may 347 include weed control, staking woody tree stems, and installing protective barriers around individual plants 348 or portions of to provide protection from wildlife. It should be noted that the goal of the project is to 349 encourage the natural vegetative and ecological succession cycle to the maximum extent practicable. This 350 includes acceptance within the design for sediment to accumulate in some places while other areas become 351 heavily vegetated, then allowing these areas to reshuffle after large flood events, per historical patterns.

#### 352 A. Maintenance Provisions

353

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.

### 358 B. Monitoring Provisions

359

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 31<sup>st</sup> 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.

369 370	С.	Reports
371 372 373 374 375	(CEN	Bank Sponsor will submit reports to the US Army Corps of Engineers, Denver Regulatory Office IWO-OD-RCO) using the Annual Mitigation Monitoring Report Format provided by Denver latory Office and following procedures described in RGL 08-03. Monitoring Reports will be mailed to:
376		State Program Manager
377		Denver Regulatory Office
378		CENWO-OD-RCO
379		9307 S. Wadsworth Blvd.
380		Littleton, CO 80128-6901
381		
382	8.0 P	Performance Standards
383 384 385 386 387	33 C	e interim wetland performance standards will follow guidelines from the USEPA and USACE (USACE FR 332) Compensatory Mitigation for Losses of Aquatic Resources, Final Rule, and approved by CE, in consultation with the IRT.
388 389 390 391 392 393	CFR bioloo Rees	itions of establishment, reestablishment, restoration, enhancement, and preservation are found at 33 332.2. The USEPA defines wetland reestablishment as "manipulation of the physical, chemical, or gical characteristics of a site with the goal of returning natural/historical functions to a former wetland. tablishment results in rebuilding a former wetland and results in a gain in wetland acres" (USEPA ). Post-construction wetland performance standards are defined in Table A-9 below.
394 395 396 397 398 399	ensu that a and t	Bank Sponsor will demonstrate the successful reestablishment and enhancement of wetlands by ring that these areas meet the definition of wetlands found at 33 CFR 328.3. "Wetlands are those areas are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, hat under normal circumstances do support, a prevalence of vegetation typically adapted for life in ated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."
400 401 402 403 404 405 406	reest hydro parar Wate indica soils.	
407 408 409 410 411	in ree surfa	nterim Hydrology Performance Standard requires that, with the exception of drought years, hydrology established and enhanced wetlands will have a minimum of saturation within 12 inches of the ground ce for 2 weeks (14 days) or more during the growing season. We will use well data loggers to meet riterion.
412 413		and vegetation will be assessed through both hydrophytic vegetation indicators (i.e., dominance test) 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).

- 420
- 421 Additionally, FACWet will be used in re-established wetlands to demonstrate a FCI score equal to or greater 422 than a 0.7 to be considered a functioning score.
- 423

424 Credits will be released, upon: (1) meeting all four interim performance criteria in Table A-9 below, (2) 425 submission of that year's monitoring report, and (3) approval of that report by the Corps. Monitoring will be 426 conducted for a minimum of 5 years for PEM areas and 10 years in forested communities unless success 427 criteria as determined by the Corps occurs earlier. If success criteria are met in any area, that area may 428 be approved for credit release as long as the long-term endowment is fully funded as specified in the Credit 429 Release Schedule detailed in Section C. of the MBI.

430

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.

436

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.

- 443
- 444 445
- 446
- 447
- 448 449
- 449 450
- 451
- 452
- 453
- 454

**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.

457 458

#### 459 9.0 Monitoring Requirements

460

461 The Bank Sponsor shall submit annual monitoring reports for the next five years or until such time that the 462 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 463 464 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 465 monitoring report will be submitted by December 31st of each year. Monitoring will be conducted for a 466 minimum of 5 years for PEM areas and forested communities unless success criteria as determined by the 467 468 Corps occurs earlier.

#### 469 9.1 Access

470

471 The Bank Sponsor will allow, or otherwise provide for, access to the Property by members of the IRT, as 472 reasonably necessary, for the purpose of inspection, compliance monitoring, and remediation consistent 473 with the terms and conditions of this MBI throughout the period of Bank establishment, monitoring, and 474 operation. IRT site visits will go through the Chair(s) of the IRT. Inspecting parties will not unreasonably 475 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. 476

#### 477 **10.0 Long-term Management**

478

479 Upon Bank Closure, the Land Manager will conduct and be responsible for the Bank's long term 480 management activities and implementing the Long-Term Management Plan (Exhibit B of the MBI). The

481 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

483 with minimal human intervention, including long-term Bank maintenance. Natural changes to the vegetative

- 484 community that occur after all Bank performance standards have been met are not expected to require 485 remediation. During the long-term management period, if vegetative composition and densities require
- 486 prescribed holistic grazing events as a management strategy, a comprehensive plan will be provided to
- 487 USACE for approval.

### 488 11.0 Adaptive Management

489

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.

496

497 A list of potential major stressors or drivers which may affect the mitigation project and could trigger adaptive 498 management actions is provided in EXHIBIT C of the Adaptive Management Plan. The table does not 499 attempt to explain all possible relationships of potential factors influencing the Bank; rather, presents only 500 those relationships and factors deemed most relevant to obtaining the required success criteria, and may 501 be modified, as necessary.

### 502 11.1 Default

503

504 If the Corps, in consultation with the IRT, believes that the Bank Project is in default, it must provide 505 written notice to the Bank Sponsor, including a detailed description of the basis for the notice of default. 506 The Bank Sponsor will submit a written corrective action plan to the Corps, in consultation with the IRT 507 for review and approval within a reasonable time of receiving written notice of default. The corrective 508 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 509 compliance. The Corps will inspect and review the plan in a reasonable time. To the extent practicable, 510 511 the Corps, in consultation with the IRT will approve or reasonably amend the corrective action plan 512 (Plan), provided that sufficient information and acceptable measures are contained within the plan. The 513 Bank and the Bank Sponsor shall not be considered to be in default as long as the Bank Sponsor is 514 taking reasonable steps to develop the Plan within the stated timeframes and come into compliance in 515 accordance with the actions and timelines specified in the Plan. If the Bank Sponsor does not make 516 responsible efforts to come into compliance, then credits may be suspended until Bank Sponsor does 517 make such responsible efforts. Depending on the nature of the non-compliance, the Corps may suspend 518 credits until such non-compliance is corrected.

519 520

### 521 12.0 Financial Assurances and Responsibilities

### 522 A. Construction Phase

523

524 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

- 527 will be a USACE approved construction insurance policy, being 110% of estimated costs. The insurance 528 policy documentation along with construction estimates will be provided as Exhibit E Financial Assurances
- 529 prior to Bank Establishment. The full Construction Assurance Mechanism will be held until the final
- 530 monitoring report is submitted and approved, performance standards are being met, and the Long Term
- 531 Endowment is fully funded at which time this insurance will be released.

### 532 B. Maintenance and Monitoring Phase

533

534 After completion of Bank construction, the entire Construction Assurance Mechanism will be released and 535 at this time the Bank Sponsor will furnish a USACE approved financial assurance mechanism for the 536 monitoring and maintenance associated with the Bank (the "MM Assurance Mechanism"). The MM 537 Assurance Mechanism will be an insurance policy. The insurance policy amount will be determined by 538 covering 110% of the estimated annual monitoring and maintenance budget. The full MM Assurance 539 Mechanism will be held until the final monitoring report is submitted and approved, performance standards 540 are being met, and the Long Term Endowment is fully funded (see following paragraph) at which time this 541 insurance will be released.

### 542 C. Long Term Management Phase

543

544 Prior to the initial 45% credit release of the Bank, the Bank Sponsor will fund 100% of the \$144,667 total 545 Long Term Endowment amount as calculated and set forth in Table 1 of the Long-Term Management Plan 546 (EXHIBIT B). This amount is estimated to be adequate to generate the projected annual management costs 547 associated with implementing the Long-Term Management Plan of the SPMB. The Long Term Endowment 548 will be held in a separate, interest-bearing escrow account and will be further funded by the Bank Sponsor 549 according to the timeframes set forth in the credit release schedule outlined in Table 2 of the MBI. Upon 550 the transfer of the Long-Term Endowment and the long-term responsibility of the Bank Property to the CSLB 551 as the Land Manager pursuant to Section IX of the MBI (and upon satisfaction of the remaining 552 requirements for Bank Closure under Section VIII-F of the MBI), the Bank Sponsor will be relieved of all 553 management responsibilities and all other obligations under the MBI with respect to SPMB. The long-term 554 management phase does not begin until after either all credits have been sold or the Bank Sponsor agrees 555 to discontinue selling credits.

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

557

558 Written concurrence by the Corps must be obtained prior to any termination, revocation, modification, 559 amendment, or partial release of the Construction Assurance Mechanism or MM Assurance Mechanism or 560 the Long Term Endowment (collectively, the "Bank Assurance Mechanisms"). The Corps must be provided 561 with written notice at least 120 days in advance of any termination or revocation of the Bank Assurance 562 Mechanisms. The Corps must be provided written notice at least 60 days in advance of any modification. 563 amendment, or partial release of the Bank Assurance Mechanisms. Termination, revocation, modification, 564 amendment, or partial release of the Bank Assurance Mechanisms without the Corps' written concurrence 565 may result in a determination that the SPMB is not in compliance with the Instrument.

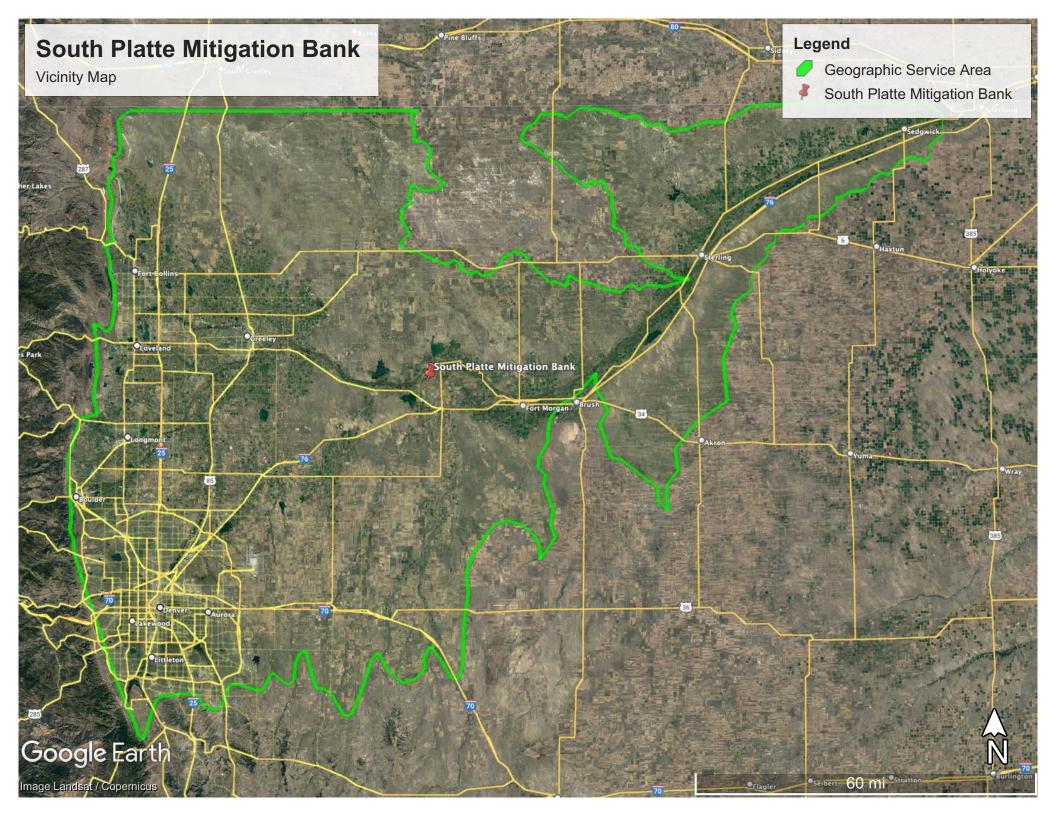
#### 566 13.0 References

- 567 Chapman, S.S., Griffith, G.E., Omernik, J.M., Price, A.B., Freeouf, J., and Schrupp, D.L., 2006, Ecoregions of
- 568 Colorado (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S.
- 569 Geological Survey (map scale 1:1,200,000)
- 570 Colorado Department of Agriculture (2017) Noxious Plant List
- 571 https://www.colorado.gov/pacific/agconservation/noxious-weed-species
- 572 CPW (1998) Native Plant Revegetation Guide for Colorado: Caring for the Land Series, Vol. III. Colorado
- 573 Natural Areas Program, Colorado State Parks, and Colorado Dept. of Natural Resources.
- 574 https://cpw.state.co.us/Documents/CNAP/RevegetationGuide.pdf
- 575 Johnson, J. Bradley, Mark Beardsley, and Jessica Doran. 2010. The Functional Assessment of Colorado Wetlands 576 (FACWet) Methodology. Retrieved from: http://rydberg.biology.colostate.edu/FACWet/
- USACE (2005). The U.S. Army Corps of Engineers' Guidance for Compensatory Mitigation and Mitigation Banking in
   the Omaha District. August 2005.

- 579 USACE (2008) Compensatory Mitigation for Losses of Aquatic Resources, Final Rule. Regulation 40CFR Part 230
- 580 USACE (2016) Implementing Financial Assurance for Mitigation Project Success Institute for Water Resources U.S.
- 581 Army Corps of Engineers Alexandria, VA. March 2016
- 582 USACE (2015) Regional Compensatory Mitigation and Monitoring Guidelines for the South Pacific Division. United
- 583 States Army Corps of Engineers, January 12, 2015.

Appendix A

Vicinity Map South Platte Mitigation Bank December 2022



# Appendix B

Water Rights Determination South Platte Mitigation Bank December 2022



July 16, 2021

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

Re: South Platte Mitigation Bank - Revised Prospectus Application No. NWO-2020-02252-DEN Section 16, Township 4 North, Range 60 West, 6<sup>th</sup> 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



South Platte Mitigation Bank July 16, 2021 Page 2 of 4

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 South Platte Mitigation Bank July 16, 2021 Page 3 of 4

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.

South Platte Mitigation Bank July 16, 2021 Page 4 of 4

Should you have any questions, please let me know.

Sincerely,

Jeff Deathy

Jeff Deatherage, P.E. Water Supply Chief

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

# Appendix C

Wetland Delineation Report South Platte Mitigation Bank December 2022



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

Prepared for—

Mr. Gray Stevens SCP Conservation, LLC 1030 3<sup>rd</sup> 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

### Contents

Introduction	.1
Location	.1
Summary of Ecological Setting	.3
Project Area Description	.3
Methods	.5
Wetland Delineation	. 5
Wetland Classification	
Jurisdictional Assessment	. 7
Description of Wetlands and Other Waters	. 8
Streams and Open Water	. 8
Wetlands	. 9
Palustrine Emergent, Riverine Wetlands	.9
Palustrine Scrub-Shrub, Riverine Wetlands	. 9
Uplands1	
Jurisdictional Assessment Review	10
References	11

### Tables

Table 1. V	Wetland area,	Cowardin classificat	ion and HGM		8
------------	---------------	----------------------	-------------	--	---

### Figures

Figure 1.	Vicinity Map	2
Figure 2.	Wetland Delineation	4

### Appendices

Appendix A – Photo Log
Appendix B – Routine Wetland Determination Dataforms
Appendix C – Plant Species List

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

### December 2, 2020

### Introduction

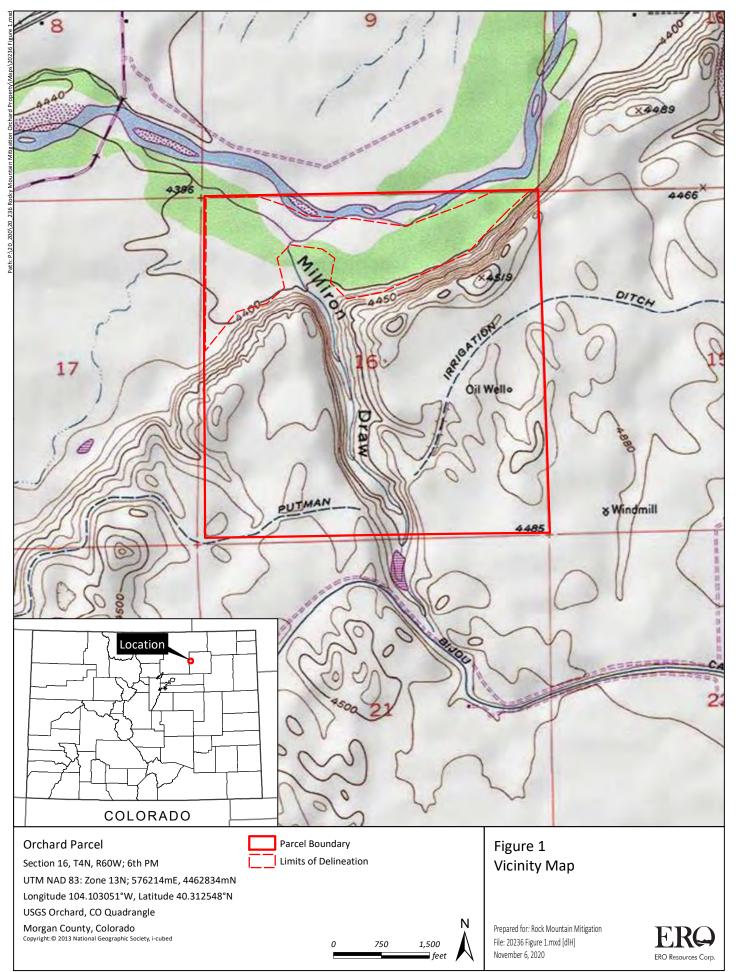
Rocky Mountain Mitigation (RMM) retained ERO Resources Corporation (ERO) to provide a wetland delineation along the south side of the South Platte River, east of Colorado Highway 144, and north of County Road U southeast of the city of Orchard in Morgan County, Colorado (project area/limits of delineation; 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.



Portions of this document include intellectual property of ESRI and its licensors and are used herein under license. Copyright © 2019 ESRI and its licensors. All rights reserved.

# **Summary of Ecological Setting**

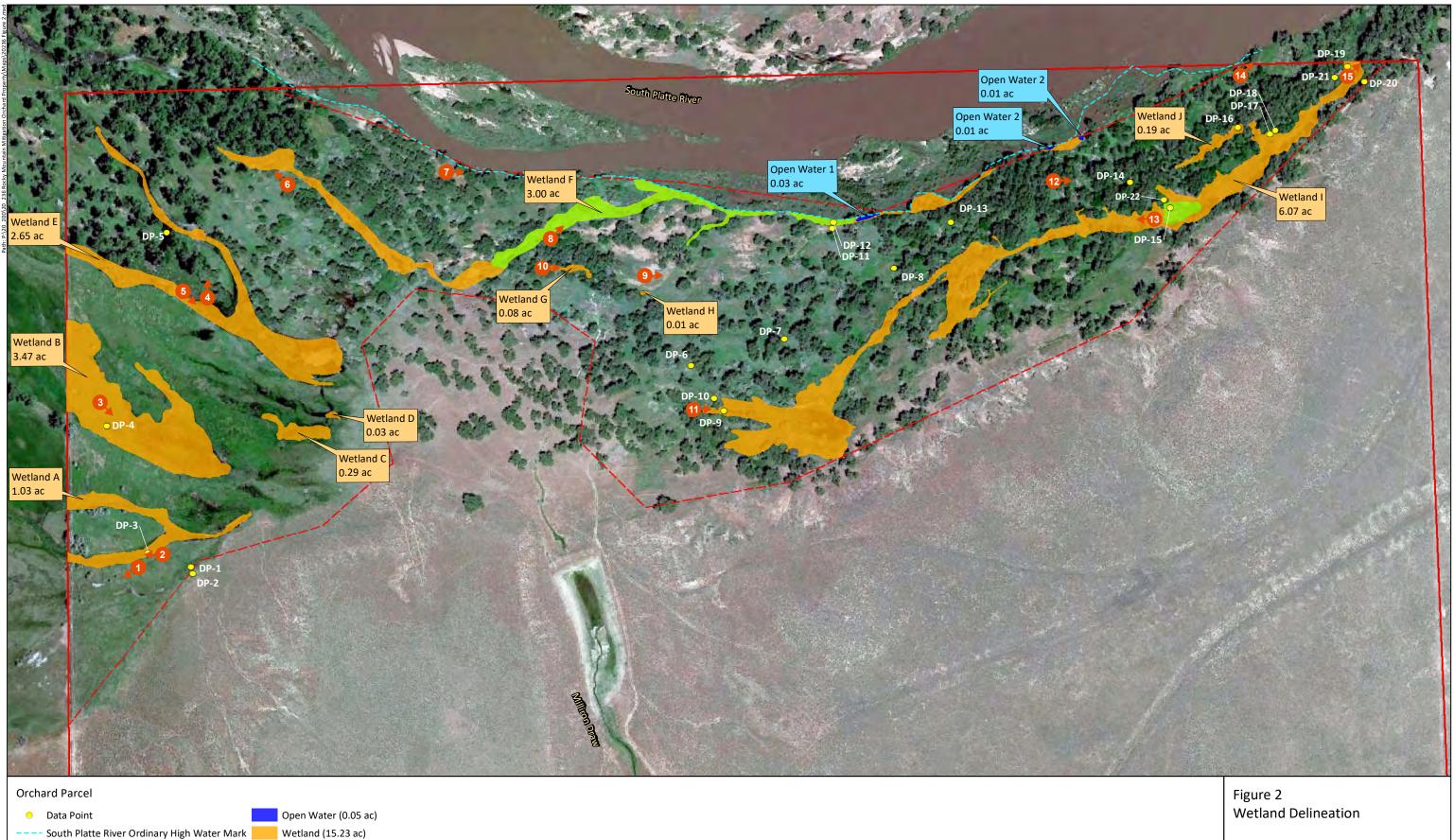
The U.S. Department of Agriculture (USDA) maps the project area within the southern part of the Central High Plains Major Land Resource Area (MLRA), which is characterized by a flat to gently rolling landscape formed by glacial drift material and sediment deposition from the Rocky Mountains (USDA, Natural 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.

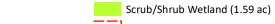
The project area is further divided into the Rolling Sand Plains ecoregion of Colorado (Chapman et al. 2006). The geology of the Rolling Sand Plains ecoregion consists largely of sandy soils, formed from eolian deposits, and supports a sandsage prairie natural vegetation type. Located within the South 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.

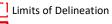
The majority of the ecoregion historically consisted of shortgrass prairie. Most of the land use has or is currently undergoing a shift from rangeland, or other agricultural uses, to urban development. The development has resulted in a shift from native habitat to urban areas that contain a high number 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.



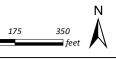




Parcel Boundary

Photo Point

4



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



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 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.

5

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<sup>®</sup> 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).

Water/Wetland ID	Longitude	Latitude	Feature Size (acre)	Cowardin Classification <sup>*</sup>	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
Matland F	-104.104143	40.040760	1.63	PEM	Riverine
Wetland F		40.318769	1.37	PSS	
Wetland G	-104.105266	40.317868	0.08	PEM	Riverine
Wetland H	-104.104525	40.317599	0.01	PEM	Riverine
	-104.100295	40.317352 5.85 PEM 0.22 PSS	5.85	PEM	Discontrac
Wetland I			PSS	Riverine	
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		

Table 1. Wetland area, Cowardin classification and HGM.

\*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. 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.

### References

- Ackerfield, J. 2015. Flora of Colorado. 1st edition. Botanical Research Institute of Texas. Fort Worth, TX.
- Brinson, M.M. 1993. A hydrogeomorphic classification of wetlands. Technical Report WRP-DE-4, U.S. Army Engineers Waterways Experiment Station, Vicksburg, MS.
- Chapman, S.S., G.E. Griggith, J.M. Omernik, A.B. Price, and D.L. Schrupp. 2006. Ecoregions of Colorado (color poster with map, descriptive text, summary tables, and photographs): Reston, VA, U.S. Geological Survey (map scale 1:1,200,000). ftp://ftp.epa.gov/wed/ecoregions/co/co\_front.pdf.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. Department of the Interior, U.S. Fish and Wildlife Service, Office of Biological Services Program. No. FWS/OBS-79/31.
- Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual, Technical Report 7-87-1, U.S. Army Engineer Waterways Experiment Station. Vicksburg, MS.
- U.S. Army Corps of Engineers (Corps). 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0).* U.S. Army Research and Development Center. Vicksburg, MS.
- U.S. Army Corps of Engineers (Corps). 2018. *National Wetland Plant List, version 3.4*. http://wetlandplants.usace.army.mil/. U.S. Army Corps of Engineers. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH.
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. Agriculture Handbook 296. Washington, DC: U.S. Department of Agriculture.
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2020a. *The PLANTS Database*. http://plants.usda.gov. National Plant Data Team, Greensboro, NC 27401-4901 USA. Last accessed November 13, 2020.
- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2020b. *Web Soil Survey*. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Last accessed November 12.
- Weber, W.A. and R.C. Wittmann. 2012. *Colorado Flora: Eastern Slope*. 4th edition. University Press of Colorado. Boulder, CO.

Appendix A – Photo Log

Photo Log Rocky Mountain Mitigation - Orchard Parcel Wetland Delineation Report October 30, 2020



**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 Log Rocky Mountain Mitigation - Orchard Parcel Wetland Delineation Report October 30, 2020



**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 Log Rocky Mountain Mitigation - Orchard Parcel Wetland Delineation Report October 30, 2020



**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 LOG ROCKY MOUNTAIN MITIGATION - ORCHARD PARCEL WETLAND DELINEATION REPORT OCTOBER 30, 2020



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 Log Rocky Mountain Mitigation - Orchard Parcel Wetland Delineation Report October 30, 2020



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 Log Rocky Mountain Mitigation - Orchard Parcel Wetland Delineation Report October 30, 2020



**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 Log Rocky Mountain Mitigation - Orchard Parcel Wetland Delineation Report October 30, 2020



**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 Log Rocky Mountain Mitigation - Orchard Site Wetland Delineation Report October 30, 2020



**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

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, To	wnship, Ra	<sub>nge:</sub> Section 16, T4N	I, R60W
Landform (hillslope, terrace, etc.): 1000plain		Local relief	(concave,	convex, none): none	Slope (%): 0
Subregion (LRR): G	_ Lat: <u>40.</u> :	31483208	3°N	_ Long: -104.1108415	552°W Datum:
Soil Map Unit Name: Wann fine sandy loam, saline				NWI classifi	cation: <u>N/A</u>
Are climatic / hydrologic conditions on the site typical for this	time of yea	ar?Yes	× No	(If no, explain in F	Remarks.)
Are Vegetation ${f N}_{}$ , Soil ${f N}_{}$ , or Hydrology ${f N}_{}$ si	gnificantly	disturbed?	Are '	'Normal Circumstances"	present? Yes 🔀 No 🗌
Are Vegetation ${f N}_{}$ , Soil ${f N}_{}$ , or Hydrology ${f N}_{}$ na	aturally pro	blematic?	(lf ne	eded, explain any answe	ers in Remarks.)
SUMMARY OF FINDINGS – Attach site map s	howing	samplin	g point l	ocations, transects	s, important features, etc.
Hydrophytic Vegetation Present? Yes No Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No Remarks:			e Sampled in a Wetlar		□ No <u>×</u>
Upper edge of floodplain					
VEGETATION – Use scientific names of plant					
	Absolute	Dominant	Indicator	Dominance Test work	(sheet:
<u>Tree Stratum</u> (Plot size: <u>30'</u> )		Species?		Number of Dominant S	
1				That Are OBL, FACW,	or FAC
2				(excluding FAC-):	1 (A)
3				Total Number of Domir	
4				Species Across All Stra	ata: <u>1</u> (B)
Sapling/Shrub Stratum (Plot size: <u>15'</u> )		= Total Cov	ver	Percent of Dominant S That Are OBL, FACW,	
1 2				Prevalence Index wor	rksheet:
				Total % Cover of:	Multiply by:
3				OBL species 5	x 1 = 5
 5.				FACW species 80	
		= Total Cov	/er	FAC species	x 3 = 0
Herb Stratum (Plot size: 5')				FACU species 2	$x 4 = \frac{8}{2}$
1. Spartina pectinata	70	Y	FACW	UPL species 0	x 5 = 0
<sub>2.</sub> Juncus balticus	10	<u>N</u>	FACW	Column Totals: 87	(A) <u>173</u> (B)
3. Schoenoplectus pungens	5	N	OBL	Prevalence Index	r = p/a = 1.9
4. Cirsium arvense	2	<u>N</u>	FACU		
5				Hydrophytic Vegetati	on Indicators: Hydrophytic Vegetation
6				2 - Dominance Tes	
7				3 - Prevalence Ind	
8					Adaptations <sup>1</sup> (Provide supporting
9					is or on a separate sheet)
10					phytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:) 1	87	= Total Cov	ver	<sup>1</sup> Indicators of hydric so be present, unless dist	il and wetland hydrology must urbed or problematic.
2.				Hydrophytic	
% Bare Ground in Herb Stratum 13		= Total Cov	ver	Vegetation	es 🗵 No 🔲
Remarks:					

#### SOIL

Depth       Matrix       Redox Features         (inches)       Color (moist)       %       Type*       Loc²       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       SiCi	Profile Desc	ription: (Describ	be to the de	pth needed to docu	ument the	indicator	or confir	m the absence of indicators.)
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         98       10YR 4/3       2       C       M       SiCl						es	2	-
6-8       10YR 2/2       98       10YR 4/3       2       C       M       SiCl         Image: Single								
Image:							M	
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F,       (MLRA 72 & 73 of LRR H)         Depth (inches):       (ff present):         Type:       Depth (inches):         Depth (inches):       No         Exemarks:       Kemarks:	6-8	10YR 2/2	98	10YR 4/3	2	С	М	SiCl
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F,       (MLRA 72 & 73 of LRR H)         Depth (inches):       (ff present):         Type:       Depth (inches):         Depth (inches):       No         Exemarks:       Kemarks:	<u> </u>							
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F,       (MLRA 72 & 73 of LRR H)         Depth (inches):       (ff present):         Type:       Depth (inches):         Depth (inches):       No         Exemarks:       Kemarks:							·	
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F,       (MLRA 72 & 73 of LRR H)         Depth (inches):       (ff present):         Type:       Depth (inches):         Depth (inches):       No         Exemarks:       Kemarks:								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F,       (MLRA 72 & 73 of LRR H)         Depth (inches):       (ff present):         Type:       Depth (inches):         Depth (inches):       No         Exemarks:       Kemarks:				<u> </u>				
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F,       (MLRA 72 & 73 of LRR H)         Depth (inches):       (ff present):         Type:       Depth (inches):         Depth (inches):       No         Exemarks:       Kemarks:								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Black Histic (A3)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Thick Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F)       Migh Plains Depressions (F16)         Mucky Veat or Peat (S2) (LRR F)       Migh Plains Depressions (F16)         Depth (inches):       Mucky (In present):         Type:       Depth (inches):         Depth (inches):       No         Memarks:       Hydric Soil Present?	<u> </u>							
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Black Histic (A3)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Thick Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F)       Migh Plains Depressions (F16)         Mucky Veat or Peat (S2) (LRR F)       Migh Plains Depressions (F16)         Depth (inches):       Mucky (In present):         Type:       Depth (inches):         Depth (inches):       No         Memarks:       Hydric Soil Present?								
Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)       Indicators: (Applicable to all LRRs, unless otherwise noted.)         Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F3)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)         Sandy Mucky Mineral (S1)       Redox Depressions (F16)         2.5 cm Mucky Peat or Peat (S2) (LRR F)       Migh Plains Depressions (F16)         Mucky Veat or Peat (S2) (LRR F)       Migh Plains Depressions (F16)         Depth (inches):       Mucky (Ip resent):         Type:       Depth (inches):         Depth (inches):       No         Memarks:       Hydric Soil Present?								
Histosol (A1)       Sandy Gleyed Matrix (S4)         Histosol (A1)       Sandy Redox (S5)         Black Histic (A3)       Stripped Matrix (S6)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)         Loamy Gleyed Matrix (F2)       Depleted Matrix (F2)         Depleted Below Dark Surface (A11)       Depleted Matrix (F3)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F6)         Sandy Mucky Peat or Peat (S2) (LRR F)       High Plains Depressions (F16)         Strictive Layer (if present):       (MLRA 72 & 73 of LRR H)         Type:       Depth (inches):         Type:       No         Memarks:							ed Sand G	
Histic Epipedon (A2)       Sandy Redox (S5)       Coast Prairie Redox (A16) (LRR F, G, H)         Black Histic (A3)       Stripped Matrix (S6)       Dark Surface (S7) (LRR G)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       Loamy Gleyed Matrix (F2)         1 cm Muck (A9) (LRR F, G, H)       Depleted Matrix (F3)       Reduced Vertic (F18)         Depleted Below Dark Surface (A12)       Depleted Dark Surface (F7)       Redox Depressions (F16)         3 Sandy Mucky Mineral (S1)       Redox Depressions (F16)       Other (Explain in Remarks)         2.5 cm Mucky Peat or Peat (S2) (LRR G, H)       High Plains Depressions (F16)       Muchar 72 & 73 of LRR H)         Mucky Peat or Peat (S3) (LRR F)       (MLRA 72 & 73 of LRR H)       Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Restrictive Layer (if present):       Type:       Hydric Soil Present?       Yes       No       X         Remarks:       Remarks:       Hydric Soil Present?       Yes       No       X	Hydric Soil	Indicators: (App	licable to a	II LRRs, unless oth	erwise no	oted.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
Black Histic (A3)       Stripped Matrix (S6)       Dark Surface (S7) (LRR G)         Hydrogen Sulfide (A4)       Loamy Mucky Mineral (F1)       High Plains Depressions (F16)         Stratified Layers (A5) (LRR F, G, H)       Depleted Matrix (F3)       Reduced Vertic (F18)         Depleted Below Dark Surface (A11)       Redox Dark Surface (F6)       Red Parent Material (TF2)         Sandy Mucky Peat or Peat (S2) (LRR G, H)       Redox Depressions (F16)       Other (Explain in Remarks)         2.5 cm Mucky Peat or Peat (S3) (LRR F)       (MLRA 72 & 73 of LRR H)       Bindicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Restrictive Layer (if present):         Type:	L Histosol	(A1)		🛄 Sandy	Gleyed M	latrix (S4)		1 cm Muck (A9) (LRR I, J)
Hydrogen Sulfide (A4)       □       Loamy Mucky Mineral (F1)       □       High Plains Depressions (F16)         Stratified Layers (A5) (LRR F)       □       Loamy Gleyed Matrix (F2)       □       (LRR H outside of MLRA 72 & 73)         □       Depleted Below Dark Surface (A11)       □       Depleted Dark Surface (F6)       □       Reduced Vertic (F18)         □       Depleted Sold Warky Mineral (S1)       □       Redox Depressions (F8)       □       Other (Explain in Remarks)         □       2.5 cm Mucky Peat or Peat (S2) (LRR G, H)       □       High Plains Depressions (F16)       □       Very Shallow Dark Surface (TF12)         □       S cm Mucky Peat or Peat (S2) (LRR G, H)       □       High Plains Depressions (F16)       0       0         0       S cm Mucky Peat or Peat (S3) (LRR F)       □       High Plains Depressions (F16)       0		• • •				,		
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 (S2) (LRR F)   Muck Layer (if present):   Type:   Depth (inches):   Remarks:		. ,				. ,		
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)   High Plains Depressions (F16)   (MLRA 72 & 73 of LRR H)     Restrictive Layer (if present):   Type:   Depth (inches):     Remarks:     Remarks:		• •						
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)   (MLRA 72 & 73 of LRR H)     Restrictive Layer (if present):   Type:   Depth (inches):     Remarks:     Remarks:								
Thick Dark Surface (A12)   Sandy Mucky Mineral (S1)   2.5 cm Mucky Peat or Peat (S2) (LRR G, H)   High Plains Depressions (F8)   High Plains Depressions (F16)   (MLRA 72 & 73 of LRR H)     ************************************						. ,		
□       Sandy Mucky Mineral (S1)       □       Redox Depressions (F8)       □       Other (Explain in Remarks)         □       2.5 cm Mucky Peat or Peat (S2) (LRR G, H)       □       High Plains Depressions (F16)       ³Indicators 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:       Performance       No       Image: No       Image: No			ace (A11)			· · ·		
□       2.5 cm Mucky Peat or Peat (S2) (LRR G, H)       □       High Plains Depressions (F16)       ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Restrictive Layer (if present):       Type:         Hydric Soil Present?       Yes       No         Remarks:						•	)	
Image: Source of the sector		•	,		•	• •		
unless disturbed or problematic.         Restrictive Layer (if present):         Type:		•	. , .			•	,	
Restrictive Layer (if present):         Type:         Depth (inches):         Remarks:		icky Peat of Peat	(53) ( <b>LRR F</b>	·) (IV	LRA / 2 6	. / 3 OT LR	КП)	
Type: Depth (inches): Hydric Soil Present? Yes No Xo	Bootriotivo I	over (if present)						
Depth (inches):		Layer (il present)	•					
Remarks:								
		ches):						Hydric Soil Present? Yes <u>U</u> No <u></u>
HYDROLOGY	Remarks:							
HYDROLOGY								
HYDROLOGY								
HYDROLOGY								
	HYDROLO	GY						

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
Surface Water (A1)	Surface Soil Cracks (B6)
High Water Table (A2)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Drainage Patterns (B10)
Water Marks (B1)	Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2) Dividized Rhizospheres on Livin	g Roots (C3) (where tilled)
Drift Deposits (B3) (where not tilled)	Crayfish Burrows (C8)
Algal Mat or Crust (B4) Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)	Geomorphic Position (D2)
□ Inundation Visible on Aerial Imagery (B7) □ Other (Explain in Remarks)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)	Frost-Heave Hummocks (D7) (LRR F)
Field Observations:	
Surface Water Present? Yes No Depth (inches):	
Water Table Present? Yes Ves Depth (inches):	
Saturation Present? Yes No Depth (inches): Includes capillary fringe)	Wetland Hydrology Present? Yes No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspe	ections), if available:
Remarks:	

Project/Site: Orchard Parcel	(	City/County:	Orchard	, Morgan Co.	_ Sampling Da	te: 10/30/2020
Applicant/Owner: Rocky Mountain Mitigation				State: CO	_ Sampling Poi	<sub>int:</sub> DP2
Investigator(s): DEL/AJW		Section, Tov	wnship, Rar	nge: Section 16, T4N	I, R60W	
Landform (hillslope, terrace, etc.): hillslope		Local relief	(concave, d	convex, none): <u>slightly</u>	concave	
	Lat: 40.3	31475691	°N	Long: -104.110815	5°W [	Datum:
Soil Map Unit Name: Wann fine sandy loam, saline				NWI classifi	cation: N/A	
Are climatic / hydrologic conditions on the site typical for this t	ime of yea	ar?Yes	No	(If no, explain in F	Remarks.)	
Are Vegetation ${\color{black}{N}}_{,}$ Soil ${\color{black}{N}}_{,}$ or Hydrology ${\color{black}{N}}_{,}$ sig	nificantly o	disturbed?	Are "	Normal Circumstances"	present? Yes	<u>No</u>
Are Vegetation ${ extsf{N}}_{,}$ Soil ${ extsf{N}}_{,}$ or Hydrology ${ extsf{N}}_{,}$ nat	turally prol	blematic?		eded, explain any answe		
SUMMARY OF FINDINGS – Attach site map sl	howing	sampling	g point lo	ocations, transects	s, important	t features, etc.
Hydrophytic Vegetation Present?       Yes       No         Hydric Soil Present?       Yes       No         Wetland Hydrology Present?       Yes       No         Remarks:       No       No	×		e Sampled in a Wetlan		□ No	X
Toe of hillslope (slightly above DP1)						
VEGETATION – Use scientific names of plants	 3.					
		Dominant Species?	<u>Status</u>	Dominance Test work Number of Dominant S That Are OBL, FACW, (excluding FAC–): Total Number of Domin Species Across All Stra Percent of Dominant S	Species or FAC 1 nant ata: 3 Species	(A) (B)
1				That Are OBL, FACW,		3 (A/B)
2				Prevalence Index wor Total % Cover of:		Iltiply by:
3				OBL species		
4				FACW species		
5				FAC species		
Herb Stratum (Plot size: 5' )		= Total Cov	er	FACU species	x 4 =	
1 Thinopyrum ponticum	20	Y	UPL	UPL species		
	15	Y	FACW	Column Totals:		(B)
	15	Y	FACU			
	10	N	FACW	Prevalence Index	x = B/A =	
	10	N	FACU	Hydrophytic Vegetati	on Indicators:	
6. Muhlenbergia asperifolia	5	N	FACW	□ 1 - Rapid Test for	Hydrophytic Ve	egetation
		N	FAC	2 - Dominance Te	st is >50%	
8	<u> </u>			3 - Prevalence Ind	lex is ≤3.0 <sup>1</sup>	
9				4 - Morphological		
10				data in Remark D Problematic Hydro	•	,
Woody Vine Stratum         (Plot size:)           1	77	= Total Cov	er	<sup>1</sup> Indicators of hydric so be present, unless dist	bil and wetland l	hydrology must
2 % Bare Ground in Herb Stratum 23		= Total Cov	er	Hydrophytic Vegetation Present? Ye	es 🔲 No	. <u>×</u>
Remarks:				I		

Profile Desc	cription: (Describ	be to the depth ne	eded to docur	nent the indica	tor or confir	m the absence of indicators.)
Depth	Matrix			x Features		
(inches)	Color (moist)		olor (moist)	<u>% Тур</u>	e <sup>1</sup> Loc <sup>2</sup>	Texture Remarks
0-4	10YR 4/2	100				LoSa
4-10	10YR 5/2	15				Clay
4-10	10YR 3/2	85				Clay
						· ·
<sup>1</sup> Type: C=C	oncentration, D=D	epletion, RM=Redu	ced Matrix, CS	S=Covered or C	oated Sand G	Brains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.
		licable to all LRRs				Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Sandy C	Gleyed Matrix (S	64)	1 cm Muck (A9) ( <b>LRR I, J</b> )
	pipedon (A2)			Redox (S5)	,	Coast Prairie Redox (A16) (LRR F, G, H)
	istic (A3)			d Matrix (S6)		Dark Surface (S7) (LRR G)
	en Sulfide (A4)			Mucky Mineral (	F1)	High Plains Depressions (F16)
	d Layers (A5) ( <b>LRI</b>	R F)		Gleyed Matrix (I	,	(LRR H outside of MLRA 72 & 73)
	uck (A9) (LRR F, C			d Matrix (F3)	_/	Reduced Vertic (F18)
	d Below Dark Surf			Dark Surface (F	6)	Red Parent Material (TF2)
	ark Surface (A12)			d Dark Surface		Very Shallow Dark Surface (TF12)
	Aucky Mineral (S1)	)		Depressions (F8	• •	Other (Explain in Remarks)
	• • • •	, at (S2) ( <b>LRR G, H</b> )		ains Depressions (1 c	,	<sup>3</sup> Indicators of hydrophytic vegetation and
	ucky Peat of Peat				. ,	wetland hydrology must be present,
		(53) ( <b>LRR F</b> )		RA 72 & 73 of I		unless disturbed or problematic.
Restrictive	Layer (if present)	:				
Туре:						
Depth (in	ches):					Hydric Soil Present? Yes 📃 No 🔀
Remarks:						
HYDROLO	GY					
Wetland Hy	drology Indicator	'S'				

Primary Indicators (minimum of one required; c	heck all that apply)	Secondary Indicators (minimum of two required)
Surface Water (A1)	Salt Crust (B11)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Invertebrates (B13)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Water Marks (B1)	Dry-Season Water Table (C2)	Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living	
Drift Deposits (B3)	(where not tilled)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)	Thin Muck Surface (C7)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)		Frost-Heave Hummocks (D7) (LRR F)
Field Observations:		
Surface Water Present? Yes <u>U</u> No	Depth (inches):	
Water Table Present? Yes <u>U</u> No	Depth (inches):	
Saturation Present? Yes <u>Ves</u> No (includes capillary fringe)	Depth (inches):	Wetland Hydrology Present? Yes <u>No</u> No
Describe Recorded Data (stream gauge, monito	oring well, aerial photos, previous inspec	tions), if available:
Remarks:		

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, Tov	wnship, Rar	nge: Section 16, T4N,	R60W
Landform (hillslope, terrace, etc.): Swale		Local relief	(concave, c	convex, none): slightly co	oncave Slope (%): 0-2
	Lat: 40.3	31498615	δ°Ν	Long: -104.1114297°	W Datum:
Soil Map Unit Name: Wann fine sandy loam, saline				NWI classifica	tion: N/A
Are climatic / hydrologic conditions on the site typical for this ti	me of yea	ar?Yes	No	(If no, explain in Re	marks.)
Are Vegetation ${\sf N}_{}$ , Soil ${\sf N}_{}$ , or Hydrology ${\sf N}_{}$ sign	nificantly	disturbed?	Are "	Normal Circumstances" pr	esent? Yes 🗵 No 🔲
Are Vegetation ${\sf N}_{}$ , Soil ${\sf N}_{}$ , or Hydrology ${\sf N}_{}$ nati	urally pro	blematic?	(If ne	eded, explain any answers	s in Remarks.)
SUMMARY OF FINDINGS – Attach site map sh	lowing	sampling	g point lo	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present?       Yes       No         Hydric Soil Present?       Yes       No         Wetland Hydrology Present?       Yes       No         Remarks:       No       No			e Sampled in a Wetlan	-	× No
Cattle churned swale					
VEGETATION – Use scientific names of plants					
		Dominant Species? 	<u>Status</u>	Dominance Test works Number of Dominant Spi That Are OBL, FACW, or (excluding FAC–): Total Number of Domina Species Across All Strata Percent of Dominant Spe That Are OBL, FACW, or	ecies r FAC 2 (A) nt a: 2 (B) ecies
1				Prevalence Index work	、 ,
2			<u> </u>	Total % Cover of:	Multiply by:
3				OBL species	x 1 =
4				FACW species	x 2 =
~·		= Total Cov	rer	FAC species	x 3 =
Herb Stratum (Plot size: 5') 1 Hordeum jubatum		Y	FACW	FACU species	x 4 =
	40	$\frac{1}{Y}$	FACW	UPL species	(B)
Carey a characteria	40 5	· N	OBL	Column Totals:	(A) (B)
	2	N	FACU	Prevalence Index	
5				Hydrophytic Vegetation	
6				1 - Rapid Test for Hy	
7				3 - Prevalence Index	
8					daptations <sup>1</sup> (Provide supporting
9				data in Remarks	or on a separate sheet)
10	87	- Tatal Cau		Problematic Hydropl	hytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum         (Plot size:)           1		= Total Cov	'er	<sup>1</sup> Indicators of hydric soil be present, unless distur	and wetland hydrology must bed or problematic.
2				Hydrophytic	
% Bare Ground in Herb Stratum 13		= Total Cov	ver	Vegetation Present? Yes	<u>No</u>
Remarks:					

#### SOIL

Profile Desc	cription: (Describe	to the dep	th needed to docur	nent the	e indicator	or confiri	m the absence of indicators.)	
Depth	Matrix		Redc	x Featur			_	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks	
0-2	10YR 2/1	95	7.5YR 4/4	5	С	М	CILo	
2-10	10YR 3/2	93	7.5YR 4/4	7	C	M	CILo	_
								_
·				-				—
						·		
<u> </u>								—
$\frac{1}{1}$ Type: C=C	oncentration D=Den	letion RM	=Reduced Matrix, CS	S=Cover	red or Coat	ed Sand G	Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.	—
			LRRs, unless other				Indicators for Problematic Hydric Soils <sup>3</sup> :	
Histosol					Jatrix (S4)		1 cm Muck (A9) ( <b>LRR I, J</b> )	
	pipedon (A2)			Redox (S			Coast Prairie Redox (A16) (LRR F, G, H)	
	istic (A3)			d Matrix			Dark Surface (S7) (LRR G)	
	en Sulfide (A4)				, /lineral (F1)		High Plains Depressions (F16)	
	d Layers (A5) (LRR I	F)			Matrix (F2)		(LRR H outside of MLRA 72 & 73)	
	uck (A9) (LRR F, G,	,		d Matrix			Reduced Vertic (F18)	
	d Below Dark Surfac				rface (F6)		Red Parent Material (TF2)	
	ark Surface (A12)	0 (//11)			Surface (F7	)	Very Shallow Dark Surface (TF12)	
	Aucky Mineral (S1)				ions (F8)	)	Other (Explain in Remarks)	
	• • • •			•	• •	-10)		
	Mucky Peat or Peat (	. , .	· · · —	-	pressions (F	,	<sup>3</sup> Indicators of hydrophytic vegetation and	
5 cm Μι	ucky Peat or Peat (S	3) ( <b>LRR F</b> )	(ML	RA 72 8	& 73 of LRF	RH)	wetland hydrology must be present,	
De staletica i							unless disturbed or problematic.	
Type:	Layer (if present):							
, <u> </u>	ches):						Hydric Soil Present? Yes 🔜 🛛 No 🔤	
Remarks:	,							
HYDROLO	GY							
	drology Indicators:							
-			d; check all that appl	y)			Secondary Indicators (minimum of two require	<u>d)</u>
Surface	Water (A1)		🔲 Salt Crust	(B11)			Surface Soil Cracks (B6)	
🔲 High Wa	ater Table (A2)		🔲 Aquatic In	vertebra	tes (B13)		Sparsely Vegetated Concave Surface (B8	)

	Surface Water (A1)		Salt Crust (B11)			Surface Soil Cracks (B6)
	High Water Table (A2)	$\Box$	Aquatic Invertebrates (B13)		$\Box$	Sparsely Vegetated Concave Surface (B8)
×	Saturation (A3)		Hydrogen Sulfide Odor (C1)		$\Box$	Drainage Patterns (B10)
	Water Marks (B1)	$\Box$	Dry-Season Water Table (C2)		$\square$	Oxidized Rhizospheres on Living Roots (C3)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living	Roots (C3)		(where tilled)
	Drift Deposits (B3)		(where not tilled)		$\Box$	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)	$\Box$	Presence of Reduced Iron (C4)		$\Box$	Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		×	Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)	$\Box$	Other (Explain in Remarks)		×	FAC-Neutral Test (D5)
	Water-Stained Leaves (B9)				$\Box$	Frost-Heave Hummocks (D7) (LRR F)
Fie	Id Observations:	_	-			
Su	rface Water Present? Yes 💶 No _	×	Depth (inches):			
Wa	iter Table Present? Yes 🗕 No _	×				
	turation Present? Yes <u>Ves</u> No _		Depth (inches): 0"	Wetland H	lydı	rology Present? Yes 🔀 No 🗌
`	scribe Recorded Data (stream gauge, monito	ring	well, aerial photos, previous inspec	tions), if ava	ilab	e:
Re	marks:					

Project/Site: Orchard Parcel		City/County	<u>.</u> Orchard	, Morgan Co.	Sampling Date: 10/30/20	020
Applicant/Owner: Rocky Mountain Mitigation				State: CO	Sampling Point: DP4	
Investigator(s): DEL/AJW		Section, To	wnship, Ra	<sub>nge:</sub> Section 16, T4N	, R60W	
Landform (hillslope, terrace, etc.): <u>swale</u>		Local relief	(concave,	convex, none): slightly o	concave Slope (%): 0-2	
Subregion (LRR): G	_ Lat: <u>40.</u>	31633426	6°N	_ Long: <u>-104.1119706</u>	S°W Datum:	
Soil Map Unit Name: Wet alluvial land				NWI classific	ation: N/A	
Are climatic / hydrologic conditions on the site typical for this	time of ye	ar?Yes	× No	(If no, explain in R	emarks.)	
Are Vegetation ${f N}_{}$ , Soil ${f N}_{}$ , or Hydrology ${f N}_{}$ si	gnificantly	disturbed?	Are '	'Normal Circumstances" p	oresent? Yes 🔣 No _	$\Box$
Are Vegetation ${\color{black}{N}}_{,}$ Soil ${\color{black}{N}}_{,}$ or Hydrology ${\color{black}{N}}_{,}$ na	aturally pro	blematic?	(lf ne	eded, explain any answe	rs in Remarks.)	
SUMMARY OF FINDINGS – Attach site map s	howing	samplin	g point l	ocations, transects	, important features,	etc.
Hydrophytic Vegetation Present?       Yes       X       No         Hydric Soil Present?       Yes       X       No         Wetland Hydrology Present?       Yes       X       No         Remarks:       No       No       No			e Sampled in a Wetlar		🗵 No 🗌	
Wetland B						
VEGETATION – Use scientific names of plant	S.					]
Tree Stratum       (Plot size: 30')         1.	Absolute % Cover	Dominant Species?	<u>Status</u>	Dominance Test work Number of Dominant S That Are OBL, FACW, (excluding FAC–): Total Number of Domin Species Across All Stra Percent of Dominant Sp That Are OBL, FACW, (	pecies or FAC 1 (A nant ata: 1 (E pecies	A) B) A/B)
1					••••••••••••••••••••••••••••••••••••••	<b>ч</b> Б)
2				Prevalence Index wor Total % Cover of:	Multiply by:	
3				OBL species	x 1 =	
4				FACW species	x 2 =	
5	<u> </u>			FAC species	x 3 =	
Herb Stratum (Plot size: 5')		= Total Cov	/er	FACU species	x 4 =	
1 Schoenoplectus pungens	55	Y	OBL	UPL species	x 5 =	
2 Schoenoplectus tabernaemontani	10	N	OBL	Column Totals:		(B)
Juncus balticus	10	N	FACW			. ,
4. Verbena hastata	10	N	FACW		: = B/A =	
<sub>5.</sub> Typha angustifolia	5	N	OBL	Hydrophytic Vegetatio		
6				1 - Rapid Test for H		
7				2 - Dominance Tes		
8				3 - Prevalence Inde		
9					Adaptations <sup>1</sup> (Provide suppor s or on a separate sheet)	rting
10					phytic Vegetation <sup>1</sup> (Explain)	
Woody Vine Stratum         (Plot size:)           1	90	= Total Cov	/er	<sup>1</sup> Indicators of hydric soi be present, unless dist	il and wetland hydrology mus urbed or problematic.	st
2				Hydrophytic		
% Bare Ground in Herb Stratum 10		= Total Cov	/er	Vegetation	s X No	
Remarks:						

	Matrix Color (moist)	% Co	olor (moist)	x Features	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks	
				·					
				·					
				·					
				·					
	oncentration, D=Dep					d Sand Gra		ion: PL=Pore Lining, M=M	
	Indicators: (Application)	able to all LRRs					_	r Problematic Hydric Soi	ls°:
Histosol				Bleyed Mat				ck (A9) (LRR I, J)	<b>C</b> III)
	pipedon (A2) istic (A3)			Redox (S5) I Matrix (S6				airie Redox (A16) ( <b>LRR F,</b> face (S7) ( <b>LRR G</b> )	G, H)
	en Sulfide (A4)			Mucky Mine				ins Depressions (F16)	
	d Layers (A5) (LRR F	•)		Gleyed Ma			-	H outside of MLRA 72 &	73)
	uck (A9) ( <b>LRR F, G, I</b>			d Matrix (F				Vertic (F18)	
	d Below Dark Surface	∋ (A11)		Dark Surfac	. ,			ent Material (TF2)	
	ark Surface (A12) /lucky Mineral (S1)			d Dark Sur Depression	• •			Illow Dark Surface (TF12) xplain in Remarks)	
	Mucky Peat or Peat (	S2) ( <b>LRR G. H</b> )		ains Depres	. ,	(6)		hydrophytic vegetation and	d
	ucky Peat or Peat (Sa	, ,		RA 72 & 7	•	,		ydrology must be present,	
							unless di	sturbed or problematic.	
Restrictive I	Layer (if present):								
Туре:									
Depth (in	ches):						Hydric Soil Pi	resent?Yes 🔀 N	10 <u> </u>
Remarks:			onhytic year	tation ar	nd apom	ornholoc	11/		
	based on domin	ance of hydro		auon a	iu yeon	ωρισιού	<u>,</u> ,		
	based on domin	ance of hydro	op.i.j ao 1090						
id not dig		ance of hydro			-				
id not dig YDROLO	GY	ance of hydro							
id not dig YDROLO Vetland Hyd	GY drology Indicators:			v)			Secondary	Indicators (minimum of two	o required)
id not dig YDROLO Vetland Hyd	GY drology Indicators: cators (minimum of o		ck all that apply					Indicators (minimum of two	o required)
id not dig YDROLO Vetland Hyd Primary Indic	GY drology Indicators: cators (minimum of o Water (A1)		ck all that apply	(B11)	; (B13)		Surfac	e Soil Cracks (B6)	
id not dig YDROLO Vetland Hyd Primary India Surface	<b>GY</b> drology Indicators: <u>cators (minimum of o</u> Water (A1) ater Table (A2)		ck all that apply	(B11) vertebrates			Surfac		
id not dig YDROLO Vetland Hy Primary India Primary India Primary India Primary India Primary India Primary India Primary India	<b>GY</b> drology Indicators: <u>cators (minimum of o</u> Water (A1) ater Table (A2)		ck all that apply	(B11) vertebrates Sulfide Od	or (C1)		☐ Surfac ☐ Sparse ☐ Draina	e Soil Cracks (B6) ely Vegetated Concave Su	rface (B8)
id not dig YDROLO Vetland Hyd Primary India Surface High Wa Saturatia Water M Sedimer	drology Indicators: cators (minimum of o Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2)		ck all that apply Salt Crust Aquatic Inv	(B11) vertebrates Sulfide Od n Water Ta	or (C1) able (C2)	ng Roots ((	Surfac Sparse Draina Oxidiz C3) (whe	e Soil Cracks (B6) ely Vegetated Concave Sun ige Patterns (B10) ed Rhizospheres on Living ere tilled)	rface (B8)
id not dig YDROLO Wetland Hy Primary Indic Surface High Wa Saturatic Water M Sedimer Drift Dep	GY drology Indicators: cators (minimum of o Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2) posits (B3)		ck all that apply         Salt Crust         Aquatic Inv         Hydrogen         Dry-Seaso         Oxidized R         (where r	(B11) vertebrates Sulfide Od in Water Ta Rhizospher <b>not tilled</b> )	or (C1) able (C2) es on Livi		Surfac Sparse Draina Oxidiz C3) (whe	e Soil Cracks (B6) ely Vegetated Concave Sur ige Patterns (B10) ed Rhizospheres on Living ere tilled) sh Burrows (C8)	rface (B8) Roots (C3
id not dig YDROLO Vetland Hy Primary India Surface High Wa Saturatia Water M Sedimer Diff Deg Algal Ma	drology Indicators: <u>cators (minimum of o</u> Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)		ck all that apply         Salt Crust         Aquatic Inv         Hydrogen 3         Dry-Seaso         Oxidized R         (where r         Presence of	(B11) vertebrates Sulfide Od in Water Ta Rhizosphere <b>not tilled</b> ) of Reduced	or (C1) able (C2) es on Livi d Iron (C4		Surfac Sparse Draina Oxidiz C3) (whe Crayfis Satura	e Soil Cracks (B6) ely Vegetated Concave Sur ige Patterns (B10) ed Rhizospheres on Living ere tilled) sh Burrows (C8) ition Visible on Aerial Imag	rface (B8) Roots (C3
id not dig YDROLO Vetland Hy Primary Indig Surface High Wa Saturatio Water M Sedimer Chift Dep Algal Ma Iron Dep	drology Indicators: <u>cators (minimum of o</u> Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5)	ne required; che	ck all that apply         Salt Crust         Aquatic Inv         Hydrogen         Dry-Seaso         Oxidized R         (where r         Presence o         Thin Muck	(B11) vertebrates Sulfide Od n Water Ta Rhizosphere <b>not tilled</b> ) of Reduced Surface (C	or (C1) able (C2) es on Livi d Iron (C4 C7)		Surfac Sparse Draina Oxidiz C3) (whe Crayfis Satura Seom	e Soil Cracks (B6) ely Vegetated Concave Sur ige Patterns (B10) ed Rhizospheres on Living ere tilled) sh Burrows (C8) ition Visible on Aerial Imag orphic Position (D2)	rface (B8) Roots (C3
id not dig YDROLO Vetland Hy Primary India Surface High Wa Saturatio Water M Sedimer Chift Dep Algal Ma Iron Dep Inundati	drology Indicators: cators (minimum of o Water (A1) ater Table (A2) on (A3) 1arks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial I	ne required; che	ck all that apply         Salt Crust         Aquatic Inv         Hydrogen 3         Dry-Seaso         Oxidized R         (where r         Presence of	(B11) vertebrates Sulfide Od n Water Ta Rhizosphere <b>not tilled</b> ) of Reduced Surface (C	or (C1) able (C2) es on Livi d Iron (C4 C7)		Surfac Sparse Draina Oxidiz C3) (whe Crayfis Satura Satura E Geome	e Soil Cracks (B6) ely Vegetated Concave Sur ige Patterns (B10) ed Rhizospheres on Living ere tilled) sh Burrows (C8) tion Visible on Aerial Imag orphic Position (D2) leutral Test (D5)	rface (B8) Roots (C3 ery (C9)
id not dig YDROLO Vetland Hy Primary India Surface High Wa Saturatia Vater M Sedimer Algal Ma Iron Deg Inundatia Water-S	drology Indicators: cators (minimum of o Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial I stained Leaves (B9)	ne required; che	ck all that apply         Salt Crust         Aquatic Inv         Hydrogen         Dry-Seaso         Oxidized R         (where r         Presence o         Thin Muck	(B11) vertebrates Sulfide Od n Water Ta Rhizosphere <b>not tilled</b> ) of Reduced Surface (C	or (C1) able (C2) es on Livi d Iron (C4 C7)		Surfac Sparse Draina Oxidiz C3) (whe Crayfis Satura Satura E Geome	e Soil Cracks (B6) ely Vegetated Concave Sur ige Patterns (B10) ed Rhizospheres on Living ere tilled) sh Burrows (C8) ition Visible on Aerial Imag orphic Position (D2)	rface (B8) Roots (C3 ery (C9)
id not dig YDROLO Vetland Hyn Primary India Surface High Wa Saturatia Water M Sedimer Drift Dep Algal Ma Iron Dep Inundati Water-S Field Obser	drology Indicators: <u>cators (minimum of o</u> Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) on Visible on Aerial I stained Leaves (B9) vations:	ne required; che	ck all that apply         Salt Crust         Aquatic Inv         Hydrogen         Dry-Seaso         Oxidized R         (where r         Presence o         Thin Muck	(B11) vertebrates Sulfide Od in Water Ta Rhizospher <b>not tilled</b> ) of Reduced Surface (C olain in Rer	or (C1) able (C2) es on Livi d Iron (C4 C7)		Surfac Sparse Draina Oxidiz C3) (whe Crayfis Satura Satura E Geome	e Soil Cracks (B6) ely Vegetated Concave Sur ige Patterns (B10) ed Rhizospheres on Living ere tilled) sh Burrows (C8) tion Visible on Aerial Imag orphic Position (D2) leutral Test (D5)	rface (B8) Roots (C3 ery (C9)

Saturation Present? (includes capillary fringe)	Yes		Depth (inches):		Wetland Hydrology Present?	Yes _	×	No _	
Describe Recorded Data (stre	am gau	ige, monitor	ing well, aerial photos	, previous inspec	tions), if available:				

Remarks:

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, To	wnship, Ra	nge: Section 16, T4N,	R60W
Landform (hillslope, terrace, etc.): floodplain terrace		Local relief	(concave, o	convex, none): none	Slope (%): <u>0</u>
Subregion (LRR): G	Lat: 40.3	31837828			°W Datum:
Soil Map Unit Name: Wet alluvial land				NWI classifica	
Are climatic / hydrologic conditions on the site typical for this	time of yea	ar?Yes	No No	(If no, explain in Re	emarks.)
Are Vegetation ${f N}_{}$ , Soil ${f N}_{}$ , or Hydrology ${f N}_{}$ sig	nificantly o	disturbed?	Are "	Normal Circumstances" p	resent? Yes 🔣 No 🗌
Are Vegetation ${ extsf{N}}_{,}$ Soil ${ extsf{N}}_{,}$ or Hydrology ${ extsf{N}}_{,}$ na	turally pro	blematic?	(If ne	eded, explain any answer	s in Remarks.)
SUMMARY OF FINDINGS – Attach site map s	howing	sampling	g point le	ocations, transects,	important features, etc.
Hydrophytic Vegetation Present?       Yes       No         Hydric Soil Present?       Yes       No         Wetland Hydrology Present?       Yes       No         Remarks:       No       No	×		e Sampled in a Wetlar		🗆 No 🗵
Slight rise above side channels					
VEGETATION – Use scientific names of plants	s.				
	Absolute % Cover 60	Dominant Species? Y		Dominance Test works Number of Dominant Sp That Are OBL, FACW, o (excluding FAC-):	pecies
3 4				Total Number of Domina Species Across All Strat	
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u> ) <sub>1.</sub> Elaeagnus angustifolia	60 5	= Total Cov	<sup>rer</sup> FACU	Percent of Dominant Sp That Are OBL, FACW, c	or FAC: <u>66 7</u> (A/B)
2 3				Prevalence Index work Total % Cover of: OBL species	<b>Scheet:</b> <u>Multiply by:</u> x = 0
4 5	5	= Total Cov		FACW species 125 FAC species 0	$x_{2} = \frac{250}{0}$
Herb Stratum (Plot size: 5')	60		FACW	FACU species 20 UPL species	$x = \frac{80}{x = 5}$
2. Cirsium arvense	15	N	FACU	Column Totals: 145	(A) 330 (B)
3. Lepidium latifolium	5	N	FACW		
4				Prevalence Index	
5				Hydrophytic Vegetatio	
6				2 - Dominance Test	
7				3 - Prevalence Inde	
8					daptations <sup>1</sup> (Provide supporting
9			. <u></u>	data in Remarks	or on a separate sheet)
10	80			Problematic Hydrop	hytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum         (Plot size:)           1		= Total Cov	er	<sup>1</sup> Indicators of hydric soil be present, unless distu	and wetland hydrology must rbed or problematic.
2				Hydrophytic	
% Bare Ground in Herb Stratum 20		= Total Cov	er	Vegetation Present? Yes	s No
romano.					

Profile Desc	cription: (Describ	e to the depth ne	eded to docur	nent the ir	ndicator	or confirm	m the absence of indicators.)
Depth	Matrix		Redo	x Features	3		
(inches)	Color (moist)		olor (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
0-8	10YR 2/2	100					CILo
	oncentration, D=De					d Sand G	
Hydric Soil	Indicators: (Appli	cable to all LRRs	, unless othe	rwise note	ed.)		Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		🔲 Sandy 🤇	Gleyed Mat	trix (S4)		1 cm Muck (A9) (LRR I, J)
Histic E	pipedon (A2)		🔲 Sandy F	Redox (S5)	)		Coast Prairie Redox (A16) (LRR F, G, H)
📘 🔲 Black H	istic (A3)		D Stripped	d Matrix (S	6)		Dark Surface (S7) (LRR G)
📘 🔲 Hydroge	en Sulfide (A4)		Loamy	Mucky Min	eral (F1)		High Plains Depressions (F16)
	d Layers (A5) ( <b>LRR</b>		Loamy	Gleyed Ma	trix (F2)		(LRR H outside of MLRA 72 & 73)
📘 1 cm Mu	uck (A9) (LRR F, G	, <b>H</b> )	Deplete	d Matrix (F	-3)		Reduced Vertic (F18)
Deplete	d Below Dark Surfa	ice (A11)	E Redox I	Dark Surfa	ce (F6)		Red Parent Material (TF2)
Direct Di	ark Surface (A12)		Deplete	d Dark Su	rface (F7)		Very Shallow Dark Surface (TF12)
🔲 🗖 Sandy N	Aucky Mineral (S1)		🔲 Redox I	Depressior	ns (F8)		Other (Explain in Remarks)
🔲 2.5 cm I	Mucky Peat or Peat	(S2) (LRR G, H)	🔲 High Pla	ains Depre	ssions (F	16)	<sup>3</sup> Indicators of hydrophytic vegetation and
🔲 5 cm Mi	ucky Peat or Peat (	S3) ( <b>LRR F</b> )	(ML	RA 72 & 7	3 of LRR	H)	wetland hydrology must be present,
							unless disturbed or problematic.
Restrictive	Layer (if present):						
Type:							
, , <u> </u>	ches):						Hydric Soil Present? Yes 🛛 No 🛛
Remarks:							
Remarks:							
	2)/						
HYDROLO	GY						
Wotland Hy	drology Indicators						

wetiand right ology mulcators.		
Primary Indicators (minimum of one required; ch	neck all that apply)	Secondary Indicators (minimum of two required)
Surface Water (A1)	Salt Crust (B11)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Invertebrates (B13)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
U Water Marks (B1)	Dry-Season Water Table (C2)	Oxidized Rhizospheres on Living Roots (C3)
Sediment Deposits (B2)	Dividized Rhizospheres on Living Ro	pots (C3) (where tilled)
Drift Deposits (B3)	(where not tilled)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Presence of Reduced Iron (C4)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)	Thin Muck Surface (C7)	Geomorphic Position (D2)
D Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	FAC-Neutral Test (D5)
Water-Stained Leaves (B9)		Frost-Heave Hummocks (D7) (LRR F)
Field Observations:		
Surface Water Present? Yes 🛄 No	Depth (inches):	
Water Table Present? Yes D	Depth (inches):	
Saturation Present? Yes <u>Ves</u> No No	Depth (inches):	Wetland Hydrology Present? Yes 📃 No 🗵
Describe Recorded Data (stream gauge, monito	oring well, aerial photos, previous inspection	ons), if available:
Remarks:		

Project/Site: Orchard Parcel		City/County	: Orchard, Mo	rgan Co. Sampling Date: <u>10/</u>	30/2020
Applicant/Owner: Rocky Mountain Mitigat	ion		St	ate: <u>CO</u> Sampling Point:	DP6
Investigator(s): K. Russo, H. Gerstung		Sec	tion, Township,	Range: <u>S16, T4N, R60W</u>	
Landform (hillslope, terrace, etc.) _open w	oods	_ Local relief (c	oncave, convex,	none): <u>slightly concave</u> Slope (%	b): <u>0 %</u>
Western Great Plains Subregion (LRR): <u>Region</u>	Range & Irrigated	Lat: <u>40</u>	.31688087	Long: <u>-104.103888</u> 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?	∕es □No	(If no, explain in Remarks)	
Vegetation Significantly Disturbed?	Soil Hydrology	Are		tances" present?   ⊠ Yes            No ed, explain any answers in Remarks)	
SUMMARY OF FINDINGS – Attach si	te map showing	sampling poir	nt locations, t	ansects, important features, etc.	
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Is the Sampled Area within a Wetland?	Yes No	Remarks: Uplan	d sample plot.		
VEGETATION – Use scientific names	-				
Tree Stratum       (Plot size: <u>30 ft.</u> )         1. <u>Populus deltoides</u> 2.	%	solute         Domina           Cover         Specie           15         Y           %	s? Status FAC Cover 	OBL species       %       x 1 =         FACW species       %       x 2 =         FAC species       %       x 3 =         FACU species       %       x 4 =         UPL species       %       x 5 =         Column Totals:       0       %         Prevalence Index = B/A =	= 0 = 0 = 0 = 0 = 0 (B)
5.		%           %           %           %           %           %           %           %           0 %           = Total		Hydrophytic Vegetation Indicators:         □       1 Rapid Test for Hydrophytic Veget         ⊠       2 Dominance Test is >50%         □       3 Prevalence Index is ≤3.01         □       4 Morphological Adaptations1 (Prossupporting data in Remarks or on a sepation of the separation of the separation of the separation of the separation of the set of the s	vide arate sheet) on <sup>1</sup> (explain) hydrology problematic

Remarks: The dominance test for hydrophytic vegetation is met.

		to the de	pth nee				or confirm the	absence of indicators.)	
Depth (inches)	Matrix Color (moist)	0/			edox Fea		Loc <sup>2</sup>	Tautuma	Demente
0-6	10YR 3/2	<u>%</u> 100	000	or (moist)	%	Type <sup>1</sup>		Texture loamy sand	Remarks
6-15	10YR 3/3	90	7.5	5YR 3/4	10	С		loamy sand	
							. <u> </u>		
			·				·		
	ncentration, D=Dep	lation PN	I-Dodu	and Matrix C	8-Covor	ad or Coato	d Sand Craina	<sup>2</sup> Location: PL=Pore	Liping M-Motrix
									0.
_	ndicators: (Applic	cable to al						Indicators for Problem	-
Histosol (/	,			Sandy Gle	-			1 cm Muck (A9) ( <b>LR</b>	
Histic Epi				Sandy Re				Coast Prairie Redox	
Black Hist	. ,			Stripped N	•	,		Dark Surface (S7) (L	,
	_ayers (A5) ( <b>LRR F</b>			☐ Loamy Mı ☐ Loamy Gl				High Plains Depress (LRR H outside of	
	k (A9) ( <b>LRR F, G, F</b>			Depleted	-			Reduced Vertic (F18	•
	Below Dark Surface			☐ Depleted ☐ Redox Da	`	,		Red Parent Material	
•	k Surface (A12)	- (****)		Depleted				Uery Shallow Dark S	( )
	cky Mineral (S1)			Redox De				Other (Explain in Re	marks)
•	ucky Peat or Peat (	52) ( <b>LRR (</b>		 High Plair	•	. ,	)	<sup>3</sup> Indicators of hydrophyt	ic vegetation and
🗌 5 cm Muc	ky Peat or Peat (S3	3) (LRR F)		(MLRA 7	2 & 73 o	f LRR H)		wetland hydrology must	be present, unless
								disturbed or problemation	2
Restrictive L	ayer (if present):							Hydric Soil Present?	
Туре:			Depth (	inches):				🗌 Yes 🖾 No	
HYDROLO	GY								
Wetland Hyd	Irology Indicators	:							
Primary Indic	ators (minimum of o	one require	ed; chec	k all that app	ly)			Secondary Indicators (2	2 or more required)
Surface W	/ater (A1)			Salt Crust (B	11)			Surface Soil Cracks	(B6)
High Wate	er Table (A2)			Aquatic Inver		(B13)		Sparsely Vegetated	Concave Surface (B8)
Saturation	i (A3)			Hydrogen Su	Ifide Od	or (C1)		🗌 Drainage Patterns (	B10)
Water Ma	rks (B1)			Dry-Season		· · /			eres on Living Roots (C3
	Deposits (B2)			Oxidized Rhi		es on Living	Roots (C3)	(where tilled)	20)
Drift Depo	( )			(where no		lran(C4)		Crayfish Burrows (C	
-	or Crust (B4)			Presence of Thin Muck S		( )		Saturation Visible of Geomorphic Positio	••••
Iron Depo	sits (B5) i Visible on Aerial Ii	magany (P		Other (Expla	-	-		FAC-Neutral Test (	
	ined Leaves (B9)	nagery (D	<i>'</i> )	ettiel (±xpia		lanto)		Frost-Heave Humm	/
Field Observ	( )			Depth	Des	cribe Record	led Data (strea	m gauge, monitoring well,	
		Yes	No	(inches)			), if available:	an gaage, monitoring well,	aonai priotos, previous
Surface Wate	er present?		$\boxtimes$						
M/-+ T + /	present?		$\boxtimes$						
Water Table					1				
Water Table Saturation Pr	esent?		$\boxtimes$						
Saturation Pr (includes cap									

Project/Site: Orchard Parcel		City/	County: Orcl	hard, Morga	<u>n Co.</u> Samplin	g Date: <u>10/30/2020</u>
Applicant/Owner: Rocky Mount	ain Mitigation			State:	<u>CO</u> San	npling Point: DP7
Investigator(s): K. Russo, H. G	erstung		Section, To	wnship, Ran	ige: <u>S16, T4N, R60\</u>	N
Landform (hillslope, terrace, etc.)	open woods	Local re	elief (concave,	convex, nor	ne): <u>none</u>	Slope (%):%
Western Gr Subregion (LRR): Region	eat Plains Range & Irrig	ated La	t: <u>40.317142</u>		ong: <u>-104.102589</u>	Datum: NAD83
Soil Map Unit Name: Bankard	l sand, 0 to 3 percent slo	opes			NWI Classification:	PFOA
Are climate/hydrologic conditions	on the site typical for th	is time of year?	🛛 Yes	□ No (If	no, explain in Remark	(S)
Significantly Disturbed?		rology			ces" present? 🛛 Ye	
SUMMARY OF FINDINGS -			a point locat	tions, tran	sects, important fe	atures, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Is the Sampled Area within a W	Yes N		: Upland sampl			
VEGETATION – Use scientif	ic names of plants					
1.	ot size: <u>15 ft.</u> )	% Cover 35 % % % % 35 % = % % %	Species?         S           Y	Status         Ni           FAC         ar           (e         To	ominance Test Works         umber of Dominant Sp         e OBL, FACW, or FAC         xcluding FAC-):         otal Number of Dominant Sp         oecies Across All Strat         ercent of Dominant Sp         e OBL, FACW, or FAC         ercent of Dominant Sp         e OBL, FACW, or FAC         revalence Index Worl         Total % Cover of:         DBL species         ACW species         ACU species         ACU species         ACU species         Column Totals:         prevalence Index = B/A	3 (A)         ant         a:       3 (B)         ecies that $100%$ (A/B)         xsheet: $%$ x 1 = 0 $%$ x 2 = 0 $%$ x 3 = 0 $%$ x 5 = 0 $%$ (A) 0 (B)
5.         6.         7.         8.         9.         10.	ot size: <u>30 ft.</u> )	$     \frac{\frac{\%}{65 \%}}{\frac{\%}{65 \%}} = $	Total Cover	H:	Problematic Hydroph ndicators of hydric soi ust be present, unless	rophytic Vegetation >50% s ≤3.0¹

Remarks: The dominance test for hydrophytic vegetation is met.

Profile Description: (Describe Depth Matrix	to the depth		Redox Features		absence of indicators.)	
(inches) Color (moist)	%	Color (moist)	% Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-10 10YR 3/1	100				silty clay loam	
	·					
	·		· ·			
	·					
<sup>1</sup> Type: C=Concentration, D=Dep	oletion, RM=R	educed Matrix, C	S=Covered or Coa	ated Sand Grains	<sup>2</sup> Location: PL=Por	e Lining, M=Matrix
Hydric Soil Indicators: (Applic					Indicators for Problem	0
Histosol (A1)		☐ Sandv G	leyed Matrix (S4)		☐ 1 cm Muck (A9) ( <b>LR</b>	RI.J)
Histic Epipedon (A2)		Sandy R			Coast Prairie Redox	
Black Histic (A3)		Stripped			Dark Surface (S7) (I	
☐ Hydrogen Sulfide (A4)			lucky Mineral (F1)		High Plains Depress	,
Stratified Layers (A5) (LRR F	)	Loamy G	leyed Matrix (F2)		(LRR H outside of	MLRA 72 & 73)
1 cm Muck (A9) (LRR F, G, H		Depleted			Reduced Vertic (F18	,
Depleted Below Dark Surface	-	Redox D	ark Surface (F6)		Red Parent Material	( )
Thick Dark Surface (A12)		Depleted	Dark Surface (F7)		Very Shallow Dark S	
Sandy Mucky Mineral (S1)		🗌 Redox D	epressions (F8)		Other (Explain in Re	marks)
2.5 cm Mucky Peat or Peat (S	62) ( <b>LRR G, H</b>		ns Depressions (F	16)	<sup>3</sup> Indicators of hydrophyt	
5 cm Mucky Peat or Peat (S3)	8) ( <b>LRR F</b> )	(MLRA )	72 & 73 of LRR H)		wetland hydrology must	
					disturbed or problemation	0
Restrictive Layer (if present):					Hydric Soil Present?	
		pth (inches):			Yes 🛛 No	
Remarks: Hydric soil indicators a		pth (inches):			Yes 🛛 No	
Remarks: Hydric soil indicators a	are not met.	pth (inches):			Yes 🛛 No	
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators						
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators		check all that ap			Secondary Indicators (	• •
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of o		check all that app	311)		Secondary Indicators (	(B6)
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of of Surface Water (A1) High Water Table (A2)		<u>check all that ap</u> □ Salt Crust (E □ Aquatic Inve	311) ertebrates (B13)		Secondary Indicators (	(B6) Concave Surface (B8)
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of Surface Water (A1) High Water Table (A2) Saturation (A3)		check all that app Salt Crust (E Aquatic Inve Hydrogen S	311) ertebrates (B13) ulfide Odor (C1)		Secondary Indicators (	: (B6) Concave Surface (B8) B10)
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)		check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season	311) ertebrates (B13) ulfide Odor (C1) Water Table (C2)		Secondary Indicators (	; (B6) Concave Surface (B8) B10)
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)		check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season	311) ertebrates (B13) ulfide Odor (C1) Water Table (C2) iizospheres on Livi	ng Roots (C3)	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled)	(B6) Concave Surface (B8) B10) eres on Living Roots (C3
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)		check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no	311) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled)		Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (0)	(B6) Concave Surface (B8) B10) eres on Living Roots (C3
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)		check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of	311) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) FReduced Iron (C4		Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (0 Saturation Visible o	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9)
<ul> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> </ul>	are not met.	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rr (where no Presence of Thin Muck S	B11) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7)		Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows ( Saturation Visible o Geomorphic Positio	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2)
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of 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 In	are not met.	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rr (where no Presence of Thin Muck S	311) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) FReduced Iron (C4		Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio X FAC-Neutral Test (I	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5)
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of 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 In Water-Stained Leaves (B9)	are not met.	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	311) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7) ain in Remarks)	)	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio FAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of 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 In Water-Stained Leaves (B9)	are not met.	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	B11) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7) ain in Remarks)	)	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio X FAC-Neutral Test (I	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of 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 In Water-Stained Leaves (B9) Field Observations:	magery (B7)	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	B11) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7) ain in Remarks)	) prded Data (strea	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio FAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of 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)	magery (B7)	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	B11) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7) ain in Remarks)	) prded Data (strea	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio FAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of 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 In Water-Stained Leaves (B9) Field Observations: Surface Water present?	magery (B7)	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	B11) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7) ain in Remarks)	) prded Data (strea	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio FAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Remarks: Hydric soil indicators a HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of of 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 In Water-Stained Leaves (B9) Field Observations: Surface Water present? Water Table present?	magery (B7)	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	B11) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7) ain in Remarks)	) prded Data (strea	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio FAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Remarks: Hydric soil indicators a         HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of of 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 In         Water-Stained Leaves (B9)         Field Observations:         Surface Water present?         Water Table present?         Saturation Present?	magery (B7)	check all that app Salt Crust (E Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	B11) ertebrates (B13) ulfide Odor (C1) Water Table (C2) izospheres on Livi ot tilled) Reduced Iron (C4 Surface (C7) ain in Remarks)	) prded Data (strea	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio FAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>

Project/Site: Orchard Parcel	City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020
Applicant/Owner: <u>Rocky Mountain Mitigation</u>	State: <u>CO</u> Sampling Point: <u>DP8</u>
Investigator(s): K. Russo, H. Gerstung	Section, Township, Range: <u>S16, T4N, R60W</u>
Landform (hillslope, terrace, etc.) slight depression	Local relief (concave, convex, none): <u>concave</u> Slope (%): <u>0 %</u>
Western Great Plains Range & Irrigate Subregion (LRR): <u>Region</u>	ed Lat: <u>40.31787661</u> Long: <u>-104.1010628</u> Datum: <u>NAD83</u>
Soil Map Unit Name: Bankard sand, 0 to 3 percent slope	NWI Classification: PFOA
Are climate/hydrologic conditions on the site typical for this t	ime of year? 🛛 Yes 🗌 No 🛛 (If no, explain in Remarks)
Vegetation Soil Hydrold	999 Are "Normal Circumstances" present? ⊠ Yes 🗌 No
Significantly Disturbed?   Image: Constraint of the second seco	(If needed, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map showi	ng sampling point locations, transects, important features, etc.
Yes       No         Hydrophytic Vegetation Present?       Image: Comparison of the second seco	Remarks: Upland sample plot.
VEGETATION – Use scientific names of plants	

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1	<u>% Cover</u>	Opecies :	Olalus	Number of Dominant Species that	ıt
2.				are OBL, FACW, or FAC (excluding FAC-):	(A)
3.				( °,	(A)
4.				Total Number of Dominant	
	0 %	= Total Cove	r	Species Across All Strata:	(B)
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u> )				Percent of Dominant Species tha	
1. <u>Salix exigua</u>	20 %	Y	FACW	are OBL, FACW, or FAC:	(A/B)
2. <u>Symphoricarpos occidentalis</u>			UPL	Prevalence Index Worksheet:	
3.				Prevalence index worksheet:	
4.				Total % Cover of:	Multiply by:
5.					x 1 = <u>0</u>
	23 %	= Total Cove	r	FACW species%	x 2 = <u>0</u>
Herb Stratum (Plot size: <u>5 ft.</u> )				FAC species %	x 3 = <u>0</u>
······ ·······························	25 %	Y	FACW	FACU species%	x 4 = <u>0</u>
Spartina pectinata     Asclepias speciosa		<u> </u>			x 5 = <u>0</u>
			FAC	Column Totals: 0%	(A) <u>0</u> (B)
3. <u>Nepeta cataria</u>		<u>N</u>	FACU	Prevalence Index = B/A =	
4. <u>Cirsium arvense</u>		<u>N</u>	FACU		
5. <u>Equisetum laevigatum</u> 6.		<u>N</u>	FAC	Hydrophytic Vegetation Indicat	ors:
6 7				☑ 1 Rapid Test for Hydrophytic V	/egetation
8				☐ 2 Dominance Test is >50%	
9	0/			□ 3 Prevalence Index is $\leq 3.0^{1}$	
10	<u>%</u>			☐ 4 Morphological Adaptations <sup>1</sup>	(Provide
	42 %	= Total Cove	r	supporting data in Remarks or on a	
Woody Vine Stratum (Plot size: <u>30 ft.</u> )				Problematic Hydrophytic Vege	etation <sup>1</sup> (explain)
1	<u>%</u>	<u> </u>		<sup>1</sup> Indicators of hydric soil and wet	land hydrology
2	<u>%</u>			must be present, unless disturbed	
	0 %	= Total Cove	r		•
Bare Ground in Herb Stratum <u>58</u> %				Hydrophytic Vegetation Present?	🛛 Yes 🗌 No
Remarks: The rapid test for hydrophytic vegetation is met					

Remarks: The rapid test for hydrophytic vegetation is met.

Dooth Matula		-					
Depth Matrix (inches) Color (moist)	%		Redox Fea %		Loc <sup>2</sup>	Texture	Pomorko
0-2 10YR 2/2	100	Color (moist)	70	Type <sup>1</sup>		silty clay loam	Remarks
2-10 10YR 5/3	100				·	sand	
<sup>1</sup> Type: C=Concentration, D=De	pletion, R	M=Reduced Matrix, 0	CS=Cover	ed or Coate	d Sand Grains	<sup>2</sup> Location: PL=Pore	e Lining, M=Matrix
Hydric Soil Indicators: (Appli	cable to a	III LRRs, unless oth	erwise n	oted.)		Indicators for Problem	natic Hydric Soils <sup>3</sup> :
Histosol (A1)		🗌 Sandy G	leved Mat	trix (S4)		☐ 1 cm Muck (A9) ( <b>LR</b>	R I, J)
Histic Epipedon (A2)		☐ Sandy R	-			Coast Prairie Redox	
Black Histic (A3)		Stripped				Dark Surface (S7) (L	
Hydrogen Sulfide (A4)		🗌 Loamy N	lucky Min	eral (F1)		High Plains Depress	
Stratified Layers (A5) (LRR F		🗌 Loamy G	-			(LRR H outside of	
1 cm Muck (A9) (LRR F, G, I	-	Depleted		,		Reduced Vertic (F18	
Depleted Below Dark Surfac	e (A11)	Redox D		. ,		Red Parent Material	
Thick Dark Surface (A12)				( )		☐ Very Shallow Dark S ☐ Other (Explain in Re	· ,
Sandy Mucky Mineral (S1)			•	( )		— 、 :	,
2.5 cm Mucky Peat or Peat (	, (	, , _ 0	•	• • •	)	<sup>3</sup> Indicators of hydrophyt	
5 cm Mucky Peat or Peat (S	3) ( <b>LRR F</b>		72 & 73 o			wetland hydrology must disturbed or problemation	
Restrictive Layer (if present):						Hydric Soil Present?	
Type:		Depth (inches):				🗌 Yes 🖾 No	
Туре:		· · · · <u> </u>				•	
• • • •	 are not me	· · · · <u> </u>				•	
Туре:	 are not me	· · · · <u> </u>				•	
Туре:	 are not me	· · · · <u> </u>				•	
Туре:	 are not me	· · · · <u> </u>				•	
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators		ət.				Yes 🛛 No	
Type: Remarks: Hydric soil indicators HYDROLOGY		ət.	<u></u>			•	2 or more required)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of Surface Water (A1)		et. red; check all that ap □ Salt Crust (I	B11)			Yes ⊠ No     Secondary Indicators (2     Surface Soil Cracks	(B6)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of Surface Water (A1) High Water Table (A2)		et. red; check all that ap Salt Crust (I Aquatic Inve	B11) ertebrates	. ,		Yes ⊠ No     Secondary Indicators (3     Surface Soil Cracks     Sparsely Vegetated	(B6) Concave Surface (B8)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of Surface Water (A1) High Water Table (A2) Saturation (A3)		et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S	B11) ertebrates sulfide Ode	or (C1)		Yes ⊠ No Secondary Indicators (2 Surface Soil Cracks Sparsely Vegetated Drainage Patterns (	(B6) Concave Surface (B8) B10)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)		et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season	B11) ertebrates sulfide Ode Water Ta	or (C1) able (C2)		Yes ⊠ No Secondary Indicators (2 Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe	(B6) Concave Surface (B8)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)		et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rł	B11) ertebrates sulfide Ode Water Ta nizosphere	or (C1) able (C2)	Roots (C3)	Yes ⊠ No Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled)	: (B6) Concave Surface (B8) B10) eres on Living Roots (C3
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)		et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where ne	B11) ertebrates sulfide Ode Water Ta hizosphere ot tilled)	or (C1) able (C2) es on Living	Roots (C3)	Yes ⊠ No     Secondary Indicators (//     Surface Soil Cracks     Sparsely Vegetated     Drainage Patterns (     Oxidized Rhizosphe     (where tilled)     Crayfish Burrows (0)	: (B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)		et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rł (where ne Presence of	B11) ertebrates sulfide Ode water Ta nizosphere ot tilled) f Reduced	or (C1) able (C2) es on Living I Iron (C4)	Roots (C3)	Yes       No         Secondary Indicators (/         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphetic         (where tilled)         Crayfish Burrows (C         Saturation Visible of	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3) C8) n Aerial Imagery (C9)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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)	: one requi	et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S	B11) ertebrates sulfide Ode water Ta nizosphere <b>ot tilled)</b> f Reduced Surface (C	or (C1) able (C2) es on Living I Iron (C4) C7)	Roots (C3)	Yes       No         Secondary Indicators (1)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphe         (where tilled)         Crayfish Burrows (C         Saturation Visible o         Geomorphic Positio	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3) C8) n Aerial Imagery (C9) n (D2)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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 I	: one requi	et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S	B11) ertebrates sulfide Ode water Ta nizosphere <b>ot tilled)</b> f Reduced Surface (C	or (C1) able (C2) es on Living I Iron (C4) C7)	Roots (C3)	Yes       No         Secondary Indicators (/         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphetic         (where tilled)         Crayfish Burrows (C         Saturation Visible of	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3) C8) n Aerial Imagery (C9) n (D2) D5)
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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)	: one requi	et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rf (where ne Presence or Thin Muck S 37) Other (Expl Depth	B11) ertebrates sulfide Ode water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) able (C2) es on Living H Iron (C4) C7) narks) cribe Record	led Data (strea	Yes       No         Secondary Indicators (2)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphe         (where tilled)         Crayfish Burrows (C)         Saturation Visible o         Geomorphic Positio         FAC-Neutral Test (I	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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 I Water-Stained Leaves (B9) Field Observations:	: one requir magery (E  Yes	et. red; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rt (where no Presence or Thin Muck S 37) Other (Expl Depth No (inches)	B11) ertebrates sulfide Ode water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) able (C2) es on Living H Iron (C4) C7) narks) cribe Record		Yes       No         Secondary Indicators (?         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphe         (where tilled)         Crayfish Burrows (C         Saturation Visible of         Geomorphic Positio         FAC-Neutral Test (I         Frost-Heave Humm	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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 I Water-Stained Leaves (B9) Field Observations: Surface Water present?	: one requir magery (E	et. ed; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rł (where no Presence of Thin Muck S Thin Muck S Thin Muck S Other (Expl. Depth No (inches)	B11) ertebrates sulfide Ode water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) able (C2) es on Living H Iron (C4) C7) narks) cribe Record	led Data (strea	Yes       No         Secondary Indicators (?         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphe         (where tilled)         Crayfish Burrows (C         Saturation Visible of         Geomorphic Positio         FAC-Neutral Test (I         Frost-Heave Humm	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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 I Water-Stained Leaves (B9) Field Observations: Surface Water present? Water Table present?	: one requir magery (E	et.  red; check all that ap Salt Crust (I Aquatic Invo Hydrogen S Dry-Season Oxidized Rt (where no Presence or Thin Muck S Thi	B11) ertebrates sulfide Ode water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) able (C2) es on Living H Iron (C4) C7) narks) cribe Record	led Data (strea	Yes       No         Secondary Indicators (?         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphe         (where tilled)         Crayfish Burrows (C         Saturation Visible of         Geomorphic Positio         FAC-Neutral Test (I         Frost-Heave Humm	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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 I Water-Stained Leaves (B9) Field Observations: Surface Water present? Water Table present? Saturation Present?	: one requir magery (E	et. ed; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Season Oxidized Rł (where no Presence of Thin Muck S Thin Muck S Thin Muck S Other (Expl. Depth No (inches)	B11) ertebrates sulfide Ode water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) able (C2) es on Living H Iron (C4) C7) narks) cribe Record	led Data (strea	Yes       No         Secondary Indicators (?         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphe         (where tilled)         Crayfish Burrows (C         Saturation Visible of         Geomorphic Positio         FAC-Neutral Test (I         Frost-Heave Humm	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicators HYDROLOGY Wetland Hydrology Indicators Primary Indicators (minimum of 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 I Water-Stained Leaves (B9) Field Observations: Surface Water present? Water Table present?	: one requir magery (E	et.  red; check all that ap Salt Crust (I Aquatic Invo Hydrogen S Dry-Season Oxidized Rt (where no Presence or Thin Muck S Thi	B11) ertebrates sulfide Ode water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) able (C2) es on Living H Iron (C4) C7) narks) cribe Record	led Data (strea	Yes       No         Secondary Indicators (?         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C)         Saturation Visible of         Geomorphic Positio         FAC-Neutral Test (I)         Frost-Heave Humm	i (B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>

Project/Site: Orchard Parcel		City/Co	ounty: <u>Orchard, M</u>	organ Co. Samp	ling Date: <u>10/30/2020</u>
Applicant/Owner: Rocky Mount	ain Mitigation		S	tate: <u>CO</u> S	ampling Point: <u>DP9</u>
Investigator(s): K. Russo, H. G	erstung		Section, Township,	Range: S16, T4N, R6	60W
Landform (hillslope, terrace, etc.)	depression	Local relie	ef (concave, convex	none): <u>concave</u>	Slope (%): 0 %
Western Gr Subregion (LRR): Region	eat Plains Range & Irrigated		40.3163935	Long: <u>-104.103447</u>	7 Datum: <u>NAD83</u>
Soil Map Unit Name: Bankard	I sand, 0 to 3 percent slopes			NWI Classification	: PFOA
Are climate/hydrologic conditions	on the site typical for this tim	e of year?	🛛 Yes 🗌 No	(If no, explain in Rema	arks)
Significantly Disturbed? [	tation Soil Hydrology	/ .	Are "Normal Circum (If need	stances" present? 🛛 🛛	Yes ☐ No in Remarks)
SUMMARY OF FINDINGS -		g sampling <sub>l</sub>	point locations, f	ransects, important	features, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Is the Sampled Area within a W	Yes No ⊠ □ ⊠ □ etland? ⊠ □	1	Vetland sample plot.		
VEGETATION – Use scienti	ic names of plants			T	
4(Pl Sapling/Shrub Stratum (Pl 1. <u>Amorpha fruticosa</u> 2 3 4	ft.)       9	% Cover         Sp           7         %           %	Indicator           Y         FAC           Y         FAC           Gotal Cover         FACW           Y         FACW           Gotal Cover         FACW	Dominance Test Work         Number of Dominant Sare OBL, FACW, or FA         (excluding FAC-):         Total Number of Dominant Sare OBL, FACWs are OBL, FACW, or FA         Percent of Dominant Sare OBL, FACW, or FA         Prevalence Index Work	Species that AC3 (A) inant rata:3 (B) Species that AC:100% (A/B) <b>brksheet:</b> f:Multiply by: % x 1 =0 % x 2 =0 % x 3 =0 % x 4 =0 % x 5 =0 0% (A)0 (B)
5.         6.         7.         8.         9.         10.	ot size: <u>30 ft.</u> )	%           %           %           %           %           %           %           %           %           %           %           %		Problematic Hydro <sup>1</sup> Indicators of hydric s must be present, unle	ydrophytic Vegetation is >50% x is ≤3.0 <sup>1</sup>

Remarks: The dominance test for hydrophytic vegetation is met.

Profile Description	n: (Describe	to the de	epth n	eeded to docun	nent th	e indicator o	or confirm the	absence of indicators.)				
Depth Matrix Redox Features												
(inches) Co	olor (moist)	%	C	olor (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks			
	0YR 2/1	95		7.5YR 3/4	5	С	M	silty clay loam				
	0YR 4/1	88		7.5YR 3/4	12	<u> </u>	M/PL	silty clay loam				
12-14 1	0YR 4/1	85		7.5YR 3/4	15	C	M/PL	silty clay				
·												
·												
<sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains <sup>2</sup> Location: PL=Pore Lining, M=Matrix Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) Indicators for Problematic Hydric Soils <sup>3</sup> :												
Hydric Soil Indicat	tors: (Applic	able to a	III LRF						•			
Histosol (A1)				Sandy Gle	-			1 cm Muck (A9) ( <b>LR</b>				
Histic Epipedon				Sandy Rec	-			Coast Prairie Redox				
Black Histic (A3)				Stripped M	•	,		Dark Surface (S7) (L	,			
Hydrogen Sulfid	. ,			Loamy Mu	•	. ,		High Plains Depress (LRR H outside of				
Stratified Layers				Loamy Gle	-			Reduced Vertic (F18				
1 cm Muck (A9)				Depleted N	`	,		Red Parent Material				
Depleted Below Thick Dark Surface		(ATT)		⊠ Redox Dar □ Depleted D		( )		Very Shallow Dark S	· · · ·			
Sandy Mucky M	( )					. ,		Other (Explain in Re	. ,			
		2) (I RR	G H)			. ,		_ 、 .	,			
-	2.5 cm Mucky Peat or Peat (S2) (LRR G, H)       High Plains Depressions (F16)       3Indicators of hydrophytic vegetation and wetland hydrology must be present, unless         5 cm Mucky Peat or Peat (S3) (LRR F)       (MLRA 72 & 73 of LRR H)       wetland hydrology must be present, unless											
,	( - )		/	•				disturbed or problemation				
Restrictive Layer (	(if present):							Hydric Soil Present?				
Туре:			Dept	h (inches):				Yes 🗌 No				
Remarks: Hydric sc	oil indicators F	3 and F6	are m	net.								
HYDROLOGY												
Wetland Hydrolog	y Indicators:											
Primary Indicators (	minimum of o	ne requi	red; ch	eck all that apply	<u>y)</u>			Secondary Indicators (2	2 or more required)			
Surface Water (A	A1)		[	☐ Salt Crust (B1	1)			Surface Soil Cracks	(B6)			
High Water Tabl	le (A2)		[	Aquatic Invert	tebrates	s (B13)		Sparsely Vegetated	Concave Surface (B8)			
Saturation (A3)			-	Hydrogen Sul		· · /		Drainage Patterns (	,			
U Water Marks (B	-			Dry-Season V		( )			eres on Living Roots (C3)			
Sediment Depos			l	Oxidized Rhiz ⊠ Where not)		es on Living I	Roots (C3)	(where tilled) ☐ Crayfish Burrows (C	<b>2</b> 87			
Drift Deposits (B			I	Presence of F		d Iron (C4)		Saturation Visible of				
Algal Mat or Cru				Thin Muck Su				Geomorphic Positio				
Iron Deposits (B Inundation Visib	,	nagony (E		Other (Explain		-		FAC-Neutral Test (	( )			
Water-Stained L		nagery (L	., .			,		Frost-Heave Humm	,			
_	( )			Depth	Dur	with a Damard	a d Data (atua a					
Field Observations	S:	Yes	No	(inches)		ections, etc.)		m gauge, monitoring well,	aerial photos, previous			
Surface Water pres	ent?		$\boxtimes$	. ,	inop		, il available.					
Water Table preser												
Saturation Present				·								
(includes capillary f				·								
Wetland Hydrolog		$\boxtimes$										
Remarks: Wetland	-			and D5 are met								
	, areiegy mu		J, DZ,	and be are mot.								

Project/Site: Orchard Parcel	City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020
Applicant/Owner: Rocky Mountain Mitigation	State: <u>CO</u> Sampling Point: <u>DP10</u>
Investigator(s): K. Russo, H. Gerstung	Section, Township, Range:S16, T4N, R60W
Landform (hillslope, terrace, etc.) open woods	Local relief (concave, convex, none): <u>none</u> Slope (%): <u>0 %</u>
Western Great Plains Range & Irriga Subregion (LRR): <u>Region</u>	ated Lat: <u>40.31653004</u> Long: <u>-104.1035772</u> Datum: <u>NAD83</u>
Soil Map Unit Name: Bankard sand, 0 to 3 percent slop	pes NWI Classification: PFOA
Are climate/hydrologic conditions on the site typical for this	s time of year? 🛛 Yes 🗌 No 🛛 (If no, explain in Remarks)
Vegetation Soil Hydro	ology Are "Normal Circumstances" present? 🛛 Yes 🗌 No
Significantly Disturbed?   Image: Comparison of the second seco	] (If needed, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map show	ving sampling point locations, transects, important features, etc.
Yes       No         Hydrophytic Vegetation Present?       Image: Comparison of the second seco	
Is the Sampled Area within a Wetland?	

#### **VEGETATION – Use scientific names of plants**

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
(	% Cover %	Species ?	Status	Number of Dominant Species that
1 2				are OBL, FACW, or FAC
	0/			(excluding FAC-): (A)
3 4				Total Number of Dominant
7.	0 %	= Total Cover		Species Across All Strata:(B)
Sapling/Shrub Stratum (Plot size: 15 ft.)	0 70			Percent of Dominant Species that
	%			are OBL, FACW, or FAC:(A/B)
1 2				
	0/			Prevalence Index Worksheet:
3 4				Total % Cover of:Multiply by:
5				OBL species % x 1 = 0
·	0 %	= Total Cover		FACW species% x 2 =
Herb Stratum (Plot size: 5 ft.)				FAC species% x 3 =
······································		V		FACU species% x 4 =0
1. <u>Distichlis spicata</u> 2. Elvmus lanceolatus	10.01		FACW	UPL species% x 5 =0
			FACU	Column Totals: <u>0</u> % (A) <u>0</u> (B)
3. <u>Glycyrrhiza lepidota</u>	0/	<u>    N                                </u>	FACU	Prevalence Index = B/A =
4 5.			. <u> </u>	
				Hydrophytic Vegetation Indicators:
6 7				☐ 1 Rapid Test for Hydrophytic Vegetation
8	0/			☐ 2 Dominance Test is >50%
9.				$\square$ 3 Prevalence Index is ≤3.0 <sup>1</sup>
10.	%			
	90 %	= Total Cover		4 Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
Woody Vine Stratum (Plot size: <u>30 ft.</u> )				
1	%			Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
2.	%			<sup>1</sup> Indicators of hydric soil and wetland hydrology
	0 %	= Total Cover		must be present, unless disturbed or problematic
				Lludronhytic Vegetation Dresent? MV UN-
Bare Ground in Herb Stratum 10 %				Hydrophytic Vegetation Present? 🛛 Yes 🔲 No
Demarkey The regid test for hydrophytic vegetation is mat				

Remarks: The rapid test for hydrophytic vegetation is met.

Depth	Matrix		F	Redox Fea	itures			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-4	10YR 3/1	80	10YR 9/1	12	D	М	silty clay loam	
			7.5YR 3/4	8	С	Μ		
4-6	10YR 6/3	90	7.5YR 4/6	10	C	M	sand	
<sup>1</sup> Type: C=Conc	centration, D=Dep	letion, RM	=Reduced Matrix, (	CS=Cover	ed or Coate	d Sand Grains	<sup>2</sup> Location: PL=Pore	e Lining, M=Matrix
Hydric Soil Ind	licators: (Applic	able to all	LRRs, unless oth	erwise no	oted.)		Indicators for Problem	natic Hydric Soils <sup>3</sup> :
Histosol (A1	)		🗌 Sandy G	ileyed Mat	rix (S4)		☐ 1 cm Muck (A9) ( <b>LR</b>	R I, J)
Histic Epiped	, don (A2)		☐ Sandy R	•	. ,		Coast Prairie Redox	
Black Histic			Stripped				Dark Surface (S7) (L	
Hydrogen Su	ulfide (A4)		Loamy N	lucky Min	eral (F1)		High Plains Depress	ions (F16)
	yers (A5) (LRR F	)	Loamy G				(LRR H outside of	
	A9) ( <b>LRR F, G, H</b>	,		-			Reduced Vertic (F18	3)
	low Dark Surface	-	Redox D	•	,		Red Parent Material	(TF2)
Thick Dark S		( )	Depleted		· · ·		Very Shallow Dark S	Surface (TF 12)
Sandy Muck			Redox D		. ,		Other (Explain in Re	marks)
	y Peat or Peat (S	62) ( <b>LRR G</b>		•	. ,	)	<sup>3</sup> Indicators of hydrophyt	ic vegetation and
	Peat or Peat (S3			72 & 7 <sup>'</sup> 3 o	•	,	wetland hydrology must disturbed or problematio	be present, unless
Restrictive Lay	/er (if present):						Hydric Soil Present?	
<b>T</b>	pact soil	[	Depth (inches): 6	;			🖾 Yes 🔲 No	
Type: com	pact soil c soil indicator F6	_	Depth (inches):				🛛 Yes 🔲 No	
Type: com	•	_	Depth (inches): <u>6</u>	<u>.</u>	<u></u>		Yes 🗌 No	
Type: com	c soil indicator F6	_	Depth (inches): <u>6</u>	i			Yes 🗌 No	
Type: <u>com</u> Remarks: Hydri HYDROLOGY Wetland Hydro	c soil indicator F6	) is met.					Yes 🗌 No	
Type: <u>com</u> Remarks: Hydri HYDROLOGY Wetland Hydro	c soil indicator F6	) is met.	Depth (inches): <u>6</u>				Yes I No	2 or more required)
Type: <u>com</u> Remarks: Hydri HYDROLOGY Wetland Hydro	c soil indicator F6 / / /ology Indicators: prs (minimum of c	) is met.		<u>ply)</u>				
Type: <u>com</u> Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato	c soil indicator F6 / / / / / / / / / / / / /	) is met.	d; check all that ap	<u>ply)</u> B11)	(B13)		Secondary Indicators (	
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato	c soil indicator F6 f blogy Indicators: brs (minimum of c cer (A1) Table (A2)	) is met.	d <u>; check all that ap</u> □ Salt Crust (	<u>ply)</u> B11) ertebrates			Secondary Indicators (	(B6) Concave Surface (B8)
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Surface Wat G High Water	c soil indicator F6 f blogy Indicators: ors (minimum of c rer (A1) Table (A2) A3)	) is met.	d; check all that ap □ Salt Crust ( □ Aquatic Invo	<u>ply)</u> B11) ertebrates sulfide Odo	or (C1)		Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns (	(B6) Concave Surface (B8) B10)
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Surface Wat High Water <sup>-</sup> U Saturation (A	c soil indicator F6 f blogy Indicators: ors (minimum of c er (A1) Table (A2) A3) s (B1)	) is met.	d; check all that ap □ Salt Crust ( □ Aquatic Inv □ Hydrogen S	<u>ply)</u> B11) ertebrates Sulfide Odo 1 Water Ta	or (C1) Ible (C2)	Roots (C3)	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled)	(B6) Concave Surface (B8) B10) eres on Living Roots (C3
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Surface Wat High Water <sup></sup> Saturation ( <i>A</i> Water Marks	c soil indicator F6 f blogy Indicators: brs (minimum of c ter (A1) Table (A2) A3) s (B1) eposits (B2)	) is met.	d; check all that ap ☐ Salt Crust ( ☐ Aquatic Inve ☐ Hydrogen S ☐ Dry-Seasor	<u>ply)</u> B11) ertebrates Sulfide Odo 1 Water Ta hizosphere	or (C1) Ible (C2)	Roots (C3)	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled)	(B6) Concave Surface (B8) B10) eres on Living Roots (C3
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Surface Wat High Water T Saturation (# Water Marks Sediment De	c soil indicator F6 f blogy Indicators: brs (minimum of c ter (A1) Table (A2) A3) s (B1) eposits (B2) is (B3)	) is met.	d; check all that ap ☐ Salt Crust ( ☐ Aquatic Invo ☐ Hydrogen S ☐ Dry-Seasor ☐ Oxidized RI	<u>ply)</u> B11) ertebrates Sulfide Odd N Water Ta nizosphere ot tilled)	or (C1) ble (C2) es on Living	Roots (C3)	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled)	(B6) Concave Surface (B8) B10) eres on Living Roots (C3
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Surface Wat High Water <sup></sup> Saturation ( <i>A</i> Water Marks Sediment De Drift Deposit	c soil indicator F6 f f f f f f f f f f f f f	) is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized Rl (where n	ply) B11) ertebrates Sulfide Odd N Water Ta nizosphere ot tilled) f Reduced	or (C1) able (C2) es on Living Iron (C4)	Roots (C3)	Secondary Indicators ( Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled)	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9)
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato G Surface Wat High Water Saturation ( <i>A</i> Water Marks Sediment De Drift Deposit Algal Mat or I ron Deposit	c soil indicator F6 f f f f f f f f f f f f f	) is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized RI (where n Presence o Thin Muck S	<u>ply)</u> B11) ertebrates Sulfide Odd n Water Ta nizosphere <b>ot tilled)</b> f Reduced Surface (C	br (C1) ble (C2) es on Living Iron (C4) 7)	Roots (C3)	Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (0 Saturation Visible o Geomorphic Positio X FAC-Neutral Test (1	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5)
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato G Surface Wat High Water Saturation ( <i>A</i> Water Marks Sediment De Drift Deposit Algal Mat or I ron Deposit	c soil indicator F6 c soil indicator F6 f f logy Indicators: ors (minimum of c crer (A1) Table (A2) A3) s (B1) eposits (B2) is (B3) Crust (B4) s (B5) /isible on Aerial In	) is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized RI (where n Presence o Thin Muck S	<u>ply)</u> B11) ertebrates Sulfide Odd n Water Ta nizosphere <b>ot tilled)</b> f Reduced Surface (C	br (C1) ble (C2) es on Living Iron (C4) 7)	Roots (C3)	Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 C8) n Aerial Imagery (C9) n (D2) D5)
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato G Surface Wate High Water Saturation (A Saturation (A Sediment De Drift Deposit Algal Mat or I ron Deposit I nundation V	c soil indicator F6 f f f f f f f f f f f f f	b is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized RI (where n Presence o Thin Muck S	ply) B11) ertebrates Sulfide Odd h Water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) ble (C2) es on Living Iron (C4) 7) harks) cribe Record		Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (0 Saturation Visible o Geomorphic Positio X FAC-Neutral Test (1	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 28) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Surface Wat Gaturation (# Water Marks Sediment De Sediment De Drift Deposit Algal Mat or Iron Deposit Inundation V Water-Staine	c soil indicator F6 c soil indicator F6 plogy Indicators: prs (minimum of c ter (A1) Table (A2) A3) s (B1) eposits (B2) is (B3) Crust (B4) s (B5) /isible on Aerial In ed Leaves (B9) itions:	) is met. ) is met. one required nagery (B7 Yes	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized RI (where n Presence o Thin Muck S ) Other (Expl Depth No (inches)	ply) B11) ertebrates Sulfide Odd h Water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) ble (C2) es on Living Iron (C4) 7) harks) cribe Record	ded Data (strear	Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio KFAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 28) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Garage Water Gaturation (A Water Marks Gaturation (A Water Marks Gaturation (A Mater Marks) Gaturation (A Mater Mater	c soil indicator F6 f f f f f f f f f f f f f	bis met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized RI (where n Presence o Thin Muck S ) Other (Expl Depth (inches)	ply) B11) ertebrates Sulfide Odd h Water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) ble (C2) es on Living Iron (C4) 7) harks) cribe Record	ded Data (strear	Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio KFAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 28) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Garage Wate High Water Saturation (A Saturation (A Saturati	c soil indicator F6 f f f f f f f f f f f f f	b is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized Rl (where n Presence o Thin Muck S ) Other (Expl Depth (inches)	ply) B11) ertebrates Sulfide Odd h Water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) ble (C2) es on Living Iron (C4) 7) harks) cribe Record	ded Data (strear	Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio KFAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 28) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Garage Wate High Water G Saturation (A Saturation (A Sediment De Drift Deposit Algal Mat or Iron Deposit Inundation V Water-Staine Field Observat Surface Water p Water Table pres	c soil indicator F6 c soil indicator F6 f logy Indicators: ors (minimum of c er (A1) Table (A2) A3) s (B1) eposits (B2) is (B3) Crust (B4) s (B5) fisible on Aerial In ed Leaves (B9) fions: present? ent?	b is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized RI (where n Presence o Thin Muck S ) Other (Expl Depth (inches)	ply) B11) ertebrates Sulfide Odd h Water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) ble (C2) es on Living Iron (C4) 7) harks) cribe Record	ded Data (strear	Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio KFAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 28) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydri HYDROLOGY Wetland Hydro Primary Indicato Garage Wate High Water Saturation (A Saturation (A Saturati	c soil indicator F6 c soil indicator F6 f logy Indicators: ors (minimum of c er (A1) Table (A2) A3) s (B1) eposits (B2) is (B3) Crust (B4) s (B5) fisible on Aerial In ed Leaves (B9) fions: present? ent? ent? ary fringe)	b is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized Rl (where n Presence o Thin Muck S ) Other (Expl Depth (inches)	ply) B11) ertebrates Sulfide Odd h Water Ta hizosphere ot tilled) f Reduced Surface (C ain in Ren	or (C1) ble (C2) es on Living Iron (C4) 7) harks) cribe Record	ded Data (strear	Secondary Indicators () Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible o Geomorphic Positio KFAC-Neutral Test (I Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 28) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>

Project/Site: Orchard Parcel	City/County: Orchard, Mo	organ Co. Sampling Date: <u>10/30/2020</u>
Applicant/Owner: <u>Rocky Mountain Mitigation</u>	St	ate: <u>CO</u> Sampling Point: <u>DP11</u>
Investigator(s): K. Russo, H. Gerstung	Section, Township,	Range: _ S16, T4N, R60W
Landform (hillslope, terrace, etc.) <u>terrace</u>	Local relief (concave, convex,	none): <u>none</u> Slope (%): <u>0 %</u>
Western Great Plains Range & Irrigate Subregion (LRR): Region	d Lat: <u>40.31831028</u>	Long: -104.1019071 Datum: NAD83
Soil Map Unit Name: Riverwash - Water		NWI Classification: PFOA
Are climate/hydrologic conditions on the site typical for this til	me of year? 🛛 Yes 🗌 No	(If no, explain in Remarks)
Vegetation Soil Hydrolo		
Significantly Disturbed?	Are Normal Circums	stances" present? 🛛 Yes 🗌 No
Naturally Problematic?	(If neede	ed, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map showin	ng sampling point locations, t	ransects, important features, etc.
Yes       No         Hydrophytic Vegetation Present?       Image: Comparison of the sent of the sen	Remarks: Upland sample plot.	
VEGETATION – Use scientific names of plants		
Tree Stratum       (Plot size: 30 ft.)         1.       Populus deltoides         2.       Elaeagnus angustifolia         3.	Absolute       Dominant       Indicator         % Cover       Species?       Status         5       Y       FAC         5       Y       FAC         5       Y       FAC         5       Y       FAC         %       Y       FACU         %	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:40% (A/B)OBL species% x 1 = 0 % x 2 = 0 FACW speciesFACW species% x 3 = 0 
5.	%	Hydrophytic Vegetation Indicators:         □       1 Rapid Test for Hydrophytic Vegetation         □       2 Dominance Test is >50%         □       3 Prevalence Index is ≤3.01         □       4 Morphological Adaptations1 (Provide supporting data in Remarks or on a separate sheet)         □       Problematic Hydrophytic Vegetation1 (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.

Lientn	Matrix			Redox Feature			absence of indicators.)		
Depth (inches)		%					Toyturo	Pomorko	
0-5	Color (moist) 10YR 3/3	100	Color (moist)	<u>%</u> T	ype <sup>1</sup>	_00-	Texture silt loam	Remarks	
0-0	1011( 0/0			<u> </u>			Sittioan		
		<u> </u>							
Type: C=Co	oncentration, D=Dep	oletion. RM		 CS=Covered o	r Coated Sa	nd Grains	<sup>2</sup> Location: PL=Pore	Lining, M=Matrix	
	ndicators: (Applic						Indicators for Problem	0	
Histosol (A	A1)		☐ Sandv G	leyed Matrix (S	54)		☐ 1 cm Muck (A9) ( <b>LRF</b>	R I. J)	
 ☐ Histic Epip	,		☐ Sandy R	, ,	,		Coast Prairie Redox		
Black Hist			Stripped				Dark Surface (S7) (L		
🗌 Hydrogen	Sulfide (A4)		🗌 Loamy M	lucky Mineral	(F1)		High Plains Depressi		
	Layers (A5) ( <b>LRR F</b>		🗌 Loamy G	ileyed Matrix (	F2)		(LRR H outside of I		
	k (A9) ( <b>LRR F, G, F</b>	,	Depleted	( )			Reduced Vertic (F18)		
	Below Dark Surface	e (A11)		ark Surface (F	,		Red Parent Material	· · ·	
	k Surface (A12)			Dark Surface			<ul> <li>Very Shallow Dark Surface (TF 12)</li> <li>Other (Explain in Remarks)</li> </ul>		
-	icky Mineral (S1)			epressions (F8	,		_ 、 .	,	
	ucky Peat or Peat (S ky Peat or Peat (S3	, ,		ns Depressior 72 & 73 of LR	. ,		<sup>3</sup> Indicators of hydrophytic wetland hydrology must		
	ky real of real (33	)( <b>LKK</b> F)			IX 11)		disturbed or problematic		
Postrictivo I	ayer (if present):						Hydric Soil Present?		
-			Depth (inches): 5				$\square$ Yes $\square$ No		
Type. C	ompacted soil	- '	Depth (inches): 5						
Remarks: Hy	dric soil indicators a	are not met	Soil could not be r	etrieved below	a depth of	5 inches d	ue to the presence of com	paction.	
HYDROLOG	GY								
	Irology Indicators:								
-			d; check all that ap	oly)			Secondary Indicators (2	or more required)	
Primary Indicators (minimum of one required; check all that apply)							Surface Soil Cracks	(B6)	
Surface Water (A1)     Salt Crust (B11)							<b>— — — — — — — — — —</b>		
	High Water Table (A2)       Aquatic Invertebrates (B13)         Saturation (A3)       Hydrogen Sulfide Odor (C1)						Sparsely Vegetated	Concave Surface (B8	
 ☐ High Wate	n (A3)								
☐ High Wate ☐ Saturation				ulfide Odor (C	1)		<ul> <li>Sparsely Vegetated</li> <li>Drainage Patterns (E</li> <li>Oxidized Rhizosphere</li> </ul>	310)	
☐ High Wate ☐ Saturation ☐ Water Mai			Hydrogen S	ulfide Odor (C Water Table (	1) (C2)	ts (C3)	Drainage Patterns (E	310)	
☐ High Wate ☐ Saturation ☐ Water Mai ☐ Sediment	rks (B1) Deposits (B2)		Hydrogen S Dry-Season Oxidized Rh (where no	ulfide Odor (C Water Table ( iizospheres or ot tilled)	1) (C2) Living Roo	ts (C3)	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizosphere</li> <li>(where tilled)</li> <li>Crayfish Burrows (Comparison of the second seco</li></ul>	310) res on Living Roots (C 8)	
☐ High Wate ☐ Saturation ☐ Water Maı ☐ Sediment ☐ Drift Depo	rks (B1) Deposits (B2) osits (B3)		Hydrogen S Dry-Season Oxidized Rh (where no	ulfide Odor (C Water Table ( izospheres or ot tilled) Reduced Iron	1) (C2) Living Roo	ts (C3)	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizosphere (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> </ul>	310) res on Living Roots (C 8) Aerial Imagery (C9)	
☐ High Wate ☐ Saturation ☐ Water Mai	rks (B1) Deposits (B2) sits (B3) or Crust (B4)		Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S	ulfide Odor (C Water Table ( izospheres or ot tilled) Reduced Iron Surface (C7)	1) (C2) Living Roo (C4)	ts (C3)	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizospher (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> <li>Geomorphic Position</li> </ul>	res on Living Roots (C 8) Aerial Imagery (C9) n (D2)	
High Wate     Saturation     Water Mai     Sediment     Drift Depo     Algal Mat     Iron Depos     Inundation	rks (B1) Deposits (B2) osits (B3) or Crust (B4) sits (B5) n Visible on Aerial Ir	nagery (B7	Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S	ulfide Odor (C Water Table ( izospheres or ot tilled) Reduced Iron Surface (C7)	1) (C2) Living Roo (C4)	ts (C3)	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizospher (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> <li>Geomorphic Position</li> <li>FAC-Neutral Test (D</li> </ul>	810) res on Living Roots (C 8) Aerial Imagery (C9) 6 (D2) 5)	
High Wate     Saturation     Water Mai     Sediment     Drift Depo     Algal Mat     Iron Depo:     Inundation	rks (B1) Deposits (B2) osits (B3) or Crust (B4) sits (B5)	nagery (B7	Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S	ulfide Odor (C Water Table ( izospheres or ot tilled) Reduced Iron Surface (C7)	1) (C2) Living Roo (C4)	ts (C3)	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizospher (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> <li>Geomorphic Position</li> </ul>	810) res on Living Roots (C 8) Aerial Imagery (C9) 6 (D2) 5)	
High Wate Saturation Water Mar Sediment Drift Depo Algal Mat Iron Depo Inundatior Water-Sta	rks (B1) Deposits (B2) osits (B3) or Crust (B4) sits (B5) n Visible on Aerial Ir ined Leaves (B9)		Hydrogen S Hydrogen S Ory-Season Oxidized Rh (where no Presence of Thin Muck S ) Other (Expla	ulfide Odor (C Water Table ( iizospheres or ot tilled) Reduced Iron Surface (C7) ain in Remarks	1) C2) I Living Roo (C4) 3) Recorded I	Data (strea	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizospher (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> <li>Geomorphic Position</li> <li>FAC-Neutral Test (D</li> </ul>	310) res on Living Roots (C 8) Aerial Imagery (C9) 6 (D2) 5) pocks (D7) <b>(LRR F)</b>	
High Wate Saturation Water Mai Sediment Drift Depo Algal Mat Iron Depos Inundatior Water-Sta	rks (B1) Deposits (B2) osits (B3) or Crust (B4) sits (B5) n Visible on Aerial Ir ined Leaves (B9) vations:	Yes	Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	ulfide Odor (C Water Table ( iizospheres or ot tilled) Reduced Iron Surface (C7) ain in Remarks	1) C2) I Living Roo (C4)	Data (strea	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizosphere (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> <li>Geomorphic Position</li> <li>FAC-Neutral Test (D</li> <li>Frost-Heave Hummon</li> </ul>	310) res on Living Roots (C 8) Aerial Imagery (C9) 6 (D2) 5) pocks (D7) <b>(LRR F)</b>	
High Wate Saturation Water Mai Sediment Drift Depo Algal Mat Iron Depos Inundatior Water-Sta Field Observ Surface Wate	rks (B1) Deposits (B2) osits (B3) or Crust (B4) sits (B5) or Visible on Aerial Ir ined Leaves (B9) vations:	Yes	Hydrogen S Hydrogen S Ory-Season Oxidized Rh (where no Presence of Thin Muck S Other (Explain) Other (Explain) Depth No (inches)	ulfide Odor (C Water Table ( iizospheres or ot tilled) Reduced Iron Surface (C7) ain in Remarks	1) C2) I Living Roo (C4) 3) Recorded I	Data (strea	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizosphere (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> <li>Geomorphic Position</li> <li>FAC-Neutral Test (D</li> <li>Frost-Heave Hummon</li> </ul>	310) res on Living Roots (C 8) Aerial Imagery (C9) 6 (D2) 5) pocks (D7) <b>(LRR F)</b>	
High Wate     Saturation     Water Mai     Sediment     Drift Depo     Algal Mat     Iron Depo:     Inundation	rks (B1) Deposits (B2) Isits (B3) or Crust (B4) sits (B5) or Visible on Aerial Ir ined Leaves (B9) vations: er present?	Yes	Hydrogen S Dry-Season Oxidized Rh (where no Presence of Thin Muck S Other (Expla	ulfide Odor (C Water Table ( iizospheres or ot tilled) Reduced Iron Surface (C7) ain in Remarks	1) C2) I Living Roo (C4) 3) Recorded I	Data (strea	<ul> <li>Drainage Patterns (E</li> <li>Oxidized Rhizosphere (where tilled)</li> <li>Crayfish Burrows (C</li> <li>Saturation Visible on</li> <li>Geomorphic Position</li> <li>FAC-Neutral Test (D</li> <li>Frost-Heave Hummon</li> </ul>	310) res on Living Roots (C 8) Aerial Imagery (C9) 6 (D2) 5) pocks (D7) <b>(LRR F)</b>	

Remarks: Wetland hydrology indicators are not met.

 $\boxtimes$ 

(includes capillary fringe)
Wetland Hydrology Present?

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 terr	ace	Local relief (concave, convex, none): <u>concave</u> Slope (%): <u>1 %</u>
Western Great Plains Range & Subregion (LRR): Region	Irrigated	Lat: <u>40.31837192</u> Long: <u>-104.1018882</u> Datum: <u>NAD83</u>
Soil Map Unit Name: Riverwash - Water		NWI Classification: PFOA
Are climate/hydrologic conditions on the site typical f	or this time c	of year? 🛛 Yes 🗌 No 🛛 (If no, explain in Remarks)
Vegetation Soil	Hydrology	Are "Normal Circumstances" present? 🛛 Yes 🗌 No
Significantly Disturbed?		(If needed, evaluin any ensurers in Remarks)
Naturally Problematic?		(If needed, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map	showing s	sampling point locations, transects, important features, etc.
Yes	No F	Remarks: Wetland sample plot.
Hydrophytic Vegetation Present?		
Hydric Soil Present?		
Wetland Hydrology Present?		
Is the Sampled Area within a Wetland?		

#### VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1	%	opeoles	Oluluo	Number of Dominant Species that
2.				are OBL, FACW, or FAC (excluding FAC-): (A)
3.	0/			
4.	%			Total Number of Dominant Species Across All Strata: (B)
	0 %	= Total Cove	r	
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u> )				Percent of Dominant Species that are OBL, FACW, or FAC: (A/B)
1. <u>Salix exigua</u>	40 %	Y	FACW	
2.	%			Prevalence Index Worksheet:
3	%			
4	%			Total % Cover of:Multiply by:
5	%			OBL species% x 1 =
	40 %	= Total Cove	r	FACW species $\%$ x 2 = $0$
Herb Stratum (Plot size: <u>5 ft.</u> )				FAC species         % x 3 =         0           FACU species         % x 4 =         0
1. Phalaris arundinacea	35 %	Y	FACW	PACO species         %         X 4 -         0           UPL species         %         X 5 =         0
2. <u>Salix exigua</u>		<u>Y</u>	FACW	Column Totals: $\underline{0}\%$ (A) $\underline{0}$ (B)
3				Prevalence Index = B/A =
4				
5				Hydrophytic Vegetation Indicators:
6		<u> </u>		☐ 1 Rapid Test for Hydrophytic Vegetation
7	0/		<u> </u>	
8				☐ 2 Dominance Test is >50%
9 10.	<u>%</u> %			☐ 3 Prevalence Index is ≤3.0 <sup>1</sup>
10	45 %	= Total Cove	r	4 Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
Woody Vine Stratum (Plot size: <u>30 ft.</u> )				Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
1				<sup>1</sup> Indicators of hydric soil and wetland hydrology
2	<u>%</u>			must be present, unless disturbed or problematic
	0 %	= Total Cove	r	
Bare Ground in Herb Stratum <u>55</u> %				Hydrophytic Vegetation Present? 🛛 Yes 🗌 No
Demonstras. The new iditent few hyselen has the second station is much				

Remarks: The rapid test for hydrophytic vegetation is met.

Drofilo Dooo	rintian: (Deceriba	to the de	nth pooded to do	una a rat th	a indiaatar a	r oonfirm th	a abaanaa of indiaatara )	
	•	to the de	•			or confirm th	e absence of indicators.)	
Depth (inches)	Matrix Color (moist)	%	Color (moist)	Redox Fe %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-5	10YR 2/2	100		70	Туре		silty clay loam	Remarks
5-12	10YR 5/2	95	10YR 6/6	5	C	М	sand	
					. <u> </u>			
					·	<u> </u>		
					·			
	ncentration, D=Dep		A=Reduced Matrix	CS=Cove	red or Coate	d Sand Grain	s <sup>2</sup> Location: PL=Pore	Lining M=Matrix
	ndicators: (Applic						Indicators for Problem	0.
Histosol (			□ Sandy 0		•			•
	,		⊠ Sandy C		· · /		☐ 1 cm Muck (A9) ( <b>LRF</b> ☐ Coast Prairie Redox	
Black Hist			☐ Stripped	•	,		Dark Surface (S7) (L	
	. ,		Loamy I				High Plains Depressi	,
	_ayers (A5) ( <b>LRR F</b>	)	Loamy (	•	. ,		(LRR H outside of I	
	k (A9) ( <b>LRR F, G, H</b>		Deplete	-			Reduced Vertic (F18)	)
	Below Dark Surface			•			Red Parent Material	(TF2)
•	k Surface (A12)	( )	Deplete		. ,		Very Shallow Dark Sector	urface (TF 12)
🗌 Sandy Mu	cky Mineral (S1)		🗌 Redox 🛛	Depressio	ns (F8)		Other (Explain in Rer	narks)
2.5 cm M	ucky Peat or Peat (S	62) ( <b>LRR</b> (		•	essions (F16)		<sup>3</sup> Indicators of hydrophyti	c vegetation and
🗌 5 cm Muc	ky Peat or Peat (S3	) (LRR F)	(MLRA	72 & 73 (	of LRR H)		wetland hydrology must disturbed or problematic	
Restrictive L	ayer (if present):						Hydric Soil Present?	
Туре:			Depth (inches):				🖾 Yes 🔲 No	
Demonstra Libr	dela a all in dia atau Of	- !						
Remarks: Hy	dric soil indicator St	o is met.						
HYDROLO	GY							
Wetland Hyd	Irology Indicators:							
Primary Indic	ators (minimum of c	one require	ed; check all that ap	oply)			Secondary Indicators (2	or more required)
Surface V	/ater (A1)		Salt Crust	(B11)			Surface Soil Cracks	(B6)
High Wate	er Table (A2)		🗌 Aquatic Inv		``		Sparsely Vegetated	Concave Surface (B8)
Saturation	· · /		Hydrogen S				Drainage Patterns (E	/
☐ Water Ma	( )		Dry-Seaso		( )		Oxidized Rhizospher	res on Living Roots (C3)
	Deposits (B2)				res on Living	Roots (C3)	(where tilled)	0)
	( )		Presence of	ot tilled)	d Iron (C1)		☐ Crayfish Burrows (C- ☐ Saturation Visible on	,
-	or Crust (B4)		Thin Muck				Geomorphic Position	
Iron Depo	אוט (נס) N Visible on Aerial Ir	nagery (B		•	,		☑ FAC-Neutral Test (D	· · ·
_	ined Leaves (B9)	nagery (D	7) 🗅 🕬 🤇 🛶		,		Frost-Heave Hummo	,
_	( )		Depth	D	oribe Deserv	ad Data (-t		
Field Observ	vations:	Yes	No (inches)			led Data (stre ), if available:	am gauge, monitoring well,	aeriai pnotos, previous
Surface Wate	er present?			1	, 0.0.,	,,		
Water Table	•			-				
Saturation Pr		$\square$	□ <u>5</u>	-				
(includes cap		к.ч	<u> </u>	-				
	Irology Present?	$\boxtimes$						

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.

Project/Site: Orchard Parcel		City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020
Applicant/Owner: Rocky Mountain Mitigati	ion	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): <u>concave</u> Slope (%): <u>0 %</u>
Western Great Plains Subregion (LRR): Region	Range & Irrigated	t Lat: <u>40.31835579</u> Long: <u>-104.1002677</u> Datum: <u>NAD83</u>
Soil Map Unit Name: Bankard sand, 0 to	3 percent slopes	NWI Classification: PFOA
Are climate/hydrologic conditions on the site	typical for this tin	ne of year? 🛛 Yes 🗌 No 🛛 (If no, explain in Remarks)
Vegetation	Soil Hydrolog	Ŋ Are "Normal Circumstances" present? ☑ Yes □ No
Significantly Disturbed?		(If needed, evaluin any ensurers in Demerke)
Naturally Problematic?		(If needed, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach sit	te map showin	g sampling point locations, transects, important features, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Is the Sampled Area within a Wetland?	Yes No ⊠ □ □ ⊠ □ □	Remarks: Upland sample plot.

#### **VEGETATION – Use scientific names of plants**

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
(	% OOVEI	Opecies:	Otatus	Number of Dominant Species that
1 2			·	are OBL, FACW, or FAC
	0/			(excluding FAC-): (A)
				Total Number of Dominant
4	0 %	= Total Cove		Species Across All Strata:(B)
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u> )	0 %			Percent of Dominant Species that
1. <u>Salix exigua</u>	7 %	Y	FACW	are OBL, FACW, or FAC:(A/B)
		<u> </u>	TACW	
•	0/			Prevalence Index Worksheet:
3 4		·	·	Total % Cover of: Multiply by:
5.			·	OBL species % x 1 = 0
J	7 %	= Total Cove		FACW species% x 2 =0
			1	FAC species % x 3 = 0
Herb Stratum (Plot size: <u>5 ft.</u> )				FACU species % x 4 = 0
1. Phragmites australis spp. americanus		<u>Y</u>	FACW	UPL species% x 5 =
2. <u>Spartina pectinata</u>		<u>Y</u>	FACW	Column Totals: <u>0</u> % (A) <u>0</u> (B)
3. <u>Cirsium arvense</u>		<u>N</u>	FACU	Prevalence Index = B/A =
4		·	. <u> </u>	
5		·	. <u> </u>	Hydrophytic Vegetation Indicators:
6 7.				☐ 1 Rapid Test for Hydrophytic Vegetation
0	0/	·		$\square$ 2 Dominance Test is >50%
8 9		·		
10.		·		☐ 3 Prevalence Index is ≤3.0 <sup>1</sup>
	70 %	= Total Cove		4 Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
Woody Vine Stratum (Plot size: <u>30 ft.</u> )				
1	%			Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
2.	<u>%</u>	·	·	<sup>1</sup> Indicators of hydric soil and wetland hydrology
2.	0 %	= Total Cove	r	must be present, unless disturbed or problematic
Bare Ground in Herb Stratum <u>30</u> %				Hydrophytic Vegetation Present? 🛛 Yes 🗌 No
Demorton The regid test for hydrophytic vegetation is mot				

Remarks: The rapid test for hydrophytic vegetation is met.

		to the de	epth n				or confirm the	absence of indicators.)	
Depth (inchos)	Matrix	0/				eatures	. 2	<b>-</b> .	<b>D</b> 1
(inches)	Color (moist)	<u>%</u>	C	olor (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
<u> </u>	10YR 3/1 10YR 5/3	<u>    100   </u> 87		10YR 3/1	10	C	M	silty clay loam sand	
0-12	1011( 0/0		-	10YR 5/6	3			Sana	
<sup>1</sup> Type: C=Co	ncentration, D=Dep	oletion RI	M=Red	duced Matrix (	CS=Cov	vered or Coate	d Sand Grains	<sup>2</sup> Location: PL=Pore	Lining M=Matrix
									0,
•	ndicators: (Applic	able to a		•		•		Indicators for Problem	•
	,			Sandy G	-			1 cm Muck (A9) ( <b>LR</b>	
				Sandy R	-			☐ Coast Prairie Redox ☐ Dark Surface (S7) (L	
Black Hist	. ,			☐ Stripped ☐ Loamy №		. ,		High Plains Depress	
	_ayers (A5) ( <b>LRR F</b>	3			-			(LRR H outside of	
	k (A9) (LRR F, G, F				-			Reduced Vertic (F18	)
	Below Dark Surface	-		Redox D		( )		Red Parent Material	(TF2)
	k Surface (A12)	( )		Depleted		. ,		Very Shallow Dark S	urface (TF 12)
	cky Mineral (S1)			Redox D	epressi	ons (F8)		Other (Explain in Rei	marks)
🗌 2.5 cm Mu	ucky Peat or Peat (	52) ( <b>LRR</b>	<b>G</b> , <b>H</b> )			ressions (F16)	1	<sup>3</sup> Indicators of hydrophyti	ic vegetation and
🗌 5 cm Muc	ky Peat or Peat (S3	3) (LRR F)	)	(MLRA	72 & 73	6 of LRR H)		wetland hydrology must disturbed or problematic	
	ayer (if present):		Dent	- (in the se).				Hydric Soil Present?	
Туре:		_	Depu	h (inches):				🗌 Yes 🖾 No	
HYDROLO	-								
-	Irology Indicators								
Primary Indic	ators (minimum of o	one requir	red; ch	eck all that ap	ply)			Secondary Indicators (2	2 or more required)
Surface W	( )			Salt Crust (I				Surface Soil Cracks	( )
High Wate				Aquatic Inve		. ,		Sparsely Vegetated	
Saturation	· · /			Hydrogen S		( )		Drainage Patterns (I	-
U Water Ma	Deposits (B2)		-	Dry-Season		· · ·	Deate (C2)	(where tilled)	res on Living Roots (C3)
Drift Depc			L	where no		eres on Living	ROOLS (C3)	Crayfish Burrows (C	8)
Algal Mat	( )		[	Presence of				Saturation Visible or	
Iron Depo				Thin Muck S		( )		Geomorphic Position	
•	n Visible on Aerial II	magery (E	37) [	Other (Expl	ain in R	emarks)		FAC-Neutral Test (E	05)
🗌 Water-Sta	ined Leaves (B9)		,					Frost-Heave Humme	ocks (D7) <b>(LRR F)</b>
Field Observ	vations:	Yes	No	Depth (inches)		escribe Record spections, etc.	,	m gauge, monitoring well,	aerial photos, previous
Surface Wate	er present?		$\boxtimes$			·			
Water Table	present?		$\boxtimes$		-				
Saturation Pr			$\boxtimes$						
(includes cap					-				
Wetland Hyd	Irology Present?	$\boxtimes$							
Remarks: We	etland hydrology ind	licators D	2 and	D5 are met.					

Project/Site: Orchard Parcel	City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020
Applicant/Owner: <u>Rocky Mountain Mitigation</u>	State: <u>CO</u> Sampling Point: <u>DP14</u>
Investigator(s): K. Russo, H. Gerstung	Section, Township, Range: S16, T4N, R60W
	Local relief (concave, convex, none): <u>concave</u> Slope (%): <u>0 %</u>
Western Great Plains Range & Irrigate Subregion (LRR): <u>Region</u>	
Soil Map Unit Name: Wet alluvial land	NWI Classification: PFOA
Are climate/hydrologic conditions on the site typical for this t	ime of year? 🛛 Yes 🔲 No 🛛 (If no, explain in Remarks)
Vegetation     Soil     Hydrold       Significantly Disturbed?     I     I       Naturally Problematic?     I     I	Are "Normal Circumstances" present?  ☐ Yes  ☐ No (If needed, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map showi	ng sampling point locations, transects, important features, etc.
Yes       No         Hydrophytic Vegetation Present?       Image: Comparison of the second seco	Remarks: Upland sample plot.
VEGETATION – Use scientific names of plants	
Tree Stratum       (Plot size: 30 ft.)         1. Fraxinus pennsylvanica         2. Populus deltoides         3.         4.         Sapling/Shrub Stratum       (Plot size: 15 ft.)         1. Salix exigua         2.         3.         4.         5.         Herb Stratum       (Plot size: 5 ft.)         1. Phalaris arundinacea         2.         3.         4.         5.         4.         5.	Absolute % CoverDominant Species?Indicator StatusDominance Test Worksheet: $\frac{25 \%}{3 \%}$ YFAC $\frac{3 \%}{4}$ NFAC $\frac{3 \%}{6}$ NFAC $\frac{\%}{6}$ $\frac{\%}{6}$ $\frac{28 \%}{6}$ = Total Cover $\frac{2 \%}{6}$ NFACW $\frac{2 \%}{6}$ N $\frac{2 \%}{6}$ FACW $\frac{\%}{6}$ $\frac{2 \%}{6}$ N $\frac{100 \%}{6}$ Y $1$
5.	%

Remarks: The dominance test for hydrophytic vegetation is met.

Profile Desc	ription: (Describe	to the de	epth n	eeded to docum	ent th	e indicator o	or confirm the	absence of indicators.)		
Depth	Matrix			Red	ox Fea	atures				
(inches)	Color (moist)	%	<u> </u>	olor (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks	
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	<u> </u>	M	silty clay		
				7.5YR 4/6	2	C	M			
Í						·				
				·		·	<u> </u>			
						·				
				·		·				
<sup>1</sup> Type: C=Co	oncentration, D=Dep	oletion, RI	M=Red	duced Matrix, CS=	Cove	red or Coated	Sand Grains	<sup>2</sup> Location: PL=Pore	e Lining, M=Matrix	
Hydric Soil I	ndicators: (Applic	able to a	II LRF	Rs, unless otherv	vise n	oted.)		Indicators for Problem	atic Hydric Soils <sup>3</sup> :	
Histosol (	A1)			Sandy Gley	ed Ma	trix (S4)		☐ 1 cm Muck (A9) ( <b>LR</b>	R I, J)	
Histic Epi	pedon (A2)			Sandy Redo				Coast Prairie Redox		
Black Hist	tic (A3)			Stripped Ma	ıtrix (S	6)		Dark Surface (S7) (LRR G)		
Hydrogen	Sulfide (A4)			🗌 Loamy Muc	ky Min	eral (F1)		High Plains Depress		
Stratified	Layers (A5) ( <b>LRR F</b>	)		🗌 Loamy Gley	ed Ma	atrix (F2)		(LRR H outside of	,	
	k (A9) ( <b>LRR F, G, H</b>	-		Depleted Ma	atrix (F	=3)		Reduced Vertic (F18	,	
· ·	Below Dark Surface	e (A11)		🛛 Redox Dark		. ,		Red Parent Material	· /	
	k Surface (A12)			Depleted Da		. ,		Very Shallow Dark S	, ,	
-	icky Mineral (S1)		<b>_</b>	Redox Depr		. ,		Other (Explain in Re	marks)	
	ucky Peat or Peat (S ky Peat or Peat (S3	, ,		☐ High Plains (MLRA 72 (	•	· · ·		<sup>3</sup> Indicators of hydrophyt wetland hydrology must disturbed or problematio	be present, unless	
Restrictive I	_ayer (if present):							Hydric Soil Present?		
Туре:	ayer (il present).	_	Dept	h (inches):				Yes No		
	dric soil indicator F6									
HYDROLO	GY drology Indicators:									
,	0,		ad ab	and all that apply				Secondary Indicators (	Cormore required)	
	ators (minimum of o	one requir			-			Secondary Indicators (2		
Surface V	( <i>)</i>			Salt Crust (B11		(5.4.6)		Surface Soil Cracks		
-	er Table (A2)			Aquatic Inverte		. ,			Concave Surface (B8)	
☐ Saturatior ☐ Water Ma	( )			Hydrogen Sulfi		( )		Drainage Patterns (	/	
				Dry-Season Watch Oxidized Rhizo		. ,	Poote (C3)	(where tilled)	eres on Living Roots (C3)	
Drift Depo	Deposits (B2)		I	(where not t		es on Living r	1001S (C3)	Crayfish Burrows (C	(8)	
	or Crust (B4)		[	Presence of Re		d Iron (C4)		Saturation Visible of	-	
Iron Depo	. ,		[	 Thin Muck Surf	face (C	C7)		Geomorphic Positio		
	n Visible on Aerial Ir	nagery (E		Other (Explain				FAC-Neutral Test (	D5)	
	ained Leaves (B9)	5 7 (	,					Frost-Heave Humm	ocks (D7) <b>(LRR F)</b>	
Field Observ	( )			Depth	Doc	cribo Pocord	od Data (stroar	n gauge, monitoring well,	aorial photos, provious	
Field Observ	valions.	Yes	No	(inches)		ections, etc.)		n gauge, monitoring weil,	aeriai priotos, previous	
Surface Wate	er present?		$\boxtimes$			, ,	,			
Water Table	•									
Saturation Pr	•			·						
(includes cap										
	drology Present?		$\boxtimes$							
-				•	I					
Remarks: we	etland hydrology ind	icator D5	is me	t.						

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): <u>concave</u> Slope (%): <u>1 %</u>						
Western Great Plains Range & Irriga Subregion (LRR): <u>Region</u>	ted Lat: <u>40.31846839</u> Long: <u>-104.0972308</u> Datum: <u>NAD83</u>						
Soil Map Unit Name: Wet alluvial land	NWI Classification: PFOA						
Are climate/hydrologic conditions on the site typical for this time of year? Xes INO (If no, explain in Remarks)							
Vegetation Soil Hydro	logy Are "Normal Circumstances" present? ⊠ Yes □ No						
Significantly Disturbed?	(If needed, evaluin any ensurem in Demerke)						
Naturally Problematic?	(If needed, explain any answers in Remarks)						
SUMMARY OF FINDINGS – Attach site map show	ving sampling point locations, transects, important features, etc.						
Yes No	Remarks: Wetland sample plot.						
Hydrophytic Vegetation Present?							
Hydric Soil Present?							
Wetland Hydrology Present?							
Is the Sampled Area within a Wetland?							

#### **VEGETATION – Use scientific names of plants**

Tree Stratum (Plot size: 30 ft.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:
1	<u>% 00ver</u>	Opecies:	Otatus	Number of Dominant Species that
2.				are OBL, FACW, or FAC
3.				(excluding FAC-): (A)
4.	0/			Total Number of Dominant
	0 %	= Total Cover		Species Across All Strata:(B)
Sapling/Shrub Stratum (Plot size: <u>15 ft.</u> )				Percent of Dominant Species that are OBL, FACW, or FAC: (A/B)
1. <u>Salix exigua</u>	40 %	Y	FACW	
2	%			Prevalence Index Worksheet:
3	%			
4	<b>A</b> /			Total % Cover of: Multiply by:
5.	%			OBL species% x 1 =0
	40 %	= Total Cover		FACW species % x 2 = 0
Herb Stratum (Plot size: <u>5 ft.</u> )				FAC species% x 3 =0
( · · · · · · · · · · · · · · · · · · ·	10.0/	Y	FACW	FACU species% x 4 =0
	<b>F</b> 0/		OBL	UPL species         % x 5 =         0
		<u> </u>		Column Totals: <u>0</u> % (A) <u>0</u> (B)
3	0/			Prevalence Index = B/A =
5.				Hydrophytic Vegetation Indicators:
6.	%			
7	<u>%</u>			☑ 1 Rapid Test for Hydrophytic Vegetation
8	0/			☐ 2 Dominance Test is >50%
9				☐ 3 Prevalence Index is ≤3.0 <sup>1</sup>
10	%			4 Morphological Adaptations <sup>1</sup> (Provide
	<u>    15  %</u>	= Total Cover		supporting data in Remarks or on a separate sheet)
Woody Vine Stratum (Plot size: <u>30 ft.</u> )				Problematic Hydrophytic Vegetation <sup>1</sup> (explain)
1				<sup>1</sup> Indicators of hydric soil and wetland hydrology
2	%			must be present, unless disturbed or problematic
	0 %	= Total Cover		
Bare Ground in Herb Stratum 85 %				Hydrophytic Vegetation Present? 🛛 Yes 🗌 No
Demonstration The manifold and for her demonstration are not at the second				

Remarks: The rapid test for hydrophytic vegetation is met.

r									
Profile Desc	ription: (Describe	to the dep	oth needed to docu	ument the	e indicator o	or confirm the	absence of indicators.)		
Depth	 Matrix			Redox Fea			,		
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks	
0-4	10YR 2/2	100		/0	Турс		silty clay loam	T Cilianos	
4-8	10YR 3/1	95	7.5YR 2.5/3	5	С	М	silty clay		
8-14	10YR 3/1	90	7.5YR 3/2	10	C	M/PL	silty clay		
							, , ,		
<u> </u>					·				
	·				·				
<sup>1</sup> Type: C=Co	oncentration, D=De	pletion, RM	=Reduced Matrix, C	S=Cover	red or Coated	d Sand Grains	<sup>2</sup> Location: PL=Pore	Lining, M=Matrix	
Hydric Soil	Indicators: (Appli	cable to all	LRRs, unless othe	erwise n	oted.)		Indicators for Problem	atic Hydric Soils <sup>3</sup> :	
Histosol (			🗌 Sandy Gl				1 cm Muck (A9) ( <b>LRF</b>	(L J S	
Histic Epi	,		Sandy Re		· · ·		$\Box$ Coast Prairie Redox (A16) ( <b>LRR F, G, H</b> )		
Black His			Stripped				$\square$ Dark Surface (S7) (LRR G)		
	n Sulfide (A4)		☐ Loamy M	•	,		☐ High Plains Depressions (F16)		
	Layers (A5) (LRR F	•)	Loamy G				(LRR H outside of MLRA 72 & 73)		
	k (A9) (LRR F, G, I		Depleted				Reduced Vertic (F18)		
	Below Dark Surface		🖂 Redox Da	•	,		Red Parent Material (TF2)		
	k Surface (A12)	· · ·	Depleted		. ,		Very Shallow Dark Surface (TF 12)		
🗌 Sandy Mu	ucky Mineral (S1)		Redox De	epressior	ns (F8)		Other (Explain in Rer	narks)	
	ucky Peat or Peat (			•	essions (F16)		<sup>3</sup> Indicators of hydrophyti	c vegetation and	
🗌 5 cm Muc	ky Peat or Peat (S	3) ( <b>LRR F</b> )	(MLRA 7	72 & 73 o	of LRR H)		wetland hydrology must		
							disturbed or problematic	:	
Restrictive I	Layer (if present):						Hydric Soil Present?		
Туре:		[	Depth (inches):				🖾 Yes 🔲 No		
Remarks: Hy	dric soil indicator F	6 is met.							
HYDROLO	GV								
	-	_							
-	drology Indicators		-lllll 4l4	- 1 2			O a constant la dia atom (0		
Primary India	cators (minimum of	one require	d; check all that app 				Secondary Indicators (2	• •	
Surface V	( )		☐ Salt Crust (E	,			Surface Soil Cracks	( )	
-	er Table (A2)		Aquatic Inve				Sparsely Vegetated		
Saturation	. ,		Hydrogen S		· · ·		Drainage Patterns (E	,	
U Water Ma			Dry-Season		. ,		Oxidized Rhizospher (where tilled)	res on Living Roots (C3)	
	Deposits (B2)		Oxidized Rh		es on Living	Roots (C3)	• • •	8)	
			(where no		d Iron (CA)		Crayfish Burrows (C		
Algal Mat or Crust (B4)       Presence of Reduced Iron (C4)         Iron Deposits (B5)       Thin Muck Surface (C7)							Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2)		
	· · ·	magany (B7		,	,		FAC-Neutral Test (D	( )	
	n Visible on Aerial I ained Leaves (B9)	magery (Dr		un ni i i i i i i i i i i i i i i i i i	nanoj		Frost-Heave Hummo	·	
	( )								
Field Obser	vations:	Yes	Depth No (inches)				m gauge, monitoring well,	aerial photos, previous	
C C				insp	ections, etc.)	, if available:			
Surface Wate	•		⊠	.					
Water Table	•								
Saturation P		$\boxtimes$	13	.					
(includes cap		_	_						
Wetland Hy	drology Present?	$\boxtimes$							

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.

Project/Site: Orchard Parcel	(	City/County	<sub>:</sub> Orchard	/Morgan	Sampling Date:	10/30/2020
Applicant/Owner: Rocky Mountain Mitigation				State: CO		
		Section, To	wnship, Ra	<sub>nge:</sub> S16, T4N, R60W		
Landform (hillslope, terrace, etc.): terrace				convex, none): concave		ope (%): 0
Subregion (LRR): G				Long: -104.096281		
Soil Map Unit Name: Wet alluvial land				NWI classific	ation: PFOA	
Are climatic / hydrologic conditions on the site typical for this	time of ve	ar? Yes				
Are Vegetation $\underline{N}_{}$ , Soil $\underline{N}_{}$ , or Hydrology $\underline{N}_{}$ sig				Normal Circumstances" p		× No
Are Vegetation $\underline{N}$ , Soil $\underline{N}$ , or Hydrology $\underline{N}$ na	turally pro	blematic?		eded, explain any answe		
SUMMARY OF FINDINGS – Attach site map s	howing	samplin	g point le	ocations, transects	, important f	eatures, etc.
Hydrophytic Vegetation Present? Yes <u>Ves</u> No						
			e Sampled		. r	7
Wetland Hydrology Present? Yes No		with	in a Wetlar	nd? Yes	<u>×</u> No [	2
Remarks:		I				
Wetland depression						
VEGETATION – Use scientific names of plant	s.					
• [	Absolute	Dominant	Indicator	Dominance Test work	sheet:	
	% Cover	Species?	Status	Number of Dominant Sp		
1				That Are OBL, FACW, ( (excluding FAC-):	or FAC	(A)
2					2	
3				Total Number of Domin Species Across All Stra		(B)
4	0					
Sapling/Shrub Stratum (Plot size: 15')		= Total Cov		Percent of Dominant Sp That Are OBL, FACW, o		(A/B)
1. Salix exigua	2	<u>N</u>	FACW	Prevalence Index wor	kshoot:	
2				Total % Cover of:		bly by:
3				OBL species	x 1 =	
4				FACW species	x 2 =	
5				FAC species	x 3 =	
Herb Stratum (Plot size: 5')	2	= Total Cov	ver	FACU species		
1. Schoenoplectus pungens	40	Y	OBL	UPL species		
<sub>2.</sub> Carex emoryi	35	Y	OBL	Column Totals:	(A)	(B)
3. Cirsium arvense	5	Ν	FACU			
4				Prevalence Index		
5				Hydrophytic Vegetatio		tation
6				■ 1 - Rapid Test for H		etation
7				3 - Prevalence Inde		
8				4 - Morphological A		vide supporting
9					s or on a separate	
10				Problematic Hydrop	phytic Vegetation	<sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)	80	= Total Cov	ver	<sup>1</sup> Indicators of hydric soi be present, unless distu		
1	<b>  </b>					
2	$\vdash$			Hydrophytic Vegetation		
% Bare Ground in Herb Stratum 20		= Total Cov	ver	Present? Yes	s 🗵 No _	
Remarks:				1		
leaf litter						

Profile Des	Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth	Matrix	0/ 0		<u>ox Feature</u>		12	Tautum	Demoster
(inches)	Color (moist)	<u>    %      C</u>	olor (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
				_				
				_				
					·			
	Concentration, D=Depl					d Sand Gr		cation: PL=Pore Lining, M=Matrix.
Hydric Soil	I Indicators: (Applica	ble to all LRRs	s, unless othe	rwise not	ed.)		Indicators	for Problematic Hydric Soils <sup>3</sup> :
Histoso				Gleyed Ma				Muck (A9) ( <b>LRR I, J</b> )
	Epipedon (A2)			Redox (S5	,			Prairie Redox (A16) (LRR F, G, H)
	Histic (A3)			d Matrix (S				Surface (S7) (LRR G)
	en Sulfide (A4)			Mucky Mir	• •			Plains Depressions (F16)
	ed Layers (A5) (LRR F			Gleyed M			` `	RR H outside of MLRA 72 & 73)
	luck (A9) (LRR F, G, H			ed Matrix ( Dark Surfa				ed Vertic (F18) arent Material (TF2)
	ed Below Dark Surface Dark Surface (A12)	(ATT)			urface (F6)			Shallow Dark Surface (TF12)
	Mucky Mineral (S1)			Depressio	· · ·			(Explain in Remarks)
	Mucky Peat or Peat (S	32) ( <b>I RR G H</b> )		•	essions (F	16)		of hydrophytic vegetation and
	lucky Peat or Peat (S3	, , , ,		•	73 of LRR	,		d hydrology must be present,
		)(,)	(			••)		disturbed or problematic.
Restrictive	Layer (if present):							· · · · · · · · · · · · · · · · · · ·
	nches):						Hydric Soil	Present? Yes 🗵 No
Remarks:							injune con	
Nemaiks.								
not sample	ed; same vegetati	on communit	v as DP17					
noteamp	ea, eanie regelaa		.,					
HYDROLO	DGY							
	ydrology Indicators:							
-	licators (minimum of or	o roquirodi obo	ak all that ann	6.0			Cocondo	ary Indicators (minimum of two required)
		ne required; che						
	e Water (A1)		Salt Crust		(5.4.6.)			face Soil Cracks (B6)
	/ater Table (A2)		Aquatic In		. ,			rsely Vegetated Concave Surface (B8)
	tion (A3)		Hydrogen					inage Patterns (B10)
	Marks (B1)				Table (C2)			dized Rhizospheres on Living Roots (C3)
	ent Deposits (B2)			•	eres on Liv	ing Roots		vhere tilled)
	eposits (B3)			not tilled)			= .	yfish Burrows (C8)
	lat or Crust (B4)		Presence			.)		uration Visible on Aerial Imagery (C9)
	eposits (B5)		L Thin Mucł					omorphic Position (D2)
	tion Visible on Aerial Ir	nagery (B7)	U Other (Ex	plain in Re	emarks)			C-Neutral Test (D5)
U Water-	Stained Leaves (B9)						🛄 Fros	st-Heave Hummocks (D7) (LRR F)
Field Obse	rvations:							
Surface Wa	ater Present? Ye	es <u> </u>	Depth (in	iches):		_		
Water Table	e Present? Ye	es 🔲 No 🔄	Depth (in	iches):		_		
Saturation I	Present? Ye	es 🖸 No		iches):			and Hydrolog	y Present? Yes 🔀 No 🗌
	apillary fringe)			,				

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

Remarks:

localized depression/concave position within floodplain

Project/Site: Orchard Parcel		City/County	: Orchard	/Morgan	Sampling Date: 10/30/2020
Applicant/Owner: Rocky Mountain Mitigation		, ,			Sampling Point: DP17
		Section, To	wnship, Ra	<sub>nge:</sub> S16, T4N, R60V	V
Landform (hillslope, terrace, etc.): terrace		Local relief	(concave,	convex, none): concave	e Slope (%): 0
Subregion (LRR): G	Lat: 40	.3192360	-	Long: -104.095840	Datum: 83
Soil Map Unit Name: Wet alluvial land				NWI classific	
Are climatic / hydrologic conditions on the site typical for this	time of ye	ear? Yes			
Are Vegetation ${\color{black}{N}}_{,}$ Soil ${\color{black}{N}}_{,}$ or Hydrology ${\color{black}{N}}_{,}$ si	gnificantly	/ disturbed?	Are	، "Normal Circumstances"	present?Yes 🛛 🛛 No 🗖
Are Vegetation $\underline{N}_{}$ , Soil $\underline{N}_{}$ , or Hydrology $\underline{N}_{}$ na	aturally pr	oblematic?		eded, explain any answe	
SUMMARY OF FINDINGS – Attach site map s	showing	g samplin	g point l	ocations, transects	, important features, etc.
Hydrophytic Vegetation Present? Yes No	, 🛛			1 A	
Hydric Soil Present? Yes <u>Yes</u> No	) <u> </u>		e Samplec in a Wetla		🗵 <sub>No</sub>
Wetland Hydrology Present? Yes No	)	with			
Remarks:					
Wetland depression					
VEGETATION – Use scientific names of plant	S.				
	Absolute			Dominance Test work	(sheet:
Tree Stratum (Plot size: NA)	<u>% Cover</u>	Species?	Status	Number of Dominant S	
1	<u> </u>	l		That Are OBL, FACW, (excluding FAC-):	or FAC 2 (A)
23				Total Number of Domir	aant
4.		<u> </u>		Species Across All Stra	
	0	= Total Cov	/er	Percent of Dominant S	pecies
<u>Sapling/Shrub Stratum</u> (Plot size: <u>15'</u> ) 1. Salix exigua		1 N	FACW	That Are OBL, FACW,	
	Ě		<u></u>	Prevalence Index wor	ksheet:
2		1		Total % Cover of:	Multiply by:
4.		1		OBL species	x 1 =
5		1		FACW species	x 2 =
5'	2	= Total Cov	/er	FAC species	x 3 =
Herb Stratum (Plot size: 5') 1. Schoenoplectus pungens	40	1γ	OBL	FACU species	x 4 =
2. Carex emoryi	40 35	Ϋ́Υ	OBL	Column Totals:	(A) (B)
3. Cirsium arvense	5	N	FACU		
4		1			x = B/A =
5		1		Hydrophytic Vegetati	
6					Hydrophytic Vegetation
7				2 - Dominance Tes 3 - Prevalence Ind	
8					Adaptations <sup>1</sup> (Provide supporting
9					s or on a separate sheet)
10				Problematic Hydro	phytic Vegetation <sup>1</sup> (Explain)
Woody Vine Stratum (Plot size:)	80	= Total Cov	/er		il and wetland hydrology must
1		]		be present, unless dist	urbed or problematic.
2				Hydrophytic	
% Bare Ground in Herb Stratum 20	0	= Total Cov	/er	Vegetation Present? Ye	es 🗵 No 🗖
Remarks:					
leaf litter					

SOIL
------

Profile Desc	cription: (Describ	e to the de	oth needed to docu	ment the	indicator	or confi	rm the absence of indicators.)
Depth	Matrix			ox Featur	es1	. 2	
<u>(inches)</u> 0-3	Color (moist) 10YR 3/2	<u>%</u>	<u>Color (moist)</u> 7.5YR 2.5/3	2	<u>Type<sup>1</sup></u> C	<u>_Loc<sup>2</sup>_</u> M	<u>Texture</u> Remarks
							_ Silty Cla
3-8	10YR 3/2	90	5YR 3/4	_ 10	<u> </u>	<u>M</u>	Silty Cla <mark>n</mark>
8-15	10YR 3/2	80	5YR 3/4	_ 20	С	M	Silty Cla
			I=Reduced Matrix, C			ed Sand (	
Hydric Soll		icable to al	I LRRs, unless othe		latrix (S4)		Indicators for Problematic Hydric Soils <sup>3</sup> :
	oipedon (A2)			Redox (S	, ,		<ul> <li>1 cm Muck (A9) (LRR I, J)</li> <li>Coast Prairie Redox (A16) (LRR F, G, H)</li> </ul>
	stic (A3)			d Matrix (	,		$\square$ Dark Surface (S7) (LRR G)
Hydroge	en Sulfide (A4)				ineral (F1)		High Plains Depressions (F16)
	d Layers (A5) ( <b>LRR</b>				/latrix (F2)		(LRR H outside of MLRA 72 & 73)
	ick (A9) (LRR F, G	. ,		ed Matrix	• •		Reduced Vertic (F18)
	d Below Dark Surfa ark Surface (A12)	ice (A11)		Dark Sur	race (F6) 5urface (F7	`)	☐ Red Parent Material (TF2) ☐ Very Shallow Dark Surface (TF12)
	lucky Mineral (S1)			Depressi	•	)	Dether (Explain in Remarks)
	Aucky Peat or Peat			•	ressions (I	-16)	<sup>3</sup> Indicators of hydrophytic vegetation and
📘 5 cm Mu	icky Peat or Peat (	S3) (LRR F	) (MI	RA 72 &	73 of LR	R H)	wetland hydrology must be present,
							unless disturbed or problematic.
_	Layer (if present):						
							Hydric Soil Present? Yes 🗶 No
	ches):						Hydric Soil Present? Yes No
Remarks:							
prominent	redox features						
HYDROLO	GY						
Wetland Hy	drology Indicators	6:					
Primary India	cators (minimum of	one require	ed; check all that app	ly)			Secondary Indicators (minimum of two required
Surface	Water (A1)		🔲 Salt Crus	t (B11)			Surface Soil Cracks (B6)
🔲 🛛 High Wa	ater Table (A2)		🔲 Aquatic Ir				Sparsely Vegetated Concave Surface (B8)
Saturatio	. ,		L Hydrogen		• •		Drainage Patterns (B10)
	larks (B1)				Table (C2		Oxidized Rhizospheres on Living Roots (C
	nt Deposits (B2)				eres on Li	ing Root	
	posits (B3)			not tilled	,	4)	Crayfish Burrows (C8)
	at or Crust (B4) posits (B5)		Thin Muc		ed Iron (C	4)	Saturation Visible on Aerial Imagery (C9) Geomorphic Position (D2)
	on Visible on Aeria	l Imagery (F					FAC-Neutral Test (D5)
	tained Leaves (B9)	•••					$\square$ Frost-Heave Hummocks (D7) ( <b>LRR F</b> )
Field Obser	. ,						
Surface Wat	er Present?	Yes 🗖	No Depth (ir	nches):			
Water Table	Present?		No Depth (ir	nches):			
Saturation P	resent?		No Depth (ir				etland Hydrology Present? Yes 🔛 No 🗌
(includes cap	oillary fringe)						) if evellable.
	Corueu Data (Strea	m yauye, m	onitoring well, aerial	μποιος, β		spections	s, ii avaliauie.
Remarks:							
i temaiño.							
localized d	enression/conc	ave nositi	ion within floodpl	ain			
		ave positi		ann			

Project/Site: Orchard Parcel		City/County	: Orchard	/Morgan	Sampling	Date:	10/30/2020
Applicant/Owner: Rocky Mountain Mitigation				State: CO		Point: [	DP18
Investigator(s): H. Gerstung		Section, To	wnship, Rar	<sub>nge:</sub> <u>S16, T4N, R60</u> W	/		
Landform (hillslope, terrace, etc.): terrace		Local relief	(concave, d	convex, none): <u>slightly</u> a	convex	Slop	be (%): 0
Subregion (LRR): G I	<sub>Lat:</sub> <u>40</u> .	3192709		Long: -104.095762		Datur	<sub>n:</sub> 83
Soil Map Unit Name: Wet alluvial land				NWI classific			
Are climatic / hydrologic conditions on the site typical for this tir	me of ye	ar? Yes	× No	(If no, explain in R	emarks.)		
Are Vegetation ${\sf N}_{}$ , Soil ${\sf N}_{}$ , or Hydrology ${\sf N}_{}$ sign	nificantly	disturbed?	Are "	Normal Circumstances" p	oresent?	Yes	× No
Are Vegetation ${\sf N}_{}$ , Soil ${\sf N}_{}$ , or Hydrology ${\sf N}_{}$ natu	urally pro	oblematic?		eded, explain any answe			
SUMMARY OF FINDINGS – Attach site map sh	owing	ı samplin	g point le	ocations, transects	, import	ant fe	atures, etc.
Hydrophytic Vegetation Present?       Yes       No         Hydric Soil Present?       Yes       No         Wetland Hydrology Present?       Yes       No         Remarks:       No       No			ie Sampled in a Wetlan		<u> </u>	X	
Upland adjacent to wetland depression							
VEGETATION – Use scientific names of plants.		_					
Tree Stratum (Plot size: NA )	bsolute 6 Cover	Dominant Species?		Dominance Test work Number of Dominant S			
1. Populus deltoides	35	<u>Y</u>	FAC	That Are OBL, FACW,	or FAC		
2				(excluding FAC-):	l	3	(A)
3				Total Number of Domin		3	
4				Species Across All Stra		<u></u>	(B)
Sapling/Shrub Stratum (Plot size: 15' )	35	= Total Co	/er	Percent of Dominant Sp That Are OBL, FACW,		100	(A/B)
1. Salix exigua	<u>-</u>	Y	FACW				((12)
2				Prevalence Index wor	ksheet:	Multiply	<i>.</i> b. <i>a</i>
3				<u>Total % Cover of:</u> OBL species			<u>/ by:</u>
4		l		FACW species			
5				FAC species			
Herb Stratum (Plot size: 5')	<u>)                                    </u>	= Total Co	/er	FACU species	x 4		
1. Phalaris arundinacea	92	<u>Y</u>	FACW	UPL species	x 5	=	
2. Cirsium arvense	3	<u>N</u>	FACU	Column Totals:	(A)		(B)
3				Prevalence Index	= B/A =		
4		l		Hydrophytic Vegetatio			
5				1 - Rapid Test for H			ation
6				2 - Dominance Tes			
7				3 - Prevalence Inde			
8		l		4 - Morphological A			
9 10.		l		data in Remarks		•	,
	95	= Total Co	/er	Problematic Hydro	ohytic Veg	etation'	(Explain)
Woody Vine Stratum (Plot size:)		] - 10tai 00		<sup>1</sup> Indicators of hydric soi be present, unless dist			
1 2.		i		Hydrophytic			
2	0	= Total Co	/er	Hydrophytic Vegetation			
% Bare Ground in Herb Stratum 5				Present? Ye	s	No	
Remarks:							

OOIL	SOI	L
------	-----	---

Depth	Matrix		oth needed to docur Redc	x Featur	es			
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		Remarks
$\frac{0-3}{2}$	10YR 3/1	$-\frac{100}{20}$		- 0		- <u> </u>	Silty Cla	
3-8	10YR 3/2	_ <u>98</u>	7YR 3/4	2	<u> </u>	M	Silty Clar	
8-15	10YR 3/2	_ 90	7YR 3/4	10	<u> </u>	M	Silty Cla	
							·	
							·	
							· ·	
<sup>1</sup> Type: C=Co	oncentration. D=De	pletion. RM	=Reduced Matrix, CS	S=Cover	ed or Coate	ed Sand G	Grains. <sup>2</sup> Location	n: PL=Pore Lining, M=Matrix.
			LRRs, unless othe					Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		🛄 Sandy 🤇	Gleyed N	latrix (S4)			(A9) ( <b>LRR I, J</b> )
	oipedon (A2)			Redox (S				ie Redox (A16) ( <b>LRR F, G, H</b> )
Black Hi				d Matrix	• •			ce (S7) (LRR G)
	n Sulfide (A4) I Layers (A5) ( <b>LRR</b>	E)		-	lineral (F1) ⁄Iatrix (F2)			Depressions (F16) outside of MLRA 72 & 73)
	ick (A9) (LRR F, G,	,		d Matrix			Reduced V	
	Below Dark Surfa				face (F6)			Material (TF2)
	ark Surface (A12)		Deplete	d Dark S	Surface (F7	)		w Dark Surface (TF12)
	lucky Mineral (S1)			•	ons (F8)			ain in Remarks)
	/lucky Peat or Peat icky Peat or Peat (\$			•	ressions (F	,		drophytic vegetation and
	icky Pear of Pear (3	53) ( <b>LKK F</b>		.RA / 2 0	73 of LRI	хп)	-	Irology must be present, Irbed or problematic.
Restrictive I	ayer (if present):							
Туре:								
Depth (ind	ches):						Hydric Soil Pres	sent? Yes 🔀 No 🗌
Remarks:							•	
distinct red	ox foaturos							
HYDROLO	GY							
Wetland Hyd	drology Indicators	:						
Primary Indic	ators (minimum of	one require	d; check all that appl	y)			Secondary In	dicators (minimum of two required)
Surface			Salt Crust	(B11)				Soil Cracks (B6)
	ter Table (A2)		🛄 Aquatic In					Vegetated Concave Surface (B8)
Saturatio			L Hydrogen					Patterns (B10)
	arks (B1)				Table (C2			Rhizospheres on Living Roots (C3)
	t Deposits (B2)			•	eres on Liv	ing Roots		
	oosits (B3)			not tilled	,	4		Burrows (C8)
	t or Crust (B4)		Thin Muck		ced Iron (C	4)		n Visible on Aerial Imagery (C9) blic Position (D2)
	osits (B5) on Visible on Aerial	Imagery (F			. ,			utral Test (D5)
	tained Leaves (B9)				(emarks)			ave Hummocks (D7) (LRR F)
Field Observ	( )							
Surface Wate		Yes 🗖	No Depth (in	ches):				
Water Table		Yes 🔲						
Saturation Pr		Yes 🗖	No Depth (in				and Hydrology Pre	esent? Yes 🗖 No 🗵
(includes cap	oillary fringe)							
Describe Red	corded Data (strear	n gauge, m	onitoring well, aerial	pnotos, p	previous in:	spections)	, if available:	
Remarks:								
i tomanto.								
Indicator D	5 is met.							

Project/Site: Orchard Parcel		Cit	y/County:	Orchard, Mo	organ Co. Sampling Date	e: <u>10/30/2020</u>
Applicant/Owner: Rocky Mount	ain Mitigation			St	tate: <u>CO</u> Sampling	Point: DP19
Investigator(s): K. Russo, H. G	erstung		Section	n, Township,	Range: <u>S16, T4N, R60W</u>	
Landform (hillslope, terrace, etc.)				ave, convex,	none): <u>concave</u> S	lope (%): <u>1 %</u>
Western Gr Subregion (LRR): Region	eat Plains Range & Irrigat		_at: <u>40.31</u>	993294	Long: <u>-104.0947502</u> Dat	um: NAD83
Soil Map Unit Name: Wet allu	vial land				NWI Classification: PFO	A
Are climate/hydrologic conditions	on the site typical for this	time of year?	? 🛛 Yes	🗌 No	(If no, explain in Remarks)	
Significantly Disturbed?	tation Soil Hydrolo	ogy	Are "No		stances" present?  ⊠ Yes ed, explain any answers in Rema	□ No arks)
SUMMARY OF FINDINGS -	Attach site map show	ing sampli	ng point l	ocations, t	ransects, important feature	s, etc.
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present? Is the Sampled Area within a W		Remark	ks: Wetland	sample plot.		
VEGETATION – Use scienti	ic names of plants					
4.	ot size: <u>15 ft.</u> )	Absolute % Cover <u>5 %</u> % % 5 % % % % % 0 % 100 % % % % %	Dominant Species? 	Status <u>FACW</u>  ver	FACW species       %         FAC species       %         FACU species       %         UPL species       %         Column Totals:       0 %         Prevalence Index = B/A =	that (A) (B) that (A/B) t: (A/B) t: x 1 = 0 x 2 = 0 x 3 = 0 x 3 = 0 x 4 = 0 x 5 = 0 (A) (B)
6 7 8 9 10	ot size: <u>30 ft.</u> )	%           %           %           %           100 %           %           %           0 %	= Total Co		Hydrophytic Vegetation India ☐ 1 Rapid Test for Hydrophyt ☐ 2 Dominance Test is >50% ☐ 3 Prevalence Index is ≤3.0° ☐ 4 Morphological Adaptation supporting data in Remarks or o ☐ Problematic Hydrophytic Ved <sup>1</sup> Indicators of hydric soil and w must be present, unless distur Hydrophytic Vegetation Present	ic Vegetation Ins <sup>1</sup> (Provide In a separate sheet) egetation <sup>1</sup> (explain) vetland hydrology bed or problematic

Remarks: The rapid test for hydrophytic vegetation is met.

Profile Descrip Depth	Matrix		r	Redox Fea	aturoc			
(inches)		%	Color (moist)	%		Loc <sup>2</sup>	Toxturo	Pomorko
0-3	Color (moist) 10YR 2/2	98	7.5YR 3/4	2	<u>Type<sup>1</sup></u> C	<u>LOC-</u>	Texture silty clay loam	Remarks
3-12	10YR 2/2	85	7.5YR 4/6	15	C	M/PL	silty clay	
	1011(2/2		7.511(4/0	15			Sity Cidy	
								·
								-
<sup>1</sup> Type: C=Con	centration, D=Dep	letion, RM	=Reduced Matrix, (	CS=Cover	ed or Coate	d Sand Grains	<sup>2</sup> Location: PL=Pore	e Lining, M=Matrix
Hydric Soil Ind	dicators: (Applica	able to all	LRRs, unless oth	erwise no	oted.)		Indicators for Problem	atic Hydric Soils <sup>3</sup> :
Histosol (A1	)		🗌 Sandy G	leyed Ma	trix (S4)		1 cm Muck (A9) ( <b>LR</b>	R I, J)
Histic Epipe	don (A2)		☐ Sandy R	-			Coast Prairie Redox	
Black Histic			Stripped	, ,			Dark Surface (S7) (L	.RR G)
Hydrogen S	Sulfide (A4)		Loamy N	/ucky Min	eral (F1)		High Plains Depress	ions (F16)
Stratified La	yers (A5) (LRR F)	1	Loamy G	•	. ,		(LRR H outside of	MLRA 72 & 73)
	(A9) (LRR F, G, H			-			Reduced Vertic (F18	5)
	elow Dark Surface	,	⊠ Redox D	•	,		Red Parent Material	(TF2)
Thick Dark		()	Depleted		. ,		Very Shallow Dark S	Surface (TF 12)
Sandy Mucl	( )		Redox D		. ,		Other (Explain in Re	marks)
-	ky Peat or Peat (S	2) ( <b>LRR G</b>		•	. ,	)	<sup>3</sup> Indicators of hydrophyt	ic vegetation and
	Peat or Peat (S3)	, (	0	72 & 73 o		/	wetland hydrology must	
_		`					disturbed or problemation	
Restrictive La	yer (if present):						Hydric Soil Present?	
Туре:	yer (if present):	_	Depth (inches):				Hydric Soil Present? ⊠ Yes □ No	
Туре:		_	Depth (inches):				•	
Туре:	ic soil indicator F6	_	Depth (inches):				•	
Type: Remarks: Hydr	ic soil indicator F6	_	Depth (inches):				•	
Type: Remarks: Hydr HYDROLOG Wetland Hydr	ic soil indicator F6 Y plogy Indicators:	- is met.	Depth (inches):	<u></u>			•	2 or more required)
Type: Remarks: Hydr HYDROLOG Wetland Hydr	ic soil indicator F6 Y ology Indicators:	- is met.		<u> </u>			Yes No	
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat	ic soil indicator F6 Y ology Indicators: cors (minimum of o ter (A1)	- is met.	d; check all that ap	B11)	(B13)		Yes No	(B6)
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat	ic soil indicator F6 Y ology Indicators: ors (minimum of o ter (A1) Table (A2)	- is met.	d; check all that ap □ Salt Crust (	B11) ertebrates	( )		Yes No Secondary Indicators (2	(B6) Concave Surface (B8)
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat Surface Wa High Water	ic soil indicator F6 Y ology Indicators: ter (A1) Table (A2) A3)	- is met.	d; check all that ap □ Salt Crust ( □ Aquatic Invo	B11) ertebrates Sulfide Ode	or (C1)		Yes No Secondary Indicators (2 Surface Soil Cracks Sparsely Vegetated Drainage Patterns (1)	(B6) Concave Surface (B8) B10)
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat Surface Wa High Water Saturation ( Water Mark	ic soil indicator F6 Y ology Indicators: ter (A1) Table (A2) A3) s (B1)	- is met.	d; check all that ap	B11) ertebrates Sulfide Ode Water Ta	or (C1) able (C2)	Roots (C3)	Yes No Secondary Indicators (2 Surface Soil Cracks Sparsely Vegetated Drainage Patterns (1)	(B6) Concave Surface (B8) B10)
Type: Remarks: Hydr HYDROLOG Wetland Hydr Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D	ic soil indicator F6 Y ology Indicators: fors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2)	- is met.	d; check all that ap	B11) ertebrates Sulfide Ode n Water Ta hizosphere	or (C1) able (C2)	Roots (C3)	Yes No Secondary Indicators (2 Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe	(B6) Concave Surface (B8) B10) pres on Living Roots (C3
Type: Remarks: Hydr HYDROLOG Wetland Hydre Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi	ic soil indicator F6 Y blogy Indicators: tors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3)	- is met.	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b>	or (C1) able (C2) es on Living	Roots (C3)	Yes ☐ No Secondary Indicators (2 ☐ Surface Soil Cracks ☐ Sparsely Vegetated ☐ Drainage Patterns (1 ☐ Oxidized Rhizosphe (where tilled)	(B6) Concave Surface (B8) B10) rres on Living Roots (C3
Type: Remarks: Hydr HYDROLOG Wetland Hydre Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat out	ic soil indicator F6 Y blogy Indicators: tors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) c Crust (B4)	- is met.	d; check all that ap Salt Crust ( Aquatic Inve Hydrogen S Dry-Seasor Oxidized Rł (where n	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced	or (C1) able (C2) es on Living I Iron (C4)	Roots (C3)	Yes □ No     Secondary Indicators (//     Surface Soil Cracks     Sparsely Vegetated     Drainage Patterns (/     Oxidized Rhizosphe     (where tilled)     Crayfish Burrows (//     Crayfish	(B6) Concave Surface (B8) B10) rres on Living Roots (C3) 8) n Aerial Imagery (C9)
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat ou Iron Deposi	ic soil indicator F6 Y blogy Indicators: tors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) c Crust (B4)	- is met. <u>ne require</u>	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized Ri (where n Presence o	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C	or (C1) able (C2) es on Living I Iron (C4) C7)	Roots (C3)	Yes □ No     Secondary Indicators (//     Surface Soil Cracks     Sparsely Vegetated     Drainage Patterns ((     Oxidized Rhizosphe     (where tilled)     Crayfish Burrows (C     Saturation Visible on	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2)
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat on Iron Deposi Inundation V	ic soil indicator F6 Y blogy Indicators: ors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) Crust (B4) ts (B5)	- is met. <u>ne require</u>	d; check all that ap Salt Crust ( Aquatic Invo Hydrogen S Dry-Seasor Oxidized Ri (where n Presence o	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C	or (C1) able (C2) es on Living I Iron (C4) C7)	Roots (C3)	Yes □ No     Secondary Indicators (2     Surface Soil Cracks     Sparsely Vegetated     Drainage Patterns (0     Oxidized Rhizosphe     (where tilled)     Crayfish Burrows (C     Saturation Visible of     Geomorphic Positio	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5)
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat on Iron Deposi Inundation V	ic soil indicator F6 Y ology Indicators: cors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) r Crust (B4) ts (B5) Visible on Aerial Im- ied Leaves (B9)	ne required	d; check all that ap Salt Crust (I Aquatic Invo Hydrogen S Dry-Seasor Oxidized Rt (where n Presence o Thin Muck S Other (Expl Depth	B11) ertebrates Sulfide Odi n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C lain in Ren	or (C1) able (C2) es on Living I Iron (C4) C7) narks)		Yes       No         Secondary Indicators (2         Surface Soil Cracks         Drainage Patterns (1         Oxidized Rhizosphe         (where tilled)         Crayfish Burrows (C         Saturation Visible or         Geomorphic Positio         FAC-Neutral Test (C	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydr HYDROLOG Wetland Hydr Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat on Iron Deposi Inundation V Water-Stain	ic soil indicator F6 Y ology Indicators: cors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) r Crust (B4) ts (B5) Visible on Aerial Im- ied Leaves (B9)	ne required	d; check all that ap Salt Crust (I Aquatic Inve Hydrogen S Dry-Seasor Oxidized Rt (where n Presence o Thin Muck S ) Other (Expl	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C lain in Ren	or (C1) able (C2) es on Living l Iron (C4) C7) narks) cribe Record		Yes       No         Secondary Indicators (1)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (I)         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C)         Saturation Visible on         Geomorphic Positio         FAC-Neutral Test (I)         Frost-Heave Humm	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydr HYDROLOG Wetland Hydr Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat on Iron Deposi Inundation V Water-Stain	ic soil indicator F6 Y blogy Indicators: tors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) r Crust (B4) ts (B5) visible on Aerial Im- ted Leaves (B9) tions:	ne required	d; check all that ap Salt Crust (I Aquatic Invo Hydrogen S Dry-Seasor Oxidized Rt (where n Presence o Thin Muck S Other (Expl Depth	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C lain in Ren	or (C1) able (C2) es on Living l Iron (C4) C7) narks) cribe Record	ded Data (strea	Yes       No         Secondary Indicators (1)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (I)         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C)         Saturation Visible on         Geomorphic Positio         FAC-Neutral Test (I)         Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydr HYDROLOG Wetland Hydre Primary Indicat Surface Wa High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat on Iron Deposi Inundation V Water-Stain Field Observa	ic soil indicator F6 Y blogy Indicators: ors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) r Crust (B4) ts (B5) /isible on Aerial Im ted Leaves (B9) tions: present?	ne required	d; check all that ap ☐ Salt Crust ( ☐ Aquatic Invo ☐ Hydrogen S ☐ Dry-Seasor ⊠ Oxidized RH (where n ☐ Presence o ☐ Thin Muck S ) ☐ Other (Expl Depth No (inches) ⊠	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C lain in Ren	or (C1) able (C2) es on Living l Iron (C4) C7) narks) cribe Record	ded Data (strea	Yes       No         Secondary Indicators (1)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (I)         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C)         Saturation Visible on         Geomorphic Positio         FAC-Neutral Test (I)         Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydr HYDROLOG Wetland Hydre Primary Indicat Surface Wat High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Inundation V Water-Stain Field Observa	ic soil indicator F6 Y blogy Indicators: ors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) r Crust (B4) ts (B5) Visible on Aerial Im red Leaves (B9) tions: present? esent?	ne required	d; check all that ap □ Salt Crust ( □ Aquatic Invo □ Hydrogen S □ Dry-Seasor ⊠ Oxidized Rł (where n □ Presence o □ Thin Muck S ) □ Other (Expl Depth No (inches) ⊠	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C lain in Ren	or (C1) able (C2) es on Living l Iron (C4) C7) narks) cribe Record	ded Data (strea	Yes       No         Secondary Indicators (1)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (I)         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C)         Saturation Visible on         Geomorphic Positio         FAC-Neutral Test (I)         Frost-Heave Humm	(B6) Concave Surface (B8) B10) eres on Living Roots (C3 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat Surface Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat ou Iron Deposi Inundation V Water-Stain Field Observa Surface Water Water Table pr Saturation Press	ic soil indicator F6 Y blogy Indicators: ors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) r Crust (B4) ts (B5) Visible on Aerial Im led Leaves (B9) tions: present? esent?	ne required	d; check all that ap ☐ Salt Crust ( ☐ Aquatic Invo ☐ Hydrogen S ☐ Dry-Seasor ⊠ Oxidized RH (where n ☐ Presence o ☐ Thin Muck S ) ☐ Other (Expl Depth No (inches) ⊠	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C lain in Ren	or (C1) able (C2) es on Living l Iron (C4) C7) narks) cribe Record	ded Data (strea	Yes       No         Secondary Indicators (1)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (I)         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C)         Saturation Visible on         Geomorphic Positio         FAC-Neutral Test (I)         Frost-Heave Humm	(B6) Concave Surface (B8) B10) ires on Living Roots (C3 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydr HYDROLOG Wetland Hydro Primary Indicat Surface Wat High Water Saturation ( Water Mark Sediment D Drift Deposi Algal Mat or Iron Deposi Inundation Water-Stain Field Observa Surface Water Water Table pr Saturation Pres (includes capill	ic soil indicator F6 Y blogy Indicators: ors (minimum of o ter (A1) Table (A2) A3) s (B1) eposits (B2) ts (B3) r Crust (B4) ts (B5) Visible on Aerial Im led Leaves (B9) tions: present? esent?	ne required	d; check all that ap □ Salt Crust ( □ Aquatic Invo □ Hydrogen S □ Dry-Seasor ⊠ Oxidized Rł (where n □ Presence o □ Thin Muck S ) □ Other (Expl Depth No (inches) ⊠	B11) ertebrates Sulfide Ode n Water Ta hizosphere <b>ot tilled)</b> f Reduced Surface (C lain in Ren	or (C1) able (C2) es on Living l Iron (C4) C7) narks) cribe Record	ded Data (strea	Yes       No         Secondary Indicators (1)         Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (I)         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C)         Saturation Visible on         Geomorphic Positio         FAC-Neutral Test (I)         Frost-Heave Humm	(B6) Concave Surface (B8) B10) rres on Living Roots (C3 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>

Project/Site: Orchard Parcel	City/County: Orchard, Mo	organ Co. Sampling Date: <u>10/30/2020</u>
Applicant/Owner: Rocky Mountain Mitigation	St	tate: <u>CO</u> Sampling Point: <u>DP20</u>
Investigator(s): K. Russo, H. Gerstung	Section, Township,	Range:S16, T4N, R60W
Landform (hillslope, terrace, etc.) hillslope		none): <u>convex</u> Slope (%): <u>3 %</u>
Western Great Plains Range & Irrigate           Subregion (LRR):         Region	ed Lat: <u>40.31976787</u>	Long: <u>-104.094525</u> Datum: <u>NAD83</u>
Soil Map Unit Name: Cascajo soil and gravelly land		NWI Classification: PFOA
Are climate/hydrologic conditions on the site typical for this t	ime of year? 🛛 Yes 🗌 No	(If no, explain in Remarks)
Vegetation Soil Hydrolo Significantly Disturbed?		stances" present?    ⊠ Yes     □ No ed, explain any answers in Remarks)
Naturally Problematic?		
SUMMARY OF FINDINGS – Attach site map show	ing sampling point locations, t	ransects, important features, etc.
Yes       No         Hydrophytic Vegetation Present?       Image: Constraint of the sent of the sen	Remarks: Upland sample plot.	
VEGETATION – Use scientific names of plants		
Tree Stratum       (Plot size: <u>30 ft.</u> )         1.       Populus deltoides         2.	Absolute % Cover         Dominant Species?         Indicator Status           15 %         Y         FAC           %	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: $50\%$ (A/B)Multiply by: OBL species% x 1 = 0 % x 2 = 0 FACW speciesFACW species% x 3 = 0 % x 3 = 0 FACU speciesFACU species% x 4 = 0 % x 5 = 0 Column Totals:Own (A)0 (B) O (B)Prevalence Index = B/A =
5.	%	Hydrophytic Vegetation Indicators:         □       1 Rapid Test for Hydrophytic Vegetation         □       2 Dominance Test is >50%         □       3 Prevalence Index is ≤3.01         □       4 Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)         □       Problematic Hydrophytic Vegetation <sup>1</sup> (explain)         ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic         Hydrophytic Vegetation Present?       □ Yes

Remarks: Indicators of hydrophytic vegetation are not met.

Profile Description: (Description) Depth Mat	rix		Redox Fea	atures			
(inches) Color (moist		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-5 10YR 3/3	100		·			sand	
5-7 10YR 5/3	98	10YR 5/6	2	С	М	sand	
7-14 10YR 5/3	100					sand	
				·			
			·	·			
<sup>1</sup> Type: C=Concentration, D=	Depletion, R	M=Reduced Matrix,	CS=Cove	red or Coate	d Sand Grair	s <sup>2</sup> Location: PL=Pc	pre Lining, M=Matrix
Hydric Soil Indicators: (Ap	plicable to a	II LRRs, unless oth	nerwise n	oted.)		Indicators for Proble	matic Hydric Soils <sup>3</sup> :
Histosol (A1)		🗌 Sandy 0	Bleyed Ma	trix (S4)		🗌 1 cm Muck (A9) (L	RR I, J)
Histic Epipedon (A2)		☐ Sandy F	-				ox (A16) (LRR F, G, H)
Black Histic (A3)		☐ Stripped	Matrix (S	6)		Dark Surface (S7)	
Hydrogen Sulfide (A4)		🗌 Loamy I	Mucky Min	eral (F1)		High Plains Depres	
Stratified Layers (A5) (LR		🗌 Loamy (	-			•	of MLRA 72 & 73)
1 cm Muck (A9) (LRR F, 6	G, H)	Deplete	d Matrix (F	-3)		Reduced Vertic (F	,
Depleted Below Dark Sur	ace (A11)	🗌 Redox 🛛		. ,		Red Parent Materia	· · ·
Thick Dark Surface (A12)		Deplete		· · ·		Very Shallow Dark	· · · ·
Sandy Mucky Mineral (S1		Redox [	•	· · /		Other (Explain in F	(emarks)
<ul> <li>2.5 cm Mucky Peat or Peat</li> <li>5 cm Mucky Peat or Peat</li> </ul>	. , .	• • •	ains Depre 72 & 73 c	ssions (F16) of LRR H)	)	<sup>3</sup> Indicators of hydroph wetland hydrology mu disturbed or problema	st be present, unless
Restrictive Layer (if presen	t).					Hydric Soil Present?	
	.,.						
Type: Remarks: Hydric soil indicate	rs are not me	Depth (inches):				Yes 🛛 No	
Type:	rs are not me	· · · · <u> </u>				Yes 🛛 No	
Type: Remarks: Hydric soil indicato		· · · · <u> </u>				Yes 🛛 No	
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato	Drs:	et.					(2 or more required)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum	Drs:	et. red; check all that ap				Secondary Indicators	
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum Surface Water (A1)	Drs:	et. red; check all that ap	(B11)	(B12)		Secondary Indicators	(s (B6)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum Surface Water (A1) High Water Table (A2)	Drs:	et. red; check all that ap Salt Crust ( Aquatic Inv	(B11) ertebrates	. ,		Secondary Indicators	ks (B6) ed Concave Surface (B8)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3)	Drs:	et. red; check all that ap Salt Crust ( Aquatic Inv Hydrogen S	(B11) ertebrates Sulfide Od	or (C1)		Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns	ks (B6) ed Concave Surface (B8) (B10)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1)	Drs:	et. ed; check all that ag Salt Crust ( Aquatic Inv Hydrogen S Dry-Season	(B11) rertebrates Sulfide Od n Water Ta	or (C1) able (C2)	Roots (C3)	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns	ks (B6) ed Concave Surface (B8)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)	Drs:	et. ed; check all that an Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R	(B11) rertebrates Sulfide Od n Water Ta	or (C1) able (C2)	Roots (C3)	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl	ks (B6) ed Concave Surface (B8) (B10) heres on Living Roots (C3
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	Drs:	et. ed; check all that an Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R	(B11) ertebrates Sulfide Od n Water Ta hizospher i <b>ot tilled)</b>	or (C1) able (C2) es on Living	Roots (C3)	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows	ks (B6) ed Concave Surface (B8) (B10) heres on Living Roots (C3
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)	Drs:	et. ed; check all that ag Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n	(B11) ertebrates Sulfide Od n Water Ta hizospher <b>iot tilled)</b> of Reduced	or (C1) able (C2) es on Living d Iron (C4)	Roots (C3)	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows	ks (B6) ed Concave Surface (B8) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)	ors: of one requir	et. et. Salt Crust ( Aquatic Inv Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c Thin Muck	(B11) ertebrates Sulfide Od n Water Ta hizospher <b>tilled)</b> of Reduced Surface ((	or (C1) able (C2) es on Living d Iron (C4) C7)	Roots (C3)	Secondary Indicators Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible	ks (B6) d Concave Surface (B8) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum 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)	o <b>rs:</b> of one requir	et. et. Salt Crust ( Aquatic Inv Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c Thin Muck	(B11) ertebrates Sulfide Od n Water Ta hizospher <b>tilled)</b> of Reduced Surface ((	or (C1) able (C2) es on Living d Iron (C4) C7)	Roots (C3)	Secondary Indicators Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible Geomorphic Posit	(S (B6) (B10) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2) (D5)
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum 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 Aeri	o <b>rs:</b> of one requir	et. et. Salt Crust ( Aquatic Inv Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c Thin Muck	(B11) ertebrates Sulfide Od n Water Ta hizospher tot tilled) of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) narks) cribe Record		Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible Geomorphic Posit FAC-Neutral Test Frost-Heave Hum cam gauge, monitoring we	ks (B6) d Concave Surface (B8) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2) (D5) mocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicator Primary Indicators (minimum 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 Aeri Water-Stained Leaves (B5)	ors: of one requir al Imagery (E 3)	et. red; check all that ap Salt Crust ( Aquatic Inv Hydrogen S Dry-Seasol Oxidized R (where n Presence c Thin Muck 37) Other (Exp Depth	(B11) ertebrates Sulfide Od n Water Ta hizospher tot tilled) of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) narks) cribe Record	ded Data (stre	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible Geomorphic Posit FAC-Neutral Test Frost-Heave Hum cam gauge, monitoring we	ks (B6) d Concave Surface (B8) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2) (D5) mocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum 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 Aeri Water-Stained Leaves (B3) Field Observations:	ors: of one requir of one requir (E al Imagery (E )) Yes	et. ed; check all that ap Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c Thin Muck B7) Other (Exp Depth No (inches)	(B11) ertebrates Sulfide Od n Water Ta hizospher tot tilled) of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) narks) cribe Record	ded Data (stre	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible Geomorphic Posit FAC-Neutral Test Frost-Heave Hum cam gauge, monitoring we	ks (B6) d Concave Surface (B8) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2) (D5) mocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum 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 Aeri Water-Stained Leaves (B3) Field Observations: Surface Water present?	ors: of one requir al Imagery (E )) Yes	et. et. Salt Crust ( Aquatic Inv Aquatic Inv Aquatic Inv Hydrogen S Oxidized R (where n Presence c Thin Muck 37) Other (Exp Depth No (inches) Salt Crust ( Presence c Depth No (inches)	(B11) ertebrates Sulfide Od n Water Ta hizospher tot tilled) of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) narks) cribe Record	ded Data (stre	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible Geomorphic Posit FAC-Neutral Test Frost-Heave Hum cam gauge, monitoring we	ks (B6) d Concave Surface (B8) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2) (D5) mocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum 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 Aeri Water-Stained Leaves (B1) Field Observations: Surface Water present? Water Table present? Saturation Present?	ors: of one requir al Imagery (E )) Yes	et. ed; check all that ap Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c Thin Muck B7) Other (Exp Depth No (inches)	(B11) ertebrates Sulfide Od n Water Ta hizospher tot tilled) of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) narks) cribe Record	ded Data (stre	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible Geomorphic Posit FAC-Neutral Test Frost-Heave Hum cam gauge, monitoring we	ks (B6) d Concave Surface (B8) (B10) heres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2) (D5) mocks (D7) <b>(LRR F)</b>
Type: Remarks: Hydric soil indicato HYDROLOGY Wetland Hydrology Indicato Primary Indicators (minimum 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 Aeri Water-Stained Leaves (B3) Field Observations: Surface Water present? Water Table present?	ors: of one requir al Imagery (E )) Yes D	et. et. Salt Crust ( Aquatic Inv Aquatic Inv Aquatic Inv Hydrogen S Oxidized R (where n Presence c Thin Muck 37) Other (Exp Depth No (inches) Salt Crust ( Presence c Depth No (inches)	(B11) ertebrates Sulfide Od n Water Ta hizospher tot tilled) of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) narks) cribe Record	ded Data (stre	Secondary Indicators Surface Soil Cracl Sparsely Vegetate Drainage Patterns Oxidized Rhizospl (where tilled) Crayfish Burrows Saturation Visible Geomorphic Posit FAC-Neutral Test Frost-Heave Hum cam gauge, monitoring we	(C8) (B10) (B10) neres on Living Roots (C3) (C8) on Aerial Imagery (C9) ion (D2) (D5) mocks (D7) <b>(LRR F)</b>

Project/Site: Orchard Parcel		City/County:	Orchard, Mo	rgan Co. Sa	ampling Date: <u>10/30/2020</u>
Applicant/Owner: <u>Rocky Mountain Mitigation</u>				ate: <u>CO</u>	Sampling Point: DP21
Investigator(s): K. Russo, H. Gerstung		Section	, Township, I	Range: <u>S16, T4N</u>	I, R60W
Landform (hillslope, terrace, etc.) <u>terrace</u>		Local relief (conca	ave, convex,	none): <u>convex</u>	Slope (%): <u>1 %</u>
Western Great Plains Range & Subregion (LRR): Region	& Irrigated	Lat: 40.319	982036	Long: -104.094	9344 Datum: NAD83
Soil Map Unit Name: Wet alluvial land					ation: PFOA
Are climate/hydrologic conditions on the site typical			□ No	(If no, explain in R	
					(emains)
Vegetation Soil	Hydrology	Are "Nor	mal Circums	tances" present?	🛛 Yes 🗌 No
Significantly Disturbed?   Image: Constraint of the second seco			(If neede	ed, explain any answ	wers in Remarks)
•	_				
SUMMARY OF FINDINGS – Attach site map	showing	sampling point lo	ocations, tr	ansects, import	ant features, etc.
Yes         Hydrophytic Vegetation Present?         Hydric Soil Present?         Wetland Hydrology Present?         Is the Sampled Area within a Wetland?	No □ ⊠ ⊠	Remarks: Upland sa	ample plot.		
VEGETATION – Use scientific names of pla	nts				
Tree Stratum       (Plot size: 30 ft.)         1.       Populus deltoides         2.       Elaeagnus angustifolia         3.	Abs % (	solute         Dominant           Cover         Species?           35 %         Y           10 %         Y           %		Dominance Test Number of Domin are OBL, FACW, (excluding FAC-): Total Number of D Species Across A Percent of Domina are OBL, FACW, of Prevalence Index Total % Cov OBL species FACW species FACW species FACU species UPL species Column Totals: Prevalence Index	ant Species that or FAC3_(A) Dominant Il Strata:5_(B) ant Species that or FAC:60%_(A/B) x Worksheet:
5.		%		<ul> <li>☐ 1 Rapid Test for</li> <li>☐ 2 Dominance ☐</li> <li>☐ 3 Prevalence I</li> <li>☐ 4 Morphological supporting data in I</li> <li>☐ Problematic Hyphanistic Hyphanisti Hyphanistic Hyphanistic Hyph</li></ul>	

Remarks: The dominance test for hydrophytic vegetation is met.

Profile Description: (Descri				or confirm the	absence of indicators.)	)
DepthMatr(inches)Color (moist)0-1210YR 3/1		<u>Color (moist)</u> 10YR 3/2	edox Features <u>%</u> Type <sup>1</sup> 5 C	Loc <sup>2</sup>	Texture clay	Remarks
<sup>1</sup> Type: C=Concentration, D=I Hydric Soil Indicators: (App Histosol (A1) Histoc Epipedon (A2) Black Histic (A3) Hydrogen Sulfide (A4) Stratified Layers (A5) (LRI 1 cm Muck (A9) (LRR F, G) Depleted Below Dark Surface Thick Dark Surface (A12) Sandy Mucky Mineral (S1) 2.5 cm Mucky Peat or Pea	R F) G, H) ace (A11)	=Reduced Matrix, C3 LRRs, unless othe Sandy Gle Sandy Re Stripped M Loamy Mu Loamy Gle Pepleted I Redox Da Depleted I Redox Da	S=Covered or Coate rwise noted.) eyed Matrix (S4) dox (S5) Matrix (S6) ucky Mineral (F1) eyed Matrix (F2)	d Sand Grains	<sup>2</sup> Location: PL=Por Indicators for Probler 1 cm Muck (A9) (LF Coast Prairie Redox Dark Surface (S7) ( High Plains Depres (LRR H outside o Reduced Vertic (F1 Red Parent Materia Very Shallow Dark 3 Other (Explain in Red	RR I, J) x (A16) (LRR F, G, H) LRR G) sions (F16) f MLRA 72 & 73) 8) I (TF2) Surface (TF 12) emarks)
5 cm Mucky Peat or Peat (	(S3) ( <b>LRR F</b> )		2 & 73 of LRR H)	)	<sup>3</sup> Indicators of hydrophy wetland hydrology mus disturbed or problemat	st be present, unless
Restrictive Layer (if present Type:		Depth (inches):			Hydric Soil Present?	
Remarks: Hydric soil indicator	s are not met					
Wetland Hydrology Indicato	rs:					
Primary Indicators (minimum	of one require	d; check all that appl	<u>ly)</u>		Secondary Indicators	(2 or more required)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aeria</li> <li>Water-Stained Leaves (B9)</li> </ul>	•••	☐ Oxidized Rhi: (where not ☐ Presence of I ☐ Thin Muck Su ) ☐ Other (Explai	tebrates (B13) Ifide Odor (C1) Water Table (C2) zospheres on Living t <b>tilled)</b> Reduced Iron (C4) urface (C7)	Roots (C3)	<ul> <li>Drainage Patterns</li> <li>Oxidized Rhizosph (where tilled)</li> <li>Crayfish Burrows (</li> </ul>	d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2) (D5)
Field Observations: Surface Water present? Water Table present? Saturation Present?		Depth           No         (inches)           Image: Constraint of the second s	Describe Record inspections, etc.		ım gauge, monitoring wel	l, aerial photos, previous
(includes capillary fringe) Wetland Hydrology Present	?	$\boxtimes$				
Remarks: Wetland hydrology	indicators are	not met.				

Project/Site: Orchard Parcel	City/County: Orchard, Morgan Co. Sampling Date: 10/30/2020
Applicant/Owner: <u>Rocky Mountain Mitigation</u>	State: <u>CO</u> Sampling Point: <u>DP22</u>
Investigator(s): K. Russo, H. Gerstung	Section, Township, Range: _S16, T4N, R60W
Landform (hillslope, terrace, etc.) terrace	Local relief (concave, convex, none): <u>convex</u> Slope (%): <u>0 %</u>
Western Great Plains Range & Irrigated Subregion (LRR): Region	d Lat: <u>40.31855327</u> Long: <u>-104.0973155</u> Datum: <u>NAD83</u>
Soil Map Unit Name: <u>Wet alluvial land</u>	NWI Classification: PFOA
Are climate/hydrologic conditions on the site typical for this tim	me of year? 🛛 Yes 🔲 No (If no, explain in Remarks)
Vegetation     Soil     Hydrolog       Significantly Disturbed?     Image: Comparison of the second seco	Are "Normal Circumstances" present? ☑ Yes ☐ No (If needed, explain any answers in Remarks)
SUMMARY OF FINDINGS – Attach site map showing	ng sampling point locations, transects, important features, etc.
Yes       No         Hydrophytic Vegetation Present?       Image: Constraint of the sent of the sen	Remarks: Upland sample plot.
VEGETATION – Use scientific names of plants	
Tree Stratum(Plot size: <u>30 ft.</u> )9	Absolute $\%$ Cover $\%$ Cover $5 pecies?DominantStatusFACDominance Test Worksheet:20 \%5 \%YYFACFACFACNumber of Dominant Species thatare OBL, FACW, or FAC(excluding FAC-):4 (A)\frac{9}{\%}25 \%25 \%Total Number of DominantSpecies Across All Strata:4 (B)\frac{5 \%}{\%}\frac{Y}\frac{FACW}Percent of Dominant Species thatare OBL, FACW, or FAC:100% (A/B)\frac{5 \%}{\%}\frac{Y}\frac{FACW}Percent of Dominant Species thatare OBL, FACW, or FAC:100% (A/B)\frac{5 \%}{\%}\frac{Y}\frac{5 \%}{\%}Total Number of Cover of:\frac{Multiply by:}{0BL species}\frac{\% x 1 = 0}{\% x 2 = 0}FACW speciesMultiply by:\% x 1 = 0FACW species\frac{45 \%}{15 \%}\frac{N}{15 \%}\frac{N}{15 \%}Y\frac{FACU}{ACW}FACUVUPL species0 \% x 4 = 00 \% x 5 = 0Column Totals:\frac{45 \%}{2 \%}\frac{N}{N}\overline{FAC}\overline{FAC}0 \% (A) 0 (B)\overline{Facu}$
5.	%

Remarks: The dominance test for hydrophytic vegetation is met.

Profile Description: (Describe to	the dept				or confirm the	absence of indicators.)	
Depth Matrix (inches) Color (moist)	%		Redox Fea %		Loc <sup>2</sup>	Toxturo	Bomorko
(inches) Color (moist) 0-8 10YR 3/2	100	Color (moist)	70	Type <sup>1</sup>		Texture silty clay loam	Remarks
8-12 10YR 3/2	93	7.5YR 2.5/3	7	С		clay loam	
					<u> </u>		
					·		
<sup>1</sup> Type: C=Concentration, D=Deple	tion PM-	Poducod Matrix		rod or Coato	d Sand Grains	<sup>2</sup> Location: PL=Pore	Lipipa M-Matrix
							0.
Hydric Soil Indicators: (Applicat	ble to all L					Indicators for Problem	•
Histosol (A1)		Sandy G	-			1 cm Muck (A9) ( <b>LR</b>	
Histic Epipedon (A2)		Sandy F	•	,		Coast Prairie Redox	. , ,
Black Histic (A3)		☐ Stripped	•	,		Dark Surface (S7) (L	,
Hydrogen Sulfide (A4)		Loamy N	•	. ,		High Plains Depress (LRR H outside of	
☐ Stratified Layers (A5) (LRR F) ☐ 1 cm Muck (A9) (LRR F, G, H)		Loamy (	-			Reduced Vertic (F18	,
Depleted Below Dark Surface (A	Δ11)		•	,		Red Parent Material	
Thick Dark Surface (A12)	ATT)			. ,		Uery Shallow Dark S	· /
Sandy Mucky Mineral (S1)		Redox D		. ,		Other (Explain in Re	marks)
2.5 cm Mucky Peat or Peat (S2)	) (LRR G,		•	ssions (F16	)	<sup>3</sup> Indicators of hydrophyt	ic vegetation and
5 cm Mucky Peat or Peat (S3) (	(LRR F)		72 & 73 c		, ,	wetland hydrology must	be present, unless
						disturbed or problemation	2
Restrictive Layer (if present):						Hydric Soil Present?	
Туре:	De	epth (inches):				🗌 Yes 🖾 No	
Remarks: Hydric soil indicators are	not met.						
Remarks: Hydric soil indicators are	not met.						
Remarks: Hydric soil indicators are	e not met.						
- 	e not met.						
HYDROLOGY		check all that ap	oply)			Secondary Indicators (2	2 or more required)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one							
HYDROLOGY Wetland Hydrology Indicators:		check all that ap	(B11)	s (B13)		Secondary Indicators (2	(B6)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one Surface Water (A1)		Salt Crust (	(B11) vertebrates	· · ·		Surface Soil Cracks	(B6) Concave Surface (B8)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one Surface Water (A1) High Water Table (A2)		☐ Salt Crust ( ☐ Aquatic Inv	(B11) /ertebrates Sulfide Od	or (C1)		Surface Soil Cracks	(B6) Concave Surface (B8) B10)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2)		Salt Crust ( Aquatic Inv Hydrogen S Dry-Season	(B11) rertebrates Sulfide Od n Water Ta hizospher	or (C1) able (C2)	Roots (C3)	Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled)	(B6) Concave Surface (B8) B10) pres on Living Roots (C3)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3)		Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tilled)</b>	or (C1) able (C2) es on Living	Roots (C3)	Surface Soil Cracks Sparsely Vegetated Orainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C	(B6) Concave Surface (B8) B10) rres on Living Roots (C3)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one Surface Water (A1) High Water Table (A2) Saturation (A3) Water Marks (B1) Sediment Deposits (B2) Drift Deposits (B3) Algal Mat or Crust (B4)		Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>not tilled)</b> of Reduced	or (C1) able (C2) es on Living d Iron (C4)	Roots (C3)	Surface Soil Cracks Sparsely Vegetated Drainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C) Saturation Visible on	(B6) Concave Surface (B8) B10) rres on Living Roots (C3) :8) n Aerial Imagery (C9)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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)	e required;	Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c Thin Muck	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface ((	or (C1) able (C2) es on Living d Iron (C4) C7)	Roots (C3)	Surface Soil Cracks Sparsely Vegetated Orainage Patterns ( Oxidized Rhizosphe (where tilled) Crayfish Burrows (C Saturation Visible or Geomorphic Positio	(B6) Concave Surface (B8) B10) res on Living Roots (C3) :8) n Aerial Imagery (C9) n (D2)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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 Image	e required;	Salt Crust ( Aquatic Inv Hydrogen S Dry-Season Oxidized R (where n Presence c	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface ((	or (C1) able (C2) es on Living d Iron (C4) C7)	Roots (C3)	Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (i         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C         Saturation Visible or         Geomorphic Positio         FAC-Neutral Test (E	(B6) Concave Surface (B8) B10) eres on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5)
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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 Ima Water-Stained Leaves (B9)	e required;	☐ Salt Crust ( ☐ Aquatic Inv ☐ Hydrogen S ☐ Dry-Season ☐ Oxidized R (where n ☐ Presence c ☐ Thin Muck ☐ Other (Exp	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tilled)</b> of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) marks)		<ul> <li>☐ Surface Soil Cracks</li> <li>☐ Sparsely Vegetated</li> <li>☐ Drainage Patterns (</li> <li>☐ Oxidized Rhizosphenet</li> <li>(where tilled)</li> <li>☐ Crayfish Burrows (C</li> <li>☐ Saturation Visible on</li> <li>☐ Geomorphic Positio</li> <li>☑ FAC-Neutral Test (C</li> <li>☐ Frost-Heave Humm</li> </ul>	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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 Ima Water-Stained Leaves (B9) Field Observations:	e required;	☐ Salt Crust ( ☐ Aquatic Inv ☐ Hydrogen S ☐ Dry-Season ☐ Oxidized R (where n ☐ Presence c ☐ Thin Muck ☐ Other (Exp Depth	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) marks) cribe Record		Surface Soil Cracks         Sparsely Vegetated         Drainage Patterns (i         Oxidized Rhizosphener         (where tilled)         Crayfish Burrows (C         Saturation Visible or         Geomorphic Positio         FAC-Neutral Test (E	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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 Ima Water-Stained Leaves (B9) Field Observations:	e required; agery (B7)	☐ Salt Crust ( ☐ Aquatic Inv ☐ Hydrogen S ☐ Dry-Seasor ☐ Oxidized R (where n ☐ Presence c ☐ Thin Muck ☐ Other (Exp Depth o (inches)	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) marks) cribe Record	ded Data (strea	<ul> <li>☐ Surface Soil Cracks</li> <li>☐ Sparsely Vegetated</li> <li>☐ Drainage Patterns (</li> <li>☐ Oxidized Rhizosphenet</li> <li>(where tilled)</li> <li>☐ Crayfish Burrows (C</li> <li>☐ Saturation Visible on</li> <li>☐ Geomorphic Positio</li> <li>☑ FAC-Neutral Test (C</li> <li>☐ Frost-Heave Humm</li> </ul>	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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 Ima Water-Stained Leaves (B9) Field Observations:	e required; agery (B7) Yes N	☐ Salt Crust ( ☐ Aquatic Inv ☐ Hydrogen S ☐ Dry-Seasor ☐ Oxidized R (where n ☐ Presence c ☐ Thin Muck ☐ Other (Exp Depth o (inches)	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) marks) cribe Record	ded Data (strea	<ul> <li>☐ Surface Soil Cracks</li> <li>☐ Sparsely Vegetated</li> <li>☐ Drainage Patterns (</li> <li>☐ Oxidized Rhizosphenet</li> <li>(where tilled)</li> <li>☐ Crayfish Burrows (C</li> <li>☐ Saturation Visible on</li> <li>☐ Geomorphic Positio</li> <li>☑ FAC-Neutral Test (C</li> <li>☐ Frost-Heave Humm</li> </ul>	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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 Ima Water-Stained Leaves (B9) Field Observations: Surface Water present?	e required; agery (B7) Yes N	□ Salt Crust (         □ Aquatic Inv         □ Hydrogen S         □ Dry-Season         □ Oxidized R         (where n         □ Presence c         □ Thin Muck         □ Other (Exp         0         0         □ Depth         (inches)         □	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) marks) cribe Record	ded Data (strea	<ul> <li>☐ Surface Soil Cracks</li> <li>☐ Sparsely Vegetated</li> <li>☐ Drainage Patterns (</li> <li>☐ Oxidized Rhizosphenet</li> <li>(where tilled)</li> <li>☐ Crayfish Burrows (C</li> <li>☐ Saturation Visible on</li> <li>☐ Geomorphic Positio</li> <li>☑ FAC-Neutral Test (C</li> <li>☐ Frost-Heave Humm</li> </ul>	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
HYDROLOGY         Wetland Hydrology Indicators:         Primary Indicators (minimum of one         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 Ima         Water-Stained Leaves (B9)         Field Observations:         Surface Water present?         Water Table present?	e required; agery (B7) Yes N	□ Salt Crust (         □ Aquatic Inv         □ Hydrogen S         □ Dry-Season         □ Oxidized R         (where n         □ Presence c         □ Thin Muck         □ Other (Exp         0         0         □ Depth         (inches)         □	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) marks) cribe Record	ded Data (strea	<ul> <li>☐ Surface Soil Cracks</li> <li>☐ Sparsely Vegetated</li> <li>☐ Drainage Patterns (</li> <li>☐ Oxidized Rhizosphenet</li> <li>(where tilled)</li> <li>☐ Crayfish Burrows (C</li> <li>☐ Saturation Visible on</li> <li>☐ Geomorphic Positio</li> <li>☑ FAC-Neutral Test (C</li> <li>☐ Frost-Heave Humm</li> </ul>	(B6) Concave Surface (B8) B10) res on Living Roots (C3) 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>
HYDROLOGY Wetland Hydrology Indicators: Primary Indicators (minimum of one 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 Ima Water-Stained Leaves (B9) Field Observations: Surface Water present? Water Table present? Saturation Present?	e required; agery (B7) Yes N	□ Salt Crust (         □ Aquatic Inv         □ Hydrogen S         □ Dry-Season         □ Oxidized R         (where n         □ Presence c         □ Thin Muck         □ Other (Exp         0	(B11) rertebrates Sulfide Od n Water Ta hizospher <b>tot tilled)</b> of Reduced Surface (C lain in Rer	or (C1) able (C2) es on Living d Iron (C4) C7) marks) cribe Record	ded Data (strea	<ul> <li>☐ Surface Soil Cracks</li> <li>☐ Sparsely Vegetated</li> <li>☐ Drainage Patterns (</li> <li>☐ Oxidized Rhizosphenet</li> <li>(where tilled)</li> <li>☐ Crayfish Burrows (C</li> <li>☐ Saturation Visible on</li> <li>☐ Geomorphic Positio</li> <li>☑ FAC-Neutral Test (C</li> <li>☐ Frost-Heave Humm</li> </ul>	(B6) Concave Surface (B8) B10) res on Living Roots (C3 8) n Aerial Imagery (C9) n (D2) D5) ocks (D7) <b>(LRR F)</b>

Appendix C – Plant Species List

#### Commonly occurring plant species in the project area.

Common Name	Scientific Name	Wetland Indicator Status <sup>*</sup>
	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

## <u>Hydrology and Soils Summary</u> 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.

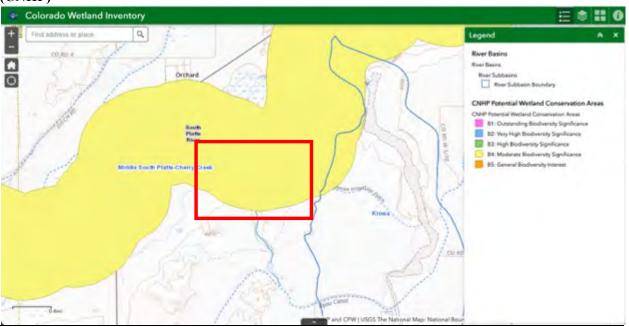


Figure 1: Potential Wetland Conservation Areas Map from Colorado Natural Heritage Program (CNHP)

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.

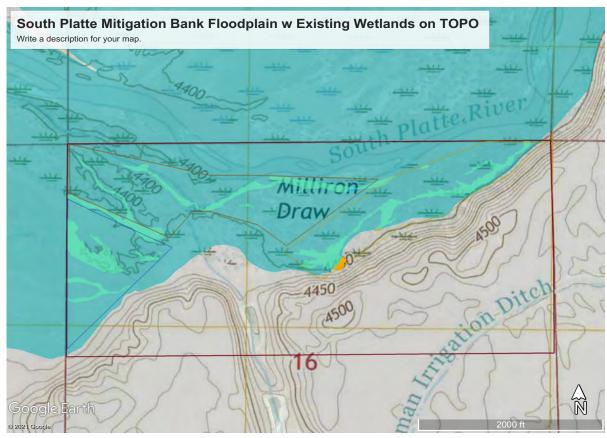


Figure 2: Historical Topo map with existing wetlands within the 100-year floodplain

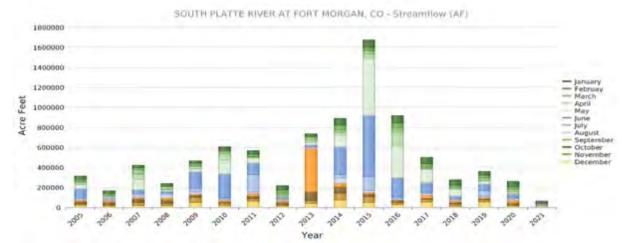
Figure 2 showing existing mapped wetlands in light green within a historical topo map within the 100-year floodplain shown in dark green. The historical topo map indicates locations of where wetlands used to be (correlating to the 100-year flood plain in dark green). In contrast, the mapped wetlands 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 lease 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

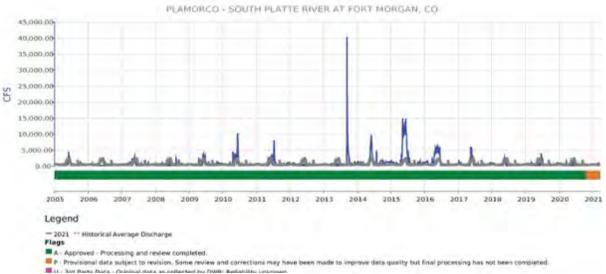


Figure 4 shows the peak Cubic Feet Per Second (CFS) water flows from the gage station on the South Platte at Fort Morgan from 2005-2021. As you can see the blue line peaks statistically high in 2013 and again in 2015 correlating to the flooding events in those years. This figure was created at: <u>https://dwr.state.co.us/Tools/Stations/PLAMORCO?params=DISCHRG</u>

#### Figure 5: South Platte Mitigation Bank CWCB Risk Assessment

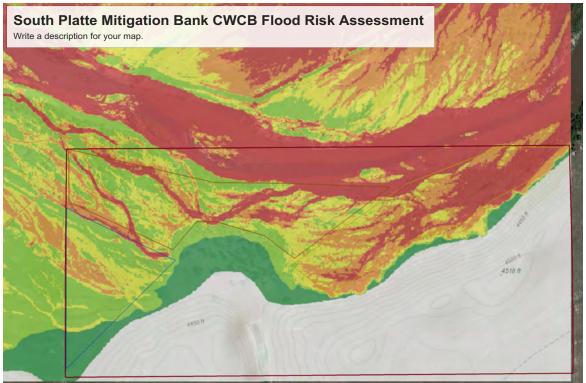


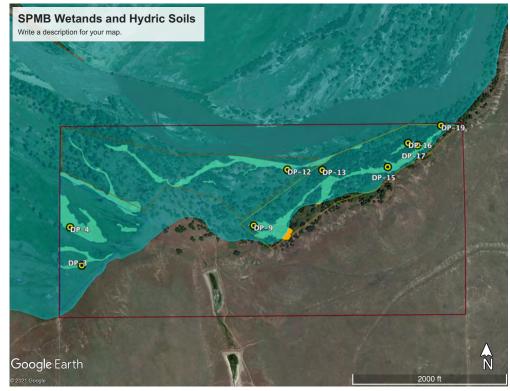
Figure 5 showing a CWCB elevation lidar map showing historical river base flow channels and overflow channels in red that, in turn indicate appropriate restoration areas.  $\land$ 

Ñ

<sup>© 2021 Google</sup> 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.

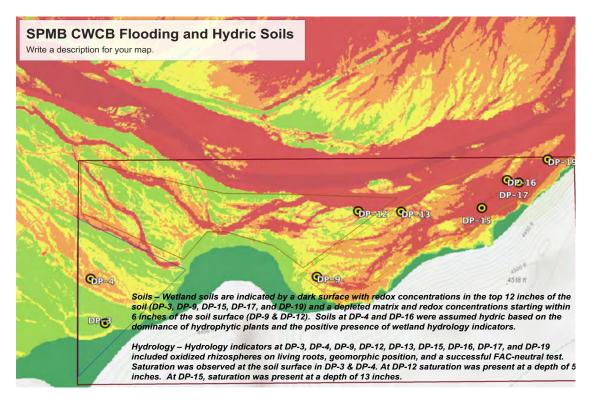


Figure 7 showing specific hydric soils within the CWCB flood risks zones. Contrast that with the lack of hydric soil indicators within the mapped channels in red. This is an indicator of target restoration areas.

#### D.2Salinity

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

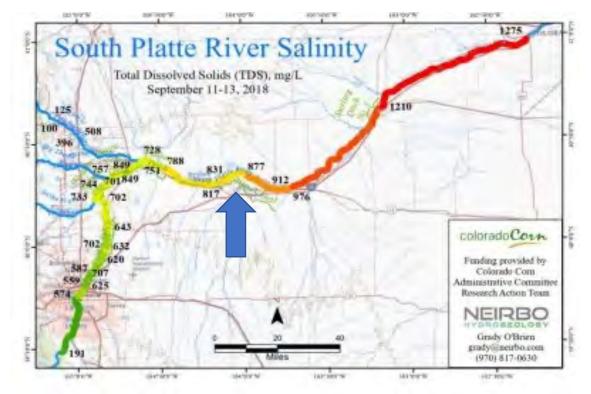


Figure 8 showing salinity levels increasing along the South Platte River more and more as it flows east.

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. <u>https://www.watereducationcolorado.org/fresh-water-news/is-the-south-platte-river-too-salty-new-study-to-examine-toxicity/</u>

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 <a href="https://www.journal-advocate.com/2020/01/16/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/</a>

Appendix E

Habitat Assessment South Platte Mitigation Bank December 2022

December 10, 2020

Consultants in Natural Resources

and the Environment



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 2<sup>nd</sup> St. Hotchkiss, CO 81419 970.872.3020

Idaho 4001 East Main Street Emmett, ID 83617 208.365.7684

## **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.

Common Name	Scientific Name	Status*	Habitat	Suitable Habitat Present		
Mammals						
Preble's meadow	Zapus hudsonius	Т	Shrub riparian/wet	Potential		
jumping mouse	preblei		meadows			
Birds						
Interior least tern**	Sterna antillarum	E	Sandy/pebble beaches on	No habitat; no		
	athalassos		lakes, reservoirs, and rivers	depletions		
Piping plover**	Charadrius melodus	Т	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		

 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 <sup>*</sup>	Habitat	Suitable Habitat Present	
Plants					
Ute ladies'-tresses orchid	Spiranthes diluvialis	Т	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	Т	Moist to wet prairies and meadows	No habitat; no depletions	

<sup>\*</sup>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 Busso

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 6<sup>th</sup> 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**

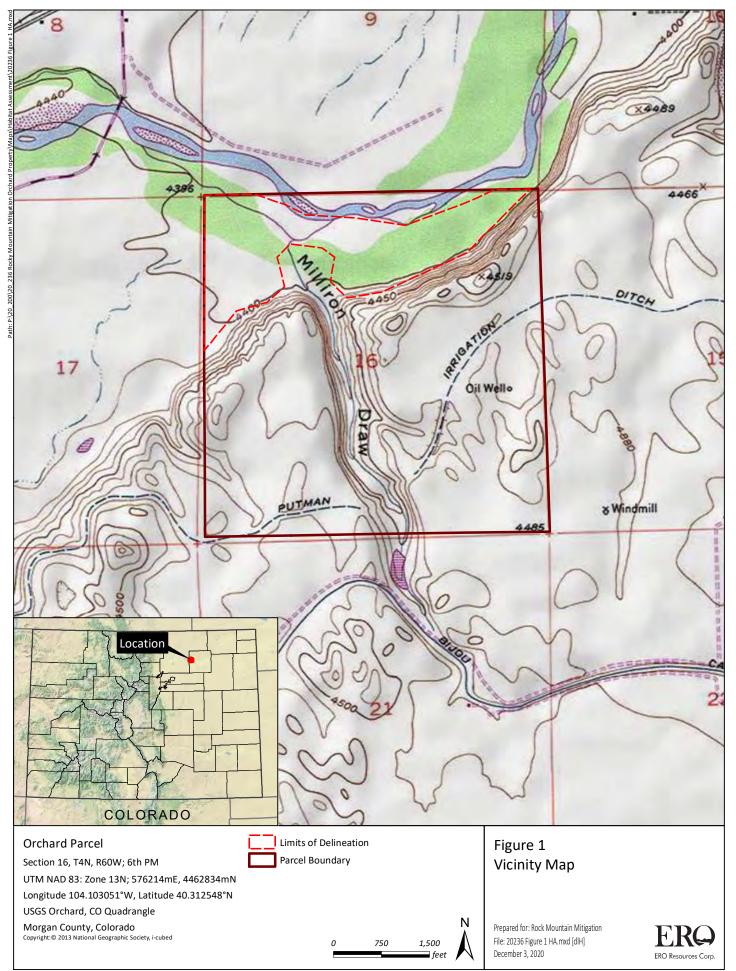
The qualifications and experience of Denise Larson have been previously submitted to the Service and are available upon request.

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.

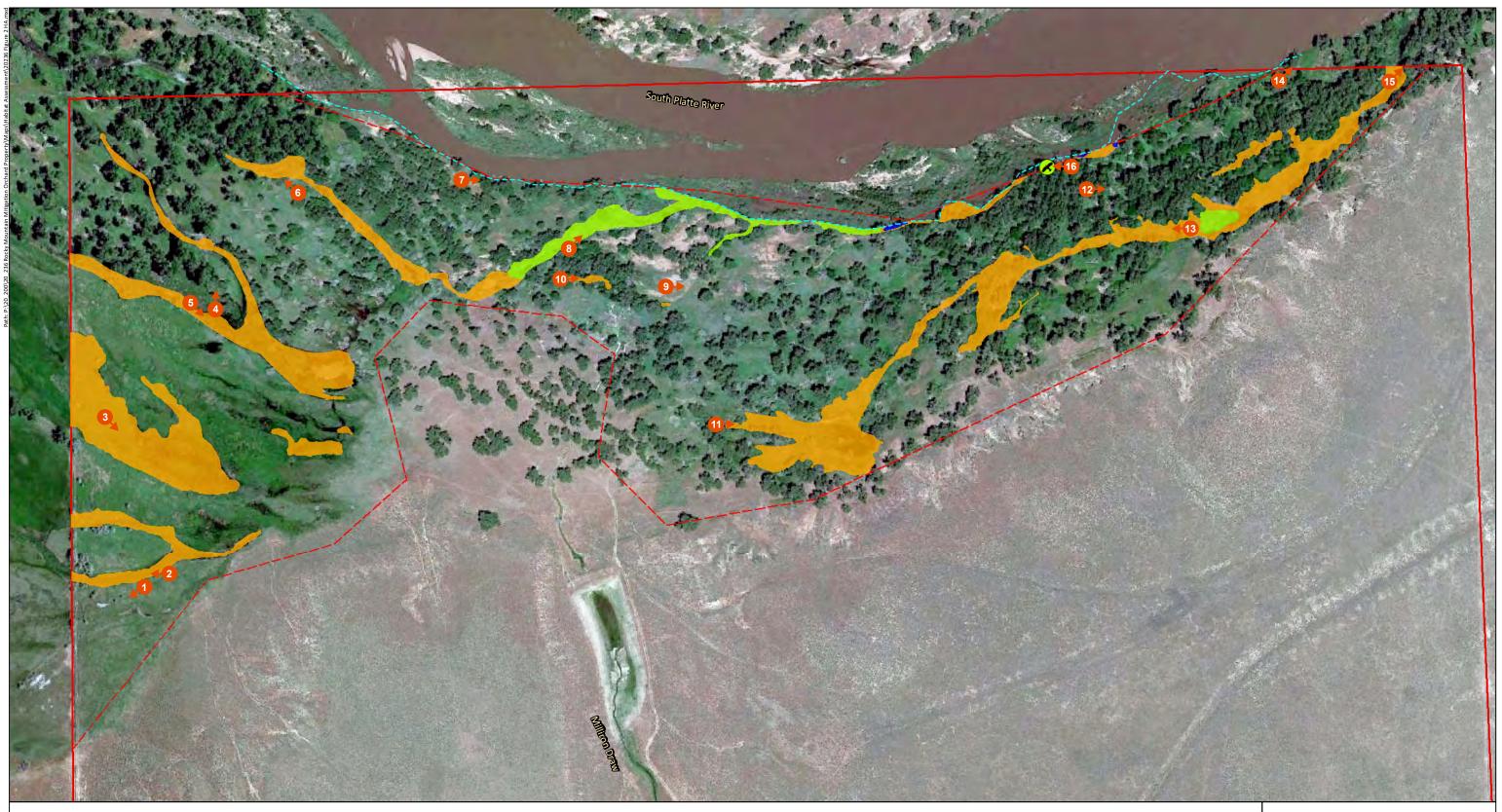
## References

- 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.
- Colorado Parks and Wildlife (CPW). 2018. CPW Bald Eagle Shapefile. https://www.arcgis.com/home/item.html?id=30cc9afded9c44d8835141f98f0c485a. Last accessed December 2, 2020.
- 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.

- U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2020. Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Last accessed November 12.
- U.S. Fish and Wildlife Service (Service). 1992. Interim Survey Requirements for *Spiranthes diluvialis*.
- 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.
- U.S. Fish and Wildlife Service (Service). 2014. Preble's meadow jumping mouse (*Zapus hudsonius preblei*) trapping database for scientific collection activities conducted under Section 10 of the Endangered Species Act. Colorado Ecological Services Field Office. Denver.
- U.S. Fish and Wildlife Service (Service). 2020. Information for Planning and Consultation resource list. http://ecos.fws.gov/ipac/. Last accessed November 17, 2020.



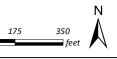
Portions of this document include intellectual property of ESRI and its licensors and are used herein under license. Copyright © 2019 ESRI and its licensors. All rights reserved.



#### Orchard Parcel



## Figure 2 Existing Conditions



Prepared for: Rocky Mountain Mitigation File: 20236 Figure 2 HA.mxd (dlH] December 3, 2020



Photo Log Rocky Mountain Mitigation - Orchard Parcel Habitat Assessment October 30, 2020



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 Log Rocky Mountain Mitigation - Orchard Parcel Habitat Assessment October 30, 2020



**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 Log Rocky Mountain Mitigation - Orchard Parcel Habitat Assessment October 30, 2020



**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.



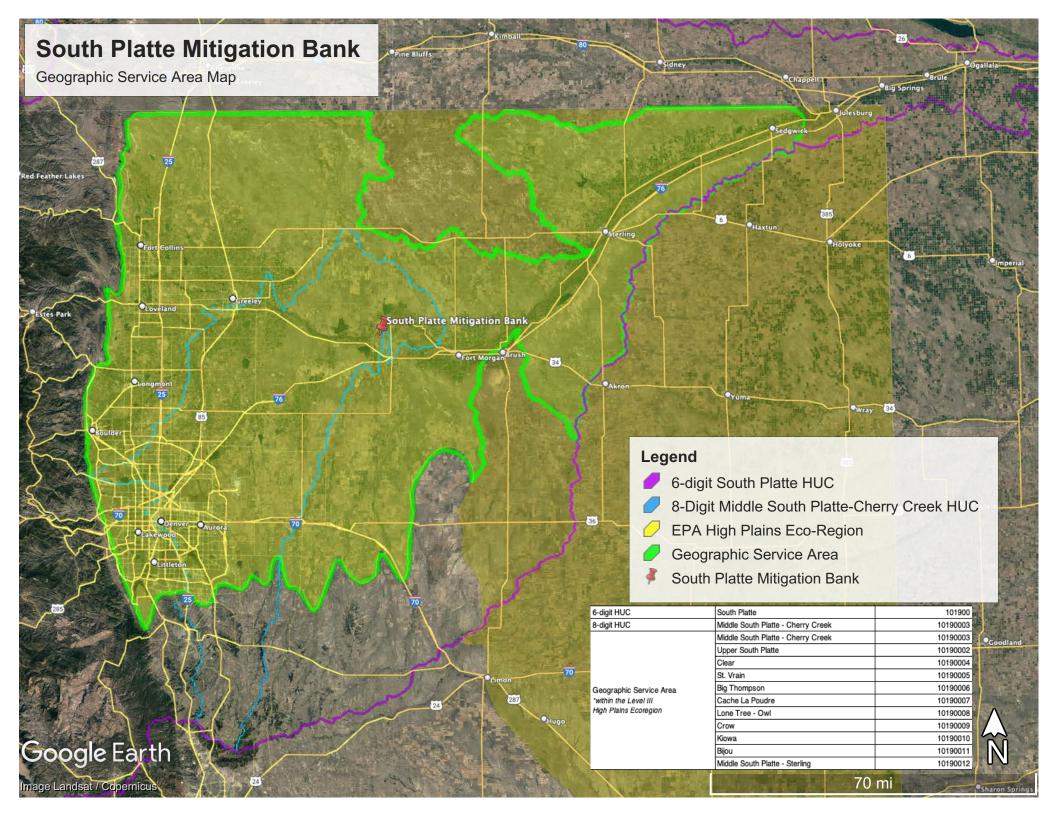
**Photo 15** - Overview of the eastern portion of Wetland I in the eastern portion of the project area. View is to the northeast.



Photo 16 - Raptor stick nest. View is to the west.

Appendix F

GSA Map South Platte Mitigation Bank December 2022

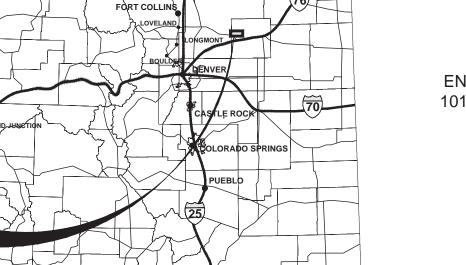


Appendix G

Design Plan South Platte Mitigation Bank December 2022

# SOUTH PLATTE WETLAND RESTORATION AND REHABILITATION CREDIT 30% DESIGN PLANS FOR **ROCKY MOUNTAIN MITIGATION**





Date

PREPARED BY: ENGINUITY ENGINEERING SOLUTIONS 10106 WEST SAN JUAN WAY, SUITE 215 LITTLETON, COLORADO 80127



VICINITY MAP NOT TO SCALE

ENGINUITY ENGINEERING SOLUTIONS

Il Bluch

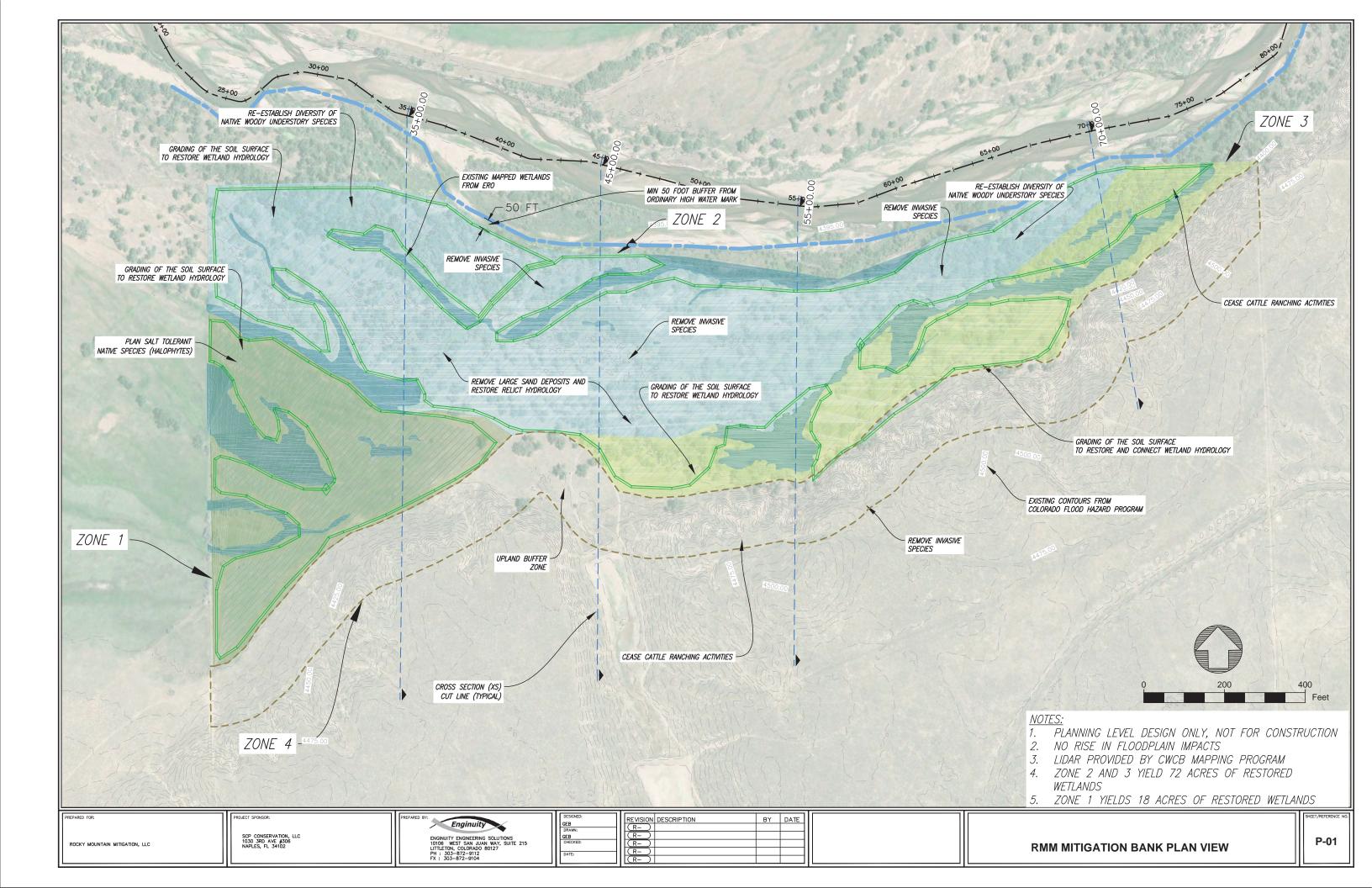
Gerald Blackler, Ph.D, P.E., D.WRE

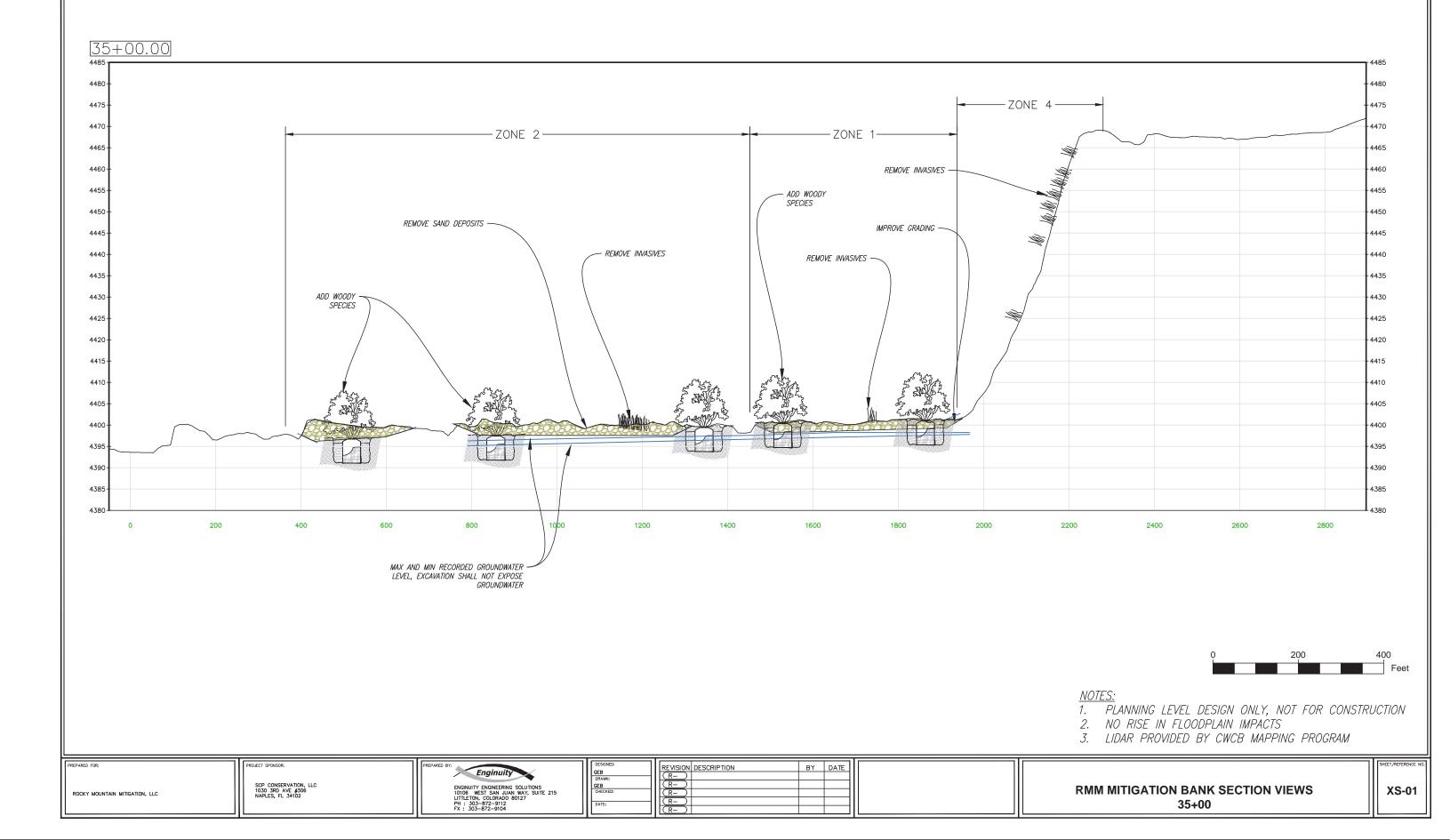
PROJECT VICINITY

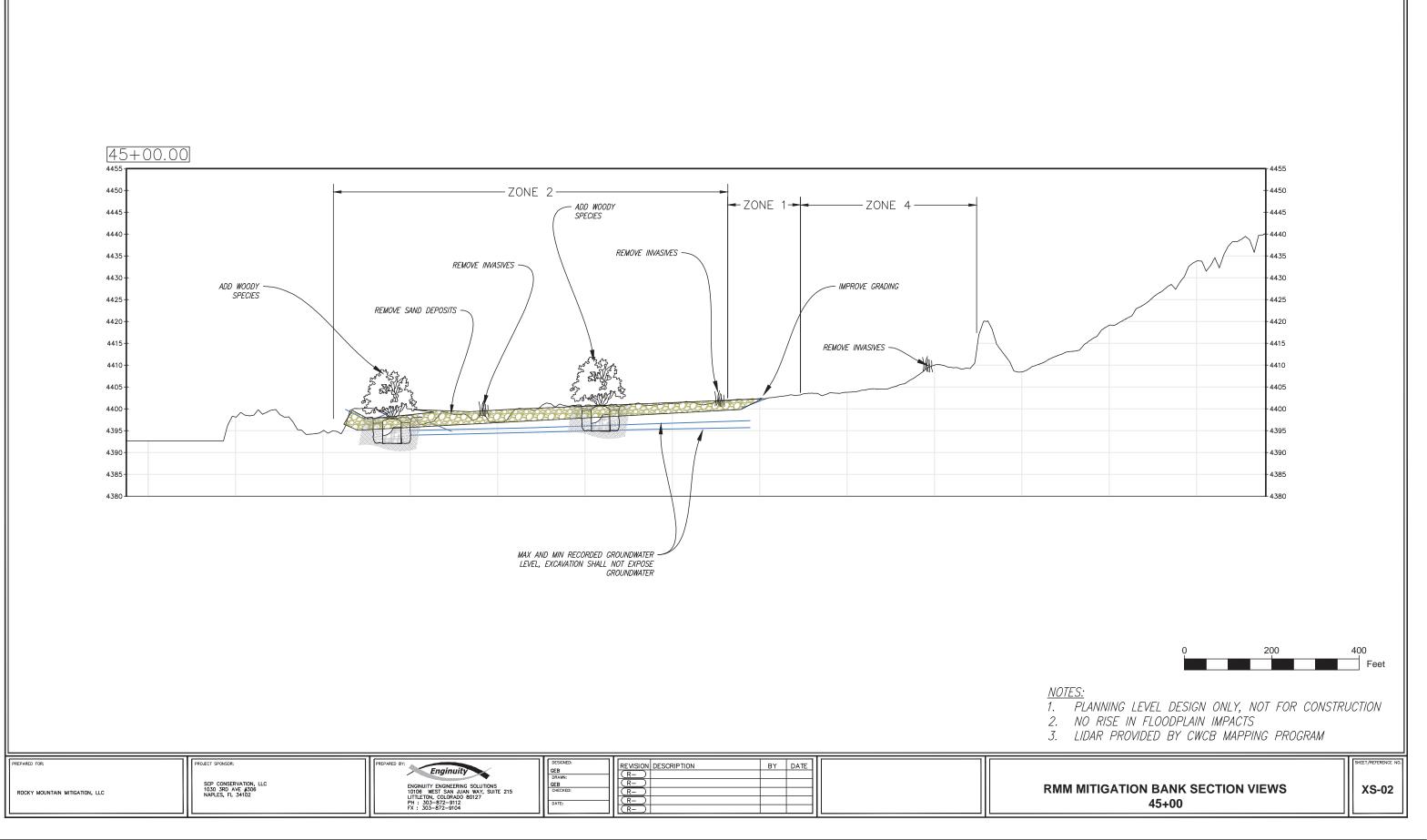
# SHEET INDEX

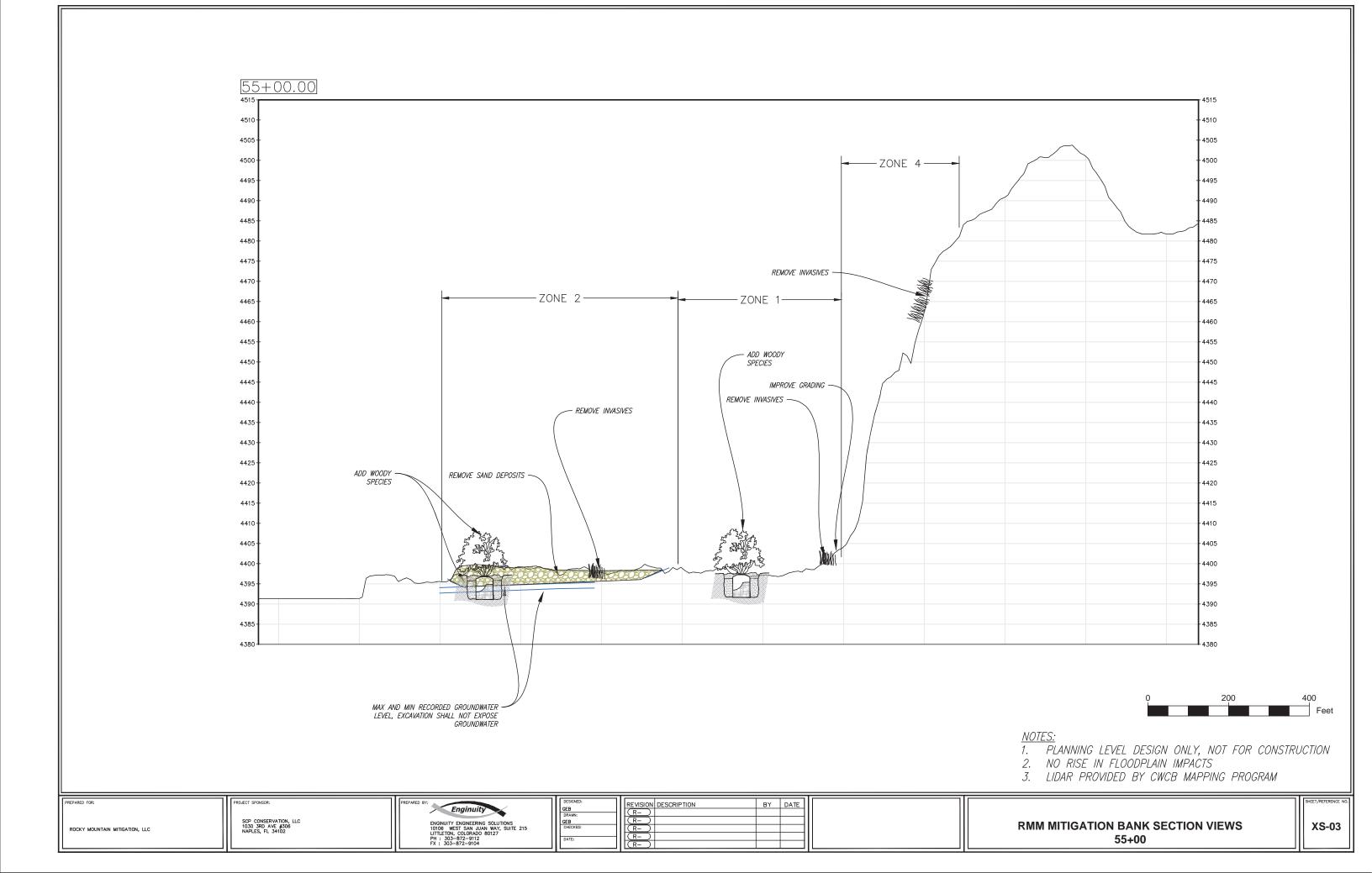
G-01	COVER
P-01	PLAN VIEW
XS-01	CROSS SECTION STATION 35+00
XS-02	CROSS SECTION STATION 45+00
XS-03	CROSS SECTION STATION 55+00
XS-04	CROSS SECTION STATION 70+00
D-01	PLANTING DETAILS

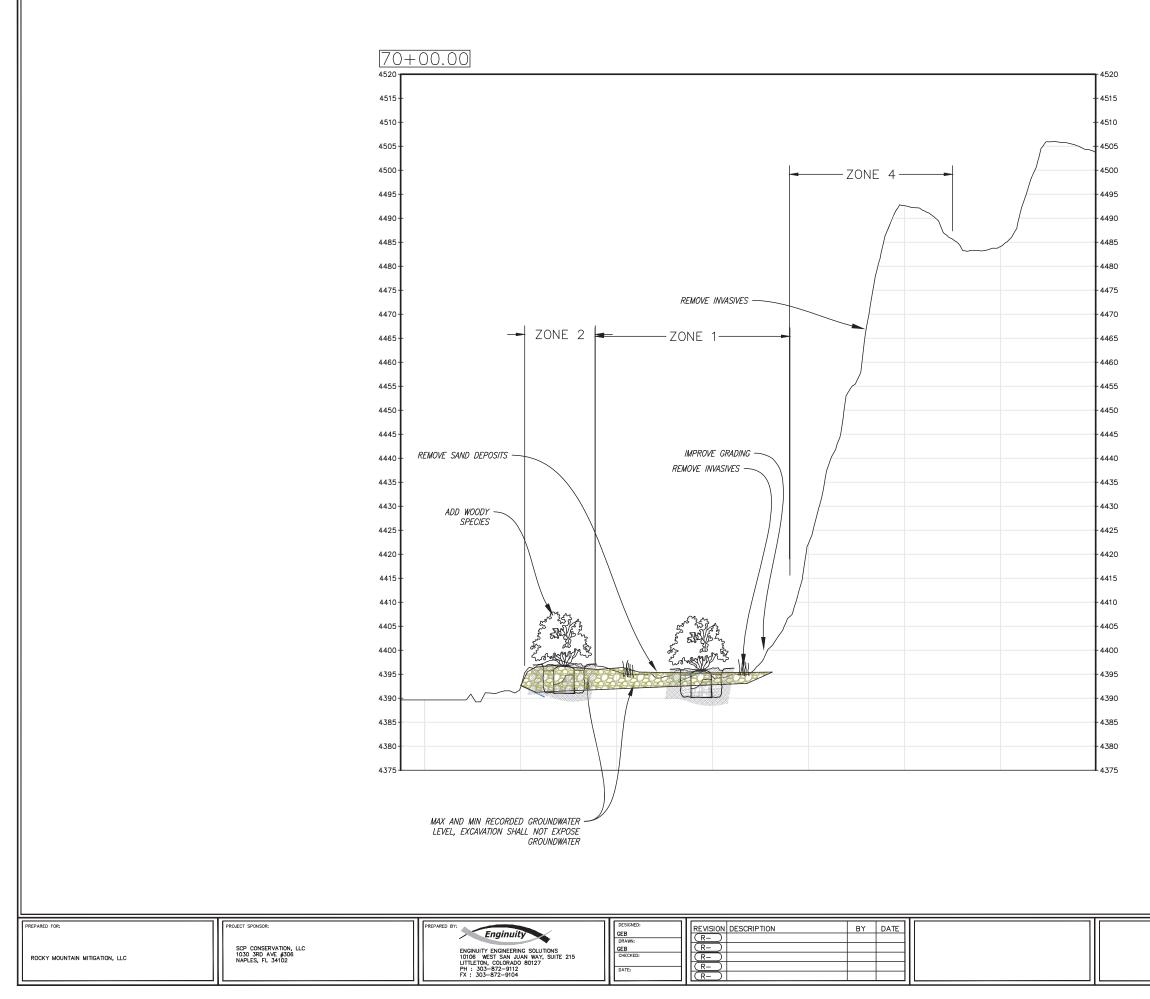
PREPARED FOR:	PROJECT SPONSOR:		DESIGNED: GEB	REVISION DESCRIPTION BY DATE	
	SCP CONSERVATION, LLC	ENGINUITY ENGINEERING SOLUTIONS	DRAWN: GEB CHECKED:		
ROCKY MOUNTAIN MITIGATION, LLC	1030 3RD AVE #306 NAPLES, FL 34102	LITTLETON, COLORADO 80127	DATE:		
		17. 303-872-9104			

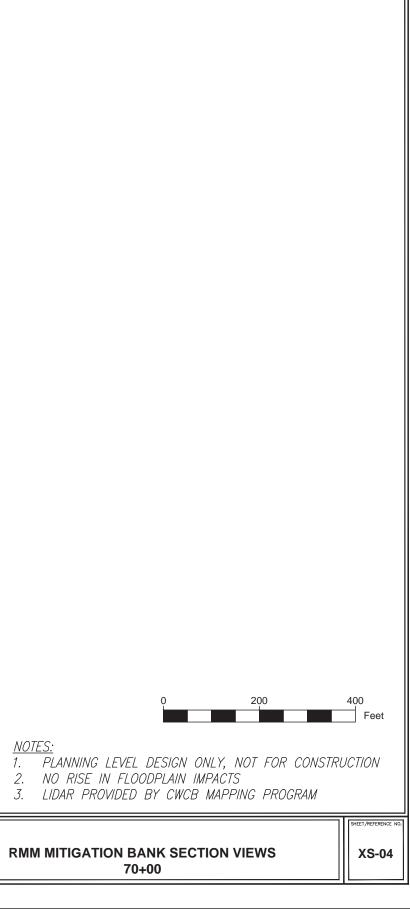












#### ZONE-1 WETLAND PLUGS-SEEDING

	ZONE 1 - SEED	ING		
	0-2.5FT (WETLA	ND)		6
SCIENTIFICNAME	COMMON NAME	VARIETY	% IN MIX	LB/AC (PLS*)
Beckmannia syzigachne	American sloughgras	Native	15.0	0.4
Carex lanuginosa (syn: Carex pellit	dwooly sedge	Native	15.0	1.6
Carex nebrascensis	N ebrask a 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	softstern bulrush	Native	4.0	0.2
Spartina pectina ta	prairie cordgrass	Native	10.0	1.7
Verbena hastata	blue verbena	Native	1.0	0.1
Total pounds PLS /acre			100.0	6.9
# THE Room How Parent 15 based on	a second to be a first of a second	de la		

\*PLS = Pure Live Seed - If broadcast seeding, double the rate

#### ZONE 1 - PLANTING (PLUGS) 0-2.5FT (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 pellit	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 baltícus	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			

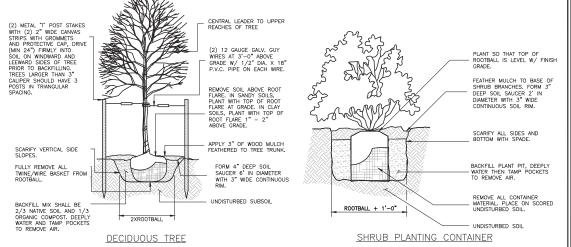
#### ZONE-2 ANNUAL FLUC SEEDING AND STAKING

254	ZONE 2 - SEED ING	DNE)		_
SCIENTIFIC NAME	COMMON NAME	VARIETY	% IN MIX	LB/AC (PLS
Achillea millefolium	varrow	Native	1	0.1
And ropogon gerardii	big bluestern	Champ	15	2.3
Asclepia s inca ma ta	swamp milkweed	Native	1	0.3
Asclepia s speciosa	showy milkweed	Native	1	0.3
Buchloedactyloides	Buffalograss	Texoca	15	0.4
Chondrosum gracile (syn: Bouteloua gracilis)	Blue grama	Lovington	5	1.8
Distichlis stricta	Inland saltgrass	Native	5	0.2
Elym us can ad en sis	Canada wildrye	Mandan	5	0.9
Elym us lan cola tus	Streambank wheatgrass	Sodar	10	1.3
Pa nicum virga tum	switchgrass	Native	10	0.5
Pascopyrum smithii (syn: Ag <mark>ro</mark> pyron smithii)	Western wheatgrass	Arriba	15	2.9
Sorg hastrum avenaceum (syn: Sorg hastrum nu	toyellow Indiangrass	Holt	10	1.2
Spartina pectinata	prairie cordgrass	Native	5	0.5
Verbena hastata	blue verbiena	Native	1	0.1
Total pounds PLS/acre			100.0	12,4
2.5-4 FT (ANNUAL FLUCTUATION ZONE)           SCIENTIFIC NAME         COMMON NAME         VARIETY         % INMIX         L           Achillea millefolium         yarrow         Native         1         1           Andropogon gerardii         big bluestem         Champ         15           Asclepias incarnata         swamp mil kweed         Native         1           Asclepias speciesa         showy mil kweed         Native         1           Suchlo e dactyloides         Buffalograss         Texoca         15           Chon drosum gracile (syn: Bouteloua gracilis)         Blue grama         Lovington         5           Distichlis stricta         Inland saltgrass         Native         5           Distichlis stricta         Inland saltgrass         Native         5           Sym us canadensis         Canada wildrye         Mand an         5           Sym us fancolotus         Streambank whe atgrass         Sodar         10           Panicum virgatum         switchgrass         Native         10           Panicum virgatum         switchgrass         Native         10           Storghastrum avenaceum (syn: Sorghastrum nuto sparina pectinato         prainie cord grass         Native         5           Storghastrum avena				
ZONE 2	- PLANTING (STAKES)			
25-4 FT (ANN	UAL FLUCTUATION ZONE)			
SCIENTIFIC NAME	COMMON NAME	FORM		
Salix amygdaloides	peach leaf willow	Stakes	10'	
Salix exiqua	sand bar willow	Stakes	3'	

#### ZONE-3 UPLAND SEEDING

	ZONE 3 - SEEDING			
	4+ FT (UPLAND)	Concern T		1
SCIENTIFIC NAME	COMMON NAME	VARIETY	% IN MIX	LB/AC (PLS*
Ach no therum 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
Bou tela ua curtipend ula	Sideoats grama	Butte	5	0.5
Buchloe dactyloides	Buffalograss	Texoka	15	5.3
Calamovilfa longifolia	Prairie san dreed	Goshen	5	0.4
Chondrosum gracile (syn:Bouteloua gracilis)	Biue gram a	Lovingto n	15	0,4
Cleome serrulata	Rocky Mountain beeplan	Native	1	0.3
Elymus lanco latus	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
Sporabolus cryptandrus	Sand dropseed	Native	5	0.1
Total pounds PLS/acre			100.0	14.5





	SHRUBS AND TREES			
GROWTH FORM	SCIENTIFIC NAME <sup>1</sup>	COMM ON NAME	SIZE <sup>2</sup>	SPACIN G (O.C.)
Tree	Acer negundo	Box Elder	5-gal	10'
Shrub <sup>4</sup>	Amorpha fruticosa	Le adplant	60 ci	3'
Shrub <sup>4</sup>	Com us sericea	Redosie r Dogwood	60 ci	3
Tree <sup>3</sup>	Populus sargentii (syn. = P. deltoides ssp. monilifera)	Native Plains Cottonwoo	2" B&B	10'
Tree <sup>3</sup>	Populus sargentii (syn. = P. deltoides ssp. monilifera)	Native Plains Cottonwoo	5-gal	6'
Tall Shrub <sup>4</sup>	Prun us americana	American Plum	60 ci	3
Shrub <sup>4</sup>	Prunus virginiana	Chokecherry	60 ci	3'
Low Shrub <sup>4</sup>	Ribes aurem	Golden Currant	60 ci	3'
Low Shrub <sup>4</sup>	Rosa woodsii	Woods' Rose	60 ci	3′
Tree	Salix amygdaloides	Peachleaf Willow	5-gal	10'
Low Shrub <sup>4</sup>	Symphoricarpos occidentalis	Western Snowberry	60 ci	3'
1 table sorted by	Scientific Name			
2 if using 1-gallor	n pots, can reduce number of 60ci containers.			
3 Plant cottonwo	ods 10' apart in groves			
4 Shrub spacing -	in wetlands @ 3', in wet meadows @ 9'			

	PREPARED FOR: ROCKY MOUNTAIN MITIGATION, LLC	PROJECT SPONSOR: SCP CONSERVATION, LLC 1030 3RD AVE #306 NAPLES, FL 34102		DESIGNED: GEB DRAWN: GEB CHECKED: DATE:	REVISION         BY         DATE           (R-)         (R-)         (R-)         (R-)           (R-)         (R-)         (R-)         (R-)           (R-)         (R-)         (R-)         (R-)		
--	---	--	--	--	--	--	--

#### SHRUB AND TREE PLANTINGS

- NOTES 1. KEES PLANT MOIST AND SHADED IN MULCH BEDS ON SITE UNTIL 1. KEES OF PLANTING, CONTAINER PLANTS, MAKE 4-5" DEEP VERTICAL 2. CHR ROTO HONO CONTAINER PLANTS, MAKE 4-5" DEEP VERTICAL 3. DO NOT CUT LEADER, PRUNE ALL DAMAGED OR DEAD WOOD AFTER PLANTING, STAKING AND MULCHING, KEEP CROWN SHAPE TYPICAL OF SPECES, REMOVE ALL PLANTING TASS, TAPE AND LABELS AFTER FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT OR ECOLOGIST. 4. PROVIDE WILDLIFE PROTECTION AROUND PLANTED SHRUB AS NEEDED.

<u>NOTES:</u>

- 1. PLANNING LEVEL DESIGN ONLY, NOT FOR CONSTRUCTION
- 2. NO RISE IN FLOODPLAIN IMPACTS
- LIDAR PROVIDED BY CWCB MAPPING PROGRAM 3.

#### **RMM MITIGATION BANK GENERAL DETAILS**

SHEET/REFERENCE NO

# 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)

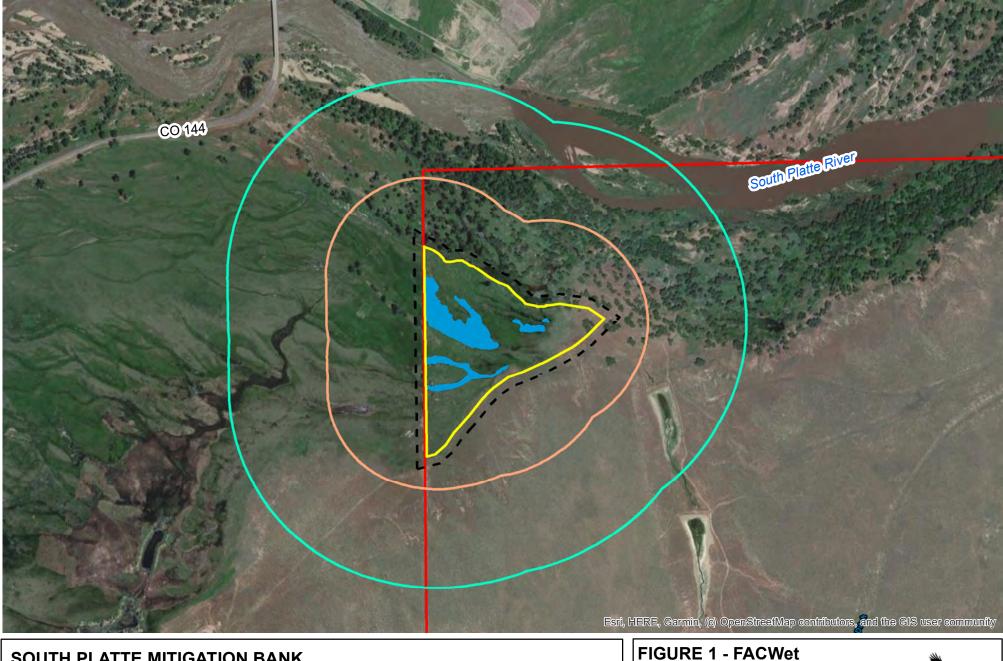
Regarding: Functional Assessment of Colorado Wetlands (FACWet) for South Platte Mitigation Bank

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.

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	0.63 0.61			
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		

#### Table 1. FACWet Functional Capacity Indices Scorecard



# SPMB Property Boundary Assessment Area 1 (AA 1) Contributing Area

AA 1 Wetlands

) 0 200400 800 Feet ├─┼─┼─┼─┤

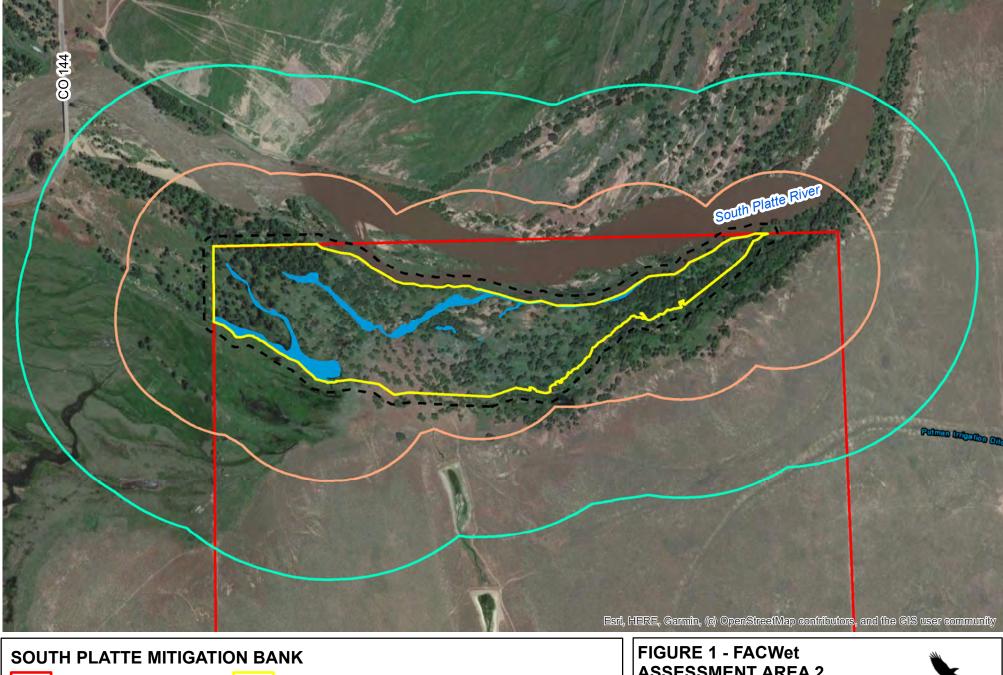
1 inch = 800 feet

# FIGURE 1 - FACWet ASSESSMENT AREA 1



Orchard, Weld County Map Date: 12/15/2021

HCE



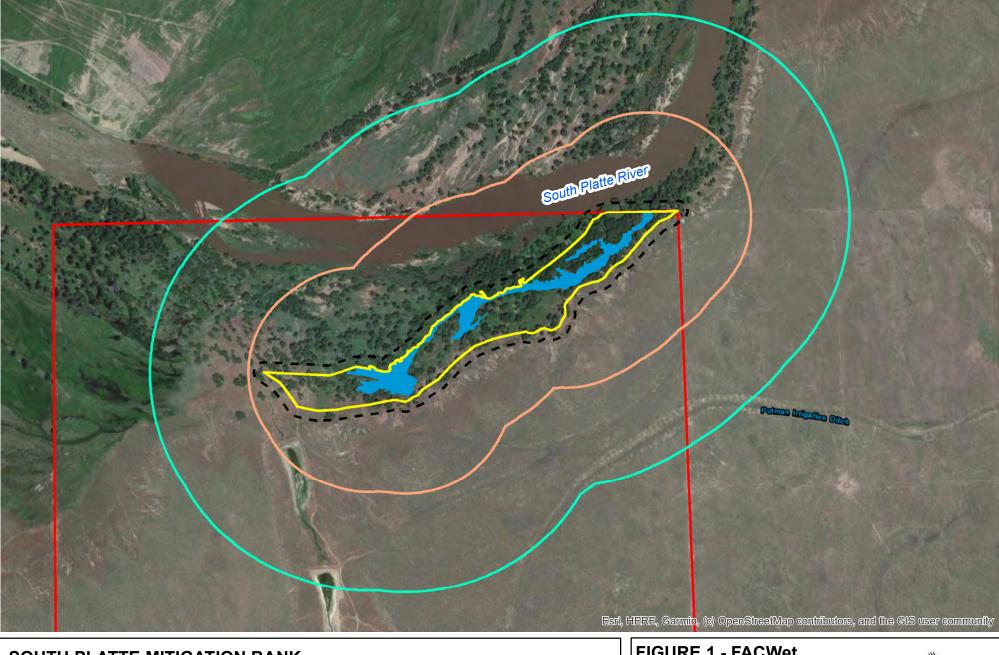


**ASSESSMENT AREA 2** 

CORVUS

Orchard, Weld County Map Date: 12/15/2021

800 Feet



# SOUTH PLATTE MITIGATION BANK SPMB Property Boundary Assessment Area 3 (AA 3) HCE 25 m buffer Contributing Area AA 3 Wetlands

# FIGURE 1 - FACWet ASSESSMENT AREA 3



Orchard, Weld County Map Date: 12/15/2021

# ADMINISTRATIVE CHARACTERIZATION

General Infor	mation		!1								
Site Name or ID:	Assessment A	rea 1		South Pla	tte Mitigatior	ı Bank					
404 or Other Per Application #:	mit NWO-2020-02	252-DEN		Stephen E Mitigation	Decker, Rock	৻y Mountain					
Evaluator Name(	Carla DeMaste	ers, PWS	Evaluator's pro	fessional position and organization:							
Location Info	rmation:										
Site Coordinat (Decimal Degrees, 38.85, -104.96)	es e.g., 40.318	659°N, -104.1	11162°W		WGS 84						
	The site is in Morg						re parcel located				
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 strea	m/water body name		South Platte Ri	Stream O	rder:	6					
USGS Quadrang Map:	le 2019 USGS Orcha	ard 7.5' topo quad	l, Morgan County, C	1:24,0001:100,000Other1:							
Sub basin Name <sub>digit HUC):</sub>	(8 Middle South F (10190003)	Platte-Cherry (	Creek HUC 8	Colorado	State Land E	3oard					
Project Inform This evaluation is being performed (Check applicable	s Project We at: X Mitigation S		Purpose of Evaluation (check all applicable):	Potentially Impa Mitigation; Pre-c Mitigation; Post- Monitoring Other (Describe)	onstruction	n					
Intent of Project:	(Check all applicable)		Restoration (Re- establishment)	Enl	nancement		Creation				
Total Size of We (Record Area, Check Measurement Metho	and Describe	4.6 ac.	Measured in G Estimated	ilS							
	a (AA) Size (Record box. Additional spaces		K Measured	ac.	ac.	ac.	ac.				
	age when more than one	4.6 ac.	Estimated	ac.	ac.	ac.	ac.				
Characteristics o AA boundary det	r Method used for ermination:	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.									

# **ECOLOGICAL DESCRIPTION 1**

Special Co	ncerns	Check all that apply										
	s including Histosols on ne AA (i.e., AA includes				tened or endangere o occur in the AA?	ed species are						
including ar epipedons.	directly impact organic eas possessing either h Is are known to occur a wetland of which the AA	Histosol soils or histic nywhere within the	×		cern according to th e (CNHP) are know							
The wetland urbanized la	l is a habitat oasis in ar andscape?	n otherwise dry or	X	The site is locat	ted within a potentia t occurrence buffer CNHP?							
	reatened or endangere he AA? List Below.	d species are KNOWN		Other special c	oncerns (please de	scribe)						
	Н	YDROGEOMOR	PHI	C SETTING	3							
X AA wetland	maintains its fundame	ental natural hydrogeom	orphi	c characteristics	3							
	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 Co	nditions	Describe the hydrogeo that apply.	morpl	hic setting of the	e wetland by circlin	g all conditions						
	Water source	Surface flow	G	roundwater	Precipitation	Unknown						
	Hydrodynamics	Unidirectional		Vertical	Bi-directional							
	Wetland Gradient	0 - 2%	0	2-4%	4-10% >10	9%						
	# Surface Inlets	Over-bank	0	1	2 3	>3						
HGM Setting	# Surface Outlets		0	1	2 3	>3						
	Geomorphic Setting (Narrative Description. Include approx. stream order for riverine)	AA 1 is located on the former an escarpment. Historically, high flows does this area rec of AA1 is within the 500 year	AA1 re	ceived overbank floverbank floverbank flows. Mos	ows from the River. On	ly during extremely						
	HGM class	Riverine		Slope	Depressional	Lacustrine						
Historical Co	nditions											
	Water source	Surface flow	G	roundwater	Precipitation	Unknown						
	Hydrodynamics	Unidirectional		Vertical								
Previous wetland typology	Description)	Historically, AA1 likely the alluvial groundwate				bank flooding and						
	Previous HGM	Riverine		Slope	Depressional	Lacustrine						
Species Act, a pl designated as the project area acco	RiverineSlopeDepressionalLacustrineNotes (include information on the AA's HGM subclass and regional subclass): In compliance with the EndangeredSpecies Act, a preliminary determination has been made that the described work will not adversely affect speciesdesignated as threatened or endangered or adversely affect critical habitat. A Species of concern is known to occur inproject 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**

Vegetat	ion H	abita	at D	esci		US FWS habitat classification according as reported in Cowardin et al. (1979).																
System		ubsyst	tem		Clas	S			ubcla					er Re					/lodifi	-	/% /	AA
Riverine (Rp1EM)	Low	ver Pere		Er	merg	ent	R	loote	ed va	scula	ar			Α				(	0		50	0
Palustrine (PEM1A)		alulstr	ine	Er	merg	ent	R	loote	ed va	scula	ar			Α				(	0		50	
Lacustrine Palustrine				Uncor Aqua	Rock Bot. (RB) Uncon Bottom(UB) Aquatic Bed(AB)			Roote	Floating vascular; Rooted vascular; Algal; Persistent;			<b>Examples</b> Temporarily flooded(A); Saturated(B); Seasonally flooded(C);			-	Hypersaline(7); Eusaline(8); Mixosaline(9); Fresh(0); Acid(a); Circunneutral(c); Alkaline/calcareous(i);			esh(0); (c);			
Riverine	Uppe	er peren er peren mittent	nnial;	Rock Unco Emo				Broad-leaved deciduous; leedle-leaved evergreen; Cobble - gravel; Sand; Mud; Organic			Se Inte A Sat	Seasflood./sat.(E); Semi-Perm. flooded(F); Intermittently exposed(G); Artificially flooded(K); Sat./semiperm./Seas. (Y); Int. exposed/permenant(Z)			; F); (G); ); (Y);	Organic(g); Mineral(n); Beaver(b); Partially Drained/ditched(d); Farmed(f); Diked/impounded(h); Artificial Substrate(r); Spoil(s); Excavated(x)			ral(n); ially I(d); d(h); te(r);			
<b>Site Ma</b> j Scale: 1 sq. :						nap of th cant feat			ding re	elevar	ıt porti	ions o	f the v	vetlan	d, AA	bound	dary, s	structı	ures, ł	habitat	t class	es,
S	See Fig	ure 1							Ĺ													
		+										]										
		+								$\left  \right $					$\left  \right $						$\left  \right $	
		+										+										
		+																				
	-	+																				
	_	+																				
	_	<u> </u>																				
		<u> </u>																				
					'			'				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	<b>A</b> Reference Standard	Very little or no loss of wetlands in the HCEor negligible.
<0.9 - 0.8	<b>B</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	<b>C</b> 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	<b>D</b> 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 manmade 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.

	$\checkmark$	Stressors		Comments/description				
		Major Highway		· · · · · · · · · · · · · · · · · · ·				
artificial barriers		Secondary Highway						
arri		Tertiary Roadway						
q		Railroad						
Sial		Bike Path						
ΞĘ		Urban Development						
		Agricultural Develop	ment					
11		Artificial Water Body						
Stressors	Х	Fence		North-south running fenceline				
SSS	Х	Ditch or Aqueduct		Agricultural return flow ditch				
Stre	Х	Aquatic Organism Ba	arriers	Alluvial fan from watershed development cut off wetlands				
0)								
Va	ariable		<b>.</b>	A Antida line of				
ŝ	Score	Condition Grade	Scorir	ng Guidelines				
1.	0 - 0.9	А		eciable barriers exist between the AA and other wetland and riparian habitats in				
	0.0	Reference Standard the Ho		; or there are no other wetland and riparian areas in the HCE.				
			Barriers impeding migration/dispersal between the AA and up to 33% of surrounding					
-0		R R		etland/riparian habitat highly permeable and easily passed by most organisms.				
<0	.9 - 0.8	Highly Functioning	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%					
		<b>U</b>		urrounding wetland/riparian habitat.				
				to migration and dispersal retard the ability of many organisms/propagules to				
			pass be	tween the AA and up to 66% of wetland/riparian habitat. Passage of organisms				
		с	and propagules through such barriers is still possible, but it may be constrained to certain					
<0	.8 - 0.7	Functioning		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					
-			· · ·	s to migration and dispersal preclude the passage of some types of				
		_		ns/propagules between the AA and up to 66% of surrounding wetland/riparian				
<0	.7 - 0.6	<b>D</b> Functioning Impaired		Travel of those animals which can potential negotiate the barrier are strongly				
		r uncloning impaired	restricted and may include a high chance of mortality. Up to 33% of surrounding					
L				/riparian habitat could be functionally isolated from the AA.				
		F		is essentially isolated from surrounding wetland/riparian habitat by impermeable				
	<0.6	г Non-functioning	•	n and dispersal barriers. An interstate highway or concrete-lined water ince canal are examples of barriers which would generally create functional				
		Non-fanctioning		on between the AA and wetland/riparian habitat in the HCE.				
				•				
		0///0	0.00	Add SV 1.1 and 1.2				
		SV 1.1 Score	0.30	scores and divide by				
		SV 1.2 Score	0.70	two to calculate				
		3V 1.2 Scole	0.70	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

#### 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

0.90 SV 2.

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
	Score 1.0 - 0.9 <0.9 - 0.8 <0.8 - 0.7 <0.7 - 0.6	ScoreReference Standard1.0 - 0.9Reference Standard<0.9 - 0.8Highly Functioning<0.8 - 0.7Functioning<0.7 - 0.6Functioning Impaired

var	iab	le 2: Co	ontrib	uting	Area	(p. 2)					
SV 2.	.3 - /	Average E	Buffer W	lidth	1	Record r	neasur	ed buffer	vidths in	the spaces below and avera	age.
Buffer	r				I		I				
Width		250	250	250	250	250	250	250	250	250	
Line #	ŧ	1	2	3	4	5	6	7	8	Avg. Buffer Width (m)	
						Subvaria Score		Conditior	Grade	Buffer Width Scoring Guide	lines
	1	SV 2.3 -	Avera	ae Bu	ffer	1.0 - 0	.9 <i>F</i>	Reference	Standard	Average Buffer width is 190-2	250m
0.9			idth Se	-		<0.9 - (	).8	Highly Fun	ctionina	Average Buffer width is 101-1	89m
						<0.8 - (		Functio	-	Average Buffer width is 31-10	
						<0.7 - (	D.6 F	unctioning	-	Average Buffer width is 6-30	
						<0.6		Non-func		Average Buffer width is 0-5	śm
					-				-		
SV 2.	.4 - 3	Surroundi	ing Lan	d Use							
	1 SI	/ 2.4 - S	urrour	ndina	_	Catalog	and cha	practariza	land usa	changes in the surrounding	v
0.6		Land U		-		landscap				changes in the surrounding	1
				ЛЕ							
		Stresso			Comm	ents/des	criptic	n			
Stressors = Land Use Changes	<u> </u>	Industria	I/comme	ercial	ļ						
	<b> </b>	Urban	tial.								
an	<b> </b>	Resident	liai								
ъ		Rural	<b>-</b>								
se	V	Dryland I			Colinite	incurs f	a utilize a		t		
Ë	×	Intensive Orchards			Salinity	issues, f	ertilize	r rich wa	ters		
and	V				Cottle	rozina					
Ľ	^	Livestoc			Cattle g	jiazing					
။ တ		Transpor									
ő		Urban Parklands Dams/impoundments									
esse		Artificial									
Str		Physical R		,							
		Biological F									
		Diological I		Extraotion							
Vari	iable										
	ore	Conditio	n Grade				Sc	oring Gu	uideline	S	
		A									
1.0 ·	- 0.9	Refer	rence	No appre	ciable lanc	l use chan	ge has b	een impos	ed Surrou	nding Landscape.	
		Stand	dard								
		в	8							ndscape, but changes have	1
<0.9	- 0.8	Highly Fu			nimal effect on the the landscape's capacity to support characteristic aquatic functioning, ther because land use is not intensive, for example haying, light grazing, or low intensity						
		• •	-							ately less than 10% of the area	
										hift in land use, however, the la	
<0.8	- 0.7	C Functio		retains much of its capacity to support natural wetland function and it is not an overt source of							
		T UTCU	oning	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.							
										been substantial including the a	
		D	)							faces, bare soil, or other artifici	ial
<0.7	- 0.6	Function	oning		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						
		Impa	ired								
				cituations	ed areas, low-density urban developments, some urban parklands and many cropping						
		F								ped or is otherwise a cause of	
~~	0.0	Non-fund	ctioning			tress on we ly rate a sc				developments or highly urban	
<0	landso					יז ומוכ מ 20		55 mail 0.0			
<0		Buffer Score Sur		Surro	unding						
<0											
<0				Land						·	
<0		(Lowest sc			1	0		\ <i>I</i> = 1	-  -   -		
<0	(			Land 0.6	) ÷	2	=	Var	iable	<b>2 Score</b> 0.60	C
<0	(	(Lowest sc			1	2	=	Var	iable	<b>2 Score</b> 0.60	Э С

## 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.

$\checkmark$	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	
Х	Mining/Natural Gas Extraction	gravel mining, natural gas exploration
	Transbasin Diversion	
	Actively Managed Hydrology	

Variable Score	Condition Grade	Depletion	Augmentation
1.0 - 0.9	<b>A</b> 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>B</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	<b>C</b> 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	<b>D</b> 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	<b>F</b> 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.

$\checkmark$	Stresso	rs	Comments/description				
	Alteration	of Water Source					
	Ditches						
	Ponding/In	npoundment					
	Culverts						
	Road Grac	les					
	Channel Ir	ncision/Entrenchment					
	Hardened/	Engineered Channel					
	Enlarged Channel						
	Artificial Ba	anks/Shoreline					
	Weirs						
	Dikes/Leve	ees/Berms					
	Diversions						
$\times$	Sediment/	Fill Accumulation	Flooding flows such as 2013 floods ha	ve deposited sediments over wetlands.			
V	ariable						
	Score	Condition Grade	Non-riverine	Riverine			
1.	.0 - 0.9	<b>A</b> 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 - <b>0</b> .8	<b>B</b> Highly Functioning	Less than 10% of the AA is affected by <i>in situ</i> 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	<b>C</b> Functioning	Between 10 and 33% of the AA is affected by <i>in situ</i> 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 o flooding are common; or uniform shift in the hydrograph near root depth.			
<0	0.7 - 0.6	<b>D</b> Functioning Impaired	33 to 66% of the AA is affected by <i>in situ</i> 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.	pread ess ater table st still nis rating.drying or flooding are the norm; or uniform shift in the hydrograph greater than root depth.d by a the andHistorical active floodplain areas are almost never wetted from overbank flooding, and/or groundwater infiltration is effectively cut off.			
	<0.6	<b>F</b> 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.				
			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.

$\checkmark$	Stressors	Comments/description
	Alteration of Water Source	
X	Ditches	Agricultural return flow ditch.
	Dikes/Levees	
	Road Grades	
	Culverts	
	Diversions	
Х	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	<b>A</b> 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>B</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	<b>C</b> Functioning	High- or low-water outflows are moderately affected, mild alteration of intermediate level outflow occurs; or hydrodynamics moderately affected.
<0.7 - 0.6	<b>D</b> 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	<b>F</b> 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.

	Í		Stressor	S	Comments
		Dredg	jing/Excavation	/Mining	
		Fill, in	cluding dikes, i	road grades, etc	
		Gradi	ng		
	a	Comp	action		
	era	Plowi	ng/Disking		
$\times$	General	Exces	sive Sediment	ation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
	G	Dump	Dumping		
		Hoof	Shear/Pugging		
		Aggre	gate or Minera	l Mining	
×		Sand	Accumulation		Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
		Chan	nel Instability/O	ver Widening	
	Ň	Excessive Bank Erosion Channelization			
	Only				
	<u>s</u>				
	Channels				
	an	Beave	er Dam Remov	al	
	ч С	Subst	rate Embeddeo	dness	
1 1		Lack	or Excess of W	oody Debris	
			Osaditisa		
Varia		Score	Condition Grade		Scoring Guidelines
Varia	able	Score	Grade	Tonography of	Scoring Guidelines
			Grade A		sentially unaltered from the natural state, or alterations appear to have a minimal effect on
	able 1.0 - (		Grade A Reference	wetland functio	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but
			Grade A	wetland functio native plant cor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1		0.9	Grade A Reference Standard B	wetland functio native plant cor Alterations to to	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1	.0 - (	0.9	<b>Grade</b> <b>A</b> Reference Standard	wetland functio native plant cor Alterations to to	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1 <(	.0 - ( 0.9 -	0.9	Grade A Reference Standard B Highly	wetland functio native plant con Alterations to to AA; or more se	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1 <(	.0 - (	0.9	Grade A Reference Standard B Highly Functioning	wetland function native plant con Alterations to to AA; or more se Changes to AA	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. oppography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA.
1 <(	.0 - ( 0.9 -	0.9	Grade A Reference Standard B Highly Functioning C Functioning	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. A topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has
1 <(	.0 - ( 0.9 - 0.8 -	0.9 0.8 0.7	Grade A Reference Standard B Highly Functioning C Functioning D	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. a topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of
1 <(	.0 - ( 0.9 -	0.9 0.8 0.7	Grade A Reference Standard B Highly Functioning C Functioning D Functioning	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in the AA. Evider	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. A topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nce that widespread diminishment or alteration of native plant community exist due to
1 <(	.0 - ( 0.9 - 0.8 -	0.9 0.8 0.7	Grade A Reference Standard B Highly Functioning C Functioning D	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in the AA. Evider physical habita	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. A topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nce that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside
1 <(	.0 - ( 0.9 - 0.8 -	0.9 0.8 0.7	Grade A Reference Standard B Highly Functioning C Functioning Impaired	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in the AA. Evider physical habita	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. A topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nce that widespread diminishment or alteration of native plant community exist due to
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 0.8 0.7 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. oppography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower.
1 <(	.0 - ( 0.9 - 0.8 -	0.9 0.8 0.7 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. oppography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower.
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 0.8 0.7 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nace that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower. morphic alterations have caused a fundamental change in site character and functioning, ulting in a conversion to upland or deepwater habitat.
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 0.8 0.7 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. a topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nice that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower. morphic alterations have caused a fundamental change in site character and functioning, ulting in a conversion to upland or deepwater habitat.
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 0.8 0.7 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nace that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower. morphic alterations have caused a fundamental change in site character and functioning, ulting in a conversion to upland or deepwater habitat.

# 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.

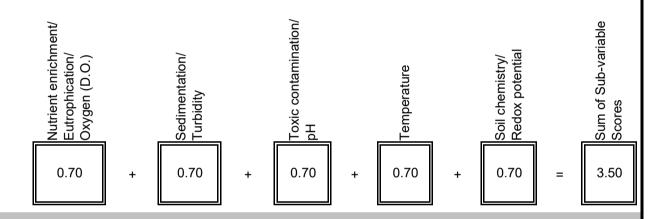
5. The lowest sub-variable score sets the letter grade range. The composite of sub-variables influences the score within that range.

Sub-variable	Stressor Indicator	$\checkmark$	Comments		Sub-
	Livestock	Х	cattle grazing		variable
SV 7.1	Agricultural Runoff	Х	Increased salinity from irrigation	$\neg$	Score
Nutrient Enrichment/	Septic/Sewage				0.70
Eutrophication/	Excessive Algae or Aquatic Veg.				0.70
-	Cumulative Watershed NPS			$\neg$ /	
Oxygen (D.O.)	CDPHE Impairment/TMDL List				
	Excessive Erosion				
	Excessive Deposition	Х	e.g. 2013 flood	$\neg$	
	Fine Sediment Plumes			$\neg$	
SV 7.2	Agricultural Runoff	Х	sedimentation		0.70
Sedimentation/	Excessive Turbidity				0.70
Turbidity	Nearby Construction Site			$\Box$ /	
	Cumulative Watershed NPS				
	CDPHE Impairment/TMDL List				
	Recent Chemical Spills				
	Nearby Industrial Sites				
	Road Drainage/Runoff				
	Livestock	Х	cattle grazing		
	Agricultural Runoff	Х	Increased salinity from irrigation		
SV 7.3	Storm Water Runoff				0.70
Toxic contamination/	Fish/Wildlife Impacts				0.70
pН	Vegetation Impacts				
	Cumulative Watershed NPS			T /	
	Acid Mine Drainage				
	Point Source Discharge				
	CDPHE Impairment/TMDL List			7/	
	Metal staining on rocks and veg.			7	
	Excessive Temperature Regime				
	Lack of Shading	Х	Lack of canopy	$\neg$	
SV 7.4	Reservoir/Power Plant Discharge				0.70
	Industrial Discharge				0.70
Temperature	Cumulative Watershed NPS			/ ٦	
	CDPHE Impairment/TMDL List				
	Unnatural Saturation/Desaturation				
SV 7.5	Mechanical Soil Disturbance				0.70
Soil chemistry/	Dumping/introduced Soil				0.70
Redox potential	CDPHE Impairment/TMDL List			$\Box$ /	<u>_</u> _

# Variable 7: Water and Soil Chemical Environment p.2

Sub-variable Scoring Guidelines						
Variable Score	Condition Class	Scoring Guidelines				
1.0 - 0.9	<b>A</b> Reference Standard	Stress indicators not present or trivial.				
<0.9 - 0.8	<b>B</b> Highly Functioning	Stress indicators scarcely present and mild, or otherwise not occurring in more than 10% of the AA.				
<0.8 - 0.7	<b>C</b> Functioning	Stress indicators present at mild to moderate levels, or otherwise not occurring in more than 33% of the AA.				
<0.7 - 0.6	<b>D</b> Functioning Impaired	Stress indicators present at moderate to high levels, or otherwise not occurring in more than 66% of the AA				
<0.6	F         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.



#### Use the table to score the Chemical Environment Variable circling the applicable scoring rules.

Variable Score	Condition Grade	Scoring Rules					
ocore		Single Factor		Composite Score			
1.0 - 0.9	<b>A</b> Reference Standard	No single factor scores < 0.9		The factor scores sum > 4.5			
<0.9 - 0.8	<b>B</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	<b>C</b> Functioning	Any single factor scores ≥ 7.0 but < 0.8		The factor scores sum >3.5 but $\leq$ 4.0			
<0.7 - 0.6	<b>D</b> Functioning Impaired	Any single factor scores ≥ 0.6 but <0.7	x	The factor scores sum >3.0 but ≤3.5			
< 0.6	<b>F</b> Non- functioning	Any single factor scores < 0.6		The factor scores sum < 3.0			
Variable 7 Score							

### 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 floodflow 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	Х		Х		Abundant noxious weeds, Russian olive, white top.
Exotic/Invasive spp.	Х		Х		Abundant exotics, pasture grasses.
Tree Harvest					
Brush Cutting/Shrub Removal					
Livestock Grazing	Х	Х	Х		Cattle grazing
Excessive Herbivory					
Mowing/Haying	Х	Х	Х		Mowing/haying activities have discouraged woody plant
Herbicide					
Loss of Zonation/Homogenization					
Dewatering			Х		hanges to groundwater levels favor noxious/invasive sp
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 +	00.00			= 140
Veg. Layer Sub- variable Score	x 0.6	x 0.5	x 0.6	x 0.7	See sub-variable scoring guidelines on following page
	П	П	П	П	
Weighted Sub-variable Score	6.00 +	25.00 +	48.00 +	0.00	= 79
					Variable 8 Score

## 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	<b>A</b> 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>B</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	<b>D</b> 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	<b>F</b> 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.

### 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 Variable 3: Water Source (Source) 0.80 Hydrology 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 Total Function 1 -- Support of Characteristic Wildlife Habitat Functional FCI V1<sub>connect</sub> + (2 x V8<sub>vec</sub>) V2<sub>CA</sub> Points 0.50 2.23 0.56 1.13 0.60 4 Function 2 -- Support of Characteristic Fish/aquatic Habitat + (2 x V5<sub>outflow</sub>) + $(3 \times V3_{source}) + (2 \times V4_{dist})$ V6<sub>geom</sub> + V7<sub>chem</sub> 1.20 0.70 6.05 2.40 1.20 0.55 9 0.67÷ Function 3 -- Flood Attenuation V8<sub>veg</sub> V2<sub>CA</sub> + (2 x V3<sub>source</sub>) + (2 x V4<sub>dist</sub>) + (2 x V5<sub>outflow</sub>) + V6<sub>geom</sub> + 5.71 0.60 1.60 1.20 1.20 0.55 0.56 0.63 ÷ 9 Function 4 -- Short- and Long-term Water Storage V3<sub>source</sub> (2 x V4<sub>dist</sub>) + (2 x V5<sub>outflow</sub>) V6<sub>geom</sub> 0.63 0.80 1.20 1.20 0.55 3.75 ÷ 6 Function 5 -- Nutrient/Toxicant Removal V7<sub>chem</sub> $(2 \times V2_{CA})$ + (2 x V4<sub>dist</sub>) V6<sub>geom</sub> + 1.20 1.20 0.55 0.70 3.65 ÷ 6 0.61 Function 6 -- Sediment Retention/Shoreline Stabilization + (2 x V6<sub>geom</sub>) + V2<sub>CA</sub> (2 x V8<sub>vea</sub>) 0.60 1.10 1.13 2.83 ÷ 5 0.57 Function 7 -- Production Export/Food Chain Support + (2 x V5<sub>outflow</sub>) + V7<sub>chem</sub> + (2 x V8<sub>ved</sub>) V1<sub>connect</sub> V6<sub>geom</sub> + 0.50 1.20 1.13 4.08 7 0.58 0.55 0.70 ÷ = 4.25 Sum of Individual FCI Scores Divide by the Number of Functions Scored ÷7

Composite FCI Score

0.61

# ADMINISTRATIVE CHARACTERIZATION

General Infor	mation			Date of Evaluation:	12/13/202	1	
Site Name or ID:	Assessment A	rea 2		Project Name:	South Plat	tte Mitigatio	n Bank
404 or Other Per Application #:	mit NWO-2020-02	NWO-2020-02252-DEN Applicant Name:			Stephen D Mitigation	ecker, Rocl	ky Mountain
Evaluator Name	(s):	ers, PWS	Evaluator's pro	ofessional position and organization:		ologist, COF ental	RVUS
Location Info	ormation:						
Site Coordinat (Decimal Degrees, 38.85, -104.96)	e.g., 40.318	659°N, -104.1	11162°W	Geographic Datum Used (NAD 83):		WGS 84	
38.83, -104.90)		ian County, Color	ado in the floodolain	Elevation	ver and consid	~4,400 ft	
Location Information: 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 strea	m/water body name		South Platte R	iver	Stream Or	rder:	6
USGS Quadrang Map:	gle 2019 USGS Orch	ard 7.5' topo quac	5' topo quad, Morgan County, CO Map Scale: (Circle one)			<b>1:24,000</b> Other	1:100,000 1:
Sub basin Name <sub>digit HUC):</sub>	(8 Middle South (10190003)	Platte-Cherry	Creek HUC 8	Wetland Ownership:	Colorado	State Land I	Board
Project Inform This evaluation in being performed (Check applicable	s Project We at: X Mitigation S		Purpose of Evaluation (check all applicable):	Potentially Impa Mitigation; Pre-c Mitigation; Post- Monitoring Other (Describe)	constructior constructio	ז	
Intent of Project:	(Check all applicable)		Restoration (Re- establishment)	Enl	hancement		Creation
Total Size of We (Record Area, Check Measurement Metho	and Describe	5.5 ac.	Measured in G Estimated	BIS			
	a (AA) Size (Record e box. Additional spaces	) 5.5 ac.	K Measured	ac.	ac.	ac.	ac.
are used to record acreage when more than one AA is included in a single assessment)			Estimated	ac.	ac.	ac.	ac.
Characteristics c AA boundary def	or Method used for termination:	(re-establishr proposed for	nent) and enhan	ion Bank Zone 2, v cement. A total of n addition, 50.4 ac on.	5.5 ac of e	existing wetle	ands are
	he AOI includes Zon oundarv as well as a			area within the So the FACWet Manu		-	

## ECOLOGICAL DESCRIPTION 1

Special Co	ncerns	Check all that apply				
Organic soi	ls including Histosols o	Histic Epipedons are		Federally threa		ngered species are
<ul> <li>present in the AA (i.e., AA includes core fen habitat).</li> <li>Project will directly impact organic soil portions of the AA including areas possessing either Histosol soils or histic epipedons.</li> <li>Organic soils are known to occur anywhere within the contiguous wetland of which the AA is part.</li> <li>The wetland is a habitat oasis in an otherwise dry or urbanized landscape?</li> <li>Federally threatened or endangered species are KNOWN to occur in the AA? List Below.</li> </ul>				Natural Heritag AA?	e (CNHP) are l ted within a po t occurrence b CNHP?	
	Н	YDROGEOMOR	PHI		G	
AA wetland	has been subject to c	ental natural hydrogeom hange in HGM classes escribe the original wetl upland setting.	as a r	esult of anthrop	ogenic modific	
Current Co	nditions	Describe the hydrogeo that apply.	omorpl	hic setting of the	e wetland by c	ircling all conditions
	Water source	Surface flow	G	roundwater	Precipitation	n Unknown
	Hydrodynamics	Unidirectional		Vertical	Bi-directiona	al
	Wetland Gradient	0 - 2%		2-4%	4-10%	>10%
	# Surface Inlets	Over-bank	0			3 >3
HGM Setting	M Setting <b># Surface Outlets 0 1 2 3 &gt;3 Constrained Bescription Include approx. stream order for riverine</b> ) <b>Constrained Constrained Constrained</b>					
	HGM class	Riverine		Slope	Depressiona	al Lacustrine
Historical Co	nditions				_	
	Water source	Surface flow	G	roundwater	Precipitation	n Unknown
	Hydrodynamics	Unidirectional		Vertical		
Previous wetland typology	Description)	Historically, AA2 likely the alluvial groundwate				
	Previous HGM Class	Riverine		Slope	Depressiona	al Lacustrine
preliminary determin adversely affect critic	ation has been made that th cal habitat. A Species of co ucocephalus). A PCA - Sou	HGM subclass and regine described work will not adduncern is known to occur in pruth Platte River CNHP PCA B	<i>versely</i> oject a	affect species desirea according to the	<i>gnated as threate</i> colorado Natura	ened or endangered or al Heritage (CNHP) - Bald

# **ECOLOGICAL DESCRIPTION 2**

Vegetatio	on Habitat D	escription	US FWS habitat classi	fication according as reporte	d 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 Palustrine	Littoral; Limnoral Palustrine	Rock Bot. (RB) Uncon Bottom(UB) Aquatic Bed(AB)	Floating vascular; Rooted vascular; Algal; Persistent;	Examples Temporarily flooded(A); Saturated(B); Seasonally flooded(C);	Hypersaline(7) ; Eusaline(8); Mixosaline(9); Fresh(0); Acid(a); Circumneutral(c);
Riverine	Lower perennial; Upper perennial; Intermittent	Rocky Shore(RS) Uncon Shore(US) Emergent(EM) Shrub-scrub(SS) Forested (FO)	Non-Persistent; Broad-leaved deciduous; Needle-leaved evergreen; Cobble - gravel; Sand; Mud; Organic	Seasflood./sat.(E); Semi-Perm. flooded(F); Intermittently exposed(G); Artificially flooded(K); Sat./semiperm./Seas. (Y); Int. exposed/permenant(Z)	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)
Site Map Scale: 1 sq. =		v a sketch map of the other significant featu		ions of the wetland, AA boun	dary, structures, habitat classes,
Se	e 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	<b>A</b> Reference Standard	Very little or no loss of wetlands in the HCEor negligible.
<0.9 - 0.8	<b>B</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	<b>C</b> 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	<b>D</b> 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 manmade 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.

	$\checkmark$	Stressors		Comments/description				
		Major Highway		· · · · · · · · · · · · · · · · · · ·				
artificial barriers		Secondary Highway						
arri		Tertiary Roadway						
q		Railroad						
<u>Sial</u>		Bike Path						
tifi		Urban Development						
ar	X	Agricultural Develop	ment	Berm on north side of S Platte River				
11		Artificial Water Body						
SOC.	Х	Fence		North-south running fencelines				
esse	Х	Ditch or Aqueduct		Agricultural return flow ditch				
Stressors	X	Aquatic Organism Ba	arriers	Alluvial fan from watershed development cut off wetlands				
0)		Ŭ Ŭ						
V	ariable							
	Score	Condition Grade	Scorin	ng Guidelines				
1	.0 - 0.9	А		reciable barriers exist between the AA and other wetland and riparian habitats in				
	Reference Standard the HCE			; or there are no other wetland and riparian areas in the HCE.				
				impeding migration/dispersal between the AA and up to 33% of surrounding				
		R		etland/riparian habitat highly permeable and easily passed by most organisms.				
<0	).9 - 0.8	Highly Functioning	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.					
				to migration and dispersal retard the ability of many organisms/propagules to				
			pass be	tween the AA and up to 66% of wetland/riparian habitat. Passage of organisms				
		с		pagules through such barriers is still possible, but it may be constrained to certain				
<0	).8 - 0.7	Functioning	times of day, be slow, dangerous or require additional travel. Busy two-lane roads,					
		Ŭ	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					
			• •	to migration and dispersal preclude the passage of some types of				
		_		ms/propagules between the AA and up to 66% of surrounding wetland/riparian				
<0	).7 - 0.6	<b>D</b> Functioning Impaired	habitat. Travel of those animals which can potential negotiate the barrier are strongly					
		Functioning impaired	restricted and may include a high chance of mortality. Up to 33% of surrounding					
				/riparian habitat could be functionally isolated from the AA.				
		F		ssentially isolated from surrounding wetland/riparian habitat by impermeable				
	<0.6	r Non-functioning		n and dispersal barriers. An interstate highway or concrete-lined water ance canal are examples of barriers which would generally create functional				
			isolation between the AA and wetland/riparian habitat in the HCE.					
		•		•				
		01/4/4 0	0.00	Add SV 1.1 and 1.2				
		SV 1.1 Score	0.30	scores and divide by				
		SV 1.2 Score	0.70	two to calculate variable score Variable 1 Score 0.50				
			0.70	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

### 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

0.90 SV 2.

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
	Score 1.0 - 0.9 <0.9 - 0.8 <0.8 - 0.7 <0.7 - 0.6	ScoreReference Standard1.0 - 0.9Reference Standard<0.9 - 0.8Highly Functioning<0.8 - 0.7Functioning<0.7 - 0.6Functioning Impaired

<u>Var</u>	Variable 2: Contributing Area (p. 2)						
SV 2.	3 - A	verage Buffer W	lidth		Record meas	ured buffer widths in	the spaces below and average.
Buffer Width	(m)	82 250		250	250 25		225
Line #		1 2	3	4	56	5 7 8	Avg. Buffer Width (m)
					Subvariable Score	Condition Grade	Buffer Width Scoring Guidelines
-	1	SV 2.3 - Avera	ao Ruffo	r	Score 1.0 - 0.9	Reference Standard	Average Buffer width is 190-250m
0.9		Width Se	-	-	<0.9 - 0.8	Highly Functioning	Average Buffer width is 101-189m
	1	wiutii Se	.0re		<0.8 - 0.7	Functioning	Average Buffer width is 31-100m
					<0.7 - 0.6	Functioning Impaired	-
					<0.6	Non-functioning	Average Buffer width is 0-5m
SV 2	4 - 9	Surrounding Land					
07 2.							
0.7		/ 2.4 - Surrour Land Use Sco	•		Catalog and c landscape an		e changes in the surrounding
		Stressors		omme	ents/descrip	tion	
		Industrial/comme	ercial				
= Land Use Changes		Urban					
lan		Residential Rural					
Ċ		Dryland Farming					
Jse		Intensive Agricul	ture				
р		Orchards or Nurs					
Lar	Х	Livestock Grazin		attle g	razing		
		Transportation C					
ors		Urban Parklands					
Stressors		Dams/impoundm Artificial Water b					
Stre		Physical Resource E					
		Biological Resource					
Varia Sco		Condition Grade			Ś	Scoring Guideline	95
1.0 -	0.9	<b>A</b> Reference Standard	No appreciat	ble land	use change ha	s been imposed Surro	unding Landscape.
<0.9	- 0.8	<b>B</b> Highly Functioning	minimal effect either becaus	ct on th se land	e the landscape use is not inten	's capacity to support of sive, for example hayir	andscape, but changes have characteristic aquatic functioning, ng, light grazing, or low intensity nately less than 10% of the area.
<0.8	- 0.7	<b>C</b> 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	<b>D</b> 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 cituations would commonly rate a core within this range.				
<0	.6	<b>F</b> Non-functioning	severe ecolo	gical st		habitats. Commercial	oped or is otherwise a cause of developments or highly urban
		Buffer Score	Surroun	-			
		(Lowest score)	Land U	lse			·
	(	0.6 +	0.7	) ÷	2	- Variable	<b>2 Score</b> 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.

$\checkmark$	Stressors	Comments/description
	Ditches or Drains (tile, etc.)	
X	Dams	Empire Reservoir, Riverside Reservoir
×	Diversions	Bijou Canal
	Groundwater pumping	
	Draw-downs	
	Culverts or Constrictions	
×	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	<b>A</b> 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>B</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	<b>C</b> 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	<b>D</b> 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	<b>F</b> 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.

$\checkmark$	Stressors		Comments/description	
	Alteration	of Water Source		
	Ditches			
	Ponding/Ir	npoundment		
	Culverts			
	Road Grad	des		
	Channel Ir	ncision/Entrenchment		
	Hardened/	Engineered Channel		
	Enlarged (	Channel		
	Artificial B	anks/Shoreline		
	Weirs			
	Dikes/Leve	ees/Berms		
	Diversions			
$\times$	Sediment/	Fill Accumulation	Flooding flows such as 2013 floods ha	ve deposited sediments over wetlands.
V	ariable			
	Score	Condition Grade	Non-riverine	Riverine
1.	.0 - 0.9	<b>A</b> 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>B</b> Highly Functioning	Less than 10% of the AA is affected by <i>in situ</i> 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	<b>C</b> Functioning	Between 10 and 33% of the AA is affected by <i>in situ</i> 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	0.7 - 0.6	<b>D</b> Functioning Impaired	33 to 66% of the AA is affected by <i>in situ</i> 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	<b>F</b> 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.

$\checkmark$	Stressors	Comments/description
	Alteration of Water Source	
X	Ditches	Agricultural return flow ditch.
	Dikes/Levees	
	Road Grades	
	Culverts	
	Diversions	
Х	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	<b>A</b> 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>B</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	<b>C</b> Functioning	High- or low-water outflows are moderately affected, mild alteration of intermediate level outflow occurs; or hydrodynamics moderately affected.
<0.7 - 0.6	<b>D</b> 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	<b>F</b> 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.

	Í	Stressors			Comments
		Dredg	jing/Excavation	/Mining	
	Fill, including dikes, road grades, etc		road grades, etc		
		Grading			
	a	Comp	Compaction		
	era	Plowi	ng/Disking		
×	General	Exces	sive Sediment	ation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
	G	Dump	oing		
		Hoof	Shear/Pugging		
		Aggre	gate or Minera	l Mining	
×		Sand	Accumulation		Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
		Chan	nel Instability/O	ver Widening	
	Ň	Exces	sive Bank Eros	sion	
	Only	Chan	nelization		
	<u>s</u>	Reco	nfigured Strean	n Channels	
	Channels	Artific	ial Banks/Shore	eline	
	an	Beave	er Dam Remov	al	
	ч С	Subst	rate Embeddeo	dness	
		Lack or Excess of Woody Debris		oody Debris	
			Q a malifi a m	1	
Vari		Score	Condition Grade		Scoring Guidelines
Varia	able	Score	Grade	Tonography or	Scoring Guidelines
			Grade A		sentially unaltered from the natural state, or alterations appear to have a minimal effect on
	able  .0 - (		Grade A Reference	wetland functio	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but
			Grade A	wetland functio native plant cor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1		0.9	<b>Grade</b> <b>A</b> Reference Standard	wetland functio native plant cor Alterations to to	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1	l.0 - (	0.9	Grade A Reference Standard B	wetland functio native plant cor Alterations to to	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1	I.0 - ( 0.9 -	0.9 · 0.8	Grade A Reference Standard B Highly	wetland functio native plant cor Alterations to to AA; or more se	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1	l.0 - (	0.9 · 0.8	Grade A Reference Standard B Highly Functioning	wetland functio native plant cor Alterations to to AA; or more se Changes to AA	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. popgraphy result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA.
1	I.0 - ( 0.9 -	0.9 · 0.8	Grade A Reference Standard B Highly Functioning C Functioning	wetland functio native plant cor Alterations to to AA; or more se Changes to AA patches of mor At least one im	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. . topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has
1	0.9 - ( 0.9 - 0.8 -	0.9 · 0.8 · 0.7	Grade A Reference Standard B Highly Functioning C Functioning D	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of
1	I.0 - ( 0.9 -	0.9 · 0.8 · 0.7	Grade A Reference Standard B Highly Functioning C Functioning D Functioning	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in the AA. Evider	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to
1	0.9 - ( 0.9 - 0.8 -	0.9 · 0.8 · 0.7	Grade A Reference Standard B Highly Functioning C Functioning D	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habitat	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. Depography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. It topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nice that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside
1	0.9 - ( 0.9 - 0.8 -	0.9 · 0.8 · 0.7	Grade A Reference Standard B Highly Functioning C Functioning Impaired	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habitat	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. . topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to
1	0.9 - ( 0.9 - 0.8 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning D Functioning	wetland function native plant corn Alterations to to AA; or more se Changes to AA patches of morn At least one im been strongly in the AA. Evider physical habitand ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. Depography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. It topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower.
1	0.9 - 0 0.8 - 0.7 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F	wetland function native plant corn Alterations to to AA; or more se Changes to AA patches of morn At least one im been strongly in the AA. Evider physical habitand ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. Depography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. It topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside like would score in this range or lower.
1	0.9 - 0 0.8 - 0.7 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant corn Alterations to to AA; or more se Changes to AA patches of morn At least one im been strongly in the AA. Evider physical habitand ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower.
1	0.9 - 0 0.8 - 0.7 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant corn Alterations to to AA; or more se Changes to AA patches of morn At least one im been strongly in the AA. Evider physical habitand ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nice that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower. morphic alterations have caused a fundamental change in site character and functioning, ilting in a conversion to upland or deepwater habitat.
1	0.9 - 0 0.8 - 0.7 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant corn Alterations to to AA; or more se Changes to AA patches of morn At least one im been strongly in the AA. Evider physical habitand ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower.

## 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.

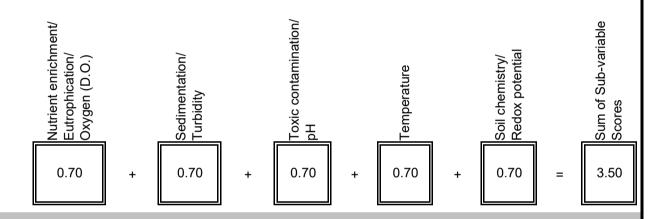
5. The lowest sub-variable score sets the letter grade range. The composite of sub-variables influences the score within that range.

Sub-variable	Stressor Indicator	$\checkmark$	Comments		Sub-
	Livestock	Х	cattle grazing		variable
SV 7.1	Agricultural Runoff	Х	Increased salinity from irrigation	$\neg$	Score
Nutrient Enrichment/	Septic/Sewage				0.70
	Excessive Algae or Aquatic Veg.				0.70
Eutrophication/	Cumulative Watershed NPS			$\neg$	
Oxygen (D.O.)	CDPHE Impairment/TMDL List				
	Excessive Erosion				
	Excessive Deposition	Х	e.g. 2013 flood	$\neg$	
	Fine Sediment Plumes				
SV 7.2	Agricultural Runoff	Х	sedimentation		0.70
Sedimentation/	Excessive Turbidity				0.70
Turbidity	Nearby Construction Site				,
	Cumulative Watershed NPS			٦/	
	CDPHE Impairment/TMDL List				
				7	
	Recent Chemical Spills				
	Nearby Industrial Sites				
	Road Drainage/Runoff				
	Livestock	Х	cattle grazing		
	Agricultural Runoff	Х	Increased salinity from irrigation		
SV 7.3	Storm Water Runoff				0.70
Toxic contamination/	Fish/Wildlife Impacts				0.70
pН	Vegetation Impacts				
	Cumulative Watershed NPS			$\neg$ /	
	Acid Mine Drainage				
	Point Source Discharge				
	CDPHE Impairment/TMDL List			7/	
	Metal staining on rocks and veg.			7	
	Excessive Temperature Regime				
	Lack of Shading	1		$\neg$	
SV 7.4	Reservoir/Power Plant Discharge				0.70
	Industrial Discharge				0.70
Temperature	Cumulative Watershed NPS	1			
	CDPHE Impairment/TMDL List	1			
				7	
	Unnatural Saturation/Desaturation				
SV 7.5	Mechanical Soil Disturbance	1			0.70
Soil chemistry/	Dumping/introduced Soil	1			0.70
Redox potential	CDPHE Impairment/TMDL List	1		/ ٦	

## Variable 7: Water and Soil Chemical Environment p.2

ub-variable Scoring Guidelines				
Variable Score	Condition Class	Scoring Guidelines		
1.0 - 0.9	<b>A</b> Reference Standard	Stress indicators not present or trivial.		
<0.9 - 0.8	<b>B</b> Highly Functioning	Stress indicators scarcely present and mild, or otherwise not occurring in more than 10% of the AA.		
<0.8 - 0.7	<b>C</b> Functioning	Stress indicators present at mild to moderate levels, or otherwise not occurring in more than 33% of the AA.		
<0.7 - 0.6	<b>D</b> Functioning Impaired	Stress indicators present at moderate to high levels, or otherwise not occurring in more than 66% of the AA		
<0.6	<b>F</b> 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.



### Use the table to score the Chemical Environment Variable circling the applicable scoring rules.

Variable Score	Condition Grade	Scoring Rules					
ocore	Grade	Single Factor		Composite Score			
1.0 - 0.9	<b>A</b> Reference Standard	No single factor scores < 0.9		The factor scores sum > 4.5			
<0.9 - 0.8	<b>B</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	<b>C</b> Functioning	Any single factor scores ≥ 7.0 but < 0.8		The factor scores sum >3.5 but $\leq$ 4.0			
<0.7 - 0.6	<b>D</b> Functioning Impaired	Any single factor scores ≥ 0.6 but <0.7	x	The factor scores sum >3.0 but ≤3.5			
< 0.6	<b>F</b> Non- functioning	Any single factor scores < 0.6		The factor scores sum < 3.0			
			Va	riable 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 floodflow 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.

	١	/egetatio	n Layers		
Current % Coverage of					
Layer	75	10	50	0	
Stressor	Tree	Shrub	Herb	Aquatic	Comments
Noxious Weeds	Х	Х	Х		Abundant noxious weeds, Russian olive, white top.
Exotic/Invasive spp.	Х	Х	Х		Abundant exotics, pasture grasses.
Tree Harvest					
Brush Cutting/Shrub Removal					
Livestock Grazing	Х	Х	Х		Cattle grazing
Excessive Herbivory					
Mowing/Haying					
Herbicide					
Loss of Zonation/Homogenization					
Dewatering	Х	Х	Х		hanges to groundwater levels favor noxious/invasive sp
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 +			= 175
Veg. Layer Sub- variable Score	x 0.7	x 0.5	x 0.6	x 0.7	See sub-variable scoring guidelines on following page
	П	П	П	П	
Weighted Sub-variable Score	35.00 +	37.50 +	30.00 +	0.00	= 102.5
					Variable 8 Score

## 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	<b>A</b> 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>B</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	<b>D</b> 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	<b>F</b> 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.

### 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 Variable 3: Water Source (Source) 0.80 Hydrology 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 Total Function 1 -- Support of Characteristic Wildlife Habitat Functional FCI V1<sub>connect</sub> + (2 x V8<sub>vec</sub>) V2<sub>CA</sub> Points 0.50 0.58 1.17 2.32 0.65 4 Function 2 -- Support of Characteristic Fish/aquatic Habitat + (2 x V5<sub>outflow</sub>) + $(3 \times V3_{source}) + (2 \times V4_{dist})$ V6<sub>geom</sub> + V7<sub>chem</sub> 1.20 0.70 5.95 2.40 1.20 0.45 9 0.66 ÷ Function 3 -- Flood Attenuation V2<sub>CA</sub> + (2 x V3<sub>source</sub>) + (2 x V4<sub>dist</sub>) + (2 x V5<sub>outflow</sub>) + V8<sub>veg</sub> V6<sub>geom</sub> + 0.59 5.69 0.65 1.60 1.20 1.20 0.45 0.63 ÷ 9 Function 4 -- Short- and Long-term Water Storage V3<sub>source</sub> (2 x V4<sub>dist</sub>) + (2 x V5<sub>outflow</sub>) V6<sub>geom</sub> 0.61 0.80 1.20 1.20 0.45 3.65 ÷ 6 Function 5 -- Nutrient/Toxicant Removal V7<sub>chem</sub> $(2 \times V2_{CA})$ + (2 x V4<sub>dist</sub>) V6<sub>geom</sub> + 1.30 1.20 0.45 0.70 3.65 ÷ 6 0.61 Function 6 -- Sediment Retention/Shoreline Stabilization + (2 x V6<sub>geom</sub>) + V2<sub>CA</sub> (2 x V8<sub>ved</sub>) 0.65 0.90 1.17 2.72 ÷ 5 0.54 Function 7 -- Production Export/Food Chain Support + (2 x V5<sub>outflow</sub>) + V7<sub>chem</sub> + (2 x V8<sub>veg</sub>) V1<sub>connect</sub> V6<sub>geom</sub> + 0.50 1.20 1.17 4.02 7 0.57 0.45 0.70 ÷ = 4.21 Sum of Individual FCI Scores

Divide by the Number of Functions Scored ÷ 7

**Composite FCI Score** 

0.60

# ADMINISTRATIVE CHARACTERIZATION

General Infor	mation			Date of Evaluation:	12/13/2021			
Site Name or ID:	Assessment A	rea 3		Project Name:	South Pla	tte Mitigatior	ו Bank	
404 or Other Per Application #:	mit NWO-2020-02	NWO-2020-02252-DEN Applicant Name: Stephen Decker, Rocky Mountain Mitigation						
Evaluator Name(	Carla DeMaste	asters, PWS Evaluator's professional position and Environmental organization:					<b>VUS</b>	
Location Info	rmation:							
Site Coordinat (Decimal Degrees, 38.85, -104.96)	es e.g., 40.318	659°N, -104.1	11162°W	Geographic Datum Used (NAD 83):		WGS 84		
	The site is in More			Elevation of the South Platte Riv			re parcel located	
Location Information: 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 strea	m/water body name		South Platte Ri	ver	Stream O	rder:	6	
USGS Quadrang Map:	le 2019 USGS Orcha	ard 7.5' topo quad	, Morgan County, C	O Map Scale: (Circle one)	<b>1:24,000</b> 1:100,000 Other 1:			
Sub basin Name <sub>digit HUC):</sub>	(8 Middle South I (10190003)	Platte-Cherry C	herry Creek HUC 8 Wetland Ownership: Colorado State			State Land F	3oard	
Project Inforr	nation:			Potentially Impa	cted Wetla	ands		
This evaluation is being performed (Check applicable)	at: 🗙 Mitigation S							
Intent of Project:	(Check all applicable)		Restoration (Re-	Enl	nhancement Creation			
Total Size of We (Record Area, Check Measurement Method	and Describe	6.3 ac.	establishment) Measured in G Estimated	SIS				
	a (AA) Size (Record box. Additional spaces		Measured	ac.	ac.	ac.	ac.	
	age when more than one	6.3 ac.	Estimated	ac.	ac.	ac.	ac.	
Characteristics o AA boundary det	r Method used for ermination:	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:	ne AOI includes Zon oundary as well as a clude a number of A «tended at least 25m	25m buffer or As with any de	this area. Per a gree of intercor	the FACWet Manu	al page 47 general, th	7, "the AOI e AOI should	l may also	

## **ECOLOGICAL DESCRIPTION 1**

Special Co	ncerns	Check all that apply				
-	s including Histosols or ne AA (i.e., AA includes	<ul> <li>Histic Epipedons are</li> </ul>			tened or endanger o occur in the AA?	
including an epipedons.	directly impact organic : eas possessing either I s are known to occur a	Histosol soils or histic	×	Species of con	cern according to t	he Colorado
	wetland of which the AA				e (CNHP) are kno	
The wetland urbanized la	l is a habitat oasis in ar andscape?	n otherwise dry or	X		ted within a potent t occurrence buffe CNHP?	
					oncerns (please d	escribe)
	Н	YDROGEOMOR	RPHI	C SETTING	G	
X AA wetland	maintains its fundame	ental natural hydrogeom	norphi	c characteristics	6	
		hange in HGM classes escribe the original wetl				
AA wetland	was created from an	upland setting.				
Current Co	nditions	Describe the hydrogeo that apply.	omorpl	nic setting of the	e wetland by circli	ng all conditions
	Water source	Surface flow	G	roundwater	Precipitation	Unknown
	Hydrodynamics	Unidirectional		Vertical Bi-directional		
	Wetland Gradient	0 - 2%	<mark>%</mark> 2-4%		4-10% >1	0%
	# Surface Inlets	Over-bank	0	1	2 3	>3
HGM Setting	# Surface Outlets		0	1	2 3	>3
	Geomorphic Setting (Narrative Description. Include approx. stream order for riverine)	AA 3 is located on the forme an escarpment. Historically, source is primarily alluvial g overbank flows. AA3 is withi	AA3 re roundw	ceived overbank fleater. Only during e	ows from the River. C	urrently, the water
	HGM class	Riverine		Slope	Depressional	Lacustrine
Historical Co	nditions				_	
	Water source	Surface flow	G	roundwater	Precipitation	Unknown
	Hydrodynamics	Unidirectional		Vertical		
Previous	Geomorphic	Historically, AA3 likely				bank flooding and
wetland typology	Description)	the alluvial groundwate	er syst	em from the So	outh 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 oreliminary 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**

Vegetatio	on Habitat D	escription	US FWS habitat classi	fication according as reporte	d 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 Palustrine	Littoral; Limnoral Palustrine	Rock Bot. (RB) Uncon Bottom(UB) Aquatic Bed(AB)	Floating vascular; Rooted vascular; Algal; Persistent;	Examples Temporarily flooded(A); Saturated(B); Seasonally flooded(C);	Hypersaline(7) ; Eusaline(8); Mixosaline(9); Fresh(0); Acid(a); Circumneutral(c);
Riverine	Lower perennial; Upper perennial; Intermittent	Rocky Shore(RS) Uncon Shore(US) Emergent(EM) Shrub-scrub(SS) Forested (FO)	Non-Persistent; Broad-leaved deciduous; Needle-leaved evergreen; Cobble - gravel; Sand; Mud; Organic	Seasflood./sat.(E); Semi-Perm. flooded(F); Intermittently exposed(G); Artificially flooded(K); Sat./semiperm./Seas. (Y); Int. exposed/permenant(Z)	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)
Site Map Scale: 1 sq. =		v a sketch map of the other significant featu		ions of the wetland, AA boun	dary, structures, habitat classes,
Se	e 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	<b>A</b> Reference Standard	Very little or no loss of wetlands in the HCEor negligible.
<0.9 - 0.8	<b>B</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	<b>C</b> 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	<b>D</b> 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 manmade 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.

	$\checkmark$	Stressors		Comments/description				
		Major Highway		· · · · · · · · · · · · · · · · · · ·				
artificial barriers		Secondary Highway	,					
arri		Tertiary Roadway						
q		Railroad						
<u>Sial</u>		Bike Path						
tifi		Urban Development						
ar	X	Agricultural Develop	ment	Berm on north side of S Platte River				
11		Artificial Water Body						
SOC.	Х	Fence		North-south running fencelines				
esse	Х	Ditch or Aqueduct		Agricultural return flow ditch				
Stressors	X	Aquatic Organism Ba	arriers	Alluvial fan from watershed development cut off wetlands				
0)		Ŭ Ŭ						
V	ariable							
	Score	Condition Grade	Scorin	ng Guidelines				
1	.0 - 0.9	А		eciable barriers exist between the AA and other wetland and riparian habitats in				
	.0 - 0.5	Reference Standard	the HCE	; or there are no other wetland and riparian areas in the HCE.				
		<b>B</b> wetland		impeding migration/dispersal between the AA and up to 33% of surrounding				
				/riparian habitat highly permeable and easily passed by most organisms.				
<0	).9 - 0.8	Highly Functioning	Examples could include gravel roads, minor levees, ditches or barbed-wire fences. More					
			•	gnificant barriers (see "functioning category below) could affect migration to up to 10% f surrounding wetland/riparian habitat.				
				to migration and dispersal retard the ability of many organisms/propagules to				
				etween the AA and up to 66% of wetland/riparian habitat. Passage of organisms				
		с	and propagules through such barriers is still possible, but it may be constrained to certain					
<0	).8 - 0.7	Functioning	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"					
				y below) could affect migration to up to 10% of surrounding wetland/riparian				
			• •	to migration and dispersal preclude the passage of some types of				
		_		ms/propagules between the AA and up to 66% of surrounding wetland/riparian				
<0	).7 - 0.6	<b>D</b> Functioning Impaired	habitat. Travel of those animals which can potential negotiate the barrier are strongly					
		Functioning impaired	restricted and may include a high chance of mortality. Up to 33% of surrounding					
				/riparian habitat could be functionally isolated from the AA.				
		F		ssentially isolated from surrounding wetland/riparian habitat by impermeable				
	<0.6	r Non-functioning		on and dispersal barriers. An interstate highway or concrete-lined water ance canal are examples of barriers which would generally create functional				
		5		between the AA and wetland/riparian habitat in the HCE.				
		•		•				
		01/4/4 0	0.00	Add SV 1.1 and 1.2				
		SV 1.1 Score	0.30	scores and divide by				
		SV 1.2 Score	0.70	two to calculate variable score Variable 1 Score 0.50				
			0.70	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

### 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

0.90 SV 2.

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
	Score 1.0 - 0.9 <0.9 - 0.8 <0.8 - 0.7 <0.7 - 0.6	ScoreReference Standard1.0 - 0.9Reference Standard<0.9 - 0.8Highly Functioning<0.8 - 0.7Functioning<0.7 - 0.6Functioning Impaired

<u>Var</u>	riab	le 2: C	ontrib	uting	Area	(p. 2)					
SV 2.	.3 - /	Average I	Buffer W	'idth	1	Record r	neasur	ed buffer v	widths in	the spaces below and average.	
Buffer	r				-						
Width	(m)	250	250	160	250	250	250	250	250	239	
Line #	ŧ	1	2	3	4	5	6	7	8	Avg. Buffer Width (m)	
						Subvaria Score		Condition	n Grade	Buffer Width Scoring Guidelines	
		SV 2.3 - Average Bu			ffer	1.0 - 0	.9	Reference	Standard	Average Buffer width is 190-250m	
0.9			/idth Se	-		<0.9 - (	0.8	Highly Fun	ctioning	Average Buffer width is 101-189m	
						<0.8 - 0	0.7	Functio	ning	Average Buffer width is 31-100m	
						<0.7 - 0	<b>D.6</b> /	unctioning	Impaired	Average Buffer width is 6-30m	
						<0.6		Non-func	tioning	Average Buffer width is 0-5m	
					7					•	
SV 2.	.4 - ૬	Surround	ling Lan	d Use							
0.7	SI	/ 2.4 - 5		•		Catalog landscap			land use	changes in the surrounding	
		Land L		ore	0.000						
		Stresso		roial	Comme	ents/des	criptio	201			
ŝ	<b> </b>		al/comme	ercial	<b> </b>						
Stressors = Land Use Changes		Urban Residen	tial								
Jar		Rural	iudi		<b> </b>						
Ċ	<u> </u>		Farming								
lse			e Agricul	turo							
			s or Nurs								
anc	X		k Grazin		Cattle g	razing					
Ľ	^		ortation C	v.	Cattle g	nazing					
ii N			arklands								
sor		-	npoundm								
es			Water b								
Str			Resource E								
			Resource								
		Ŭ									
	iable ore	Conditio	on Grade				Sc	oring Gu	uideline	s	
1.0	- 0.9		<b>a</b> rence ndard	No appre	ciable land	l use chanç	ge has t	een impos	ed Surrou	nding Landscape.	
<0.9	- 0.8		8	minimal e either beo	effect on th cause land	e the lands use is not	scape's intensiv	capacity to e, for exarr	support cl	ndscape, but changes have haracteristic aquatic functioning, g, light grazing, or low intensity ately less than 10% of the area.	
<0.8	- 0.7		C Surround retains m Functioning pollutants			cape has be capacity to ent. Moder	een sub support ate-inte	jected to a natural we nsity land u	marked s tland func ises such	hift in land use, however, the land tion and it is not an overt source of as dry-land farming, urban "green" laced within this scoring range.	
<0.7 - 0.6		D Land use D moderate Functioning surfaces; Impaired capacity of			changes v to high co considera of the land	vithin the S overage (up ble in-flow has been g	Surround to 50% urban ru greatly d	ling Landso ) of impern Inoff or fert liminished l	cape has t neable sui ilizer-rich but not tot	been substantial including the a rfaces, bare soil, or other artificial waters common. Supportive ally extinguished. Intensively n parklands and many cropping	
<0	D.6	-	F actioning	severe ec	cological st	ress on we	etland ha		mmercial	oped or is otherwise a cause of developments or highly urban	
_		Buffer Se (Lowest se			unding d Use	_		_	_		
	(	0.6	+	0.7	) ÷	2	=	Var	iable	<b>2 Score</b> 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.

$\checkmark$	Stressors	Comments/description
	Ditches or Drains (tile, etc.)	
X	Dams	Empire Reservoir, Riverside Reservoir
×	Diversions	Bijou Canal
	Groundwater pumping	
	Draw-downs	
	Culverts or Constrictions	
×	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	<b>A</b> 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>B</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	<b>C</b> 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	<b>D</b> 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	<b>F</b> 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.

$\checkmark$	Stresso	rs	Comments/description			
	Alteration	of Water Source				
	Ditches					
	Ponding/Ir	npoundment				
	Culverts					
	Road Grades					
	Channel Incision/Entrenchment					
	Hardened/Engineered Channel					
	Enlarged (	Channel				
	Artificial B	anks/Shoreline				
	Weirs					
	Dikes/Leve	ees/Berms				
	Diversions					
$\times$	Sediment/	Fill Accumulation	Flooding flows such as 2013 floods ha	ve deposited sediments over wetlands.		
V	ariable					
	Score	Condition Grade	Non-riverine	Riverine		
1.	.0 - 0.9	<b>A</b> 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>B</b> Highly Functioning	Less than 10% of the AA is affected by <i>in situ</i> 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	<b>C</b> Functioning	Between 10 and 33% of the AA is affected by <i>in situ</i> 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	0.7 - 0.6	<b>D</b> Functioning Impaired	33 to 66% of the AA is affected by <i>in situ</i> 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	<b>F</b> 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	
×	Ditches	Agricultural return flow ditch.
	Dikes/Levees	
	Road Grades	
	Culverts	
	Diversions	
×	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	<b>A</b> 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>B</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	<b>C</b> Functioning	High- or low-water outflows are moderately affected, mild alteration of intermediate level outflow occurs; or hydrodynamics moderately affected.
<0.7 - 0.6	<b>D</b> 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	<b>F</b> 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.

	Í		Stressor	S	Comments
		Dredg	jing/Excavation	/Mining	
		Fill, in	cluding dikes, i	road grades, etc	
		Grading			
	a	Comp	action		
	era	Plowi	ng/Disking		
×	General	Exces	sive Sediment	ation	Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
	G	Dump	oing		
		Hoof	Shear/Pugging		
		Aggre	gate or Minera	l Mining	
Х		Sand	Accumulation		Flooding flows such as 2013 floods deposited sediments, converting wetlands to uplands.
		Chan	nel Instability/O	ver Widening	
	Ň	Exces	sive Bank Eros	sion	
	Only	Chan	nelization		
	<u>s</u>	Recor	nfigured Strean	n Channels	
	Channels	Artific	ial Banks/Shore	eline	
	an	Beave	er Dam Remov	al	
	ч С	Subst	rate Embeddeo	dness	
		Lack	or Excess of W	oody Debris	
			Osaditisa	1	
Vari		Score	Condition Grade		Scoring Guidelines
Varia	able	Score	Grade	Tonography of	Scoring Guidelines
			Grade A		sentially unaltered from the natural state, or alterations appear to have a minimal effect on
	able .0 - (		Grade A Reference	wetland functio	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but
			Grade A	wetland functio native plant cor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1		0.9	Grade A Reference Standard B	wetland functio native plant cor Alterations to to	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1	.0 - (	0.9	<b>Grade</b> <b>A</b> Reference Standard	wetland functio native plant cor Alterations to to	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1	.0 - ( 0.9 -	0.9 • 0.8	Grade A Reference Standard B Highly	wetland functio native plant con Alterations to to AA; or more se	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported.
1	.0 - (	0.9 • 0.8	Grade A Reference Standard B Highly Functioning	wetland function native plant con Alterations to to AA; or more se Changes to AA	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. oppography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA.
1	.0 - ( 0.9 -	0.9 • 0.8	Grade A Reference Standard B Highly Functioning C Functioning	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. A topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has
1 <(	.0 - ( 0.9 - 0.8 -	0.9 • 0.8 • 0.7	Grade A Reference Standard B Highly Functioning C Functioning D	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. a topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of
1 <(	.0 - ( 0.9 -	0.9 • 0.8 • 0.7	Grade A Reference Standard B Highly Functioning C Functioning D Functioning	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in the AA. Evider	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. A topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nce that widespread diminishment or alteration of native plant community exist due to
1 <(	.0 - ( 0.9 - 0.8 -	0.9 • 0.8 • 0.7	Grade A Reference Standard B Highly Functioning C Functioning D	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in the AA. Evider physical habita	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. a topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nce that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside
1 <(	.0 - ( 0.9 - 0.8 -	0.9 • 0.8 • 0.7	Grade A Reference Standard B Highly Functioning C Functioning Impaired	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of more At least one im been strongly in the AA. Evider physical habita	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. A topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nce that widespread diminishment or alteration of native plant community exist due to
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. oppography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower.
1 <(	.0 - ( 0.9 - 0.8 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. oppography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nee that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower.
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nace that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower. morphic alterations have caused a fundamental change in site character and functioning, ulting in a conversion to upland or deepwater habitat.
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. a topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nice that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower. morphic alterations have caused a fundamental change in site character and functioning, ulting in a conversion to upland or deepwater habitat.
1 <(	0.9 - 0 0.9 - 0.8 -	0.9 • 0.8 • 0.7 • 0.6	Grade A Reference Standard B Highly Functioning C Functioning Impaired F Non-	wetland function native plant con Alterations to to AA; or more se Changes to AA patches of mor At least one im been strongly in the AA. Evider physical habita ditches and the Pervasive geor	sentially unaltered from the natural state, or alterations appear to have a minimal effect on ning and condition. Patch or microtopographic complexity may be slightly altered, but mmunities are still supported. opography result in small but detectable changes to habitat conditions in some or all of the vere impacts exist but affect less than 10% of the AA. topography may be pervasive but generally mild to moderate in severity. May include e significant habitat alteration; or more severe alterations affect up to 20 % of the AA. portant surface type or landform has been eliminated or created; microtopography has mpacted throughout most or all of the AA; or more severe alterations affect up to 50% of nace that widespread diminishment or alteration of native plant community exist due to t alterations. Most incidentally created wetland habitat such as that created by roadside e like would score in this range or lower. morphic alterations have caused a fundamental change in site character and functioning, ulting in a conversion to upland or deepwater habitat.

## 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.

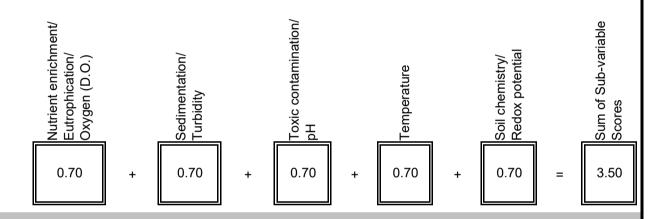
5. The lowest sub-variable score sets the letter grade range. The composite of sub-variables influences the score within that range.

Sub-variable	Stressor Indicator	$\checkmark$	Comments		Sub-
	Livestock	Х	cattle grazing		variable
SV 7.1	Agricultural Runoff	Х	Increased salinity from irrigation	$\neg$	Score
Nutrient Enrichment/	Septic/Sewage				0.70
	Excessive Algae or Aquatic Veg.				0.70
Eutrophication/	Cumulative Watershed NPS			$\neg$	
Oxygen (D.O.)	CDPHE Impairment/TMDL List				
	Excessive Erosion				
	Excessive Deposition	Х	e.g. 2013 flood	$\neg$	
	Fine Sediment Plumes				
SV 7.2	Agricultural Runoff	Х	sedimentation		0.70
Sedimentation/	Excessive Turbidity				0.70
Turbidity	Nearby Construction Site				,
	Cumulative Watershed NPS			٦/	
	CDPHE Impairment/TMDL List				
				7	
	Recent Chemical Spills				
	Nearby Industrial Sites				
	Road Drainage/Runoff				
	Livestock	Х	cattle grazing		
	Agricultural Runoff	Х	Increased salinity from irrigation		
SV 7.3	Storm Water Runoff				0.70
Toxic contamination/	Fish/Wildlife Impacts				0.70
pН	Vegetation Impacts				
	Cumulative Watershed NPS			$\neg$ /	
	Acid Mine Drainage				
	Point Source Discharge				
	CDPHE Impairment/TMDL List			7/	
	Metal staining on rocks and veg.			7	
	Excessive Temperature Regime				
	Lack of Shading	1		$\neg$	
SV 7.4	Reservoir/Power Plant Discharge				0.70
	Industrial Discharge				0.70
Temperature	Cumulative Watershed NPS	1			
	CDPHE Impairment/TMDL List	1			
				7	
	Unnatural Saturation/Desaturation				
SV 7.5	Mechanical Soil Disturbance	1			0.70
Soil chemistry/	Dumping/introduced Soil	1			0.70
Redox potential	CDPHE Impairment/TMDL List	1		/ ٦	
				$\mathbf{V}$	

## Variable 7: Water and Soil Chemical Environment p.2

ub-variable Scori	ub-variable Scoring Guidelines					
Variable Score	Condition Class	Scoring Guidelines				
1.0 - 0.9	<b>A</b> Reference Standard	Stress indicators not present or trivial.				
<0.9 - 0.8	<b>B</b> Highly Functioning	Stress indicators scarcely present and mild, or otherwise not occurring in more than 10% of the AA.				
<0.8 - 0.7	<b>C</b> Functioning	Stress indicators present at mild to moderate levels, or otherwise not occurring in more than 33% of the AA.				
<0.7 - 0.6	<b>D</b> Functioning Impaired	Stress indicators present at moderate to high levels, or otherwise not occurring in more than 66% of the AA				
<0.6	<b>F</b> 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.



### 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	<b>A</b> Reference Standard	No single factor scores < 0.9	The factor scores sum > 4.5				
<0.9 - 0.8	<b>B</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	<b>C</b> Functioning	Any single factor scores ≥ 7.0 but < 0.8		The factor scores sum >3.5 but $\leq$ 4.0			
<0.7 - 0.6	<b>D</b> Functioning Impaired	Any single factor scores $\ge 0.6$ but <0.7 X		The factor scores sum >3.0 but ≤3.5			
< 0.6	<b>F</b> Non- functioning	Any single factor scores < 0.6	The factor scores sum < 3.0				
			Va	riable 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 floodflow 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	Х	Х	Х		Abundant noxious weeds, Russian olive, white top.
Exotic/Invasive spp.	Х	Х	Х		Abundant exotics, pasture grasses.
Tree Harvest					
Brush Cutting/Shrub Removal					
Livestock Grazing	Х	Х	Х		Cattle grazing
Excessive Herbivory					
Mowing/Haying					
Herbicide					
Loss of Zonation/Homogenization					
Dewatering	Х	Х	Х		hanges to groundwater levels favor noxious/invasive sp
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 +		= 200
Veg. Layer Sub- variable Score	x 0.7	x 0.5	x 0.6	x 0.7	See sub-variable scoring guidelines on following page
	П	Ш	П	П	
Weighted Sub-variable Score	52.50 +	37.50 +	30.00 +	0.00	= 120
					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				
A 1.0 - 0.9 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>B</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	<b>D</b> 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	<b>F</b> 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.				

### 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 Variable 3: Water Source (Source) 0.80 Hydrology 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 Total Function 1 -- Support of Characteristic Wildlife Habitat Functional FCI V1<sub>connect</sub> + (2 x V8<sub>vec</sub>) V2<sub>CA</sub> Points 0.50 0.59 1.20 2.35 0.65 4 Function 2 -- Support of Characteristic Fish/aquatic Habitat + (2 x V5<sub>outflow</sub>) + $(3 \times V3_{source}) + (2 \times V4_{dist})$ V6<sub>geom</sub> + V7<sub>chem</sub> 1.20 0.70 6.09 2.40 1.20 0.59 9 0.68 ÷ Function 3 -- Flood Attenuation V2<sub>CA</sub> + (2 x V3<sub>source</sub>) + (2 x V4<sub>dist</sub>) + (2 x V5<sub>outflow</sub>) + V8<sub>veg</sub> V6<sub>geom</sub> + 0.60 5.84 0.65 1.60 1.20 1.20 0.59 0.65 ÷ 9 Function 4 -- Short- and Long-term Water Storage V3<sub>source</sub> (2 x V4<sub>dist</sub>) + (2 x V5<sub>outflow</sub>) V6<sub>geom</sub> 0.63 0.80 1.20 1.20 0.59 3.79 ÷ 6 Function 5 -- Nutrient/Toxicant Removal V7<sub>chem</sub> $(2 \times V2_{CA})$ + (2 x V4<sub>dist</sub>) V6<sub>geom</sub> + 3.79 1.30 1.20 0.59 0.70 ÷ 6 0.63 Function 6 -- Sediment Retention/Shoreline Stabilization + (2 x V6<sub>geom</sub>) + V2<sub>CA</sub> (2 x V8<sub>vea</sub>) 0.65 1.18 1.20 3.03 ÷ 5 0.61 Function 7 -- Production Export/Food Chain Support + (2 x V5<sub>outflow</sub>) + V7<sub>chem</sub> + (2 x V8<sub>ved</sub>) V1<sub>connect</sub> V6<sub>geom</sub> + 0.50 1.20 1.20 4.19 7 0.60 0.59 0.70 ÷ = 4.38 Sum of Individual FCI Scores Divide by the Number of Functions Scored ÷7

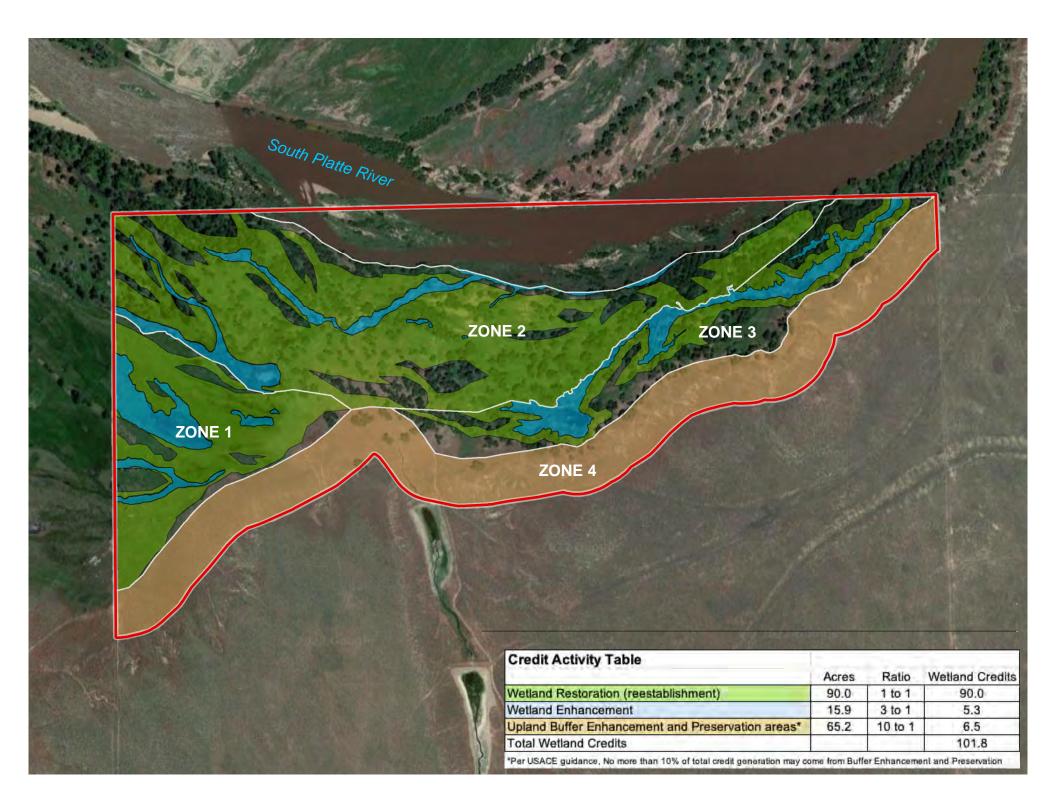
Composite FCI Score

0.63

Appendix I

## Crediting Table Map

December 2022



# Exhibit B

# Long-term Management Plan for the South Platte Mitigation Bank

I Introduction	2
A Purpose of Establishment	2
B Purpose of this Long-term Management Plan	2
C Land Manager and Responsibilities	2
II Property Description	2
A Setting and Location	2
B History and Land Use	3
C Hydrology and Topography	3
D Existing Easements	3
E Adjacent Land Uses	4
F Biological Resources Survey of Bank	4
III Management and Monitoring	4
A Aquatic Resources	4
Element A.1 Aquatic Resources	4
Element A.2 Vegetation Management and Enhacement	4
Element A.3 Invasive Plant Management	5
B Security, Safety, and Public Access	5
Element B.1 Trash and trespass	5
Element B.2 Fences, Signage, and/or Gates	5
C Reporting and Administration	6
Element C.1 Annual Report	6
IV Transfer, Replacement, Amendments, and Notices	7
A Transfer	7
B Replacement	7
C Amendments	7
D Notices	7
V Funding and Task Prioritization	8
A Funding	8
B Task Prioritization	8
Table 1: Bank Management and Monitoring Activities, Level of Effort, Frequency and Cost	9
Attachment 1: Recreational Hunting Management Plan	10

# 1 Introduction

#### 2 3

# A. Purpose of Establishment

4 The South Platte Mitigation Bank ("Bank") was established by the Mitigation Banking Instrument ("MBI") to 5 compensate for unavoidable impacts to, and to conserve and to protect, aquatic resources. The Bank 6 property (Bank Property) totals 200-acres including 15.9 acres of existing wetlands. The MBI Signatory 7 Agency is the Omaha District of the U.S. Army Corps of Engineers (USACE or Corps). Other agencies 8 listed below comprise and are referred to jointly as the Interagency Review Team ("IRT"): the Environmental 9 Protection Agency, Region VIII (EPA); the U.S. Fish and Wildlife Service, Region VI (FWS); the Colorado 10 Division of Water Resources (DWR); Colorado Department of Public Health and Environment (CDPHE); 11 and Colorado Parks and Wildlife (CPW). Terms used in this management plan have the same meaning as 12 defined in the MBI.

### 13 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.

### 19 C. Long Term Land Manager and Responsibilities

20 The long term land manager (Land Manager) is the Colorado State Land Board (CSLB). The Land 21 Manager, and subsequent Land Managers upon any authorized transfer, shall implement this LTMP, 22 managing and monitoring the Bank Property in perpetuity to preserve its habitat and conservation values 23 in accordance with the Bank's MBI and the conservation easement. LTMP tasks will be funded from the 24 returns of the Endowment Fund. The Land Manager will be responsible for providing an annual report to 25 the USACE detailing the time period covered, an itemized account of the management tasks and total 26 amount expended. Any subsequent grading, or alteration of the site's hydrology and/or topography by the 27 Land Manager or its representatives must be approved by the USACE and the necessary permits, such as 28 a Section 404 permit, must be obtained if required.

### 29 II. Property Description

### 30 A. Setting and Location

31 The Bank Property is located within Section 16, Township 4N, Range 60W, directly adjacent to the South

32 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,

34 and other distinguishable landmarks.

35

## 36 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.

43 Prior to bank development, the bank site was used for livestock grazing and hunting.

# 44 C. Hydrology and Topography

45 The South Platte River is part of the headwaters of a major water basin and serves as a primary water 46 source for eastern Colorado. The South Platte River originates in the Rocky Mountains near Fairplay and 47 flows down from the Front Range of Colorado east into Nebraska where it conjoins with the North Platte 48 River. From there it flows east until it meets the Missouri River and then into the Mississippi River, which 49 flows south into the Gulf of Mexico. The US Department of Agriculture (USDA) maps the project area within 50 the southern part of the Central High Plains Major Land Resource Areas (MLRA), which is characterized 51 by a flat to gently rolling landscape formed by glacial drift material and sediment deposition from the Rocky 52 Mountains (USDA, Natural Resources Conservation Service, 2006). This MLRA is part of the Colorado 53 Piedmont section of the Great Plains physiographic province and ranges in elevation from 3,000 to 7,800 54 feet. The climate of the area is typical of mid-continental semiarid temperate zones, but the strong rain-55 shadow effect of the Southern Rocky Mountains makes the area somewhat drier. The average annual 56 precipitation is between 12 and 18 inches, most of which occurs from April to September. The mean annual 57 temperature is 45°F to 55°F, with the number of frost-free days ranging from 135 to 190.

# 58 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.

- 65
- 66 Two existing leases affect the Bank Property:
- 67 1. Recreation (Hunting) lease: This lease allows walk-in hunting access during the legal hunting season.
- 68 Hunting under the LTMP will be subject to the Recreational Hunting Management Plan (Attachment A).
- 69
- 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
- 72 accordance with a Corps-approved grazing management plan. The Bank Sponsor or Land Manager may
- 73 submit a grazing management plan, or other land management plans for consideration and potential
- 74 approval by the Corps.
- 75

### 76 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.

79

92 93

# 80 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.

83 III. Management and Monitoring

### 84 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

- 94Objective: Monitor, conserve and maintain the overall Bank Property's wetland and other95aquatic resources. Limit any impacts to aquatic resources from vehicular travel or other96adverse activities. Monitoring, photos, and compilation of notes will provide short term and97long term understanding of ongoing positive site conditions and highlight any potential98upcoming challenges.
- 99Task: At least one annual walk-through survey will be conducted during the growing season100to qualitatively monitor the general condition of these habitats but can occur more often if101warranted. General topographic conditions, hydrology, general vegetation cover and102composition, presence of noxious weeds and other invasive species, soil deposition, and103erosion, will be noted evaluated and mapped. Observations will also include a list of104opportunistic species encountered, general extent of wetlands, and any occurrences of105erosion.
- 106Task: Establish photo-monitoring locations and prepare a site map showing these107reference sites. Photo-monitoring points should be established and mapped prior during108interim bank management period. Monitoring photographs will be taken of the overall109wetland mosaic at least every five years from the beginning of the long-term management,110with selected reference photos taken on the ground more frequently. Additional photo111monitoring points may be added if deemed appropriate during the annual survey.
- 112 Element A.2 Vegetation Management and Enhancement

- 113Objective: Adaptively manage vegetation based on site conditions and data acquired114through monitoring to maintain biological values.
- 115 Task: Establish vegetation management needs and objectives based on annual reporting.
- 116Task: Implement vegetation management techniques, if determined beneficial and as117funding allows, to maintain desired aquatic resource functions and services. Vegetation118management techniques may include, but not limited to, prescribed grazing, prescribed119fire, supplemental seeding and planting, and mowing.

### 120 Element A.3 Invasive Plant Management

- 121Invasive plant species threaten the diversity or abundance of native species through122competition for resources or causing physical or chemical changes to the invaded habitat.123The Long Term Manager will track and address any potential challenges with invasive124species. During construction, invasive species on site will be eradicated completely and125ongoing management will continue under this long term management plan.
- 126Objective: Monitor and manage invasive plant species that negatively impact the aquatic127resource habitats for which the bank was established. Treatment of invasive plant species128shall occur subject to the available funds provided by the Endowment Fund. The Land129Manager shall consult the Colorado Noxious Weeds List for guidance on priorities. what130species may threaten the site and on management of those species.
- 131Task: Mapping up to twice a year of non-native invasive vegetative species cover or132presence shall occur during the first five years of the long term management plan133establishment to establish a baseline. Mapping shall be accomplished through use of134available technologies, such as GIS and aerial photography.
- 135Task: Each year's annual walk-through survey (or a supplemental survey) will include a136qualitative assessment (e.g. visual estimate of cover) of potential or observed noxious137weeds or other non-native species invasions, primarily in or around the wetlands.138Additional actions to control invasive species will be evaluated and prioritized. Depending139on mapping and evaluation, a variety of techniques may be applied to best address any140current challenges. Table 1. indicates spot treatment by hand in two person teams twice141a year, but that can vary depending upon evaluation and needs.

# 142B.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.

### 150 Element B.1 Trash and trespass

- 151 Objective: Monitor sources of trash and trespass up to twice per year depending on 152 challenges.
- 153Objective: Collect and remove trash, repair vandalized structures, and rectify trespass154impacts.
- 155Task: During each site visit, record occurrences of trash and/or trespass. Record type,156location, and management or mitigation recommendations to address trash and/or157trespass impact.
- 158Task: At least once yearly collect and remove trash and repair and rectify any vandalism159and trespass impacts.

### 160 Element B.2 Fences, Signage, and/or Gates

- 161Objective: Monitor conditions of fences, signage, gates used to prevent casual trespass,162and/or manage livestock. As indicated in Table 1 fencing can be replaced at once, or in163spots over a 30-year replacement period as needed. Gate replacement can be replaced164every 15 years as needed.
- 165Objective: Monitor conditions of fences, signage, gates used to prevent casual trespass,166and/or manage livestock.
- 167Task: During each site visit, record condition of fences, signage, and/or gates. Record type,168location, type, and recommendations to implement repairs or replacement, if applicable.
- 169Task: Maintain fences, signage, and/or gates as necessary by replacing posts, wire,170signage, and/or gates. Replace, as necessary, and as funding allows.
- 171 C. Reporting and Administration
- 172 Element C.1 Annual Report
- 173Objective: Provide annual report on all management tasks conducted and general site174conditions to USACE and any other appropriate parties.
- 175Task: Prepare annual report for the previous calendar year and any other additional176documentation. Include a summary. Complete and circulate to the USACE by February17715 of each year.
- 178Task: Make recommendations with regard to (1) any habitat enhancement measures179deemed to be warranted, (2) any problems that need near short and long-term attention180(e.g., weed removal, fence repair, erosion control), and (3) any changes in the monitoring181or management program that appear to be warranted based on monitoring results to date.
- 182

### 183 IV. Transfer, Replacement, Amendments, and Notices

### 184 **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.

### 190 B. Replacement

191 If the Land Manager fails to implement the tasks described in this LTMP and is notified of such failure in 192 writing by any of USACE, Land Manager shall have 120 days to cure such failure. If failure is not cured 193 within 120 days, Land Manager may request a meeting with the USACE to resolve the failure. Such meeting 194 shall occur within 60 days or a longer period if approved by the USACE. Based on the outcome of the 195 meeting, or if no meeting is requested, the USACE may designate, with written approval of the Property 196 Owner, a replacement land manager in writing by amendment of this LTMP. If Land Manager fails to 197 designate a replacement land manager, then such public or private land or resource management 198 organization acceptable to and as directed by the USACE may enter onto the Bank Property in order to 199 fulfill the purposes of this LTMP.

### 200 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.

## 207 **D.** Notices

208 Any notices regarding this Long Term Management Plan shall be directed as follows:

#### 209 Land Manager / Property Owner

- 210 Colorado State Land Board
- 211 Attn: Director
- 212 1127 Sherman Street, Suite 300
- 213 Denver, CO 80203
- 214
- 215 Easement Holder
- 216 Colorado Open Lands
- 217 Attn: Director
- 218 1546 Cole Blvd. #200
- 219 Lakewood, CO 80401

### 220 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

232 Due to unforeseen circumstances, prioritization of tasks, including tasks resulting from new requirements, 233 may be necessary if insufficient funding is available to accomplish all tasks. The Land Manager and USACE 234 shall discuss task priorities and funding availability to determine which tasks will be implemented. In general, 235 tasks are prioritized in this order: 1) required by a local, state, or federal agency; 2) tasks necessary to 236 maintain or remediate habitat quality; and 3) tasks that monitor resources, particularly if past monitoring has 237 not shown downward trends. Equipment and materials necessary to implement priority tasks will also be 238 considered priorities. Final determination of task priorities in any given year of insufficient funding will be 239 determined in consultation with USACE and as authorized by the MBI and USACE in writing. 240

241

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	ļ						
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

Table 1. Bank Management and Monitoring Activities, Level of Effort, Frequency and Cost.

# Attachement A

# SOUTH PLATTE MITIGATION BANK RECREATIONAL HUNTING MANAGEMENT PLAN (RHMP)

244	Recreational hunting may occur on the South Platte Mitigation Bank Property subject to an active
245	hunting lease with the Property Owner, and approval of the Land Manager, if different entities.
246	The following stipulations apply to hunting activity within the Bank Property and shall constitute
247	the RHMP:
248 249	a. Hunting may only occur during legal hunting season.
250	b. Walk in access only; no motorized vehicles are allowed within the Bank Property.
251	d. A maximum of 4 individuals (hunters and guests) are allowed at any one time.
252	e. Handcarts are allowed to pack out harvested game.
253	f. Hunters to adhere to all applicable hunting regulations.
254	g. No overnight camping or fires allowed.
255	h. Hunters shall not remove, cut, destroy, or harvest any vegetation and shall avoid
256	disturbing creek banks and structures.
257	I. Hunters shall not burn or leave their trash on the Bank Property.
258	j. The Hunting Lessee shall immediately report any violations of this RHMP to the Land
259	Manager.

# **EXHIBIT C**

# **SPMB Adaptive Management Plan**

December 2022

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

# 1 1.0. Introduction

- 2 This Adaptive Management (AM) Plan for the South Platte Mitigation Bank (SPMB) provides a
- 3 framework for the implementation of remediation activities associated with the aquatic functions
- 4 and services provided by the SPMB. It is important to distinguish between an adaptive
- 5 management approach and maintenance of a project. Adaptive management is a process
- 6 applied to the mitigation project to improve the likelihood of success of meeting performance
- 7 standards. Maintenance is a series of ongoing operations carried out as remedies to specific
- 8 situations during the interim monitoring phase. The purpose of the AM Plan is to ensure the
- 9 Bank remains on track for meeting performance standards should deficiencies arise during this
- 10 interim monitoring phase. The AM Plan serves as a supplement to the Bank Development Plan
- 11 (MBI Appendix A) and the Maintenance and Monitoring Plan (MBI Appendix G).

# 12 2.0. Adaptive Management Planning

- 13 Adaptive management is an iterative and structured process which reduces ecological and other
- 14 uncertainties that could prevent successful mitigation implementation and performance. AM
- 15 establishes a framework for decision making which utilizes monitoring results and other
- 16 information, as it becomes available, as a feedback mechanism used to update project
- 17 knowledge and adjust management and mitigation actions to better achieve sustained aquatic
- 18 functions and services.

# 19 **3.0. Uncertainties in Management Decisions**

- 20 A fundamental tenet underlying adaptive management is decision making and achieving
- 21 desired project outcomes in the face of uncertainties. Although these systems are designed to
- 22 be self-sustaining, however if uncertainty becomes present, here is a thoughtful list of examples
- 23 that may arise, but are not limited to:
- A. Drought conditions, and variability of intense storm frequency, extreme sediment
- 25 deposition, intensity, and timing associated with climate change
- 26 B. Loss rate of vegetative plantings due to herbivory
- 27 C. Variability in growth rates and plant succession
- 28 D. Overall uncertainty relative to achieving ecological success

# 29 4.0 Decisions and Analysis

- 30 The overall goal of the adaptive management process is to design, construct, monitor and
- 31 assess the responses of the ecological system to implementation of the project relative to stated
- 32 targets, goals, objectives and project success criteria.
- 33 The Sponsor will use the following 6 Steps to Successful Adaptive Management:

- 1. Problem Assessment Define goals and identify key uncertainties
- Design Management Plan Evaluate management options and develop appropriate
   Plan
- 37 3. Implementing Management Plan
- 4. Monitoring Develop a monitoring and evaluation program that can answer questions to
   reduce uncertainty
- 40 5. Evaluation Evaluate monitoring data and incorporate it into decisions to improve the41 design
- 42 6. Adjustment
- 43

Adjustment Adjustment Adaptive Management Evaluation Monitoring

44

- 45 46
- Conrad, Steven & Olson, Erica & Raucher, Robert & Spry, Joel. (2013). Opportunities for Managing Climate Change by Applying Adaptive Management. TY BOOK

# 47 5.0 Triggers for Adaptive Management

In the event the IRT or the Sponsor determines that the project either (a) is not achieving its

- 49 performance standards in restored and enhanced areas, (b) has failed to meet or will no longer
- 50 meet targeted aquatic functions and services of this BDP or (c) has suffered an unanticipated

- 51 event (natural or man-induced) that has adversely affected the SPMB's performance, then the
- 52 IRT will be notified as soon as possible. Within 45 days of submittal to the Corps of notice, the
- 53 Sponsor will submit to the Corps a proposed adaptive management plan to address the specific
- 54 deficiency for consideration.
- 55 A list was developed to identify the potential major stressors or drivers which may affect the
- 56 mitigation project and could trigger adaptive management (Table 1). The table does not attempt
- 57 to explain all possible relationships of potential factors influencing the mitigation site; rather,
- 58 presents only those relationships and factors deemed most relevant to obtaining the required
- 59 success criteria, and may be modified, as necessary.

### Table 1: Potential adaptive management triggers and action items

	AM Stressor or Driver Recommended Action	
	1) Planted species mortality	Analyze hydrology, replant, and augment species species composition if necessary.
Wetlands	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'i Watiand craation	Conduct a FACWet analysis, consult with USACE and adjust wetland credit production if necessary

61 62

60

# 63 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 1<sup>st</sup> Avenue North Naples, FL 34102

# Maintenance and Monitoring Plan for the South Platte Mitigation Bank

I I	Introduction	2
II	Responsibilities	
Α	Access	3
III	Monitoring	3
IV	Maintenance	
Α	Wetland Resources	4
В	Noxious Weeds	
V	Additional Monitoring	6
Α	Security, safety, and public access	6
в	Trash and Trespass	6
VI	Annual Reporting and Administration	7
VII	Adaptive Management	
Refe	erences	

### 1 I. Introduction

2 The purpose of this Maintenance and Monitoring Plan (Plan) for the South Platte Mitigation Bank (SPMB) 3 is to outline activities for the management, monitoring, and maintenance of the Bank Site during the period 4 between Bank Establishment and Bank Closure. The Maintenance Plan is a description and schedule of 5 maintenance requirements to ensure the continued viability of the mitigation resources from MBI approval 6 to Bank closure and Long-Term Management. The Sponsor will continue with such maintenance activities 7 until the Bank is closed. This interim monitoring phase will continue until performance standards have been 8 met, the Bank has closed, and all financial assurances are in place according to the Provisions of Bank 9 Closure identified in Section VIII.F of the Mitigation Banking Instrument (MBI). The interim land manager 10 (Interim Land Manager) is the Bank Sponsor, SCP Conservation. Prior to Bank closure, the Interim Land 11 Manager shall implement the managing and monitoring of the Bank Site to ensure that performance 12 standards are being met and to preserve its aquatic habitat and conservation values in accordance with the 13 Bank's MBI and the terms of the conservation easement. Following Bank closure, the Long Term 14 Management Plan (Exhibit B) will be initiated. At this time, the landowner, Colorado State Land Board 15 (CSLB), will be the Land Manager and assume the necessary roles and responsibilities.

16 The Sponsor shall maintain the Bank consistent with the directives outlined in the MBI during operation of

17 the Bank, including this Maintenance Plan, including construction, monitoring, and adaptive management.

18 Deviation from the maintenance provisions in the approved MBI requires review and written approval from

19 the Chairs in consultation with the IRT.

# 20 II. Responsibilities

31

32

33

- 211. The Colorado State Land Board (CSLB) will remain the Property owner of the Bank Property22and will participate in regular site visits as necessary to guarantee compliance with the conservation23easement and mitigation goals. Upon Bank closure, the CSLB will become the Land Management24steward and will follow the Long Term Management Plan outlined in Section IX of the MBI.
- 25 2. As Interim Land Manager, SCP Conservation will conduct the maintenance and monitoring 26 activities associated with this Plan and will submit annual reports to USACE for distribution to the 27 IRT (Interagency Review Team). The following maintenance plan focuses on documenting the 28 restored ecological functions of SPMB, the adjacent wetland areas, and the associated riparian and 29 buffer zones. The Interim Land Manager shall implement the following activities that include, but are 30 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;

40 41	<ul> <li>Conduct regular inspections of all mitigation areas, particularly during non-reporting years of Bank operation (annual inspections recommended, at a minimum);</li> </ul>
42 43	<ul> <li>Maintain and repair all mitigation areas to meet or exceed the objectives and functions of the Bank, including all mitigation-related structures and plantings;</li> </ul>
44 45	<ul> <li>Make efforts to prevent trespass, illegal dumping, or trash accumulation on the Bank property;</li> </ul>
46	• Post and repair Bank/property limit, limited access, and conservation easement signs;
47	<ul> <li>Maintain, repair, and/or replace gates and fences, as necessary;</li> </ul>
48	<ul> <li>Maintain and repair direct access roads, as necessary;</li> </ul>
49	Other maintenance responsibilities to Bank operation and adaptive management.
50	

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.

# 56 A. Access

57 The Bank Sponsor will allow, or otherwise provide for, access to the Bank Property by members of 58 the IRT, as reasonably necessary, for the purpose of inspection, compliance monitoring, and 59 remediation consistent with the terms and conditions of this MBI throughout the period of Bank 60 establishment, monitoring, and operation. IRT site visits will go through the Chair(s) of the IRT. 61 Inspecting parties will not unreasonably disrupt or disturb activities on the Bank Property. Inspective 62 parties will provide reasonable written notice, of not less than 72 business hours, to the Bank Sponsor 63 and landowner, prior to inspection of the Bank Property.

# 64 III. Monitoring

65 The Bank Sponsor agrees to monitor the Bank, to demonstrate compliance with the monitoring 66 requirements established in the MBI, and to submit annual monitoring reports for the next five years to 67 years, or until such time that the Corps determines that the project has resulted in a net benefit to aquatic 68 resource functions and services. Annual monitoring reports shall comply with the "Annual Mitigation 69 Monitoring Report Format Requirements". In each monitoring report the Bank Sponsor shall state how the 70 proposed project has achieved each success criterion identified in Section 8.0 of EXHIBIT A, Bank 71 Development Plan. The annual monitoring report will be submitted by December 31<sup>st</sup> of each year. 72 Monitoring will be conducted for a minimum of 5 years for emergent plant and 10 years for forested 73 communities unless success criteria as determined by the Corps occurs earlier. The monitoring provisions 74 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.

- 82 The interim management monitoring phase will begin during the first growing season following construction
- 83 and will continue until final performance standards are met and the long-term endowment has been funded
- 84 in full. Additional years may be added or monitoring extended if necessary to achieve final performance
- 85 standards.

## 86 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.

- 94
- 95 The Bank Sponsor agrees to perform all necessary work to maintain the Bank consistent with the 96 maintenance criteria of the Bank Development Plan (EXHIBIT A - MBI). The Bank Sponsor will continue
- 97 with these maintenance activities until completion of the monitoring period. Deviation from the monitoring
- 98 and maintenance provisions in the approved MBI requires review and written approval by the IRT.

# 99 A. Wetland Resources

100 The goal of the interim Management Plan is the achievement of performance standards of the Bank 101 Property's aguatic functions and services. Primary components of the bank development plan include 102 reconnecting degraded and disconnected hydrology and subsequent wetland functions, restoration of 103 riparian vegetation, and exotic species eradication. The re-vegetated wetlands and riparian buffers of the 104 Bank Property will be maintained in a succession of native trees, shrubs, grasses, and forbs designed to 105 represent the natural system and encourage ecological diversity. Routine monitoring and minor 106 maintenance tasks are intended to attain performance standards and ensure viability of the Bank Property 107 in perpetuity.

# 108 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.

116

117 The Interim Hydrology Performance Standard requires that, with the exception of drought years, hydrology 118 in reestablished and enhanced wetlands will have a minimum of saturation within 12 inches of the ground 119 surface for 2 weeks (14 days) or more during the growing season. We will use well data loggers to meet 120 this criterion.

- 121
- 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).

130

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

133

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.

140

141 This MBI was developed to comply with the Colorado Mitigation Procedures (COMPs V 2.0, June 2020). 142 However, given that crediting methodologies for wetlands are continually evolving and the status of 143 regulations shift because of administration changes at the federal, state, and local levels, we reserve the 144 right to amend the MBI to incorporate additional new crediting methodologies or metrics as they are

- 145 developed.
- 146

147 The final credit release will also follow completion of a wetland delineation that will occur as part of meeting 148 final performance standards. Upon completion of final delineation, as required by Bank final performance 149 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

- 152 acres will be adjusted.
- 153

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

158 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

162 every five years, with selected reference photos taken on the ground more frequently.

# 163 B. Noxious Weeds

164 Invasive species threaten the diversity or abundance of native species through competition for resources,

165 predation, parasitism, interbreeding with native populations, transmitting diseases, or causing physical or

166 chemical changes to the invaded habitat. The objective is to monitor and maintain control over non-native

167 invasive species, including but not limited to noxious weeds, that diminish site quality for which the Bank

168 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.

174 Mapping of non-native invasive species cover, or presence shall occur during the first five years of bank 175 management, to establish a baseline and use of available technologies, such as GIS and aerial 176 photography. Each year's annual walk-through survey (or a supplemental survey) will include a qualitative 177 assessment (e.g. visual estimate of cover) of potential or observed noxious weeds or other non-native 178 species invasions, primarily in or around the wetlands. Additional actions to control invasive species will be 179 evaluated and prioritized. Per state law, List-A noxious weeds will be eliminated.

180 181 182

183

**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.

# 184 V. Additional Monitoring

185 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

189 Property perimeter. Research and/or other educational programs or efforts may be allowed on the Bank

190 Property as deemed appropriate by USACE but are not specifically funded or a part of this interim 191 management plan.

### 192 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.

# 198 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 218 monitoring results to date, and,
- any additional wetland areas created by the reconnection to the floodplain.
- 220 Monitoring Reports will be mailed to:
- 221 State Program Manager
- 222 Denver Regulatory Office
- 223 CENWO-OD-RCO
- 224
   9307 S. Wadsworth Blvd.

   225
   Littleton, CO 80128-6901
- 226

215

216

- 220
- 227

### 228 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.
- 233 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.

### 235 References

- 236 USACE (2020). U.S. Army Corps of Engineers. 2020. Colorado Stream Quantification Tool (CSQT) User Manual and
- 237 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

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. 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.

Gray Stevens, SCP Conservation, ILC

Date Signed: \_\_\_\_1.24.23

Eric A. Laux Chief, Regulatory Branch U.S. Army Corps of Engineers, Omaha District Date Signed: \_\_\_\_\_