DRAFT RESTORATION PLAN FOR THE SUNCOR ENERGY OIL SPILL

Commerce City, Colorado

September 10, 2019

Prepared by:
U.S. Fish and Wildlife Service
Colorado Department of Natural Resources
Colorado Department of Public Health and Environment
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EXECUTIVE SUMMARY

This Draft Restoration Plan (Draft RP) was prepared by the Trustees to address natural resources, including ecological services, injured, lost or destroyed due to releases of oil from the Suncor Energy (Suncor) refinery in Commerce City, Colorado. The purpose of the restoration outlined and proposed in this Draft RP, is to compensate the public through restoration actions that would help return injured natural resources to baseline conditions and/or compensate for interim losses.

Draft Restoration Plan

The Trustees prepared this Draft RP in accordance with the Oil Pollution Act (OPA) of 1990, 33 U.S.C. § 2701 *et seq.*, and its implementing regulations, 15 C.F.R. Part 990. This document describes the likely injuries resulting from releases of oil and the restoration projects intended to compensate the public for those injuries. The Trustees are comprised of the U.S. Department of the Interior (DOI) and the State of Colorado. The FWS is acting on behalf of the Secretary of the Interior, and the FWS Region 6, Regional Director is the Authorized Official for the DOI. The lead administrative trustee for the State of Colorado is the Colorado Attorney General's Office, which is supported by the Colorado Department of Natural Resources and Colorado Department of Public Health and Environment. Following the public review and comment period for this Draft RP, the Trustees will review and respond to comments and prepare a Final RP.

What was injured?

Natural resources and their supporting ecosystems that are or have been affected by the release of oil include*:* aquatic and riparian habitat, wetland habitat, waterfowl, and groundwater.

What actions are being proposed and evaluated in the Draft RP?

The Trustees considered several restoration alternatives, including a No Action alternative, for restoration of aquatic and riparian habitat, wetland habitat, groundwater, and waterfowl. The proposed action in this Draft RP includes the following restoration projects:

- Restoration and rehabilitation of the Rocky Flats National Wildlife Refuge
- Land acquisition, conservation easements, and restoration of wetland habitat in Colorado and Alberta, Canada
- Enhancement and restoration of existing wetlands and aquatic habitats and recharge wetlands in the South Platte River Valley and North Platte River Headwaters Valley
- Enhancement and restoration of existing wetlands and aquatic habitats and recharge wetlands in the San Luis Valley
- Development of wetlands and aquifer recharge wetlands in the South Platte River Valley
- Wetland conservation and restoration in the Sayula Lagoon and Santa Barbara Estuary, Mexico

How are restoration projects being funded?

The Trustees settled a Natural Resources Damage Assessment and Restoration (NRDAR) case for monetary damages with Suncor in February, 2014. The Trustees intend to allocate this money towards projects proposed in this Draft RP aimed at restoring, replacing, rehabilitating, or acquiring the equivalent of the injured natural resources and related ecological services.

Abbreviations and Acronyms

BMP	Best Management Practice
CFR	Code of Federal Regulations
CWA	Clean Water Act
DOI	U.S. Department of the Interior
EIS	Environmental Impact Statement
ESA	Endangered Species Act
HEA	Habitat Equivalency Analysis
NEPA	National Environmental Policy Act
NRDAR	Natural Resource Damage Assessment and Restoration
NWR	National Wildlife Refuge
REA	Resource Equivalency Analysis
RP	Restoration Plan
SWA	State Wildlife Area
USC	United States Code
USFWS	United States Fish and Wildlife Service

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1.0 INTRODUCTION

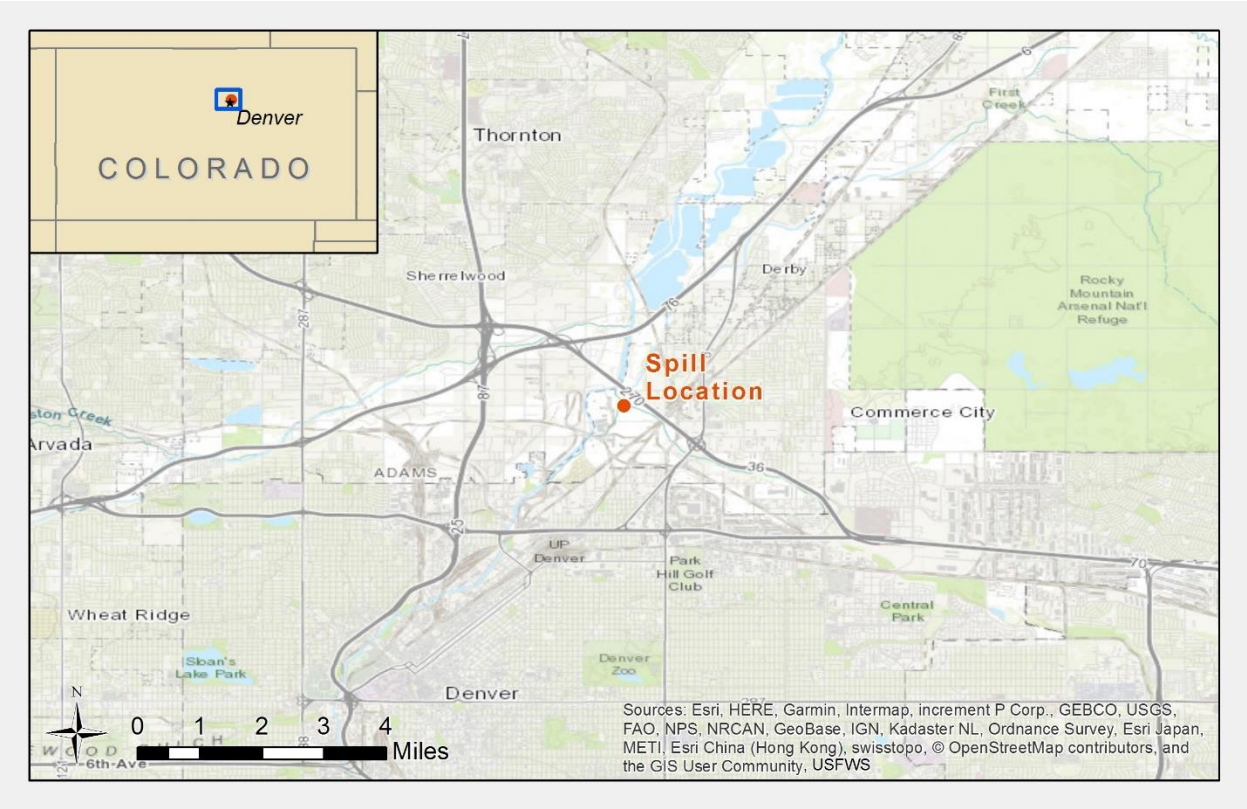
The U.S. Department of the Interior, acting through the U.S. Fish and Wildlife Service (USFWS) and the State of Colorado (through the Department of Natural Resources, the Colorado Department of Public Health and Environment, and the Colorado Attorney General's Office), collectively referred to as the Trustees, developed this Draft Restoration Plan (RP) to evaluate alternatives to restore, replace, rehabilitate, or acquire the equivalent natural resources that were injured or lost as a result of the 2011 oil spill at the Suncor Energy (USA) Inc. refinery (Suncor) in Commerce City, Colorado.

The proposed restoration projects in this Draft RP are meant to compensate for injuries to natural resources and natural resource services resulting from a release of oil into Sand Creek by returning the injured natural resources and natural resource services to their baseline condition and compensating for associated interim losses. Natural resources, as defined by the Oil Pollution Act (OPA) of 1990, include land, fish, wildlife, water sources, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or local government or Indian tribe, or any foreign government. Proposed restoration and human use projects would be completed pursuant to OPA, which provides Trustees authority to restore, rehabilitate, replace, or acquire the equivalent of injured resources.

The Draft RP includes information regarding the affected environment, the Trustees' assessment of natural resource injuries and losses resulting from the release of oil and response actions at the Site, and the restoration actions being proposed for use to compensate for those injuries and losses. This document is being released for public review.

1.1 Incident

In November 2011, oil was discovered discharging into Sand Creek near its confluence with the South Platte River in Commerce City, Colorado (Figure 1). It was subsequently determined that the discharge was the result of oil leaking from a subsurface pipe at the nearby refinery owned and operated by Suncor Energy (USA) Inc. The oil released from the pipe entered a groundwater plume underneath the refinery and migrated offsite. This led to the discharge of oil into Sand Creek and the South Platte River. This same contaminated groundwater plume was also responsible for a discharge of oil into a wetland located on the refinery property in February 2011. The discharges resulted in waterfowl mortalities.



1.2 Settlement

The Trustees initiated settlement negotiations with Suncor during the preassessment. As a result of these negotiations, the Trustees reached a settlement with Suncor to pay for damages for natural resource injuries caused by the Incident and the response to it. A Consent Decree was lodged with the U.S. District Court for the District of Colorado and made available for public comment prior to being approved by the Court on February 27, 2014. Under the Consent Decree Suncor to paid the United States $691,268 and the State of Colorado $1,195,732. From each of these settlement amounts, the Consent Decree required that a portion be allocated to reimbursing each Trustee for its assessment costs ($165,833 for the United States and $166,418 for the State) and further required that a portion be allocated for the Trustees' oversight and monitoring of restoration projects implemented as a result of the settlement ($207,916 for the United States and $116,833 for the State). Thus, the amount available to implement projects is approximately $1,230,000.

The Trustee Council retains the ultimate authority and responsibility to use the settlement funds to fund projects that will restore, replace, rehabilitate or acquire the natural resources and related services injured as a result of the Incident.

1.3 Trustee Authority and Natural Resource Damage Assessment and Restoration

Under federal law, the Trustees are authorized to act on behalf of the public to assess injuries to natural resources and services resulting from the release of oil or hazardous substances into the environment. The NRDAR process for the Suncor Energy oil spill followed the Oil Pollution Act regulations (15 C.F.R. Part 990), which allows Trustees to pursue claims against responsible parties for damages based on these injuries in order to compensate the public. The goal of this process is to plan and implement actions to restore, replace, or rehabilitate the natural resources that were injured or lost as a result of the release of oil, or to acquire the equivalent resources or the services they provide.

The Trustees for the Suncor Energy oil spill NRDAR are the State of Colorado, represented by Colorado Attorney General's Office, Colorado Department of Natural Resources, and Colorado Department of Public Health and Environment, and U.S. Department of the Interior, represented by the U.S. Fish and Wildlife Service. See also the National Contingency Plan 40 C.F.R. §§ 300.600 et seq. A Memorandum of Understanding signed in 2012 by the Trustees provided a framework for coordination and cooperation among the parties for conducting Suncor Energy oil spill NRDAR activities.

1.4 Restoration Goals

The goal of the proposed restoration projects is to restore, replace, rehabilitate, or acquire the equivalent of the injured natural resources and related ecological services.

1.5 Purpose for Restoration

The purpose of the proposed restoration alternatives is to address injured natural resources/services lost due to the spill of oil from the Suncor Energy refinery in Commerce City, Colorado. This Draft RP describes the restoration actions or projects that have been proposed pursuant to the terms of the consent decree between the United States and State of Colorado and Suncor Energy Inc. In this document, the Trustees evaluate a range of alternatives in order to identify the alternative(s) that best meets the responsibilities of the Trustees under the OPA NRDAR regulations to meet restoration objectives while minimizing any adverse impacts from the implementation of restoration projects themselves.

1.6 Injured Natural Resources

1.6.1 Aquatic and Riparian Habitat

The spill of oil and petroleum-related substances into Sand Creek and subsequent response activities resulted in approximately 1-acre of injury to aquatic and riparian habitat. Resources of concern in these urban, yet ecologically important areas include fish, resident wildlife, including migratory birds, and aquatic/riparian habitats that support fish and wildlife.

1.6.2 Wetland Habitat

In early 2012, Suncor filled in a 1.4 acre wetland on its property in order to implement interim corrective measures in response to the Incident. This wetland was the site of the early 2011 waterfowl mortality event described below. This action eliminated the habitat the wetland provided**.**

1.6.3 Biotic Environment

As a result of the discharge of oil and petroleum-related products to the wetland referenced above, a total of 48 dead birds, primarily waterfowl, were recovered from the wetland over a two-week period in early 2011. This included 24 mallards (*Anas platyrhynchos*), 10 gadwall (*Mareca strepera*), seven green-winged teal (*Anas carolinensis*), two hooded mergansers (*Lophodytes cucullatus*), one American wigeon (*Anas americana*), one Wilson's snipe (*Gallinago delicate)*, and three unidentified birds.

1.6.4 Groundwater

As a result of operations by Suncor and previous Refinery owners and operators, numerous petroleum and other discharges originating at the Refinery occurred prior to the subsurface release of oil that caused the Incident. Petroleum-related substances, including benzene, toluene, ethyl-benzene, and xylene, had been detected above Colorado state water quality criteria in groundwater underneath and in the vicinity of the Suncor Refinery. Oil released as part of the Incident commingled with this pre-existing groundwater contamination and, in some instances caused it to remobilize and migrate off the Refinery property, towards Sand Creek. In 2012, the contaminated groundwater plume beneath and around the Suncor Refinery was approximately 190 acres, which is equivalent to 930 acre-feet of groundwater.

1.7 Compliance with Laws and Policies

The OPA, National Environmental Policy Act, Clean Water Act, Endangered Species Act, National Historic Preservation Act and federal regulations implementing these laws are the major federal laws and regulations guiding the development of this Draft RP for restoration of injured resources and services resulting from the Suncor oil spill. The following subsections describe the major environmental laws and regulations considered in the restoration planning process. Proposed restoration projects are subject to meeting all permitting and other environmental compliance requirements to ensure that all projects are implemented in accordance with applicable federal, state, and local laws and regulations. Documentation of compliance will be included as part of the administrative record for the suite of implemented Suncor NRDA restoration projects.

1.7.1 Oil Pollution Act

OPA, Title 33 USC § 2701 et seq. (OPA), establishes a liability regime for oil spills into navigable waters or adjacent shorelines that injure or are likely to injure natural resources and/or the services that those resources provide to the ecosystem or humans. Pursuant to OPA, federal and state agencies and Indian tribes may act as trustees on behalf of the public to assess the injuries, scale restoration to compensate for those injuries, and implement restoration. OPA further instructs the designated trustees to develop and implement a plan for the restoration,

rehabilitation, replacement, or acquisition of the equivalent of the injured natural resources under their trusteeship.

The regulations for natural resource damage assessments under OPA are found at 15 CFR Part 990. These regulations provide trustees with guidelines on processes and methodologies for carrying out an NRDA, including guidelines for drafting restoration plans. This Draft RP was developed in accordance with the OPA NRDAR Regulations.

1.7.2 National Environmental Policy Act

The National Environmental Policy Act, 42 (United States Code) USC 4321 *et seq*., established a national policy for the protection of the environment. NEPA applies to all federal agency actions that affect the human environment. Federal agencies are obligated to comply with NEPA regulations issued by the Council on Environmental Quality. NEPA requires that for activities not categorically excluded, an analysis be conducted to determine whether proposed actions will have a significant effect on the quality of the human environment. If an impact is considered significant, then an environmental impact statement (EIS) is prepared and a record of decision is issued. If the impact is considered not significant, then an environmental assessment is prepared and a finding of no significant impact is issued.

Compliance: The Trustees will comply with NEPA and will append any final NEPA documentation to the Final RP.

1.7.3 Clean Water Act (including Colorado Water Quality Control Act)

The Clean Water Act, 33 USC 1251, et seq., and the Colorado Water Quality Control Act (25-8-101, et seq., C.R.S.) are the principal laws governing pollution control and water quality of the Nation's waterways. Section 404 of the law authorizes the permit program that allows for the disposal of dredged or fill material into navigable waters. The U.S. Army Corps of Engineers (USACE) administers this program. Restoration projects that move material into or out of waters or wetlands require individual Section 404 permits or may be addressed under nationwide permits. The Water Quality Control Division within the Colorado Department of Public Health and Environment administers the permit program required for the discharge of dredged or fill material into any state water (§ 25-8-501, C.R.S.)

Compliance: Coordination with the USACE would be completed pursuant to Section 404 of this Act before any site specific restoration action under this proposed plan could be undertaken. All joint federal/state permits would be obtained prior to the start of any site specific construction activities. All construction activity will be done in compliance with Section 404 of the law. Compliance with Section 404 of the Clean Water Act is the responsibility of the project proponent. It is anticipated that all of the wetland enhancement and restoration projects described below will covered under Nationwide Permit 27[1].

[1] Nationwide Permit 27 covers activities in waters of the United States associated with the restoration, enhancement, and establishment of tidal and nontidal wetlands and riparian areas, the restoration and enhancement of non-tidal streams and other non-tidal open waters, and the rehabilitation or enhancement of tidal streams, tidal wetlands, and tidal open waters, provided those activities result in net increases in aquatic resource functions and services. For more information go to https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll7/id/6739

1.7.4 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§1531, et seq.) requires federal agencies to conserve endangered and threatened species and to conserve the ecosystems upon which these species depend.[2] The habitat of endangered, threatened, and rare species takes on special importance because of state and federal laws, and the protection and conservation of these species requires diligent management.

Compliance: Consultation under Section 7 of the ESA will be completed by U.S. Fish and Wildlife Service prior to expenditure of Trustee restoration funds.

1.7.5 National Historic Preservation Act

Restoration actions proposed under this plan are subject to review under Section 106 of the National Historic Preservation Act of 1966 (NHPA), coordinated with the Colorado State Historic Preservation Office (SHPO), and implemented in accordance with all applicable laws and regulations concerning the protection of cultural and historic resources.

Historical and cultural resources encompass a wide range of assets or information that are part of or contribute to an understanding and appreciation of practices that define or represent our Nation's historic and cultural heritage. These resources include but are not limited to traditional, archeological, and built assets; archeological sites, structures, and districts; Native American resources protected by a U.S. laws and regulations; and land resources protected by federal, state, and/or local governments. Such land resources include: National Wildlife Refuges, National Parks, State Parks, State Wildlife Management Areas, City/County parks, and/or land trusts.

The Trustees believe that the restoration activities described and included as part of the proposed action are feasible to implement in project areas without, or with only minimal, effects to any historic or cultural resources. The potential for impacts to historic and cultural resources is very location-dependent. Accordingly, as part of the proposed action, consultation with the Colorado SHPO and other appropriate parties will be completed for each proposed restoration site prior to expenditure of funds.

1.8 Coordination and Scoping

Federal regulations implementing OPA provide that where an oil spill affects the interests of multiple trustees, they should act jointly to ensure that full restoration is achieved without double recovery (15 CFR § 990.14(a)). The Trustees in this matter have worked together closely in a shared effort to fully assess the nature and extent of injuries to natural resources and plan appropriate actions to restore the injured resources.

Pursuant to 15 CFR § 990.14(b), the Trustees coordinated with state and federal response agencies on activities conducted concurrently with response operations and in a manner consistent with the National Contingency Plan.

[2] Colorado Parks and Wildlife also identifies species that are of special concern to the state.

Public coordination is an integral component of the restoration planning process because public input helps inform the Trustees' decisions regarding the selection of appropriate restoration. It is also required pursuant to Section 1006(c)(5) of OPA (33 USC § 2706(c)(5)) and its regulations § 990.23 (c)(1)(ii)(b). On October 2, 2017, the Trustees released a Notice of Intent to Conduct Restoration Planning and Scoping Document for Restoration Planning, which provided the public with 1) information regarding the facts of the Incident and the Trustees' actions to date with respect to it; (2) a notice to the public of the Trustees' intent to develop a plan for restoring natural resources injured by the Incident in accordance with OPA's implementing regulations; (3) information regarding how the Trustees will conduct this restoration planning; and (4) information about how the public can be involved with the Trustees' restoration planning, including submitting restoration project ideas. The Trustees also accepted public input as part of a Solicitation for Project Proposals that solicited project proposals meant to restore, replace, or acquire the equivalent of natural resources injured by the release of oil from the Incident using the funds received as settlement from Suncor for natural resource injuries. The Trustees are now seeking the public's input on the Draft RP for a 30-day comment period beginning on September 10, 2019.

1.9 Overview of Damage Assessment

The goal of damage assessment is to determine the nature, extent and severity of injuries to natural resources, thus providing the technical basis for evaluating and properly scaling potential restoration actions to compensate for resource injuries. The OPA NRDAR regulations define injury as "an observable or measurable adverse change in a natural resource or impairment of a natural resource service." An impairment or loss of recreational use of the natural resources is a compensable "value" as defined by the OPA NRDAR regulations, as well.

For each of the injury categories evaluated following the spill and discussed in this Draft RP, the Trustees selected assessment procedures based on (1) the range of procedures available under § 990.27(b) of the OPA regulations; (2) the time and cost necessary to implement the procedures, and considering whether the additional cost of more complex procedures were related to the expected increase in the quantity and/or quality of the information to be acquired; (3) the potential nature, degree, and spatial and temporal extent of the injury; (4) potential restoration actions for the injury; (5) the relevance and adequacy of information generated by the procedures to meet information requirements of planning appropriate restoration actions; and (6) input from scientific experts.

The Trustee agencies used a combination of habitat equivalency analysis (HEA) and resource equivalency analysis (REA) to estimate injuries to natural resources resulting from the oil spill. For wetland and riparian injuries, the Trustees used HEA, an evaluation method to assess the interim losses and the expected service benefits of proposed restoration projects. HEA offers the ability to account for differences in ecosystem services, the potential improvements from any response agency's remedial actions or other projects to restore baseline, the different benefits of compensatory restoration projects, and the time it takes to restore to baseline. The Trustees relied on REA to estimate losses of waterfowl and injury to groundwater as a result of the oil spill. In general, REA determines an equivalent amount of services that should be provided through restoration based on the amount of ecological service or resource lost, where losses and compensation are measured in terms of units of the diminished resource itself (e.g., acres of

wetlands or gallons of water rather than economic value). After determining the number of waterfowl that died as a result of the spill, including lost future offspring of adult birds, Trustees determined the nature and extent of restoration needed to replace those birds (ie. by restoring or creating nesting habitat for breeding waterfowl). A groundwater model and REA was used to estimate the volume of water contaminated by the spill over time and how much restoration would be needed to provide an equivalent volume of clean groundwater.

1.10 Restoration Project Selection Criteria

The Trustees considered several restoration alternatives to compensate the public for spill-related injuries. Each restoration alternative has been evaluated using the regulatory factors and additional criteria described below. This process resulted in the Trustees' selection of a Preferred Action, consisting of seven restoration alternatives that include a total of 16 individual restoration projects, for this Draft RP. All alternatives, including the no action, preferred, and non-preferred, are discussed in subsequent sections below.

In accordance with § 990.53(a)(2) of the OPA NRDAR regulations only those alternatives considered technically feasible were carried forward for further evaluation. Alternatives must also be consistent with the Trustees' restoration goals and be procedurally viable to be carried forward and compared against screening criteria.

In accordance with § 990.54(a) of the OPA regulations, the Trustee Council compiled criteria it used in analyzing potential restoration projects for natural resources injured as a result of the Incident. These criteria are organized in the following three sub-sets, Threshold, Initial Screening, and Additional Screening, each with specific requirements or considerations:

1.10.1 Threshold Criteria

Restoration project proposals must meet the following criteria in order to be further considered and evaluated using the criteria set forth in the Initial and Additional Screening Criteria. If a project proposal does not meet the Threshold Criteria, it will not be given further consideration by the Trustee Council.

a. Consistency with Trustees' Restoration Goals. Project proposals must meet the Trustees' intent to restore, rehabilitate, replace, or acquire the equivalent of the natural resources and services injured as a result of the Suncor spill incident.
b. Technical Feasibility. Project proposals must be technically feasible. The level of risk or uncertainty associated with a project proposal and the success of past projects utilizing similar or identical techniques will be taken into consideration.
c. Procedural Viability. Project proposals must be procedurally viable.

1.10.2 Initial Screening Criteria

The following initial screening criteria were used to determine preferred project proposals from non-preferred ones. Preferred project proposals were subject to further review using the criteria set forth in the Additional Screening Criteria section that follows.

a. Relationship to the Injured Natural Resources and Services and the Area Impacted by the Suncor Spill Incident. All project proposals must demonstrate an ecological nexus to the

natural resources and related services injured as a result of the Incident. Restoration projects in the vicinity of the natural resources and services impacted by the Incident are preferred, but not required.

b. Avoid Adverse Impacts. Proposed projects should avoid or minimize adverse impacts to the environment and associated natural resources. In addition, proposed projects should not interfere with ongoing response actions at the site, including ongoing environmental monitoring. Adverse impacts may be caused by collateral injuries when implementing, or as a result of implementing, the project. The Trustee Council shall weigh the long-term benefits a project proposal may provide against any potential injuries to the environment and associated natural resources that may be caused by the proposed project.
c. Likelihood of Success. In determining the likelihood for success, the following will be taken into consideration: (a) the capability and feasibility of individuals and/or organizations expected to implement and monitor the proposed project; (b) the ability of the individuals and/or organizations expected to implement the proposed project to correct problems that may arise ; (c) whether the proposed project can be reasonably monitored and have benefits that can be measured and verified; and (d) the level of expected return of the injured natural resources and services.
d. Benefits to Multiple Injured Natural Resources and Services. Preferred projects will have the ability to provide benefits to more than one of the injured natural resources and services. The potential benefits of a proposed project were evaluated in terms of the quantity and associated quality of the types of natural resources and services expected to benefit from the project.
e. Time to Complete Project. The length of time it will take for a proposed project to be completed should be evaluated.
f. Time to Provide Benefits. The length of time it may take from when the proposed project is completed for the benefits to the injured natural resources and services to be realized should be considered. Project proposals capable of minimizing interim resource loss will be given preference.
g. Duration of Benefits. Project proposals capable of providing long-term benefits will be given preference.

1.10.3 Additional Screening Criteria

The following additional screening criteria were used to further evaluate and ultimately select restoration projects for inclusion in the Draft RP. The selected restoration projects shall be identified in the Draft RP as the Proposed Action.

a. Compliance with Applicable Federal, State, and Local Laws and Policies. A proposed project must comply with all applicable laws and policies.
b. Public Health and Safety. A proposed project should not pose a threat to public health and safety.
c. Protection of Implemented Project. There should be opportunities to protect the implemented project and resulting benefits over time. Project proposals involving fee title acquisition of property for open space should identify the fee title owner and include a commitment to grant a conservation easement or other mechanism allowing the Trustees to ensure the project provides continued natural resource restoration. If a grant of a conservation easement is proposed, the project proponent must include a draft of the conservation easement with the application. Project proposals involving the acquisition of

an easement should identify the easement holder. Project proposals that afford long-term protection will be given preference. Furthermore, it should be considered whether the project provides actual resource improvements rather than only conservation of open space, unless development threats are imminent or the conservation opportunity is of an advantageous scale or timing.

d. Opportunities for Collaboration. Project proposals that allow for collaboration and involve multiple partners are preferred.
e. Cost-Effectiveness. The relationship between the expected cost of a proposed project to the expected benefit to the injured natural resources and services needs to be evaluated. Project proposals that cost less, but deliver an equivalent or greater amount and type of benefits will be given preference.
f. Estimated Total Cost of Proposed Restoration Project and Accuracy of Estimate. The total cost of the proposed restoration project should be evaluated. The total cost estimate should include, among other things, costs to design, implement, monitor, and manage the project. The validity of the cost estimate is determined by the completeness, accuracy, and reliability of the methods used to estimate the costs, as well as the credibility of the person or entity submitting the estimate. A project proponent shall specify where the funds will be coming from. The total cost estimate will be evaluated to determine whether the estimated costs are reasonable and feasible.
g. Comprehensive Range of a Proposed Project. The extent to which the proposed project contributes to the more comprehensive restoration package and the degree to which it utilizes multiple approaches (restoration, replacement and acquisition) should be evaluated.
h. Project Consistency with Regional Planning. Project proposals that are consistent with applicable area land and resource management plans can be incorporated into a holistic land and natural resource management plan, and/or that take advantage of partnerships with local community groups were given preference.
i. Matching Funds. Projects including matching funds from other funding sources, in-kind services, or volunteer assistance are preferred. A project proponent that is able to demonstrate a 50% match or higher to requested NRD funds was given preference over a project that equally meets all other selection criteria.
j. Public Comment. Any public comments received throughout the restoration planning process that may apply to certain restoration project proposals under consideration of the Trustee Council may be used to assist the Trustee Council in determining which restoration project(s) to select when other criteria are equal.

2.0 RESTORATION ALTERNATIVES

This section describes the restoration alternatives identified by the Trustees for consideration and summarizes the Trustees' evaluation of those alternatives based on the restoration criteria for compensating for the incident-related natural resource losses. A comparison of the restoration alternatives to the restoration project selection criteria is included in the Appendix.

2.1 No Action Alternative

Under the No Action alternative, no restoration, rehabilitation, replacement, or acquisition actions would be taken. If the No Action alternative is selected, there would be no restoration or replacement of the lost resources or their services and the public would not be compensated for past injuries from releases from the Site. The No Action Alternative would not meet the Restoration Project Selection Criteria.

The No Action alternative is considered in this Draft RP, including as a basis for comparison of the impacts of the other alternatives. The Trustees found that the No Action alternative would not meet the purpose and need for restoration under either this Draft RP or the responsibilities of the Trustees under OPA, including as defined by NRDA processes under OPA.

2.2 Alternative A: Restoration and Rehabilitation of the Rocky Mountain Arsenal National Wildlife Refuge (NWR)

The First Creek Corridor is the target for rehabilitation and restoration efforts at the Rocky Mountain Arsenal National Wildlife Refuge (NWR) (Figure 2). The focus of this project would be on riparian and wetland restoration with complementary improvements to waterfowl habitat and enhancement of groundwater. Approximately 200 cottonwood trees would be planted along First Creek by youth corps. Vegetation enclosures and watering would be utilized for the first two growing seasons to maximize success of plantings.

2.3 Alternative B: Restoration and Rehabilitation of the Rocky Flats NWR

At the Rocky Flats NWR (Figure 2), riparian habitat restoration will be focused on invasive plant removal. Integrated Pest Management (IPM) will be utilized as described in the Comprehensive Conservation Plan (USFWS 2005) and an IPM plan to manage and eradicate high-priority invasive plants. USFWS has proposed to hire a Mile High Youth Corps crew for six weeks and one seasonal technician each year for two years to accomplish priority weed control and restoration within up to 12-miles of riparian corridor segments that contain critical habitat for Preble's meadow jumping mouse (*Zapus hudsonius preblei*) at Rocky Flats NWR. Colorado state-listed priority weed species that threaten this habitat at Rocky Flats NWR include teasel, Canada thistle, houndstongue and poison hemlock. Restoration would include planting native riparian tree species, primarily coyote willow, that are typically found in Preble's meadow jumping mouse habitat. State listed noxious weeds found in riparian corridors at Rocky Flats NWR will be controlled using chemical or mechanical methods, depending on the plant species, growth stage, and proximity to open water. Willows would be planted along riparian corridors that provide moist soil and are lacking vertical structure. Areas where larger weed infestation were controlled during year one would likely be targeted for willow planting sites in year two.

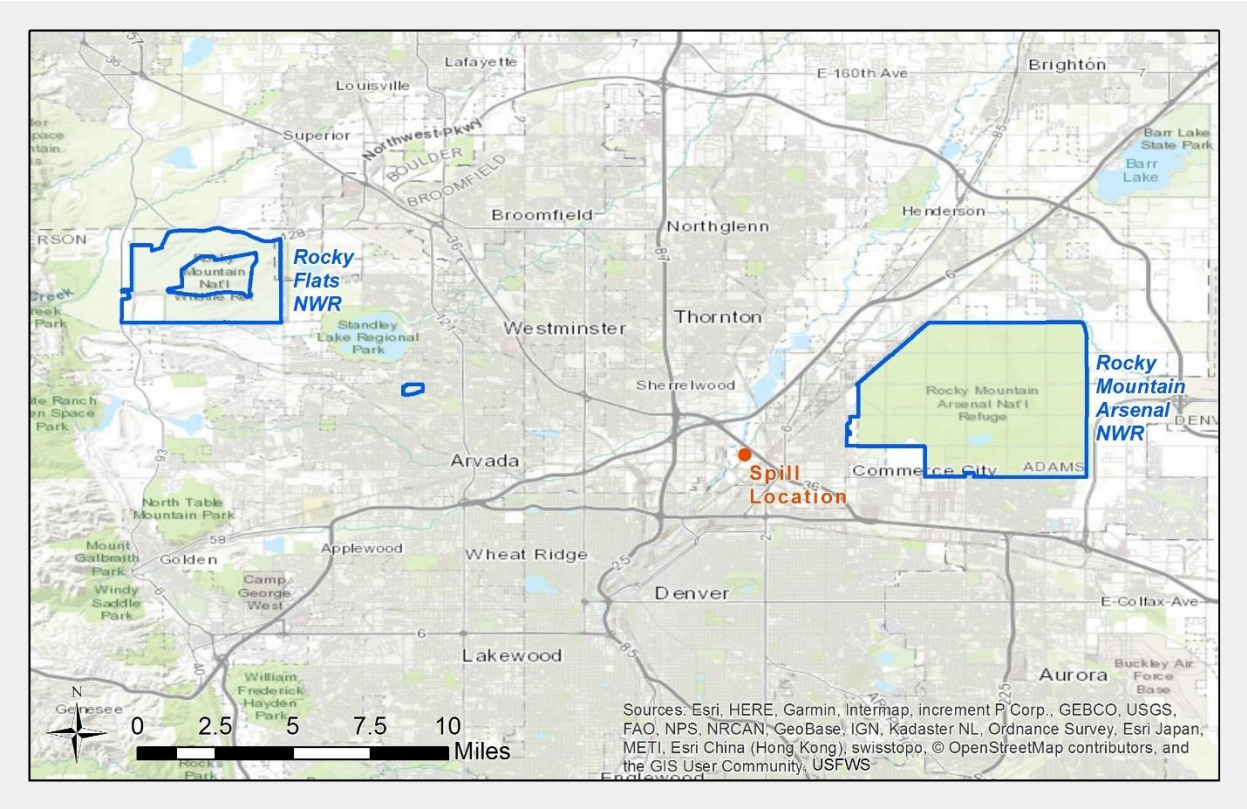


Figure 2. Alternatives A and B locations shown in relation to the oil spill location.

2.4 Alternative C: Land Acquisition/Conservation Easements and Restoration

2.4.1 Project 1: Peterson Augmentation Complex Property Acquisition

This project involves obtaining a conservation easement on a property in Sedgwick County, Colorado (Figure 3). The property is owned by Ducks Unlimited and the conservation easement will be held by a Colorado-based land trust. The current status of the project site is a cereal grain agricultural operation. Following the conservation easement placement, grasslands and recharge wetlands on the property will be restored as early as 2020, using separate funds obtained by Ducks Unlimited. Approximately 15 acres of shallow-water, recharge wetland will be constructed, which are anticipated to recharge at least, 700 acre-feet of water into the South Platte River alluvial aquifer every year. Suncor restoration funds will be used for obtaining the conservation easement but will not be used for other restoration activities.

2.4.2 Project 2: Desilets Property Acquisition

This project involves the acquisition of 474 acres of land in Alberta, Canada (Figure 4). Ducks Unlimited will complete the purchase of the Desilets property and place the property under conservation easement, regulating land use on the property. The land includes approximately 30.37 acres of existing wetlands, 299.39 acres of mixed natural grass, and 50.42 acres of tame grass/legume. Of the remaining acreage, 7.87 acres of wetlands would be restored by ditch plugs, and 49.4 acres restored by engineered works such as a dam. Suncor restoration funds will be used to acquire the property but will not be used for other restoration activities.

Denver
COLORADO
Peterson Property
N
0 0.5 1 1.5 2
Miles
Sources: NAIP, USFWS, Ducks Unlimited Inc.

NORTHWEST TERRITORIES
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
CANADA
UNITED STATES OF AMERICA
Desilets Property
N
0 0.5 1 1.5 2
Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Ducks Unlimited Inc.

2.5 Alternative D: Enhancement and Restoration of Existing Wetlands, Aquatic Habitats and Recharge Wetlands in the South Platte River Valley

2.5.1 Project 1: Andrick Ponds State Wildlife Area (SWA)

The Andrick Ponds State Wildlife Area currently serves as a wildlife habitat and recreation area managed by Colorado Parks and Wildlife (Figure 5). A number of small recharge wetlands and ponds are found on the property, but have degraded over the last 40 or more years, are dysfunctional, and do not provide high quality habitat for target wetland species. Further, they are extremely difficult to manage and maintain. The intent of this project is to conceive, plan, design and construct a series of rehabilitations and enhancements on augmentation ponds. These activities will allow managers to better manage water within, and between, basins on the property, resulting in better wetland habitat conditions for migratory birds and other wetland dependent wildlife species found there. The installation and renovation of new earthen embankments, the installation of new water-control structures and the construction of new ditches and other water conveyance will be accomplished through use of heavy machinery. The project will enhance at least 60 acres of shallow-emergent and semi-permanent wetlands and 120 acres of associated uplands benefitting migratory waterfowl. The wetlands will be capable of recharging 1,500 acre-feet of water into the South Platte alluvial aquifer every year.

Figure 3. Alternative D – Andrick State Wildlife Area in Morgan County, Colorado.

2.5.2 Project 2: Tamarack Ranch SWA Bank Stabilization

Bank stabilization work will be performed to protect riparian habitat and well galleries located on the Tamarack Ranch State Wildlife Area (Figure 6). Flood damage from several years ago left much of the important Tamarack recharge facility inoperable and exposed to further degradation. This work will protect elements of that facility, allowing it to continue to provide habitat and augmentation of the South Platte River's alluvial aquifer. This is an important component of Colorado's contribution to the Platte River Recovery Implementation Plan. The project site is a cottonwood gallery forest currently managed as a State Wildlife Area, providing habitat for riverine associated wildlife species and as a hunting recreation area. It also is the site of a set of wells used for pumping recharge water to wetlands used to augment the South Platte's alluvial aquifer. Heavy machinery will be used to reshape banks, to install bank armoring and armored channel crossings. The project will result in 357 acres of riverine and streambank habitat enhancement to improve riparian habitats and protect the Tamarack Recharge site. This will result in the continued recharge of the South Platte River’s alluvial aquifer every year of at least 10,000 acre-feet of water.

2.5.3 Project 3: Peterson Ditch Wells

The project tract is located on the constructed banks of the Peterson Ditch adjacent to the South Platte River near Sedgwick in Sedgwick County, Colorado (Figure 6). This project will install a set of three augmentation wells to pump groundwater into the Peterson Ditch to allow for the flooding of a number of existing recharge wetlands installed by private landowners, United States Fish & Wildlife Service and Ducks Unlimited on the Peterson Ditch. This supplemental winter water will increase the value of these wetlands for nonbreeding populations of waterfowl that utilize these wetlands in winter and spring. Heavy machinery will be used to drill and case the wells, install well head pumps, energize pumps and install ancillary equipment. This project will create at least 15 acres of shallow-water, recharge wetlands on privately-owned lands. These wetlands will recharge at least, on average, 450 acre-feet of water into the South Platte River alluvial aquifer every year.

2.5.4 Project 4: South Platte Wetlands

The USFWS Partners for Fish and Wildlife - South Platte Wetlands Conservation Program is an on-going, private lands conservation effort aimed at the restoration and enhancement of wetland habitats associated with the South Platte River in Colorado. The program focus area is located in portions of Weld, Arapaho, Morgan, Logan, Phillips, and Sedgwick counties in northeastern Colorado (USFWS 2017). Specific project tracts will be identified and permitted as needed through the USFWS. Projects will restore wetlands important to migratory birds and other wildlife through the installation of earthen embankments, conveyance systems, and water-control structures. This project will construct at least 20 acres of shallow-water emergent wetlands that will recharge at least 200 acre-feet of water into the South Platte River alluvial aquifer every year.

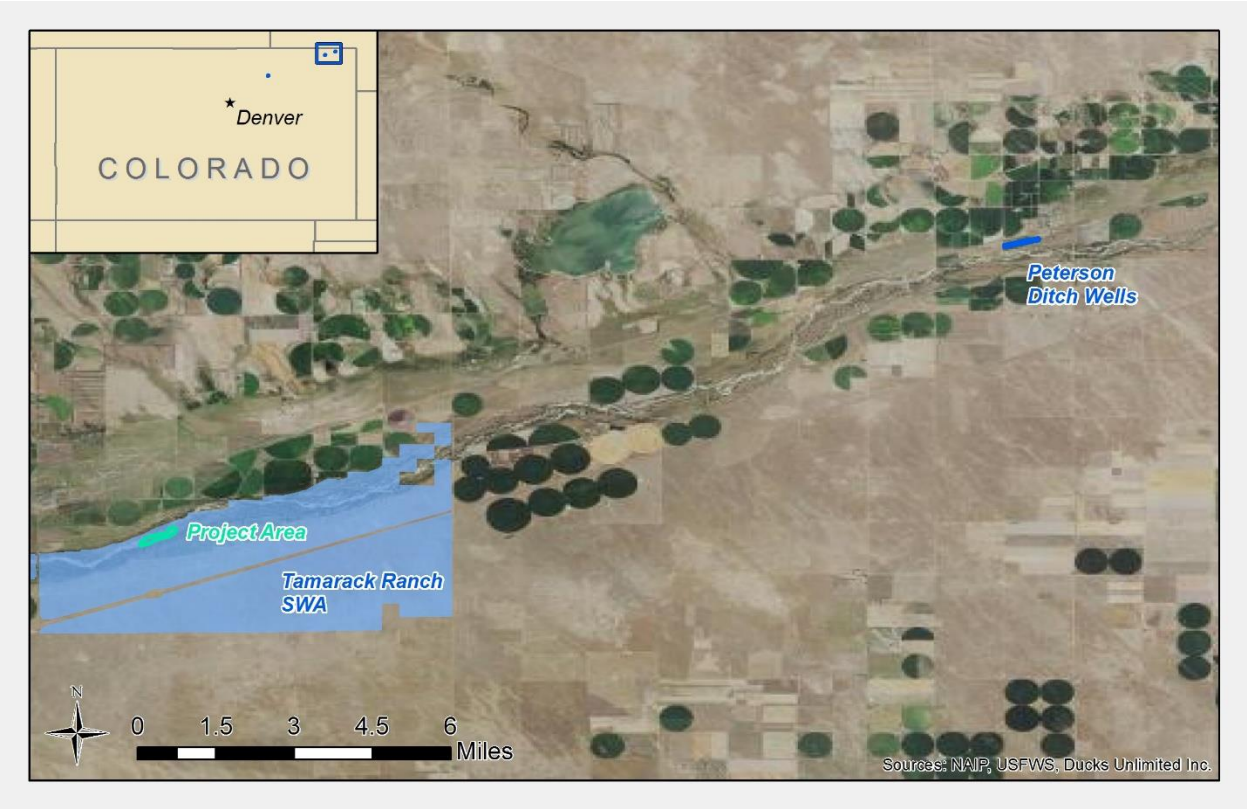


Figure 4. Alternative D - Tamarack Ranch State Wildlife Area and Peterson Ditch Wells in northeastern Colorado.

2.6 Alternative E: Enhancement and Restoration of Existing Wetlands and Aquatic Habitats in the North Platte Headwaters Valley

2.6.1 Project 1: Arapaho NWR- Chandler Unit Ditches

Wetland, wet meadow and associated upland habitats on the Chandler Unit of Arapaho National Wildlife Refuge (Figure 7) will be enhanced through the installation of modern irrigation infrastructure; including a new diversion, water measurement facilities, ditch rehabilitation, and the installation of new irrigation gates. These improvements will allow refuge managers to maintain the administrative water right to efficiently irrigate hay meadows managed for waterfowl production on the Refuge and still be consistent with the Comprehensive Conservation Plan (USFWS 2004). Heavy machinery will be used to emplace new diversion structures, to reshape ditch banks and install water-control structures in the existing conveyance systems. This project will result in 421 acres of short-emergent wetland, wet meadow and associated uplands persisting for the next 30 years.

2.6.2 Project 2: North Park Wet Meadow

The North Park Wet Meadow Conservation Program is an on-going, pre-eminently private lands conservation effort aimed at maintaining and expanding the irrigated wet meadows of North Park at the headwaters of the North Platte River in Jackson County, Colorado. Specific project tracts will be identified and, in partnership with the Colorado Partners for Fish and Wildlife Program (USFWS) and the Natural Resources Conservation Service (USDA), permitted as needed.

Projects will enhance irrigated wetlands important to migratory birds and other wildlife through the rehabilitation of head gates, conveyance systems, water-control structures, measurement devices, and storage reservoirs. The project will result in the conservation of at least 160 acres of wetland and associated uplands.

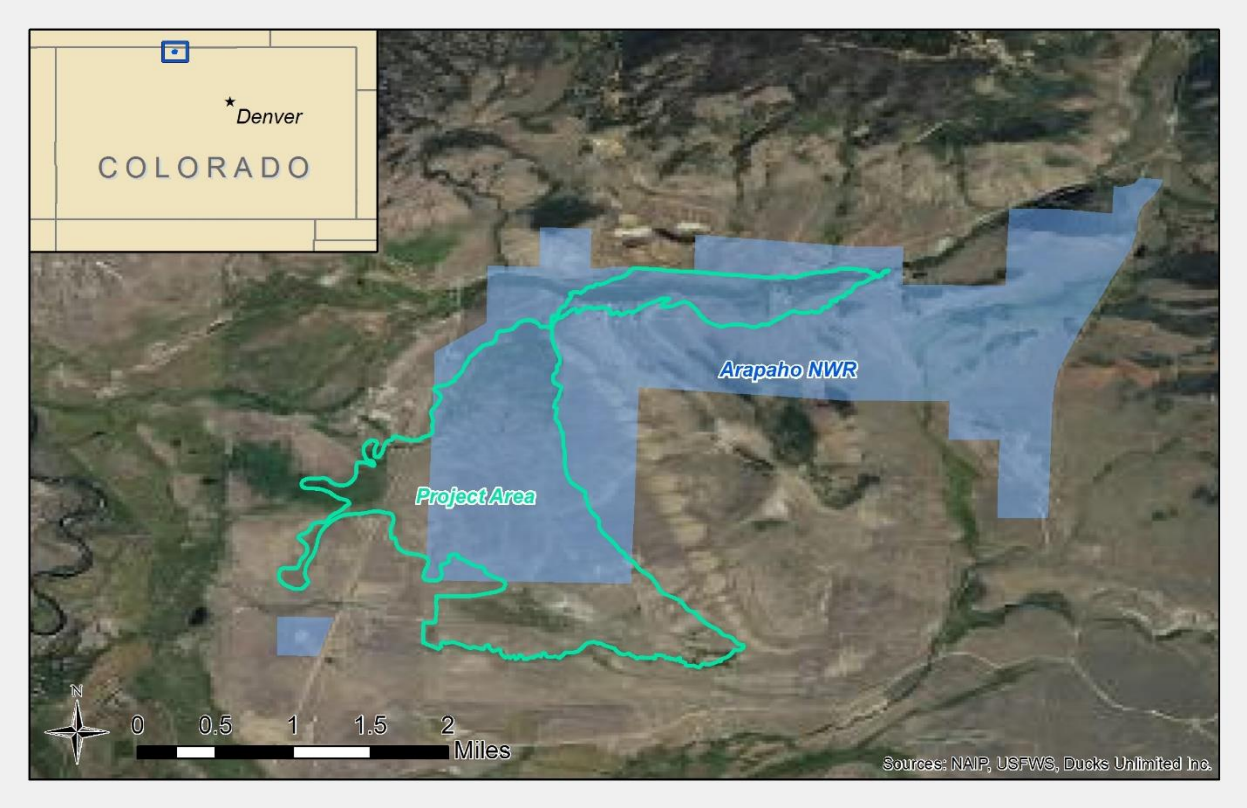


Figure 5. Alternative E – Proposed area of wetland restoration in the Chandler Unit of the Arapahoe National Wildlife Refuge, Colorado.

2.7 Alternative F: Enhancement and Restoration of Existing Wetlands and Aquatic Habitats in the San Luis Valley

2.7.1 Project 1: Monte Vista National Wildlife Refuge Restoration

The goal of the project is to partially restore and provide the flexibility to mimic the ecological processes on wetlands located within the historic flow paths and floodplain of Spring Creek identified within the Monte Vista National Wildlife Refuge's Comprehensive Conservation Plan (2003) and hydrogeomorphic evaluation. This project will build upon wetland restoration and water management infrastructure that has already been started. In particular, this project will greatly enhance natural wetland flow paths, resulting in improved waterfowl and other waterfowl migration, nesting, loafing and brood habitat in Units 14, 15, and 16 of the NWR. Heavy machinery will be used to move large quantities of earth in the de-commissioning of targeted embankments, filling in of ditches, installing diversions and other water-control structures. At least 100 acres of shallow-water wetlands preferred by breeding waterfowl will be restored as a result of this project.

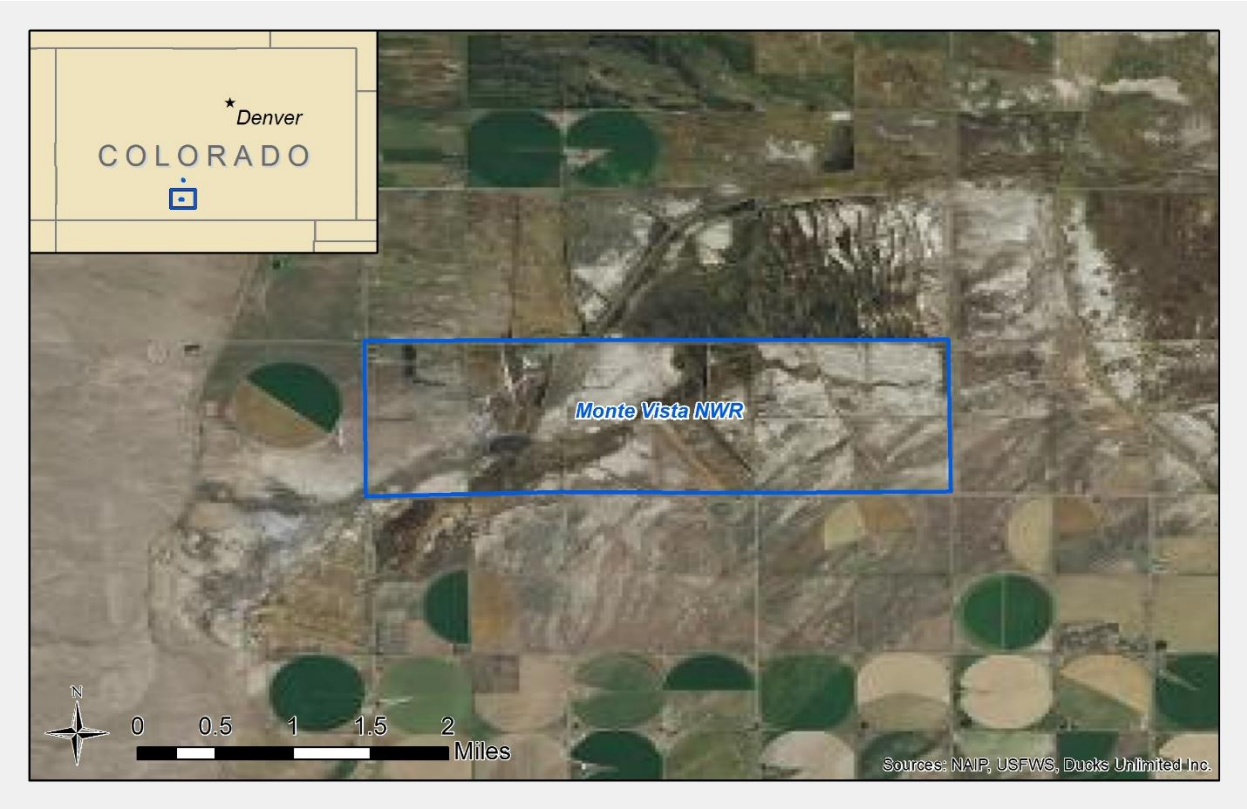


Figure 6. Alternative F- Monte Vista National Wildlife Refuge in southern Colorado.

2.7.2 Project 2: Russell Lakes SWA- Russell Creek Restoration

This project will provide for wetland restoration and enhancement at the confluence of North, Central, and South Russell Creeks on Russell Lakes State Wildlife Area in the San Luis Valley, Saguache County. Current infrastructure prevents flow, is difficult to maintain, is in poor condition, and wasn't designed to meet current management objectives. The project goals will be accomplished through removal, reconstruction, and installation of water control infrastructure that will enhance and restore 650 acres. Primary objectives include increasing the amount of shallowly flooded habitat for migrating waterfowl and wildlife, and increasing the health of wet meadows and uplands for a variety of wildlife, including nesting for some waterfowl, neo-tropical migrants, and amphibians. Heavy machinery will be used to move large quantities of earth in the de-commissioning of targeted embankments, filling in of ditches, installing diversions and other water-control structures.

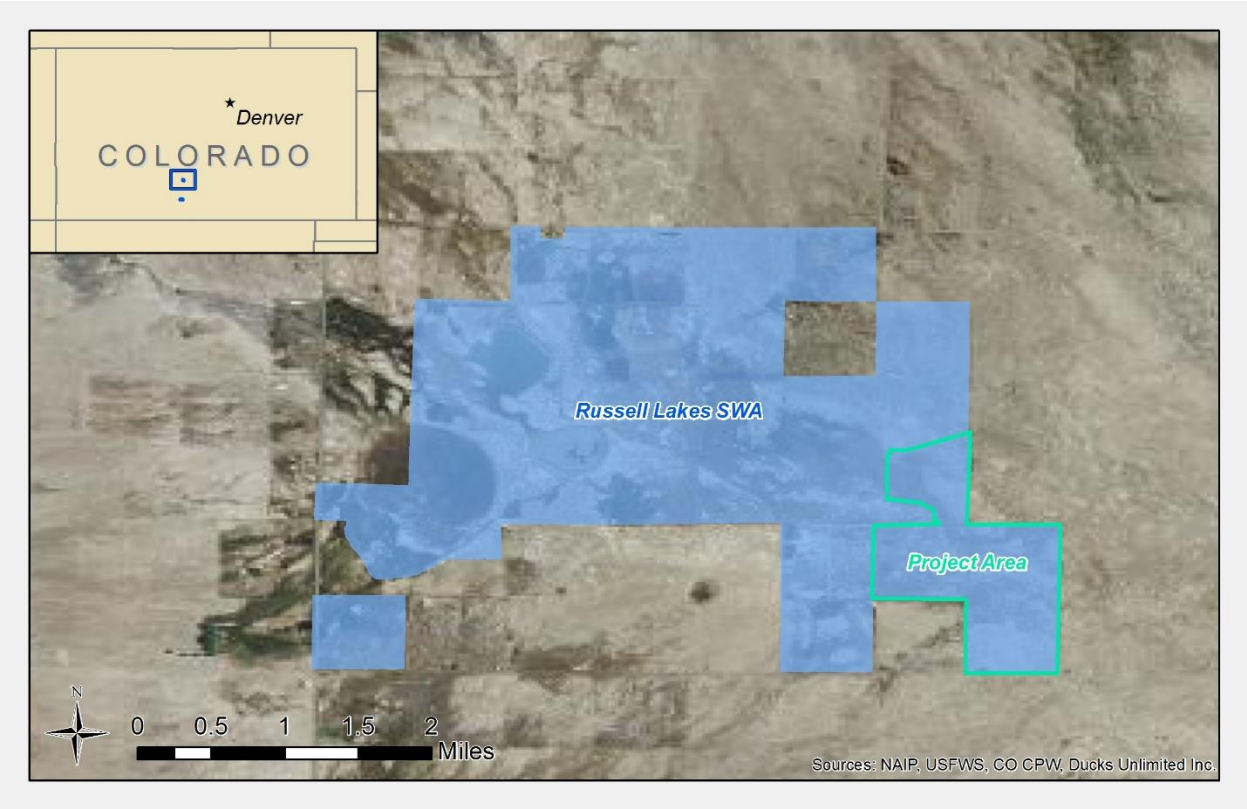


Figure 7. Alternative E – Russel Lakes State Wildlife Area in the San Luis Valley of southern Colorado.

2.8 Alternative G: Development of Wetlands and Aquifer Recharge Wetlands in the South Platte River Valley

2.8.1 Project 1: LaFleur Wetlands

The purpose of this project is to secure a conservation easement for 497 acres and restore at least 118 acres of shallow-water wetlands and recharge at least 50 acre-feet of groundwater each year on the LaFleur Farm property in Logan County, Colorado. As of the release of this Draft RP this project has been initiated, with the USFWS completing required environmental compliance prior to project implementation. However, the project proponent is still in need of funds to the complete the project.

The project involves construction of at least three irrigated wetland basins and installation of a series of ditches and checks to improve water delivery and habitat condition on the property. The restored wetlands will provide foraging habitat to nonbreeding populations of waterfowl and other wildlife. Low-level terraces will be placed on appropriate contours to create irrigated wetlands no more than 18” deep on average. With water level manipulations these units will provide foraging birds with preferred plant communities. The project site has been used historically as pasture for cattle, and as incidental wildlife habitat. Wetland conditions are maintained via seepage from the North Sterling irrigation canal. Heavy machinery will be used to excavate and move identified amounts of earthen fill, to install water-control structures, and improve conveyance of water from the site.

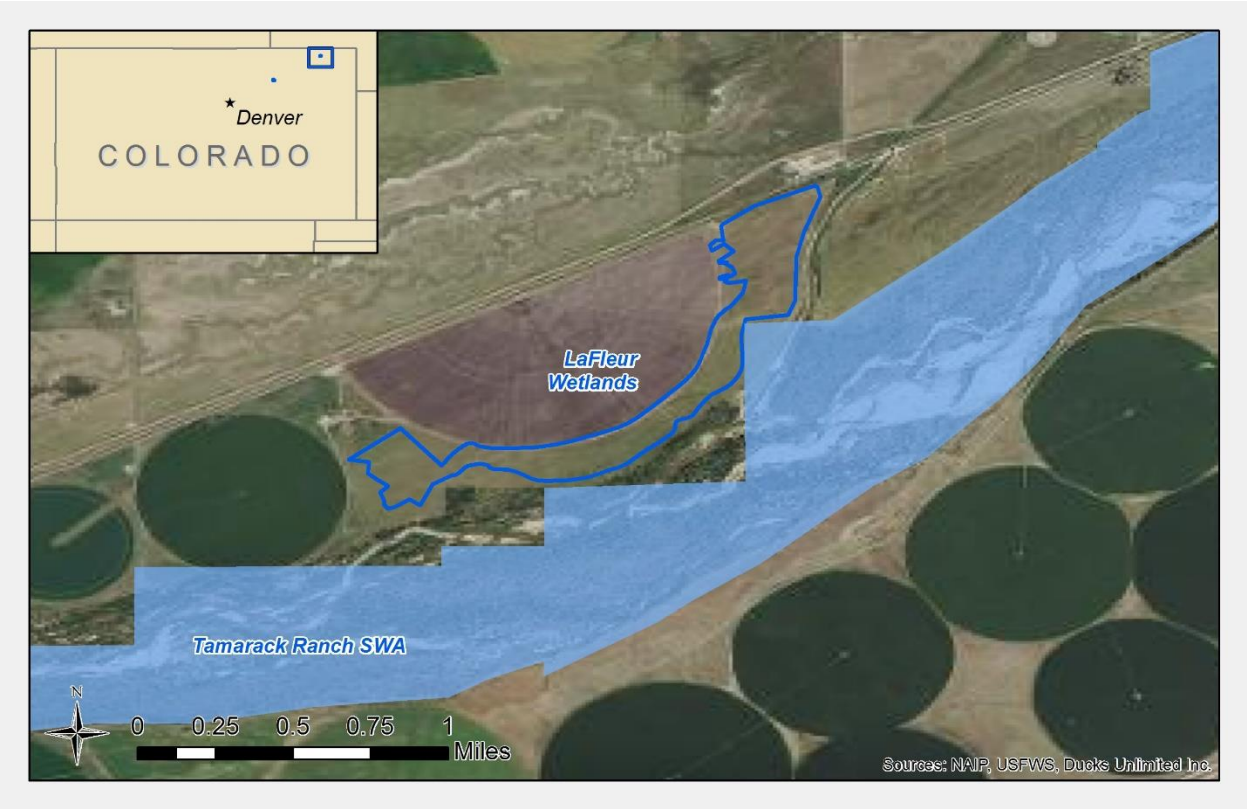


Figure 8. Alternative G – Site of LaFleur wetland restoration in Logan County, Colorado.

2.8.2 Project 2: Bijou Wetlands

The intent of this project is to further rehabilitate and expand the recharge wetland facility on the Bijou Wetlands complex which is located on two Natural Resource Conservation Service Wetlands Reserve Program and one Wetlands America Trust conservation easement in Morgan County, Colorado. Three properties consisting of wildlife preserves that are permanently protected by conservation easements comprise the project area. The wetlands on the properties serve as recharge sites for local agricultural companies requiring augmentation of South Platte River flows. These wetlands provide shallow-water wetland habitat and South Platte alluvial recharge through the flooding up of a number of recharge basins. This project will renovate approximately 165 acres of wetlands and riparian habitat in existing basins and construct new impoundments to allow for better water management on the property, resulting in higher quality wetland habitat without loss of recharge potential. Heavy machinery will be used to reshape basins, remove undesirable vegetation, construct earthen embankments, and install water control and conveyance systems on the tracts. The wetlands will contribute at least 1,000 acre-feet of recharged water supply to the South Platte River every year.

2.8.3 Project 3: Bureau of Reclamation (BOR) Narrows

The intent of this project is to conceive, plan, design and construct at least 40 acres of shallow-water augmentation and wildlife habitat wetlands on properties owned by the United States Bureau of Reclamation (BOR) in Morgan County, Colorado. These new wetlands will provide habitat to migratory birds while replenishing the South Platte River's alluvial aquifer, allowing agricultural producers to continue to irrigate in the area. Site wetlands are anticipated to recharge

at least, on average, 1,000 acre-feet of water into the South Platte River alluvial aquifer every year. The installation and renovation of new earthen embankments, the installation of new water-control structures and the construction of new ditches and other water conveyance will be accomplished. The properties are currently held by the BOR and managed as agricultural and pasture grounds. Heavy machinery will be used to shape basins, construct earthen embankments, and install water control and conveyance systems on the tracts.

Bureau of Reclamation is the lead federal agency for this project. All permitting and environmental compliance will be done in coordination with BOR prior to project implementation.

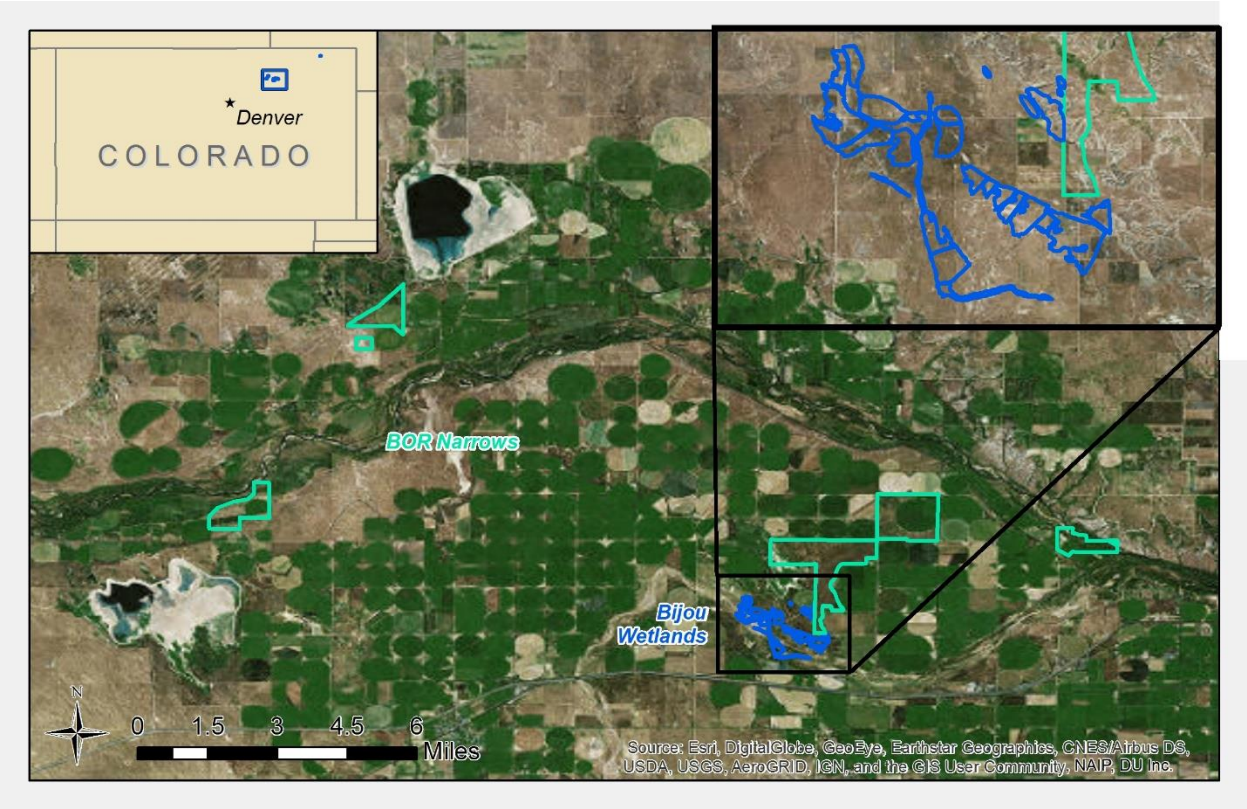


Figure 9. Alternative G - Locations of proposed wetland restoration and creation at the Bijou Wetlands and BOR Narrows, respectively.

2.9 Alternative H: Wetland Conservation and Restoration, Mexico

2.9.1 Project 1: Sayula Lagoon

The Sayula Lagoon is one of the most important wetlands in the Central Highlands region (Figure 12) due to the high ecological values by providing historical habitat conditions for the distribution of a wide variety of flora and fauna, waterfowl and shorebirds being among the most significant groups represented. Recent surveys have recorded a total of 40,000 individuals of ducks and 11,300 individuals of shorebirds resting and feeding in the Sayula Lagoon, which represents a vital component of their annual life cycle. For this reason, the Sayula Lagoon has been recognized as an important and priority wetland by national and international organizations, such as Ramsar Convention on Wetlands. The Lagoon faces enormous pressure by

anthropogenic factors, like hydrological modification and pollution from residential and commercial development, that have caused negative impacts affecting directly the habitat quality and extent.

The purpose of this project is to restore 2,986 acres of seasonal wetlands in the Sayula Lagoon, in the central highlands of Jalisco, Mexico. This will emulate natural flooding patterns in the area to guarantee that when the right environmental conditions prevail in the region, there will be the possibility to compensate the habitat loss for the benefit of migratory and resident waterfowl and shorebirds species. Topographic surveys and construction design will be needed to determine locations of dikes, concrete spillways, and gates. Heavy machinery will be used to install water control and retention dikes that will no larger in size than 1.2 meters (H) x 2 meters (W) with a slope of 2:1. This proposed project is part of a larger effort to improve water quality and develop environmental education opportunities near the Sayula Lagoon, but the Trustees are proposing to fund only the portion mentioned above.

2.9.2 Project 2: Santa Barbara Estuary

The Santa Barbara –Moroncarit –Yavaros coastal wetland system (Figure 13) is situated along the southern coast of the state of Sonora, which is considered as a priority wetland for shorebirds and waterfowl according to Mexican waterfowl and shorebird plans. The development of agricultural districts has resulted in pollution inputs along the shoreline, and the development of the shrimp farm industry along the coast has resulted in hydrological modification and changes in water quality. Because of these developments there has been loss of critical habitat for wintering waterfowl and shorebirds in the estuary. Tidal action and natural productivity of the area have been impacted in such a way that if the excess of sediment accumulated in the main open pass is not removed immediately, this area will received less intertidal action and could be seen as an area of opportunity for more development.

This project has two purposes. First, Ducks Unlimited and its partners will monitor the changes in waterfowl productivity and hydro-period before and after habitat enhancement activities with the purpose of measuring the restoration effectiveness in the Santa Barbara Estuary. Waterfowl and shorebirds surveys will be conducted in the Santa Barbara Estuary to evaluate multi-temporal habitat use by these groups of species in terms of abundance and species composition, as a result of the habitat enhancement and management activities. Second, Ducks Unlimited will incentivize the participation of different sectors of the local and regional citizens through hosting public involvement workshops about the importance of coastal wetlands conservation. A public involvement program will be implemented and targeted towards local teachers, rural communities, local fishermen cooperatives, and representatives of the shrimp farm industry. Workshops will teach these groups about the importance of the coastal wetlands for fisheries and the negative effects the shrimp farm industry is causing along the coast, both to the nursery grounds for fish, shrimp and crabs and the local economy by reducing the possibility of capturing these species.

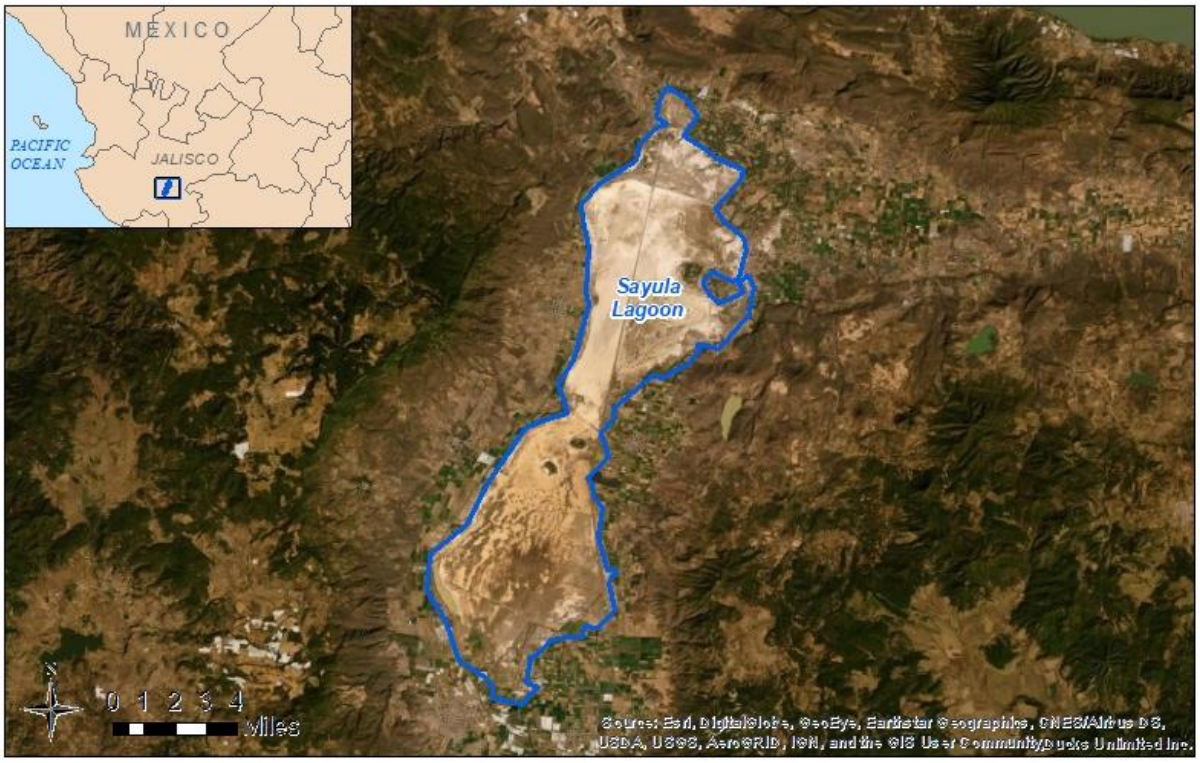


Figure 10. Alternative H – Location of Sayula Lagoon wetland restoration.

Figure 11. Alternative H – Location of Santa Barbara Estuary wetland enhancement.

2.10 Proposed Action

The Proposed Action includes Alternatives B, C, D, E, F, G, and H as the preferred alternatives, as they all meet the restoration project selection criteria, and that of the restoration goals of the Trustee Council.

2.11 Alternatives Eliminated from Further Consideration

The Trustees determined Alternative A, Restoration and Rehabilitation of Rocky Mountain Arsenal NWR, is non-preferred, and therefore are not proposing to implement the project. The project will restore or enhance riparian habitat through vegetation management, but benefits to wetlands, waterfowl, and groundwater are not anticipated to be significant. The benefit to cost ratio for the project is anticipated to be low. The Trustees' evaluation of the project can be found in Table 2 of the Appendix.

The Trustees evaluated a proposal to restore and conserve groundwater through water conservation education to the public and installation of rain barrels, rain gardens, and xeric landscaping, in the Sand Creek watershed, including the Denver Basin. By working with community members, groundwater quality would be improved and the water conserved in the Denver Basin aquifer by slowing, spreading, and sinking existing rainfall. This project met all of the Threshold Criteria. However, the proposal did not receive full consideration by the Trustees because 1) there was a low likelihood for the project to benefit multiple natural resource categories; 2) cost-effectiveness was viewed as being low due to high personnel costs; and 3) the project would provide for relatively short-term benefits (5 to 10 years).

3.0 OPERATIONS, MAINTENANCE, AND MONITORING

<u>Alternative B</u>
Rocky Flats NWR staff and Mile High Youth Corps will use IPM to achieve the following objectives within target restoration areas of the RFNWR:

- Eradication of common teasel and replacement with seeded, planted, or volunteer native plants;
- Removal of Canada thistle and other invasive plants, like houndstongue, using mechanical or chemical treatment methods; and
- Establishment of willows, using a pole-cutting and planting technique, in targeted riparian and wetland areas.

Following the two-year period of the Rocky Flats NWR project, Refuge staff will monitor for re-emergence of invasive plants and survival of willows using Refuge-approved protocols. Locations of areas treated for invasive species may be mapped and monitored no less than annually to determine effectiveness of eradication techniques. IPM will be used beyond the two-year project period to continue to manage areas where invasive plants re-occur.

<u>Alternatives C, D, E, F, G, and H</u>

Operation and maintenance of Alternatives C through H are prescribed in conservation agreements with landowners or described in federal or state management plans. The project proponent, Ducks Unlimited, for all of the conservation projects on private lands is the facilitator of these agreements. On private lands, it is the landowner's responsibility for the term of the contract to utilize physically and legally available water supplies to inundate wetlands on a schedule beneficial to ducks and other migratory birds and in a sequence that recharges the alluvial aquifers of streams. Outside of warranty, issues related to design failures and acts of nature, it is the landowner's responsibility to maintain all infrastructure installed under a conservation agreement. On public lands, it is the responsibility of the managing agency to perform required operations and maintenance leading to the hydrologic and plant community characteristics targeted by the conservation work. At times, these operations are stipulated under a contract or other agreement between Ducks Unlimited and the public agency managing the property.

Monitoring of project outcomes on the included projects will occur in three ways. First, on the two conservation easements, annual monitoring of the terms and restrictions contained in the easement will occur under practices established and maintained by the Land Trust Alliance and the State of Colorado, as well as internal policy established by Ducks Unlimited and its conservation partners. Second, performance of habitat restoration, enhancement and establishment projects will be evaluated based upon relating observed habitat/hydrologic response to Ducks Unlimited work with response estimates (breeding pairs, nest success, groundwater accretion curves, and complementary methods) produced by empirical models either authorized or in common use by collaborating partners. For example, estimates of groundwater recharge on the tracts arise from required model outputs included in the State of Colorado's adjudication of augmentation plans utilizing groundwater recharge as water supply. Estimates of bird response to habitat work are based on long-term, peer-reviewed ecological models relating avian life-cycle traits to indices of habitat condition. Finally, monitoring of project outcomes will be achieved through the inclusion of these projects in on-going research efforts performed by Colorado State University's Kennedy Program for Wetlands and Waterfowl Conservation, Colorado Parks & Wildlife Avian Research, and the United States Fish and Wildlife Service. On-going research into habitat-duck population relationships by all three of these groups can be performed on all project tracts included in Alternatives B through H. Additional work looking at seasonal food resource availability and the impact of disturbance on foraging ducks may occur on projects tracts as well. In North Park, Ducks Unlimited has been working with Colorado State University and Colorado Parks and Wildlife to institute a two-phase monitoring and research program to evaluate the performance of wetland conservation projects in that landscape. Pair density estimates, nest density, and nest success will all be measured on private working lands and public lands managed for waterfowl production to estimate variation in bird response to conservation work and land management prescriptions. Birds banded and affixed with GPS units under this research will be tracked and the linkage between North Park and the South Platte River made known. The two tracts included in the San Luis Valley are also sites of current research efforts that link habitat/hydrologic condition of areas with waterfowl life cycle requirements. Bird occupancy, migration counts, and the hydrologic dynamics of wetland complexes within the project areas will occur such that project performance can be assessed and bird response estimated.

4.0 BUDGET

The total budget for all projects included in Alternatives B through H is provided below.

Alternative/Project Name	NRDA Settlement $	Match and In-Kind $
Alternative B – Restoration and Rehabilitation of the Rocky Flats NWR	$148,000	Up to $160,000
Alternative C - Peterson Augmentation Complex Property Acquisition	$100,000	$475,000
Alternative C - Desilets Property Acquisition	$114,500	$87,500
Alternative D - Andrick Ponds State Wildlife Area	$140,000	$100,000
Alternative D - Tamarack Ranch SWA Bank Stabilization	$50,000	$267,000
Alternative D - Peterson Ditch Wells	$100,000	Up to $120,000
Alternative D - South Platte Wetlands	$25,000	N/A
Alternative E - Arapahoe NWR – Chandler Unit ditches	$75,000	$75,000
Alternative E - North Park Wet Meadows	$75,000	$250,438
Alternative F - Monte Vista NWR Restoration	$80,000	$15,000
Alternative F - Russell Lakes SWA- Russell Creek Restoration	$80,000	$100,000
Alternative G – LaFleur Wetlands	$48,000	$239,769
Alternative G – Bijou Wetlands	$50,000	$310,000
Alternative G – BOR Narrows	$30,000	$1,840,000
Alternative H – Sayula Lagoon	$44,964	$508,424
Alternative H – Santa Barbara Estuary	$55,036	$450,777
TOTAL	$1,190,500	Up to 5,751,408

5.0 REFERENCES

U.S. Fish and Wildlife Service. 2017. Partners for Fish and Wildlife Program – Mountain Prairie Region Strategic Plan, 2017 – 2021. 322 pp.

U.S. Fish and Wildlife Service. 2005. Comprehensive Conservation Plan –Rocky Flats National Wildlife Refuge, Colorado. 241 pp.

U.S. Fish and Wildlife Service. 2004. Comprehensive Conservation Plan -Arapahoe National Wildlife Refuge, Colorado. 196 pp.

U.S. Fish and Wildlife Service. 2003. Comprehensive Conservation Plan -Alamosa-Monte Vista National Wildlife Refuge Complex, Colorado. 167 pp.

APPENDIX

Table 1. Analysis of the No Action alternative against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
No Action	No Action/Natural Recovery	**1.** Consistency with Trustee restoration goals**:** Does not achieve restoration of injured natural resources. **2.** Technical feasibility: N/A **3.** Procedural viability: N/A **4.** Relationship to injured resources: N/A **5.** Avoid adverse impacts: Would not cause further injury, but will also provide no benefit to offset interim losses. **6.** Likelihood of success: Not likely to succeed since existing natural processes would be required to make up for lost natural resources. **7.** Benefits to multiple injured resources: Recovery rates of multiple resources would be less than if Trustees pursued active restoration activities included in the Proposed Actions. **8.** Time to complete project: N/A **9.** Time to provide benefits: N/A **10.** Duration of benefits: N/A **11.** Compliance with applicable laws: Does not meet the requirements and goals of OPA and the NRDAR process under OPA. **12.** Public health and safety: N/A **13.** Protection of implemented project: N/A **14.** Opportunities for collaboration: Does not allow opportunities for collaboration. **15.** Cost-effectiveness: Benefit to cost ratio is assumed to be less than pursuing the Proposed Actions. **16.** Estimated total NRDAR funds needed: N/A **17.** Comprehensive range of project: N/A **18.** Project consistency with regional planning: Not consistent with national, regional, or local plans calling for conservation and restoration of natural resources. **19.** Matching funds: N/A

Table 2. Analysis of Alternative A (Rocky Mountain Arsenal NWR) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
A	Restoration and Rehabilitation of the Rocky Mountain Arsenal National Wildlife Refuge (NWR)	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will restore or enhance riparian habitat through vegetation management, but benefits to wetlands, waterfowl, and groundwater are not significant. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will not be successful at restoring wetlands, waterfowl, and groundwater. Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for only riparian habitat. **8.** Time to complete project: Up to 7 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last at least 10 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project is on a NWR; adequate protection exists. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organization. **15.** Cost-effectiveness: Benefits to cost of projects is relatively low. **16.** Estimated total NRDAR funds needed: at least $169,000 **17.** Comprehensive range of project: Mostly comprehensive but does not compensate for all spill injuries; only partially addresses necessary restoration (one resource category) **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $160,000

Table 3. Analysis of Alternative B (Rocky Flats NWR) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
B	Restoration and Rehabilitation of the Rocky Flats NWR	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will restore or enhance riparian habitat through vegetation management and provide groundwater improvements **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Up to 2 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last at least 10 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project is on a NWR; adequate protection exists. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organization. **15.** Cost-effectiveness: Benefits to cost of projects is medium. **16.** Estimated total NRDAR funds needed: at least $148,000 **17.** Comprehensive range of project: Mostly comprehensive but does not compensate for all spill injuries; only partially addresses necessary restoration (two resource categories) **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $160,000

Table 4. Analysis of Alternative C, Land Acquisition/Conservation Easements and Restoration, against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
C	Peterson Augmentation Complex Property Acquisition	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands, provide groundwater improvement, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring three of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for three of four resource categories. **8.** Time to complete project: Up to 2 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to be in perpetuity. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site will have a long-term conservation easement. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organization. **15.** Cost-effectiveness: Benefits to cost of project is relatively high. **16.** Estimated total NRDAR funds needed: $100,000 **17.** Comprehensive range of project: Addresses three of four resource categories **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $475,000

Table 5. Analysis of Alternative C, Land Acquisition/Conservation Easements and Restoration, against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
C	Desilets Property Acquisition	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Up to 3 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to be in perpetuity. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site will have a long-term conservation easement. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organization. **15.** Cost-effectiveness: Benefits to cost of project is medium. **16.** Estimated total NRDAR funds needed: $114,500 **17.** Comprehensive range of project: Addresses two of four resource categories **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $87,500

Table 6. Analysis of Alternative D (Enhancement and Restoration of Existing Wetlands, Aquatic Habitats and Recharge Wetlands in the South Platte River Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
D	Andrick Ponds State Wildlife Area	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands, recharge groundwater, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring three of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for three of four resource categories. **8.** Time to complete project: Up to 4 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is owned by State of Colorado and thus not under threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium to high, especially considering the high number of annual duck use day equivalents. **16.** Estimated total NRDAR funds needed: $140,000 **17.** Comprehensive range of project: Addresses three of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $100,000

Table 7. Analysis of Alternative D (Enhancement and Restoration of Existing Wetlands, Aquatic Habitats and Recharge Wetlands in the South Platte River Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
D	Tamarack Ranch SWA Bank Stabilization	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore riparian habitat, recharge groundwater, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring three of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for three of four resource categories. **8.** Time to complete project: Approximately one year **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is owned by State of Colorado and thus not under threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium to high. **16.** Estimated total NRDAR funds needed: $50,000 **17.** Comprehensive range of project: Addresses three of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $267,000

Table 8. Analysis of Alternative D (Enhancement and Restoration of Existing Wetlands, Aquatic Habitats and Recharge Wetlands in the South Platte River Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
D	Peterson Ditch Wells	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetland habitat, recharge groundwater, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring three of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for three of four resource categories. **8.** Time to complete project: Approximately 3 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is privately-owned and there is no threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium. **16.** Estimated total NRDAR funds needed: $100,000 **17.** Comprehensive range of project: Addresses three of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $120,000

Table 9. Analysis of Alternative D (Enhancement and Restoration of Existing Wetlands, Aquatic Habitats and Recharge Wetlands in the South Platte River Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
D	South Platte Wetlands	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands, recharge groundwater, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring three of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for three of four resource categories. **8.** Time to complete project: Within 5 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 10 years. **11.** Compliance with applicable laws: Meets the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is privately-owned and there is no threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium. **16.** Estimated total NRDAR funds needed: **17.** Comprehensive range of project: Addresses three of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds:

Table 10. Analysis of Alternative E (Enhancement and Restoration of Existing Wetlands and Aquatic Habitats in the North Platte Headwaters Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
E	Arapahoe NWR – Chandler Unit ditches	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Approximately 3 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is on a NWR and not under threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium. **16.** Estimated total NRDAR funds needed: $75,000 **17.** Comprehensive range of project: Addresses two of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $75,000

Table 11. Analysis of Alternative E (Enhancement and Restoration of Existing Wetlands and Aquatic Habitats in the North Platte Headwaters Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
E	North Park Wet Meadows	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Approximately 3 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is on private land not under threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium to high. **16.** Estimated total NRDAR funds needed: $75,000 **17.** Comprehensive range of project: Addresses two of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $75,000

Table 12. Analysis of Alternative F (Enhancement and Restoration of Existing Wetlands and Aquatic Habitats in the San Luis Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
F	Monte Vista NWR Restoration	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise and proven track record to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Approximately 4 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is on a NWR and not under threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium. **16.** Estimated total NRDAR funds needed: $80,000 **17.** Comprehensive range of project: Addresses two of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $15,000

Table 13. Analysis of Alternative F (Enhancement and Restoration of Existing Wetlands and Aquatic Habitats in the San Luis Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
F	Russell Lakes SWA- Russell Creek Restoration	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetlands and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise and proven track record to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Approximately 4 years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last more than 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is on a state-owned wildlife area and not under threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost of project is medium. **16.** Estimated total NRDAR funds needed: $80,000 **17.** Comprehensive range of project: Addresses two of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $100,000

Table 14. Analysis of Alternative G (Development of Wetlands and Aquifer Recharge Wetlands in the South Platte River Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
G	LaFleur Wetlands	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetland and riparian habitat, recharge groundwater, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring four of four resource categories (identified in #4). Project proponent has expertise and proven track record to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for four of four resource categories. **8.** Time to complete project: Approximately one year **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last in perpetuity due to conservation easement. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Conservation easement placed on the project site will prevent development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost is high, especially considering high number of duck use day equivalents. **16.** Estimated total NRDAR funds needed: up to $53,000 **17.** Comprehensive range of project: Addresses four of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $418,000

Table 15. Analysis of Alternative G (Development of Wetlands and Aquifer Recharge Wetlands in the South Platte River Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
G	Bijou Wetlands	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetland and riparian habitat, recharge groundwater, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring four of four resource categories (identified in #4). Project proponent has expertise and proven track record to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for four of four resource categories. **8.** Time to complete project: Approximately one year **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last at least 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is on a Wetlands Reserve Program conservation easement property; therefore, there is no threat of development. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost is high, especially considering high number of duck use day equivalents. **16.** Estimated total NRDAR funds needed: up to $50,000 **17.** Comprehensive range of project: Addresses four of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $310,000

Table 16. Analysis of Alternative G (Development of Wetlands and Aquifer Recharge Wetlands in the South Platte River Valley) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
G	BOR Narrows	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetland habitat, recharge groundwater, and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring three of four resource categories (identified in #4). Project proponent has expertise and proven track record to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for three of four resource categories. **8.** Time to complete project: Approximately four years **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last at least 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Project site is a Bureau of Reclamation-owned site. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost is high, especially considering high number of duck use day equivalents. **16.** Estimated total NRDAR funds needed: up to $30,000 **17.** Comprehensive range of project: Addresses three of four resource categories and provides long-term protection. **18.** Project consistency with regional planning: Consistent with existing resource management plans and other planning efforts by existing conservation groups **19.** Matching funds: up to $1,840,000

Table 17. Analysis of Alternative H (Sayula Lagoon wetland restoration) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
H	Sayula Lagoon	**1.** Consistency with Trustee restoration goals**:** Will achieve restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will protect and restore wetland habitat and provide habitat for waterfowl. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise and proven track record to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Less than 5 years; likely 3 to 5 years. **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last at least 30 years. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Conservation agreement between Ducks Unlimited and Secretariat of Environment and Natural Resources of the State of Jalisco to guarantee the conservation of the lagoon in the long term. **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost is high, especially considering high number of waterfowl that will benefit from the project. **16.** Estimated total NRDAR funds needed: up to $44,964 **17.** Comprehensive range of project: Addresses two of four resource categories. **18.** Project consistency with regional planning: Consistent with existing regional resource management plans and other planning efforts by existing conservation groups. **19.** Matching funds: up to $508,424

Table 18. Analysis of Alternative H (Santa Barbara Estuary wetland enhancement) against restoration project selection criteria.

Alternative	Project	Restoration Project Selection Criteria
H	Santa Barbara Estuary	**1.** Consistency with Trustee restoration goals**:** Will promote and lead to restoration or enhancement of an injured resource. **2.** Technical feasibility: Feasible **3.** Procedural viability: Viable **4.** Relationship to injured resources: Project will lead to the enhancement of coastal wetland habitat for waterfowl and shorbirds. **5.** Avoid adverse impacts: Yes. **6.** Likelihood of success: Will be successful at restoring two of four resource categories (identified in #4). Project proponent has expertise and proven track record to successfully complete the project. **7.** Benefits to multiple injured resources: Benefits anticipated for two of four resource categories. **8.** Time to complete project: Less than 5 years; likely 3 to 5 years. **9.** Time to provide benefits: Anticipated to be 2 to 5 years before benefits accrue. **10.** Duration of benefits: Benefits anticipated to last 10 to 30 years, based primarily on a generational basis. **11.** Compliance with applicable laws: Meet the requirements and goals of OPA and the NRDAR process under OPA. Compliant with all other relevant laws and policies. **12.** Public health and safety: No threats from project. **13.** Protection of implemented project: Not applicable **14.** Opportunities for collaboration: Collaboration will occur with more than one partner organizations. **15.** Cost-effectiveness: Benefits to cost is high, especially considering the area is important for several waterfowl and shorebird species. **16.** Estimated total NRDAR funds needed: up to $55,036 **17.** Comprehensive range of project: Addresses two of four resource categories and will improve habitat for many years to come. **18.** Project consistency with regional planning: Consistent with other planning efforts by regional conservation groups. **19.** Matching funds: up to $450,777