Northern Water
Northern Integrated Supply Project

Larimer County Analysis – Technical Memorandum No. 6
Wetlands Mitigation Plan

Prepared for:
Larimer County

Prepared by:
Northern Integrated Supply Project
Water Activity Enterprise

February 2020

Memorandum

Date:	February 17, 2020
To:	Christie Coleman, Northern Colorado Water Conservancy District
From:	Karin McShea, Technical Group Manager Biological Resources – Pinyon Environmental, Inc.
Project:	Northern Integrated Supply Project
Subject:	Larimer County 1041 Permit: Wetland Mitigation Plan

Introduction

This memorandum (memo) presents the Wetland Mitigation Plan (Plan) developed for the Northern Integrated Supply Project's (NISP or the Project) use in the NISP Water Activity Enterprise's (WAE) 1041 Permit application. In accordance with Larimer County Land Use Code requirements, the purpose of this Plan is to document impacts to open waters and wetlands; identify strategies for avoiding, minimizing, mitigating, and enhancing open waters and wetlands; propose a plan to implement those strategies; and confirm that applicable requirements will be followed.

Furthermore, the purpose of this Plan is to document the Project's extensive coordination efforts and commitments to avoid, minimize, mitigate, and enhance open water and wetlands that would be impacted by the Project in unincorporated Larimer County, Colorado, in accordance with *Larimer County Land Use Code, 8.2.11 Wetlands Mitigation Plan Requirements* (Larimer County, 2019). NISP WAE is the permittee and the entity that will implement identified mitigation measures.

Project Overview

Northern Colorado Water Conservancy District (Northern Water), acting by and through the NISP WAE, has contracted Pinyon Environmental, Inc. (Pinyon) to provide environmental compliance services during the pre-construction phase of the Project. The Project will provide a new reliable water supply to Northern Colorado and consists of constructing the following in Larimer County:

- Glade Reservoir Complex, which includes Poudre Valley Canal and Munroe Canal improvements, and construction of the forebay area, the dam structure (including intake and release structures), a pump station, and recreation areas located adjacent to the new reservoir
- A realigned portion of U.S. Highway 287
- New pipeline conveyance systems, which include the Northern Tier, Poudre Intake, Glade Release, and County Line Alignments

The purpose of the Project is to meet a portion of the NISP Participants' (15 towns and water districts in Larimer, Weld, Morgan, and Boulder Counties) current and projected future water supply needs. The overall goal of the Project is to provide 40,000 acre-feet of new, annual water to the NISP Participants.

This Plan only covers work associated with Glade Reservoir, its appurtenant uses and recreation area, and NISP conveyance system in unincorporated Larimer County (Figure 1). Larimer County 1041 Permit requirements do not apply to Colorado Department of Transportation (CDOT) highway relocations. As a

result, the scope and effects of the realignment of U.S. Highway 287 will be evaluated per Larimer County requirements as a separate process.

8.2.1. – Purpose

The *Larimer County Land Use Code, 8.2 Standards for All Development – Wetland Areas* obligates developers to:

"…protect wetlands, their buffer areas and their water sources from encroachment that would adversely affect the wetlands' ability to maintain water quality, provide wildlife habitat, provide flood protection and maintain other critical environmental functions. When encroachment cannot be avoided, this section provides for mitigation of the impacts resulting from the encroachment."

NISP WAE is required to obtain numerous federal and state permits, licenses, and approvals. The primary regulatory processes, as related to Larimer County Land Use Code, 8.2 Standards for All Development – Wetland Areas, include:

- *Clean Water Act Section 404 Permit.* Regulates the discharge of dredged or fill material into waters of the U.S. (WUS), including jurisdictional wetlands. This means the Project will take all appropriate and practicable steps to avoid, minimize, and mitigate adverse impacts to WUS.

8.2.2. – Applicability

Larimer County Land Use Code wetlands regulations apply to all applications for subdivisions, conservation developments, planned land divisions, rezonings, special reviews, special exceptions, and site plan reviews. This section also applies to any minor land division that will result in a new, vacant building site. NISP will comply with *Larimer County Land Use Code, Section 8.2.2. Applicability* requirements, as required.

8.2.3. – Other Regulations

In addition to those outlined above, the following regulations pertain to NISP.

- *National Environmental Policy Act (NEPA) Review.* A Final Environmental Impact Statement (FEIS) (dated July 2018) has been prepared by the U.S. Army Corps of Engineers (USACE) in accordance with NEPA and applicable NEPA implementation regulations (43 U.S.C. § 4321 *et. seq*.; 40 CFR 1500, as amended; 33 CFR 325) (USACE, 2018). This means that data were collected, effects were analyzed, and technical documents were produced regarding WUS, including open waters and wetlands.

- *2008 Mitigation Rule.* The Project is in the process of developing a Wetland and Open Water Mitigation Plan (January 20, 2020 Draft) in order to comply with the USACE 2008 Mitigation Rule (33 CFR Part 332) (USACE, 2008a; Pinyon, 2020). The Wetland and Open Water Mitigation Plan describes how the Project will mitigate for unavoidable permanent impacts to WUS.

- *Endangered Species Act (ESA).* Section 7(a)(2) of the ESA requires that federal agencies consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that effects of actions that the federal agencies authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitat. The USACE submitted a biological assessment to the USFWS for the NISP proposed action (alternative 2M) and has consulted with the USFWS under Section 7 (USACE, 2007). The USFWS issued a biological opinion on NISP on October 5, 2007 (USFWS, 2007). That opinion will be updated prior to issuance of a Record of Decision by the USACE.

- *Colorado Revised Statutes (C.R.S.) 37-60.122.2.* This state law requires the creation of a *Fish and Wildlife Mitigation and Enhancement Plan* by the applicant in coordination with the Colorado Parks and Wildlife Commission. This plan was approved in 2017 by the Colorado Parks and Wildlife Commission and the Colorado Water Conservation Board and represents the official state position on the mitigation actions required of the applicant.

8.2.4. – Wetland Mapping

As mentioned above, the Project will construct the Glade Reservoir and a new pipeline conveyance system in Larimer County. The pipeline conveyance system consists of four alignments: Northern Tier Alignment, Poudre Intake Alignment, County Line Alignment, and Glade Release Alignment (Figure 1).

In 2015, ERO Resources Corporation (ERO) delineated open waters and wetlands within the Glade Reservoir study area (Figure 2; ERO, 2016; Note: jurisdictional wetlands and open waters are shown for the Glade Reservoir area). Further open waters and wetland delineations were completed for the U.S. Highway 287 realignment area and Forebay area in 2018 (ERO, 2019). In 2018, AECOM conducted a delineation of wetlands and other aquatic resources at the proposed mitigation sites in the *Northern Integrated Supply Project Aquatic Resource Inventory Report for Mitigation Sites* (AECOM, 2018). In 2019, open water and wetland delineations were completed for the Poudre River Intake Diversion area and the conveyance pipelines (Figures 2-6; Pinyon, 2019). Wetlands in the study area were primarily palustrine emergent (PEM) wetlands with smaller areas of palustrine scrub-shrub (PSS) wetlands.

In unincorporated Larimer County, the Project is anticipated to result in a maximum of 31.344 acres of permanent impacts to wetlands and 0.982 acres of permanent impacts to open waters (USACE, 2018; Northern Water, 2019; Table 1). Permanent impacts would result from constructing Glade Reservoir and its associated infrastructure, constructing improvements at the Munroe Canal, and constructing an outfall for the Glade Release Pipeline. Temporary impacts will occur to wetlands and open waters as a result of construction activities associated with the installation of the Glade Reservoir and conveyance pipelines and associated structures. These construction activities include access for vehicles and construction equipment, vegetation clearing, removal and replacement of topsoil, and regrading and blending slopes back to pre-construction contours.

Table 1. Anticipated Impacts to Wetlands and Open Waters in Unincorporated Larimer County

	Permanent		Temporary	
Location	**Wetlands (acres)**	**Open Waters (acres)**	**Wetlands (acres)**	**Open Waters (acres)**
Glade Reservoir Complex*	31.300	0.923	2.361	1.214
NISP Conveyance – Northern Tier Alignment	0.000	0.000	2.729	0.998
NISP Conveyance – Poudre Intake Alignment	0.000	0.000	0.165	0.827
NISP Conveyance – County Line Alignment	0.000	0.000	2.803	0.467
NISP Conveyance – Glade Release Alignment	0.044	0.059	0.123	0.000
Total	***31.344***	***0.982***	***8.181***	***3.506***

**This table shows impacts to jurisdictional open waters and wetlands.*

The majority of wetlands and associated buffers are located adjacent to roadways, man-made canals, agricultural crop field, and grazed pastures. As such, most of the buffer areas have previously been disturbed and impacted by human-related activities. In addition, impacts to wetland buffers along the Northern Tier, the Poudre Intake, and County Line Alignments of the conveyance system will be temporary in nature and will be restored on site. Temporarily disturbed areas will be regraded to match pre-construction conditions, will be returned to pre-construction land use, and will be seeded with a native seed mix. Plant species in the seed mix will be selected to best match the pre-construction conditions of the area.

Permanent impacts to wetland buffers will occur at the Glade Reservoir Complex and at the Glade Release Alignment. These permanent wetland buffer impacts will be mitigated by the creation and maintenance of riparian and upland buffers at the Owl Creek and Munroe Canal mitigation sites (Figures 7 and 8). Further information regarding wetland development and wetland buffer restoration is presented in section 8.2.11 below.

8.2.5. – Wetland Definition

All wetland areas mapped for NISP meet the USACE's definition of a wetland, "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory, 1987)." This definition is consistent with the criteria outlined in section 8.2.5. of the Land Use Code.

Wetland delineations at Glade Reservoir were completed by ERO and AECOM in accordance with the 1987 *USACE Wetland Delineation Manual* and the 2010 *Regional Supplement to the USACE Wetland Delineation Manual: Great Plains Region* (Environmental Laboratory, 1987; USACE, 2010).

Pinyon used a stepwise process to map potential wetlands and open waters along the pipeline conveyance systems: desktop analysis, field verification (windshield survey), and field delineations. The desktop analysis was followed by field verification of the wetlands and open waters that were visible from publicly accessible areas. The desktop analysis and field verifications likely overestimated potential wetland and open water areas. Field delineations were conducted at major river crossings (where the conveyances cross the Cache la Poudre, Big Thompson, and Little Thompson Rivers) and at the proposed Poudre River Intake structure; however, these areas are outside unincorporated Larimer County.

8.2.6. – Unmapped Wetlands

All wetlands and open waters within the proposed limits of disturbance were mapped based on conditions at the time of the delineations.

8.2.7. – Wetland Boundary Disputes

All wetland and open water areas were mapped by a qualified biologist in accordance with USACE delineation protocol, or methods approved by the USACE, as described above. Therefore, no wetland boundary disputes are anticipated.

8.2.8. – Wetland Development Standards

The NISP facilities are being designed to avoid and minimize impacts to open waters, wetlands, and wetland buffers to the extent feasible. Two of the most significant changes in the NISP/Glade Reservoir that avoid environmental effects are the movement of the proposed reservoir from an on-channel reservoir site to an off-channel reservoir site, and the elimination of a potential point-of-diversion that would have been upstream

of the North Fork confluence with the Poudre River. Additionally, wetland delineation information has been used to inform the design of the Poudre River intake structure so that the area of disturbance to jurisdictional waters can be minimized. Other avoidance measures, such as discarding pipeline alignments that followed waterways or wetlands, were incorporated into the design and final location of the conveyance alignments to the maximum extent possible.

Additionally, best management practices (BMPs), such as using equipment mats and implementing erosion control measures, will be used to further minimize impacts. BMPs will be incorporated throughout the Project to limit the indirect effects of sedimentation and erosion. Beyond the direct disturbance impacts, construction activities may temporarily change open water morphology and flow, which may in turn temporarily disturb open water and wetland functioning. Construction activities will be managed to reduce or eliminate soil compaction, increased runoff and sedimentation, nonpoint source pollution, and the introduction and spread of noxious weeds.

Unavoidable impacts to wetlands, open waters, and wetland buffers were minimized as much as practicable. Minimization measures for the conveyance system include reducing the width of impacts. Where the conveyance pipelines need to cross wetlands or open waters, or where work to install the conveyance pipelines would impact wetlands or open waters, the construction limits will be reduced from the anticipated impact width of 120 feet. At the majority of wetland and open water features for the conveyance pipelines, the reduced impact width will be 60 feet wide (30 feet on either side of center). However, at locations where wetland and open water features are over 500 feet in length along the conveyance pipeline, the reduced impact width will be 80 feet wide (40 feet on either side of center). At the Glade Reservoir Complex, construction limits at or near wetlands were reduced and non-disturbance areas were established, where possible, to avoid and then minimize impacts to wetlands and open waters. As Project designs progress, additional avoidance and minimization measures will be incorporated into engineering plan sets when possible to further limit impacts on waters, wetlands, and wetland buffers.

As would be expected for a project with the scope of NISP, not all impacts to wetlands can be avoided or minimized. Unavoidable permanent impacts remaining after implementation of avoidance and minimization measures will be offset as described in section 8.2.11 below.

8.2.9. – Protection of Wetland Water Sources

The NISP facilities are being designed to avoid and minimize impacts to wetlands and their water sources to the extent feasible. In addition, as designs progress, erosion control measures will be developed to help protect wetlands and their water sources.

8.2.10. – Wetland Mitigation Requirements

Wetlands mitigation is being developed for NISP as part of the Clean Water Act (CWA) Section 404 Permit wetlands mitigation requirements and as part of ESA Section 7 Consultation Preble's meadow jumping mouse (PMJM) (*Zapus hudsonius preblei*) mitigation area development. Wetlands mitigation plans associated with those requirements are summarized in the following sections as those plans relate to Larimer County Land Use Code wetlands regulations. These plans may be adjusted and further refined as a result of the federal agency reviews under ESA Section 7 and CWA Section 404.

Restoration of wetlands and their buffers has been developed in accordance with the requirements outlined in the Larimer County Land Use Code. Mitigation for wetlands and open waters at the Park Creek Station, Owl Creek, and Munroe Canal mitigation sites (described below) will adequately compensate for any impacts to wetlands, open waters, and wetland buffers located in unincorporated Larimer County. Further information regarding wetland development and wetland buffer restoration is presented in section 8.2.11 below.

8.2.11. – Wetland Mitigation Plan Requirements

1. A description of the ownership, location, type, size and classification of the wetland and its buffer area

NISP WAE will offset permanent Project impacts by constructing a compensatory mitigation area for wetlands and open waters, along Owl Creek in Larimer County (Figure 7). In addition, another compensatory mitigation area will be constructed for PMJM (Munroe Canal) and will create new wetlands in the vicinity of Munroe Canal in Larimer County (Figure 8). The Project will also offset permanent Project impacts to wetlands by developing a wetlands mitigation plan in association with a proposed wetlands mitigation bank along Park Creek in Larimer County (Figure 9).

At the Owl Creek mitigation site, wetlands will be created in areas along Owl Creek below the proposed Glade Reservoir dam to replace the functions of wildlife habitat, flood attenuation, short- and long-term water storage, nutrient/toxicant removal, sediment retention/shoreline stabilization, and production export/food chain support that would be lost with implementation of the proposed Project (Figure 7). Because the replacement wetlands will be the same type and provide the same functions as the impacted wetlands, the mitigation actions will qualify as "in-kind" mitigation. The mitigation area will result in a net increase in aquatic function and services and will improve ecological functions in the mitigation areas. The location of the mitigation area has been carefully selected to provide the greatest opportunities for successfully creating wetland and open water mitigation in terms of acreage and potential ecological lift for wetlands and open waters. Ecological lift is defined herein to mean a net improvement in habitat quality. NISP WAE is committed to the long-term success of the compensatory mitigation areas, and therefore sites were selected that were deemed as having high potential for success. At the Munroe Canal mitigation site, additional wetland and upland mitigation areas have been designed and planned as a part of the Project's PMJM habitat mitigation requirements. These areas are located north of the proposed forebay and south of the Munroe Canal as shown in Figure 8. By creating wetlands at the Munroe Canal mitigation site, many of the same functions and net increases described above will be replaced in this area as well.

PEM and PSS wetlands will be created at the Owl Creek and Munroe mitigation sites. Additionally, habitat lift credit (which includes Plains Cottonwood – Riparian Forest and Upland Grass, Forb, and Shrub) for non-wetland buffer zones will be created. This mitigation Plan summarizes portions of the wetlands and PMJM mitigation plans developed as part of the Project's federal permitting efforts.

None of the affected open waters within the Glade Reservoir area provide permanent aquatic habitat; i.e., no fish-bearing streams would be directly impacted by any of the Project infrastructure. However, impacts to open waters (e.g., portions of Owl Creek and its tributary drainages) will be mitigated through the development of Glade Reservoir. Many functions, including support of characteristic fish/aquatic habitat, flood attenuation, short- and long-term water storage, nutrient/toxicant removal, and sediment retention, would be greater for the new aquatic resource created by Glade Reservoir than for the impacted open water. The reservoir would also provide support of characteristic wildlife habitat for species dependent on open water.

<u>Mitigation Work Plan</u>

For the Owl Creek and Munroe Canal mitigation sites, two wetland Mitigation Zones were developed to fulfill wetland mitigation requirements, while an upland Mitigation Zone was developed to meet PMJM habitat mitigation requirements and will also mitigate permanent impacts to wetland buffers.

- **PEM Wetlands** – This wetland zone will be created by using cut and fill grading in upland slopes to establish topographic shelves which can be excavated for wetland development. The two wetland zones adjacent to Owl Creek will receive indirect flows from the dam toe drains to support wetland vegetation

(Figure 7). Toe drains will provide water to Owl Creek with mitigation areas receiving water through connections with Owl Creek. Wetland vegetation in these areas will be planted and seeded using a combination of native wetland plugs/container plants and native wetland seeds.

- **PSS Wetlands – Riparian** – This zone will be planted with riparian shrubs and trees and is designed to provide dense shrub cover for wildlife, including PMJM, as well as buffer zones to protect created wetlands. These areas will be located either on the fringes of wetland zones or on slightly elevated areas within wetland zones. Additional plant materials, including native grass, forb, and shrub seeding will also be included in these areas to supplement planted materials. This zone is included as new wetlands as most of the plant materials, either through planting or seeding, will be rated as Facultative or wetter. Hydrology and soil composition are expected to exhibit hydric conditions and function as wetlands in the future.

- **Upland** – Disturbed land surfaces adjacent to created wetlands and riparian zones will be seeded with native grass, forb, and shrub seed. Seeding in these areas will establish upland buffer zones and increase the potential lift in ecological function. Upland container shrubs will also be planted in this zone in designated areas. Upland plants will provide an increase in diversity, density, and vertical structure for wildlife and increase the buffering capacity of adjacent land throughout the wetland mitigation zones.

All planting and seeding mixes include native shrubs to provide increased density of cover throughout the zones.

The area selected for the Park Creek Station mitigation site currently includes various restoration strategies based on the potential for functional lift of existing resources to increase the overall wetland function of the area. The current concept includes six different strategies: PEM re-establishment, PEM rehabilitation, PSS re-establishment, PSS establishment, an excluded from bank area, and a 50-foot buffer area (Figure 9).

- **PEM Re-establishment** – Strategies in this area include minor grading to connect adjacent wetland areas and includes non-native species control and planting/seeding of wetland species.

- **PEM Rehabilitation** – Activities will consist of vegetation management to reduce non-native species and add additional native wetland species to increase diversity of the existing wetlands on site.

- **PSS Re-establishment** – Activities will include excavating soil adjacent to Park Creek to lower the elevation of that area down to get closer to groundwater, and then planting/seeding this area with riparian shrub species to re-establish a riparian buffer along the creek. In addition to the area-specific restoration strategies, the entire bank site will be fenced off to exclude cattle which are currently grazing throughout the site. Cattle may be used in a controlled manner to assist with vegetation management in the future but will not be allowed to roam the site freely as they do now.

- **PSS Establishment** – Activities include non-native species control and planting/seeding the fringes of existing wetland areas. This will take advantage of these wetted areas to establish riparian shrub vegetation to act as a buffer between the wetlands and upland areas similar to historic conditions.

- **Excluded from Bank** and **50-foot Buffer Areas** – These areas will receive weed control and be seeded with a native upland (shrub/grassland) plant palette to serve as a buffer between the restoration site and surrounding areas.

These sites (Park Creek Station, Owl Creek, and Munroe) in combination will provide wetlands mitigation in the same Poudre River drainage basin on a one-to-one basis by area with equivalent or better biologic and hydrologic functions.

The mitigation boundaries as described may change if the dam or forebay infrastructure or PMJM mitigation area is modified from what is shown. However, the types and amounts of mitigation areas will remain the same. Any changes in impacts or subsequent updates to the mitigation of wetlands for the NISP will forwarded to Larimer County, if needed.

2. An evaluation of the altered wetland's hydrologic and biologic functions

As part of the 2015 delineations, ERO also completed assessments to score the functions of existing wetlands in the Glade Reservoir study area using the Functional Assessment of Colorado Wetlands (FACWet) method (Johnson et al., 2013). A complete description of methodology can be found in ERO's Wetland and Other Waters Delineation Report and Addendum to the 2016 Wetland and Other Waters Delineation Report (ERO, 2016; ERO, 2019).

Wetlands in the study area were PEM wetlands that have FacWet scores ranging from Functioning Impaired condition (composite score of 0.6-0.7) to Reference Standard condition (composite score of 0.9-1.0). In the Glade Reservoir area, wetlands would either be lost by inundation or by the placement of fill for the dam and other facilities. Functions provided by these wetlands that would be lost are: support of characteristic wildlife habitat, shoreline stabilization, and production export/food chain support. Many functions, including support of characteristic fish/aquatic habitat, flood attenuation, short- and long-term water storage, nutrient/toxicant removal, and sediment retention, would be greater for the new aquatic resource created by the reservoir than for the impacted wetlands. The reservoir would also provide support of characteristic wildlife habitat for species dependent on open water.

Wetlands along the NISP conveyance system were not assessed for function as part of the 2019 NISP Conveyance system wetland mapping. However, as impacts to wetlands will be temporary and will be restored in place, wetlands along the NISP conveyance system are expected to provide the same function in the future as they do currently.

3. The estimated cost of the proposed mitigation, its probability of success and a financial guarantee for completion

NISP WAE assumes financial responsibility for all of its compensatory mitigation under Section 404 of the CWA related to the Project. NISP WAE will be financially responsible for the construction, maintenance, monitoring, and any necessary remedial actions/adaptive management associated with the mitigation area during the construction and monitoring period. NISP WAE is a permanent entity with access to adequate funds to cover mitigation monitoring and any necessary remedial actions. The NISP WAE's budget will include routine maintenance to cover compensatory mitigation monitoring and maintenance to ensure that adequate funding is available for these purposes. Northern Water's past performance under other USACE permits demonstrates its commitment to assure that projects approved by the USACE, including compensatory mitigation, will be fully implemented and maintained by NISP WAE. No federal funds will be applied to the work credited for compensatory mitigation.

4. An evaluation of the suitability of the proposed mitigation site for establishing the restored or created wetland

Wetlands mitigation sites associated with CWA Section 404 wetlands mitigation and ESA Section 7 Consultation PMJM mitigation have and will be evaluated for suitably through those federal permitting processes and associated mitigation requirements, including approvals for mitigation designs, required protections for mitigation sites, and monitoring requirements. This Plan summarizes portions of those plans applicable to Larimer County's Land Use Code and meets those same standards.

5. An evaluation of the hydrology of the site proposed for restoration or creation of a wetland and a clear statement of the project's hydrologic and ecological goals

The Owl Creek and Munroe Canal mitigation areas contain large areas of irrigated cropland and low-quality uplands that will be immediately adjacent to the proposed dam's forebay. There is high potential for habitat lift in these areas through establishment of wetlands due to the low quality of the existing habitat. The sites were selected for the potential to create new wetland habitat on lands that are owned or will be purchased by NISP WAE. The location of the sites adjacent to the proposed Glade Reservoir dam means that NISP WAE can use water from the reservoir's toe drains to supply water and establish wetlands in these areas, using this continuous water supply to allow for successful establishment of wetland vegetation.

The Park Creek Station Mitigation Site is being developed in coordination with a wetlands mitigation bank to meet USACE standards related to the adequacy of water supply and demonstration of ecological benefits.

6. A maintenance program that includes weed control; litter and debris removal; erosion control; watering, repair of water-control structures; maintenance of vegetation and wildlife habitat; and cleaning of culverts. The maintenance program must be included in the use plan for residual land and/or common area described in Section 8.14.6 (of the Land Use Code)

Once construction is completed, NISP WAE will be responsible for ongoing monitoring and maintenance. Annual monitoring will identify areas in need of maintenance and will guide adaptive management of the mitigation areas as described in section 8 below, ultimately increasing effectiveness and permanence of the mitigation area. Maintenance will be considered when a potential condition is identified that could lead to catastrophic failure, significant deviations from the Project objectives are identified, or situations are present that prevent achievement of performance standards. Any maintenance activities will be reviewed by NISP WAE to ensure consistency with federal mitigation plans as summarized in this report. Potential areas for maintenance, including weed control, litter and debris removal, erosion control, repair of structures, maintenance of vegetation and wildlife habitat, and cleaning of culverts, will be identified through annual monitoring; a proposed maintenance plan will be developed and reviewed; and the maintenance plan will be implemented by NISP WAE.

7. A description of the water source and evidence of ownership of water rights approved by the state engineer

A description of water sources and associated water rights for proposed mitigation sites is provided in section 5 above.

8. A description of the critical elements and potential problems that may influence the success of the mitigation effort

Adaptive management will be used to ensure that mitigation areas are developed and maintained properly during the critical establishment period (1 to 3 years after establishment). This will provide for the adaptation of management strategies and implementation of corrective actions for mitigation efforts based on current knowledge and continued monitoring and allow land managers to adjust management practices as needed to best suit a site and reach desired outcomes. For example, wetland creation projects can be vulnerable to plant mortality and establishment of noxious weeds. Therefore, adaptive management, in conjunction with the monitoring program, is to be used as a tool to evaluate the restoration achieved by the mitigation project. This will determine necessary corrective measures that must be implemented during the early stages of establishment to ensure the desired goals and success criteria are met.

9. A timetable for construction and monitoring

Glade Reservoir construction is anticipated to start in 2023 and last for approximately 5 years. It is anticipated that water will start to be stored in Glade Reservoir in 2028. The Owl Creek and Munroe Canal Mitigation Areas will be constructed during or after construction of the Glade Reservoir. Construction of the Park Creek Mitigation Site is anticipated to occur before construction of Glade Reservoir starts.

10. A three-year, post-construction monitoring program. The monitoring program must be included in the use plan for residual land and/or common area described in Section 8.14.6 (of the Land Use Code)

The purpose of monitoring is to ensure the mitigation area is meeting performance standards and to identify any concerns associated with the site and make appropriate recommendations. NISP WAE shall be responsible for monitoring the mitigation sites.

Prior to construction activities at the mitigation areas, NISP WAE will assess conditions at the mitigation sites to establish baseline conditions. NISP WAE will assess as-built conditions of the mitigation areas following their construction. An annual monitoring report will be submitted to the USACE before December 31 of each year for a minimum of 5 years, until performance standards have been met and monitoring requirements have been fulfilled. NISP WAE will monitor the mitigation areas with one field survey to be completed during the growing season beginning the year as-built construction conditions are reported. Each of the annual monitoring reports will include a summary of the previous year's monitoring in order to compare results from previous years. The report will identify any concerns associated with the sites and make appropriate recommendations. In addition, a Baseline Report and an As-Built Conditions Report will each be submitted to the USACE prior to the first annual monitoring report.

11. A demonstration of fiscal, administrative and technical competence to successfully execute the plan

A demonstration of fiscal, administrative and technical competence to execute the plan is provided in section 3 above.

Conclusions

The efforts summarized in this Plan have been designed to mitigate impacts to open waters and wetlands, for the construction of the Glade Reservoir Complex and associated conveyance system for NISP. Those efforts have been designed to satisfy the either the requirements of Section 404 of the Clean Water Act under the provisions administered by the USACE or the Project's ESA Section 7 consultation. These efforts also satisfy the requirements set forth in the *Larimer County Land Use Code, 8.2 Standards for All Development – Wetland Areas* (Larimer County, 2019).

Figures

References

AECOM, 2018. "Aquatic Resource Inventory Report for Mitigation Sites," prepared by AECOM for the Northern Integrated Supply Project December 2018.

Environmental Laboratory, 1987. "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

ERO, 2016. "Wetland and Other Waters Delineation Report," prepared by ERO Resources Corporation for the Northern Integrated Supply Project September 2016.

ERO, 2019. "Addendum to the 2016 Wetland and Other Waters Delineation Report," prepared by ERO Resources Corporation for the Northern Integrated Supply Project January 2019.Larimer County, 2019.

Johnson, B., M. Beardsley, and J. Doran, 2013. Colorado Department of Transportation's Functional Assessment of Colorado Wetlands (FACWet) Method Version 3.0. Colorado Department of Transportation, April 2013.

Larimer County, 2019. Larimer County Code of Ordinances, Land Use Code, 8.2 Standards for All Development – Wetland Areas. Codified though Ordinance No. 06202017O111-4, enacted March 11, 2019. (Supp. No. 39) Online content updated on October 15, 2019. Available at: https://library.municode.com/co/larimer_county/codes/code_of_ordinances?nodeId=PTIILAUSCO_8.0STALDE_8.4WI. Accessed December 2019.

Northern Water, 2019. Jurisdictional Determination request, associated with the Northern Integrated Supply Project, for Upper Galeton Reservoir and portions of Glade Reservoir. Submitted to USACE Omaha District, April 22, 2019.

Pinyon, 2019. Waters and Wetlands Report, Conveyance System. Northern Integrated Supply Project. Prepared for Northern Colorado Water Conservancy District, Berthoud, Colorado. July 2019.

Pinyon, 2020. Wetland and Open Water Mitigation Plan. Northern Integrated Supply Project. Prepared for Northern Colorado Water Conservancy District, Berthoud, Colorado. January 2020.

USACE, 2007. Northern Integrated Supply Project Environmental Impact Statement Biological Assessment. Prepared by ERO Resources Corporation. August 2007.

USACE, 2008a. Compensatory Mitigation for Losses of Aquatic Resources; Final Rule, 40 33 CFR 325 and 332. U.S. Army Corps of Engineers. April 10, 2008.

USACE, 2008b. Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment and/or Enhancement of Aquatic Resources, Regulatory Guidance Letter. No 08-0. U.S. Army Corps of Engineers. October 10, 2008.

USACE, 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-3. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE, 2018. *Northern Integrated Supply Project Final Environmental Impact Statement.* Prepared by the United States Army Corps of Engineers. Issued July 2018. Available at:

http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Colorado/EIS-NISP/. Accessed December 2019.

USFWS, 2007. Letter to Chandler Peter, United States Army Corps of Engineers from Susan C. Linner, Colorado Field Supervisor, United States Fish and Wildlife Service, subject Northern Integrated Supply Project (NISP) – Glade/Galeton Alternative (Project) (Corps File No. 200380509). October 5, 2007.

Figure 1. Project Location

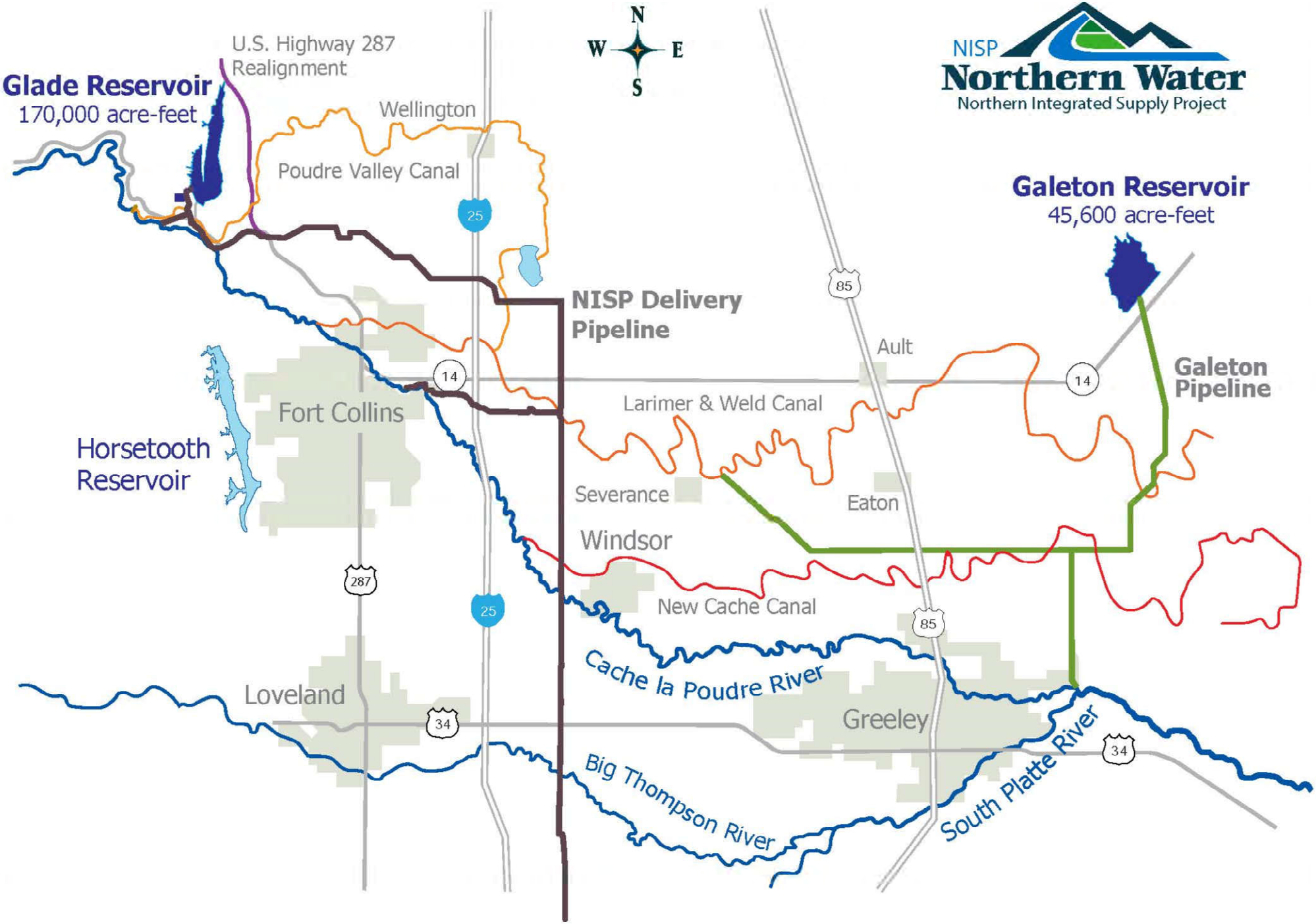
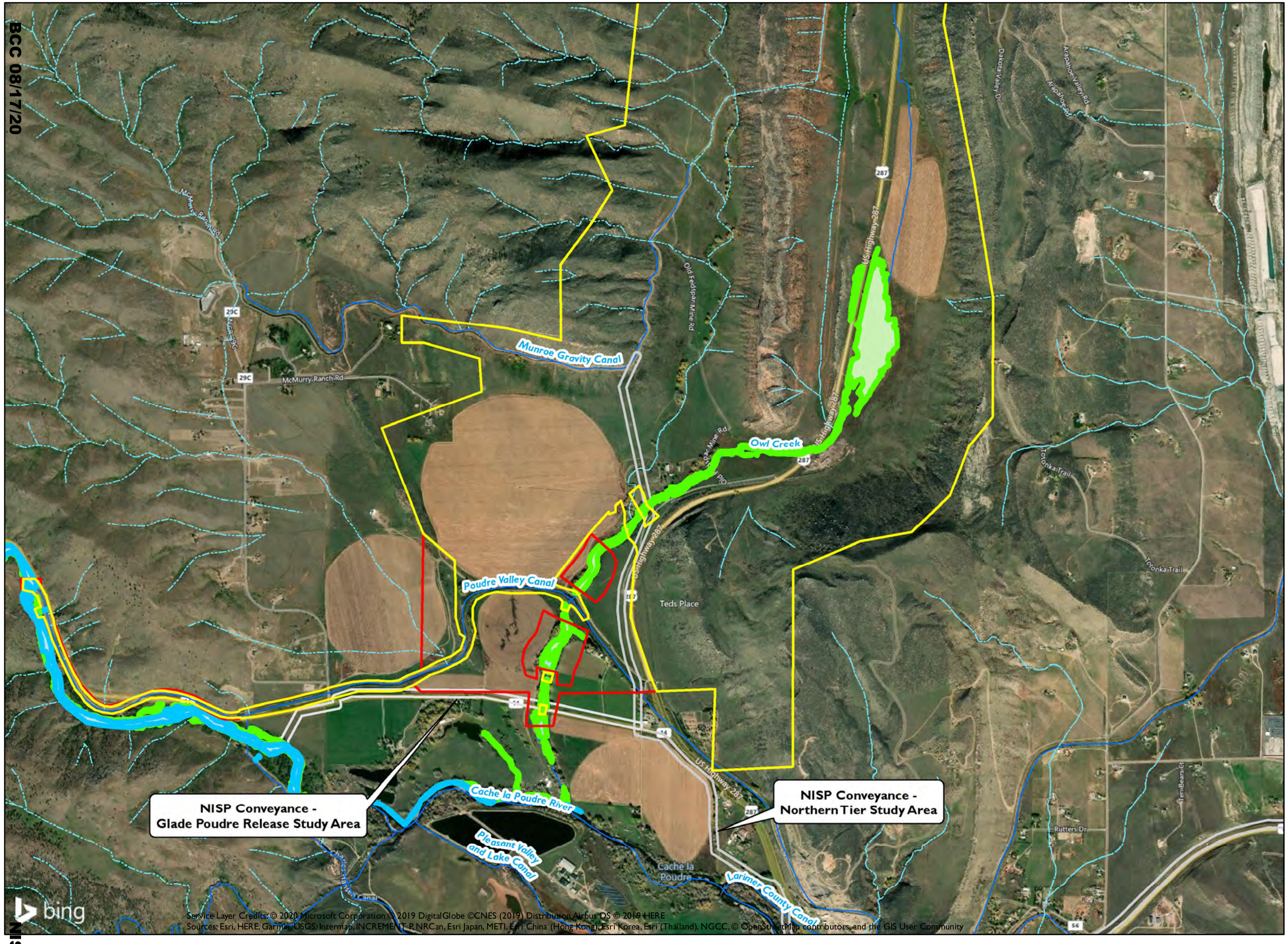
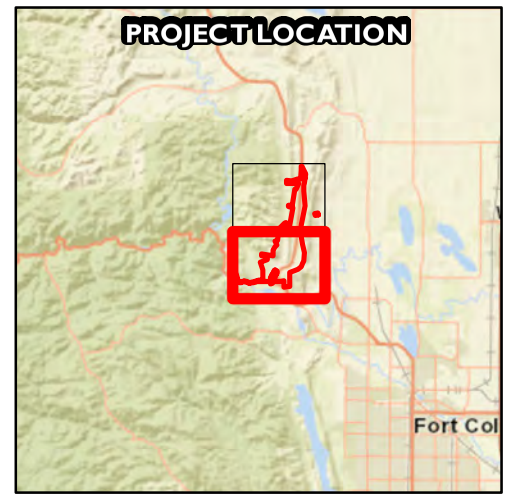

N
W
E
S
NISP
Northern Water
Northern Integrated Supply Project
Glade Reservoir
170,000 acre-feet
U.S. Highway 287
Realignment
Wellington
Poudre Valley Canal
25
Galeton Reservoir
45,600 acre-feet
NISP Delivery
Pipeline
85
Ault
14
Galeton
Pipeline
Larimer & Weld Canal
Horsetooth
Reservoir
Fort Collins
Severance
Eaton
Windsor
287
25
New Cache Canal
85
Cache la Poudre River
Loveland
Greeley
34
34
Big Thompson River
South Platte River

Figure 2. Glade Reservoir Complex Wetland Resources

BCC 08/17/20





Legend

- Glade Reservoir Permanent Impact Area
- Glade Reservoir Temporary Impact Area
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetlands Data Sources: ERO 2019 and 2016; AECOM 2018; Pinyon 2019

Jurisdictional wetlands are shown in the Glade Reservoir Area.

1 inch = 1,600 feet

0 800 1,600 Feet

Pinyon Environmental, Inc.

GLADE RESERVOIR COMPLEX WETLAND RESOURCES

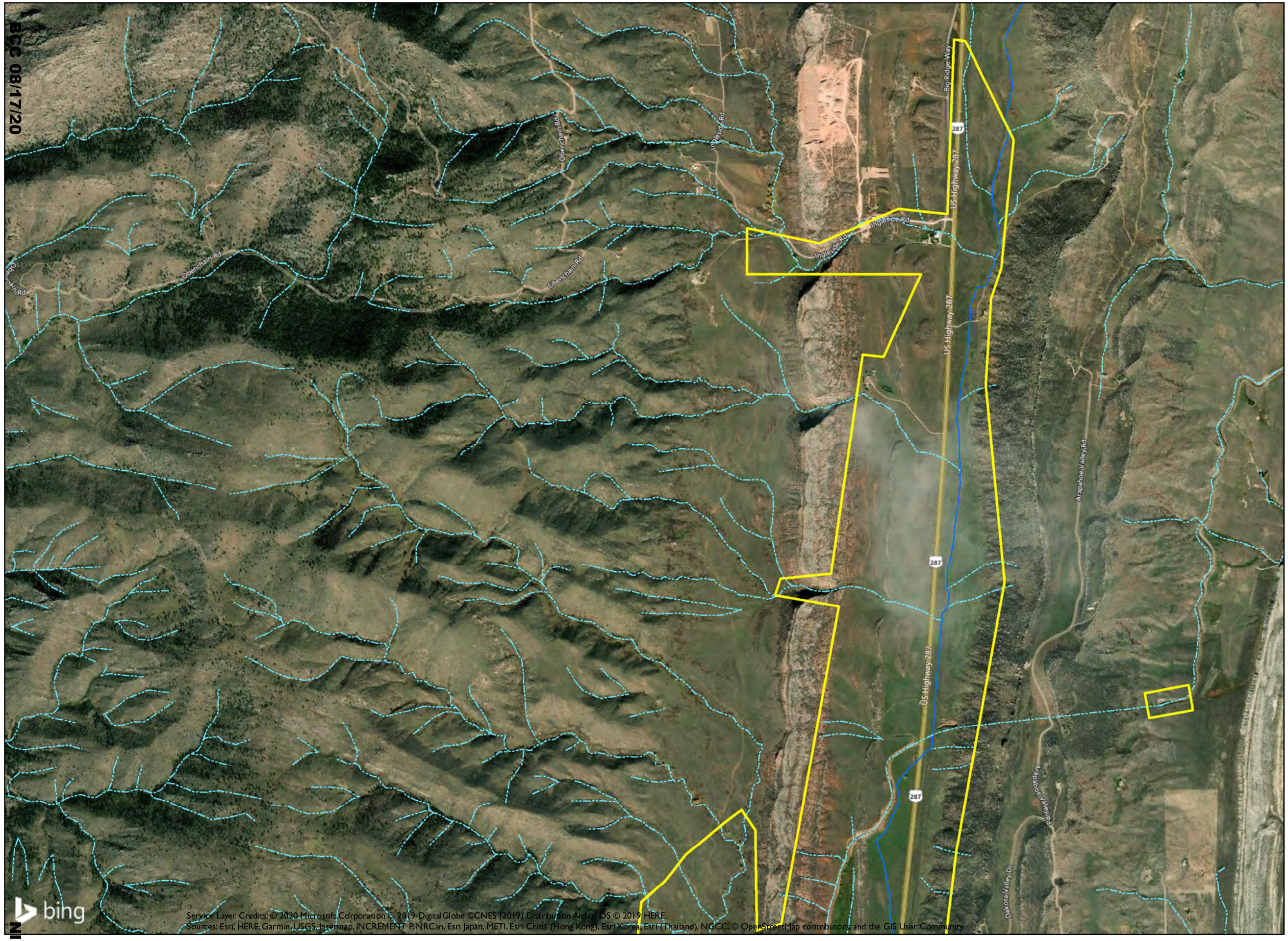
Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

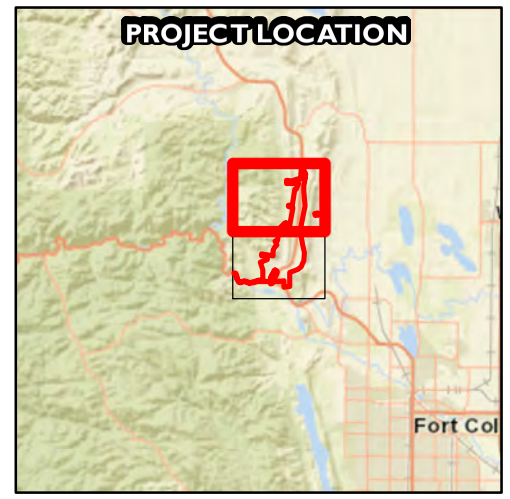
761

Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 2; Page 1 of 2
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 2/5/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - GladeReservoir MapBook.mxd

BCC 08/17/20





Legend

- Glade Reservoir Permanent Impact Area
- Glade Reservoir Temporary Impact Area
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetlands Data Sources: ERO 2019 and 2016; AECOM 2018; Pinyon 2019

Jurisdictional wetlands are shown in the Glade Reservoir Area.

1 inch = 1,600 feet

0 800 1,600 Feet

Pinyon Environmental, Inc.

GLADE RESERVOIR COMPLEX WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

762

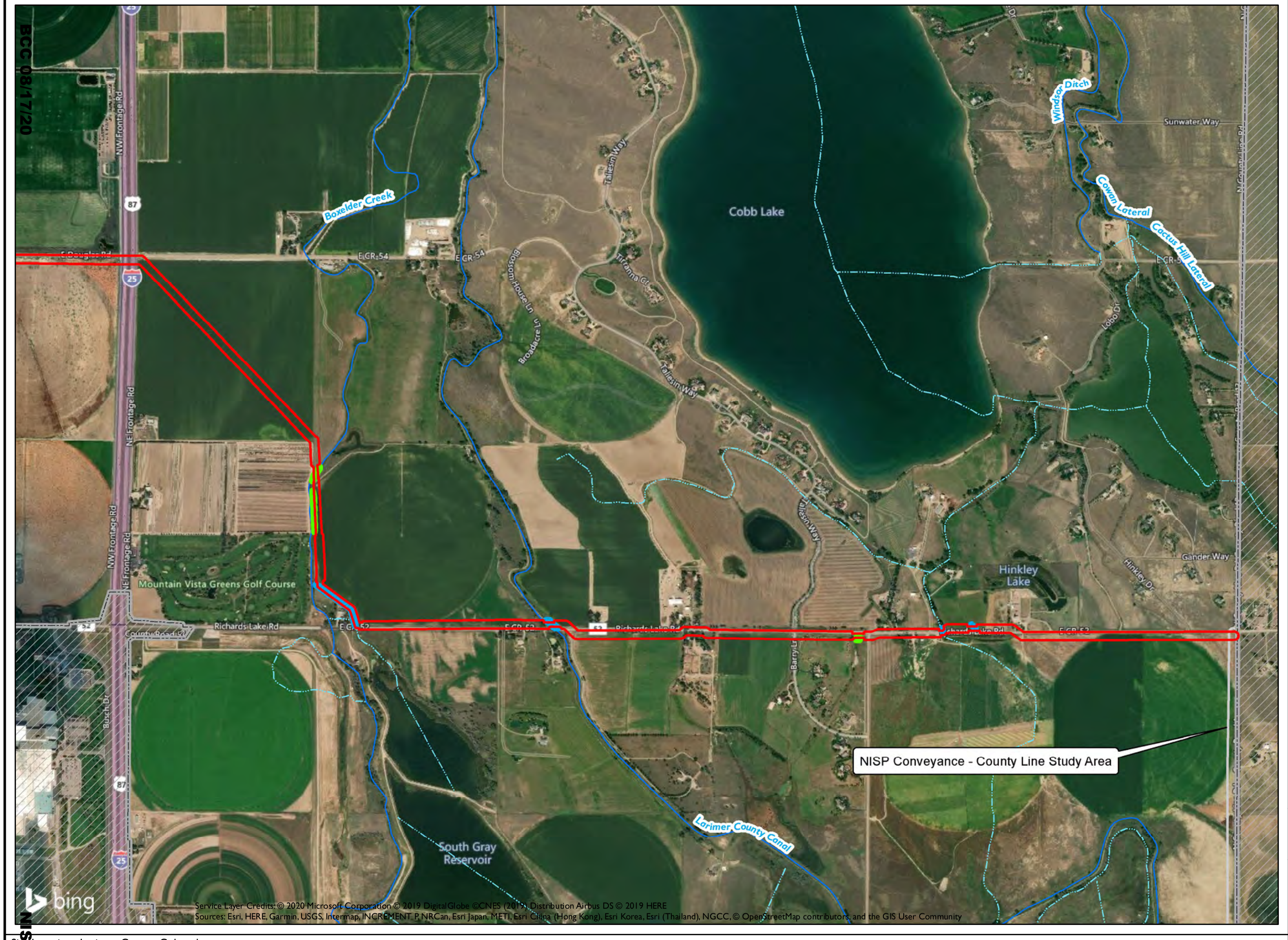
NISP

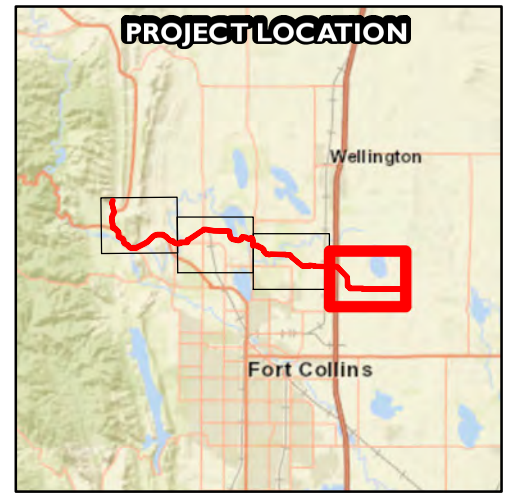
Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 2; Page 2 of 2
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 2/5/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - GladeReservoir MapBook.mxd

Figure 3. NISP Conveyance – Northern Tier Alignment Wetland Resources

BCC 08/17/20





Legend

- NISP Conveyance – Northern Tier Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetlands Data Sources: ERO 2019 and 2016; AECOM 2018; Pinyon 2019

Jurisdictional wetlands are shown in the Glade Reservoir Area.

1 inch = 0.25 miles

0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - NORTHERN TIER ALIGNMENT WETLAND RESOURCES

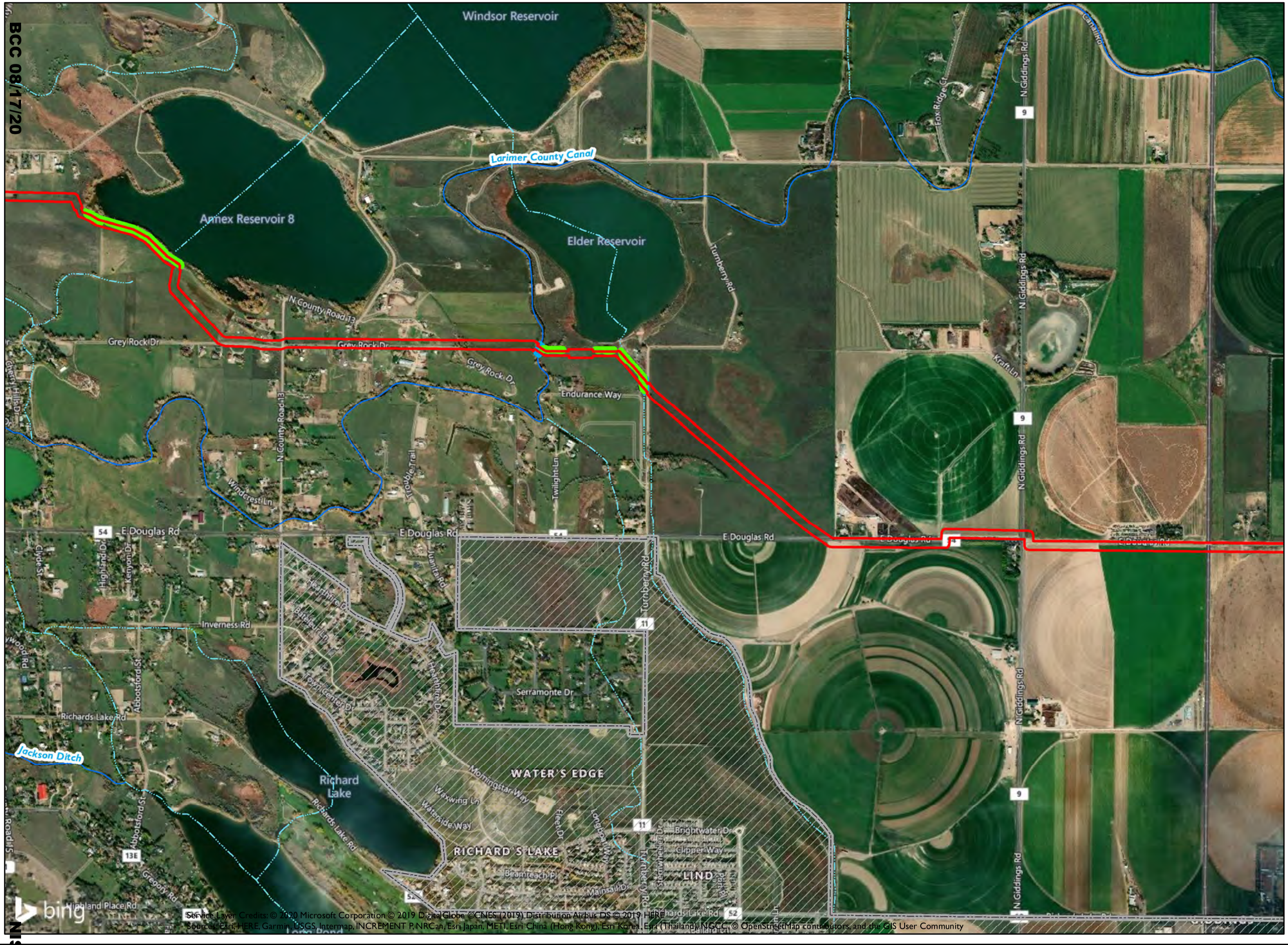
Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

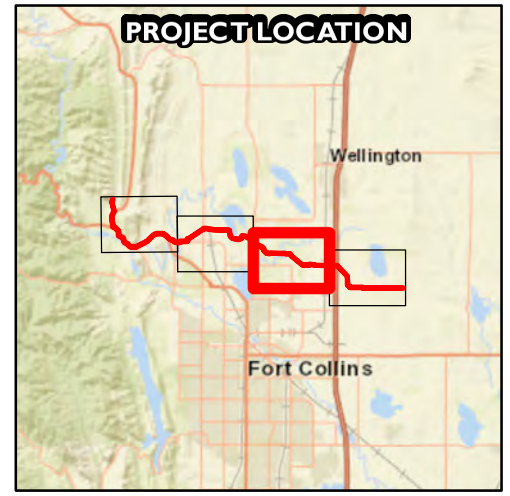
764

Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 3; Page 1 of 4
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 2/5/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - NorthernTier MapBook.mxd

BCC 08/17/20





Legend

- NISP Conveyance – Northern Tier Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetlands Data Sources: ERO 2019 and 2016; AECOM 2018; Pinyon 2019

Jurisdictional wetlands are shown in the Glade Reservoir Area.

1 inch = 0.25 miles

0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - NORTHERN TIER ALIGNMENT WETLAND RESOURCES

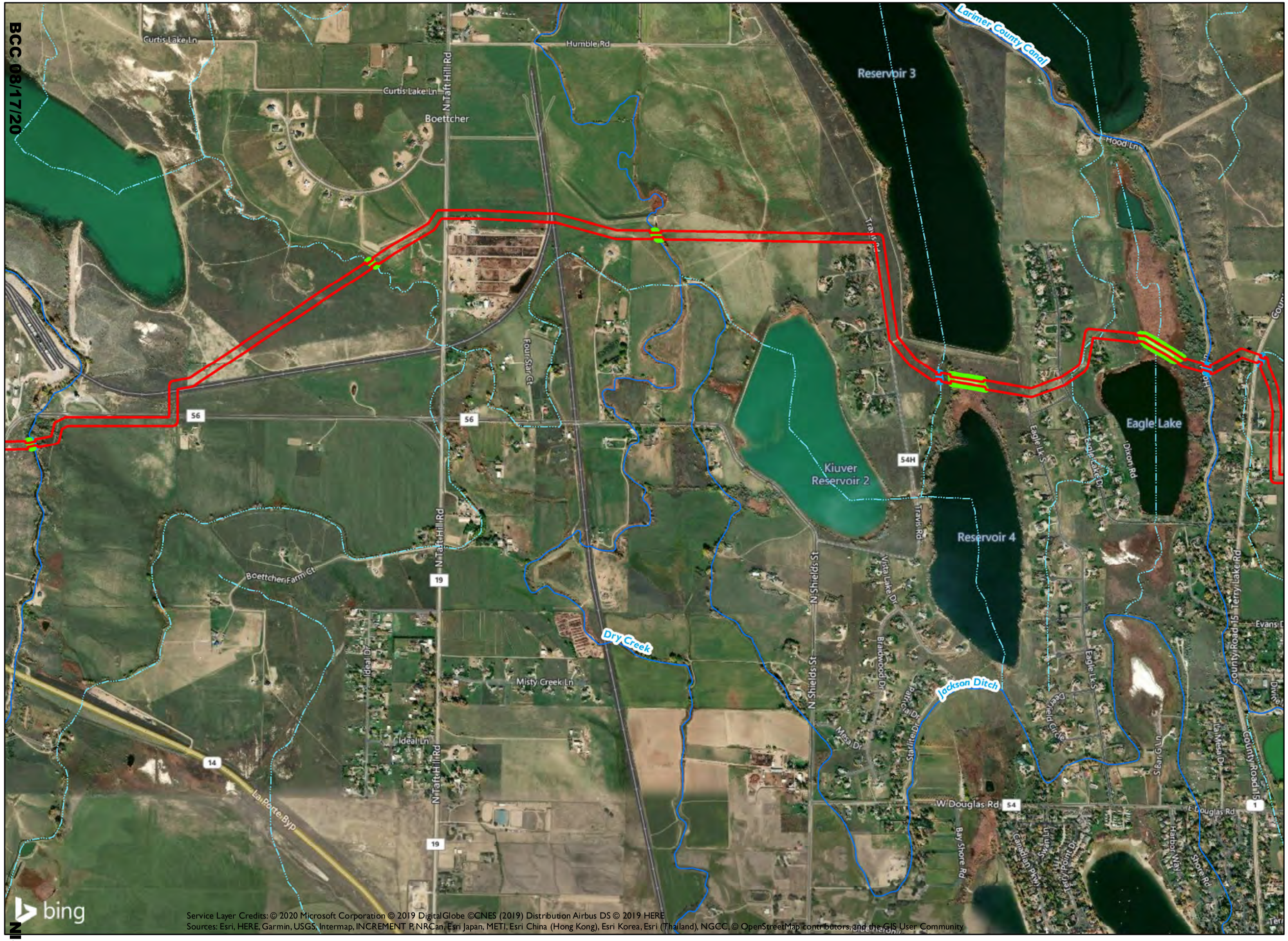
Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

765

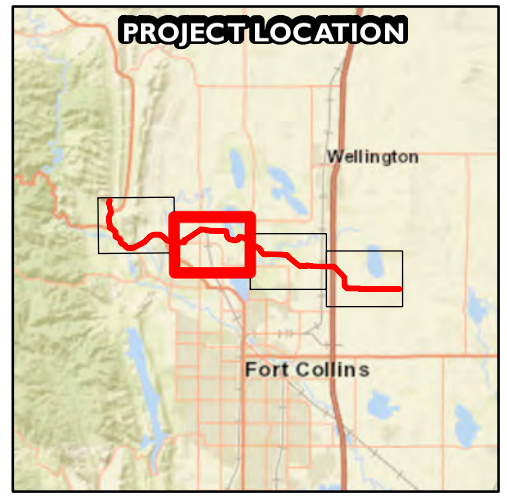
Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 3; Page 2 of 4
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 2/5/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - NorthernTier MapBook.mxd

BCC 08/17/20



Service Layer Credits: © 2020 Microsoft Corporation © 2019 DigitalGlobe ©CNES (2019) Distribution Airbus DS © 2019 HERE
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community



Legend

- NISP Conveyance – Northern Tier Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetlands Data Sources: ERO 2019 and 2016; AECOM 2018; Pinyon 2019

Jurisdictional wetlands are shown in the Glade Reservoir Area.

1 inch = 0.25 miles

0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - NORTHERN TIER ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

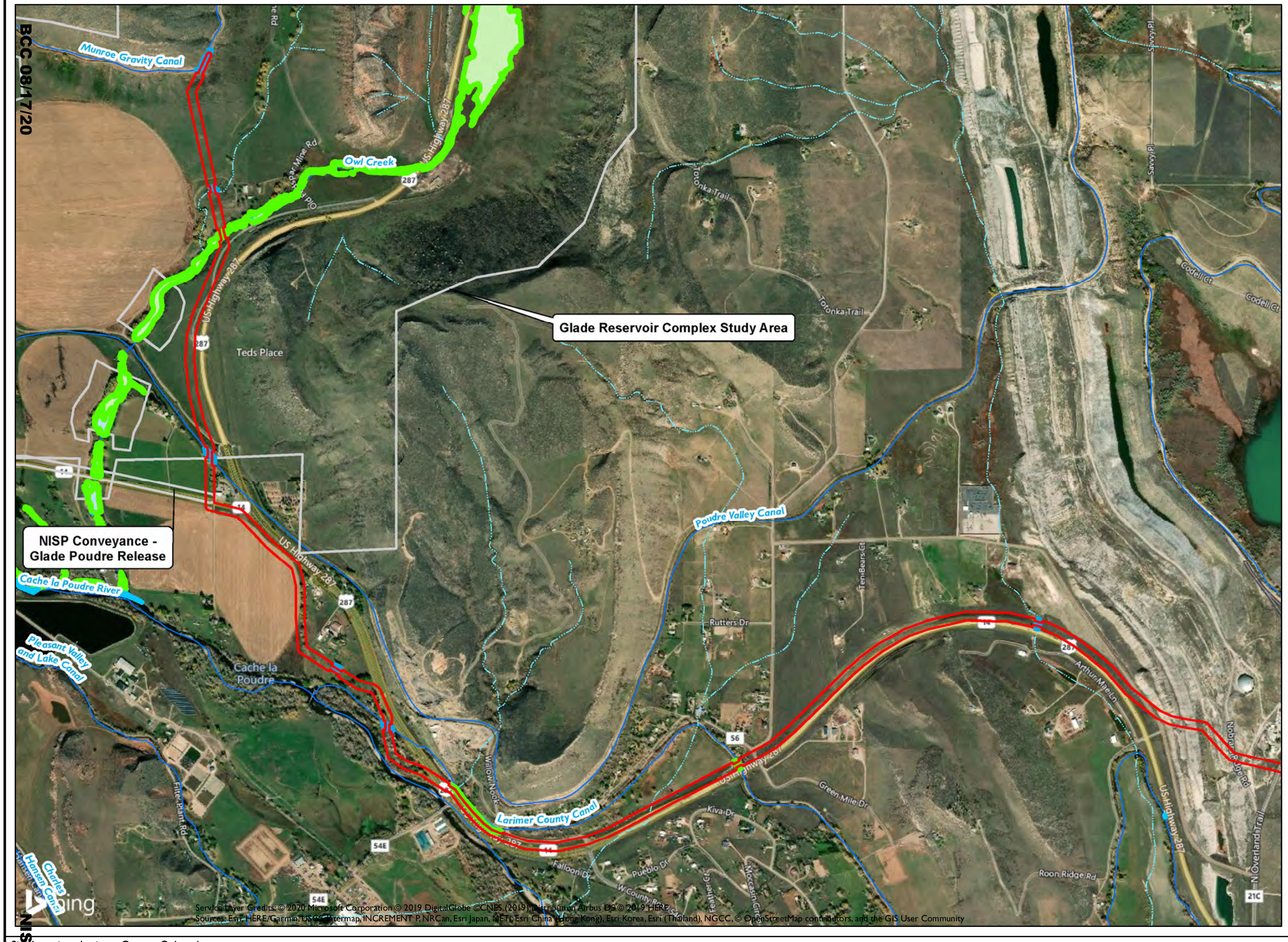
NISP

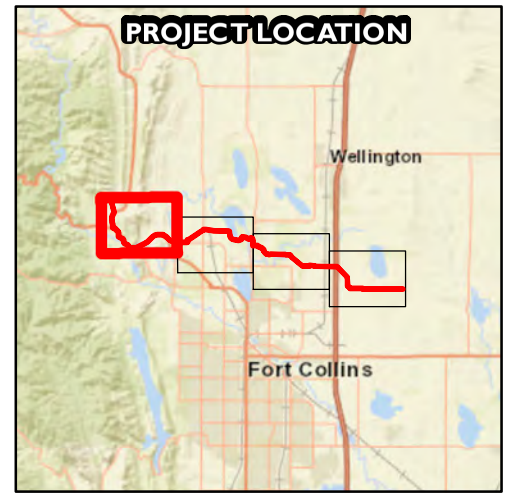
Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 3; Page 3 of 4
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 2/5/2020

766

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - NorthernTier MapBook.mxd

BCC 08/17/20





Legend

- NISP Conveyance – Northern Tier Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetlands Data Sources: ERO 2019 and 2016; AECOM 2018; Pinyon 2019

Jurisdictional wetlands are shown in the Glade Reservoir Area.

1 inch = 0.25 miles

0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - NORTHERN TIER ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

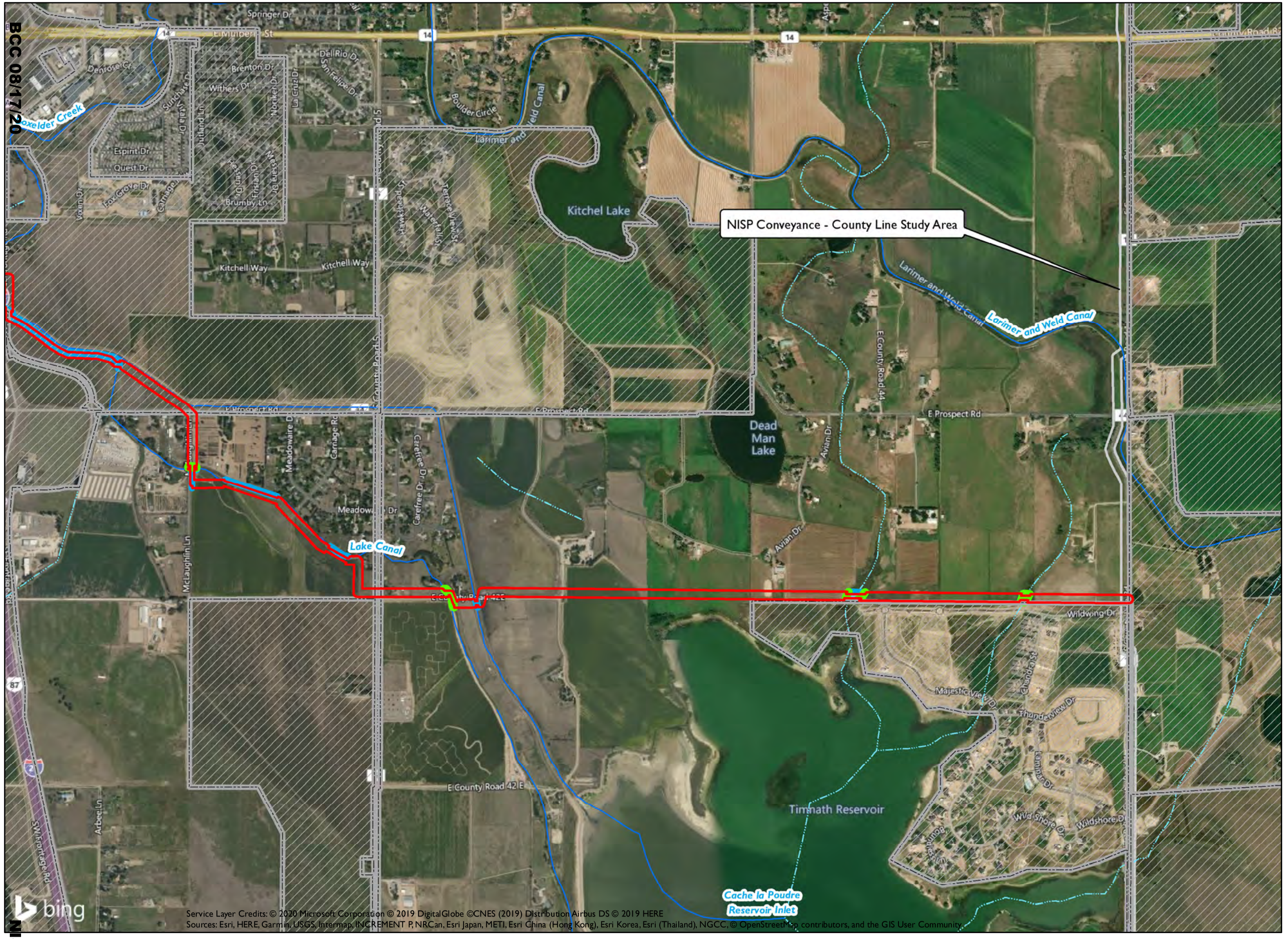
767

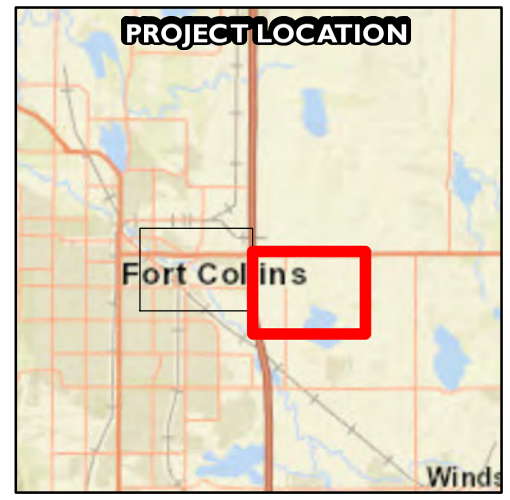
Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 3; Page 4 of 4
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 2/5/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - NorthernTier MapBook.mxd

Figure 4. NISP Conveyance – Poudre Intake Alignment Wetland Resources

BCC 08/17/20





Legend

- NISP Conveyance – Poudre Intake Permanent Impact Area
- NISP Conveyance – Poudre Intake Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - POUDRE INTAKE ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

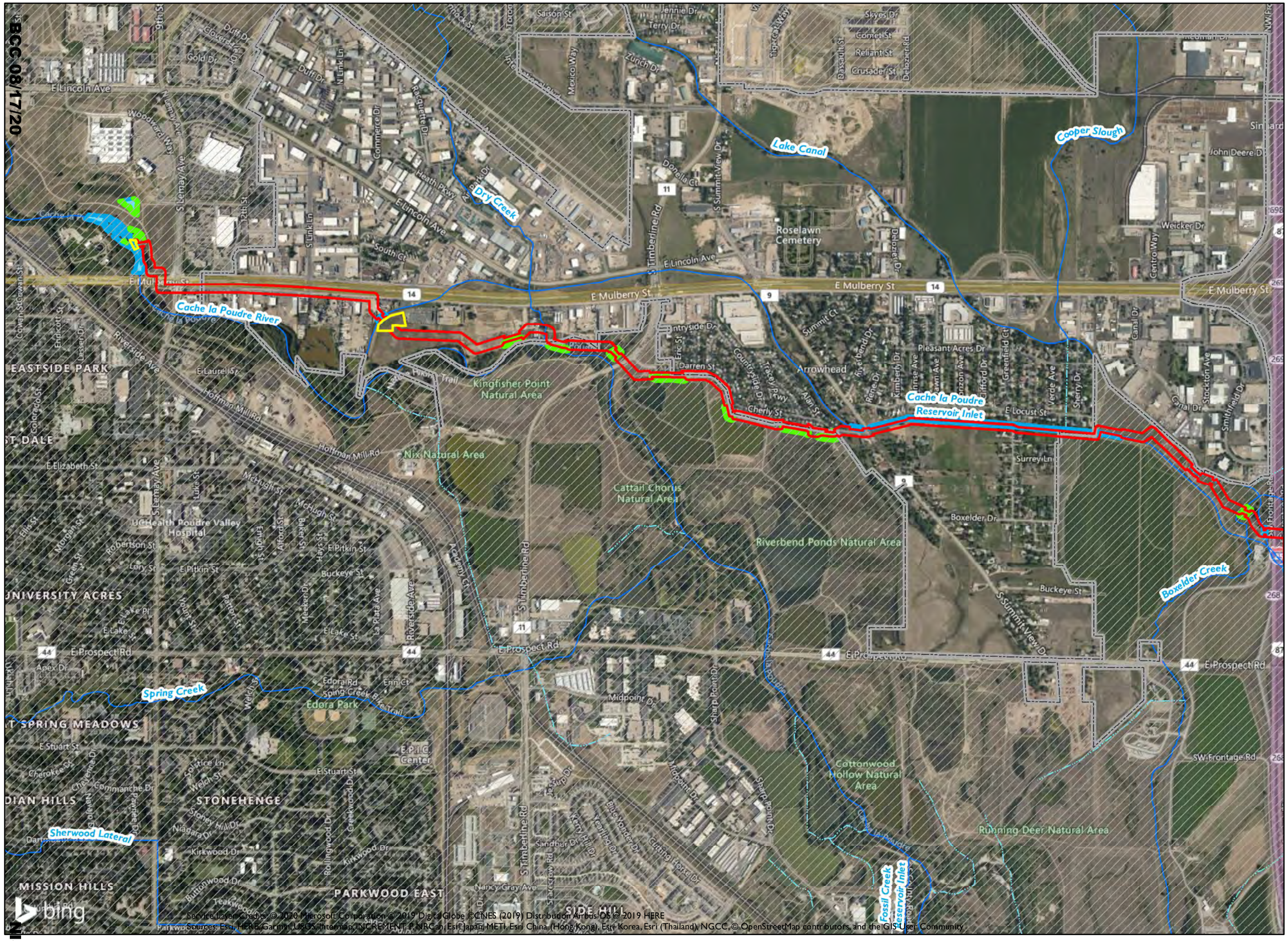
769

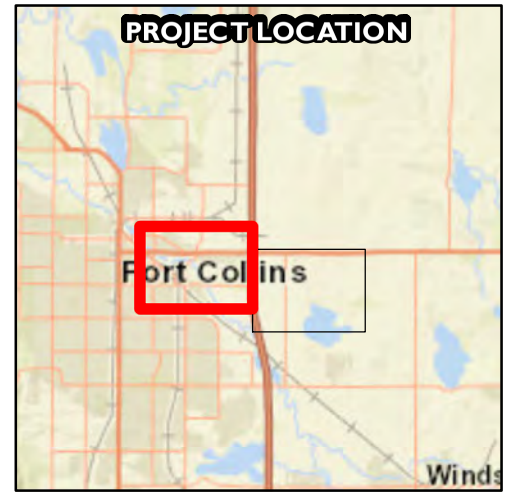
Site Location: Larimer County, Colorado	Drawn By: MJS	Figue 4; Page 1 of 2
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/23/2020

NISP

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Wetlands\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - Poudre MapBook.mxd

BCC 08/17/20





Legend

- NISP Conveyance – Poudre Intake Permanent Impact Area
- NISP Conveyance – Poudre Intake Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - POUDRE INTAKE ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

770

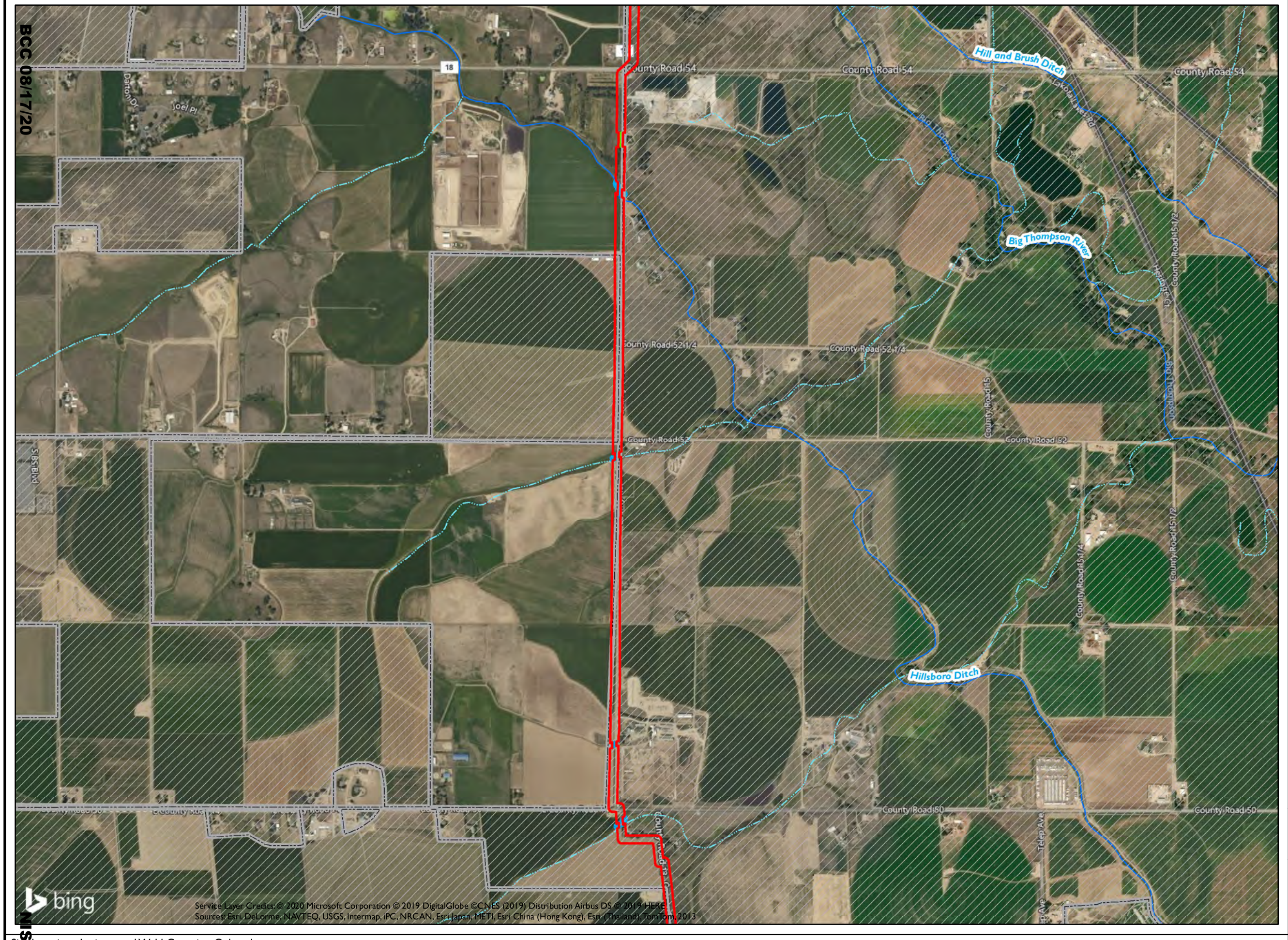
Site Location: Larimer County, Colorado	Drawn By: MJS	Figue 4; Page 2 of 2
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/23/2020

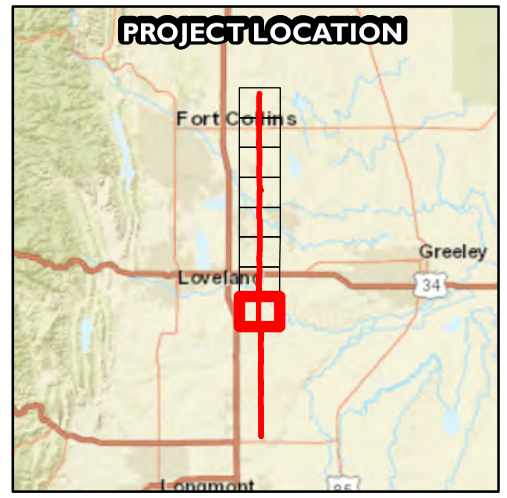
NISP

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Wetlands\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - Poudre MapBook.mxd

Figure 5. NISP Conveyance – County Line Alignment Wetland Resources

BCC 08/17/20





Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

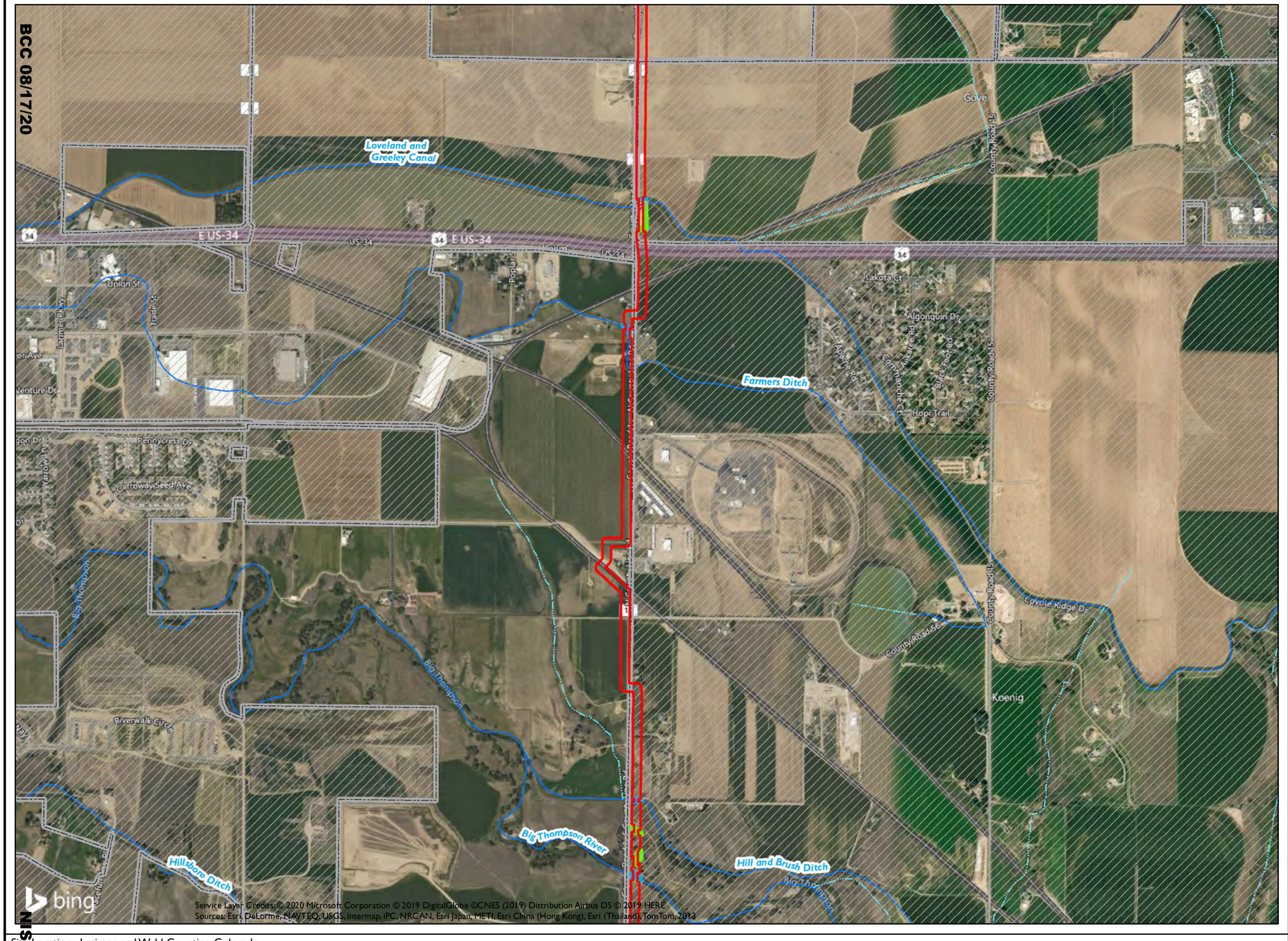
772

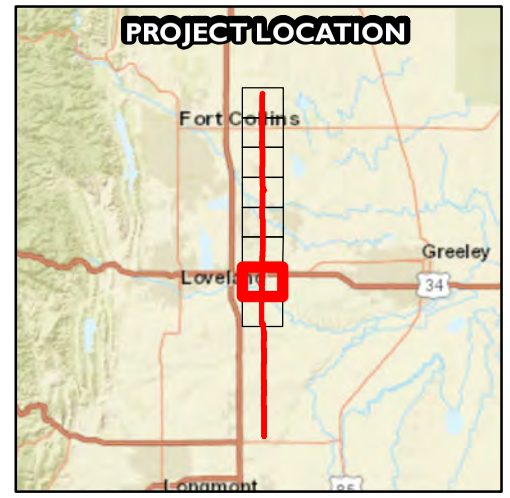
Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS	Figure 5; Page 1 of 8
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/31/2020

NISP

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd

BCC 08/17/20





Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

Pinyon Environmental, Inc.

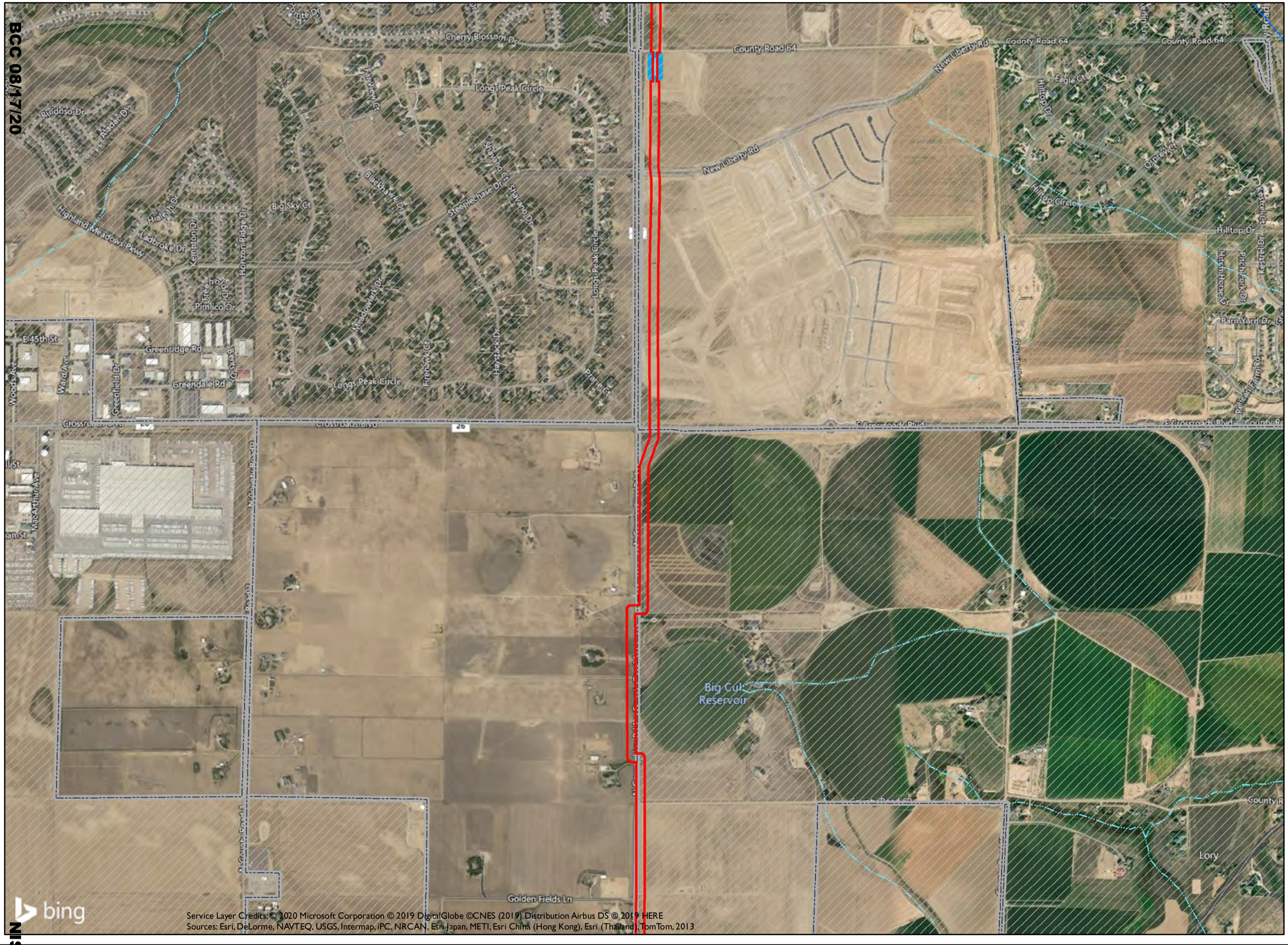
NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES

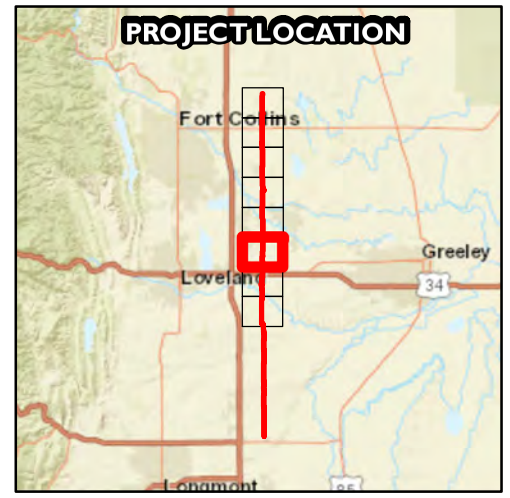
Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

773

Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS	Figure 5; Page 2 of 8
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/31/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd





Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

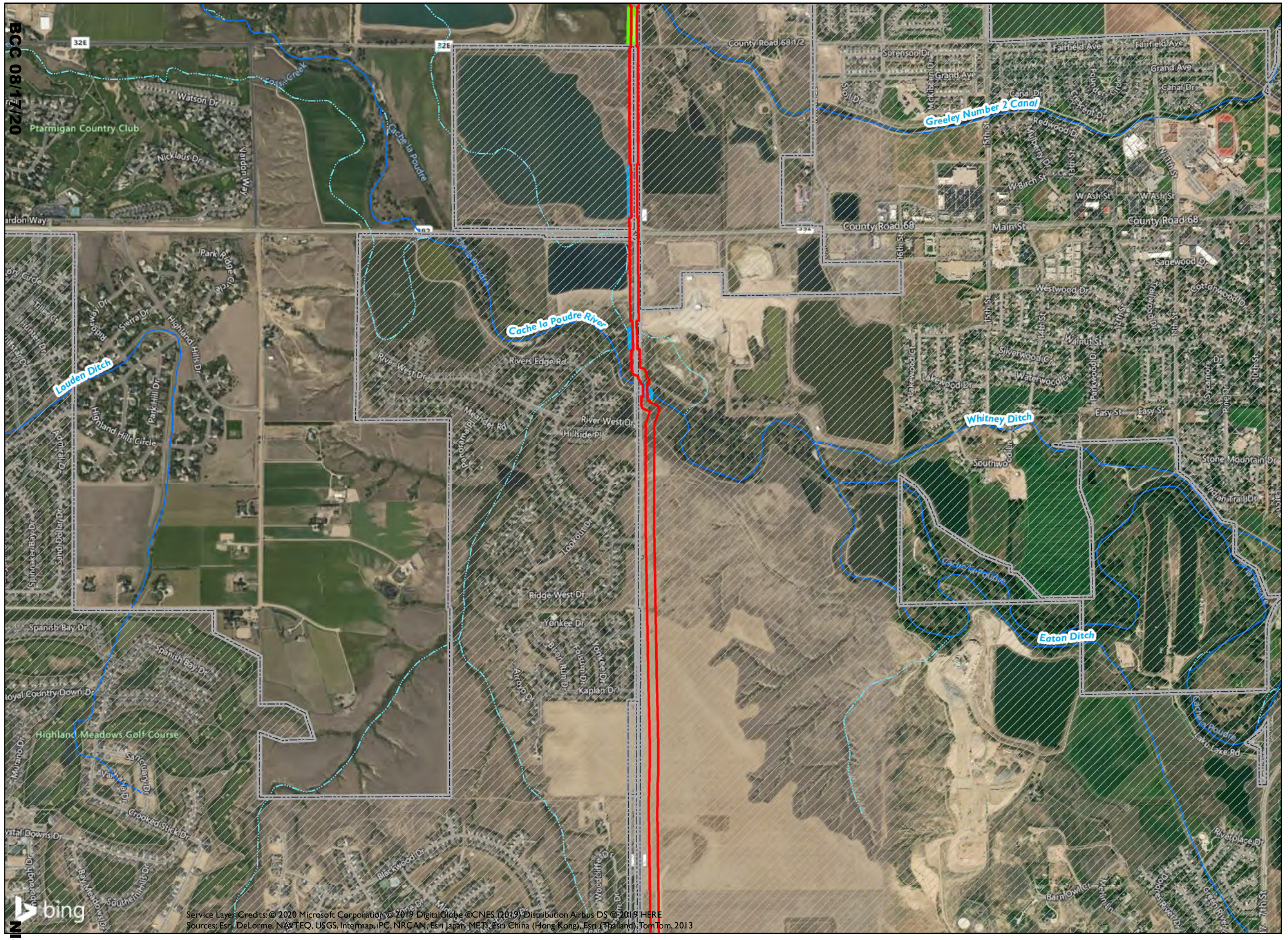
774

Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS	Figure 5; Page 3 of 8
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/31/2020

NISP

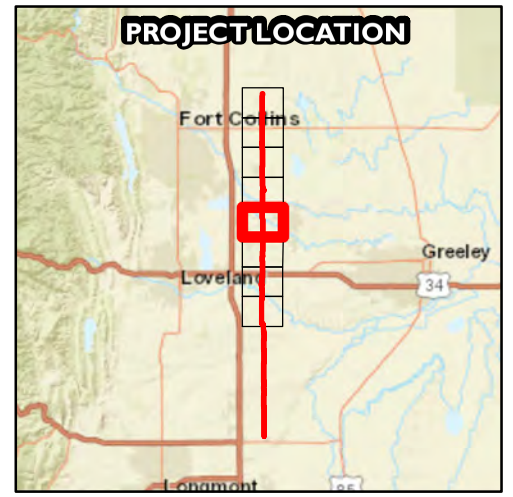
Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd

BCC 08/17/20



Service Layer Credits: © 2020 Microsoft Corporation © 2019 DigitalGlobe ©CNES (2019) Distribution Airbus DS © 2019 HERE
Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

NISP



Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25
Miles

Pinyon

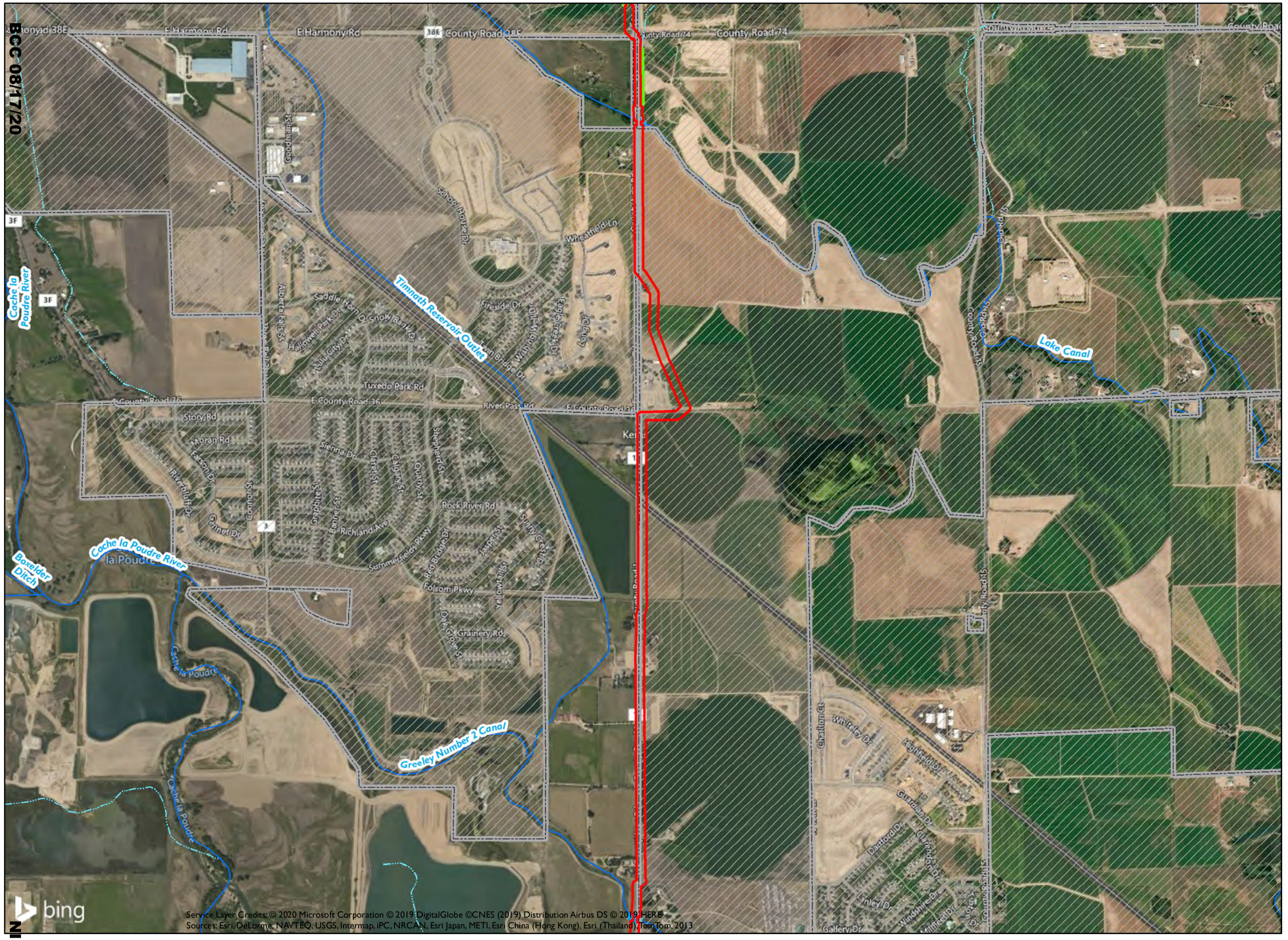
NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES
Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

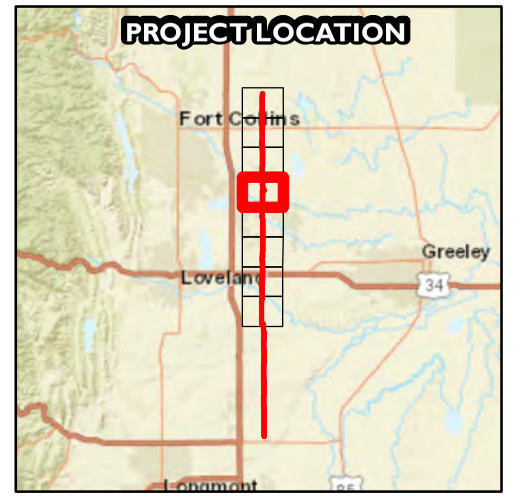
775

Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS	Figure 5; Page 4 of 8
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/31/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd

BCC 08/17/20





Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

Pinyon Environmental, Inc.

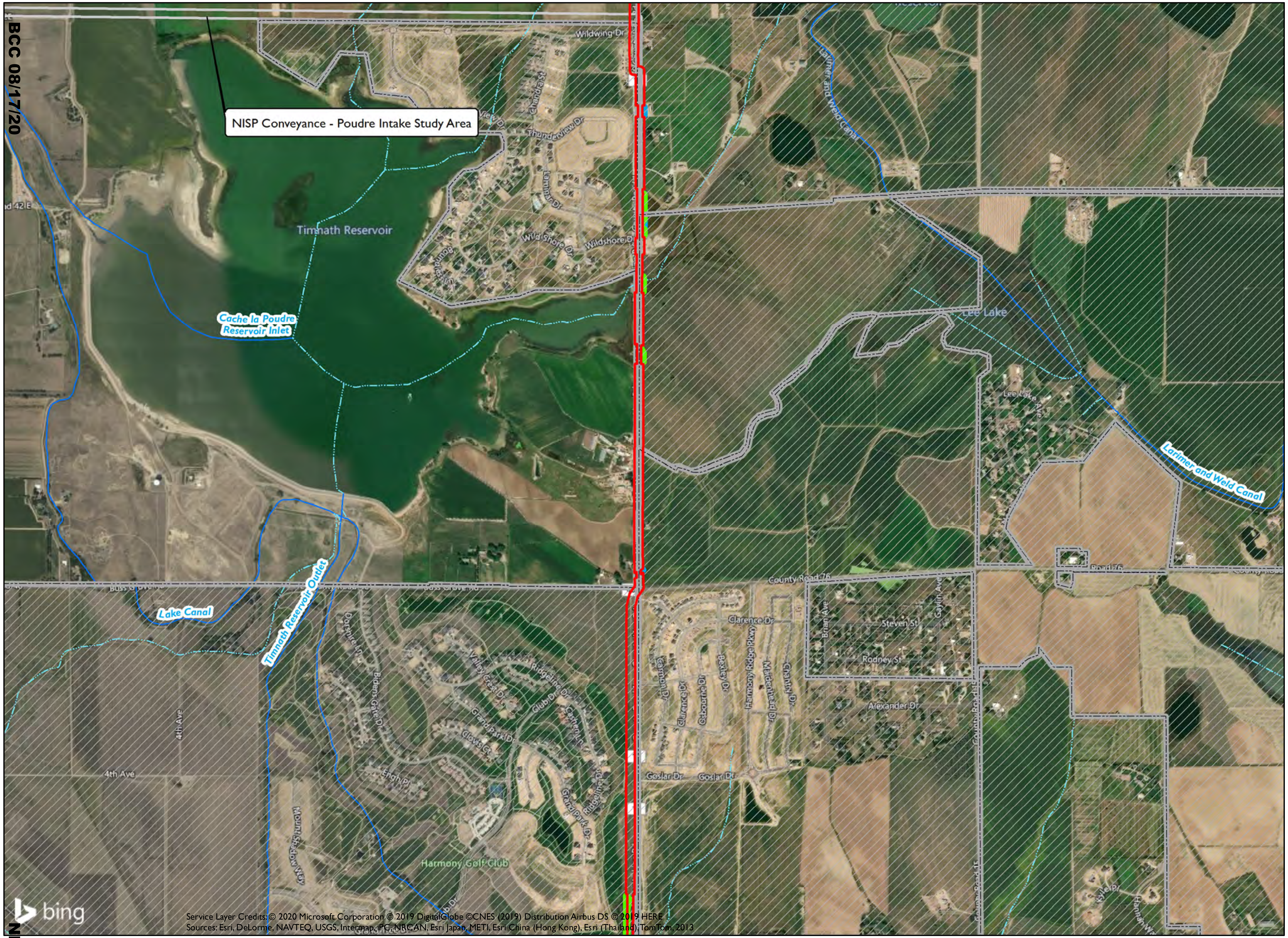
NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES

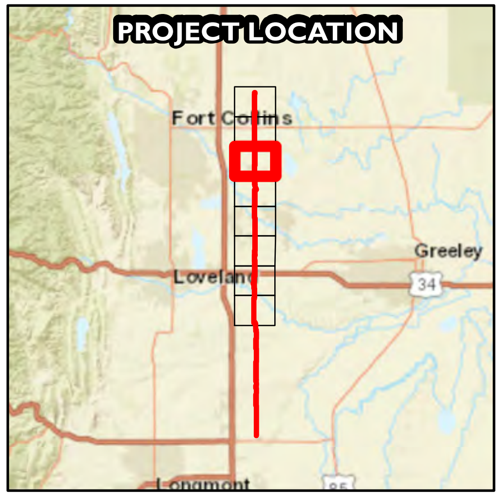
Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

776

Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS	Figure 5; Page 5 of 8
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/31/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd





Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles

0 0.125 0.25 Miles

Pinyon

NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

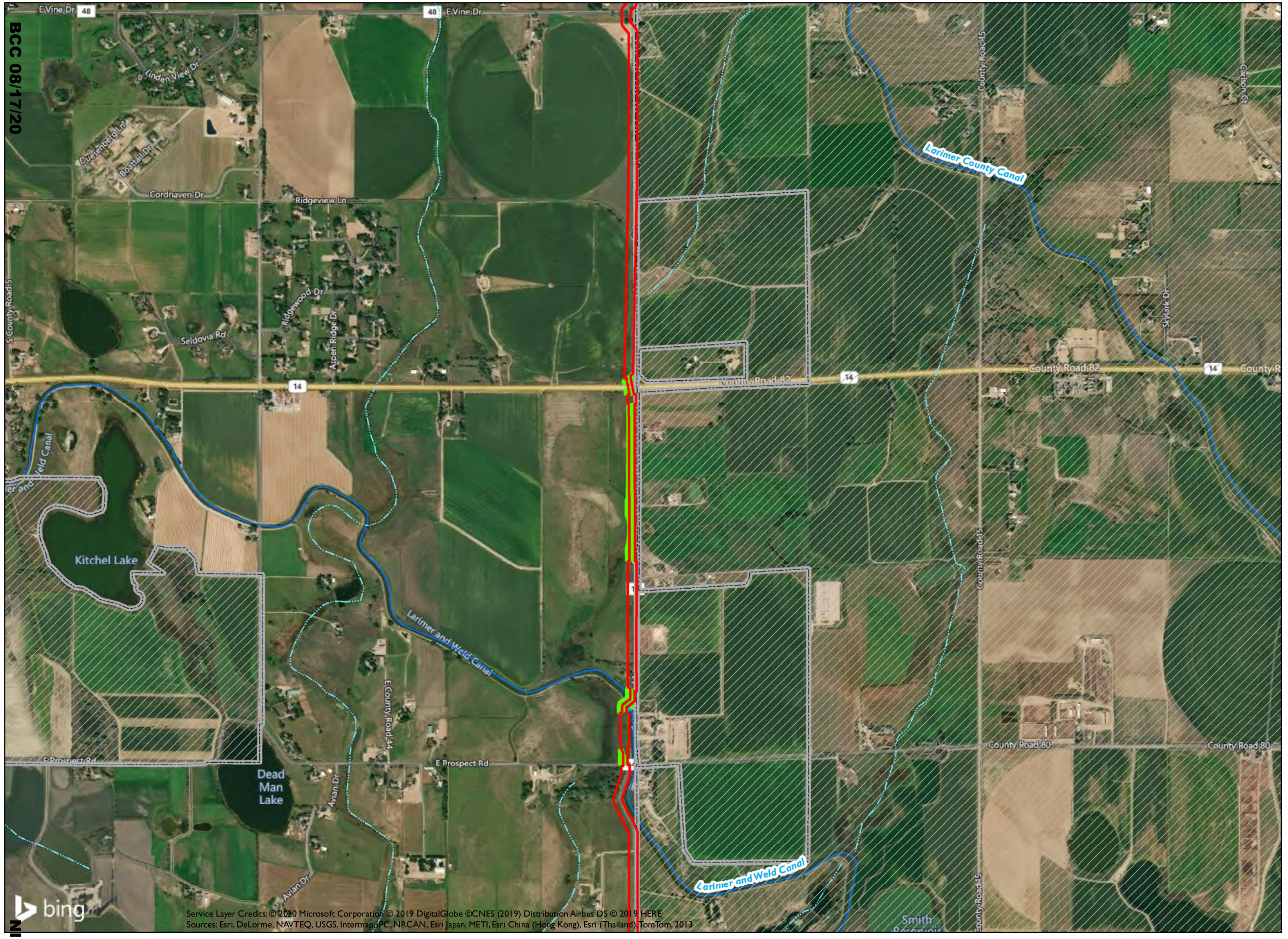
Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS
Pinyon Project Number: 11881402	Reviewed By: KKM

Figure 5; Page 6 of 8

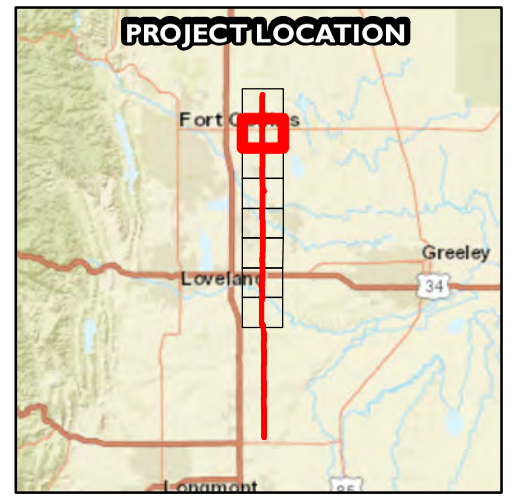
Date: 1/31/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd

BCC 08/17/20



NISP



Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

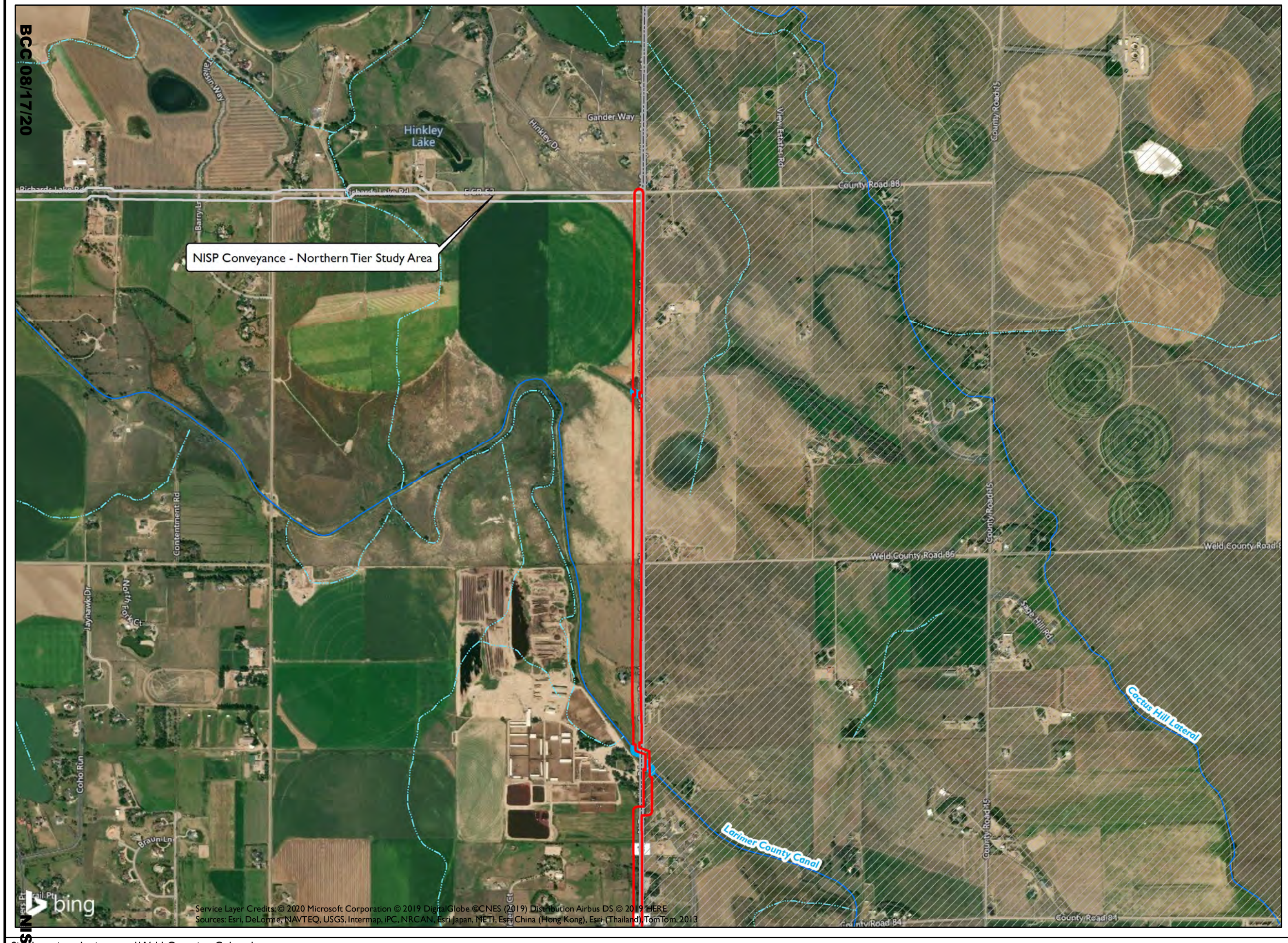
Pinyon

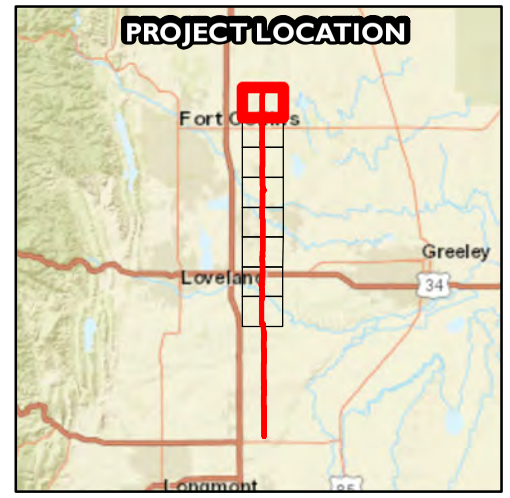
NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES
Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

778

Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS / Figure 5; Page 7 of 8
Pinyon Project Number: 11881402	Reviewed By: KKM / Date: 1/31/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd





Legend

- NISP Conveyance – County Line Temporary Impact Area
- Incorporated Larimer County and/or Weld County*
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetland Data Source: Pinyon 2019

1 inch = 0.25 miles
0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - COUNTY LINE ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

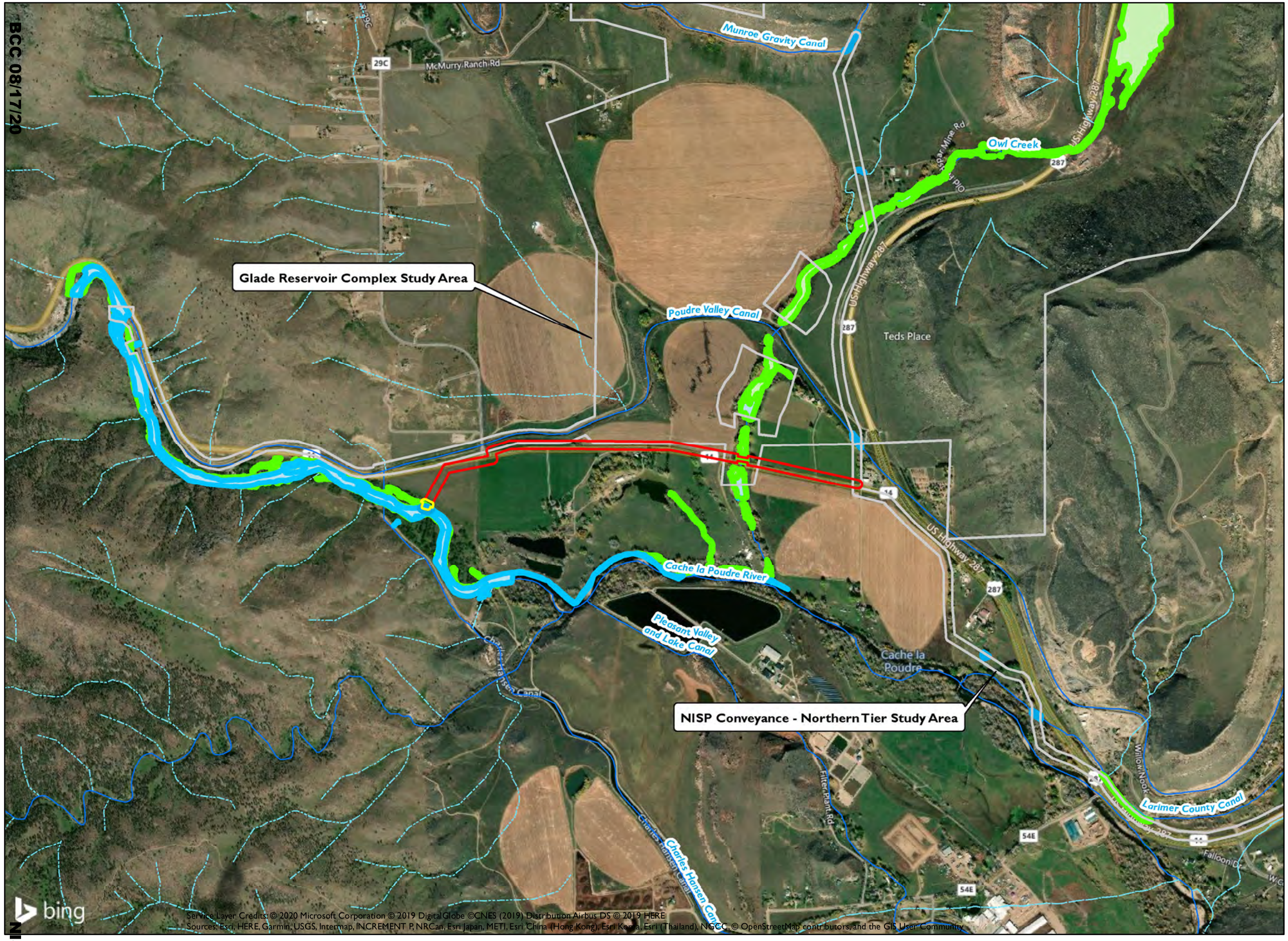
779

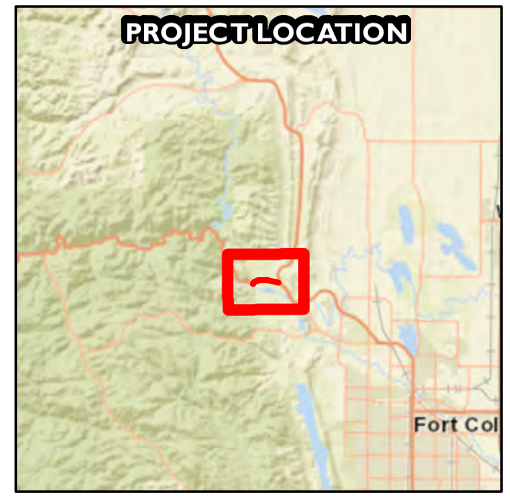
Site Location: Larimer and Weld Counties, Colorado	Drawn By: MJS	Figure 5; Page 8 of 8
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 1/31/2020

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - CountyLine MapBook.mxd

Figure 6. NISP Conveyance – Glade Release Alignment Wetland Resources

BCC 08/17/20





Legend

- NISP Conveyance - Glade Release Temporary Impact Area
- NISP Conveyance - Glade Release Permanent Impact Area
- Open Waters
- Wetland
- Major Stream/Ditch
- Minor Stream/Ditch

Note
NISP = Northern Integrated Supply Project
Wetland and Open Water boundaries have been exaggerated for visual purposes.

*All non-hatched areas are Unincorporated Larimer County

Wetlands Data Sources: ERO 2019 and 2016; AECOM 2018; Pinyon 2019

Jurisdictional wetlands are shown in the Glade Reservoir Area.

1 inch = 0.25 miles

0 0.125 0.25 Miles

Pinyon Environmental, Inc.

NISP CONVEYANCE - GLADE RELEASE ALIGNMENT WETLAND RESOURCES

Northern Integrated Supply Project
Larimer and Weld Counties, Colorado

781

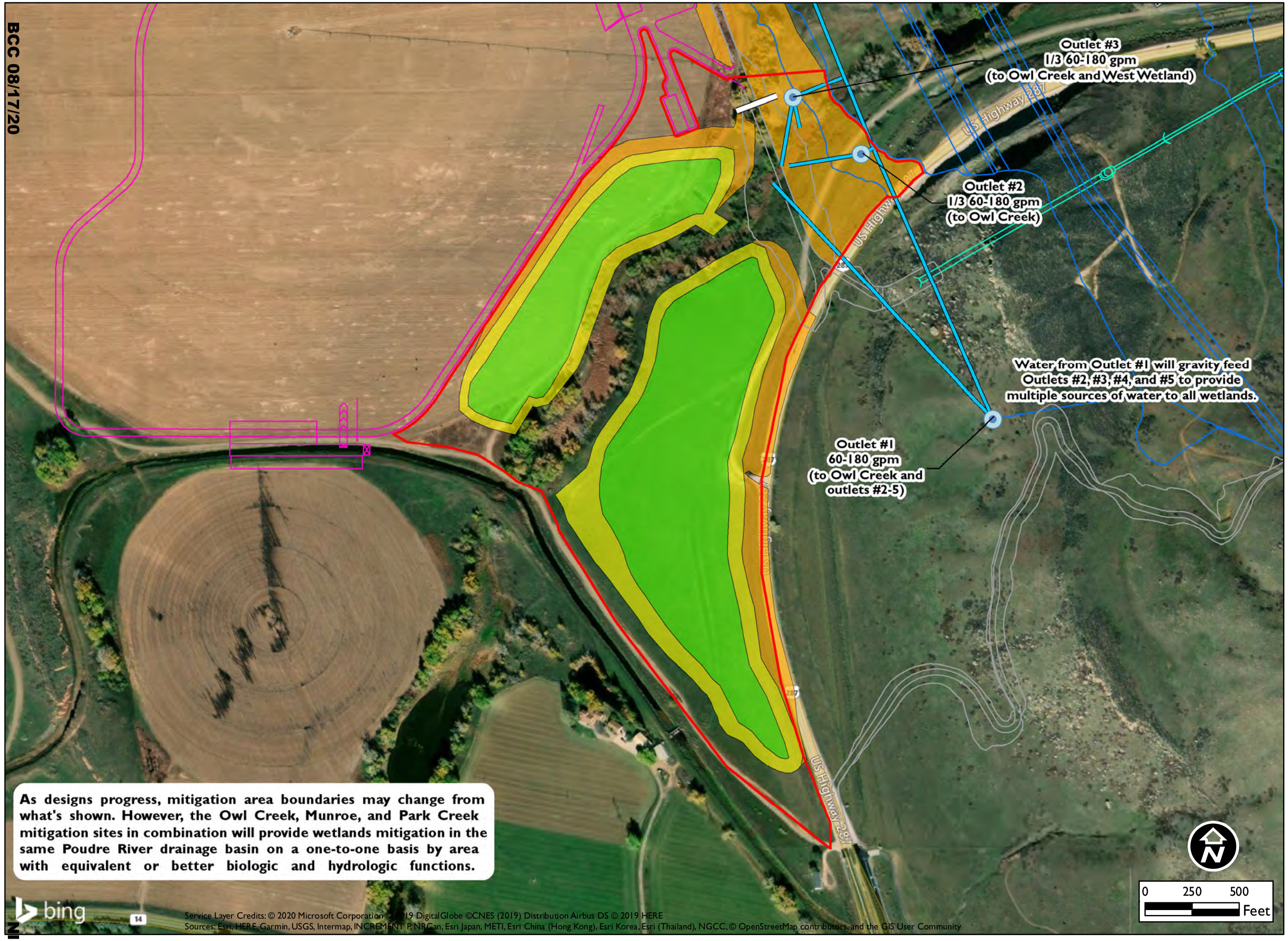
Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 6
Pinyon Project Number: 11881402	Reviewed By: KKM	Date: 2/5/2020

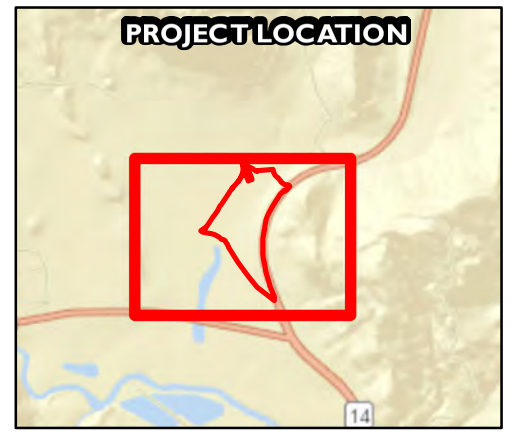
NISP

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - GladePoudre MapBook.mxd

Figure 7. Owl Creek Wetland Mitigation Site

BCC 08/17/20





Legend

- Wetland Mitigation Area
- Proposed Toe Drain Outlet
- Propsed Pipe Connections
- PMJM Crossing
- Access Road (4/25/18)
- Embankment (11/9/17)
- Forebay (4/25/18)
- LLOW (1/16/18)
- Spillway (4/24/18)

Mitigation Type

- PEM Wetlands
- PSS Wetlands - Riparian
- Upland

Pinyon Environmental, Inc.

OWL CREEK WETLAND MITIGATION
Northern Integrated Supply Project
Northern Colorado Water Conservancy District
Larimer County, Colorado

NISP

Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 7
Pinyon Project Number: 1/18-814-02	Reviewed By: CCS	Date: 2/5/2020

783

Document Path: Z:\PROJECTS\2018\11881402 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - OwlCreek.mxd

Figure 8. Munroe Canal PMJM Mitigation Site

BCC 08/17/20

As designs progress, mitigation area boundaries may change from what's shown. However, the Owl Creek, Munroe, and Park Creek mitigation sites in combination will provide wetlands mitigation in the same Poudre River drainage basin on a one-to-one basis by area with equivalent or better biologic and hydrologic functions

Old Feldspar Mine Rd

McMurry Ranch Rd

Outlet #5 -
2-30 gpm
(to three Munroe Canal wetlands)

Water from Outlet #1 will gravity feed Outlets #2, #3, #4, and #5 to provide multiple sources of water to all wetlands.

Outlet #4
1/3 60-180 gpm

Outlet #3
1/3 60-180 gpm
(to Owl Creek)

Outlet #2
1/3 60-180 gpm
(to Owl Creek)

0 250 500 Feet

bing

Service Layer Credits: © 2020 Microsoft Corporation © 2019 DigitalGlobe ©CNES (2019) Distribution Airbus DS © 2019 HERE
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

NISP

PROJECT LOCATION

Legend

- PMJM Mitigation Area Boundary
- Proposed Toe Drain Outlet
- Propsed Pipe Connections
- PMJM Crossing
- Access Road (4/25/18)
- Embankment (11/9/17)
- Forebay (4/25/18)
- LLOW (1/16/18)
- Spillway (4/24/18)

Mitigation Type

- PEM Wetlands
- PSS Wetlands - Riparian
- Upland

Pinyon Environmental, Inc.

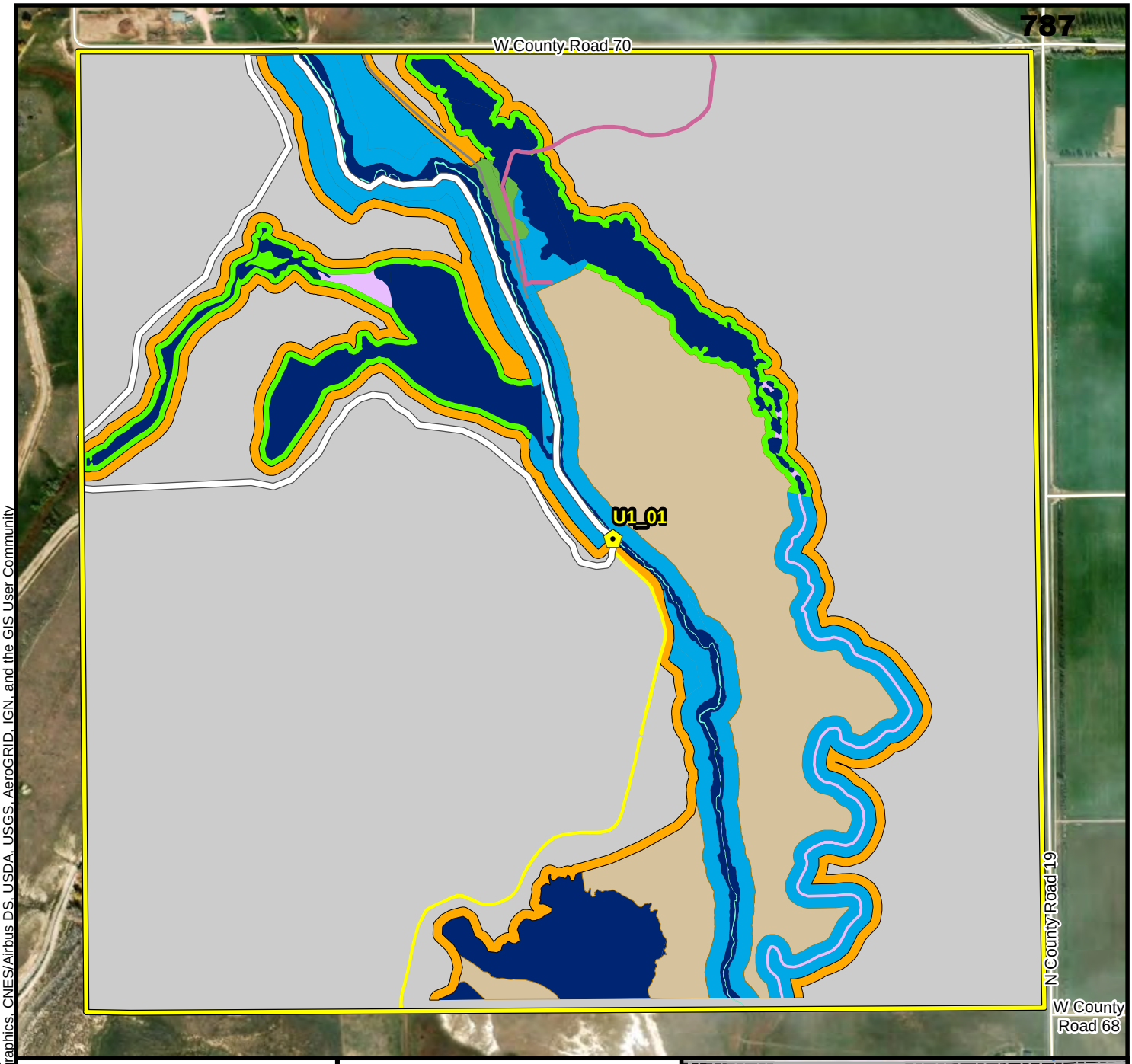
MUNROE CANAL PMJM MITIGATION
Northern Integrated Supply Project
Northern Colorado Water Conservancy District
Larimer County, Colorado

Site Location: Larimer County, Colorado	Drawn By: MJS	Figure 8
Pinyon Project Number: 1/18-814-02	Reviewed By: CCS	Date: 1/29/2020

785

Document Path: Z:\PROJECTS\2018\118814O2 NISP Environmental Compliance Support\Figures\ArcMap\MXDs\Larimer 1041 Permit\Wetland Mitigation\NISP_Larimer1041_WM - Munroe.mxd

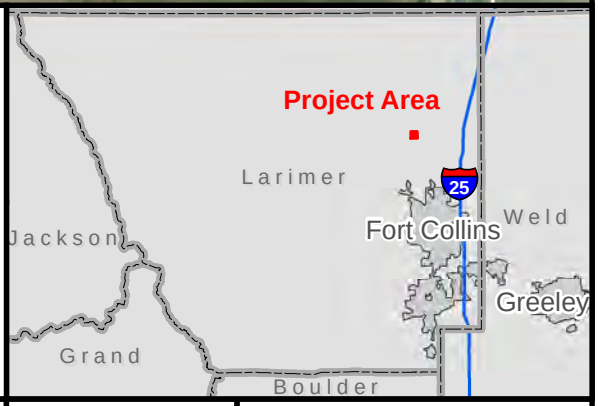
Figure 9. Park Creek Station Mitigation Site



Mitigation Strategies

- PEM Re-Establishment
- PEM Rehabilitation
- PSS Enhancement
- PSS Establishment
- PSS Re-Establishment
- Infill Buffer
- Excluded from Bank

As designs progress, mitigation area boundaries may change from what's shown. However, the Owl Creek, Munroe, and Park Creek mitigation sites in combination will provide wetlands mitigation in the same Poudre River drainage basin on a one-to-one basis by area with equivalent or better biologic and hydrologic functions.



- Canal
- Property Boundary
- Diversion Structure
- Park Creek
- 50ft Buffer
- Proposed NISP PRM Boundary
- Onsite Ditch
- Access Road
- Local Street

NORTH

800 400 0 800

Scale in Feet

BURNS McDONNELL

Attachment 1
NISP PRM Location within
Park Creek Station
Mitigation Bank
Larimer County, Colorado

NISP

BCC 08/17/20

Issued: 1/29/2020

Source: Esri; USGS-National Hydrography Dataset (NHD); and Burns & McDonnell Engineering Company, Inc.

Path: Z:\Resources\Local\Clients\KCMENS\ScoutCleanEn\103828_SweetlandWind\ArcGIS\Geospatial\DataFilesvArcDocs\PUC_App\NISP PRM Location_01282020_GB.mxd gwbuck 1/29/2020

Northern Water
Northern Integrated Supply Project

Larimer County Analysis – Technical Memorandum No. 7
Wildlife Conservation Plan

Prepared for:
Larimer County

Prepared by:
Northern Integrated Supply Project
Water Activity Enterprise

February 2020

Memorandum

Date: February 17, 2020

To: Christie Coleman, Northern Colorado Water Conservancy District

From: Brandee Anderson, Biologist – Pinyon Environmental, Inc.

Project: Northern Integrated Supply Project

Subject: Larimer County 1041 Permit: Wildlife Conservation Plan

Introduction

The memorandum (memo) presents the 1041 Permit Wildlife Conservation Plan (Plan) developed for the Northern Integrated Supply Project's (NISP or the Project) use in the NISP Water Activity Enterprise's (WAE) 1041 Permit application to Larimer County. In accordance with Larimer County Land Use Code requirements, the purpose of this Plan is to document impacts to wildlife; identify strategies for avoiding, minimizing, mitigating, and enhancing wildlife; propose a plan to implement those strategies; and confirm that applicable requirements will be followed.

Furthermore, the purpose of this Plan is to document the Project's extensive coordination efforts and commitments to avoid, minimize, mitigate, and enhance wildlife that would be impacted by the Project in unincorporated Larimer County, Colorado in accordance with *Larimer County Land Use Code, 8.2.7. Wildlife Conservation Plans* (Larimer County, 2019). NISP WAE is the permittee and the entity that will implement identified mitigation measures.

The NISP WAE has already undergone an extensive planning process in coordination with Colorado Parks and Wildlife (CPW) and private stakeholders in order to avoid, minimize, and mitigate impacts to fish and wildlife and enhance wildlife habitat. These measures are outlined in the Project's *Fish and Wildlife Mitigation and Enhancement Plan* (FWMEP) (Northern Water, 2017). The provisions of the FWMEP are enforceable through an Intergovernmental Agreement executed between the State and applicant. The FWMEP has already been developed in coordination with CPW to address impacts to fish and wildlife through the development of detailed mitigation and enhancement measures. A link to the FWMEP is available online here. Sections of the FWMEP applicable to Larimer County Land Use Code Requirements are summarized in the report below.

Project Overview

Northern Colorado Water Conservancy District (Northern Water), acting by and through the NISP WAE, has contracted Pinyon Environmental, Inc. (Pinyon), to provide environmental compliance services during the pre-construction phase of the Project. The Project will provide a new reliable water supply to Northern Colorado and consists of constructing the following in Larimer County:

- Glade Reservoir Complex, which includes Poudre Valley Canal and Monroe Canal improvements, and construction of the forebay area, the dam structure (including intake and release structures), a pump station, and recreation areas located adjacent to the new reservoir
- A realigned portion of U.S. Highway 287
- New pipeline conveyance systems, which include the Northern Tier, Poudre Intake, Glade Release, and County Line Alignments

The purpose of the Project is to meet a portion of the NISP Participants' (15 towns and water districts in Larimer, Weld, Morgan, and Boulder Counties) current and projected future water supply needs. The overall goal of the Project is to provide 40,000 acre-feet of new, annual water to the NISP Participants.

This Plan covers work associated with Glade Reservoir, including appurtenant facilities and recreation area, and the NISP pipeline conveyance system in unincorporated Larimer County (Figure 1). Larimer County 1041 Permit Requirements do not apply to Colorado Department of Transportation (CDOT) highway relocations. As a result, the scope and effects of the realignment of U.S. Highway 287 will be evaluated per Larimer County requirements as a separate process. Therefore, the U.S. Highway 287 realignment is not discussed further in this Plan unless specific measures relating to the realignment of U.S. Highway 287 also contribute to avoidance, minimization, mitigation, and/or enhancement measures for wildlife at Glade Reservoir.

8.4.1. – Purpose

The *Larimer County Land Use Code, 8.4. Standards for All Development – Wildlife* obligates developers to:

"…maintain and enhance the diversity of wildlife species and habitat in [unincorporated] Larimer County and to plan and design land uses to be harmonious with wildlife habitat and the species that depend on that habitat for economic, recreational, and environmental benefit of county residents and visitors (Larimer County, 2019)."

NISP is required to obtain numerous federal and state permits, licenses, and approvals. The primary regulatory processes, as they relate to *Larimer County Land Use Code, 8.4. Standards for All Development – Wildlife*, include:

- *Endangered Species Act.* Section 7(a)(2) of the Endangered Species Act requires that federal agencies consult with the U.S. Fish and Wildlife Service (USFWS) to ensure that effects of actions that the federal agencies authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species or adversely modify designated critical habitat. The U.S. Army Corps of Engineers (USACE) submitted a biological assessment to the USFWS for the NISP proposed action and has consulted with the USFWS under Section 7 (USACE, 2007). The USFWS issued a biological opinion on NISP on October 5, 2007 (USFWS, 2007). That opinion will be updated prior to issuance of a Record of Decision by the USACE.

- *Colorado Revised Statute (C.R.S.) 37-60.122.2.* This state law requires the creation of a FWMEP by the applicant in coordination with the CPW Commission, which is similar to the Larimer County 1041 process. In order to create the FWMEP, NISP WAE underwent an extensive planning process in coordination with CPW and private stakeholders. The FWMEP methodically outlines the project-related impacts to fish and wildlife and the applicant's commitments to avoid, minimize, mitigate, and enhance fish and wildlife impacted by the Project (Northern Water, 2017). The measures outlined in the FWMEP appropriately compensate for wildlife impacts resulting from a project with the size and scope of NISP. The FWMEP was approved in 2017 by the CPW Commission and the Colorado Water Conservation Board and represents the official State position on the mitigation actions required of the applicant.

- *Clean Water Act Section 404 Permit.* Section 404 regulates the discharge of dredged or fill material into waters of the U.S., including jurisdictional wetlands. This means the Project will take all appropriate and practicable steps to avoid and minimize adverse impacts to waters of the U.S., which will also avoid and minimize impacts to aquatic wildlife.

- *National Environmental Policy Act (NEPA) Review.* A Final Environmental Impact Statement (FEIS) (dated July 2018) has been prepared by the USACE in accordance with NEPA and applicable NEPA implementation regulations (43 U.S.C. § 4321 *et. seq*.; 40 CFR 1500, as amended; 33 CFR 325) (USACE, 2018). Through this impact statement, the Project's impacts to fish and wildlife were analyzed and documented.

8.4.2. – Applicability

Larimer County Land Use Code Wildlife regulations apply to all applications for subdivisions, conservation developments, planned land divisions, special reviews, rezonings, special exceptions, and site plan reviews. This section also applies to any minor land division that will result in a new, vacant building site. NISP will comply with *Larimer County Land Use Code, Section 8.4.2. Applicability* as required.

8.4.3. – Wildlife habitat database

The wildlife habitat information sources specified in *Larimer County Land Use Code, Section 8.4.3. Wildlife habitat database* (CPW habitat maps for Larimer County, Colorado Natural Heritage Program maps, etc.) were used during the planning phase of the Project in order to create the Draft EIS, Supplemental Draft EIS, and associated technical analyses, and were used as the basis to assess wildlife impacts and determine appropriate avoidance, minimization, mitigation, and enhancement as outlined in the FWMEP and the FEIS. The species identified by CPW during the coordination process as requiring further evaluation moved forward into the analysis in the FWMEP.

The species addressed in the FWMEP and FEIS were refined using a number of factors to develop the list of species for Larimer County. This list of species was provided to Larimer County for approval on January 7, 2020, and are the species discussed in this Plan (see Table 1, included as an attachment). Many of the species that were excluded from this Plan do not have habitat in unincorporated Larimer County or will not be affected by project-related activities in unincorporated Larimer County. The species excluded are not noted as contributing to the economic or recreational value of Larimer County. Impacts to the excluded species are still addressed in the FEIS and the FWMEP. Because of that, the Project's wetland mitigation, mitigation measures implemented as part of the Project's Stormwater Management Plan, and other best management practices (BMPs) for the Project will also mitigate for impacts to the species excluded from this Plan.

8.4.4. – Review procedures

This Plan may be submitted to Larimer County by the applicant in support of the Larimer County 1041 process, including the application and review procedure.

8.4.5. – Wildlife development standards

The standards outlined in section 8.4.5. have already been considered and included in the Project design. Throughout the development of NISP, from the initial NISP concepts through the designs now being analyzed, NISP WAE has incorporated design and operational components that are intended to avoid and minimize environmental effects. These actions are a result of more than 30 years of planning and reflect the more recent conceptual design and analysis of the NISP alternatives, including analyses performed during the FEIS.

Key avoidance and minimization measures described in the FWMEP include NISP design commitments that avoid and minimize adverse impacts to aquatic habitat and water quality effects. These measures include construction BMPs that avoid and minimize effects on wildlife and plant communities, including noxious weed management. Compensatory mitigation is also outlined that mitigates certain effects of NISP. The FWMEP includes:

- Development of a stream channel and habitat improvement plan for the Cache la Poudre River (Poudre River).
- Implementing stream channel, habitat, and riparian vegetation improvements in certain reaches of the Poudre River.

- Commitments to avoid diversions when stream water temperatures approach or exceed standards that are designed to protect fish as described in section 5.2.2.7 of the FWMEP.
- Implementing wildlife protection measures into the design and construction of the U.S. Highway 287 realignment.
- Conserving land around Glade Reservoir for wildlife habitat.
- Protection of special status wildlife species during and after construction.
- Replacing existing recreation and public access facilities at Glade Reservoir.

An Enhancement Plan is included as part of the FWMEP that addresses issues raised by CPW and other stakeholders regarding the current conditions of the aquatic environment on the Poudre River, and includes enhancement measure to enhance fish and wildlife resources over and above levels existing without NISP. The Enhancement Plan was developed in response to discussions with CPW staff, discussions with other regional governmental and non-governmental agencies, and review of comments on the Draft EIS and Supplemental Draft EIS.

Key components of the Enhancement Plan include:

- Commitments to adaptive management programs for the Poudre River and recreation areas surrounding Glade Reservoir.
- Multi-objective diversion structure retrofits at existing diversion structures on the Poudre River (i.e. installation of facilities that allow fish passage and measure bypassed flow).
- Protecting additional lands west of Glade Reservoir for wildlife habitat.
- Participation in the Coalition for the Poudre River Watershed.

8.4.6. – Wildlife development review criteria

The Project is completing this Wildlife Conservation Plan as outlined in Larimer County's Land Use Code in order to document the Project's commitments to avoid, minimize, and mitigate impacts to wildlife and enhance wildlife habitat.

8.4.7. – Wildlife conservation plans

8.4.7.1. A description of the ownership, location, type, size, and other attributes of the wildlife habitat on the site

Information	Glade Reservoir	NISP Conveyance			
		Northern Tier Alignment	Poudre Intake Alignment	County Line Alignment	Glade Release Alignment
Ownership	• Northern Colorado Water Conservancy District • Poudre River State Land Board Public Access Program • Bureau of Land Management • Private landowners	• Colorado State Land Board • City of Thornton • Private landowners	• City of Fort Collins • Private landowners	• Colorado State Land Board • City of Thornton • Private landowners	• City of Greeley • Private landowners
Nearest Town/City (distance in miles)	Bellvue (2.3 miles southeast)	Eastern Terminus: Fort Collins: (5 miles southwest) Western Terminus: Bellvue (3.8 miles south-southeast)	Eastern Terminus: Timnath (3.4 miles southwest) Western Terminus: Fort Collins (0 miles, in town)	Southern Terminus: Mead (3.6 miles northwest) Northern Terminus: Fort Collins (5 miles southwest)	Eastern Terminus: Bellvue (2.6 miles southeast) Western Terminus: Bellvue (3.3 miles southeast)
County	Larimer	Larimer	Larimer	Larimer and Weld	Larimer
Section, Township, Range[1]	Multiple Sections; Townships 8 and 9 North; Ranges 69 and 70 West	Multiple Sections; Township 8 North; Ranges 68, 69 and 70 West	Multiple Sections, Township 7 North, Ranges 68 and 69 West	Multiple Sections, Townships 3, 4, 5, 6, 7, and 8 North, Ranges 67 and 68 West	Sections 14 and 15, Township 8 North, Range 70 West
US Geological Survey (USGS) 7.5-minute Quadrangle	Laporte	Timnath Cobb Lake Wellington Laporte	Timnath Fort Collins	Gowanda Johnston Windsor Timnath	Laporte

Location of Project in Decimal Degrees (WGS84) Latitude, Longitude[2]	Approximate Centroid: 40.696582°, -105.177240°	Eastern Terminus: 40.624301°, -104.944075° Western Terminus: 40.681422°, -105.190478°	Eastern Terminus: 40.566478°, -104.943976° Western Terminus: 40.582858°, -105.059237°	Southern Terminus: 40.211723°, -104.941684° Northern Terminus: 40.624301°, -104.944075°	Eastern Terminus: 40.663988°, -105.190371° Western Terminus: 40.663084°, -105.212353°
Wildlife Habitat	Project related impacts to wildlife will occur at Glade Reservoir, which currently provides habitat for federally and state listed species, migratory birds and raptors, big and small game, and aquatic life (see section 8.4.7.2.).	Because the NISP pipeline conveyance system will be constructed primarily in and adjacent to existing road rights-of-ways and previously developed land, limited wildlife habitat occurs along the conveyance systems and only temporary impacts to wildlife are anticipated. The main places where wildlife habitat is prevalent is at the Poudre, Big Thompson, and Little Thompson river crossings (see section 8.4.7.2.).			

Notes:
Portions of the pipeline conveyance systems occur in unincorporated Larimer County; however, significant portions of the conveyance systems also occur in incorporated Larimer County and Weld County.
[1] 6th Principal Meridian
[2] World Geodetic System of 1984 (WGS84)
Sources: Various USGS 7.5-minute Quadrangle Topographic Maps, refer to References section

8.4.7.2. A description of the populations of wildlife species that inhabit or use the site, including a qualitative description of their spatial distribution and abundance

8.4.7.3. An analysis of the potential adverse impacts of the proposed development on wildlife and wildlife habitat on or off-site

8.4.7.4. A list of proposed mitigation measures and an analysis of the probability of success of such measures

(Note section 8.4.7.2. through 8.4.7.4. have been combined into one discussion below.)

Only the species identified by CPW as warranting further attention during the coordination process moved forward into the analysis in the FWMEP, and subsequently this Wildlife Conservation Plan. The list of these species was provided to Larimer County for approval on January 7, 2020 and includes the following:

- **Federally Listed Species**: Preble's meadow jumping mouse (*Zapus hudsonius preblei*); downstream species (named below); and Ute ladies'-tresses orchid (*Spiranthes diluvialis*)
- **State Listed Species**: black-tailed prairie dog (*Cynomys ludovicianus*) (state listed birds are included in the *Migratory Birds and Raptors* section)
- **Migratory Birds and Raptors**: Burrowing Owl (*Athene cunicularia*), Bald Eagle (*Haliaeetus leucocephalus*), and Golden Eagle (*Aquila chrysaetos*)
- **Big Game Species**: mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), and elk (*Cervus canadensis*)
- **Aquatic Life**: plains topminnow (*Fundulus sciadicus*) and common shiner (*Luxilus cornutus*)

Project related impacts identified in the FEIS and preceding reports were used as the basis for mitigation outlined in the FWMEP (USACE, 2008; USACE, 2015; USACE, 2018). Fish and wildlife impacts from infrastructure construction and project operations occur at and near the Glade Reservoir site, which is adjacent to state lands that provide big game and small game hunting opportunities. Construction associated with the NISP conveyance system will not have permanent impacts to wildlife because the NISP conveyance system will be constructed primarily in existing road rights-of-ways and previously developed land and will be returned to pre-construction conditions. Temporary pipeline construction impacts will be managed through surveys and with minimization measures developed though the outcome of wildlife surveys.

Key avoidance and minimization measures described in the FWMEP include NISP design commitments that avoid and minimize adverse impacts to aquatic habitat and water quality, and construction BMPs that avoid and minimize effects on wildlife and plant communities. Mitigation and enhancement measures for unavoidable impacts were developed in the FWMEP, which are summarized below. Finally, an adaptive management plan will provide monitoring and feedback processes that will provide a mechanism to make adjustments that ensure the measures, once implemented, meet the mitigation and enhancement goals.

A summary of the species that inhabit or use the site (including description of their spatial distribution and abundance), an analysis of potential impacts of the Project on each species, and a list of proposed avoidance, minimization, mitigation, and enhancement measures for each species is described in detail below. FEIS figures are included for reference.

(Note: Some of the FEIS figures depict study areas outside of unincorporated Larimer County. Portions of the Poudre Intake alignment have been slightly modified; however, the changes are not significant at this scale. Additionally, swift fox [*Vulpes velox*] and pronghorn [*Antilocapra americana*], were not assessed as part of this

plan. Swift fox was not assessed because they are not anticipated to occur in the study area and pronghorn were not assessed because they are unlikely to occur in the study area.)

Federally Listed Species

Preble's Meadow Jumping Mouse

8.4.7.2. Two adult Preble's meadow jumping mouse individuals were captured on August 10, 2004 southwest of the Glade Reservoir area along Owl Creek (Figure 3-37 from the FEIS). Additionally, Preble's meadow jumping mouse are known to occur along portions of the Poudre River three miles south of the Glade Reservoir area. No mapped habitat is located along the conveyance system, although in some areas, mapped habitat is located nearby (Figure 3-38 from the FEIS).

8.4.7.3. Based on the FEIS impact analysis, the Project is anticipated to result in a permanent loss of 43 acres of known Preble's meadow jumping mouse habitat and a temporary disturbance of 30 acres of habitat at Glade Reservoir; a permanent loss of 1 acre (from lining the Poudre Valley Canal [PVC]); and a temporary disturbance of 5 acres of habitat along the pipeline conveyance systems. There is the potential for disturbance of Preble's meadow jumping mouse behavior due to an increase in noise and human presence and physical harm to individual Preble's meadow jumping mouse from construction machinery. Changes in flow to the Poudre River are unlikely to affect Preble's meadow jumping mouse habitat.

8.4.7.4. The biological opinion issued by the USFWS in 2007 concludes that the NISP proposed action is *not likely to jeopardize the continued existence* of the threatened Preble's meadow jumping mouse, because 1) permanent and temporary impacts to available habitat are not likely to preclude recovery of the species; and 2) NISP WAE would implement proposed compensatory mitigation measures through enhancement of existing habitat and creation of new habitat. The opinion also authorizes incidental take and identifies reasonable and prudent measures, terms and conditions, and reporting requirements for such take. A mitigation plan for Preble's meadow jumping mouse has been drafted and submitted to the USFWS for review (Pinyon, 2019).

Ute Ladies'-tresses Orchid

8.4.7.2. Although Ute ladies'-tresses orchid (federally listed as threatened) is a plant, it is included in this Plan because it is a federally listed species. Although limited habitat is present, the species was documented in 2019 surveys at the PVC-Hanson Channel and Riparian Improvements site along the Poudre River southwest of Glade Reservoir and has a potential to occur in the Glade Reservoir study area. Potential habitat for Ute ladies'-tresses orchid may occur where the pipeline conveyance systems cross the active floodplain of perennial drainages. No Ute ladies'-tresses orchid individuals were found during 2019 surveys of the Glade Reservoir study area and no known populations occur along the pipeline conveyance systems.

8.4.7.3. Prior to construction, Ute ladies'-tresses orchid habitat assessments and/or final surveys would be conducted for potentially impacted suitable habitat not previously evaluated. Changes in flow in the Poudre River are unlikely to affect Ute ladies'-tresses orchid.

8.4.7.4. The Project will conduct surveys for Ute ladies'-tresses orchid for two years prior to construction and implement conservation measures developed in coordination with the USFWS, if needed. Conservation measures could include avoiding impacts by establishing a "no-work" zone or, in the event of unavoidable impacts, protecting or enhancing adjacent or off-site habitat. (See *Ute Ladies'-tresses Orchid* [SS-04], page 84 of the FWMEP [2017].)

Downstream Species

8.4.7.2. The following downstream species, Whooping Crane (*Grus americana*), Interior Least Tern (*Sterna antillarum*), Eskimo Curlew (*Numenius borealis*), Piping Plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*), American burying beetle (*Nicrophorus americanus*), and Western prairie fringed orchid (*Platanthera praeclara*), are included in the Plan because depletions to the Poudre River associated with the Project have the potential to affect these federally listed species and designated critical habitat for the Whooping Crane in Nebraska. (Although the Western prairie fringed orchid is a plant, it has been included since it is a federally listed species.)

8.4.7.3. Historical and new depletions (anticipated as part of this Project) to the South Platte River Basin *may adversely affect* Whooping Crane, Interior Least Tern, Piping Plover, pallid sturgeon, and Western prairie fringed orchid and designated critical habitat for the Whooping Crane along the Platte River in central Nebraska. The USFWS Supplemental Programmatic Biological Opinion has determined that the Project will have *no effect* on the Eskimo Curlew (believed extirpated in Nebraska; no confirmed sightings since 1926) and that the Project *may effect, but is not likely to adversely affect* the American burying beetle.

8.4.7.4. The Project will offset water depletions through membership in South Platte Water Resources Activities Program (SPWRAP). The approximate implementation cost of this commitment from the Project to SPWRAP is currently $1,550,000 (FWMEP, 2017). (See *Platte River Target Species [SS-05]*, page 85 of the FWMEP.)

State Listed Species

Black-tailed Prairie Dog

8.4.7.2. Black-tailed prairie dogs are included in the Plan because a one-acre prairie dog colony occurs on the northeastern side of the Glade Reservoir area and they are likely located in numerous areas along the conveyance system (Figures 3-37 and 3-38 from the FEIS). Although black-tailed prairie dogs are state species of special concern (which are not a statutory category), their colonies could provide habitat for Burrowing Owl, which are a state threatened species and are also protected by the Migratory Bird Treaty Act (MBTA).

8.4.7.3. Most of the impacts identified in the FEIS that are anticipated to occur to black-tailed prairie dog habitat are not anticipated in unincorporated Larimer County. However, 1 acre of permanent impact and 11 acres of temporary impacts are anticipated at Glade Reservoir and along the conveyance system, respectively. To facilitate determining adequate mitigation measures, an assessment of habitat quality and number of individual black-tailed prairie dogs will be conducted for colonies that will be directly affected by NISP construction.

8.4.7.4. Black-tailed prairie dogs potentially impacted by construction of Glade Reservoir and the conveyance system will be relocated if possible (following a step-wise progression of relocation options), or as a last resort, euthanized, prior to construction following CPW and/or CDOT guidelines (CPW, 2020; CDOT, 2002; CDOT, 2009). Black-tailed prairie dogs would only be removed in areas where they might be directly affected, leaving them in the remainder of the construction right-of-way. In addition, some areas temporarily disturbed during construction would likely be recolonized by prairie dogs (See *Black-tailed Prairie Dog* [SS-07], page 85 of the FWMEP.)

Migratory Birds and Raptors

The following applies to all migratory birds and raptors, which are protected by the MBTA.

8.4.7.2. The riparian and wetland habitat associated with Owl Creek, as well as the cliff faces and rock ledges of the Glade Reservoir area hogback formations, provide nesting and foraging habitat for a variety of raptor species. The wetland and riparian habitat associated with the Poudre, Big Thompson, and Little Thompson river crossings along the conveyance system provide nesting and foraging habitat for a variety of raptor species. In addition, trees, shrubs, and man-made structures may provide nest sites for smaller migratory birds at the Glade Reservoir area and along the conveyance system.

8.4.7.3. Based on the FEIS impact analysis, the Project is anticipated to result in a loss of the following habitat types that provide suitable nesting and foraging habitat for migratory birds and raptors: 43 acres of wetlands, 17 acres of aquatic habitat, 19 acres of riparian woodlands, 477 acres of upland native shrublands, 87 acres of other shrubland, 923 acres of native grassland, 67 acres of other grasslands, and 279 acres of agricultural land. Mortality and nest destruction could occur during construction. Temporary impacts include disturbance of vegetation and increased noise and human presence. Reductions in streamflow on the Poudre River is not anticipated to cause a loss of riparian and/or wetland habitat (which provides suitable nesting and foraging habitat for migratory birds and raptors).

8.4.7.4. The Project will survey and mark active nests to establish no-work zones during the breading seasons in accordance with MBTA. Raptor surveys started in 2018 and are on-going. When possible, vegetation clearing will be conducted during the nonbreeding season, in accordance with the MBTA. The Project will follow CPW recommended buffer zones and seasonal restrictions within certain distances of nest sites for raptors in accordance with the MBTA (CPW, 2008). Additionally, the Project will follow MBTA regulations and acquire permits for incidental or unavoidable takes, if needed. (See *Migrating Birds and Raptors - Surveys and No Work Zones [TW-03]*, *Vegetation Clearing [TW-04]*, and *Buffer Zones [TW-05]* page 59 of the FWMEP [2017].)

Raptors that are provided additional protections at the state level (Burrowing Owl, state listed as threatened) and federal level (Bald and Golden Eagle, federally protected by the Bald and Golden Eagle Protection Act) are discussed further below.

Burrowing Owl

8.4.7.2. A black-tailed prairie dog colony, which is located northeast of the Glade Reservoir area, could provide habitat for Burrowing Owls, which are state listed as a threatened species and are also protected by the MBTA (Figures 3-37 from the FEIS). Suitable habitat may also be located in numerous locations along the conveyance system (where there are black-tailed prairie dog colonies) (Figure 3-38 from the FEIS).

8.4.7.3. Most of the impacts identified in the FEIS that are anticipated to occur to Burrowing Owl habitat are not anticipated in study areas located in unincorporated Larimer County. However, 1 acre of permanent impact and 11 acres of temporary impacts are anticipated at Glade Reservoir and along the conveyance system, respectively.

8.4.7.4. Black-tailed prairie dog colonies would be surveyed for Burrowing Owls prior to any work that would disturb them between March 15 and October 31. Where Burrowing Owls are present, black-tailed prairie dog removal would be scheduled to occur from November 1 to March 14. If Burrowing Owls are found within the construction footprint, nests would be left undisturbed during construction. If Burrowing Owls are found during preconstruction surveys, additional avoidance mitigation measures would be developed in coordination with the CPW. (See *Burrowing Owl [SS-09]*, page 86 of the FWMEP [2017].)

Bald and Golden Eagles

8.4.7.2. Bald and Golden Eagles are included in this 1041 Wildlife Conservation Plan because they are protected at the federal level by the Bald and Golden Eagle Protection Act and the MBTA, and suitable habitat occurs in

the Glade Reservoir area (Bald and Golden Eagle) and along portions of the conveyance system, especially in the riparian habitat associated with the Poudre, Big Thompson, and Little Thompson river crossings (Bald Eagle) (Figures 3-37 and 3-39 from the FEIS). Additionally, an active Bald Eagle nest has been noted southwest of Glade Reservoir and Bald Eagle roost sites occur along the Poudre River south of Glade Reservoir.

8.4.7.3. Based on the FEIS impact analysis, the Project is anticipated to permanently impact <1 acre and temporarily impact 15 acres of winter concentration area for Bald Eagle along the conveyance system. Additionally, 5 acres of nest buffer are anticipated to be permanently affected along the conveyance system and 8 and 10 acres temporarily affected along the Glade and conveyance system, respectively. Golden Eagle habitat has yet to be mapped by CPW, so anticipated impacts could not be quantified. However, impacts are anticipated to be less than for Bald Eagle. Pipeline construction impacts could result in eagle nest abandonment or decreased nesting success if conducted during sensitive breeding and nesting periods.

8.4.7.4. The Project will conduct surveys for Bald and Golden Eagles and their nests; meet CPW buffer requirements whenever possible; and take necessary actions according to the Bald Eagle and Golden Eagle Protection Act and the MBTA (CPW, 2008). Effects on Bald Eagle winter concentration areas would be minimized by narrowing the construction disturbance through quality habitat such as riparian woodlands. Bald and Golden Eagle surveys and nest surveys started in 2018 and are currently on-going. Additionally, the creation of Glade Reservoir could provide additional summer foraging habitat, especially if stocked with fish. (See *Bald Eagle [SS-02]*, page 81 of the FWMEP [2017].)

Big Game Species

Mule Deer

8.4.7.2. The westernmost portion of the Glade Reservoir area includes a mule deer winter concentration area, mule deer winter range covers the entire Glade Reservoir area, and mule deer severe winter range covers the reservoir and dam site (Figure 3-32 from the FEIS). Mule deer winter range, mule deer severe winter range, and a mule deer winter concentration area occur along the conveyance system near Glade Reservoir. The conveyance system crosses mule deer winter range and mule deer severe winter range (Figures 3-32 and 3-34 from the FEIS).

8.4.7.3. Based on the FEIS impact analysis, the Project is anticipated to result in 2,068 acres of permanent impacts and 973 acres of temporary impacts to mule deer winter range (predominately occurring at Glade Reservoir). The Project will also result in 160 acres of permanent impacts and 138 acres of temporary impacts to mule deer winter concentration areas (also predominately occurring at Glade Reservoir). Potential impacts to migration in the area inundated by Glade Reservoir (and affected by U.S. Highway 287 realignment) are anticipated.

8.4.7.4. As mitigation for these identified impacts, the Project will construct one big-game underpass and identify other crossings associated with the relocation of U.S. Highway 287 that could potentially be designed to accommodate wildlife movement ($500,000 estimated cost). Additionally, the Project will monitor road kills for 10 years and implement adaptive management actions as needed ($280,000 committed). The Project will conserve approximately 1,080 acres of land owned or required for purchase surrounding Glade Reservoir as wildlife habitat using a conservation easement or other legal instrument ($2,920,000 estimated cost). The Project will also acquire and conserve approximately 300 acres of additional land surrounding Glade Reservoir as wildlife habitat using a conservation easement or other legal instrument; engage in conserving additional land west of Glade Reservoir for big-game habitat; allow use of Glade Reservoir conserved land for Great Outdoors Colorado (GOCO) match; and consent to GOCO requirements ($810,000 committed). (See *U.S. 287 - Big Game Underpass and Fencing [TW-01]* and *Big Game Movement Adaptive Management Plan [TW-02]* and *Wildlife*

Habitat - Glade Reservoir Conservation Mitigation [TW-06] and *Glade Reservoir Conservation Enhancement [TW-07]*, pages 75, 78, 79, and 107 of the FWMEP [2017], respectively.)

White-tailed Deer

8.4.7.2. A white-tailed deer concentration area occurs along the Poudre River within the southern portion of the Glade Reservoir area, including the proposed forebay area (Figure 3-32 from the FEIS). The pipeline conveyance systems cross white-tailed deer winter range at the Big Thompson River, and white-tailed deer winter range occurs along the Little Thompson River (Figure 3-35 from the FEIS).

8.4.7.3. The Project is anticipated to result in 511 acres of permanent impacts and 482 acres of temporary impact to white-tailed deer winter range. Potential impacts to migration in the area inundated by Glade Reservoir (and affected by U.S. Highway 287 realignment) are anticipated.

8.4.7.4. The Project intends to acquire land in the Confluence Area (confluence of the Big Thompson and South Platte Rivers, Weld County) in order to compensate for the loss of white-tailed deer habitat ($500,000 committed). NISP WAE will provide CPW assistance in securing this land, including pursuing additional funding opportunities and giving consideration to owning this additional land in fee-title for purposes of mitigation, wildlife habitat, and public recreation. (See *Land Acquisition in Confluence Area (RC-05)*, page 88 of the FWMEP [2017].) Additionally, the habitat areas created by the Project for Preble's meadow jumping mouse and wetland mitigation around the forebay area and Owl Creek will also create habitat beneficial for white-tailed deer.

Elk

8.4.7.2. The western portion of Glade Reservoir is elk winter range, and just to the west of the reservoir footprint is a resident elk population, winter concentration area, and elk severe winter range (Figures 3-33 and 3-36 from the FEIS).

8.4.7.3. Based on the FEIS impact analysis, the Project is anticipated to result in 2,066 acres of permanent impacts and 822 acres of temporary impact to overall elk range (predominately occurring at Glade Reservoir). Potential impacts to migration in the area inundated by Glade Reservoir (and affected by U.S. Highway 287 realignment) are anticipated.

8.4.7.4. As mitigation for these identified impacts, the Project will construct one big-game underpass and identify other crossings associated with the relocation of U.S. Highway 287 that could potentially be designed to accommodate wildlife movement ($500,000 estimated cost). Additionally, the Project will monitor road kills for 10 years and implement adaptive management actions as needed ($280,000 committed). The Project will conserve approximately 1,080 acres of land owned or required for purchase surrounding Glade Reservoir as wildlife habitat using a conservation easement or other legal instrument ($2,920,000 estimated cost). The Project will also acquire and conserve approximately 300 acres of additional land surrounding Glade Reservoir as wildlife habitat using a conservation easement or other legal instrument; engage in conserving additional land west of Glade Reservoir for big-game habitat; allow use of Glade Reservoir conserved land for GOCO match; and consent to GOCO requirements ($810,000 committed). (See *U.S. 287 - Big Game Underpass and Fencing [TW-01]* and *Big Game Movement Adaptive Management Plan [TW-02]* and *Wildlife Habitat - Glade Reservoir Conservation Mitigation [TW-06]* and *Glade Reservoir Conservation Enhancement [TW-07]*, pages 75, 78, 79, and 107 of the FWMEP [2017], respectively.)

Aquatic Life

Plains Topminnow and Common Shiner

8.4.7.2. Plains topminnow (state listed as endangered) and common shiner (state listed as threatened) are included in this Plan because they have the potential to occur in the Poudre, Big Thompson, and Little Thompson rivers along the conveyance system crossings. Although both species have been previously documented in Larimer County, the plains topminnow is not widespread throughout Colorado and the common shiner is very rare throughout Colorado (Woodling, 1985).

8.4.7.3. Impacts to these species at proposed pipeline conveyance systems river crossing will be temporary, as pipelines will be buried, and the construction site will be restored to pre-construction conditions.

8.4.7.4. The Project has made a number of flow commitments that are specifically described in the FWMEP. These address avoidance of Munroe Canal Diversions, curtailment of diversions for non-consumptive water rights, summer and winter diversion curtailments, conveyance refinement ($24,520,000 estimated cost), peak flow operations program, and ramping of NISP diversions at PVC. These flow commitments are designed to avoid and minimize the effects of NISP operations on aquatic life. (See *Avoid Munroe Canal Diversions [FW-01]*, *Curtail Diversions for Non-Consumptive Water Rights [FW-02]*, *Summer and Winter Diversion Curtailments [FW-03]*, *Conveyance Refinement – Poudre River Intake [FW-04]*, *Peak Flow Operations Program (FW-08)*, and *Ramp NISP Diversions at PVC (FW-09),* see pages 37, 39, 46, and 57 of the FWMEP [2017], respectively).

Additionally, the Project is committed to enhancing water quality through the multi-level outlet tower for Glade Reservoir releases ($1,000,000 estimated cost), Glade Reservoir release structure ($200,000 estimated cost), streamflow and water quality monitoring ($2,310,000 estimated cost), donations to the Coalition for the Poudre River Watershed ($750,000 estimated cost), temperature mitigation, and mercury bioaccumulation monitoring ($220,000 committed). (See *Multi-level Outlet Tower for Glade Reservoir Releases (WQ-01)*, *Glade Reservoir Release Structure (WQ-02)*, *Streamflow and Water Quality Monitoring (WQ-04)*, *Coalition for the Poudre River Watershed (WQ-05)*, *Temperature Mitigation (WQ-06)*, and *Mercury Bioaccumulation Monitoring (WQ-07)*, page 32, 35, 69, 105, 53, and 74 of the FWMEP [2017], respectively.)

The Project will also mitigate and enhance aquatic resources with a Stream Channel and Habitat Improvement Plan ($1,000,000 committed) and Stream Channel and Habitat Improvements ($1,800,000 estimated cost), which will result in enhanced channel restoration, aquatic habitat, riparian vegetation, riverine special status species, temperature and dissolved oxygen concentration. The Project will create the Poudre River Adaptive Management Program ($5,930,000 committed), as well as reconstruct the Poudre Valley Canal diversion structure ($300,000 estimated cost) and retrofit multi-objective diversion structures on the Poudre River ($1,200,000 estimated cost) to include fish passage. (See *Stream Channel and Habitat Improvement Plan [AG-01]*, *Stream Channel and Habitat Improvements [AG-02]*, *Poudre River Adaptive Management Program (AG-03)*, *Poudre Valley Canal Diversion Structure Reconstruction [AG-04]*, and *Multi-objective Diversion Structure Retrofits (AG-05)*, see pages 60, 61, 95, 30, and 97 of the FWMEP [2017], respectively.)

8.4.7.5. A plan for implementation, maintenance and monitoring of mitigation measures

Implementation measures for each species are included with discussion of those species listed above. Maintenance and monitoring of mitigation measures will be implemented as part of adaptive management programs outlined in the FWMEP. Adaptive management, the process of implementing and adapting management strategies based on current knowledge and continued monitoring, allows land managers to adjust management practices as needed to best suit a site and reach desired outcomes. Such programs would be implemented pursuant to the parameters outlined in earlier sections of this document.

8.4.7.6. A plan for any relevant enhancement or restoration measures

Enhancement or restoration measures for each species are included with discussion of those species as listed above.

8.4.7.7. A demonstration of fiscal, administrative, and technical competence of the applicant or other relevant entity to successfully execute the plan

As outlined in the FWMEP, the NISP WAE assumes financial responsibility for all compensatory mitigation and enhancement measures identified in the FWMEP, which are summarized in this document. Northern Water's NISP WAE is a permanent entity with access to adequate funds to cover mitigation monitoring and any necessary remedial actions. Northern Water's past performance under other similar water development projects demonstrates its commitment to assure that projects approved, including compensatory mitigation and enhancement measures, will be fully implemented and maintained by the Enterprise.

8.4.8. – Waivers and modifications

Impacts to fish and wildlife associated with NISP have been thoroughly identified and analyzed as part of the Project's Draft EIS, Supplemental Draft EIS, and FEIS. The Project's FWMEP, as summarized here, provides mitigation and enhancement measures to offset those impacts to the maximum extent practicable. The FWMEP was reviewed by and developed in cooperation with CPW and is the official State position on the mitigation actions required of the applicant.

The efforts summarized in this Plan have been designed to mitigate impacts to wildlife for the construction of the Glade Reservoir Complex and associated conveyance system for the NISP. These efforts satisfy the requirements as identified in Larimer County Land Use Code section 8.2.1. These efforts also satisfy the requirements set forth in the Larimer County Land Use Code, 8.2. Standards for All Development – Wildlife (Larimer County, 2019). The mitigation boundaries as described may change if the reservoir area or conveyance system area is modified from what is shown. However, the types and amounts of mitigation areas will remain the same. Changes in impacts or subsequent updates to the mitigation of wildlife for the NISP will forwarded to Larimer County, if needed.

Attachments

Table 1. Summary List of Species to be Discussed or Left out of the Wildlife Conservation Plan
Figure 1. Project Location
Figure 3-37. Overview of Threatened and Endangered Species and Bald Eagle Habitat in the Glade Reservoir Study Areas (from the FEIS)
Figure 3-38. Prairie dog, Preble's, and Swift Fox Habitat in the Study Areas (from the FEIS)
Figure 3-39. Bald Eagle Habitat in the Study Areas (from the FEIS)
Figure 3-32. Deer Habitat at Glade Reservoir and U.S. 287 Realignment Study Areas (from the FEIS)
Figure 3-34. Mule Deer Habitat in Study Areas (from the FEIS)
Figure 3-35. White-tailed Deer Habitat in the Study Areas (from the FEIS)
Figure 3-33. Elk and Pronghorn Habitat at Glade Reservoir and U.S. 287 Realignment Study Areas (from the FEIS)
Figure 3-36. Elk and Pronghorn Habitat in the Study Areas (from the FEIS)

References

CPW, 2008. *Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors*. Colorado Parks and Wildlife, Revised February 2008. Available at: https://cpw.state.co.us/Documents/WildlifeSpecies/LivingWithWildlife/RaptorBufferGuidelines2008.pdf. Accessed January 2020.

CPW, 2020. *Black-tailed Prairie Dog Relocation Permits and Regulations*. Colorado Parks and Wildlife. Available at: https://cpw.state.co.us/learn/Pages/SOC-Black-tailedPrairieDogPermits.aspx. Accessed January 2020.

CDOT, 2002. *Black-tailed Prairie Dog Relocation Guidelines*. Colorado Department of Transportation, January 2002. Available at: https://www.codot.gov/programs/environmental/wildlife/guidelines/pdmemo.pdf/view. Accessed January 2020.

CDOT, 2009. *Impacted Black-Tailed Prairie Dog Policy*. Colorado Department of Transportation, January 2009. Available at: https://www.codot.gov/programs/environmental/wildlife/guidelines/pdpolicy0109.pdf/view. Accessed January 2020.

Larimer County, 2019. *Larimer County Code of Ordinances, Land Use Code, 8.4 Standards for All Development – Wildlife.* Codified though Ordinance No. 06202017O111-4, enacted March 11, 2019. (Supp. No. 39) Online content updated on October 15, 2019. Available at: https://library.municode.com/co/larimer_county/codes/code_of_ordinances?nodeId=PTIILAUSCO_8.0STALDE_8.4WI. Accessed December 2019.

Northern Water, 2017. *Fish and Wildlife Mitigation and Enhancement Plan.* Prepared by the applicant, Northern Water, acting by and through Northern Integrated Supply Project, Water Activity Enterprise, Northern Colorado Water Conservancy District. Prepared for the Colorado Parks and Wildlife Commission in accordance with Colorado Revised Statute 37-60-122.2. Issued October 10, 2017. Available at: http://www.northernwater.org/docs/NISP/MapsDocuments/2017FWMEPFinal.pdf. Accessed December 2019.

Pinyon, 2019. *Preble's Meadow Jumping Mouse Mitigation Plan.* Prepared by Pinyon Environmental, Inc. for Northern Integrated Supply Project, Water Activity Enterprise, September 4, 2019.

USACE, 2007. Northern Integrated Supply Project Environmental Impact Statement Biological Assessment. Prepared by ERO Resources Corporation. August 2007.

USACE, 2008. *Northern Integrated Supply Project Draft Environmental Impact Statement*. Prepared by the United States Army Corps of Engineers. Issued April 2008. Available at: http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Colorado/EIS-NISP/. Accessed December 2019.

USACE, 2015. *Northern Integrated Supply Project Supplemental Draft Environmental Impact Statement.* Prepared by the United States Army Corps of Engineers. Issued June 2015. Available at: http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Colorado/EIS-NISP/. Accessed December 2019.

USACE, 2018. *Northern Integrated Supply Project Final Environmental Impact Statement.* Prepared by the United States Army Corps of Engineers. Issued July 2018. Available at: http://www.nwo.usace.army.mil/Missions/Regulatory-Program/Colorado/EIS-NISP/. Accessed December 2019.

USFWS, 2007. *Letter to Chandler Peter, United States Army Corps of Engineers from Susan C. Linner, Colorado Field Supervisor.* United States Fish and Wildlife Service, subject Northern Integrated Supply Project (NISP) – Glade/Galeton Alternative (Project) (Corps File No. 200380509). October 5, 2007.

Woodley, J., 1985. *Colorado's Little Fish A Guide to the Minnows and Other Lesser Known Fishes in the State of Colorado.* Colorado Division of Wildlife (now Colorado Parks and Wildlife), June 1985. Available at: http://www.nativefishlab.net/library/textpdf/20824.pdf. Accessed January 2020.

Attachments

Table I

The purpose of this summary list is to identify the species that will be analyzed as part of the Larimer County 1041 permit Wildlife Conservation Plan (plan) (and associated maps) for the Northern Integrated Supply Project (NISP). This summary list includes species from Colorado Parks and Wildlife (CPW) wildlife habitat maps and Colorado Natural Heritage Program (CNHP) maps as called for in Larimer County Land Use Code Section 8.4.3 and was assembled from information contained in the project's Final Environmental Impact Statement (FEIS).

Table 1. Summary List of Species to be Discussed or Left out of the Wildlife Conservation Plan

Species	Included?	Justification	Source
Wildlife (includes wildlife that do not have a special status)			
Raptors	Yes	Raptors are included in the plan because they are protected at the federal level by the Migratory Bird Treaty Act (MBTA) and suitable habitat occurs in the study area. The riparian and wetland habitat associated with Owl Creek, as well as the cliff faces and rock ledges of the hogback formations, provide nesting and foraging habitat for a variety of raptor species. The wetland and riparian habitat associated with the Poudre, Big Thompson, and Little Thompson river crossings along the conveyance systems provide nesting and foraging habitat for a variety of raptor species.	Final Environmental Impact Statement, p. 3-136 through 3-139
Mule Deer (*Odocoileus hemionus*)	Yes	Mule deer are included in the plan because they provide economic and recreational value to Larimer County residents and visitors and suitable habitat occurs in the study area. The westernmost portion of the Glade Reservoir study area includes a mule deer winter concentration area, mule deer winter range covers the entire Glade Reservoir study area, and mule deer severe winter range covers the reservoir and dam site. Mule deer winter range, mule deer severe winter range and a mule deer winter concentration area occur along the conveyance pipelines near Glade. The conveyance systems cross mule deer winter range and mule deer severe winter range, and white-tailed deer winter range at the Big Thompson. White-tailed deer winter range occurs along the Little Thompson River.	
White-tailed Deer (*Odocoileus virginianus*)	Yes	White-tailed deer are included in the plan because they provide economic and recreational value to Larimer County residents and visitors and suitable habitat occurs in the study area.	

Species	Included?	Justification	Source
		A white-tailed deer concentration area occurs along the Poudre River within the southern portion of the Glade Reservoir study area, including the entire proposed forebay. The conveyance systems cross white-tailed deer winter range at the Big Thompson and white-tailed deer winter range occurs along the Little Thompson River.	
Pronghorn (*Antilocapra americana*)	No	Although the eastern edge of Glade Reservoir is pronghorn winter range and severe winter range, pronghorn is unlikely to occur in the study area and they are not protected at the state or federal level. Therefore, they are not included in the plan. Additionally, mitigation measures implemented for other big game species will also mitigate for any impacts anticipated to pronghorn habitat.	
Elk (*Cervus canadensis*)	Yes	Elk are included in the plan because they provide economic and recreational value to Larimer County residents and visitors and suitable habitat occurs in the study area. The western portion of Glade Reservoir is elk winter range, and just to the west of the reservoir footprint is a resident elk population, winter concentration area, and elk severe winter range.	
Amphibians	No	Although the Glade Reservoir study area contains areas of wetland habitat suitable for breeding amphibians, they are not included in the plan because all of Colorado's listed amphibians are state species of concern except for the boreal toad (*Bufo boreas boreas*), which does not have the potential to occur in the study area. Colorado state species of special concern are not a statutory category and therefore no further action or permitting is required for these species at the state level. Impacts to these species and associated mitigation are addressed in the FEIS and the CPW approved Fish and Wildlife Mitigation and Enhancement Plan (FWMEP). Additionally, the project's wetland mitigation, mitigation measures implemented as part of the project's Stormwater Management Plan (SWMP), and other Best Management Practices (BMPs) will also mitigate for impacts to these species' habitat. Finally, these animals are not noted as contributing to the economic or recreational value of Larimer County.	
Reptiles	No	Although the Glade Reservoir study area contains suitable habitat for several reptile species (common gartersnake [*Thamnophis sirtalis*], western hognose snake [*Heterodon nasicus*], plains milk snake [*Lampropeltis triangulum gentilis*], western rattlesnake [*Crotalus viridis*], eastern fence lizard [*Sceloporus undulatus*], and short-	

Species	Included?	Justification	Source
		horned lizard [*Sceloporus undulatus*]), only the common garter snake is considered a state species of concern. Reptiles are not included in the plan because Colorado state species of special concern are not a statutory category and therefore no further action or permitting is required for common garter snake at the state level. Impacts to these species and associated mitigation are addressed in the FEIS and the CPW approved FWMEP. Additionally, mitigation measures implemented as part of the project's SWMP and other BMPs will also mitigate for impacts to these species' habitat. Finally, these animals are not noted as contributing to the economic or recreational value of Larimer County.	
Mountain Lion (*Puma concolor*)	No	Although the Glade Reservoir study area contains habitat for mountain lion, they are not included in the plan because they are not protected at the state or federal level. Additionally, mitigation measures implemented for big game species will also mitigate for impacts to mountain lion habitat.	
Black Bear (*Ursus americanus*)	No	A small black bear summer and fall concentration area occurs south and west of the Glade Reservoir study area and north of the Poudre River and black bears may occasionally forage at the Glade Reservoir study area. However, black bears are not included in the plan because they are not protected at the state or federal level. Additionally, mitigation measures implemented for big game species will also mitigate for impacts to black bear habitat.	
Special Status Species			
Federally Listed			
Canada Lynx (*Lynx canadensis*)	No	Canada lynx is not included in the plan because no suitable habitat occurs in the study area.	Final Environmental Impact Statement, p. 3-149
Black-footed Ferret (*Mustela nigripes*)	No	Black-footed ferret is not included in the plan because no suitable habitat occurs in the study area.	
Preble's Meadow Jumping Mouse (*Zapus hudsonius preblei*)	Yes	Preble's meadow jumping mouse (Preble's) is included in the plan because it is known to occur in the study area. Two adult Preble's were captured on August 10, 2004, southwest of the Glade Reservoir study area along Owl Creek. Additionally, Preble's are known to occur along portions of the Poudre River 3 miles south of the Glade Reservoir study area.	
Mexican Spotted Owl (*Strix occidentalis lucida*)	No	Mexican Spotted Owl is not included in the plan because no suitable habitat occurs in the study area.	
Greenback Cutthroat Trout	No	Greenback cutthroat trout is not included in the plan because no suitable habitat occurs in the study area.	

Species	Included?	Justification	Source
(*Oncorhynchus clarkii stomias*)			
Downstream Species	Yes	The following downstream species, Whooping Crane (*Grus americana*), Least Tern (*Sterna antillarum*), Eskimo curlew (*Numenius borealis*), Piping Plover (*Charadrius melodus*), and pallid sturgeon (*Scaphirhynchus albus*) are included in the plan because depletions to the Poudre River associated with the project have the potential to affect these federally listed species and their designated critical habitat in Nebraska.	Final Environmental Impact Statement, p. 3-150
State Listed and Colorado Natural Heritage Program or Bureau of Land Management Sensitive Species (fish and mollusks are included in Aquatic Life section)			
Mammals			Final Environmental Impact Statement, p. 3-151 through 3-153
Black-tailed Prairie Dog (*Cynomys ludovicianus*)	Yes	Black-tailed prairie dogs are included in the plan because a one-acre prairie dog colony occurs on the northeastern side of the Glade Reservoir study area and they are likely located in numerous areas along the conveyance pipelines study areas. Although black-tailed prairie dogs are state species of special concern (which are not a statutory category), their colonies could provide habitat for Burrowing Owl (*Athene cunicularia*), which are a state threatened species and are also protected by the MBTA.	
Dwarf Shrew (*Sorex nanus*)	No	Dwarf shrew is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for impacts anticipated to this species habitat. Additionally, this animal is not noted as contributing economic or recreational value to Larimer County.	
Fringed Myotis (*Myotis thysanodes*)	No	Fringed myotis is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts to this species habitat. Additionally, this animal is not noted as contributing economic or recreational value to Larimer County.	
Little Brown Myotis (*Myotis lucifigus*)	No	Little brown myotis is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for impacts to this species habitat. Additionally, this animal is not noted as contributing economic or recreational value to Larimer County	
Olive-backed Pocket Mouse (*Perognathus fasciatus*)	No	Olive-backed pocket mouse is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for impacts to this species habitat.	

Species	Included?	Justification	Source
		Additionally, this animal is not noted as contributing economic or recreational value to Larimer County	
Swift Fox (*Vulpes velox*)	No	Swift fox is not included in the plan because they are not anticipated to occur at Glade Reservoir. Additionally, swift fox is a Colorado state species of special concern, which is not a statutory category, and therefore no further action or permitting is required for this species at the state level. Impacts to this species and associated mitigation are addressed in the FEIS and the CPW approved FWMEP. Additionally, mitigation measures implemented as part of the project and other BMPs will also mitigate for impacts to this species habitat. Finally, this animal is not noted as contributing economic or recreational value to Larimer County.	
Townsend's Big-eared Bat (*Plecotus townsendii*)	No	Townsend's big-eared bat is not included in the plan because it is a Colorado state species of special concern, which is not a statutory category, and therefore no further action or permitting is required for this species at the state level. Additionally, the project is already implementing species-specific avoidance and minimization measures for this species. Surveys were conducted in 2019 and no Townsend's big-eared bats were noted. Additional surveys will occur in 2020. Finally, this animal is not noted as contributing economic or recreational value to Larimer County.	
Birds			
Bald Eagle (*Haliaeetus leucocephalus*)	Yes	Bald Eagle is included in the plan because it is protected at the federal level by the Bald and Golden Eagle Protection Act and the MBTA and suitable habitat occurs in the study area.	
Black-necked Stilt (*Himantopus mexicanus*)	No	Black-necked Stilt is not included in the plan because it is not protected at the state level. The project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection for this species.	
Brewer's Sparrow (*Spizella breweri*)	No	Brewer's Sparrow is not included in the plan because it is not protected at the state level. The project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection for this species.	
Burrowing Owl (*Athene cunicularia*)	Yes	A black-tailed prairie dog colony, which is located northeast of Glade Reservoir, could provide habitat for Burrowing Owl, which are a state threatened species and are also protected by the MBTA.	
Chestnut-collared Longspur (*Calcarius ornatus*)	No	Chestnut-collared Longspur is not included in the plan because it is not protected at the state level and it does not occur at Glade Reservoir. The project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection for this species.	

Species	Included?	Justification	Source
Ferruginous Hawk (*Buteo regalis*)	No	Ferruginous Hawk is not included in the plan because it is a Colorado state species of special concern, which is not a statutory category, and therefore no further action or permitting is required for this species at the state level. Impacts to this species and associated mitigation are addressed in the FEIS and the CPW approved FWMEP. Additionally, the project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection for this species.	
Golden Eagle (*Aquila chrysaetos*)	Yes	Golden Eagle is included in the plan because it is protected at the federal level by the Bald and Golden Eagle Protection Act and the MBTA and suitable habitat occurs in the study area.	
Lewis's Woodpecker (*Melanerpes lewis*)	No	Lewis's Woodpecker is not included in the plan because it is not protected at the state level. The project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection for this species.	
Long-billed Curlew (*Numenius americanus*)	No	Long-billed Curlew is not included in the plan because it is a Colorado state species of special concern, which is not a statutory category, and therefore no further action or permitting is required for this species at the state level. Also, it does not occur at Glade Reservoir. Additionally, the project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection to this species.	
McCown's Longspur (*Calcarius mccownii*)	No	McCown's Longspur is not included in the plan because it is not protected at the state level and it does not occur at Glade Reservoir. The project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection to this species.	
Mountain Plover (*Charadrius montanus*)	No	Mountain Plover is not included in the plan because it is a Colorado state species of special concern, which is not a statutory category, and therefore no further action or permitting is required for this species at the state level. Also, it does not occur at Glade Reservoir. Additionally, the project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection for this species.	
Peregrine Falcon (*Falco peregrinus*)	No	Peregrine Falcon is not included in the plan because it is a Colorado state species of special concern, which is not a statutory category, and therefore no further action or permitting is required for this species at the state level. Impacts to this species and associated mitigation are addressed in the FEIS and the CPW approved FWMEP. Additionally, the project will conduct pre-construction nest surveys in accordance with the MBTA, which will provide additional protection for this species.	

Species	Included?	Justification	Source
Reptiles			
Common Gartersnake (*Thamnophis sirtalis*)	No	Common garter snake is not included in the plan because Colorado state species of special concern are not a statutory category and therefore no further action or permitting is required for common garter snake at the state level. Impacts to this species and associated mitigation are addressed in the FEIS and the CPW approved FWMEP. Additionally, the project's wetland mitigation, mitigation measures implemented as part of the project's SWMP, and other BMPs will also mitigate for impacts to these species' habitat. Finally, this animal is not noted as contributing to the economic or recreational value of Larimer County.	
Amphibians			
Northern Leopard Frog (*Lithobates pipiens*)	No	Northern leopard frog is not included in the plan because Colorado state species of special concern are not a statutory category and therefore no further action or permitting is required for Northern Leopard Frog at the state level. Impacts to this species and associated mitigation are addressed in the FEIS and the CPW approved FWMEP. Additionally, the project's wetland mitigation, mitigation measures implemented as part of the project's SWMP, and other BMPs will also mitigate for impacts to these species' habitat. Finally, this animal is not noted as contributing to the economic or recreational value of Larimer County.	
Insects			
Arogros Skipper (*Atrytone arogos*)	No	Although suitable habitat may exist in the study area, these species are not included in the plan because they are not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for impacts to this species habitat. Additionally, these animals are not noted as contributing to the economic or recreational value of Larimer County.	
Crossline Skipper (*Polites origenes*)			
Dusted Skipper (*Atrytonopsis hianna*)			
Hops Feeding Azure (*Celastrina humulus*)			
Moss's Elfin (*Callophrys mossii*)			
Mottled Duskywing (*Erynnis martialis*)			
Ottoe Skipper (*Hesperia ottoe*)			
Regal Fritillary (*Speyeria idalia*)			
Rhesus Skipper			

Species	Included?	Justification	Source
(*Polites rhesus*)			
Simius Roadside Skipper (*Amblyscirtes simius*)			
Smoky-eyed Brown Butterfly (*Satyrodes eurydice fumosa*)			
Two-spotted Skipper (*Euphyes bimacula*)			
Aquatic Life			
Lake Chub (*Couesius plumbeus*)	No	Lake chub (state listed as endangered) is not included in the plan because no suitable habitat occurs in the study area.	Final Environmental Impact Statement, p. 3-152
Northern Redbelly Dace (*Chrosomus eos*)	No	Northern redbelly dace (state listed as endangered) is not included in the plan because it is not known to occur in the study area.	
Plains Topminnow (*Fundulus sciadicus*)	Yes	Plains topminnow (state listed as endangered) is included in the plan because it has a potential to occur in the study area.	
Suckermouth Minnow (*Phenacobius mirabilis*)	No	Suckermouth minnow (state listed as endangered) is not included in the plan because no suitable habitat occurs in the study area.	
Brassy Minnow (*Hybognathus hankinsoni*)	No	Brassy minnow (state listed as threatened) is not included in the plan because no suitable habitat occurs in the study area.	
Common Shiner (*Luxilus cornutus*)	Yes	Common shiner (state listed as threatened) is included in the plan because it has a potential to occur in the study area.	
Iowa Darter (*Etheostoma exile*)	No	Although the Iowa darter has the potential to occur in the study area, it is not included in the plan because Colorado state species of special concern are not a statutory category and therefore no further action or permitting is required for Iowa darter at the state level. Additionally, mitigation measures implemented as part of the project's SWMP and other BMPs will also mitigate for impacts to this species habitat.	
Orangespotted Sunfish (*Lepomis humilis*)	No	Orangespotted sunfish is not included in the plan because they are not protected at the state or federal level. Additionally, mitigation measures implemented as part of the project's SWMP and other BMPs will also mitigate for impacts to this species habitat.	
Cylindrical Papershell (*Anodontoides ferussacianus*)	No	Cylindrical papershell is not included in the plan because Colorado state species of special concern are not a statutory category and therefore no further action or permitting is required for cylindrical papershell at the state level. Additionally, no suitable habitat occurs in the study area.	

Species	Included?	Justification	Source
Macroinvertebrates	No	Macroinvertebrates are not included in the plan because they are not protected at the state or federal level. Additionally, mitigation measures implemented as part of the project's SWMP and other BMPs will also mitigate for impacts to these species' habitat.	Final Environmental Impact Statement, p. 3-166 through 3-167
Other Fish Species	No	Other fish species are not included in the plan because they are not protected at the state or federal level. Additionally, mitigation measures implemented as part of the project's SWMP and other BMPs will also mitigate for any impacts anticipated to these species' habitat.	Final Environmental Impact Statement, p. 3-165
Rare Plants (although plants are not wildlife, they are included since they enhance wildlife habitat)			
Colorado Butterfly Plant (*Oenothera coloradensis*)	No	Colorado butterfly plant (previously federally listed as threatened) is not included in the plan because, although limited habitat is present, the species is unlikely to occur, and it was not found during vegetation surveys of the Glade Reservoir study area.	Final Environmental Impact Statement, p. 3-149
Ute Ladies'-tresses Orchid (*Spiranthes diluvialis*)	Yes	Ute ladies'-tresses orchid (federally listed as threatened) is included in the plan because, although limited habitat is present, the species was documented in 2019 surveys at the PVC-Hanson Channel and Riparian Improvements site along the Poudre River southwest of Glade Reservoir.	
Western Prairie Fringed Orchid (*Platanthera praeclara*)	Yes	The following downstream species, the western prairie fringed orchid, is included in the plan because depletions to the Poudre River associated with the project have the potential to affect this federally listed threatened species and its designated critical habitat in Nebraska.	Final Environmental Impact Statement, p. 3-150
American Currant (*Ribes americanum*)	No	American currant is not included in the plan because it is not protected at the state or federal level and Glade Reservoir is not included as a possible occurrence location for them. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts anticipated to this species habitat.	Final Environmental Impact Statement, p. 3-153
American Yellow Lady's Slipper (*Cypripedium calceolus* ssp. *parviflorum*)	No	Although historical (before 2000) observations were recorded in or in proximity to the Glade Reservoir, American yellow lady's slipper is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts anticipated to this species habitat.	

Species	Included?	Justification	Source
Bell's Twinpod (*Physaria bellii*)	No	Bell's twinpod is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts anticipated to this species habitat.	
Dwarf Milkweed (*Asclepias uncialis* ssp. *uncialis*)	No	Dwarf milkweed is not included in the plan because it is not protected at the state or federal level and Glade Reservoir is not included as a possible occurrence location for them. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts anticipated to this species habitat.	
Lavender Hyssop (*Agastache foeniculum*)	No	Although historical (before 2000) observations were recorded in or in proximity to the Glade Reservoir, lavender hyssop is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts anticipated to this species habitat.	
Rocky Mountain Sedge (*Carex saximontana*)	No	Although potential habitat may be present in or in proximity to the Glade Reservoir, Rocky Mountain Sedge is not included in the plan because it is not protected at the state or federal level. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts anticipated to this species habitat.	
Slim-pod Venus' Looking Glass (*Triodanis leptocarpa*)	No	Slim-pod Venus' looking glass is not included in the plan because it is not protected at the state or federal level and Glade Reservoir is not included as a possible occurrence location for them. Mitigation measures implemented as part of the project and other BMPs will also help mitigate for any impacts anticipated to this species habitat.	

Notes:

This species summary list was compiled from the species discussed in the NISP FEIS.

Figures

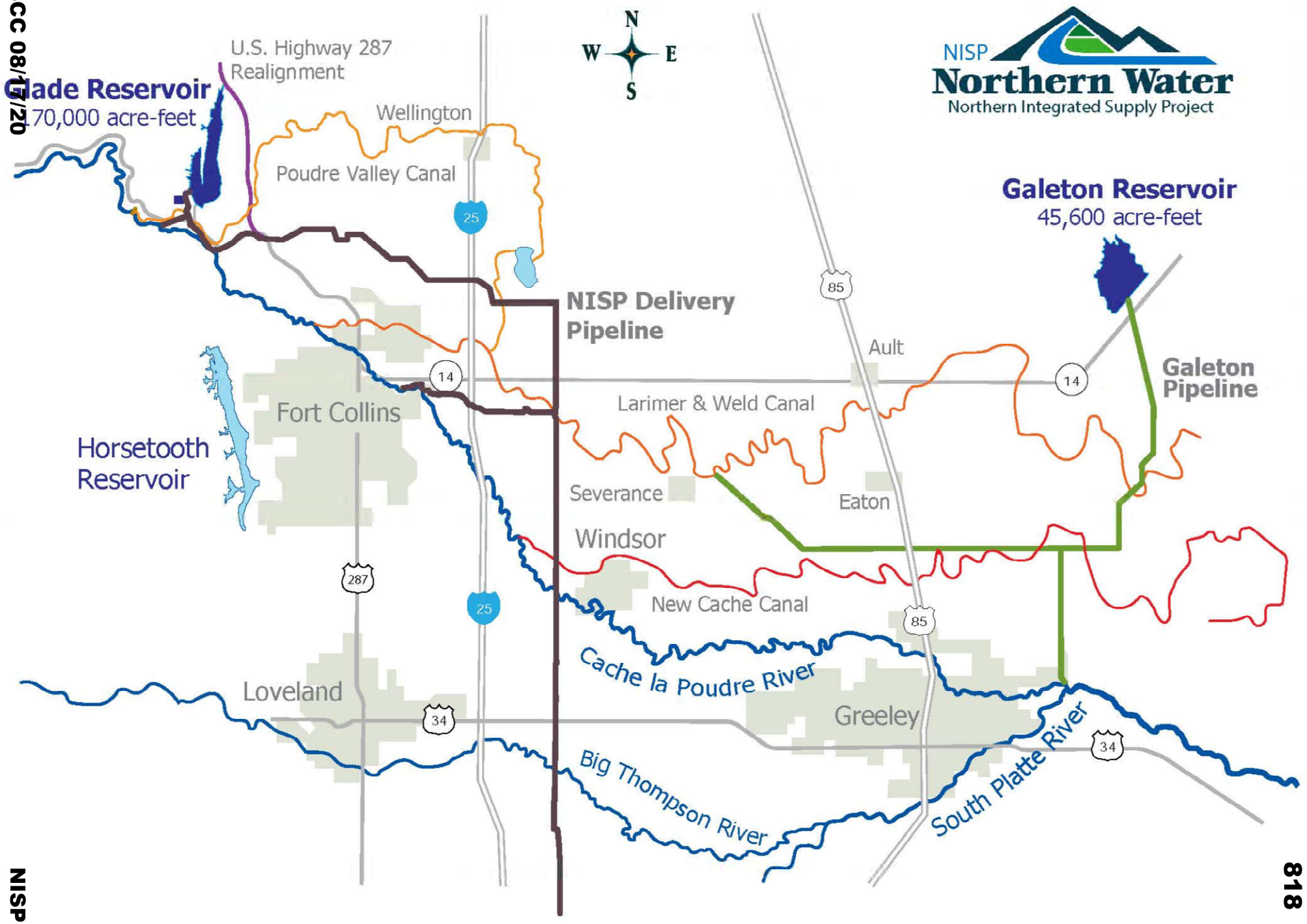

N
W
E
S
NISP
Northern Water
Northern Integrated Supply Project
U.S. Highway 287
Realignment
Glade Reservoir
70,000 acre-feet
Wellington
Poudre Valley Canal
25
Galeton Reservoir
45,600 acre-feet
85
NISP Delivery
Pipeline
Ault
14
Galeton
Pipeline
Larimer & Weld Canal
Fort Collins
Horsetooth
Reservoir
Severance
Eaton
Windsor
287
25
New Cache Canal
85
Cache la Poudre River
Loveland
Greeley
34
Big Thompson River
South Platte River
34

Figure 3-32. Deer Habitat at Glade Reservoir and U.S. 287 Realignment Study Areas.

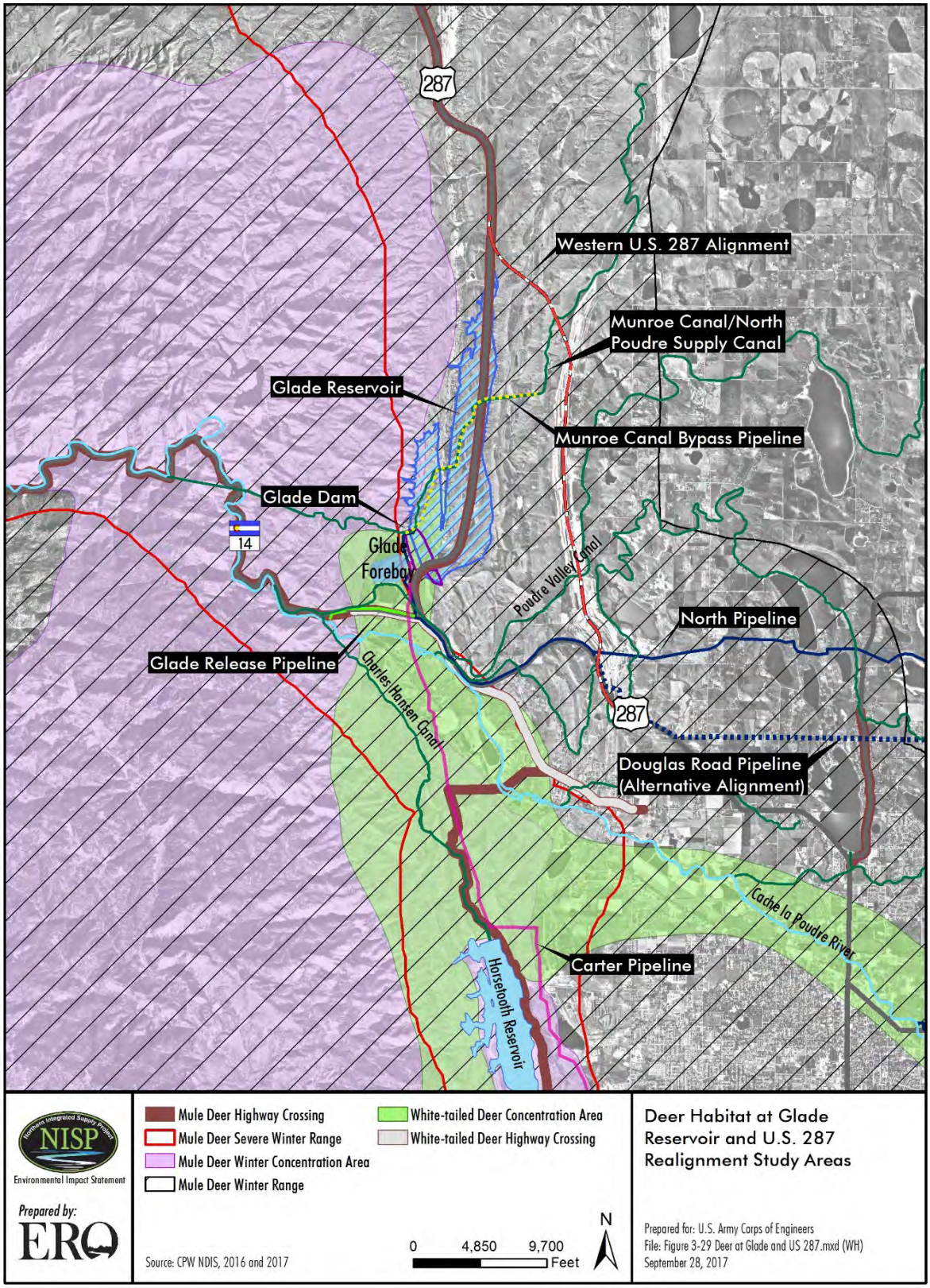
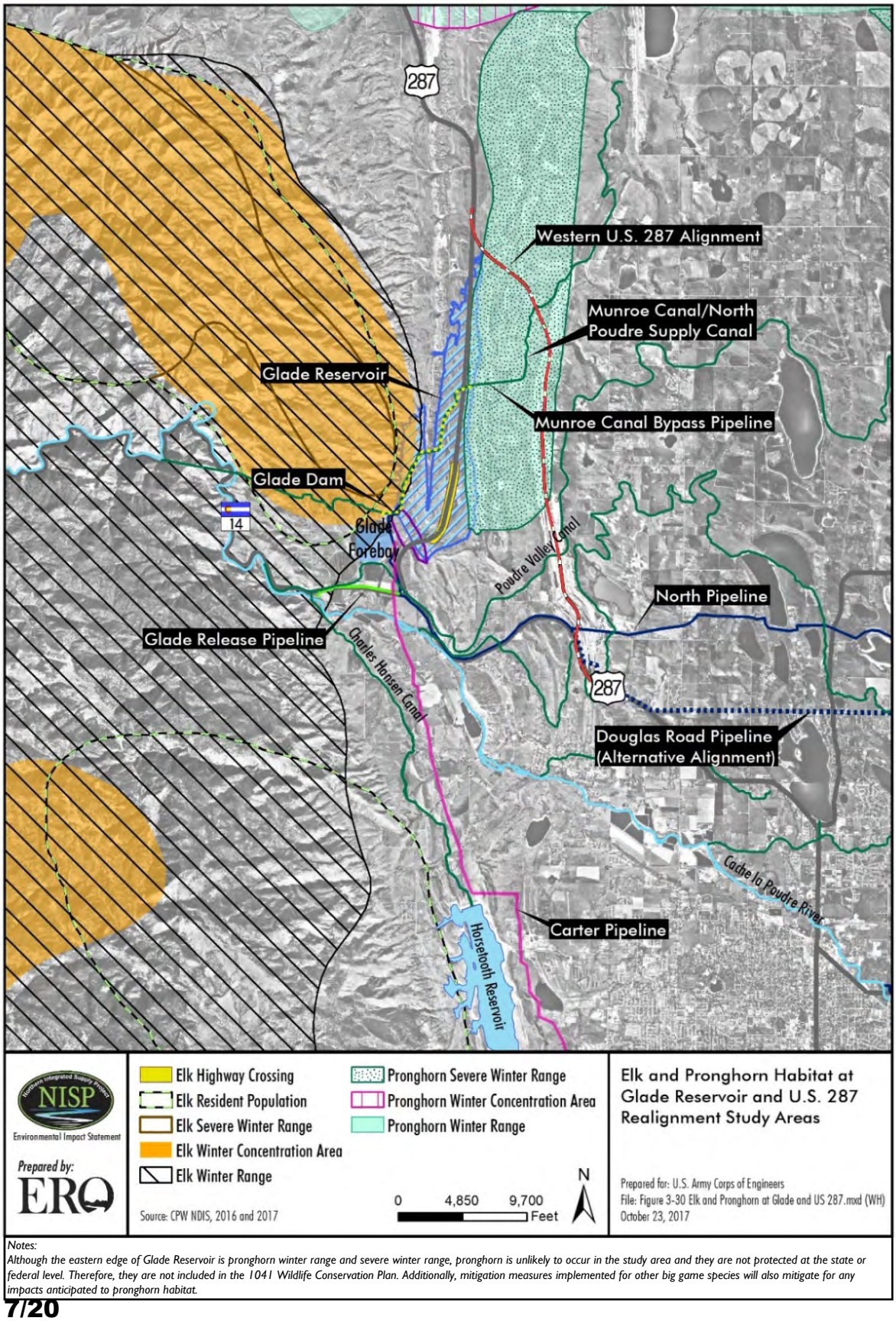


Figure 3-33. Elk and Pronghorn Habitat at Glade Reservoir and U.S. 287 Realignment Study Areas.



Notes:
Although the eastern edge of Glade Reservoir is pronghorn winter range and severe winter range, pronghorn is unlikely to occur in the study area and they are not protected at the state or federal level. Therefore, they are not included in the 1041 Wildlife Conservation Plan. Additionally, mitigation measures implemented for other big game species will also mitigate for any impacts anticipated to pronghorn habitat.

Figure 3-34. Mule Deer Habitat in Study Areas.

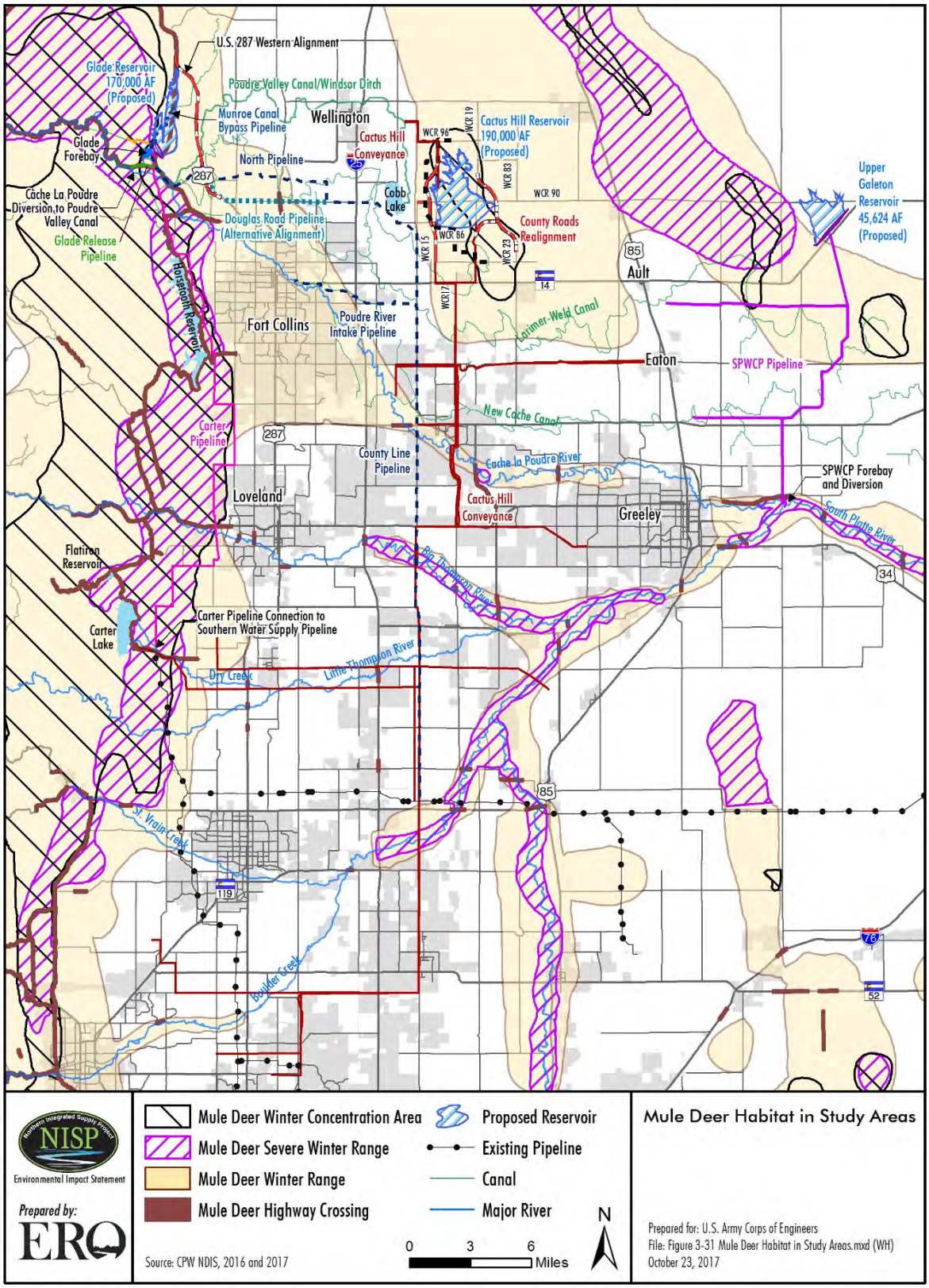


Figure 3-35. White-tailed Deer Habitat in the Study Areas.

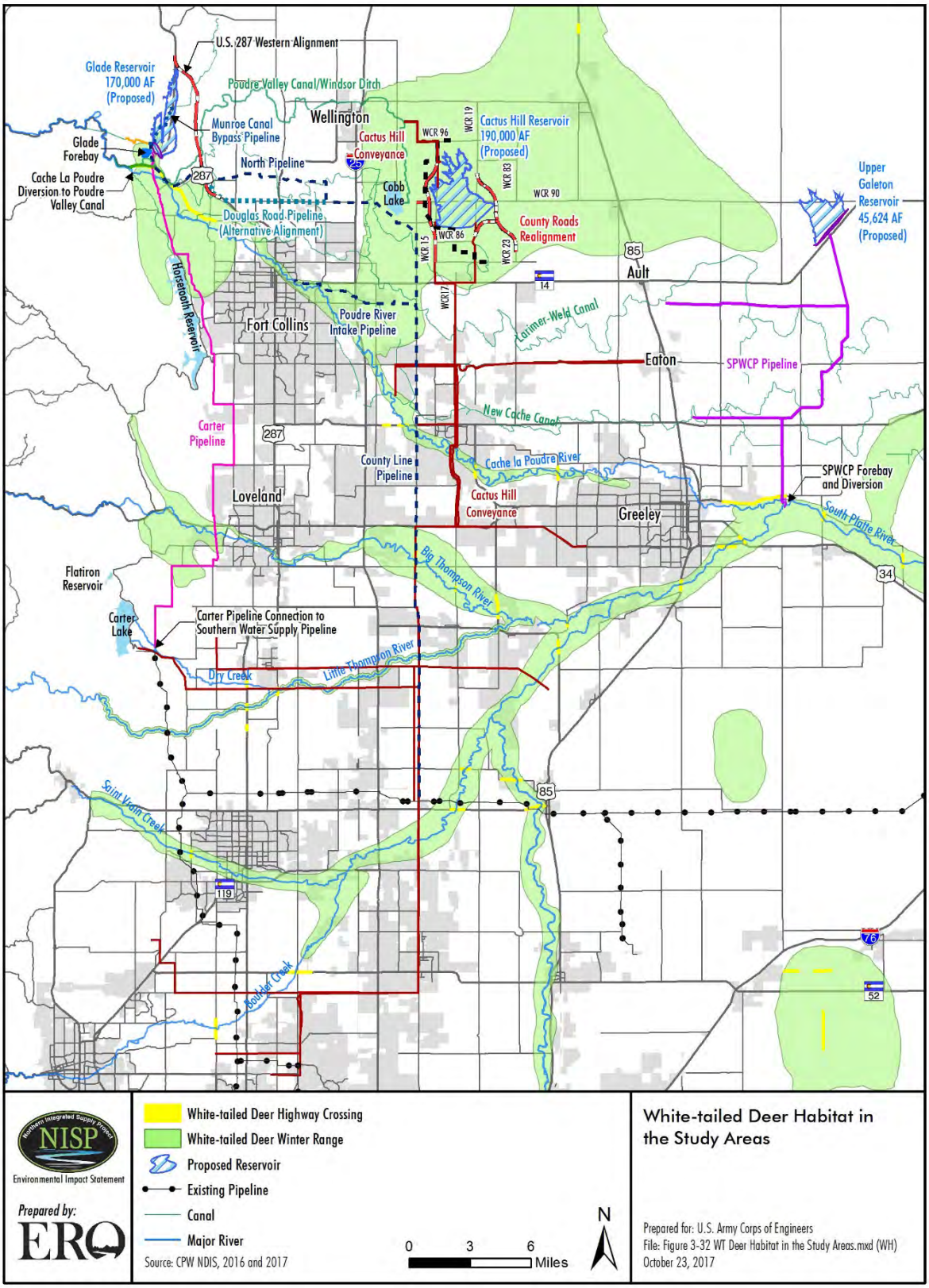
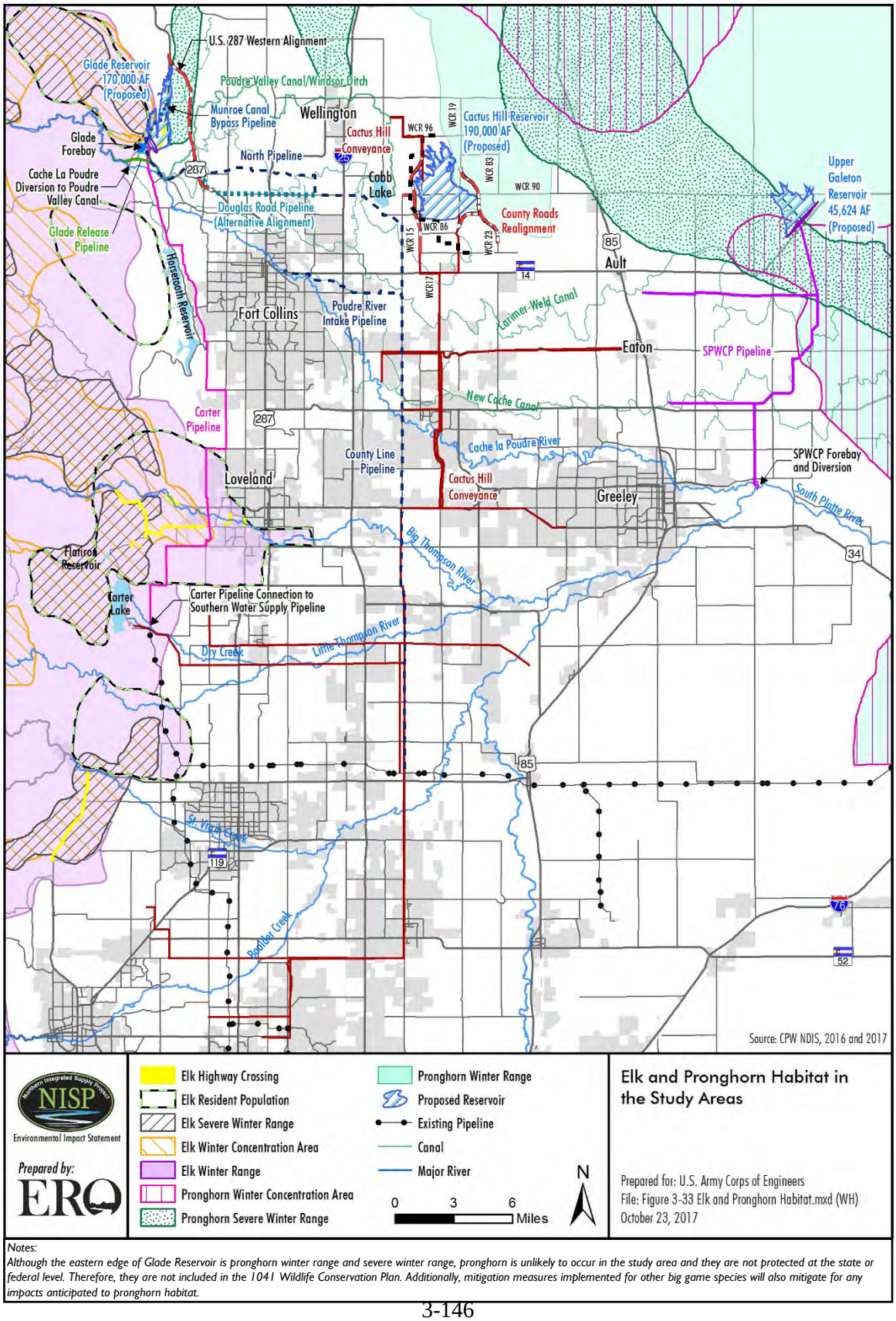


Figure 3-36. Elk and Pronghorn Habitat in the Study Areas.



Notes:
Although the eastern edge of Glade Reservoir is pronghorn winter range and severe winter range, pronghorn is unlikely to occur in the study area and they are not protected at the state or federal level. Therefore, they are not included in the 1041 Wildlife Conservation Plan. Additionally, mitigation measures implemented for other big game species will also mitigate for any impacts anticipated to pronghorn habitat.

Figure 3-37. Overview of Threatened and Endangered Species and Bald Eagle Habitat in the Glade Reservoir Study Area.

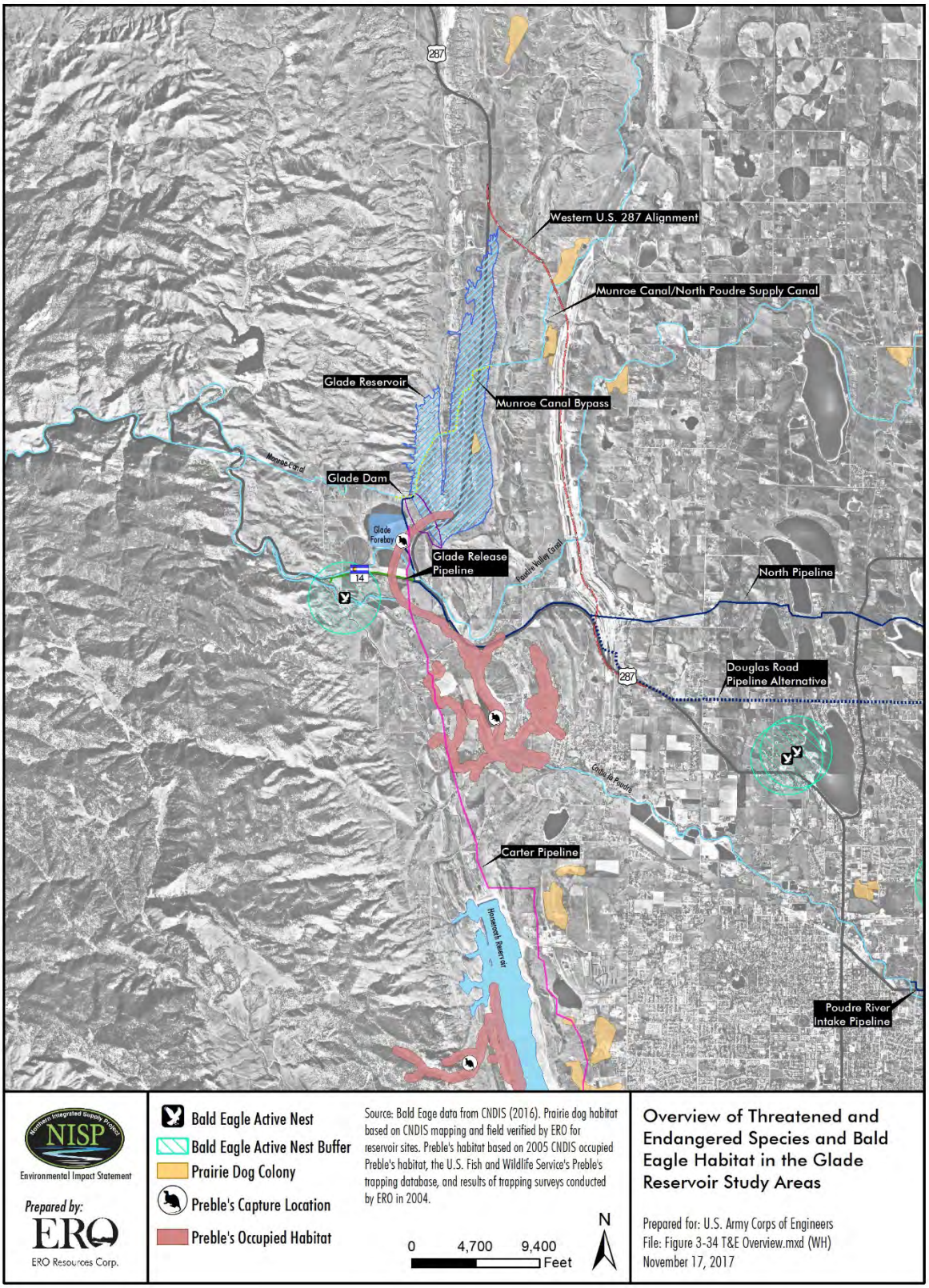
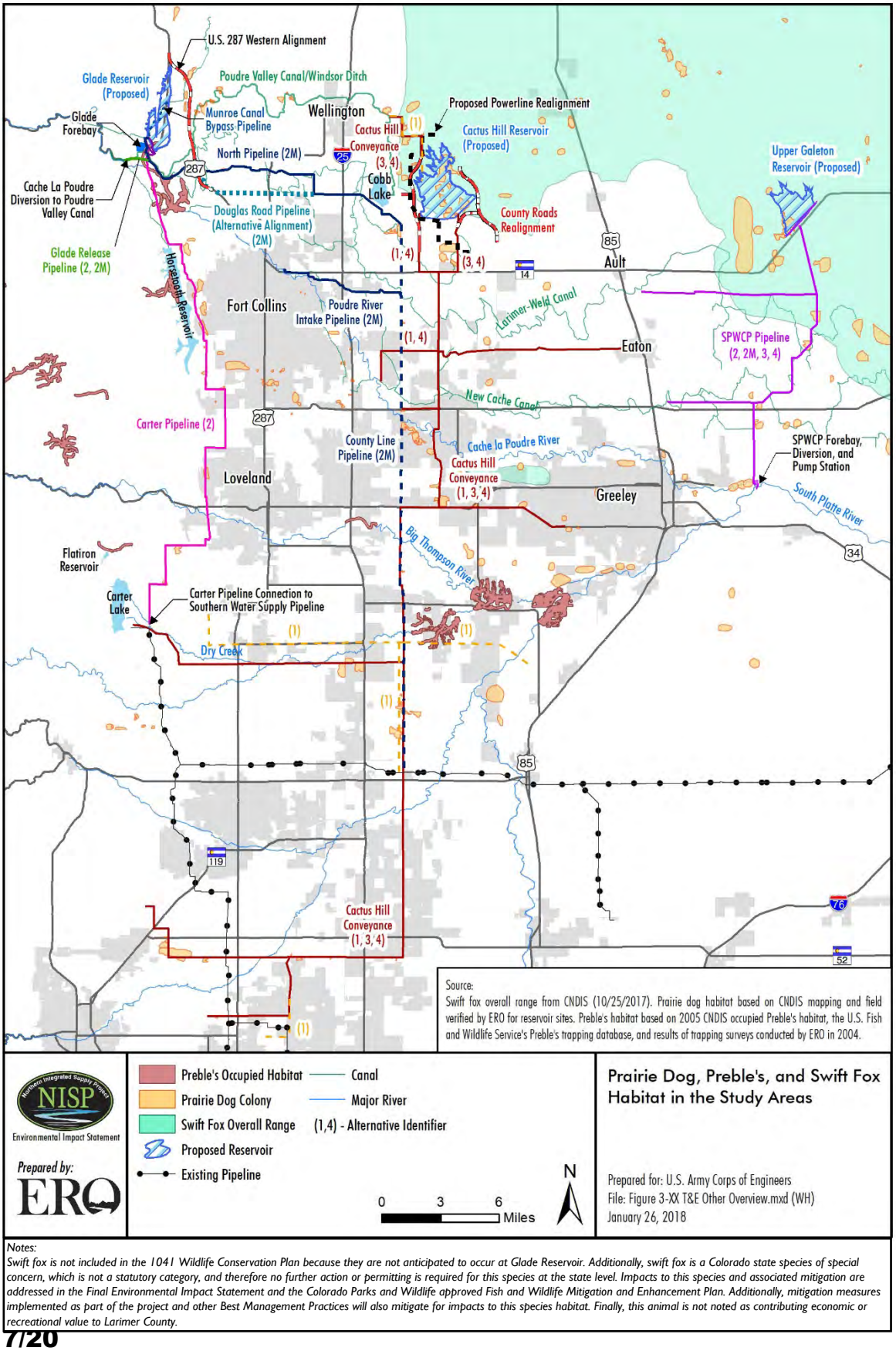


Figure 3-38. Prairie dog, Preble's, and Swift Fox Habitat in the Study Areas.



Notes:
Swift fox is not included in the 1041 Wildlife Conservation Plan because they are not anticipated to occur at Glade Reservoir. Additionally, swift fox is a Colorado state species of special concern, which is not a statutory category, and therefore no further action or permitting is required for this species at the state level. Impacts to this species and associated mitigation are addressed in the Final Environmental Impact Statement and the Colorado Parks and Wildlife approved Fish and Wildlife Mitigation and Enhancement Plan. Additionally, mitigation measures implemented as part of the project and other Best Management Practices will also mitigate for impacts to this species habitat. Finally, this animal is not noted as contributing economic or recreational value to Larimer County.

Figure 3-39. Bald Eagle Habitat in the Study Areas.