

**CONCEPTUAL WETLAND MITIGATION PLAN  
ELK CREEK WATER DIVERSION PROJECT  
CORPS PERMIT NO. NWO-2008-2659-DEN  
PARK COUNTY, COLORADO**

**APRIL 7, 2010**

**Introduction**

On behalf of Will O Wisp Metropolitan District, ERO Resources Corporation (ERO) prepared this conceptual wetland mitigation plan for inclusion in an Individual Permit (IP) (Corps Permit No. NWO-2008-2659-DEN) application submittal to the U.S. Army Corps of Engineers (Corps) for a proposed water diversion project in Park County, Colorado. The project includes installing a diversion structure and infiltration gallery on Elk Creek, and building an associated pump station and 8-inch pipeline.

**Project Area Description**

The project area is northeast of the intersection of Meadows Drive and Mount Evans Boulevard along Elk Creek near the town of Pine Junction in Section 26, Township 6 South, Range 72 West of the 6<sup>th</sup> Principal Meridian in Park County, Colorado (Figure 1). The latitude/longitude of the project area is 39.49310°N/105.42276°W.

The project area encompasses both upland and wet meadow vegetation communities between Elk Creek and Mount Evans Boulevard. The project area limits include a 150-linear-foot section of Elk Creek, a 78-foot-wide by 650-foot-long temporary construction easement in both upland and wet meadow vegetation communities southwest of Elk Creek, and a 400-foot-long temporary access road in uplands south of Elk Creek.

Elk Creek within the project area has a meandering channel that varies from 5 to 8 feet wide and has 1- to 2-foot incised banks. The wet meadow vegetation community southwest of Elk Creek is dominated by water sedge (*Carex aquatilis*), Baltic rush (*Juncus arcticus* subsp. *ater*), bluejoint (*Calamagrostis canadensis*), and tufted hairgrass (*Deschampsia cespitosa*). A few clumps of willow (*Salix* spp.) were observed along the channel banks of Elk Creek. Upland areas are mostly dominated by pasture grasses such as smooth brome (*Bromopsis inermis*) and Timothy (*Phleum pratense*), and a few native species such as needle-and-thread (*Hesperostipa comata*), prairie junegrass (*Koeleria macrantha*), and prairie sagewort (*Artemisia frigida*).

## **Wetland Impacts and Mitigation**

Elk Creek is classified as a riverine system that contains nonpersistent emergent wetlands on the adjacent banks, and the wet meadow community is classified as a palustrine system that contains persistent emergent wetlands (Cowardin et al. 1979). Surface runoff from a culvert located under Meadows Drive south of the project area and shallow ground water are the main sources of hydrology supporting the wetlands in the wet meadow.

The proposed project has been designed to minimize impacts to the stream channel and adjacent wetland areas to the greatest extent practicable; however, temporary impacts would occur to 56,258 square feet (1.29 acre) of emergent wetlands associated with the wet meadow community (see Appendix A—Diversion BMP/Overall Site Plan). There would be no permanent impacts to wetlands or the Elk Creek stream channel associated with the proposed project.

The proposed mitigation for the project includes immediate restoration of disturbed wetland and upland areas. Temporarily impacted wetlands will be mitigated in place through topsoil salvage and replacement, and reseeded. All construction access points, haul roads, and staging areas would be regraded (as necessary) and restored to preconstruction site elevations as part of the mitigation (see Appendix A—Diversion BMP/Overall Site Plan). The topsoil and subsoil will be salvaged and stockpiled separately. The stockpiled topsoil will be stored in such a manner as to keep the soil alive, weed-free, and protected from damage until it is restored and reseeded. The topsoil replacement will take place as soon as practicable, but longer than 180 days.

Although it is expected that most of the existing species would volunteer during the revegetation period, the temporarily impacted wetlands will be seeded with the native wetland seed mix listed in Table 1, and upland areas will be seeded with the native upland seed mix listed in Table 2. If the small willow clumps along Elk Creek are impacted during construction, attempts will be made to preserve the root system by pruning the vegetation near ground level so that it may grow back following construction, or the clumps may be salvaged from disturbed areas and transplanted in restored areas.

**Table 1. Native wetland seed mix.**

Common Name and Variety	Scientific Name	PLS Lb/ac.	% Lb/ac.*
Slough grass, Egan	<i>Beckmannia syzigachne</i>	0.3	4
Bluejoint reedgrass, Sourdough	<i>Calamagrostis canadensis</i>	0.3	4
Water sedge	<i>Carex aquatilis</i>	1	14
Woolly sedge	<i>Carex lanuginosa</i>	0.6	7
Tufted hairgrass, Nortran	<i>Deschampsia caespitosa</i>	0.4	5
Meadow barley	<i>Hordeum brachyantherum</i>	5	65
Baltic rush	<i>Juncus arcticus</i>	0.05	1
<b>Total</b>		<b>7.65</b>	<b>100</b>

\*Rate for drilling, double for broadcast seeding.

**Table 2. Native upland seed mix.**

Common Name and Variety	Scientific Name	PLS Lb/ac.*	% Lb/ac.
Blue grama, Alma	<i>Bouteloua gracilis</i>	0.3	2
Mountain brome, Garnet	<i>Bromus marginatus</i>	8	60
Arizona fescue, Redondo	<i>Festuca arizonica</i>	0.6	4
Junegrass	<i>Koeleria macranthera</i>	0.1	1
Western wheatgrass, Rosana	<i>Pascopyrum smithii</i>	4	25
Alpine timothy	<i>Phleum alpinum</i>	0.5	5
Canby bluegrass	<i>Poa secunda</i>	0.4	3
<b>Total</b>		<b>13.9</b>	<b>100</b>

\*Rate for drilling, double for broadcast seeding.

## Wetland Maintenance and Monitoring

As required by Special Condition C of the draft IP (NWO-2008-2659-DEN), ERO has been retained to oversee construction activities and assist the project engineer and contractor with permit compliance and implementation of the mitigation plan.

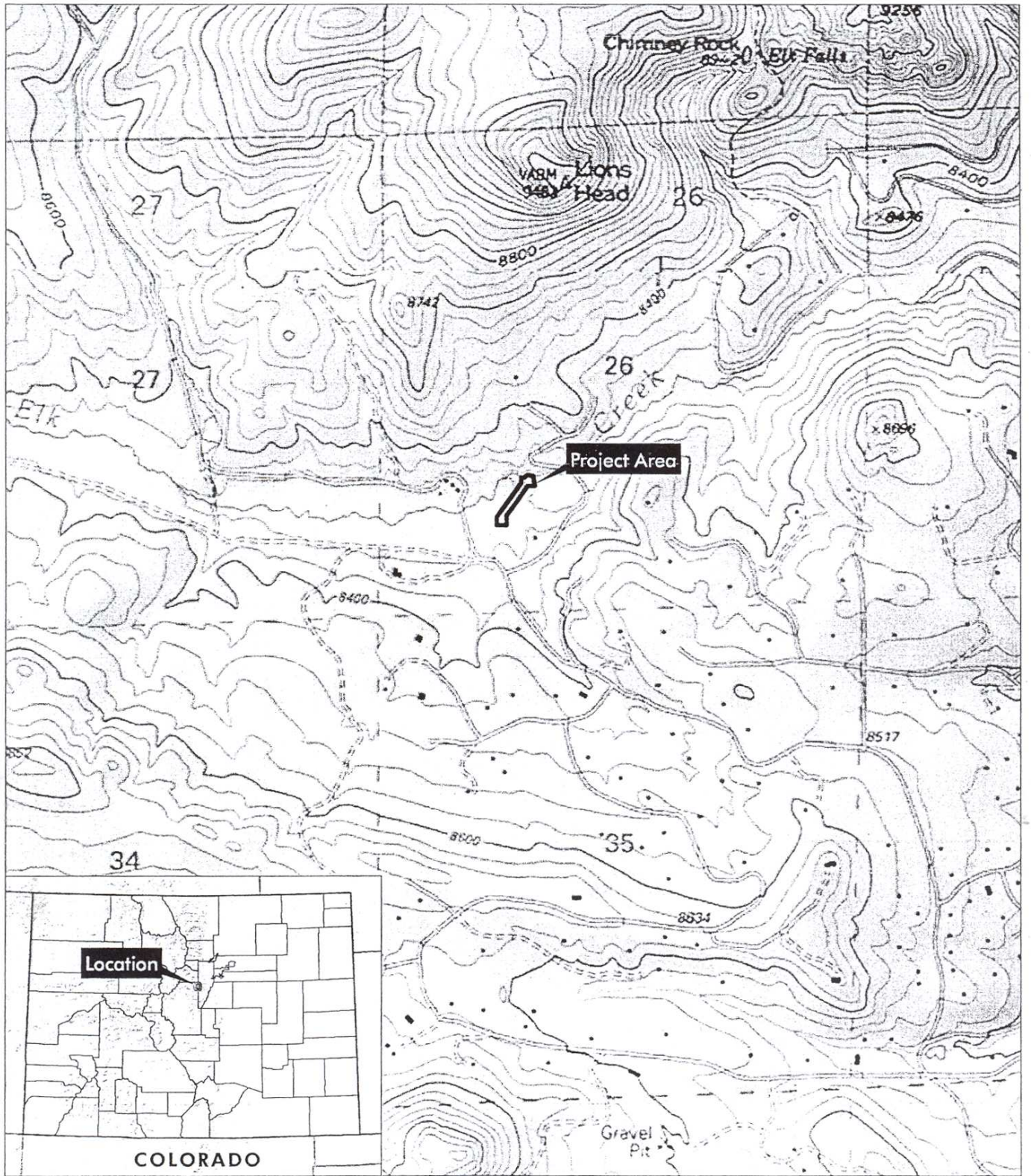
The objective of monitoring is to: ensure that the wetland compensatory mitigation has been properly implemented, determine if mitigation is successful, identify problems that could prevent or interfere with successful establishment of self-sustaining mitigation areas, and suggest recommendations to remedy any problems. Monitoring evaluates the status of the mitigation area, including plant composition and cover, and site hydrology. Documentation of the data collection methods would ensure that monitoring is carried out consistently over time. Monitoring site visits, assessments, and photographic work will

be performed once a year, during the growing season, for 5 years or until the mitigation areas have achieved and maintained success criteria as established by the Corps.

Annual monitoring reports will be submitted to the Corps before December 31. Monitoring reports will include a discussion of noxious weed colonization, a qualitative description of the mitigation area including reestablishment of species within the wet meadow. Bare areas will be noted during monitoring. The potential revegetation of bare areas will be assessed and recommendations will be made in the annual monitoring reports. Noxious weed species, population size, and extent will be noted, and weed management recommendations will be made. Permanent photo points will be established and supplied in the annual monitoring report. The annual monitoring report will include an evaluation of the status and progress of restoration and mitigation, and recommendations for remedial actions will be made.

## **References**

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service, Office of Biological Services Program. FWS/OBS-79/31.



Elk Creek Water Diversion Mitigation Plan  
 Section 26, T6S, R72W; 6th PM  
 UTM NAD 83: Zone 13N; 463648mE, 4371584mN  
 Latitude, Longitude: 39.49310°N, 105.42276°W  
 USGS Bailey, CO Quadrangle  
 Park County, Colorado



Figure 1  
 Site Location

Prepared for: Pine Ridge Residential  
 File: 4673figure 1.mxd (dlH)  
 March 2010

