APPENDIX E

WETLAND FINDING, STATE HIGHWAY 9, FRISCO TO BRECKENRIDGE, SUMMIT COUNTY, COLORADO

WETLAND FINDING

CDOT PROJECT: STA 009A-021
STATE HIGHWAY 9
FRISCO TO BRECKENRIDGE
SUMMIT COUNTY, COLORADO

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CONTENTS

TABLES

FIGURES

WETLAND FINDING

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STATE HIGHWAY 9 – FRISCO TO BRECKENRIDGE
SUMMIT COUNTY, COLORADO

This wetland finding for Colorado Department of Transportation (CDOT) Project STA 009A-021 State Highway 9 – Frisco to Breckenridge has been prepared in compliance with Executive Order 11990 "Protection of Wetlands" and is in accordance with 23 CFR 771, 23 CFR 777 and FHWA Technical Advisory T6640.8A (1987).

Location

The study area is located along State Highway 9 from the intersection of I-70 south to the intersection with Boreas Pass Road at the south end of Breckenridge in Summit County, Colorado as shown in Figures 1 through 19. Also studied was a potential realignment of State Highway 9 from Main Street to Park Avenue within the Town of Breckenridge (Figures 17 and 18). The study area is located in Township 5 South, Range 78 West, Sections 26, 35, and 36; Township 5 South, Range 77 West, Section 31; Township 6 South, Range 78 West, Section 1; Township 6 South, Range 77 West, Sections 6, 7, 18, 19, 30 and 31; and Township 7 South, Range 77 West, Section 6.

Project Description

Between Frisco and Breckenridge, State Highway 9 (SH 9) is classified by CDOT as a two-lane rural principal arterial. SH 9 carries both local and regional travelers. The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), proposes to expand SH 9 to four lanes with a median that varies from a 5.5-meter (18-foot) wide depressed or raised median to a 13-meter (10-foot) wide barrier separated median. The roadsides would be a maximum of 3:1 slope with retaining walls selectively used to narrow the toe-of-road slope to avoid wetlands and other sensitive areas where feasible. Overall, the total footprint width of the proposed road would be approximately 100 to 125 feet from toe of slope to toe of slope.

As required by Executive Order 11990, impacts to wetlands and other environmental issues were evaluated and documented in a Draft Environmental Impact Statement (DEIS) (Carter & Burgess 2002). Impacts to wetlands associated with the proposed project as discussed in the DEIS would occur in the following areas (see Figures 20 through 26):

- At Leslie's Curve (Figure 21, between Mile Posts 93.9 and 94.6), the highway would expand to the west and fill a small drainage/road side ditch.
- At the southern end of Dillon Reservoir, the highway widening would expand slightly into wetlands around the reservoir and cross a wetland/fen complex at the southern end (Figure 22, Mile Post 93.3).
- At the Blue River Crossing near Tiger Run (Figure 23), the existing crossing, which has three culverts, would be replaced with a bridge.
- Along the Blue River north of Breckenridge (Figures 24 and 25, Mile Post 90.75), the highway would be expanded to four lanes with a raised median of 18 feet (typical). In this area, long stretches of retaining walls are planned along the river side of the road.
- A new bridge crossing would be constructed at North Park Avenue (Mile Post 87.5) and the existing intersection of SH 9 and North Park Avenue would be modified to a roundabout, which would impact wetlands along the Blue River (Figure 26).

As part of this project, portions of the regional bike path would be relocated to accommodate the proposed SH 9 improvements and meet safety concerns. Bike path relocations that would affect wetlands include:

- Relocating the bike path farther up the hill to the west at Leslie's Curve to alleviate safety concerns. This realignment would include a bridge across the Iron Springs drainage (not shown on map).
- At Coyne Valley and Valley Brook Drive, the bike path would be shifted to a safer and more scenic alignment to the west. This realignment would necessitate one crossing of the Blue River and associated wetlands and one crossing of a tributary at the kayak run (Figure 24).
- The bike path along North Park Avenue would be realigned to accommodate the proposed new North Park Avenue Bridge, which would impact wetlands along the Blue River (Figure 26).

Wetland Resources

Wetlands and waters of the U.S. were surveyed by Sugnet and Associates in September 1998 (Sugnet and Associates 1998) and by ERO Resources in May and June of 1999. A wetland delineation combining the two surveys was submitted to the Corps in 2000 (ERO Resources 2000). The wetland delineations were conducted following the guidelines and criteria of the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (Environmental Laboratory 1987). Wetland resources and waters of the U.S. are regulated under Section 404 of the Clean Water Act, and Executive Order 11990 addresses protection of wetlands. Waters of the U.S. include unvegetated bodies of water such as lakes, ponds, perennial and intermittent streams, and pool and riffle complexes. Waters were mapped as separate units from wetlands.

The Corps verified the combined ERO Resources and Sugnet wetland and waters of the U.S. delineation in 2000. In 2002, wetlands to be impacted were field-reviewed by CDOT and by ERO Resources using aerial photo mapping to note any changes to the wetlands since 1999. Errors in mapping scale were corrected at this time.

ERO and Sugnet flagged and surveyed each wetland using a Global Positioning System (GPS) unit with an accuracy of less than 1 meter. Surveyed wetland boundaries, waters, and soil pits were plotted on aerial photograph base maps of the study area (Figures 2 through 19). Wetlands were classified based on the Cowardin wetland classification system (Cowardin et al. 1979).

Soil samples were collected from potential fen areas and sent to Colorado State University and Colorado Analytical Lab for analysis. Total percent organic carbon and clay content were determined for each sample and the results are included in Appendix B. Within the areas determined to be fens (wetlands 20 and 22), additional soil pits were dug in order to determine the boundary of the fens (Figure 20).

Sugnet and ERO delineated 66 wetlands within the project study as described below. Additionally, CDOT delineated wetlands east of wetland 13 in 2003.

Scrub-Shrub Wetlands (5, 7, 8, 10-12, 23, 24, 25, 32, 34, 43-46, 48, 49-52, 59, 61-65)

Along the Blue River and some of its tributaries, dense to sparse patches of willow shrub wetlands occur with an understory of redtop (*Agrostis stolonifera*), bluejoint reedgrass (*Calamagrostis canadensis*), and other herbaceous species. A thin layer of soil overlays cobbles (Typic Cryaquents). Intermixed within these willow shrub areas are small patches of unvegetated gravel. Other hydric soils within the willow shrublands are classified as Typic Cryaquents, Typic Cryaquepts, Typic Cryaquolls, and Cumulic Cryaquolls (Sugnet). Surface and subsurface flows from the adjacent river or tributaries support the scrub-shrub wetlands.

Within the Blue River floodplain, much of the soil has been disturbed by historical placer mining. The scrub-shrub willow wetlands occur next to the river (wetlands 25, 32, 34, 43, 44, 45, 46, 51, 61, and 62) and in depressions near the river (wetlands 23, 24, and 52). These depressional wetlands appear to have been constructed during the grading for the bike path, and some of the wetlands are connected to the river by small channels. Narrowleaf cottonwoods and other trees have been planted near some of the wetlands.

At the north end of the project, a complex mosaic of uplands and wetlands occurs along Meadow Creek, Tenmile Creek and Miners Creek where they flow into Dillon Reservoir (wetlands 5, 7, 8, 10, 11, 12, 40a, 48, 49a, and 50). Included in this mosaic is an expansive willow carr at the mouth of Miners Creek (wetland 12) where it forms a myriad of small streamlets and beaver ponds before flowing into Dillon Reservoir.

Other scrub-shrub wetlands include a large willow carr west of North Park Avenue (wetland 63) and along Lehmann and Illinois Gulches (wetlands 64 and 65) at the southern end of Breckenridge.

Emergent Wetlands (2, 3, 6, 9, 13-22, 33, 35-37, 41, 42, 47, 48a, 49b, 53-58, 60, and 66)

Wet meadows of sedges, including beaked sedge (*Carex rostrata*) and water sedge (*Carex aquatilis*), along with redtop (*Agrostis stolonifera*) and a variety of other herbaceous species, occur throughout the study site.

At the northern end of the project, wet meadows occur in a small drainage (wetland 2), and adjacent to Tenmile Creek (wetland 49b). These wetlands are supported by surface flows and possibly ground water associated with the creeks. Other emergent wetlands occur in depressions (wetlands 6 and 48a) and around small ponds (wetland 9). Cattails (*Typha latifolia*) and sedges (*Carex* sp.) grow in the pools and standing water within wetland 9.

Wetlands 13, 14, 15, and 16 are a series of herbaceous wetlands with patches of willows occurring at low areas east of the highway and along a small intermittent drainage that flows into Dillon Reservoir. Side seeps along with surface flows support these wetlands. Other herbaceous wetlands occur adjacent to and are supported by the water in Dillon Reservoir (wetlands 16, 17, 18, and 19). A large emergent wetland complex (wetlands 20, 21, and 22) occurs at the southern end of Dillon Reservoir where several small streams meander through a flat valley. Ground water is an important water source for these wetlands.

Within the Blue River floodplain is a series of small depressions dominated by herbaceous wetland species (wetlands 33, 35, 36, and 37, 41, 42, 53, 55, 26, 27, and 58), which are separated from the river by uplands including the bike path. These wetlands are sometimes connected to the river by small channels and appear to be supported by ground water associated with the river and periodic flooding.

The hydric soils within the emergent wetlands are classified as Typic Cryaquents, Typic Cryaquepts, Typic Cryaquolls, and Cumulic Cryaquolls (Sugnet and Associates 1998). Within the Blue River floodplain, much of the soil has been disturbed by historical placer mining and consists of coarse gravel, cobbles, and stones.

Fens (Portions of Wetlands 20 and 22)

Fens are wetlands that contain a high percentage of organic material (peat) in the upper horizons. Histic epipedons have 12 to 18 percent organic carbon (depending on the texture) in the surface horizon and an O Horizon at least 8 inches thick. Histosols have 40 centimeters (16 inches) or more of the upper 80 centimeters (32 inches) as organic soil material (Corps 1998). Histosols and histic epipedons form under unique conditions that

typically include a growing season of less than 120 days and saturation with ground water throughout most of the growing season.

Laboratory samples were collected and analyzed to determine percent organic carbon. According to this analysis, wetlands 20 and 22 include a component of soils with histic epipedons generally 8 to 10 inches in depth. Total organic carbon percentages for fen samples ranged from about 19 to 39 percent (Appendix B). Fen boundaries within the wetland were determined by transecting the wetland with a series of sample pits to determine the presence and depth of histic material. The boundaries of the fen and wet meadows are shown in Figure 22. Beaked sedge (*Carex rostrata*) dominates these fens with a mixture of other herbaceous species such as Baltic rush (*Juncus arcticus*) and tufted hairgrass (*Deschampsia caespitosa*). Fens are supported by ground water discharge at the toe of a mountain slope and in part by a drainage ditch/creek running through the site.

Forested Wetlands (4, 26-31, 38, 39, 40)

A series of small wetlands occur within openings of the lodgepole pine forests near Breckenridge (wetland 26-31, and 38, 39, and 40) and within the forest along a small tributary adjacent to Tenmile Creek (wetland 4). These wetlands are dominated either by aspen (*Populus tremuloides*) or blue spruce (*Picea pungens*) with scattered lodgepole pine (*Pinus contorta*) and an understory of willow shrubs *(Salix monticola* or *S. ge*yeriana). Soils are characterized as Typic Cryaquolls, Cumulic Cryaquolls, or Typic Cryaquents (Sugnet 1998). Surface and ground water flows from the adjacent drainages support these wetlands.

Aquatic Bed, Rooted Vascular (Part of Wetland 48)

The creek channel on the west side of wetland 48 is dominated by submergent vascular wetland vegetation, mainly water crowfeet (*Batrachium trichophyllum*). Other ponds and inundated areas along the Blue River also contain some submergent vegetation; however, the vegetation is not dominant and, therefore, these areas do not meet the criteria for wetlands.

Waters of the U.S.

Within the project corridor are areas of open water, including the Blue River, Ten Mile Creek, and Dillon Reservoir. Because these water bodies are tributaries to navigable waters, they are considered to be waters of the United States (CWA section 502 U.S.C. 1362 (7)) and are under the jurisdiction of the U.S. Army Corps of Engineers. These waters of the U.S. are separate from jurisdictional wetlands because they are not dominated (greater than 50% cover) by vegetation.

Project Alternatives

Project Issues

FHWA and CDOT propose to improve SH 9 from Frisco to Breckenridge (a total of 14.5 kilometers [9 miles]) to enhance mobility and improve safety for corridor users. Increasing the number of general purpose travel lanes from two to four will be the recommendation of the preferred alternative to be published in the Final EIS. Transportation improvements are needed because the average annual daily traffic for this segment has nearly doubled over the last 10 years, and traffic in the area is forecasted to increase by 50 percent by the year 2020. Currently, this two-lane segment of SH 9 is operating at capacity in peak travel times, and the accident rate along SH 9 exceeds the statewide average (Carter & Burgess 2002).

As part of the DEIS, five alternatives were evaluated for potential direct and indirect impacts to wetlands and other environmental concerns. These alternatives are discussed below.

No-Action Alternative

For this alternative, SH 9 would not be improved except for independent projects with already committed funding that would be constructed regardless of other improvements to SH 9. Not improving SH 9 would not meet the project purpose and need for mobility for year 2020 travel projections.

Alternative 1: Four-Lane Full Width

This four-lane alternative would have a road width of 31.7 meters (104 feet) at its widest and a median a maximum width of 11.0 meters (36 feet). However, in wetland

areas, the median width would be reduced to minimize permanent impacts to wetlands to approximately 0.589 hectare (1.456 acres). At Leslie's Curve and the wetland area south of Dillon Reservoir (Figure 21 and 22), the median width was reduced to 3 meters (10 feet), with concrete and retaining walls used in appropriate locations where feasible. Along the Blue River at the northern end of Breckenridge, a raised median with retaining walls would be used with a maximum width of 5.5 meters (18 feet) where feasible. This alternative would meet the project purpose and need for both mobility and safety, although additional right of way would need to be purchased. This alternative also would result in a slightly greater loss of vegetation and wildlife habitat than the preferred alternative (Alternative 3).

Alternative 2: Four-Lane Full Width with Bus/HOV

Alternative 2 is identical to Alternative 1 in its physical characteristics including impacts to wetlands and need for additional right of way. In addition, for Alternative 2, the outside lane would be converted to a bus/carpool lane during peak periods.

Alternative 3: Four-Lane Reduced Width (Preferred Alternative)

Alternative 3 would have a narrower roadway width of 25 meters (82 feet) at its widest because the maximum median width of 5.5 meters (18 feet) is narrower than the maximum median width of Alternatives 1 and 2. The permanent wetland impacts for Alternative 3 are the same as Alternatives 1 and 2 because Alternative 3 has the same minimal median width through wetlands as Alternatives 1 and 2. Alternative 3 would have fewer impacts to land, vegetation and wildlife habitat than Alternatives 1 and 2. Additionally, Alternative 3 meets the project purpose and need for mobility and safety.

Alternative 4: Enhanced Two-Lane Roadway

Alternative 4 would have a roadway width of 21.3 meters (70 feet) at its widest and would permanently impact slightly fewer wetlands (0.522 hectare [1.290 acres]) than Alternatives 1, 2, and 3. However, this two-lane alternative does not meet the project purpose and need for both mobility and safety.

Alternative Chosen

Alternative 3 was selected as the preferred alternative to be forwarded to the Final EIS. This alternative meets the project's purpose and need for mobility and safety and meets the Clean Water Act – Section 404 (b) (1**)** guidelines as the least environmentally damaging practicable alternative to wetlands and other environmental impacts. The no-action alternative and Alternative 4 did not meet the project's purpose and need for mobility and safety in 2020, and therefore were not selected. Alternatives 1 and 2 were not selected because they would require larger right of way purchases, and result in greater impacts to vegetation and wildlife habitat than the preferred alternative.

During completion of the Final EIS, the project design for Alternative 3 was further refined to reduce wetland impacts. These refinements include design changes to the North Park Avenue intersection and revisions to the wetland mapping to correct GPS discrepancies. Because of these changes, permanent impacts to wetlands have been reduced from 0.589 hectare (1.456 acres) in the Draft EIS to 0.396 hectare (0.979 acre), for a total reduction of approximately 0.20 hectare (0.49 acre).

Direct Impacts Avoidance and Minimization

The preferred alternative (Alternative 3) avoids and minimizes wetland impacts as follows:

- Impacts to wetlands throughout the project area were avoided and minimized by using retaining walls instead of fill slopes where the highway is adjacent to wetlands, particularly along the Blue River and at the wetlands at the southern end of Dillon Reservoir.
- Near all of the wetlands, the median width was limited to a maximum 5.5 meters (18 feet) instead of the width allowed by CDOT standards of 10.9 meters (36 feet).
- At the fen/wetland complex south of Dillon Reservoir (Figure 22), the median width was reduced to 3 meters (10 feet) with a concrete barrier to reduce impacts to Dillon Reservoir and wetlands 20, 21, and 22.
- The highway at Leslie's Curve was designed for a speed limit of 50 MPH to minimize wetland disturbances. Higher speed limits require wider turning radius curves, which would impact more of wetlands 20, 21, and, 22.
- From the intersection with Coyne Valley Road south to North Park Avenue, the highway design plan was widened to the east away from the Blue River as much as possible to avoid impacting the river.

- The crossings of the Blue River at North Park Avenue (Figure 23) would be spanned with bridges instead of culverts to minimize impacts to wetlands and aquatic resources.
- The bike path alignments were chosen to minimize impacts to wetlands. The bike path crossing north of Highlands Drive (Figure 25) is proposed to be a three-pier bridge to minimize wetland impacts. At Leslie's Curve, the bike path bridge across the drainage would be designed to avoid impacts to the wetlands within the drainage, where feasible.

Indirect and Temporary Impact Avoidance and Minimization

The following mitigation measures will be incorporated into the final project design to avoid and minimize indirect and temporary impacts to wetlands and other waters of the U.S.

- Potential indirect impacts to wetlands and fens will be minimized by maintaining the hydrological connection between wetlands on either side of the highway. These connections include culverts carefully constructed to avoid erosion and, where feasible, a gravel or other semi-permeable barrier at the base of the roadbed with a geotextile barrier to prevent fines from filtering in from roadway fill.
- Silt fencing and temporary fencing will be placed around all non-impacted wetlands and waters of the U.S. adjacent to the construction zone to prevent siltation and to provide a barrier that prevents accidental construction disturbance in wetlands. Wetland areas outside of the barriers will be designated as no work zones in the construction plans.
- Disturbance to native upland plant communities that border wetland areas will be minimized, especially near the Blue River. A specification for the protection of existing vegetation will be included in the construction plans
- Areas temporarily disturbed by construction, particularly along the Blue River, will be revegetated with appropriate native trees, shrubs, and herbaceous vegetation to prevent streambank erosion, buffer wetland areas, and to provide wildlife habitat.
- Erosion from increased and concentrated storm water flows will be minimized by using drainage structures that slow or detain runoff before it reaches wetlands.
- Where feasible, best management practices for erosion and sediment control as identified in the DEIS will be used.

Unavoidable Impacts

Widening SH 9 would result in unavoidable impacts to wetlands in some locations because of the close proximity of these wetlands to the existing highway (Figures 21

through 26). Moving the highway alignment away from these wetlands is not feasible because similar or larger impacts to wetland would occur, or topographical constraints such as steep mountainsides limit highway realignment alternatives. As previously discussed, impacts to wetlands were avoided to the maximum extent practicable.

Wetland Impacts

Wetland impacts can be defined as direct, indirect, and temporary. Direct impacts are caused by the action and occur at the same time and place as the action, such as the placement of fill in a wetland or the loss of wetlands from construction of a bridge, which shades wetlands and prevents or inhibits vegetation growth. Indirect impacts are caused by the action and occur later in time or farther removed from the place, but are still reasonably foreseeable. Indirect impacts could occur from changes in hydrology that affect down gradient wetland communities. Both direct and indirect impacts result in a permanent loss of wetlands. Temporary wetland impacts occur from the short-term disturbance necessary for activities like construction access or replacement of culverts. Following construction activities, temporarily disturbed wetlands are restored. The following discussion addresses direct, indirect, and temporary wetland impacts to specific locations following refinements in project design.

Direct Impacts

Improvements to SH 9 would include widening the existing highway from two lanes to four lanes with a divided median and would permanently impact about 0.396 hectare (0.979 acre) of wetlands that currently border the existing highway (see Table 1 and Figures 21 through 26). Because of refinements to proposed North Park Avenue during final design, wetland impacts in this area has been reduced from the total impacts originally described under Alternative 3 in the Draft EIS. Additionally, revisions to the wetland mapping have also reduced wetland impacts described in the Draft EIS.

Drainage at Leslie's Curve (Wetlands 13, 14, and 15; Figure 21) —Permanent wetland impacts of 0.187 hectare (0.462 acre) occur in the emergent wetland drainage near the Dillon Reservoir peninsula. These narrow redtop and sedge-dominated wetlands, classified as palustrine emergent wetlands (Cowardin et al. 1979), have

developed in a drainage between the toe of the slope and SH 9. These wetlands are supported by side-slope seeps and runoff from the road. The proposed expansion of SH 9 would fill most of these wetlands and a new roadside drainage would be constructed along the new toe of slope, which would be between about 3 and 10 meters (10 and 30 feet) farther east and about 0.6 to 1.0 meters (2 or 3 feet) higher in elevation.

Wetlands South of Dillon Reservoir (Wetlands 20, 21 and 22; Figure 22) — Realigning the curve and widening SH 9 at the southern end of Dillon Reservoir would permanently fill about 0.111 hectare (0.274 acre) of a wetland/fen complex at the south end of Dillon Reservoir. This impact includes about 0.013 hectare (0.032 acre) of fens and 0.098 hectare (0.242 acre) of palustrine emergent wetlands.

The Blue River Crossing at SH 9 near Tiger Run (Wetland 51; Figure 23) — Less than 0.0004 hectare (0.001 acre) of scrub-shrub wetland would be filled for the expanded SH 9 and new bridge.

South of Coyne Valley Road (Wetland 23; Figure 24) — A narrow slice (0.012 hectare, 0.030 acre) of a large scrub-shrub wetland would be filled by the widened highway.

Forested Wetlands East of SH 9SH 9 (Wetlands 31, 38-40; Figure 25) — Widening the highway would permanently impact about 0.009 hectare (0.021 acre) of several forested wetlands.

Blue River Wetlands North of Highlands Drive (Wetlands 32, 43, 58, and 59; Figure 25) — Highway widening at this location would impact 0.001 hectare (0.003 acre) of two scrub-shrub wetlands (wetlands 32 and 43). Additionally, relocating the bike path to the west side of the highway would permanently impact 0.002 hectare (0.005 acre) of wetlands by the Blue River (wetland 59) and a depressional wetland on the west side of the river (wetland 58) associated with the placement of piers and abutment slope fills within the wetlands. No shading impacts to wetlands would occur from this bridge because, except at the ends, it is at least twice as high above the wetlands (minimum 2.1 meters [7 feet] as it is wide (4.3 meters [14 feet]) allowing enough light under the bridge to support wetlands (Curtis, pers. comm. 2003).

North Park Avenue and Main Street Intersection (Wetlands 44, 45, 46, and 61; Figure 26) —*A* total of 0.074 hectare (0.183 acre) of wetlands would be impacted by the realignment of SH 9 from Main Street to North Park Avenue and rerouting of the bike path. Direct impacts from filling would impact about 0.062 hectare (0.153 acre) of scrub-shrub wetlands and a small seasonal pond within a secondary channel of the Blue River. Also, 0.012 hectare (0.030 acre) of wetlands would be affected by shading from the new bridge. Shading is included as a permanent impact because this approximately 35-foot wide and 15-foot high bridge would not allow enough light under the bridge to support wetlands (Curtis, pers. comm. 2003). A bridge height of two times the width is needed to avoid shading impacts to wetlands, which is impracticable for this location.

Table 1. Temporary and Permanent Wetland Impacts.

Site	Figure #	Wetland Numbers	Type†	Temporary Impacts		Permanent Impacts	
				hectare	acre	hectare	acre
Drainage on the west side of Leslie's Curve	21	13-15	PE	0.011	0.028	0.187	0.462
South of Dillon Res.	22	20, 21, 22	PE	0.070	0.173	0.098	0.242
	22	20	Fen	0.002	0.005	0.013	0.032
Blue River Crossing at Tiger Run	23	51	SS	0.002	0.006	0.0004	0.001
Coyne Valley Road	24	23	SS	0.043	0.107	0.012	0.030
Forested wetlands east of SH 9	25	31, 38-40	F	0.022	0.054	0.009	0.021
Wetlands along Blue River – North of Highlands Drive	25	32, 43	SS	0.015	0.037	0.001	0.003
Wetlands along Blue River – North of Highlands Drive	25	58, 59	PE	0.002	0.005	0.002	0.005
N. Park Avenue	26	44-46, 61	SS	0.120	0.297	0.074	0.183
Total‡				0.287	0.706	0.396	0.979

†F = Forested Wetland; PE = Palustrine Emergent Wetland; SS = Scrub Shrub Wetland.

‡Total values may vary slightly from sum of individual impacts because of rounding and conversion between metric and English units.

Indirect Wetland Impacts

Proposed road improvements may result in indirect wetland impacts at several locations throughout the project. Proposed use of best management practices and other

corrective actions were incorporated into the project design to avoid and minimize indirect wetland impacts as described below.

Indirect wetland impacts include the decrease or elimination of a vegetation buffer between SH 9 and wetlands along the Blue River from Park Avenue to Coyne Valley Road. The buffers along the Blue River, Dillon Reservoir, and other wetland locations have already been compromised by the existing highway alignment and previous disturbances. Indirect impacts to the Blue River from highway encroachment are not expected to occur with the implementation of best management practices (Carter & Burgess 2002).

Other indirect impacts to wetlands are possible from increased storm water flows due to the additional impervious surface with a wider road. However, the implementation and maintenance of best management practices (Carter & Burgess, 2002) should minimize impacts from the increased runoff to wetlands.

Building the roundabout at the North Park Avenue and Main Street intersection also would include construction of a new bridge over the Blue River. This would result in indirect impacts to the side channel and associated wetlands (wetlands 44, 45, 46, and 61; Figure 26) by partially cutting off occasional high water, seasonal flows from the main Blue River to these wetlands. It should be noted though that the primary source of hydrology for these wetlands is ground water. The project will be designed to maintain these flows and minimize these impacts.

Temporary Wetland Impacts

Temporary wetland impacts would occur from construction access and disturbances needed for building retaining walls, bike path construction, and toe of slope construction. These activities would occur within about 6.1 meters (20 feet) of the proposed toe of slope (Figures 21 to 26). Total temporary wetland impacts of 0.287 hectare (0.706 acre) would occur within several wetlands as listed in Table 1.

Also, temporary impacts to the Blue River (waters of the U.S.) would occur with construction of a retaining wall between Highlands Drive and County Road 450, replacing culverts with a bridge at the SH 9 crossing of the Blue River (Figure 23), and

the addition of a new bridge at North Park Avenue (Figure 26). Temporary channel diversions will probably be necessary during construction of North Park Avenue and possibly during construction of the SH 9 crossing of the Blue River.

CDOT plans to minimize temporary impacts to wetlands and waters of the U.S. wherever possible during final construction design. All temporarily disturbed wetland sites would be restored and revegetated following construction.

Mitigation

Wetland Replacement

CDOT plans to replace direct impacts to wetlands (0.396 hectare [0.979 acre]) in a series of mitigation sites within the Blue River watershed and within the SH 9 project limits on a 1:1 basis. These mitigated wetlands will have functions and values similar to the impacted wetlands.

Mitigation is planned as shown below and in Figures 21 through 26. These plans are conceptual and based on the DEIS design (except for the North Park Avenue interchange). During final highway design, the wetland mitigation locations and designs will be further refined. A Section 404 permit will be submitted to the Corps of Engineers based on the conceptual design, supplemented by updates as design is finalized.

Table 2. Wetland Mitigation.

Mitigation Site	Description	Figure #	Mitigation Site Area	
			hectare	acre
1	Drainage on the west side of Leslie's Curve	21	0.187	0.462
2a and b	South of Dillon Reservoir.	22	0.111	0.274
3	Blue River Crossing at Tiger Run	23	0.0004	0.001
4	Coyne Valley Road	24	0.012	0.030
5	North of Highlands Drive – Between Wetlands 41 and 42	25	0.009	0.021
6	North of Highlands Drive – Adjacent to Wetland 43	25	0.003	0.008
7	North Park Avenue	26	0.074	0.183
Total‡			0.396	0.979

‡Total values may vary slightly from sum of individual impacts because of rounding and conversion between metric and English units.

Mitigation Site 1 — Drainage West of Leslie's Curve

The 0.187 hectare (0.462 acre) of impacts from filling the existing emergent wetlands (wetlands 13, 14, and 15) within the drainage would be replaced on a 1:1 ratio by constructing a new drainage with associated wetlands to the east of the proposed widened roadway (Figure 21). Most of the proposed drainage channel and wetlands would be

located within the temporary construction easement to avoid removing trees and other impacts to the adjacent forest. The downstream end of the wetland, however, would be widened to provide increased runoff storage capability. The drainage would be designed to flow at a low gradient to minimize erosion, encourage vegetation growth, and to have a length and characteristics similar to the existing drainage. A series of small check structures may be constructed to slow the water and prevent erosion.

Topsoil from the existing wetlands would be salvaged and placed on top of the existing ditch. An appropriate native seed mix would be seeded across the drainage. Locally collected willow cuttings would be planted in a few patches to replicate the willow patches in the existing wetlands.

Because some of the side seepage that supports the current wetland may be filled, the final design process would include careful study of the existing hydrology to determine the best methods to provide for adequate hydrology to support these wetlands. A subdrain may be used to direct water from the existing seep and away from the roadway to the wetland mitigation site. If after hydrological investigation or construction, it is determined that water to support 0.187 hectare (0.462 acre) of wetlands is not present, then the needed amount of wetlands would be constructed at Mitigation Site 2.

Mitigation Site 2 — Wetlands South of Dillon Reservoir

The 0.098 hectare (0.242 acre) of palustrine emergent wetlands and 0.013 hectare (0.032 acre) of fen impacted at wetlands 20, 21, and 22 would be mitigated in two areas adjacent to wetland 22 (Figure 22):

- **Site 2a (Palustrine Emergent Wetlands) —** Wetland 22 would be expanded to the north by grading to approximately the level of the existing wetland. This includes removing the existing highway and bike path, which would be relocated with the shift in road alignment. The small channel within the existing wetland 21 may be redirected to slowly flow into the mitigation site providing additional water. Small check structures may be needed to reduce the flows from the small channel before flowing into the wetland mitigation area. The culvert that currently drains the wetland may be moved to the south as shown on Figure 22.
- **Site 2b (Palustrine Emergent and Fen) —** The existing road fill west of wetland 22 would be removed and wetland 22 would be expanded. A fen area would be created within wetland 2b (the exact location to be determined after geotechnical and ground water studies are completed). This area will be graded deeper than

the rest of the mitigation site in order to allow for the placement of sufficient fen soils.

For both Mitigation Sites 2a and 2b, ground water monitoring wells would be installed and monitored for several years prior to design. Data from these monitoring wells also will help evaluate the flows of ground water to wetland 20 to ensure that the redesigned highway does not interrupt flows to this wetland.

For both Mitigation Sites 2a and 2b, topsoil from the impacted wetlands will be stockpiled, per CDOT specifications, then backfilled to the designated elevation in the over-excavated wetland mitigation site. Fen material from wetland 20 will be stored separately and placed in the fen area within Site 2b. After the topsoil has been placed, transplant plugs carefully harvested from the existing wetland may be planted in the mitigation areas. No seed mix or nursery stock will be used unless plug material in the existing wetlands is limited and if removal of the plugs would be detrimental to the existing wetlands. If a seed mix were used, it would be specifically designed to re-establish this species-rich site. If nursery stock is used, it will be only from locally collected sources.

Mitigation Site 3 — Blue River Crossing at Tiger Run

The 0.0004 hectare (0.001 acre) of scrub-shrub wetlands impacted by bridge construction (Wetland 51) would be replaced by planting locally collected willows along the banks as shown in Figure 23.

Mitigation Site 4 — South of Coyne Valley Road

This mitigation site would replace the 0.012 hectare (0.030 acre) of wetlands impacted south of Coyne Valley Road (Wetland 21) by expanding an existing scrub-shrub wetland (Wetland 24c). Before construction, ground water wells will be installed and monitored. After the hydrological studies are complete, the site (Figure 24) would be graded to the elevation designated on the plans and topsoil placed on the surface. Existing willows in the area will not be disturbed. An appropriate native seed mix would be seeded in the area. Locally collected willow cuttings would be planted at the site.

Mitigation Site 5 — North of Highlands Drive Between Wetlands 41 and 42

Mitigation Site 5 (Figure 25) would connect and expand two existing emergent wetlands (wetlands 41 and 42). The site would be graded to the elevation designated on the plans and topsoil placed on top. Blue spruce (*Picea pungens*) and narrowleaf cottonwoods (*Populus angustifolia)* would be planted to replace the 0.009 hectare (0.021 acre) of forested wetlands (wetlands 31, 38, 39, and 40).

Mitigation Site 6 — North of Highlands Drive Adjacent to Wetland 43

The existing wetland 43 would be expanded to the north (Figure 25). The site would be graded to the elevation designated on the plans and topsoil placed on top. To replace the 0.001 hectare (0.003 acre) of scrub-shrub (wetlands 32 and 43), locally collected willow cuttings would be planted over about half the site. The remainder of the mitigation site would be planted with an appropriate herbaceous wetland seed mix to replace the.0.002 hectare (0.005 acre) of permanently impacted palustrine emergent wetlands (wetlands 58 and 59).

Mitigation Site 7 — North Park Avenue

The 0.074-hectare (0.183 acre) of scrub-shrub wetlands impacted by construction of the new portion of North Park Avenue bridge and the adjacent expansion of SH 9 (including shading impacts) would be replaced in the area shown on Figure 26. Because this project is likely to be one of the first constructed following the completion of the Final EIS and Record of Decision, the Conceptual Mitigation Plan contains more detail for Mitigation Site 7 than for Mitigation Sites 1 through 6.

Currently, a large, mostly unvegetated gravel pile occurs on the site between the Blue River and a small secondary channel. A portion of the gravel pile would be removed to 6 inches below the level of the existing wetlands. A strip of gravel would be left between the river and mitigation site to help protect the wetlands during high flows. Based on hydrological studies, the area will be designed to maintain the hydrological connection that supports wetlands and ponds within the secondary channel.

After the mitigation site has been graded to the elevations designated on the plans, topsoil (not gravel) from either the impacted wetlands or nearby disturbed upland areas

would be placed on top of the newly graded mitigation site. The site would be seeded with an appropriate native seed mix. Locally collected willow cuttings would be planted within the wetlands and along the edges of the Blue River and secondary channel.

To minimize temporary impacts to the secondary channel and Blue River, constructed crossings would be kept to the minimum number practicable. The temporary crossing(s) would be culverted and have a temporary barrier placed underneath the road material. After construction, willow cuttings would be planted and wetland seeding would occur in all areas temporarily impacted by construction.

Temporarily Impacted Wetlands

Where appropriate, temporarily impacted wetlands would have a geotextile barrier with a layer of straw followed by two feet of soil placed between the wetlands and any temporarily placed fill. Shrubs would be cut only to the ground surface and would not be grubbed. After construction, any areas where the vegetation has been disturbed would be seeded with a native seed mix appropriate for the sites. Locally collected willow cuttings, and nursery supplied aspen and blue spruce, which (where feasible) have been collected from the Blue River Valley, will be planted in the appropriate areas.

Summary

Based on the above finding, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.

References

Carter & Burgess. 2002. State Highway 9 (Frisco to Breckenridge) Draft Environmental Impact Statement. Prepared for FHWA and CDOT.

Cowardin, L.M. et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service. FWS/OBS-79/31. Denver, CO.

Curtis, T. 2003. U.S. Army Corps of Engineers. Personal communication at CDOT Meeting. January 23.

Environmental Laboratory. 1987. U.S. Army Corps of Engineers Wetland Delineation Manual, Technical Report 7-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

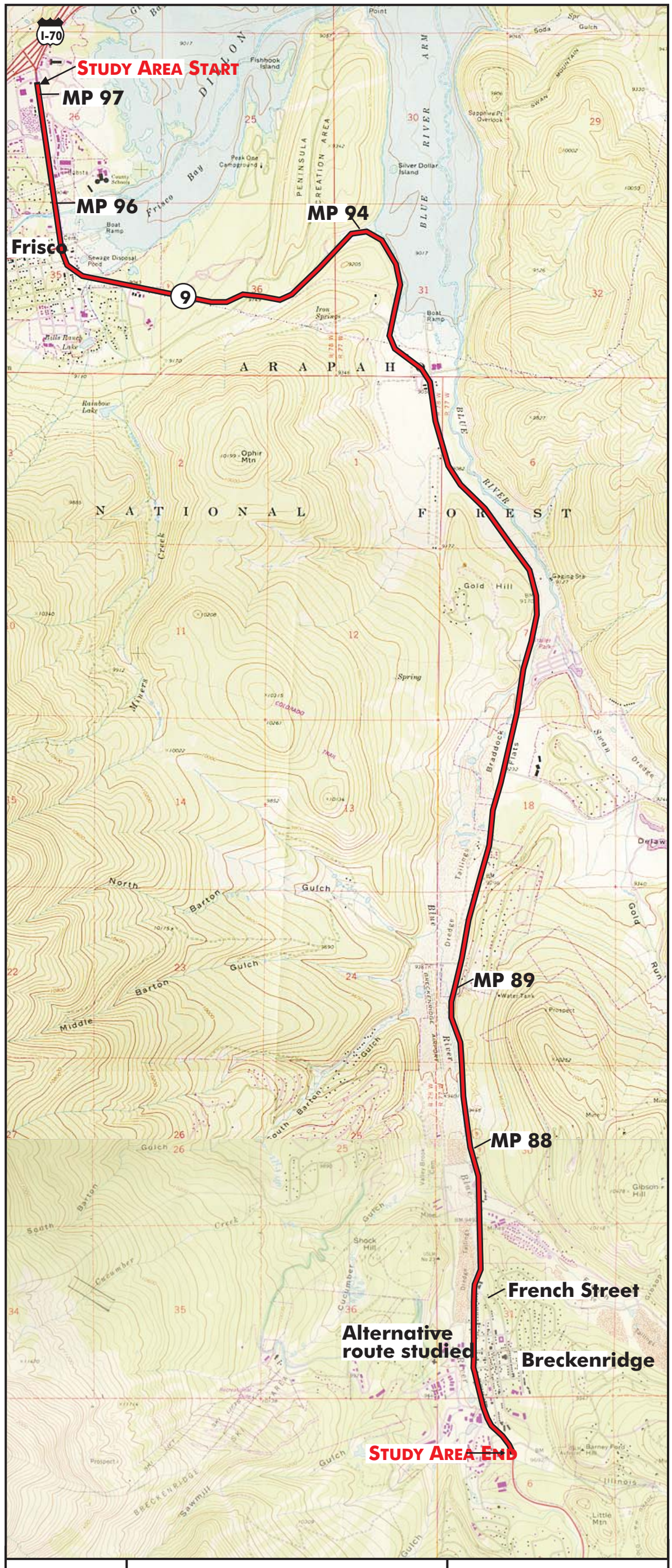
ERO Resources. 2000. Wetland Delineation – State Highway 9, Frisco to Breckenridge Colorado. Prepared for Carter & Burgess and CDOT – Region 1.

Sabine, B (editor). 1994. National List of Plant Species that occur in Wetlands: Regions 4, 5, and 8. Resource Management Group, Inc

Soil Conservation Service. 1980. Soil Survey of Summit County Area, Colorado. USDA and SCS in cooperation with the Colorado Agricultural Experiment Station. U.S. Printing Office. Washington DC.

Sugnet and Associates. 1998. Wetlands and Threatened, Endangered and Sensitive Animal and Plant Species. State Highway 9, Frisco to Breckenridge. Prepared for CDOT—Region 1.

Corps (U.S. Army Corps of Engineers). 1998. November 13, 1998 Public Notice: Proposed Regional Conditions for Nationwide Permit Use within Colorado Under Section 404 of the Clean Water Act 33 USC 1344.



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Information provided by:
SUGNET AND ASSOCIATES

N

Figure 1
Study Area
U.S. Highway 9
Frisco to Breckenridge

Prepared for:
CDOT-Region 1

File: ProjectLoc.cdr

Date: June 2000

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Figure 2
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

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Figure 3
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

January 2003

Aquatic bed
48
S48
48
Scrub-shrub
Aquatic bed
48a
Emergent
48
Scrub-shrub
Scrub-shrub
8
S8
9
S9
Emergent
Scrub-shrub
49a
49b
Emergent
S4
Forested wetland
4
S5

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Figure 4
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

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Figure 5
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

January 2003

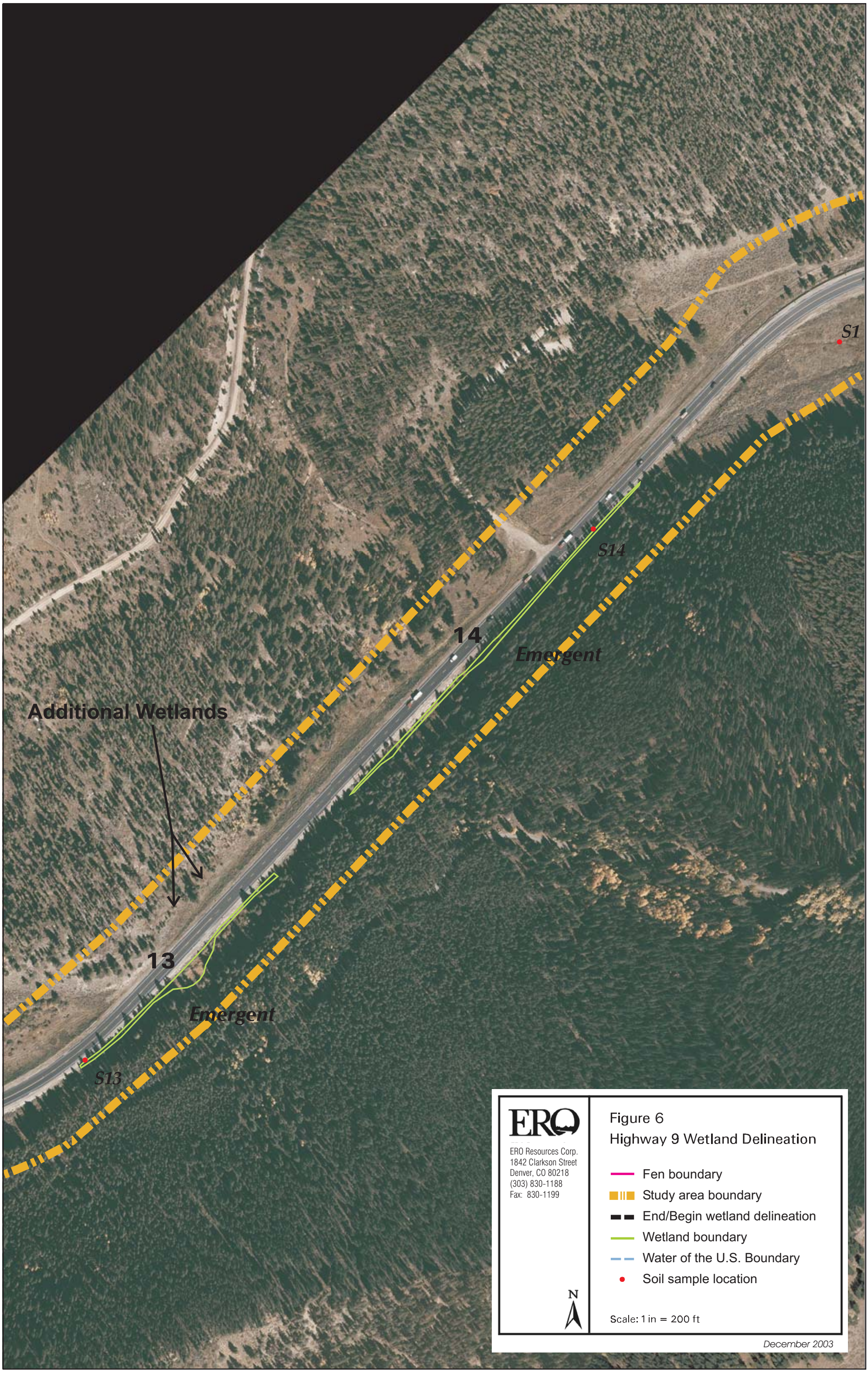

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Figure 6
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

December 2003

16
Emergent
S16
S16-4
S16-3
S16-2
S16-1
15
S15
Emergent
17
S17
18
S18
Emergent(17,18,19)
19
S19

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Figure 7
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

January 2003

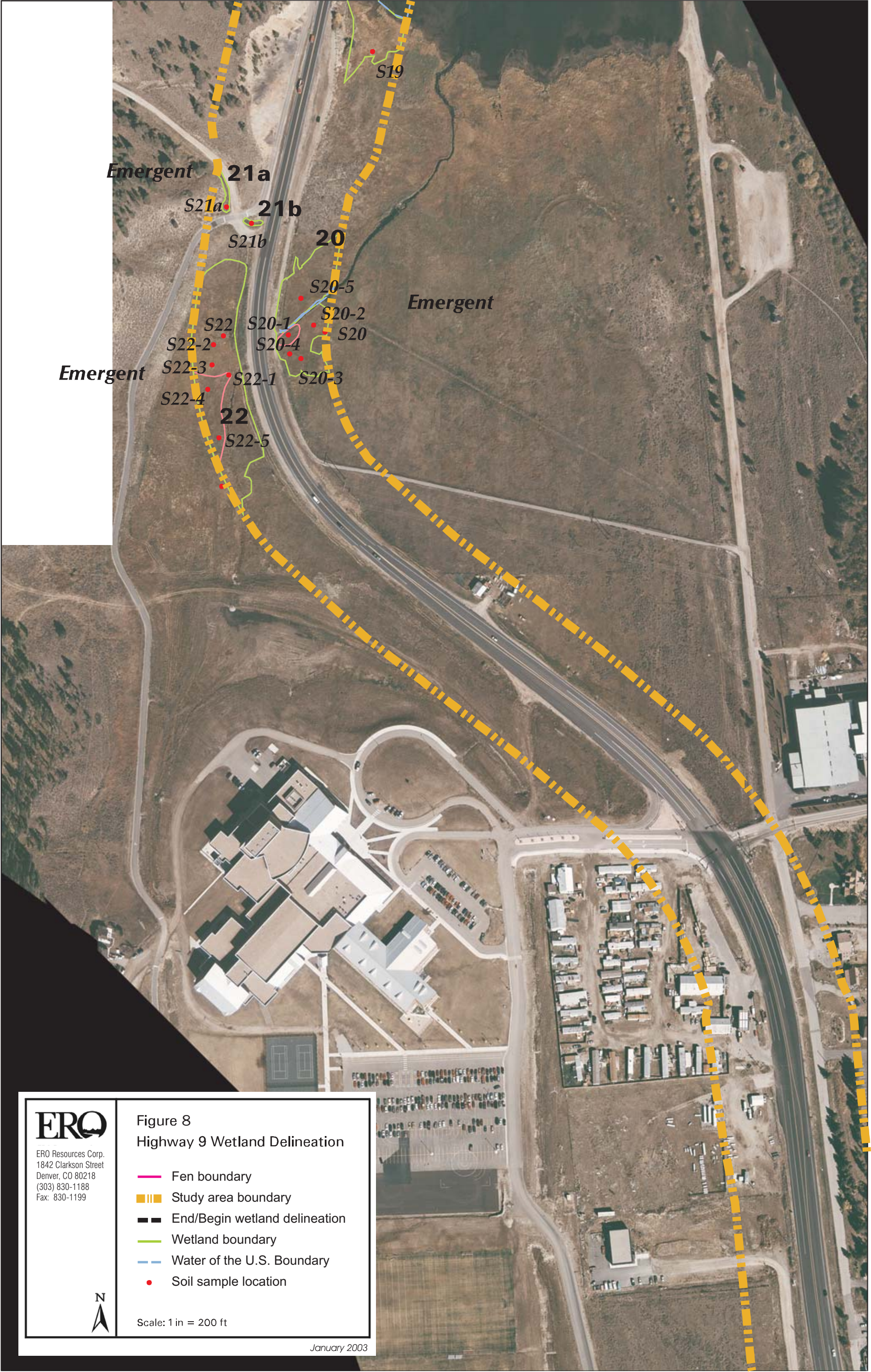
S19
Emergent
21a
S21a
21b
S21b
20
S20-5
Emergent
S20-2
S22
S20-1
S20
S22-2
S20-4
Emergent
S22-3
S22-1
S20-3
S22-4
22
S22-5
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Figure 8
Highway 9 Wetland Delineation
Fen boundary
Study area boundary
End/Begin wetland delineation
Wetland boundary
Water of the U.S. Boundary
Soil sample location
N
Scale: 1 in = 200 ft
January 2003

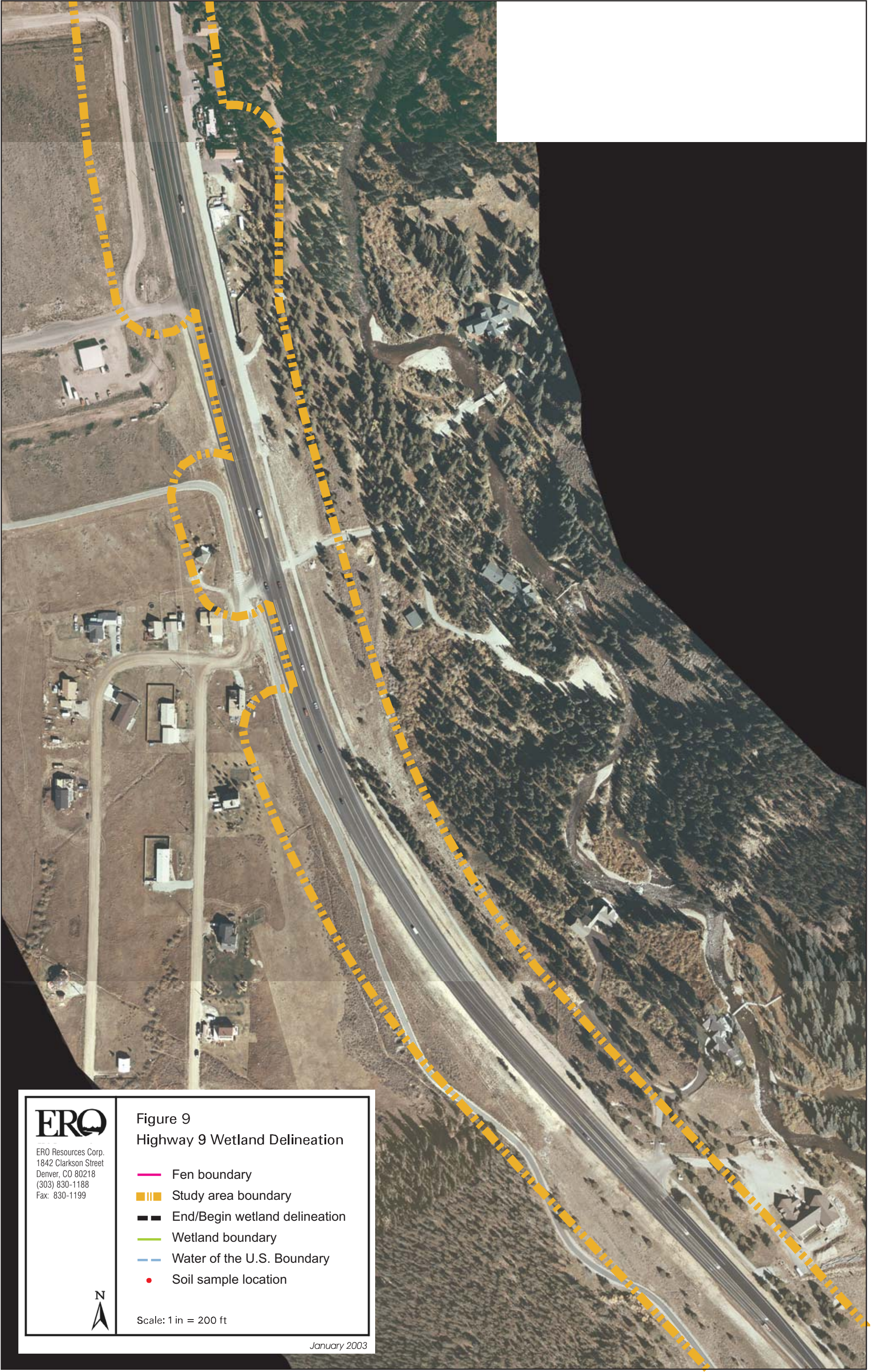
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Figure 9
Highway 9 Wetland Delineation
Fen boundary
Study area boundary
End/Begin wetland delineation
Wetland boundary
Water of the U.S. Boundary
Soil sample location
N
Scale: 1 in = 200 ft
January 2003

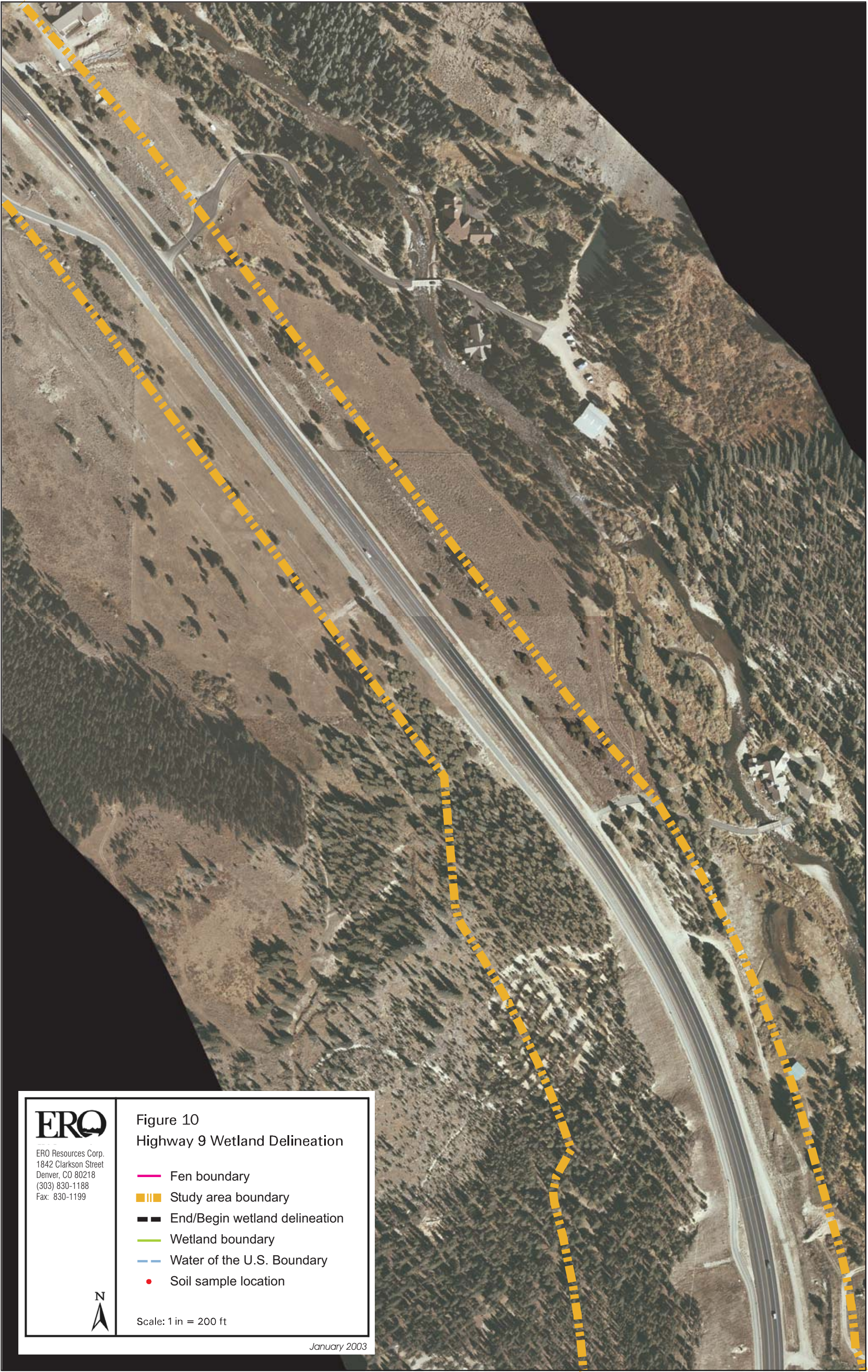
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Figure 10
Highway 9 Wetland Delineation
Fen boundary
Study area boundary
End/Begin wetland delineation
Wetland boundary
Water of the U.S. Boundary
Soil sample location
N
Scale: 1 in = 200 ft
January 2003

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Figure 11
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

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Figure 12
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

January 2003


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Figure 13
Highway 9 Wetland Delineation
Fen boundary
Study area boundary
End/Begin wetland delineation
Wetland boundary
Water of the U.S. Boundary
Soil sample location
N
Scale: 1 in = 200 ft
January 2003

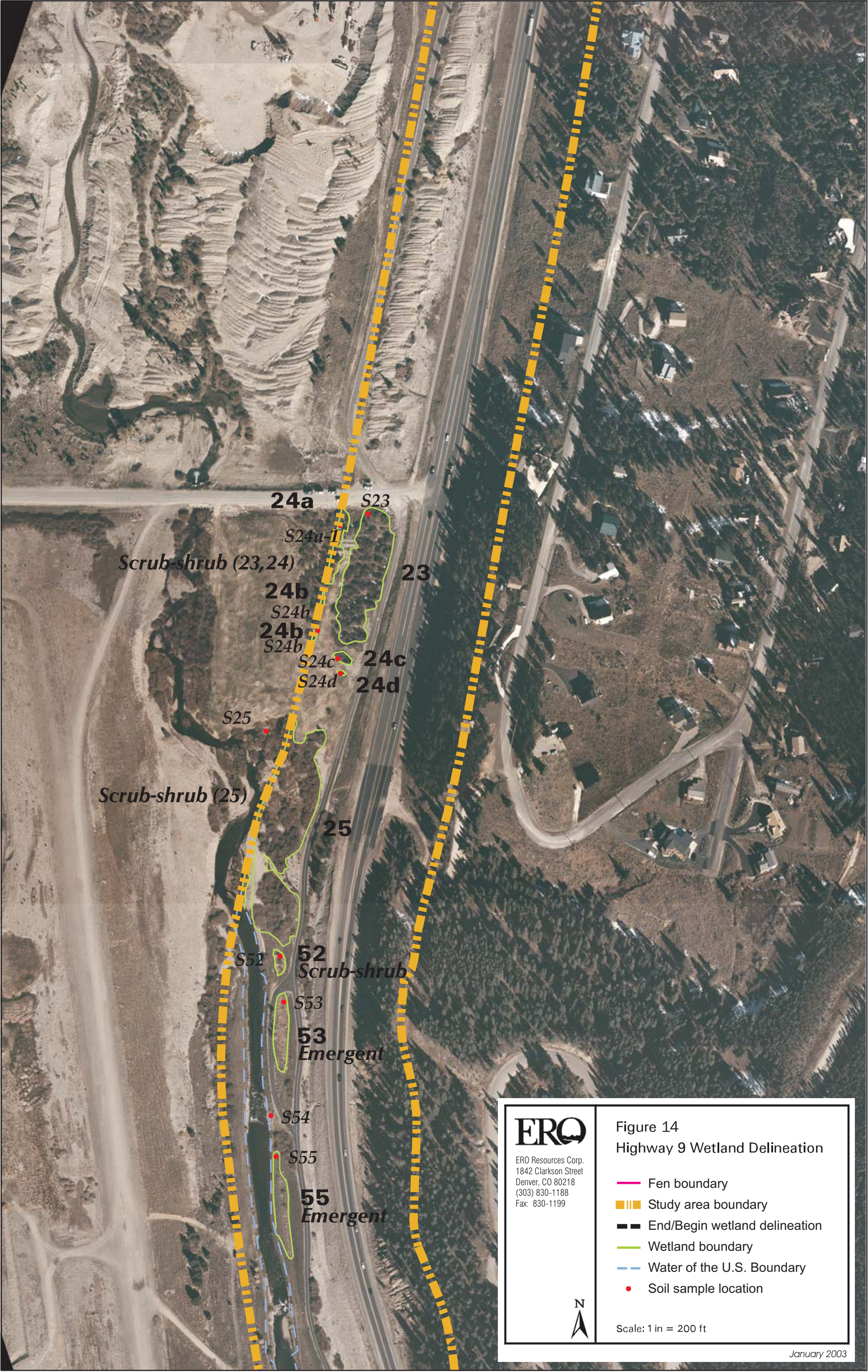
24a
S23
S24a-1
Scrub-shrub (23,24)
23
24b
S24b
24b
S24b
S24c
24c
S24d
24d
S25
Scrub-shrub (25)
25
S52
52
Scrub-shrub
S53
53
Emergent
S54
S55
55
Emergent
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Figure 14
Highway 9 Wetland Delineation
Fen boundary
Study area boundary
End/Begin wetland delineation
Wetland boundary
Water of the U.S. Boundary
Soil sample location
N
Scale: 1 in = 200 ft
January 2003

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Figure 15
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

January 2003

S56
56
Emergent
S57
57
Emergent
58f
Emergent
58e
Emergent
26
S26
27
S27
28
S28
29
S29
Forested wetland (26,27,28,29)
S60
60
Emergent
S33
33
Emergent
S34
32
31
30
Forested wetland (30,31)
Scrub-shrub (32,34)
34
S32
S31
S30
S35
35
Emergent (35,36,37)
S36
36
59
38
S38
37
S58d
S39
Forested wetland (38,39,40)

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Figure 16
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

January 2003

S44

45

S45

S46

46

Scrub-shrub

S61-e

S62a

Scrub-shrub

62

S62b

S63b

S63a

63

Scrub-shrub

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Figure 17
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

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Figure 18
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

Scale: 1 in = 200 ft

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Figure 19
Highway 9 Wetland Delineation

- Fen boundary
- Study area boundary
- End/Begin wetland delineation
- Wetland boundary
- Water of the U.S. Boundary
- Soil sample location

N

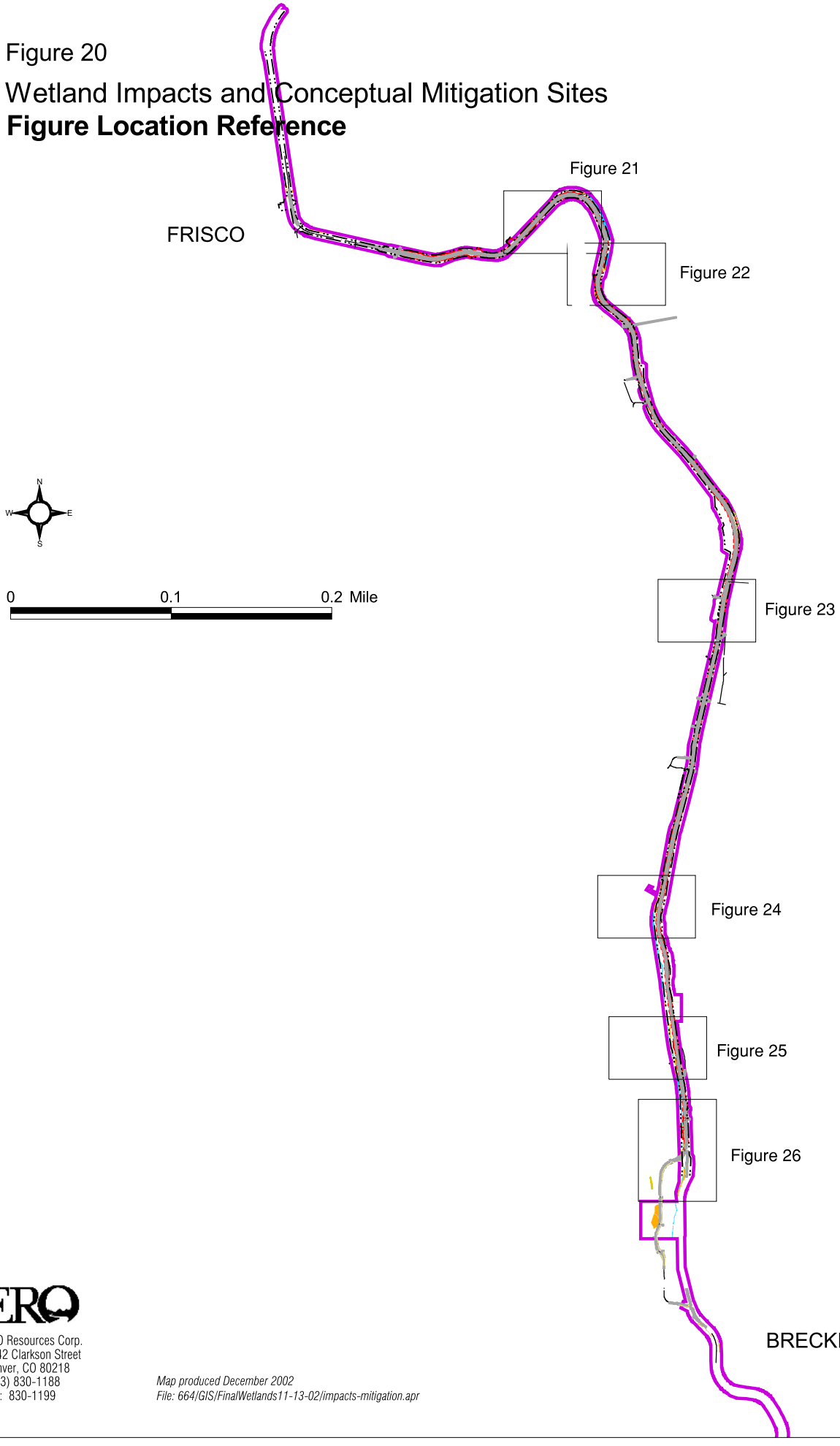
Scale: 1 in = 200 ft

January 2003

Figure 20

Wetland Impacts and Conceptual Mitigation Sites

Figure Location Reference



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Map produced December 2002
File: 664/GIS/FinalWetlands11-13-02/impacts-mitigation.apr

Figure 20

Permanent impacts to wetlands 13-15 in the drainage on the west side of Leslie's Curve total 0.187 ha (0.462 ac)

Mitigation area totals 0.187 ha (0.462 ac)

PDF Karen
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Appendix E now

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DILLON RESERVOIR

Wetland 14
Permanent Impacts 0.070 ha (0.173 ac)

Mitigation Site 1
0.187 ha
(0.462 ac)

Wetland 15
Permanent Impacts 0.036 ha (0.089 ac)
Temporary Impacts 0.005 ha (0.012 ac)

Additional Temporary
Wetland Impacts 0.004 ha (0.11 ac)

Wetland 13
Permanent Impacts 0.081 ha (0.200 ac)
Temporary Impacts 0.002 ha (0.005 ac)

Wetland Impacts and Conceptual Mitigation Sites
Drainage on West Side of Leslie's Curve

- Wetland
- Permanently Impacted Wetland
- Temporarily Impacted Wetland
- Waters of the U.S.
- Wetland Mitigation Area
- Proposed Right-of-Way
- Construction Limits
- Temporary Construction Easement
- Centerline of Proposed Construction Alternative
- Study Area Boundary

N W E S

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Map Produced December 2003
File: 664-impacts-mitigation.apr (SR)

Scale: 1 Inch = 200 Feet

0 100 200 Feet

Figure 21

Permanent impacts to wetlands 20-22 at the southern end of Dillon Reservoir total 0.11 ha (0.27 ac)

Mitigation area totals 0.11 ha (0.27 ac)

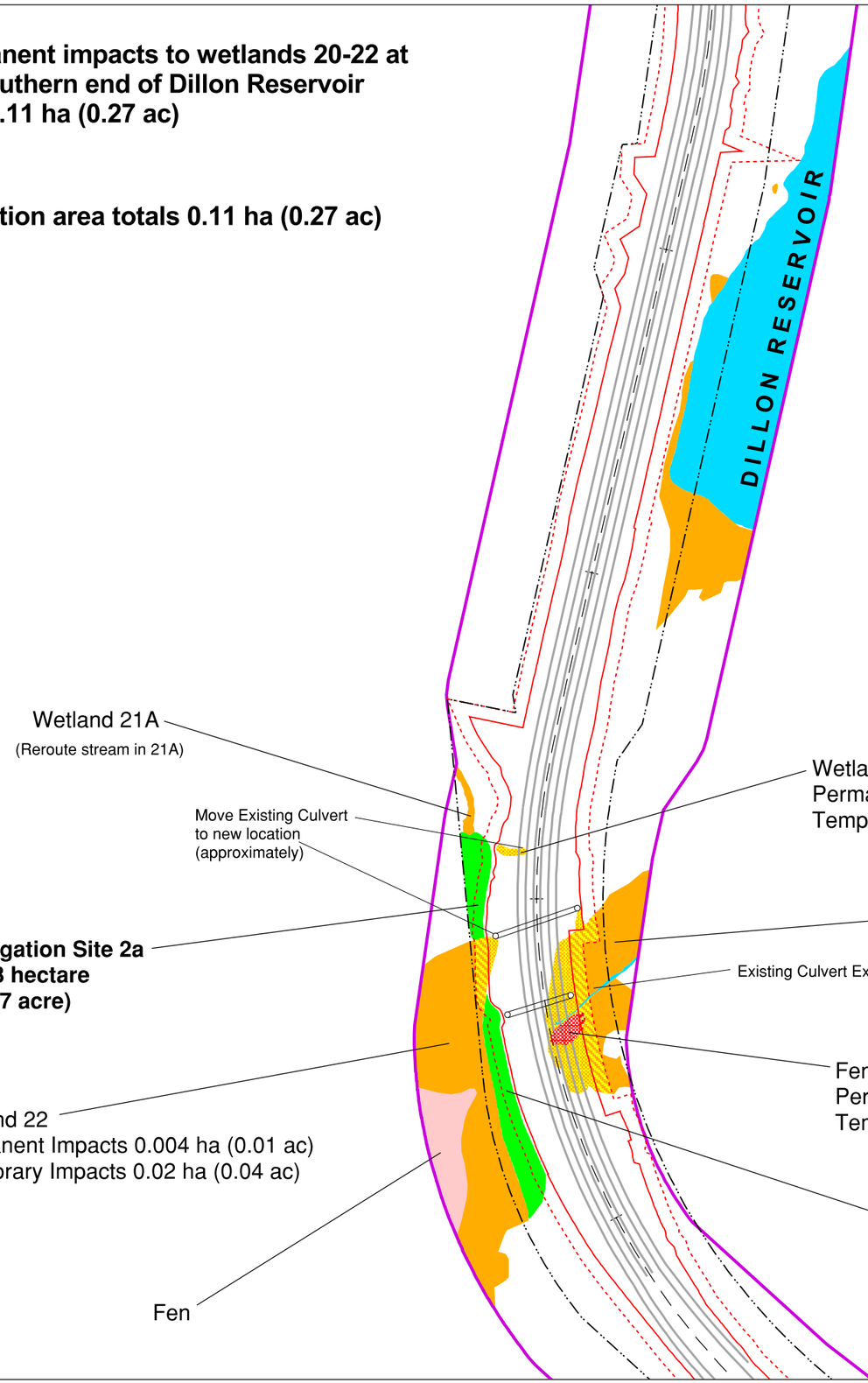

Figure 22 - Draft 04/25/2003

Wetland Impacts and Conceptual Mitigation Sites
Southern end of Dillon Reservoir

- Wetland
- Permanently Impacted Wetland
- Temporarily Impacted Wetland
- Fen
- Permanently Impacted Fen
- Temporarily Impacted Fen
- Waters of the U.S.
- Wetland Mitigation Area
- Proposed Right-of-Way
- Construction Limits
- Temporary Construction Easement
- Centerline of Proposed Construction Alternative
- Study Area Boundary

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Map Produced April 2003
File: 664/GIS/Final/Wetlands11-13-02/impacts-mitigation.apr (JLL)

Scale: 1 Inch = 200 Feet

0 100 200 Feet

Figure 22

Permanent impacts to wetland 51 at the Blue River crossing near Tigers Run total 0.00 ha (0.001 ac)

Mitigation area totals 0.00 ha (0.001 ac)

Figure 23 - Draft 04/28/2003

Wetland Impacts and Conceptual Mitigation Sites
Blue River crossing near Tigers Run

- Wetland
- Permanently Impacted Wetland
- Temporarily Impacted Wetland
- Waters of the U.S.
- Wetland Mitigation Area
- Proposed Right-of-Way
- Construction Limits
- Temporary Construction Easement
- Centerline of Proposed Construction Alternative
- Study Area Boundary

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Scale: 1 Inch = 200 Feet

0 100 200 Feet

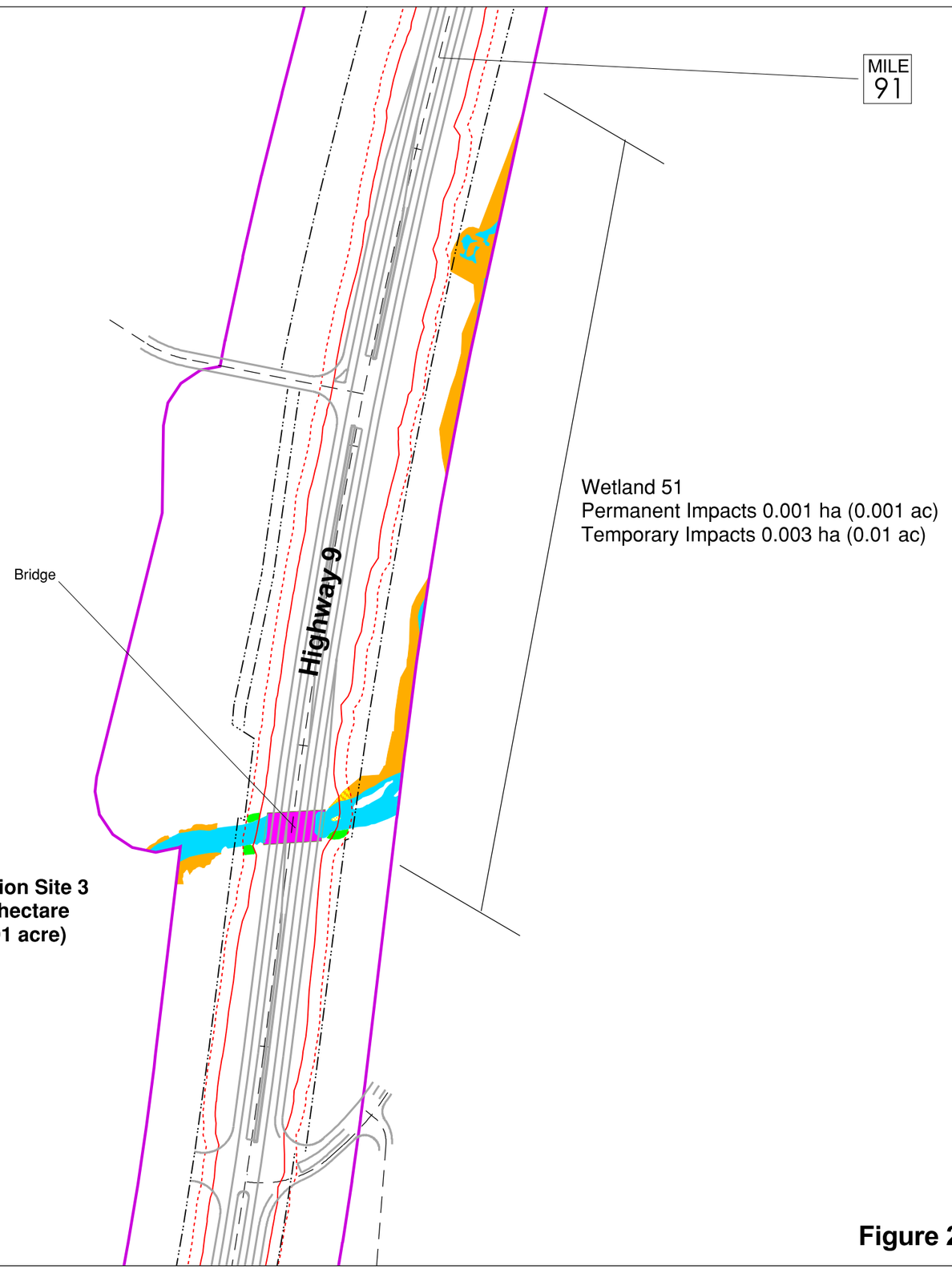

Figure 23

Permanent impacts to wetland 23
south of Coyne Valley Road
total 0.01 ha (0.03 ac)

Mitigation area totals 0.01 ha (0.03 ac)

Figure 24 - Draft 04/25/2003

Wetland Impacts and Conceptual Mitigation Sites
South of Coyne Valley Road

- Wetland
- Permanently Impacted Wetland
- Temporarily Impacted Wetland
- Waters of the U.S.
- Wetland Mitigation Area
- Proposed Right-of-Way
- Construction Limits
- Temporary Construction Easement
- Centerline of Proposed Construction Alternative
- Study Area Boundary

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Map Produced April 2003
File: 664/GIS/FinalWetlands11-13-02/impacts-mitigation.apr (JLL)

Scale: 1 Inch = 200 Feet

0 100 200 Feet

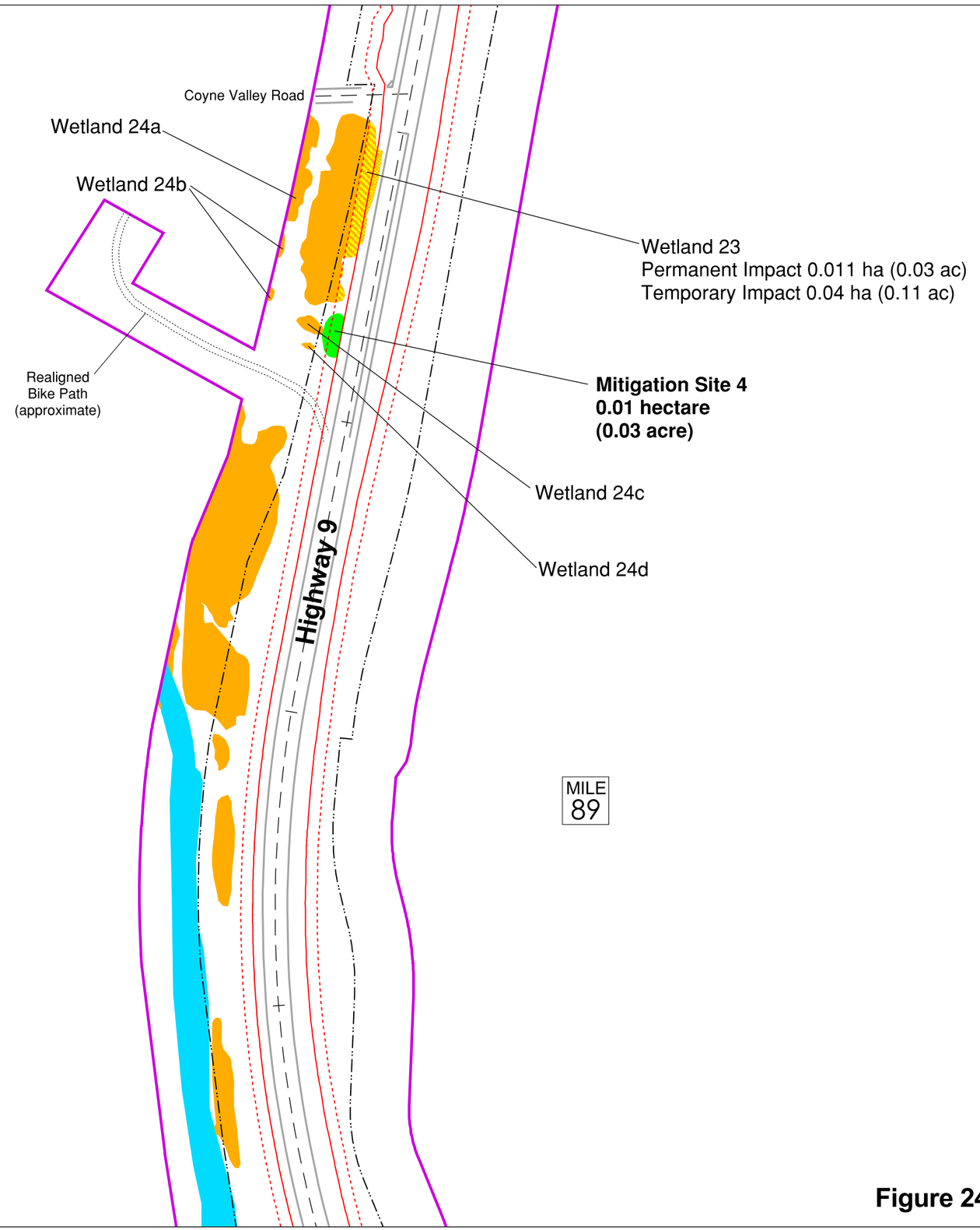

Figure 24

Permanent impacts to wetlands 31-32, 38-40, 43, 58, 59 north of Highlands Drive and East of Highway 9 total 0.01 ha (0.03 ac)

Mitigation area totals 0.01 ha (0.03 ac)

Figure 25 - Draft 04/25/2003

Wetland Impacts and Conceptual Mitigation Sites
North of Highlands Drive and East of Highway 9

- Wetland
- Permanently Impacted Wetland
- Temporarily Impacted Wetland
- Waters of the U.S.
- Wetland Mitigation Area
- Proposed Right-of-Way
- Construction Limits
- Temporary Construction Easement
- Centerline of Proposed Construction Alternative
- Study Area Boundary

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Map Produced April 2003
File: 664/GIS/FinalWetlands11-13-02/impacts-mitigation.apr (JLL)

Scale: 1 Inch = 200 Feet

0 100 200 Feet

Wetland 32
Permanent Impact 0.001 ha (0.002 ac)
Temporary Impact 0.002 ha (0.003 ac)

Wetland 31
Permanent Impact 0.00 ha (0.00 ac)
Temporary Impact 0.001 ha (0.003 ac)

Wetland 38
Permanent Impact 0.0 ac
Temporary Impact 0.002 ha (0.005 ac)

Wetland 39
Permanent Impact 0.002 ha (0.004 ac)
Temporary Impact 0.022 ha (0.046 ac)

Highway 9

Wetland 40
Permanent Impact 0.007 ha (0.014 ac)
Temporary Impact 0.00 ha (0.00 ac)

Wetland 41

Wetland 42

Mitigation Site 5
0.01 hectare
(0.02 acre)

Wetland 59
Permanent Impact 0.00 ha (0.00 ac)
Temporary Impact 0.00 ha (0.00 ac)

Wetland 43
Permanent Impact 0.001 ha (0.001 ac)
Temporary Impact 0.015 ha (0.033 ac)

Wetland 58
Permanent Impact due to
bike path bridge 0.004 ha (0.01ac)
Temporary Impact 0.002 ha (0.01 ac)

Highlands Drive

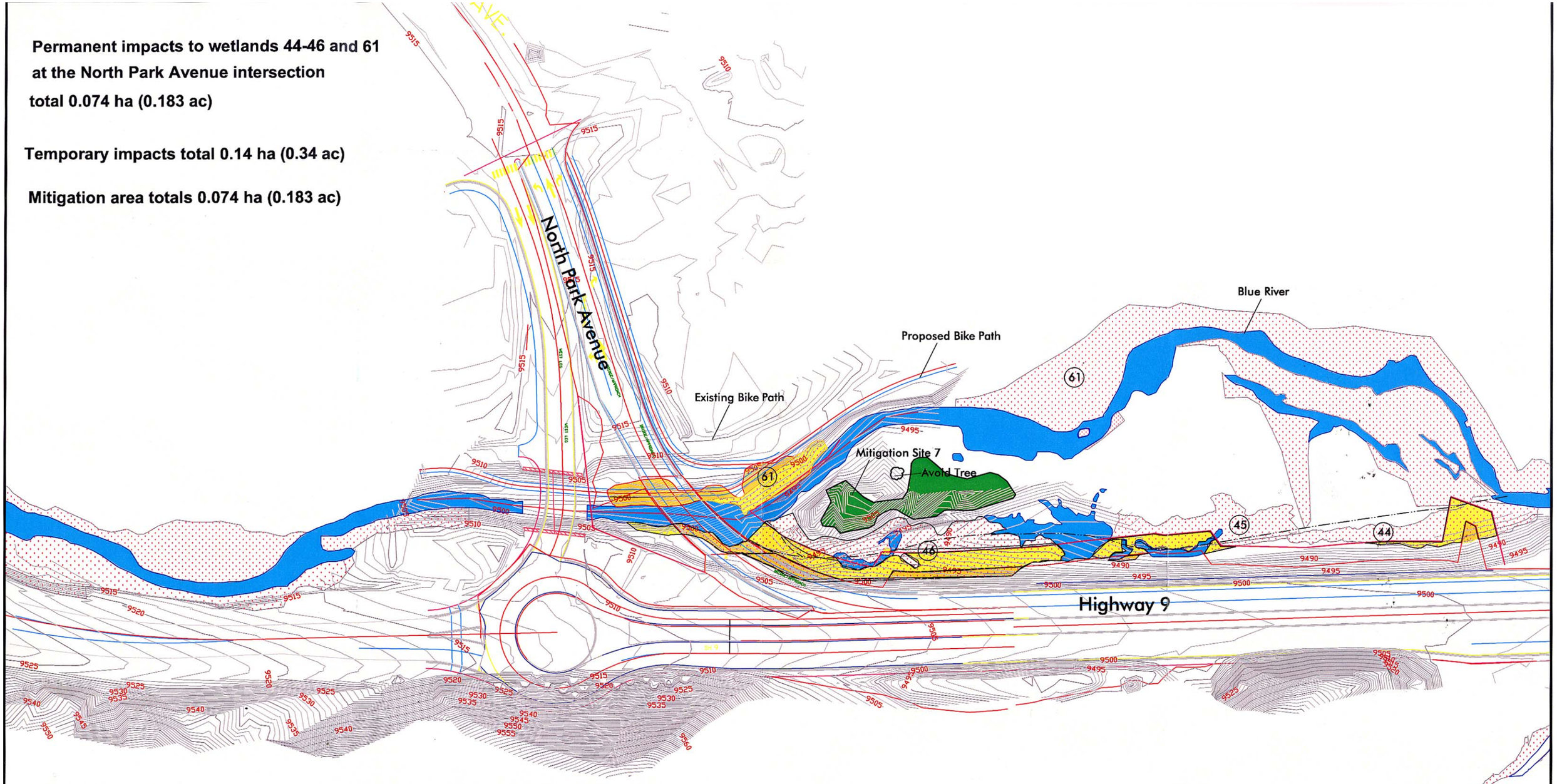
Mitigation Site 6
0.004 hectare
(0.01 acre)

Figure 25

Permanent impacts to wetlands 44-46 and 61 at the North Park Avenue intersection total 0.074 ha (0.183 ac)

Temporary impacts total 0.14 ha (0.34 ac)

Mitigation area totals 0.074 ha (0.183 ac)



ERO
ERO Resources Corp.
1842 Clarkson Street
Denver, CO 80218
(303) 830-1188
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- Wetland
- Waters of the U.S.
- Mitigation Site
- Permanently Impacted Wetland
- Temporarily Impacted Wetland
- Existing Secondary Channel
- Realigned Channel
- Construction Limits
- Temporary Construction Easement
- (44) Wetland Number

N

Scale: 1" = 100'

0 50 100 feet

Figure 26
Proposed North Park Avenue and Main Street Intersection Wetland Impacts and Conceptual Mitigation

August 2003
File: 664-wetmit_fig26_Aug-03.dwg (SR)

Figure 26