GDP SUB-PARCEL	RELATED ENVIRONMENTAL REPORT
Parcel A2, A3, B1, B2, B4, C1, C2, C3, D1, D2, D3, D4, D5, D6, D7, D8	Original Millennium GDP Cedar Creek – January 1999 NOTE: Portion of Parcel C1, "Area 4", See ESAR by Ecological Resource Consultants, Inc. dated February 6, 2018, amended into the Millennium General Development Plan per Minor Amendment 9.11
Parcel A1, A4	Centerra East Property Ecological Resource Consultants – July 18, 2003 rev. Nov. 20, 2003 and FlyWater Consulting, Inc. – November 6, 2006 FlyWater Consulting, Inc. – October 11, 2007
Parcel B10, B11	Parcels E, F and G of the Millennium GDP Cedar Creek and Associates – August 17, 2000 and Environmental and Natural Areas Report – Cloverleaf Addition Wildland Consultants – January 2000
Parcel B12	Myers Group No. 949 3rd Subdivision Ecological Resource Consultatns – February 4, 2005
Parcel A5, B3, C4	Spreng Property and Colorado College Ecological Resource Consultants – June 8, 2004 Flywater Consulting, Inc. – February 12, 2008
Parcel B6	Rocky Mountain Village II Development ENSR Corporation – January 2000
Parcel B7, B9, & D9	No Report
Parcel A6, A7	FlyWater Consulting, Inc. – October 11, 2007

Parcel B13	FlyWater Consulting, Inc. – October 11, 2007
Parcel B14	FlyWater Consulting, Inc. – February 12, 2008
Portion of Parcel C1	Houts Reservoir "Area 4" Ecological Resource Consultants, Inc. (ERC) February 6, 2018
Parcel D10	Ecological Resource Consultants, Inc. (ERC) April 17, 2017

ENVIRONMENTALLY SENSITIVE AREAS AND WETLAND REPORT FOR THE ROCKY MOUNTAIN VILLAGES III PROPERTIES

Prepared
by
Cedar Creek Associates, Inc.
Fort Collins, Colorado

Prepared
for
McWhinney Enterprises
Loveland, Colorado

January 1999

ENVIRONMENTALLY SENSITIVE AREAS AND WETLAND REPORT FOR THE ROCKY MOUNTAIN VILLAGES III PROPERTIES

INTRODUCTION AND LOCATION

This report documents the evaluation of environmental conditions at the Rocky Mountain Villages III properties in Loveland in accordance with City of Loveland Planning Department guidelines for preparation of an Environmentally Sensitive Areas Report (Attachment D - 9/23/98). This report includes an evaluation of three separate parcels proposed for development. The properties are all located in Township 5 North, Range 68 West. The western-most parcel consists of approximately 480 acres in Section 17 (W 1/2 & NW 1/4 of SE 1/4). The central parcel is comprised of approximately 665 acres and occupies portions of Section 9 (N 1/2), Section 4 (S 1/2), and Section 10 (NW 1/4). The eastern-most and largest parcel consists of approximately 960 acres and occupies portions of Section 10 (E 1/2), Section 11 (W 1/2), Section 2 (SW 1/4), and Section 3 (SE 1/4). The locations of each parcel are shown on Figure 1. The proposed development parcels consist primarily of cultivated land except for drainages, irrigation ditches, reservoirs, reservoir margins.

Wetland surveys and field evaluations of habitats were completed by Cedar Creek personnel on November 5, 6, 10, and 11, 1998. Observations recorded included: major vegetation communities / wildlife habitats present within the property; dominant flora associated with each community / habitat; unique habitat features; and observations of wildlife species and/or definitive sign. Wildlife presence and habitat use was based on on-site observations and habitat presence in conjunction with the known habitat requirements of potential wildlife species. Once the field reconnaissance was completed, environmentally sensitive areas and other habitats were delineated from color aerial photographs of the properties. Wetland surveys were completed to satisfy Corps of Engineers guidelines (Environmental Laboratory, Department of the Army 1987) for determination of "jurisdictional" wetlands. The results of these survey are also summarized in this report. Detailed mapping of jurisdictional wetlands is provided on the General Development Plan maps for Parcels A, B, C, and D.

This report summarizes the findings of the field surveys, identifies environmentally sensitive areas on the properties, discusses potential impacts associated with the proposed development, and provides recommendations for mitigation.

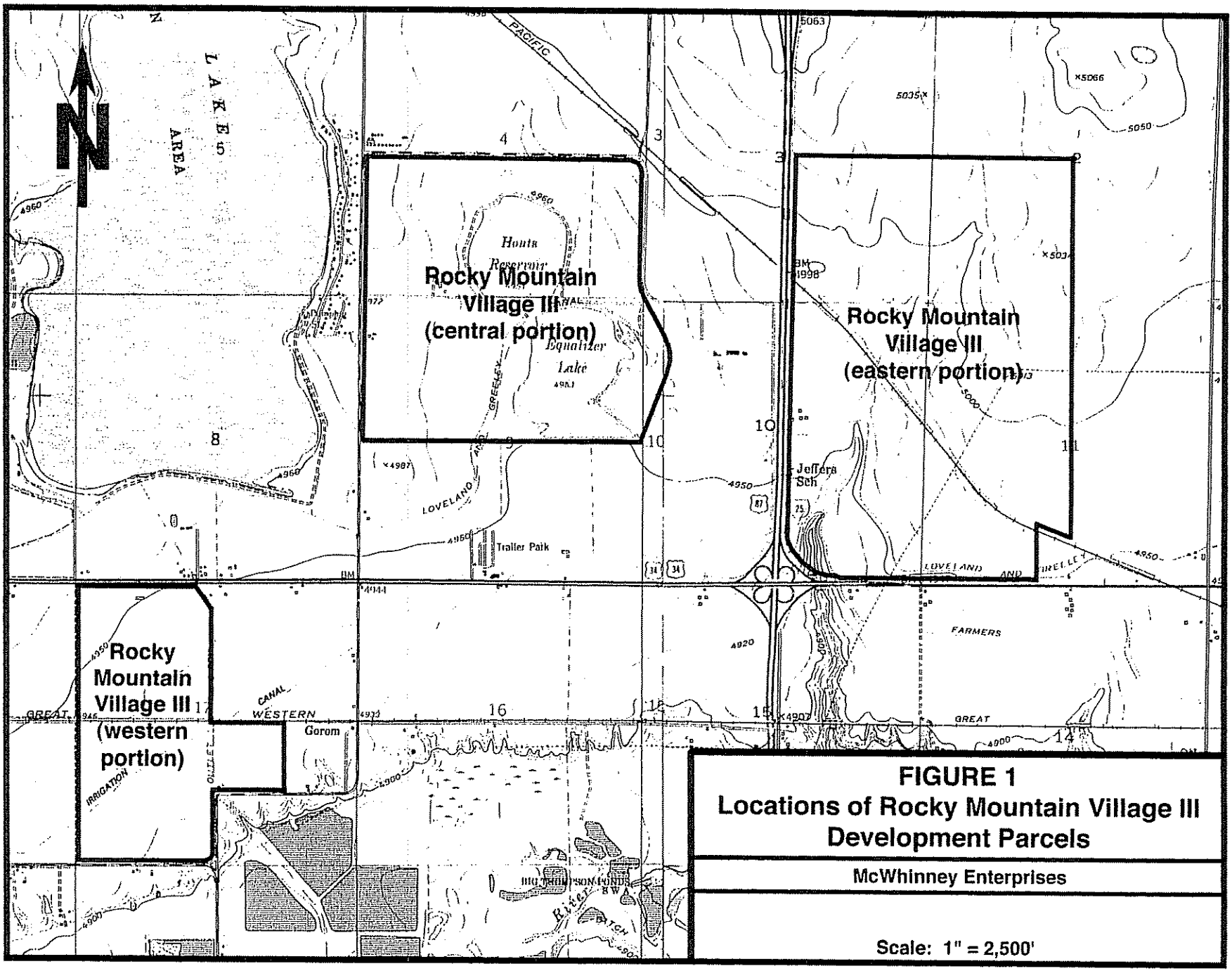


FIGURE 1
Locations of Rocky Mountain Village III Development Parcels

McWhinney Enterprises

Scale: 1" = 2,500'

HABITAT CONDITIONS AND ENVIRONMENTALLY SENSITIVE AREAS

Western Portion

This development parcel is nearly level and is comprised almost entirely of actively cultivated cropland (see Figure 2). Areas defined as environmentally sensitive by City of Loveland guidelines are limited to an irrigation ditch (Farmers Ditch) and the Outlet Ditch that carries overflow water from Boyd Lake to the Big Thompson River. There are no other drainages, areas of wildlife habitat, or other Natural Areas (*In the Nature of Things, Loveland's Natural Areas* - October 1996) in this parcel that would qualify as environmentally sensitive areas (see Figure 3).

According to the *Soil Survey of Larimer County Area, Colorado* (SCS 1980), predominant soils in the area include Aquepts, Nunn clay loam, and Stoneham loam. These are not highly erosive soils; runoff is slow to medium and the hazard of wind or water erosion is slight to moderate. No slopes over 20 percent, land formerly used for landfill operations or hazardous industrial use, or fault areas were identified on the property.

Wetlands associated with the Farmers Ditch were not delineated because wetlands supported in active irrigation ditches are not classified as jurisdictional by the Corps of Engineers. In addition, since active cultivation approaches to the edge of this narrow ditch and there is minimal vegetation cover, this ditch has little value as wildlife habitat or as a movement corridor.

The only jurisdictional wetlands on the property were located within the Outlet Ditch. At the time of the survey, there was flowing water (6 to 10 inches deep) in the bottom of ditch and wetlands were restricted to the edges of the flowing channel and the side-slopes of the ditch (see Figure 2). There were also some minor inclusions of uplands on the ditch banks. Wetland herbaceous vegetation within the ditch was characterized by reed canarygrass (*Phalaris arundinacea*), common cattail (*Typha latifolia*), hemp dogbane (*Apocynum cannabinum*), showy milkweed (*Asclepias speciosa*), field horsetail (*Equisetum arvense*), and Emory sedge (*Carex emoryi*). Several large, mature plains cottonwoods (*Populus sargentii*) also grow within the ditch (see Figure 2). There were individual box elder trees (*Acer negundo*) and scattered pockets of coyote willow (*Salix exigua*), red hawthorn (*Crataegus erthyropoda*), and wild plum (*Prunus americana*) along the ditch, as well.

The Outlet Ditch was classified as an environmentally sensitive area because it supports wetlands and mature cottonwood trees. Based on the rating system used in *In the Nature of Things, Loveland's Natural Areas* (ratings of 1 to 10 with 10 indicating highest value and 1 indicating lowest habitat value), the outlet ditch was given a rating of "3." Although the ditch contains wetlands and several large trees, its overall

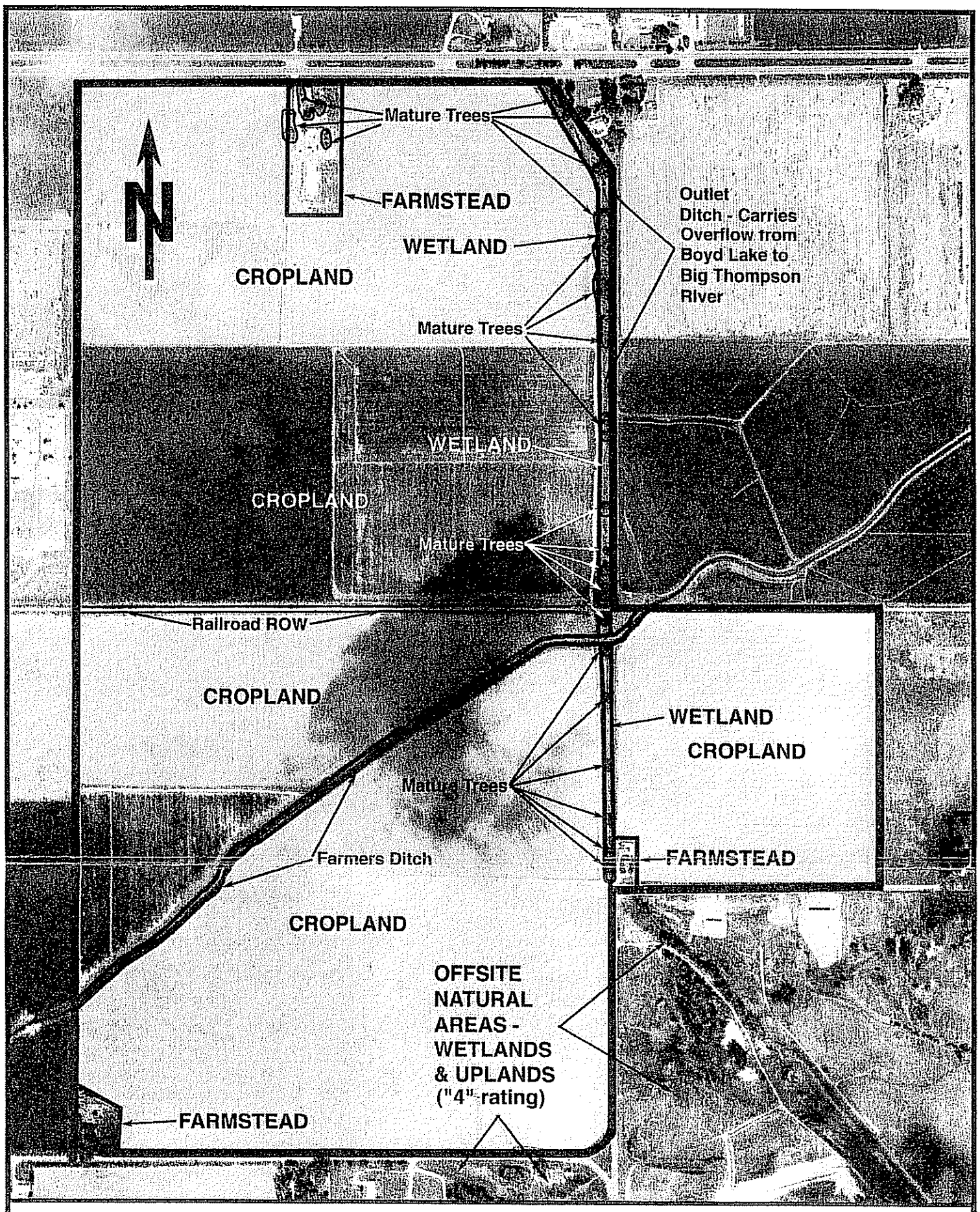


FIGURE 2
Habitat Mapping

Rocky Mountain Village III - Western Portion

McWhinney Enterprises

Scale: 1" = 600'

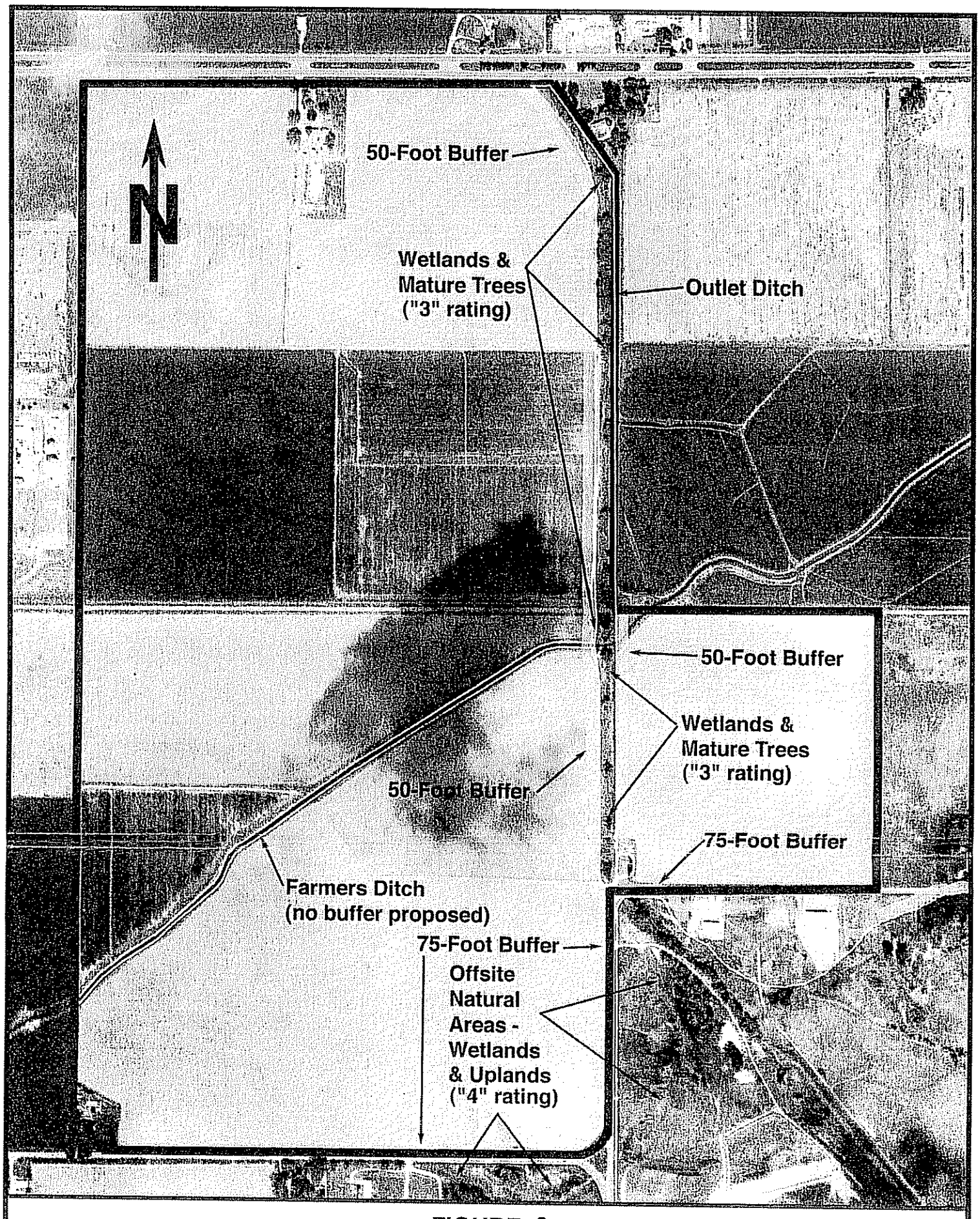


FIGURE 3
Environmentally Sensitive Areas

Rocky Mountain Village III - Western Portion

McWhinney Enterprises

Environmentally Sensitive Areas Rated 5 or Below (Recommend 50 to 75-foot buffer to protect natural resources)

Scale: 1" = 600'

habitat value is limited by its narrow configuration, lack of adjacent natural habitats, its close proximity to croplands, and its lack of continuity with other natural areas.

Habitat between the outlet ditch edge and cropland is restricted to a narrow strip of ground supporting primarily non-native and annual weedy species such as smooth brome (*Bromus inermis*), cheatgrass (*Bromus tectorum*), prostrate knotweed (*Polygonum aviculare*), common mullein (*Verbascum thapsus*), yellow foxtail (*Setaria glauca*), field bindweed (*Convolvulus arvensis*), prickly lettuce, (*Lactuca serriola*), common dandelion (*Taraxacum officinale*), Canada thistle (*Cirsium arvense*), and musk thistle (*Carduus nutans*). These areas and adjacent croplands have limited wildlife habitat value and would not be classified as environmentally sensitive areas.

It should be noted that two areas classified as Natural Areas (Sites #14 and #15 with a "4" rating) in *In the Nature of Things, Loveland's Natural Areas* exist adjacent to the southeast corner of the property (see Figures 2 and 3). These areas contain a mixture of wetlands and uplands, and the area east and south of County Road 9E has undeveloped land continuity with the Big Thompson River corridor to the south. These areas lack continuity with the Rocky Mountain Village III Western Portion, however, because of the presence of County Road 9E.

Wildlife Use and Corridors

The only potential wildlife movement corridor on the property is the Outlet Ditch. This ditch is hydrologically linked to Boyd Lake and the Big Thompson River, but it does not provide a continuous wildlife movement corridor between these two areas due to disruption by Highway 34 at the north edge of the property and by County Road 9E at the south edge of the property. The greatest potential for wildlife movement to and from the property is most likely to occur across County Road 9E from the Big Thompson River corridor. County Road 9E is a two-lane road with relatively low traffic volume. Wildlife movement between the property and the Boyd Lake area to the north is unlikely since wildlife would have to cross a four-lane, high-speed highway (Highway 34) with high traffic volumes. In addition, the size of the Outlet Ditch culvert under Highway 34 is insufficient in size to permit passage by most wildlife species.

Wildlife use of the property is limited primarily to urban-adapted songbirds, small and medium-sized mammals (rodents, red fox, raccoon, striped skunk), and reptiles and amphibians. Open-country raptor species such as great-horned owl and red-tailed hawk may use the large trees in the Outlet Ditch as perch sites, although suitable hunting habitat is limited by adjacent croplands. No evidence of past raptor nesting activity (stick nests, nest cavities, or whitewash) was noted during the field survey. Wildlife species noted during the field survey included common snipe, great-horned owl, American robin, and American kestrel along the Outlet Ditch. A dead red fox was also found along the edge of the Outlet

Ditch. Canada goose droppings between a harvested cornfield and the Outlet Ditch indicated considerable use of the area by Canada geese.

Croplands have little value for wildlife because of seasonal cultivation or mowing and the lack of forage and cover. As a wheat or corn crop matures, croplands may receive limited use by species such as white-tailed deer, raccoon, striped skunk, ring-necked pheasant, common grackle, red-winged blackbird, and western meadowlark. Once the crop is harvested and cover is removed, wildlife use of this habitat is limited to occasional use by rodents, songbirds, and waterfowl such as Canada goose that forage for remnant wheat or corn kernels left by harvest operations.

No habitat for any state or federally listed threatened or endangered species exists within or near the Western Portion property. Suitable habitat for Ute ladies-tresses' orchid (*Spiranthes diluvialis*) and Preble's meadow jumping mouse (*Zapus hudsonius preblei*) is not present along the wetlands within the Outlet Ditch due to the steep side-slopes. Wintering bald eagles in the region may occasionally perch in large cottonwoods along the ditch, but surrounding croplands do not provide suitable winter foraging habitat.

Central Portion

This nearly level development parcel is composed of actively cultivated cropland and two irrigation reservoirs (Houts Reservoir and Equalizer Lake), as well as wetland, disturbed/weedy, grassland, and rabbitbrush/grassland habitats (see Figure 4). Cropland, disturbed weedy areas, and rabbitbrush/grassland do not meet any criteria for classification of environmentally sensitive areas. Cropland is seasonally disturbed and lacking vegetation cover between late fall and spring. It provides minimal wildlife habitat except for occasional foraging by Canada geese after harvest.

Disturbed/weedy areas have been cleared of native vegetation and revegetated by primarily weedy and non-native grasses and forbs. Dominant vegetation in these areas included kochia (*Kochia scoparia*), prickly lettuce (*Lactuca serriola*), flixweed (*Descurainia sophia*), Canada thistle (*Cirsium arvense*), intermediate wheatgrass (*Agropyron intermedium*), western wheatgrass (*Agropyron smithii*), and cheatgrass (*Bromus tectorum*). The disturbed weedy area on the west side of Houts Reservoir (see Figure 4) also contained scattered trash piles, old car bodies, and abandoned farm implements, particularly at the south end.

The two rabbitbrush/grassland habitat parcels on the west side of Equalizer Lake appeared to have had some surface disturbance in the past and currently support a mixture of native shrubs and non-native weedy species. Dominant vegetation in this habitat was rubber rabbitbrush (*Chrysothamnus nauseosus*), fringed sagebrush (*Artemisia frigida*), broom snakeweed (*Gutierrezia sarothrae*), winterfat (*Eurotia lanata*),

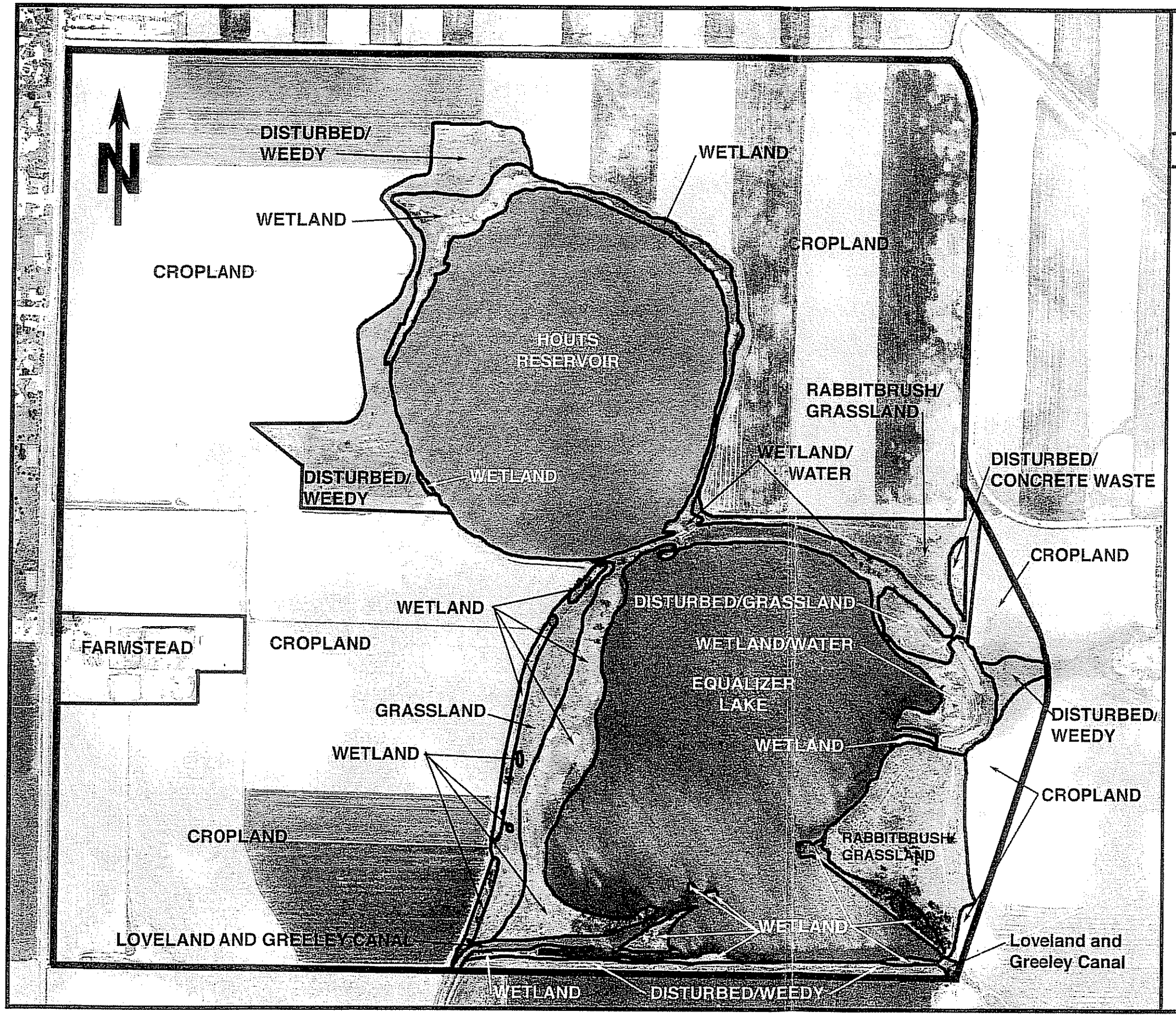


FIGURE 4
Habitat Mapping

Rocky Mountain Village III - Central Portion

McWhinney Enterprises

Scale: 1" = 600'

crested wheatgrass (*Agropyron cristatum*), cheatgrass, kochia, and Russian thistle (*Salsola kali*). These two habitat areas also contain prairie dog burrows, but observed burrow openings were in disrepair, and there was no evidence of recent occupation by prairie dogs. It is unknown if the prairie dog town had been poisoned or if plague or some other disease had caused the loss of prairie dogs in this area. This habitat is not unique in the region, and with the lack of a prairie dog population its value as hunting habitat for open-country raptors or mammalian predators is limited.

Houts Reservoir and Equalizer Lake are both classified as Natural Areas and were given overall ratings of "5" and "6," respectively in *In the Nature of Things, Loveland's Natural Areas* . Other areas on the property that were determined to qualify as environmentally sensitive areas based on field surveys and City of Loveland guidelines were lake shoreline areas that support wetlands and mature trees. There are no other drainages, areas of important wildlife habitat, or other natural areas (*In the Nature of Things, Loveland's Natural Areas*) in, or adjacent to, this parcel that would qualify as environmentally sensitive areas (see Figures 4 and 5).

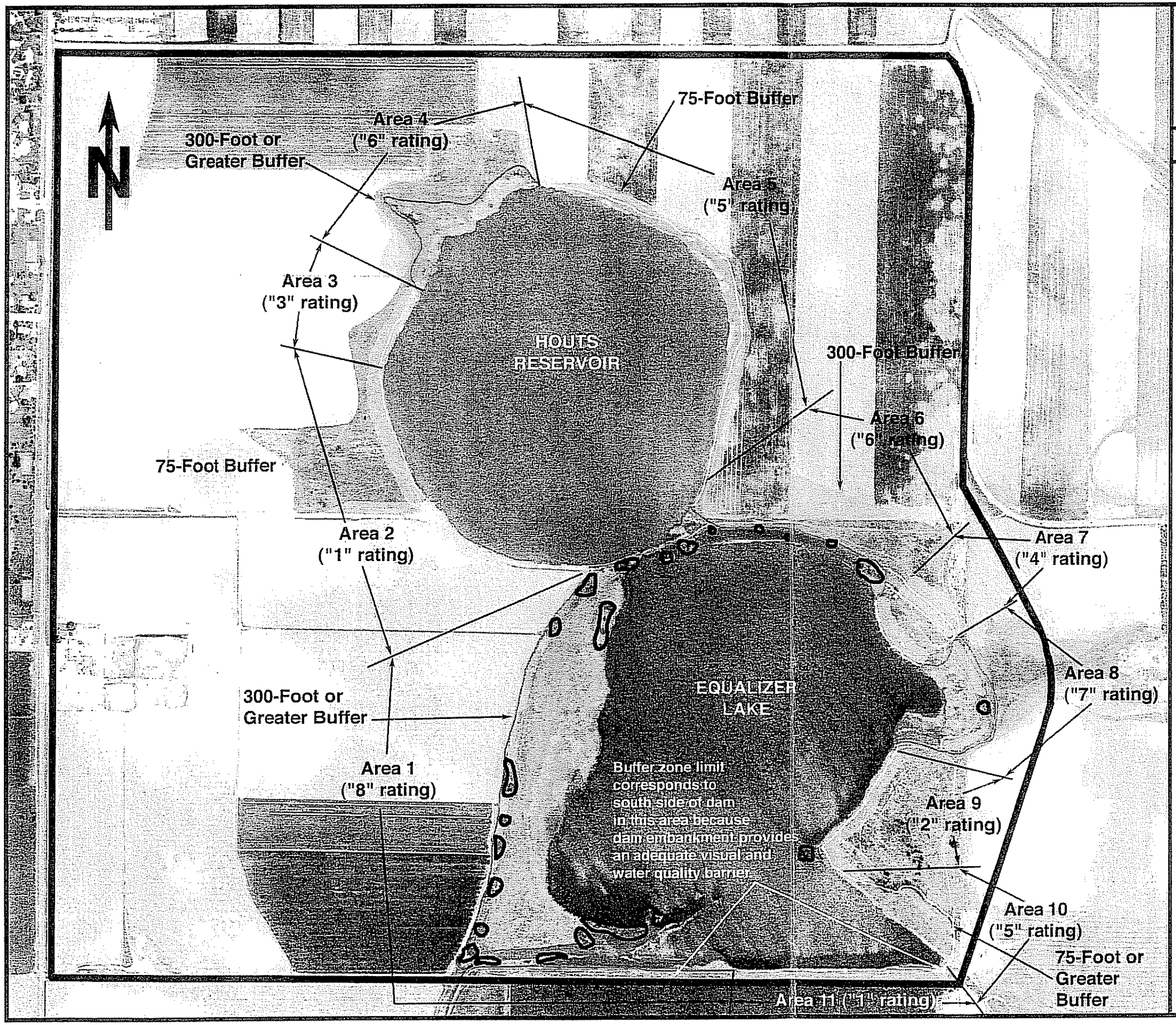
According to the *Soil Survey of Larimer County Area, Colorado* (SCS 1980), predominant soils in the area include Aquepts, Heldt clay loams, Kim loam, Nunn clay loams, and Ulm clay loam. Most of these soil units are not highly erosive soils; runoff is slow to medium and the hazard of wind and water erosion is slight to moderate. However, most of the east side of Houts Reservoir is classified as Heldt clay loam, 3 to 6 percent slopes. Runoff is rated as rapid by the SCS for this unit, with the hazard of wind erosion moderate and the hazard of water erosion severe. The field survey indicated proper surface management of this cropland area, and no problem erosion areas were observed. No slopes over 20 percent, land formerly used for landfill operations or hazardous industrial use, or fault areas were identified on the property.

Seasonal drawdowns in both lakes subject the shoreline areas to large fluctuations in water levels. As with many of the irrigation reservoirs in the region, these conditions and other management practices (e.g., rip-rapped shorelines) have limited the establishment of wetland habitats along some portions of the shoreline, especially at Houts Reservoir. The overall ratings of "5" and "6" for Houts Reservoir and Equalizer Lake, respectively, do not provide an accurate assessment of the wetlands and other natural habitats adjacent to the lakes since the ratings take into account wetlands that are marginal or non-existent along portions of the shoreline areas. In order to provide a more accurate, site-specific assessment of the overall habitat quality of shoreline wetland habitats and environmentally sensitive areas adjacent to the lakes, a ranking scheme, similar to that used in *In the Nature of Things Loveland's Natural Areas*, was developed to classify distinct shoreline segments. These rankings were then evaluated to determine appropriate recommendations for buffer zones, land use management, and adjacent development. Wetland shoreline habitat and associated upland natural areas were rated as Highest ("6" to "8" ratings),

FIGURE 5
Environmentally Sensitive Areas

Rocky Mountain Village III - Central Portion

McWhinney Enterprises



Environmentally Sensitive Areas Rated 6 or Higher (Recommend 300-foot buffer from operating high water line)

Environmentally Sensitive Areas Rated 5 or Lower (Recommend 75-foot buffer from operating high water line)

Areas of Mature Trees

Scale: 1" = 600'

Moderate ("3" to "5" ratings), or Lowest ("1" to "2" ratings) habitat quality (see Figure 5) based on the following considerations.

- Highest Quality ("6" to "8" ratings) - Extensive areas (≥ 75 feet wide) with a diversity of dense, herbaceous wetland vegetation (cattails, sedges, grasses, forbs etc.) cover including occasional stands of mature cottonwood and willow trees and some inclusions of natural upland vegetation.
- Moderate Quality ("3" to "5" ratings) - Areas with moderate herbaceous wetland vegetation cover 5 to 75 feet wide intermixed with mudflats and/or mostly young trees and/or shrubs (willows).
- Lowest Quality ("1" to "2" ratings) - Areas with minimal or no wetland vegetation establishment or disturbed shoreline areas such as rip-rapped embankments.

Rankings and boundaries of shoreline/wetland habitats are shown on Figure 5. The characteristics and rationale for the rating of each shoreline area are described in the following sections.

Area 1. This area supports the highest quality and most diverse habitat area around the perimeter of either lake and was assigned a rating of "8." It consists of a broad wetland zone that intergrades with upland grasslands and then is bordered on the western edge by wetlands that have formed in an abandoned segment of the Loveland and Greeley Canal. The current functioning inlet from the Loveland and Greeley Canal is located at the south end of Area 1 at the southwest corner of Equalizer Lake.

Scattered individuals of large, mature plains cottonwoods (*Populus sargentii*) and peach-leaf willow (*Salix amygdaloides*) trees grow at the north and south ends of Area 1 and along the abandoned ditch segment. The wetland/shoreline zone supports a broad, dense stand of common cattail (*Typha latifolia*). Representative vegetation in wetland transition zone between these wetlands and adjacent upland grasslands consisted of foxtail barley (*Hordeum jubatum*), three-square (*Scirpus americanus*), alkali muhly (*Muhlenbergia asperifolia*), showy milkweed (*Asclepias speciosa*), saltgrass (*Distichlis stricta*), sea-blite (*Suaeda depressa*), curly dock (*Rumex crispus*), and common lambsquarters (*Chenopodium album*). Blue grama (*Bouteloua gracilis*), western wheatgrass, crested wheatgrass, and kochia were the dominant species supported in upland grassland habitat between the two wetland areas. Wetlands within the abandoned portion of the Loveland and Greeley Canal were represented primarily by reed canarygrass (*Phalaris arundinacea*), common cattail, coyote willow (*Salix exigua*), and Emory sedge. The old canal segment is a ditch contained within elevated berms that create a water quality and visual barrier between Area 1 and adjacent cropland.

Area 1 supports suitable nesting and foraging habitat for waterfowl and shorebirds, small mammal habitat, songbird nesting and foraging habitat, raptor perch sites and hunting habitat as well as hunting habitat for red fox, coyote, raccoon, and striped skunk. Although a number of the larger trees are of suitable size and configuration to support raptor nesting activity, no evidence of raptor nests (i.e. stick nests, nest cavities, and whitewash accumulations) was noted in any of the larger trees in this area.

Area 2. This area is the lowest rated ("1" rating) lake shoreline area. Most of this area exhibits recent surface disturbance and compacted soils with a high coarse fragment content. There are no wetlands supported in this shoreline segment, and portions have been rip-rapped with concrete blocks. Existing vegetation cover is provided primarily by low-lying annual weeds. Because of the lack of vegetation cover, wetlands, and shoreline mud flats, this area is unsuitable for use by waterfowl, shorebirds, and most other wildlife species.

Area 3. Most of this area consists primarily of disturbed/weedy habitat, although a thin strip (<5-10 feet wide in most places) of wetland vegetation, consisting primarily of common cattail, is also supported along the shoreline zone. This area was given a habitat rating of "3." Vegetation cover provided by the cattail stands as well as the grasses and forbs in the adjacent upland strip may provide sufficient cover to support waterfowl nesting use. The cattail stands, although narrow, have sufficient height to provide a visual barrier between adjacent uplands and waterfowl on the surface of the reservoir.

Area 4. Although no shrub or trees are supported in this area, the wetland zone is relatively broad (≥ 75 feet, and it supports a diversity of herbaceous wetland species. Wetland habitat extends nearly 400 feet from the reservoir edge along a shallow drainage that feeds into this shoreline zone from adjacent uplands (see Figures 4 and 5). Wetlands along the shoreline area consist of dense stands of common cattail, while along the shallow drainage a more diverse mix of cattails and other wetland species such as three-square, Baltic rush (*Juncus balticus*), foxtail barley, sand spurrey (*Spergularia marina*), saltgrass, and reed canarygrass are supported. Area 4 was determined to provide suitable habitat for waterfowl and shorebird nesting and foraging. This area was given a rating of "7" because of the width of the wetland zone, the diversity of wetland vegetation present, and its importance as wildlife habitat.

Area 5. Wetlands in this area consist of dense, stands of cattails intermixed with pockets of mostly bare mudflats. Most wetlands are less than 75 feet in width, and the diversity of wetland vegetation is limited. The narrow wetland transition zone between the cattail stands and adjacent upland cropland supports primarily narrow, linear stands of foxtail barley and reed canarygrass. No shrubs or trees grow along this area. Wildlife use of this area is similar to Area 3 but possibly more extensive because of the broader band of wetland vegetation. A habitat rating of "5" was assigned to this area.

Area 6. This area is mixture of wetlands and open water habitat that has been created by an inoperable portion of the Loveland and Greeley Canal. This portion of the ditch appeared to have supplied water to Equalizer Lake in the past but now has open water connections to the lake and therefore contains surface water at the same level as the lake. Narrow bands of wetland vegetation exist along both of the ditch embankments. Pockets of wetland and upland shrubs such as coyote willow, chokecherry (*Prunus virginiana*), and skunkbush sumac (*Rhus trilobata*) are also supported along the top of the interior ditch

embankment. A few large plains cottonwood trees grow at each end of Area 6 as well. The total width of the wetlands in conjunction with the open water ditch area equals or exceeds 75 feet along most of the length of Area 6. The mixture of a protected open water area in combination with wetlands and shrubs and trees creates a relatively diverse habitat area, and Area 6 was given a rating of "6."

This area was judged to provide nesting, loafing, and foraging habitat for waterfowl and shorebirds; small mammal habitat, songbird nesting and foraging habitat, and raptor perch sites. Although a number of the larger trees are of suitable size and configuration to support raptor nesting activity, no evidence of raptor nests (i.e. stick nests, nest cavities, and whitewash accumulations) was noted in any of the larger trees in this area.

Area 7. This area, like Area 6, also contains a portion of the old Loveland and Greeley Canal but wetland and woody vegetation development along the canal and lake shoreline is much more limited than in Area 7. The central upland portion between the lake shoreline and the canal is a mowed grassland area with little cover or suitability as wildlife habitat. This disturbed/grassland area is used by the Greeley and Loveland Irrigation Company as a picnic area. The adjacent shoreline is used for fishing and boat launching and docking. Area 7 was given a habitat rating of only "4" because of the lack of woody vegetation, minimal wetland development, and human disturbance factors. Wildlife use of Area 7 is limited open-country songbirds and resting and foraging by waterfowl when human disturbance is lacking.

Area 8. This area contains the southern most segment of the inoperable portion of the Loveland and Greeley Canal. It encircles three sides of a small bay on the east side of Equalizer Lake (see Figure 5) and occupies a lower topographic position than Area 7 to the north and Area 9 to the south. As a result, wetland development is much more extensive and diverse in this area. Wetland habitat is nearly continuous for 300 feet from the lake edge to the east side of the canal except for open water portions of the canal and a narrow dirt road that parallels the west side of the canal. Dense stands of common cattail are supported in the more saturated portions of this wetland while coyote willow, Emory sedge, reed canarygrass, blue vervain (*Verbena hastata*) were dominant along the wetland periphery. A large multi-trunked peach-leaf willow tree also grows near the eastern edge of this area (see Figure 5). This area was given a habitat rating of "7" because of the presence of pockets of open water, inclusions of woody vegetation, and the width and diversity of wetlands.

The disturbed/weedy area on the east side of Area 8 (see Figure 4) is of interest because much of this area was delineated as wetland by ENSR in 1997 (*Equalizer Lake Property Wetland Delineation*, October 1997). The site was classified as an "atypical" wetland because it had been farmed and the soil profile disturbed by cultivation. Wetland surveys completed by Cedar Creek in 1998 recorded some sites dominated by wetland associated plants including yellow foxtail (*Setaria glauca*) and foxtail barley in this

area. Other sites were dominated by upland species such as Canada thistle, common sunflower (*Helianthus annuus*), cheatgrass, and horseweed (*Conyza canadensis*). However, Cedar Creek surveys did not find any evidence of hydric soils or wetland hydrology. The situation was discussed with Terry McKee of the U.S. Army Corps of Engineers, and he indicated that the area was probably a wetland/upland transition zone and should be classified as non-wetland based on current evidence that all three criteria (vegetation, soils, and hydrology) for wetland determination were not met.

Area 8 was judged to provide suitable nesting, foraging, and loafing habitat for waterfowl and shorebirds, small mammal habitat, songbird nesting and foraging habitat, and raptor perch sites and foraging habitat. A stick nest of a size and configuration suggesting use by long-eared owl was located in the peach-leaf willow tree in this area.

Area 9. Wetland establishment is minimal to non-existent in this area. Wetlands have not formed in this area because a nearly vertical shoreline embankment (5 to 6 feet high) separates uplands from the operating high water line of the lake. Pockets of wetland (too small to map) have formed only where portions of the shoreline embankment have slumped into lake. This shoreline appears to be subjected to continuous erosion from wave action in the lake. Old car bodies, tractor tires, and crumpled culverts have been placed in the lake shallows, possibly in an effort to slow embankment erosion. This area was given a habitat rating of "2" because of the lack of wetlands and the steep shoreline embankment that limit the suitability of this area as wildlife habitat. Wildlife use of this area is likely restricted to shorebird foraging during periods when lower lake water levels expose shoreline mudflats.

Area 10. The shoreline embankment in this area is also nearly vertical in most areas, but it is lower (4 to 5 feet) in height than in Area 9, and some wetland development has occurred above the embankment edge. A dense stand of young plains cottonwoods is also supported in this area. These trees are relatively even-aged and ranged in size from 4 to 8 inches diameter at breast height (dbh). Total canopy cover within the densest portions of this tree stand was estimated at 75 to 80 percent. Most of this cotttonwood stand grows within the wetland zone, but some portions of the stand are supported outside of the wetland boundary (see Figure 4). Cottonwood stands outside the wetland were included within the area identified as environmentally sensitive (see Figure 5) because these trees add vegetational structural diversity and result in an increase wildlife habitat diversity in this area.

Dominant vegetation species within the wetland portion of this area were plains cottonwood, reed canarygrass, coyote willow, and curly dock. In the non-wetland portion dominant understory species were cheatgrass, Canada thistle, kochia, and crested wheatgrass. This area was given a rating of "5" because of the mix of wetlands and young cottonwood trees that create a diverse but relatively small habitat parcel. This area was judged to be most suitable for use as songbird nesting, perching, and foraging habitat.

There could also be some shorebird foraging use of this area during periods when reduced lake water levels expose shoreline mudflats.

The Loveland and Greeley Canal exits Equalizer Lake at the south end of this area and the southeast corner of the property.

Area 11. This shoreline area is composed primarily of a concrete, rip-rapped dam embankment that supports a very narrow strip of reed canarygrass wetland at its east end. Wetlands are non-existent in the remainder of this area, and overall habitat quality is low because of the dirt packed road surface along the top of the dam and the lack of vegetation cover except for weedy annual species. This area was given a habitat rating of only "1" since vegetation cover and suitable foraging areas are lacking for most wildlife species

Wildlife Use and Corridors

The property is surrounded by roadways and actively cultivated cropland and the only potential movement corridor that connects this property to other natural areas is the Loveland and Greeley Canal. The canal extends from the southeast corner of Boyd Lake to the southwest corner of Equalizer Lake, but its value as a wildlife movement corridor between these two areas is severely limited by surrounding croplands and developments that have restricted the development of any suitable vegetation cover along its entire length. This corridor is also disrupted by Boyd Lake Avenue. Similar constraints exist with respect to the canal's viability as a movement corridor where it exits the southeast corner of the property. In addition, this segment of the canal is interrupted by the I-25 corridor before it reaches the natural area in the southeast corner of the Eastern Portion of the Rocky Mountain Village III development area (see following section).

Habitat suitability for various wildlife groups and species was summarized for each distinct shoreline area in the preceding sections. Although the diversity of wildlife using the area is relatively low during the late fall season when the field surveys were completed, a number of species were observed in association with the two lakes and natural areas around the lake perimeters. Waterfowl use of the area was also probably reduced by the fact that most of Equalizer Lake had been drained at the time of the survey. The area greatest value is in providing important habitat for migrating and summer resident waterfowl and shorebirds. Dave Graves with the Greeley and Loveland Irrigation company indicated that waterfowl use of the lakes is extensive from spring through late fall. Lake margins and marshy areas provide resting and foraging areas for waterfowl, shorebirds, and wading birds, including species such as American white pelican and great blue heron. Waterfowl and shorebirds observed on the lake surface and at lake margins included Canada goose, mallard, northern shoveler, gulls, and killdeer.

Other avian species observed were northern harrier, ring-necked pheasant, short-eared owl, great horned owl, belted kingfisher, northern flicker, hairy woodpecker, American crow, western meadowlark, black-capped chickadee, and song sparrow. Raccoon tracks were noted at several locations around the lake perimeters, and Nuttall's cottontail were seen in rabbitbrush/grassland habitat as well as in disturbed/weedy areas with denser vegetation cover.

Potential or known habitat for three federally listed threatened species exists within the property boundaries. Suitable habitat for Ute ladies-tresses' orchid and Preble's meadow jumping mouse exists along the upland margins of the cattail stands where grass/forb wetlands or moist meadow areas exist, primarily along the west side of Equalizer Lake in Area 1 and along the eastern margin of Area 8. Suitable habitat in Area 8 and the south edge of the Equalizer Lake dam embankment were surveyed for Ute ladies-tresses' orchid by ENSR in 1997 with negative results (*Ute Ladies-Tresses' Orchid Survey Equalizer Lake Property*, October 1997).

Wintering bald eagles use the two lakes for foraging habitat. Wintering bald eagles in the region feed on dead and crippled geese or ducks on open or frozen reservoirs. Large cottonwood trees around the perimeter of Equalizer Lake provide suitable perch sites for these foraging eagles. Dave Graves with the Greeley and Loveland Irrigation Company indicated that trees at the south end of Area 1 are the most frequently used perch sites by wintering eagles.

Eastern Portion

This development parcel is gently sloping to the southwest with a more defined drainage in the southwest corner of the property (see Figures 1 and 6). The property is composed almost entirely of cropland except for the southwest drainage portion and a small wetland depression in the northeast corner (see Figure 6). Areas defined as environmentally sensitive by City of Loveland guidelines are limited to two irrigation ditches (Farmers Ditch and the Loveland and Greeley Canal), the small wetland depression in the northeast corner of the property, and the drainage in the southwest corner of the property (see Figure 7). The drainage in the southwest corner of the property is listed as a Natural Area #99 (with a rating of "7") in *In the Nature of Things, Loveland's Natural Areas* . There are no other drainages, areas of important wildlife habitat, or other Natural Areas (*In the Nature of Things, Loveland's Natural Areas*) in this parcel that would qualify as environmentally sensitive areas.

According to the *Soil Survey of Larimer County Area, Colorado* (SCS 1980), predominant soils in the area include Fort Collins loam, Kim loam, Nunn clay loam, Weld silt loam, and Wiley silt loam. These are not highly erosive soils; runoff is slow to medium and the hazard of wind or water erosion ranges from slight to moderate for these soils. No land formerly used for landfill operations or hazardous industrial use or fault areas were identified on the property. Slopes over 20 percent do exist, however, within the lower

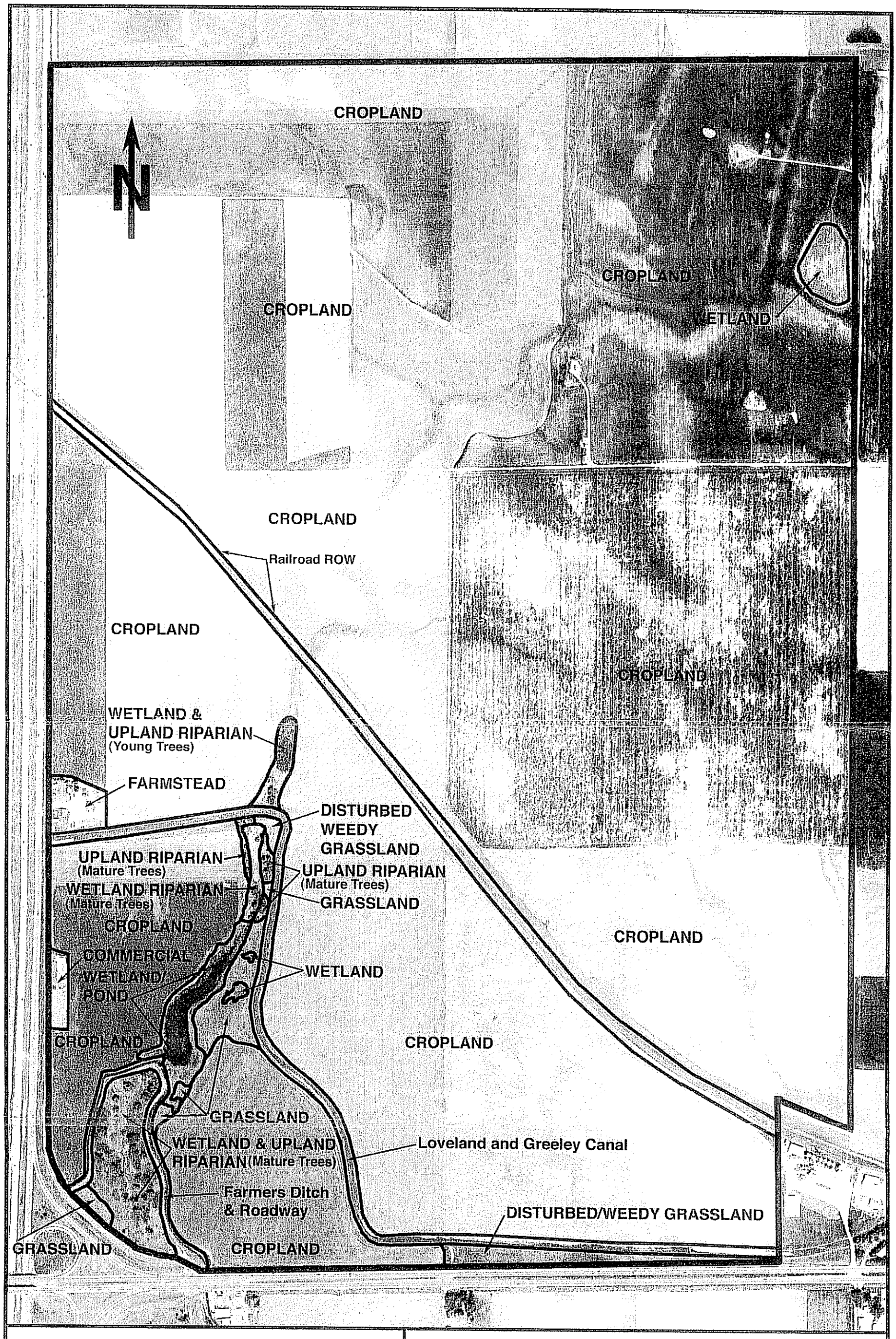


FIGURE 6
Habitat Mapping

Rocky Mountain Village III - Eastern Portion

McWhinney Enterprises

Scale: 1" = 600'

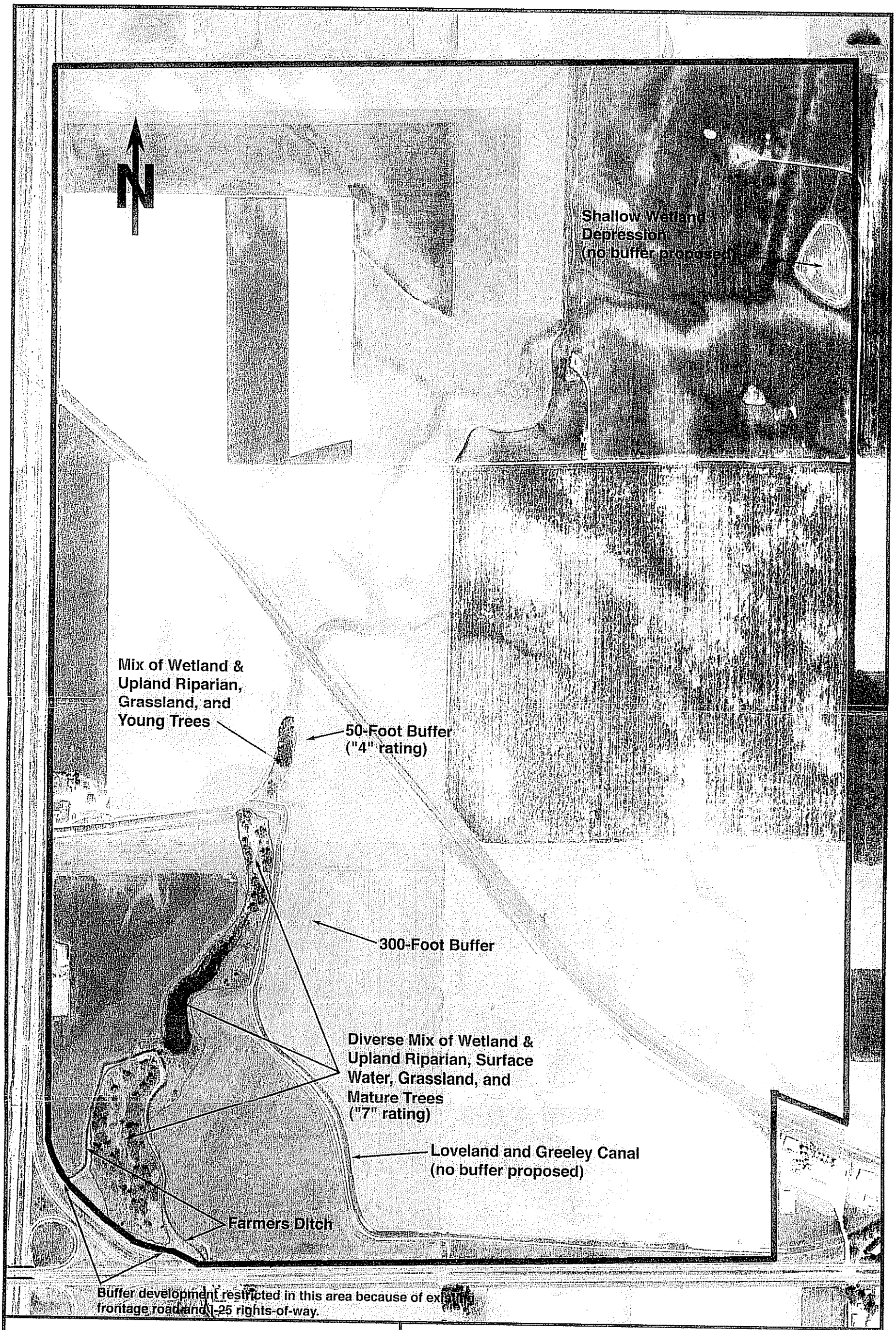


FIGURE 7
Environmentally Sensitive Areas

Rocky Mountain Village III - Eastern Portion

McWhinney Enterprises

Environmentally Sensitive Area Rated 6 or Higher (Recommend 300-foot buffer to protect natural resources)

Environmentally Sensitive Area Rated 5 or Lower (Recommend 50-foot buffer to protect natural resources)

Scale: 1" = 600'

segment of the drainage in Natual Area #99 (see Figure 1). These slopes are confined within the area already defined as environmentally sensitive because of the presence of wetlands and important other habitats.

Wetlands associated with the Farmers Ditch and the Loveland and Greeley Canal were not delineated because wetlands supported in active irrigation ditches are not classified as jurisdictional by the Corps of Engineers. In addition, since active cultivation approaches to the edges of most segments of these ditches and there is minimal vegetation cover, these ditches have little value as wildlife movement corridors or wildlife habitat, except where they are in close proximity to Natural Area #99. The ditches were classified as environmentally sensitive, however, because irrigation ditches are identified as environmentally sensitive areas by City of Loveland guidelines (Appendix D).

Wetlands were located on the property within Natural Area #99 and in a small cropland depression near the northeast property corner (see Figure 6). The northeast corner wetland may not be considered jurisdictional by the Corps of Engineers since it has apparently established as a direct result of irrigation water collection in a depression surrounded by cropland. This wetland has been cultivated in the past, but appears to accumulate too much moisture to support the crops planted on adjacent, more upland sites. Vegetation supported in this wetland included yellow foxtail, smartweed (*Polygonum* sp.), and small pockets of common cattail. Total vegetation cover was relatively sparse (15 to 25 percent), and there was no woody vegetation growing at this site. Although this area was classified as wetland, it has minimal value as wildlife habitat because of small size, seasonal cultivation, minimal vegetation cover, and surrounding cropland.

In contrast, wetlands within Natural Area #99 support a variety of wetland species and the mixture of these wetlands with the existing pond, grasslands, and upland riparian areas create a very diverse wildlife habitat area. Wetland in this area are located along the drainage bottom, around the periphery of the pond, and on side-slopes near the irrigation ditches. Wetlands on the side-slopes have likely been created from seepage from adjacent irrigation ditches and may not be classified as jurisdictional by the Corps of Engineers. These wetlands do create additional habitat diversity within the site, however. Representative wetland species recorded in the more saturated sites and around the pond margins were coyote willow, common cattail, pondweed (*Potamogeton* sp.), watercress (*Nasturtium officinale*), Baltic rush, three-square, Nebraska sedge (*Carex nebracensis*), swamp milkweed (*Asclepias incarnata*), smartweed, and willowherb (*Epilobium* sp.). At less saturated wetland sites, reed canarygrass, teasel (*Dipsacus sylvestris*), clustered field sedge (*Carex praegracilis*), Emory sedge, switchgrass (*Panicum virgatum*), foxtail barley, hemp dogbane, alkali muhly, field mint (*Mentha arvensis*), showy milkweed, and Nuttall's sunflower (*Helianthus nuttallii*) were representative species. In many areas of the lower and upper segments of the drainage, there is also an overstory of mature plains cottonwood and peach-leaf willow.

Upland riparian areas within the drainage support plains cottonwoods, chokecherry, Wood's rose (*Rosa woodsii*), western snowberry (*Symphoricarpos occidentalis*), rubber rabbitbrush, and skunkbush sumac in the overstory and a mixture of native and non-native species such as smooth brome, cheatgrass, western wheatgrass, slender wheatgrass (*Agropyron trachycaulum*), crested wheatgrass, Indian grass (*Sorghastrum nutans*), Canada wildrye (*Elymus canadensis*), Kentucky bluegrass (*Poa pratensis*), Canada thistle, and Virgin's bower (*Clematis ligusticifolia*) in the understory.

The entire drainage area between the Loveland and Greeley Canal and Highway 34 and the I-25 frontage road was included as an environmentally sensitive area with a rating of "7" because of the presence of wetlands and the diversity of wildlife habitat created by the mix of wetlands, riparian uplands, and grassland habitats. An even higher habitat rating would be appropriate for this area if it was not surrounded by croplands and roadways and had some connection to other natural areas.

To the northeast of the Loveland and Greeley Canal, habitat in the drainage is less diverse and vegetation is dominated by young plains cottonwoods (4 to 8 inches dbh) and reed canarygrass in the wetland portion and by young plains cottonwoods and smooth brome in the non-wetland portions. This area was given a lower habitat rating ("4") because of reduced vegetation diversity, its narrow configuration, and adjacent croplands (see Figure 7).

Wildlife Use and Corridors

There are no wildlife movement corridors from natural areas in the Eastern Portion to other natural areas. Potential movement to and from the property along the Farmers Ditch is blocked by I-25 and Highway 34. Active cultivation approaches right up to the edge of the Loveland and Greeley Canal and there is minimal vegetation cover. Potential movement along this ditch is blocked by I-25 at the western property edge and by Highway 34 approximately 2 miles east of the Eastern Portion. The I-25 underpass for the Union Pacific Railroad right-of-way is large enough to permit wildlife passage, but there is minimal cover along the right-of-way between the northeast corner of Boyd Lake and the Eastern Portion as a result of active cultivation along the entire length of this right-of-way segment.

Natural Area #99 supports suitable nesting and foraging habitat for waterfowl and shorebirds, small mammal habitat, songbird nesting and foraging habitat, raptor perch sites and hunting habitat as well as hunting habitat for red fox, coyote, raccoon, and striped skunk. Suitable breeding and foraging habitat for a variety of amphibians and reptiles is also present. Although a number of the larger trees are of suitable size and configuration to support raptor nesting activity, no evidence of raptor nests (i.e. stick nests, nest cavities, and whitewash accumulations) was noted in any of the larger trees in this area.

Wildlife species observed during the field surveys included mallard, red-tailed hawk, American kestrel, great horned owl, belted kingfisher, northern flicker, blue jay, black-billed magpie, American robin, western meadowlark, black-capped chickadee, American goldfinch, and Nuttall's cottontail

Potential habitat for two federally listed threatened species exists within Natural Area #99. Suitable habitat for Ute ladies-tresses' orchid exists along the margins of cattail stands and other saturated areas where wetland vegetation cover is less than 2 feet tall. Suitable habitat for Preble's meadow jumping mouse exists along the upland margins of wetlands where grass/forb wetlands or moist meadow areas exist, especially along the west side of the drainage.

Wintering bald eagles could perch in the large cottonwoods along the drainage, but surrounding croplands and highway corridors do not provide suitable winter foraging habitat for bald eagle.

IMPACTS OF DEVELOPMENT AND MITIGATION RECOMMENDATIONS

Specific development plans were not available at the time of report preparation, but a general assessment of potential impacts to environmentally sensitive areas can be made based the development envelopes proposed in the General Development Plan (GDP).

Western Portion

Impacts. The south half of this development parcel is proposed for residential development while the north half would be developed to commercial retail and a residential park. None of the proposed developments would directly affect environmentally sensitive areas in the Outlet Ditch or Natural Areas #14 and #15 to the south of the development. Indirect impacts could occur as a result of surface water runoff from developed sites into the Outlet Ditch or Natural Areas #14 and #15. The loss of irrigation water application on the property could also have an effect on wetlands in Natural Areas #14 and #15.

The Outlet Ditch has an elevated berm along most of its length, and it is unlikely that surface runoff from developed areas would reach the ditch and affect water quality, especially if Best Management Practices (BMPs) are employed to control runoff during and after construction. There is the potential that irrigation may provide some surface water recharge to wetlands in Natural Areas #14 and #15, and that loss of this water may result in drier conditions in these wetlands. **However, this potential impact is unlikely since County Road 9E currently prevents any surface flow off the property from reaching Natural Areas #14 and #15. No data on groundwater conditions are available for this area, but it is assumed that subsurface recharge must support the wetlands in Natural Area #15 since there is no up gradient surface flow connection to this area because of the presence of County Road 9E. The most likely source of this**

subsurface recharge would be from Natural Area #14. Wetlands in Natural Area #14 appear to be supported primarily from surface flow and seepage from the Outlet Ditch. Project development would have no effect on hydrologic conditions and wetlands in Natural Area #14 since flow from the Outlet Ditch would be maintained to this area.

Mitigation. In order to further protect wetlands and trees in the Outlet Ditch and urban wildlife use of this ditch, a minimum setback of 50 feet is recommended from the **top of the existing ditch embankment** (see Figure 3). A 50-foot buffer is sufficient to protect water quality in the ditch since the edges of the ditch are bermed. Development should not intrude into the buffer zone, but a footpath or trail system would be appropriate for this corridor. The buffer zone should be planted, at a minimum to self-sustaining grass cover. Plantings of native grasses and shrubs would further enhance the corridor as wildlife habitat for urban adapted species.

If road crossings are required over the Outlet Ditch, these crossings should avoid areas in the ditch that support trees. Culverts under **any new roadways over the ditch** should be sized to permit wildlife movement along the ditch.

There are limited opportunities for enhancement or impacts to Natural Areas #14 and #15 because of separation by County Road 9E. A 75-foot setback **from the west and north edges of County Road 9E** is recommended to minimize an abrupt shift from these natural areas to development. However, creation of attractive natural areas within this buffer may not be appropriate. Creation of natural areas on the west and north sides of County Road 9E would encourage wildlife movement across County Road 9E and increase the risk of wildlife road-kills. **Plantings of turf grass in this buffer area would be appropriate, but plantings of trees and shrubs should be emphasized to provide some visual screening between development sites and Natural Areas #14 and #15.**

No mitigation is proposed for the Farmer's Ditch since this ditch is not a suitable wildlife corridor and it provides minimal wildlife habitat.

Detailed preliminary design plans will be prepared to address each sensitive area, required buffers, mitigation measures, and road crossing recommendations. These plans will be prepared prior to, or in conjunction with, the approval of a Preliminary Plat for any building lots or development features adjacent to or within 300 feet of identified sensitive areas.

Central Portion

Impacts. The area to the west of the lakes is proposed for residential development, while the area to the east of the lakes is proposed for commercial development. None of the proposed developments would directly affect the lakes or environmentally sensitive habitats identified around the lake perimeters. Indirect impacts to wildlife use of these areas could occur from increased human presence and recreational use of the lakes and shoreline habitats.

Erosion, runoff, and general disturbance from construction may produce some indirect, temporary impacts on water quality in the lakes and adjacent wetland / shoreline habitats if erosion is unchecked. However, standard construction mitigation measures and BMPs such as fabric silt fences, catchment basins, hay bales, berms, and other standard sediment and surface runoff control measures should be sufficient to prevent any substantial sediment transport or liquid spills into the lake or shoreline areas.

Depending on surface configuration after final grading and other factors such as street alignment, street runoff and nutrient-laden runoff from fertilized lawns could flow into shoreline / wetland areas and may alter the water quality of Houts Reservoir and Equalizer Lake. However, overall water quality of surface runoff into the lakes should be improved because of the following.

- Watering for residential and commercial landscaping would require a reduced volume of water over current agricultural irrigation practices.
- Reduced quantities of agricultural chemicals would be used for landscaping as opposed to existing croplands.
- Recommended setbacks (see below) from the operating high water lines and proposed developments will be sufficient to intercept and retain sediment and potentially toxic substances (e.g. herbicides, pesticides, etc.) in sheet flow runoff from developed sites.

Mitigation. In order to further protect wetlands, mature trees, and other environmentally sensitive areas around the lakes, development setbacks of 75 to 300 feet or more are recommended from the operating high water lines of the lakes (see Figure 5). These recommendations are consistent with or exceed guidelines provided for lake shoreline setbacks provided in *City of Loveland Open Lands Plan* (Open Lands Steering Committee et al. 1996). Proposed setbacks would also protect any potential habitat for bald eagle, Ute ladies-tresses' orchid, and Preble's meadow jumping mouse.

Lake access should only be permitted in shoreline areas with minimal or no wetlands, and recreational trail systems should avoid the higher rated wildlife habitat areas. Free-roaming pets should be prohibited and lease laws strictly enforced along trail systems to minimize dog and cat/wildlife interactions.

More specific recommendations for each rated shoreline segment are provided in the following sections.

- Area 1. A setback of 300 feet or more is recommended for this area. The setback should correspond to the western edge of the abandoned Loveland and Greeley Canal. This ditch has elevated berms that create good visual and water quality barriers between the natural areas and proposed development sites. **Additional setbacks may be employed from the outside edge of the ditch, but these setbacks are not necessary to protect important habitat features within the recommended buffer zone. The recommended buffer would also be sufficient to protect potential Preble's meadow jumping mouse habitat within the natural area since suitable habitat ends abruptly in the abandoned ditch. Prohibition of free-roaming pets within the buffer zone and adjacent areas would preclude any potential indirect impacts to Preble's meadow jumping mouse from predation by pets.** Because of the high quality of wildlife habitat in this area, there should be no development of trail systems within the buffer zone. Selective placement of one or two short lengths of elevated boardwalk for wildlife viewing and education may be appropriate, **but siting and construction of any boardwalks should be carefully planned in coordination with natural resource experts to avoid impacts to areas of highest quality and important wildlife use areas. No other developments or park features should be considered for this buffer zone.**

  Where possible, plantings of a mixture of native upland vegetation and more formal landscaping would be suitable for additional development setbacks in this area. Trail and recreational site development would be appropriate for the area between the buffer zone and developed sites. **Interpretative and educational signs should be placed at regular intervals along the outside edge of the buffer zone. The signs should stress the need for no human intrusion into important habitat areas. The placement of split-rail or similar type of fencing with wire mesh along the lower portion may also be necessary along the buffer edge to further discourage intrusion by humans and pets.**

- Area 2. Because of the low habitat quality of this shoreline area, this would be the best area on Houts Lake to develop more formal recreational facilities such as picnic areas and docks for non-motorized boat use. The 75-foot buffer zone should be planted to native vegetation or landscaped to protect lake water quality. **Because wildlife habitat quality is low along this area and other areas designated by yellow on Figure 5, buffer recommendations are directed primarily at protecting water quality in both lakes rather than preserving wildlife habitat. Therefore, buffers proposed for yellow designated areas are not intended to limit all human intrusion or developments. Limited trail development, human recreation activities, and the integration of detention and other storm management features would be appropriate within the proposed 75-foot development setbacks.**

  Trail development could connect the two 75-foot development setback at the south end of Houts Reservoir via the dam between Houts and Equalizer. The dam faces consist primarily of rip-rap with minimal wetland or other habitat development. The dam is currently used as a road crossing for use in dam maintenance and operation by the Greeley and Loveland Irrigation Company. This use is likely to continue, and occasional pedestrian use of this road as a trail is unlikely to create additional adverse impacts to wildlife use of the area. One exception is that bald eagles may use the large cottonwood trees in the vicinity of the dam for winter perch sites while foraging at the two reservoirs. In this situation it would be appropriate to place a seasonal restriction on pedestrian use of this segment of the trail so that disturbance to bald eagle winter perch sites would be avoided.

- Area 3. A setback of 75 feet is recommended for this area. This would be an appropriate area for establishment of shoreline platforms for wildlife viewing. Platforms should be designed similar to a blind so that wildlife viewing is not disruptive to waterfowl on the lake surface. This area could also have trail or recreational site development outside of, but adjacent to, the buffer zone. Existing vegetation within the buffer zone should be maintained. Existing disturbed areas or areas dominated by annual weeds should be replanted to native upland vegetation.

- Area 4. A setback of 300 feet or more is recommended for this area. There should be no development intrusion into the buffer zone, but trail development within the buffer zone but outside of the wetland areas would be appropriate. Current cropland portions of the buffer zone should be planted to native upland vegetation.

- Area 5. This shoreline zone is similar to Area 3 and the same recommendations would apply to this area.

- Area 6. A setback of 300 feet is recommended for this area. It is recommended that no development occur in the buffer zone except for **trail** construction outside of the wetland areas. Existing vegetation within the buffer zone should be maintained. Existing cropland areas within the buffer zone should be replanted to native upland vegetation.

- Area 7. A setback of 75 feet is recommended for the shoreline zone and ditch wetlands in this area. Because of past use of this area as an undeveloped recreational site, this would be an appropriate area for development of a picnic area and similar recreational facilities. Docks for non-motorized boating use of this lake are not recommended because of the extent and quality of wetlands and waterfowl nesting habitat around the perimeter of Equalizer Lake. It is recommended that boat use be restricted to Houts Reservoir and that Equalizer Lake be maintained primarily as waterfowl and shorebird habitat.

- Area 8. A setback of 300 feet is recommended for this area. Because of the high diversity of wetlands and pockets of open water habitat in this area, this area represents high quality waterfowl nesting, resting, and foraging habitat. It should be preserved with no trail disturbance or other development intrusions. **The 300-foot buffer would be sufficient to protect wetlands and potential Preble's meadow jumping mouse habitat to the west of the ditch and narrow peripheral wetlands on the east side of the ditch. Currently cropland disturbance encroaches right up to the edge of existing wetlands. Native revegetation for this area is proposed only for those portions of the buffer zone that have been disturbed by cultivation. No revegetation measures are recommended for delineated wetland areas or other undisturbed sites within the buffer area.**

- Area 9. A setback of 75 feet is recommended for this area. **As indicated on Figure 4 this area currently supports rabbitbrush / grassland. The areas appears to have had some surface disturbance in the past but is currently returning to a mostly native dominated community. It is recommended that existing vegetation be maintained in the buffer zone and left to continues to progress naturally toward a native community. However, supplemental plantings of native shrubs and trees would be appropriate for this area.** This would be another **suitable** area for adjacent development of recreational facilities such as picnic areas or trails.

- Area 10. A buffer zone of 75 feet or more is proposed for this area. The 75-foot buffer zone should be extended to include the cottonwood tree stands in this area. Trail development would be appropriate in this area but trail placement should avoid tree removal. However, some selective thinning of trees may be necessary in denser portions of the tree stand to improve stand vigor.

- Area 11. No specific recommendations are provided for this area because of poor habitat quality and because dam maintenance and operation would preclude any development or enhancement measures. **Pedestrian movement across this area to access trail systems to be established on both sides of Equalizer Lake would be suitable recreational use in this area as long as a trail would be compatible with dam maintenance and operation by the Greeley and Loveland Irrigation Company. The dam faces consist primarily of rip-rap or disturbed weedy soil surfaces with minimal wetland or other habitat development. Trail design, barrier placement, and educational signs would be used to prevent human intrusion into higher quality habitat areas (red zone in Figure 5) on the west side of the reservoir.**

Detailed preliminary design plans will be prepared to address each sensitive area, required buffers, mitigation measures, native plantings, educational features, viewing platforms, and trail design as well as long-term maintenance and management of sensitive natural areas. These plans will be prepared prior to, or in conjunction with, the approval of a Preliminary Plat for any building lots or development features adjacent to or within 300 feet of identified sensitive areas. Specifications for native revegetation planting schedules, soil preparation, weed control, irrigation needs, etc. will also be provided at this time.

Eastern Portion

Impacts. This area is proposed for commercial, manufacturing, and light industrial development. None of the proposed developments would directly affect Natural Area #99. The small wetland depression in the northeast corner may be lost to development, but this would have little effect on important wildlife habitats since the existing wetland has minimal wildlife habitat value. This depression may have some potential for creation of more extensive and higher quality wetlands if the site needs to be developed for surface water detention.

Indirect impacts to wildlife use of Natural Area #99 could occur from increased human presence and recreational use.

Erosion, runoff, and general disturbance from construction may produce some indirect, temporary impacts on water quality in Natural Area #99 if erosion is unchecked. However, standard construction mitigation measures and BMPs such as fabric silt fences, catchment basins, hay bales, berms, and other standard sediment and surface runoff control measures should be sufficient to prevent any substantial sediment transport or liquid spills into this area.

Depending on surface configuration after final grading and other factors such as street alignment, street runoff and nutrient-laden runoff from fertilized landscaped areas could flow into wetland areas in Natural Area #99 and may alter the water quality in the existing pond.

Mitigation. In order to further protect wetlands, mature trees, and other natural habitats within Natural Area #99, a development setback of 300 feet from important habitat areas is recommended (see Figure 7). This setback would be sufficient to protect water quality in the drainage and wildlife use of the area. A development setback of 300 feet is the general recommendation of the City of Fort Collins and the Colorado Division of Wildlife to protect important waterfowl habitat and is also sufficient to minimize disturbance to songbird nesting habitat and raptor perch sites. Proposed setbacks would also protect any potential habitat for Ute ladies-tresses' orchid and Preble's meadow jumping mouse. A setback of 300

feet is the current guideline used by the U.S. Fish and Wildlife Service for protecting known habitat areas of Preble's meadow jumping mouse.

The portion of the drainage north of the Loveland and Greeley Canal received a much lower habitat rating, and a 50-foot buffer is recommended to protect existing vegetation and wetlands in this area. It is recommended that no development occur within the 50-foot buffer but the creation of trails or picnic areas would be appropriate within or near this buffer zone.

It is recommended that there be no intrusion by trails or other recreational facilities within the red-lined zone (see Figure 7). A foot path or trail system around the perimeter of the red-lined zone but within the buffer zone would be appropriate. No other development should occur within the buffer zone, and this area should be planted and maintained to create and adjacent area of native upland habitat to maintain the integrity of the buffer zone and increase habitat diversity in the area.

Detailed preliminary design plans will be prepared to address each sensitive area, required buffers, mitigation measures, native plantings, and trail design as well as long-term maintenance and management of sensitive natural areas. These plans will be prepared prior to, or in conjunction with, the approval of a Preliminary Plat for any building lots or development features adjacent to or within 300 feet of identified sensitive areas. Specifications for native revegetation planting schedules, soil preparation, weed control, irrigation needs, etc. will also be provided at this time.

Since only commercial developments are proposed for the Eastern Portion, free-roaming cats and dogs should not be a significant problem to wildlife in Natural Area #99. However, lease laws should be strictly enforced along developed trail systems to minimize dog and cat/wildlife interactions.

No mitigation is proposed for the Loveland and Greeley Canal since this canal is not a suitable wildlife corridor and it provides minimal wildlife habitat.

RESUME OF REPORT PREPARER

CEDAR CREEK ASSOCIATES, INC.

T. MICHAEL PHELAN

EXPERIENCE ABSTRACT

Employed since 1974 as an environmental consultant. Responsibilities include service as corporate officer, project manager, permitting specialist, wildlife ecologist, vegetation survey technical assistant, and technical editor. Project management activities include client/agency liaison, project risk analyses, interdisciplinary coordination, subcontractor supervision, personnel management, cost control, and quality assurance.

Career accomplishments include authorship of, or technical contribution to:

45 EIS/EA Documents • **75** Wetland Delineations/Evaluations • **8** Mine Permit Reviews/Revisions • Permit Strategy Development/Preparation for Numerous Projects • **80** Wildlife Baseline or Monitoring Studies/Technical Sections • **50** Threatened and Endangered or "High Federal Interest" Wildlife Species Studies • Over **100** Wildlife Surveys Emphasizing Big Game, Raptors, Waterfowl, or Upland Game Birds • **32** Wildlife Impact Assessments • **27** Wildlife Mitigation/Habitat Management Plans • **7** Biological Assessments • **10** Vegetation Surveys • **3** Published Wildlife Manuals, **2** for the USFWS and **1** for the Office of Technology Assessment, U.S. Congress

Types of projects have included:

Hard Rock Mines • Coal Mines • Wetland Delineations/Enhancement • Corridor Analyses • Water Developments • Oil, Gas, and Synfuels Projects • Abandoned Mines • Power and other Industrial Plants • Timber Harvest • Housing Developments

Involved in over **200** projects including work in:

Rocky Mountains • Desert Southwest • Pacific Northwest • Intermountain Region • Northern Great Plains • Appalachia • Alaska • California • Missouri • Kansas • Oklahoma • Texas

EDUCATION AND CERTIFICATIONS

B. A., Zoology, University of California, Los Angeles, 1971
Post-graduate Studies, Biology and Ecology, San Diego State University, 1972-1974
Certified Wildlife Biologist - The Wildlife Society
Certified in Habitat Evaluation Procedures (HEP) - U.S. Fish and Wildlife Service
Certified in Black-footed Ferret, Southwestern Willow Flycatcher, and Preble's Meadow Jumping Mouse Survey Techniques - U.S. Fish and Wildlife Service
Desert Tortoise Survey and Examination Techniques

EMPLOYMENT HISTORY

Cedar Creek Associates, Inc. - 1982 to Present
Environmental Research and Technology, Inc. - 1976 to 1982 (presently ENSR Corporation)
Self-employed Environmental Consultant - 1974 to 1976

REPRESENTATIVE CLIENTS

Atlantic Richfield Co. (CO) • Atlas Minerals, Inc. (OR) • BHP-Utah International Inc. (UT) • Carlota Copper Co. (AZ) • Chevron Shale Oil Co. (CO) • Cities of Boulder, Fort Collins, and Loveland (CO) • Diamond Shamrock Corp. (AK) • Energy Fuels Co. (CO, SD) • Exxon Minerals Co. (NM) • FMC Corp. (NV, WY, MT) • Freeport Gold Co. (NV) • Getty Mining Co./Twentymile Coal Co. (CO) • Getty Oil Co. (CO) • Homestake Mining Co. (NV) • Kensington Venture (AK) • Koppers Co. (TN) • LAC Minerals, Inc. (NV) • L. Berger/Federal Bureau of Prisons (CO) • Meridian Minerals Co. (SD, CA, ID) • Montana DEQ (MT) • Newmont Gold Co. (OR, NV) • North American Coal Co. (ND) • Northern Border Pipeline (IA) • Office of Technology Assessment, U.S. Congress (Western U. S.) • Peabody Coal Co. (AZ, CO, WY) • Rocky Mountain Energy Co. (WY) • Simons, Li & Associates, Inc. (CO, UT, WA, Africa) • TerraMatrix Inc./ACZ (CO, NV, UT, WA) • U.S. Bureau of Land Management (MT, NV, UT) • U. S. Fish and Wildlife Service (Western U.S., WVA) • U.S.Forest Service (AK, CO, ID, MT, NV, WA) • U.S. Sprint (CA, OR, WA) • Utah Division of Oil, Gas and Mining (UT) • Western Area Power Administration (CO, NE)

EXPERIENCE SPECIFICS

Mr. Phelan's education and several years of environmental and regulatory compliance experience has facilitated his development of specialized multi-disciplinary skills for projects in mining (coal, hard rock, and synfuels), industrial and urban developments, corridor assessments, wetland evaluation and restoration, and water developments. Areas of expertise include permitting and project management, wildlife ecology, wildlife impact assessment and mitigation planning, habitat evaluation and enhancement, range ecology, bond determination, report/permit document preparation, literature review, and technical editing.

PERMITTING AND PROJECT MANAGEMENT. Mr. Phelan has been actively involved in all phases of permit development. Permitting and management responsibilities have included personnel scheduling and management, strategy formulation, client/agency liaison, regulatory compliance evaluation, subcontractor supervision, cost control, quality assurance, and technical document editing for a variety of projects, including development of, or input to, mine permit applications and NEPA compliance documents (EAs and EISs). In addition, Mr. Phelan has successfully reviewed, edited, and revised sections of mine permit applications to achieve compliance for applications previously submitted by other firms and deemed inadequate by the regulatory agency. Mr. Phelan's permitting experience and related interactions with regulatory agencies for development projects and associated permit submittals have provided him with a working understanding of the policies and regulations of state and federal agencies such as the BLM, COE, OSMRE, WDEQ, CMLRD, UDOGM, USFS, USFWS and NRC, among others. Mr. Phelan's project management experience has been gained on projects ranging from single discipline to large interdisciplinary studies for mining and other development projects.

WILDLIFE ECOLOGY. Mr. Phelan has completed wildlife studies for a wide range of projects including: hard rock mines, surface and underground coal mines, synfuel developments, wetland assessments and restoration, corridor analyses, water developments, abandoned mines, and municipal disturbances. Technical capabilities include: baseline inventories; habitat assessment and restoration; wetland delineation; evaluation of threatened and endangered species populations; wildlife impact assessment and mitigation planning; literature review, and authorship of wildlife technical manuals. Wildlife mitigation plans prepared by Mr. Phelan have emphasized restoration and mitigation for wildlife habitats in desert, rangeland, shrubland, woodland, subalpine, and wetland ecosystems. Specific areas of concern addressed by these plans have included raptor nesting habitat, upland game bird and waterfowl breeding and nesting areas, big game winter range, and critical habitat for threatened and endangered species as well as species of "High Federal Interest." Beyond the capabilities listed above, Mr. Phelan's technical skills include the design and implementation of: big game aerial surveys, big game browse utilization transects, aerial and ground surveys for raptor nests, daytime and night spotlight surveys for black-footed ferrets, other predator inventories, small and medium-sized mammal trapping, avian strip transects, surveys for migratory birds of "High Federal Interest," upland game bird breeding and nesting surveys, waterfowl counts and nesting surveys, wetland mapping and habitat evaluation, herpetofauna surveys, aquatic sampling studies, and tissue sample collection for trace element analysis. In addition, Mr. Phelan has reviewed and analyzed mitigation options for waterfowl mortality on toxic mine tailings ponds.

RANGE ECOLOGY. Technical capabilities in this field include photo interpretation/community mapping and field measurement of plant density, ground cover, plant composition, and current annual production. Mr. Phelan has participated in the design and establishment of revegetation test plots constructed to determine the effects that season of seeding, slope, species selection, and seedbed material characteristics would have on revegetation success. He also has been involved in soil sampling projects to assess soil characteristics and nutrient levels.

PUBLICATIONS

Phelan, T. M., S. R. Viert, and S. G. Long. 1986. Wildlife technologies for western surface coal mining. Office of Technology Assessment, U. S. Congress, Washington, D. C. 183 pp.+ appendices.

Phelan, T. M. and S. R. Viert. 1986. Prairie dog and black-footed ferret surveys in northeast and east-central Utah. Cedar Creek Associates, Inc., Fort Collins, Colorado. Report prepared for the Bureau of Land Mangement, Salt Lake City, Utah. 31 pp. + appendices.

Contributing Author to:

Moore, R., and T. Mills. 1977. An environmental guide to western surface mining, part two: impacts, mitigation, and monitoring. Western Energy and Land Use Team, U. S. Fish and Wildlife Service Publication FWS/OBS - 78/04. Misc. pagings.

Mountain West Research, Inc. 1979. Fact book for western coal/energy development. Missouri River Basin Commission, Resource and Land Investigations program (RALI). Misc. pagings.

Ecological Resource Consultants, Inc.
4920 Tesla Court~Boulder, Colorado~80301~720.564.0788

Centerra East Property
CITY OF LOVELAND
NATURAL AREA 99 ANALYSIS

Larimer County, Colorado

July 18, 2003

Revised November 20, 2003

INTRODUCTION

Ecological Resource Consultants, Inc. (ERC) conducted a site specific analysis of the City of Loveland mapped Natural Area 99 and associated buffer zone area on the Property known as Centerra East (Property). The Property is located east of Interstate 25 in the east half of Section 10 and the southwest quarter of Section 11, Township 5 North, Range 68 West, Larimer County, Colorado (Latitude 40° 24' 30" N, Longitude 104° 59' 00" W). The Property is on the northeast corner of the I-25 and Highway 34 intersection. A Site Location Map is included as Figure 1. The Natural Area analysis was conducted as part of the master plan development proposed for the Property to document existing conditions and provide recommendations for Natural Area buffer zones to adequately protect the Natural Area from further degradation. The Property is owned by McWhinney Enterprises (2725 Rocky Mountain Ave., Suite 200, Loveland, CO, 80538 (970.962.9990)).

GENERAL SITE CONDITIONS

The Property has an average elevation of approximately 4,950 feet above mean sea level (amsl). The Property is comprised of fairly level farmland with the exception of a natural intermittent drainage, a fragmented tributary to the Big Thompson River, crossing the Property from the northeast to the southwest Property corner. A majority of the Property is cultivated land with two large, active irrigation ditches that convey water flowing southeast: the Farmers Ditch and the Loveland and Greeley Canal. The Union Pacific Railroad is located north of the Natural Area. The Property is bounded by commercial development and the I-25 frontage road to the west, agricultural land to the north and east, and Highway 34 to the south. According to the USGS water feature description, the natural drainage is characterized as an intermittent drainage, the pond as a perennial pond, and the irrigation channels by name. The weather during the investigation was warm and sunny, soils were thawed and vegetation growth was in the early blooming stages.

City of Loveland Natural Area 99

Natural Area 99 has been identified on the Centerra East Property by the City of Loveland study In The Nature of Things (1993) (refer to Figure 2 and Figure 3). The study defines a *Natural Area* as undeveloped lands containing potential natural values such as wildlife habitat, plant diversity and wetlands. Natural Area 99 is ranked as having an overall habitat Rating of 7 (refer to **Figure 2** and **Table 1**).

Habitat Types Classification present on the Centerra East Property per In the Nature of Things includes the Wetland (Cattail Marsh, Sedge/Rush), Aquatic (Modified Drainage, Open Water), Grassland (Grass/Forb), Shrubland (Plains Shrubland), Forest (Cottonwood Grove, Scattered Deciduous Trees), Agricultural (Cropland, Irrigation Ditch) and Miscellaneous Types (Weedy/Disturbed).

The following is a summary of natural attributes and numerical rating for Natural Area 99 as presented in In the Nature of Things. ERC concurs with the following ratings per site specific analysis.

Table 1. Numerical Rating for Natural Area 99

Natural Attribute	Numerical Rating*
Overall Habitat Rating	7
Wetland Rating	7
Animal Diversity	6
Plant Diversity	7
Songbird Rating	7
Raptor Rating	5
Waterbird Rating	6
Mammal Rating	6
Reptile. Amphib. Rating	7
Enhancement Potential	medium

*Numerical rating system based on a scale of 1 (low) to 10 (high).

NATURAL AREA 99 SITE SPECIFIC ANALYSIS

ERC performed a site specific analysis and delineation of Natural Area 99 on the Property July 2, 2003 (refer to Buffer Zone Map). Previously more generalized analyses of Natural Area 99 have been conducted and documented in the City of Loveland's In The Nature of Things (1993) and in the Millennium General Development Plan (GDP), Environmentally Sensitive Areas and Wetland Report prepared by Cedar Creek Associates, Inc. (1999).

Natural Area 99 was delineated roughly following the main drainage way from the railroad crossing extending south approximately 3,3300 linear feet south to the intersection with Highway 34. Natural Area 99 was delineated covering an area of 24.12 acres, which is comprised of 12.04 acres of wetland habitat (includes 2.91 acres of open water), 4.08 acres of upland riparian habitat, 6.04 acres of meadow, 0.51 acre of upland shrub habitat and 1.45 of miscellaneous access roads and irrigation canals. A Natural Area boundary was delineated based on a transition from naturalized native vegetation to significantly disturbed, cultivated land.

Natural Area 99 is entirely surrounded bordered by agricultural lands and Ditch maintenance roads. The agricultural land use (refer to **Figure 3**) is primarily irrigated farming (**Photo 9** and **Photo 12**), dryland farming (**Photo 8** and **Photo 10**), grazing, the Loveland and Greeley Canal (**Photo 7**), and the Farmers Ditch (**Photo 4**). The Natural Area 99 habitat has been fragmented by irrigation channels, ditch maintenance road crossings, intrusion by agricultural practices as well as surrounding roadways and development. Currently, the majority of the hydrology in the area drains towards the natural drainage with limited treatment.

Wetland Habitat

ERC completed a jurisdictional delineation on May 27, 2003. The jurisdictional delineation was conducted following the methodology enumerated in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987). The jurisdictional delineation has been verified by the US Army Corps of Engineers (July 11, 2003).

The jurisdictional wetland habitat includes open water, a modified natural intermittent drainage (tributary to the Big Thompson River), cattail marsh, rush/sedge dominated areas and weedy/disturbed areas (refer to **Appendix B**).

The Farmers Ditch and the Loveland and Greeley Canal appear to have a significant affect on the local groundwater hydrology and therefore have a significant influence on the wetland hydrology within the project limits. The irrigation canals convey a significant quantity of water along the upslope side of the low-lying wetlands associated with the natural drainage way identified on site. The extent to which sustaining wetland hydrology is from irrigation water, natural groundwater or irrigation recharge is unclear at this point and would require further groundwater hydrology analysis.

The wetland habitat identified onsite delineates wetland habitat associated with the natural drainage (**Photo 1**), including a small pond (**Photo 2**), and associated with the surrounding irrigation ditches. The wetland habitat along the drainage banks is comprised of rush/sedge dominated areas and weedy/disturbed areas along the wetland periphery. Weed species found within the wetland boundary include houndstongue (*Cynoglossum officinale*), common teasel (*Dipsacus sylvestris*), Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), and Russian olive trees (*Elaeagnus angustifolia*). Dominant vegetation of the wetland habitat onsite is canary reed grass (*Phalaris arundinacea*), broad-leaf cattail (*Typha latifolia*), Baltic rush (*Juncus balticus*), water sedge (*Carex aquatilus*), clustered field sedge (*Carex praegracilis*), peach-leaf willow (*Salix amygdaloides*), plains cottonwood (*Populus deltoides*), common teasel, houndstongue, false Solomon's seal (*Smilacina stellata*), Nebraska sedge (*Carex nebrascensis*), and curly dock (*Rumex crispus*). The wetland area south of Farmers Ditch consists of the natural drainage and wetlands associated with the drainage and Farmers Ditch. A narrow, defined stream of flowing surface water approximately six inches deep meanders through the channel bottom, which is confined by relatively steep vegetated banks (**Photo 1**). The drainage channel is densely vegetated by a monotypic cattail stand throughout the channel bottom. The stream drains under Highway 34 into a small pipe culvert located at the south terminus of the wetland. North of the Farmers Ditch is a small, man-made pond encompassed by a narrow cattail fringe that continues north along and within the drainage channel, creating a dense, monotypic cattail stand with minimal surface water toward the north terminus of the open water (**Photo 2**). A small, inactive pumphouse that is partially collapsed remains on the southeast edge of the pond. The dense cattail marsh continues north, confined by the channel banks and terminates at the Loveland and Greeley Canal Ditch maintenance road (**Photo 3**). North of the Loveland and Greeley Canal is the north terminus of the wetland habitat, where the natural drainage is not defined by steep banks and surface water is not evident. A dense cluster of large, mature peach-leaf willow and plains cottonwood trees dominate the wetland and continue to dominate the Natural Area a short distance north toward the railroad (**Photo 5**). Sustaining hydrology of this wetland appears to be from a naturally high groundwater table as well as a potential influence from the irrigation ditches.

Wetland habitat within Natural Area 99 provides local and migratory wildlife with foraging, nesting, and roosting habitat. The open water within the wetland habitat is used by various species of waterfowl for feeding, resting and breeding. The dense vegetation of the wetland habitat anchors the soils, preventing soil erosion and filters impurities from percolating water, improving water quality.

Upland Riparian Habitat

The upland habitat onsite is composed of cottonwood groves, scattered deciduous trees, plains shrubland, grass/forb habitat, cropland, irrigation ditches and weedy/disturbed areas. The upland habitat is suffering from the encroachment of aggressive weedy plant species.

Large, mature trees of various species are located along the natural drainage throughout the study area. These trees are typical riparian remnants from the fragmented tributary to the Big

Thompson River, and non-native volunteer species, which have established or are landscape trees planted by the previous landowners. The Natural Area sections south of the Farmers Ditch and north of the Loveland and Greeley Canal contain stands of mature deciduous trees along the east and west banks of the natural drainage. The Natural Area north of Farmers Ditch and south of the Loveland and Greeley Canal contains scattered mature deciduous trees. The mature trees species identified include plains cottonwoods and peach-leaf willow trees. Some of the trees have become quite large, up to 75+ feet in height and three feet in diameter and provide quality localized habitat for wildlife.

The upland riparian habitat is found in low-lying areas (relative to the road and agricultural lands) bordering the wetland habitat usually densely vegetated and diverse in vegetative structure (**Photo 1** and **Photo 3**). Typical upland riparian habitat within Natural Area 99 consists of large, mature plains cottonwood and peach-leaf willows with a dense shrub or grass/forb understory. The shrub understory is dominated by dense chokecherry (*Prunus virginiana*) stands, Wood's rose (*Rosa woodsii*) and snowberry (*Symphoricarpos albus*). The grass/forb understory is dominated by smooth brome (*Bromus inermis*), creeping bentgrass (*Agrostis stolonifera*), clustered field sedge, false Solomon's seal, Canada thistle, and poison ivy (*Toxicodendron rydbergii*). The grass/forb understories are being encroached upon by various weedy species that include common teasel, yellow sweet clover (*Melilotus officinalis*), musk thistle, Canada thistle, leafy spurge (*Euphorbia esula*), and houndstongue.

Although the surrounding agricultural land was not delineated as part of Natural Area 99, agricultural land is not insignificant habitat. Open fields, including agricultural crops, provide ideal hunting habitat for raptors, owls and foraging habitat for small mammals (Bird Atlas, 1998).

The mature trees and dense groundcover throughout the riparian area provide cover, foraging, nesting and roosting habitat for wildlife. The soils are stabilized by the extensive root systems of the large trees and dense understory of shrubs and graminoids. The vegetative cover and anchoring root systems prevent soil erosion, sedimentation within the drainage and increase filtration of water impurities.

Plains Shrubland

Plains shrubland habitat exists in small patches on high points along the northeast and southwest banks of the natural drainage. The shrubland located on the northeast bank is dominated by rabbit brush (*Chrysothamnus nauseosus*) and scarlet falsemallow (*Sphaeralcea coccinea*) (**Photo 3**). This area is sparsely vegetated and adjacent to dryland crops. The shrubland located in the southwest portion of the Natural Area is dominated by Wood's rose and snowberry. This area is densely vegetated by the shrubs and graminoids such as creeping bentgrass, smooth brome, and wild licorice (*Glycyrhizza lepidota*). A meadow containing a mixture of wetland and upland plant species surrounds the shrubland with the exception of the Ditch maintenance road along the north. The surrounding mesic meadow vegetated by dominant species such as creeping bent grass, clustered field sedge and false Solomon's seal.

The shrubland habitats provide cover and foraging habitat for wildlife. The densely vegetated shrubland located along the southwest bank of the drainage anchors the soils, preventing sedimentation and erosion. The shrubland located along the east bank of the drainage provides soil stabilization with the deep taproot of the rabbitbrush.

Meadow

The meadow habitat within Natural Area 99 includes upland grassland and grass/forb habitat (**Photo 1 and Photo 4**). The grassland is dominated by smooth brome, crested wheatgrass

(*Agropyron cristatum*), orchard grass (*Dactylis glomerata*), wild licorice, stinging nettle (*Urtica dioica*), hare barley (*Hordeum leporinum*) and wild lettuce (*Lactuca serriola*). Small meadow areas influenced by irrigation in the upland habitat of Natural Area 99 are dominated by clustered field sedge, curly dock, showy milkweed (*Asclepias speciosa*), smooth scouring rush (*Equisetum laevigatum*) and Baltic rush accompanied by various upland grasses previously listed. The meadow habitat is invaded by weedy plant species throughout the Natural Area, especially along the roads and agricultural interface (**Photos 8-11**). Weedy species within the meadow habitat include yellow sweetclover, common teasel, houndstongue, saltcedar (*Tamarix ramosissima*), Canada thistle, musk thistle and downy brome (*Bromus tectorum*).

Meadow habitat serves as nesting, cover and foraging habitat for wildlife. Meadow habitat is ideal habitat for foraging because of the high production of graminoid seeds. The soils are stabilized by the dense vegetation, preventing erosion, and sedimentation. Meadow habitat also has high filtering capabilities of runoff.

Noxious Weeds

Noxious Weed is a legally defined term by the State of Colorado that refers to specific plant species which have been designated for mandatory control by branches of local, state or federal government due to the harm, actual or potential, that the species is capable of inflicting upon the resources and values of society (State of Colorado, Dec. 2001). The following list of species have been identified within Natural Area 99 that are on the State Noxious Weed list:

- Downy Brome (*Bromus tectorum*)
- Flixweed (*Descurainia sophia*)
- Common Mullein (*Verbascum thapsus*)
- Common Teasel (*Dipsacus fullonum*)
- Houndstongue (*Cynoglossum officinale*)
- Kochia (*Kochia scoparia*)
- Saltcedar (*Tamarix ramosissima*)
- Russian Olive (*Elaeagnus angustifolia*)

The following species found within Natural Area 99 have been identified in the Colorado Noxious Weed Act (1996 Supp.) as species in the top ten prioritized weed species for the State of Colorado:

- Canada Thistle (*Cirsium avervense*)
- Hoary cress (*Cardaria draba*)
- Leafy Spurge (*Euphorbia esula*)
- Musk Thistle (*Carduus nutans*)

Wildlife

Wildlife can utilize the general landscape in a multitude of ways. Wildlife can use specific habitats as areas of permanent inhabitance, seasonal inhabitance, migratory routes, breeding, and foraging. Natural Area 99 forms a relatively isolated refuge for a variety of wildlife. The natural area is fragmented to the north by the railroad, to the south by Highway 34 limiting wildlife movement through the area. Interstate 25 limits wildlife movement in the west to east direction. Wildlife movement from the east is generally open but is limited from large expanses of open agricultural fields and the crossing of wide irrigation canals.

During the site visits on May 26, 2003 and July 2, 2003, various wildlife species were observed using the habitat on the Property. A majority of the species were avian species that consisted of the white pelican, blue heron, double-breasted cormorant, mallard, kill deer, red wing blackbird, barn swallow, western tanager, red-tail hawk and great-horned owl. Although one pair of great-horned owls were observed within the Natural Area during the site visit, nests were not found. Snakes, frogs, cottontail, and coyote were also observed onsite. Most likely, various additional species of birds, reptiles, amphibians and small mammals common to the Loveland area inhabit and utilize Natural Area 99.

The riparian corridor of the natural drainage, including the man-made pond is regularly used by avian species and home to local reptiles and amphibians. The shrubs and trees within the riparian area are used by songbirds for nesting and by raptors for roosting and hunting the nearby agricultural fields and meadow habitat. Waterfowl use the pond area for foraging and possibly nesting. The pond area and wetland area are inhabited by various species of reptiles and amphibians. The reptiles and amphibians require surface water and wetland habitat for reproduction and shelter.

Natural Area 99 contains habitats conducive to avian, amphibian and reptilian species. The surface water and dense wetland habitat cover are ideal for amphibians and reptiles. The fragmented habitat limits the mammalian use of the area to primarily small mammals. Avian species use the Natural Area most frequently due to the ease of avian migration although the habitat is fragmented. The large trees, open water and wetland habitat are good quality nesting, roosting and foraging habitats for avian species.

THREATENED, ENDANGERED AND SPECIES OF CONCERN (TES) SCREENING

ERC conducted a site specific Threatened, Endangered and Species of Concern (TES) Screening for the Property. Field investigations conducted on May 28, 29 and July 2 examined specific site characteristics which may support TES or provide potential habitat for TES. In addition, existing literature and databases were reviewed to determine the presence of identified species of concern and species listed as threatened or endangered under the Endangered Species Act of 1973, as amended (ESA).

A sensitive species and habitat assessment of the Property area was conducted and reported to ERC by the Colorado Natural Heritage Program (CNHP). The CNHP database classifies Boyd Lake as a General Biodiversity Interest. No TES species or CNHP Potential Conservation Areas were documented on the Centerra East Property, however, the whooping crane and Preble's meadow jumping mouse have been documented in the local region (refer to **Appendix C**).

The following species have been identified as potential inhabitants of the Property based on general habitat requirements and US Fish and Wildlife Service Ecological Services Colorado Field Office charts (effective May 20, 2003), *Federally Listed and Candidate Species and Their Status in Colorado*, Larimer County:

- Bald Eagle (*Haliaeetus leucocephalus)*- Listed Threatened
- Black-footed ferret (*Mustela nigripes*)-Listed Endangered
- Black-tailed prairie dog (*Cynomys ludovicianus*)-Candidate for Listing
- Colorado butterfly plant (*Guara neomexicana* ssp. *coloradensis*)-Listed Threatened
- Eskimo curlew (*Numenius borealis*)-Listed Endangered
- Mountain plover (*Charadrius montanus*)-Proposed Threatened

- Preble's meadow jumping mouse (*Zapus hudsonius preblei*)-Listed Threatened
- Ute ladies'-tresses (*Spiranthes diluvialis*)-Listed Threatened
- Whooping crane (*Grus americana*)-Listed Endangered

Bald eagle

The bald eagle is listed as federally threatened under the ESA. Bald eagles are usually winter residents of Colorado. These raptors are commonly found in lower elevation grasslands and semi-deserts near prairie dog towns and open water (i.e. rivers, reservoirs). Neither Bald eagle nests nor individuals were observed within or near the study area boundaries during the investigation, therefore, any change of use on the Property would not adversely affect the continued existence or available habitat of this species.

Black-footed ferret

The black-footed ferret is listed as federally endangered under the ESA. The ferret is dependent on black-tailed prairie dog colonies for food, shelter and rearing young. According to the *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (US Fish and Wildlife Service, 1989), black-footed ferrets require over 80 acres of active black-tailed prairie dog towns or complex for a sustainable population. A prairie dog town or complex of this size does not exist on the Property or in surrounding areas. Neither black-footed ferrets nor their specific habitat was observed on or surrounding the study area, therefore any change in use of Property would not adversely affect the continued existence or available habitat of this species.

Black-tailed prairie dog

The black-tailed prairie dog is currently a candidate species for listing under the ESA. Prairie dogs have become an important political, social, economic, and ecological issue in the Front Range region of Colorado. Nationally, less than 2 percent of pre-settlement prairie dog populations exist today, due to a combination of habitat loss and targeted extermination. The US Fish and Wildlife Service has determined that adding the black-tailed prairie dog to the federal list of threatened or endangered species is "warranted but precluded" at this time due to administrative and fiscal limitation within the agency (City of Broomfield, 2001). Short-grass species commonly eaten by prairie dogs include buffalo grass and blue grama. Prairie dogs play an important role in the overall ecosystem, not only creating an unique ecosystem for their species, but they also create habitat and are a food source for a number of other federally and state-listed threatened or endangered species. No prairie dog colonies exist onsite; therefore any change in use of Property would not adversely affect the continued existence or available habitat of this species.

Colorado butterfly plant

The Colorado butterfly plant is listed as federally threatened under the ESA. This plant species is a short-lived, perennial herb endemic to moist soils in mesic or wet meadows of floodplain areas in southeastern Wyoming, north central Colorado, and extreme western Nebraska, between elevations of 5,800 feet and 6,000 feet (Spackman et. al., 1997). This early to mid-seral stage species occurs primarily in habitats created and maintained by streams active within their floodplains, with vegetation that is relatively open and not overly dense or overgrown. The disturbance of riparian areas that contain native grasses by agricultural conversion, water diversions, channelization, and urban development threaten the species existence (Federal Register, 2000). The floodplain vegetation within the Property boundary is atypical of the butterfly plant habitat. The average elevation of the site is 4,950 amsl, which is uncharacteristic of typical habitats. The drainage bottom does not contain subirrigated meadows due to the minimal surface flows and the steep banks confining the drainage. The Property's hydrology sources include irrigation channels, which are a primary threat to the butterfly plant. Any change in use

on the Property would not adversely affect the continued existence or available habitat of this species

Eskimo curlew

The Eskimo curlew is listed as federally endangered under the ESA. This avian species is nearly extinct due to over hunting while winter and migratory stopover habitat has been degraded by agricultural and commercial development. Historic migration patterns suggest a spring route through central plains with stopovers in tallgrass prairies and less frequently in mixed-grass prairies. The stopover habitats are not present onsite or in surrounding properties and the curlew is not known to use the site for a migration corridor (Bird Atlas, 1998). Any change in use on the Property would not adversely affect the continued existence or available habitat of this species.

Mountain plover

The mountain plover is proposed to be listed under the ESA. This plover species is approximately nine inches in length, exhibits an unbanded neck, light brown dorsal area accompanied by white underparts. Potential habitat for plovers consists of sparsely vegetated or barren level terrain, prickly pear cactus pads and prairie dog colonies. The Property does not contain habitat conducive to plovers, therefore any change in use on the Property would not adversely affect the continued existence or available habitat of this species.

Preble's meadow jumping mouse

The Preble's meadow jumping mouse (PMJM) is listed as a federally threatened species under the ESA. The mouse's range extends from southwestern Wyoming through eastern Colorado generally below 7,600 feet. Armstrong et.al. (1997) described typical mouse habitats as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." Also noted was a preference for "dense herbaceous vegetation consisting of a variety of grasses forbes and thick shrubs" (Fish and Wildlife, Service 1999). The CNHP database search resulted in one observation of the PMJM in 1895 (Report Generated: June 24, 2003). The location is not Section-specific due the time period and the credibility of the observer is unknown. The US Fish and Wildlife Service (USFWS) PMJM database lists two trapping efforts proximate to the Property with negative results. Farmer's Ditch at County Road 17 was trapped in 2001 with no evidence of PMJM populations and the Big Thompson, west of I-25 concluded with negative results. Preble's meadow jumping mouse habitat does not exist on the Property. The natural channel on the Property does not have the typical characteristics of PMJM habitat and no PMJM populations are known to exist on nearby potential habitat, therefore, any change in use on the Property would not adversely affect the continued existence or available habitat of this species

Ute ladies'-tresses

The Ute ladies-tresses orchid (Orchid) is listed as federally threatened under the ESA. The Orchid occurs in seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated floodplains below 6,500 feet elevation in certain areas in Utah, Colorado, Idaho, Wyoming, and Nevada. Typical sites include old stream channels and alluvial terraces, subirrigated meadow and other sites where the soil is saturated to within 18" of the surface at least temporarily during the spring or summer growing seasons. Sites that do not require an Orchid survey included highly disturbed or modified sites such as highway rights-of-way, upland sites including prairie dog towns, shortgrass prairie and sagebrush rangeland, sites entirely inundated by standing water including monocultures of cattails or Olney's three-square. The subject Property contains a network of irrigation ditches, lacks alluvial soils, subirrigated meadows, and is dominated by monocultures of cattails where the channel is not inundated by

surface water. This site is uncharacteristic Orchid habitat. Any change in use on the Property would not adversely affect the continued existence or available habitat of this species

Whooping crane

The whooping crane is listed as a federally endangered species under the ESA. The adult crane is a relatively large white bird approximately 50 to 56 inches tall with a wingspan of 87 to 90 inches with an average weight of 15 pounds. The bird is distinguished by its outstretched neck in flight. Cranes typically live in mudflats around reservoirs and in agricultural areas, while wintering they live on salt flats that are dominated by coastal salt grass. Their nesting grounds are wetland communities dominated by bulrush. In Colorado the crane occurs only as migrants, stopping over in the San Luis Valley for four to six weeks during February and March and in the western valleys, especially Mesa, Delta and Gunnison Counties (CDOW). The CNHP database search lists a whooping crane observation in 1982 in Section 16, southwest of the Property, most likely on the Big Thompson River, 1.5 miles southwest of the site. The Centerra East Property does not contain wetland habitat dominated by bulrush, mudflats or a perennial, natural drainage. Due to atypical habitat and no evidence of whooping crane use onsite any change in use on the Property would not adversely affect the continued existence or available habitat of this species.

- No significant wildlife habitat of concern was identified on the Property, nor was the presence of threatened/endangered species or potential habitat.

EXISTING BUFFER ZONE CONDITIONS

ERC evaluated the general quality and functional value of the originally recommended 300 foot buffer zone surrounding Natural Area 99. Generally the existing buffer zone is highly disturbed by irrigation easements as well as active farming and lacks vegetative structural diversity.

The irrigation ditches and associated roads are adjacent to most of the Natural Area's periphery. The roads are vegetated along the sides and through the center. The irrigation ditches both typically have vegetated banks. These vegetated areas consist of a mixture of native and weedy species including: reed canary grass, crested wheat grass, smooth brome, stinging nettle, wild lettuce, western wheat grass (*Pascopyrum smithii*), orchard grass, hare barley, showy milkweed, clustered field sedge, curly dock, common teasel, yellow sweetclover, downy brome, musk thistle, yellow toadflax, saltcedar, common dandelion (*Taraxacum officinale*) and Canada thistle. The Farmers Ditch is approximately ten feet wide, runs north along the southwestern Natural Area 99 boundary, then bisects Natural Area 99 and continues south along the southeastern boundary (refer to Figure 1). The Loveland and Greeley Canal (Canal) is a large irrigation canal, approximately twenty feet wide. The Canal flows from the west, bisects the north portion of Natural Area 99, continues south along the southwestern boundary, then west into the agricultural land (refer to Figure 1). Both irrigation channels have vegetated banks dominated by upland, wetland and weed plant species. The Loveland and Greeley Canal banks are eroded and less vegetated than the Farmers Ditch (**Photos 4-6**). Two Ditch maintenance roads follow the south bank of each irrigation channel, often defining the Natural Area 99 boundary (refer to Sheet 1). The agricultural lands within the buffer zone limits consist of alfalfa fields west of Natural Area 99 and dryland farming to the east.

Wildlife habitat, water quality and soil stability of the Natural Area are compromised by the degraded condition of the buffer zone. Weedy plant species dominating the buffer zone do not provide a nutritious food source or ideal cover for local wildlife species. Limited wildlife species, such as raptors, small mammals and snakes, currently use the buffer zone for hunting and possibly for a travel corridor. The sparse vegetation along the buffer zone provides little soil

stabilization during heavy rain events and run-off. Soil erosion along the periphery of Natural Area 99 could cause degraded habitat quality due to deterioration of current vegetated slopes. The buffer zone could contribute to poor water quality through sedimentation and lack of filtration due to inadequate vegetation. The sediment deposition into Natural Area 99 from erosion of the buffer zone further degrades the quality of habitat within the Natural Area. Currently, the buffer zone lacks shrubs, trees and dense, native vegetation that is characteristic of higher quality wildlife habitat and stable soils.

NATURAL AREA DISTURBANCES ASSOCIATED WITH DEVELOPMENT

Commercial development is proposed for the western portion of the site between Interstate 25 and the eastern side of Natural Area 99 and bordering the east side. An access road is also proposed to cross the natural area. The proposed preliminary development includes commercial buildings, parking lots, associated Ditch maintenance roads and general infrastructure improvements. Disturbance to natural areas typically associated with this type of development includes water quality degradation, alteration in vegetation species composition, light/noise disturbances wildlife, habitat fragmentation/degradation and general pollution.

Site development often results in a significant increase in concentration and volume of runoff produced from an increase of impervious surfaces such as roofs, roads and parking lots. Pollutant loads from a developed site can often have a negative effect on local water systems by increasing water temperatures, depleting dissolved oxygen, creating unbalanced water chemistry and increasing sediment loads, hydrocarbons and heavy metals. Light from streetlights, parking lot lights, headlights and other lights linked to commercial development cause visual disturbance to the wildlife inhabiting or using the neighboring Natural Area. Human activity and noise such as automobiles, trucks, voices, littering, pets, visual stimuli (i.e. movement, bright clothes, etc.) and wandering into the Natural Area also degrades the quality of the natural area habitat. Earth disturbance associated with site grading can often create optimal conditions for invasive/noxious weed establishment. During grading operations and soil disturbance local weed sources can typical establish an area rapidly. Once established these weed communities can migrate into Natural Areas, out competing native vegetation and possibly altering the composition of the native plant community.

BUFFER ZONE RECOMMENDATIONS

The City of Loveland Development Code requires the establishment of buffer zones surrounding natural habitat areas and special features for all development located within 500 feet of such features. Buffer zone requirements of the Code that apply to the study area include a recommended 180-300 foot buffer zone associated with *Wetlands with a rating of 6 or higher for water birds, wetland or overall habitat* which have been identified in Natural Area 99 located on the Property. The Millennium General Development Plan (GDP), Environmentally Sensitive Areas and Wetland Report (Cedar Creek Associates, Inc., January 1999) summarizes the existing condition and general value of Natural Area 99 as well as recommends a general 300-foot general buffer zone to protect Natural Area 99. The US Fish and Wildlife Service, Colorado Division of Wildlife and US Army Corps of Engineers do not require nor regulate a buffer zone for Natural Areas, wetlands or habitat of those species not listed as TES.

Natural Area 99 is a remnant tributary of the Big Thompson River that has been fragmented by development and degraded by agriculture. The Natural Area is utilized by primarily by avian species and small mammals typically adapted to urban areas. No TES species inhabit Natural Area 99 nor does potential habitat for any TES species exist within the Property boundaries. No

raptor nests or sensitive breeding sites were found within Natural Area 99. The fragmentation and surrounding development are currently limiting the overall functional value of Natural Area 99. The open water, fringe wetlands and mature cottonwood gallery onsite does provide relatively higher quality habitat for wildlife.

Buffer zones are intended to preserve or enhance the ecological character or function and wildlife use of the natural or special features and to minimize or adequately mitigate the foreseeable impacts of development. The establishment of an arbitrary 300 foot buffer zone along the Natural Area 99 boundary will not necessarily adequately protect the resources of the natural area. The existing buffer zone is of relatively low quality due to sparse native ground cover, active farming practice, irrigation canals, presence of weeds and lack of vegetative structural diversity. The functional effectiveness of the existing buffer zone is significantly limited in its capability to protect the Natural Area regardless of width.

The preliminary development plan proposes a 75 foot buffer zone between the edge of development and the edge of the Natural Area. In order to mitigate against any potential adverse environmental impacts to the Natural Area resulting from a reduced buffer zone, site specific buffer zone restoration measures could be implemented which would adequately protect the resources of the Natural Area. By establishing a site specific, higher functional value buffer zone, the buffering capabilities of the zone can be achieved over less of a horizontal distance.

A buffer zone enhanced with vegetative structural diversity utilizing native grasses, shrubs and tree can offset the adverse effects of developmental impacts on the Natural Area. The increased vegetative structural diversity can create a natural screen between the Natural Area and the development, which aids in reducing the noise pollution, light pollution, visual stimuli, and wind-driven litter associated with development. Additional vegetation within the buffer zone combined with water quality and detention features would decrease sedimentation and provide additional runoff filtration. Re-vegetating the buffer zone and eradicating the aggressive weed species could increase the wildlife habitat quality of the Natural Area by extending the foraging habitat, shelter, and nesting habitat.

In order to create an optimal buffer zone for the study area, restoration efforts must focus on eradication of noxious weeds including Russian olive trees, establishment of native grasses, shrubs and trees creating structural vegetative diversity and improved wildlife habitat.

Implementation of the following site-specific improvements could protect the Natural Area's resources. Although greater distances between the Natural Area and human activity is ideal, it is not always practical.

1. All non-native/noxious weed species should be eliminated from the buffer zone and Natural Areas.
2. The buffer zone should be reseeded with a native seed mix which promotes vegetative structural diversity, species richness, runoff retention and wildlife forage and cover.
3. Native trees and shrubs such as cottonwood trees, peach-leaf willow and chokecherry should be strategically planted to provide a shading, visual/noise screen as well as to reduce light from entering the natural areas. Dense groupings of shrub planting are recommended which also create additional structural diversity promoting wildlife habitat.
4. The buffer zone should be identified within the development plan through the use of an open type fence such as split rail and signs, to discourage routine human disturbance.
5. The buffer zone should be managed, eliminating routine mowing, and implementing weed control and routine litter control.

6. All developmental stormwater runoff should be treated prior to discharge into local drainages.
7. Wildlife habitat improvement structures could be installed throughout the Natural Area.

Natural Area 99 would benefit more from an enhanced 75 foot buffer zone as opposed to an unimproved 300 foot buffer zone. The current buffer zone consists of poor quality habitat and has poor functional value especially pertaining to water quality. Natural Area 99 is identified in In The Nature of Things as having a medium habitat enhancement potential (refer to **Figure 4** and **Table 1**). Habitat enhancement potential ranking (i.e., low, medium, high) refers to the potential of feasible habitat enhancement without regard to financial feasibility, Property ownership, water rights, etc. (City of Loveland, October 1996). The enhanced buffer zone could stabilize soils, decrease sedimentation, increase water filtration, decrease erosion and improve habitat quality. The revegetation of the buffer zone could create a natural screen between the human disturbances, development disturbances, and re-establish native vegetation, and vegetative structural diversity. An overall net increase in the Natural Area habitat quality could be achieved with an enhanced buffer zone, where degradation could occur with an arbitrary 300 foot unimproved buffer zone.

SUMMARY

Natural Area 99 is a comprised of various vegetation and wildlife communities associated with a remnant and fragmented tributary drainage to the Big Thompson River. The Natural Area contains wetland and riparian habitat, dry shrubland habitat, meadows and large mature deciduous trees. The Natural Area is utilized by a variety of locally common avian and small mammal, reptile, and amphibian species adapted to urban areas. No TES species or their potential habitat was found onsite. Wildlife movement is limited through the area due to fragmentation by I-25, Highway 34 and the railroad. Preliminary development plans propose a reduced buffer zone from 300 feet to 75 feet surrounding the Natural Area. The reduced buffer zone with a site specific buffer zone restoration plan should not result in any additional adverse impacts to the Natural Areas and with proper implementation, could increase the functional value of the resource.

Sincerely,

Ecological Resource Consultants, Inc.

David J. Blauch
V.P., Senior Ecologist

Céline M. Pliessnig
Staff Ecologist

Enclosures:
Figure 1. Site Location Map
Figure 2. Overall Habitat Quality Map
Figure 3. Agricultural Uses Map
Figure 4. Habitat Enhancement Potential Map
Natural Area and Buffer Zone Map
Appendix A. Photographic Documentation
Appendix B. Jurisdictional Wetland Delineation Report
Appendix C. Colorado Natural Heritage Program Environmental Review

REFERENCES

Andrews, J.M., and R. Righter. 1992. *Colorado Birds: a reference to their distribution and habitat*. Denver Mus. Nat. Hist., Denver.

Cedar Creek Associates, Inc. January 1999. Millennium General Development Plan, Natural Area 99 Impact.

City of Loveland. December 1993. *In the Nature of Things: Loveland's Natural Area 99s*. Revised October 1996. The City of Loveland Long Range Planning and Natural Resources Department.

City of Loveland. 1996. *City of Loveland Open Lands Plan.* The City of Loveland Long Range Planning Division.

Colorado Division of Wildlife. Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern. May 2000

Cowardin, L.M., V. Carter, F.C. Golet, & E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States (FWS/OBS-79/31).* Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.

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

Kingery, Hugh. *Colorado Breeding Bird Atlas*. Colorado Bird Atlas Partnership 1998.

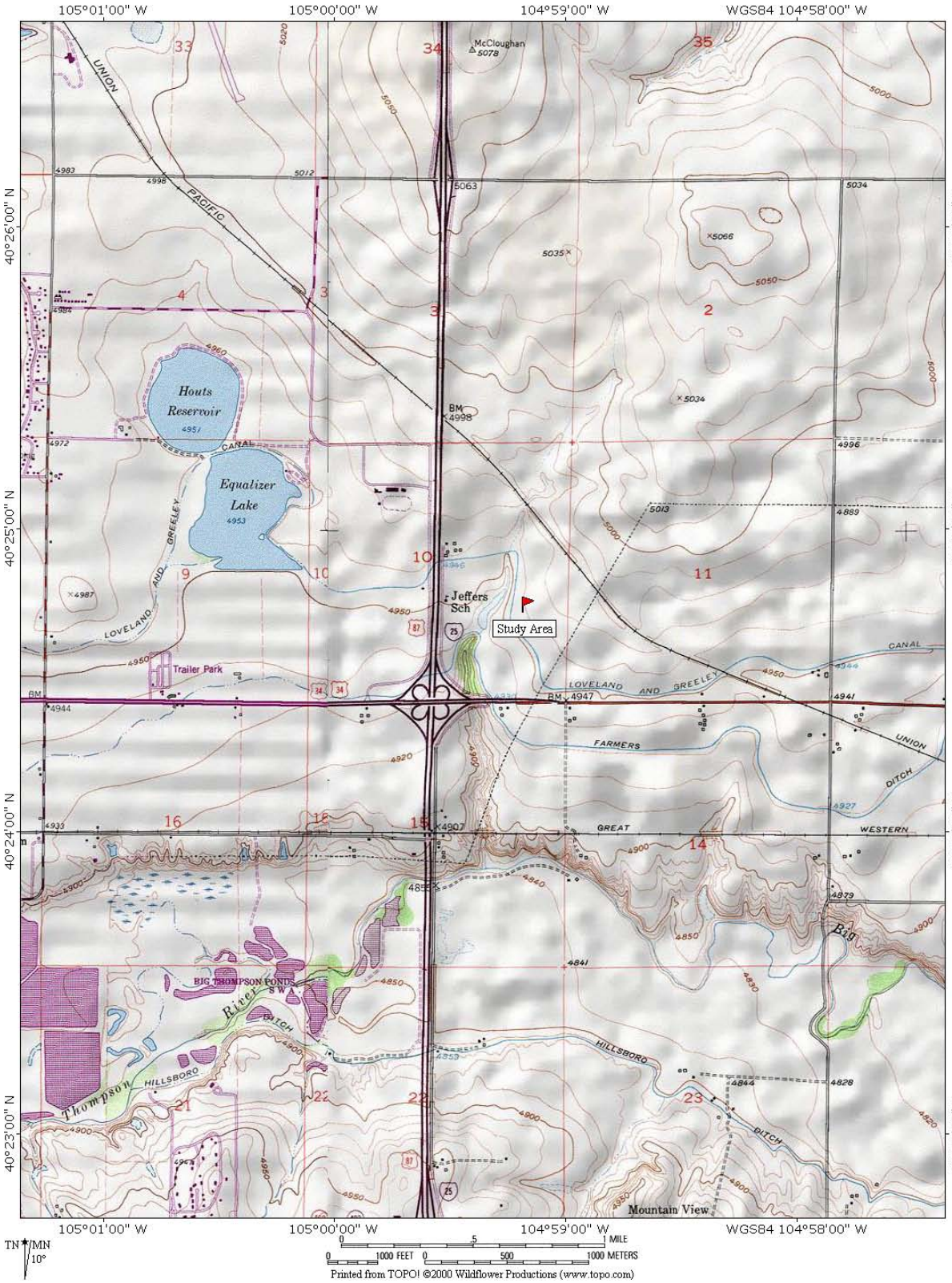
Kollmorgen Instruments Corp. 1990. *Munsell Soil Color Charts.* Baltimore, MD

Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. *Colorado Rare Plant Field Guide*. Prepared for the Bureau of Land Man genet, the U.S. Forest Service and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.

U.S. Fish & Wildlife Service. 1994. *National List of Plant Species that Occur in Wetlands (Regions 4, 5 & 8),* published by Resource Management Group, Inc., Grand Haven, MI

Western Society of Weed Science, The Western United States Land Grant Universities Cooperative Extension Services and the University of Wyoming. *Weeds of the West.* 9th addition, 2000.

FIGURE 1. Site Location Map



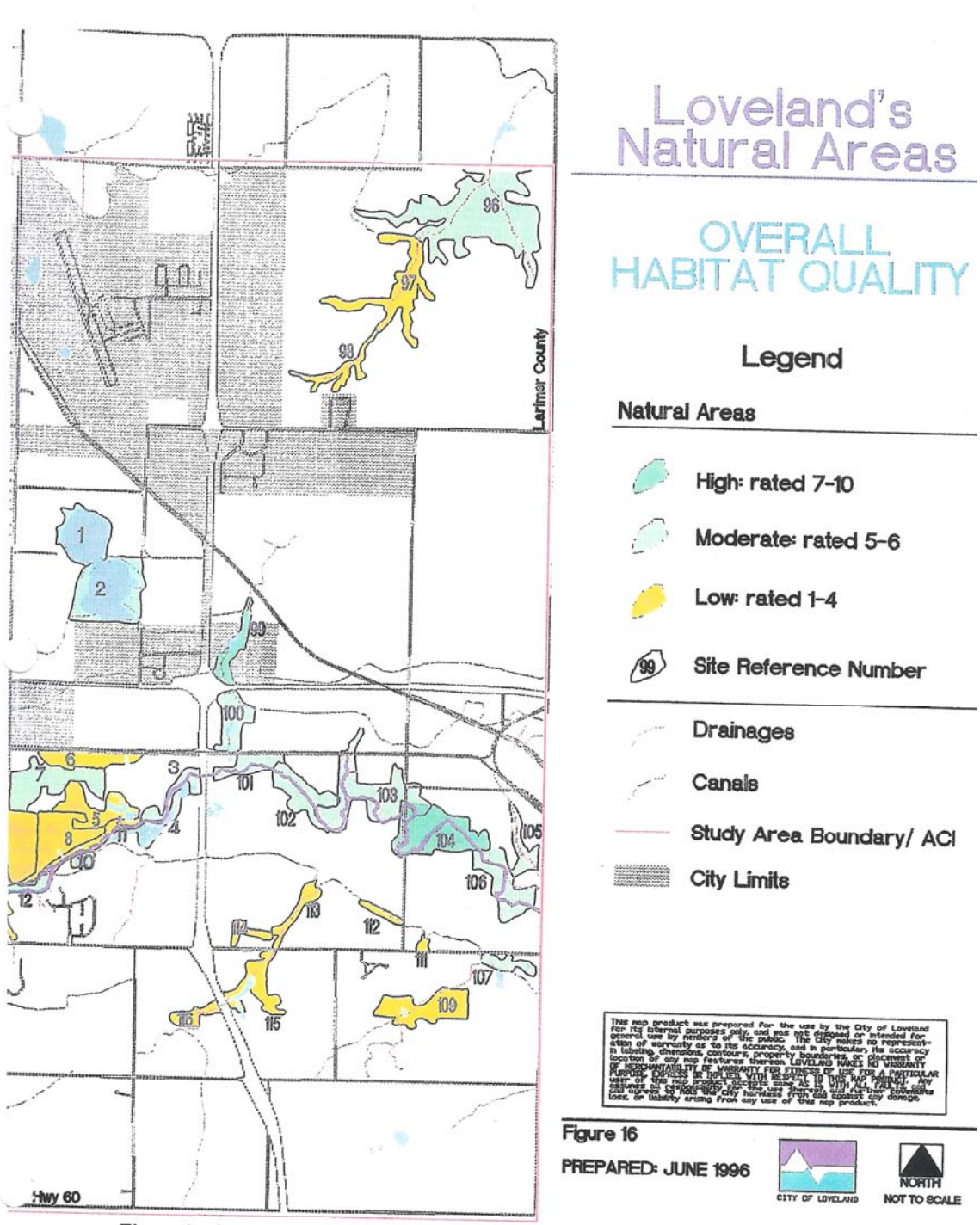


Figure 2. Overall Habitat Quality Map. *In The Nature of Things: Loveland's Natural Areas.* Revised October 1996. City of Loveland.

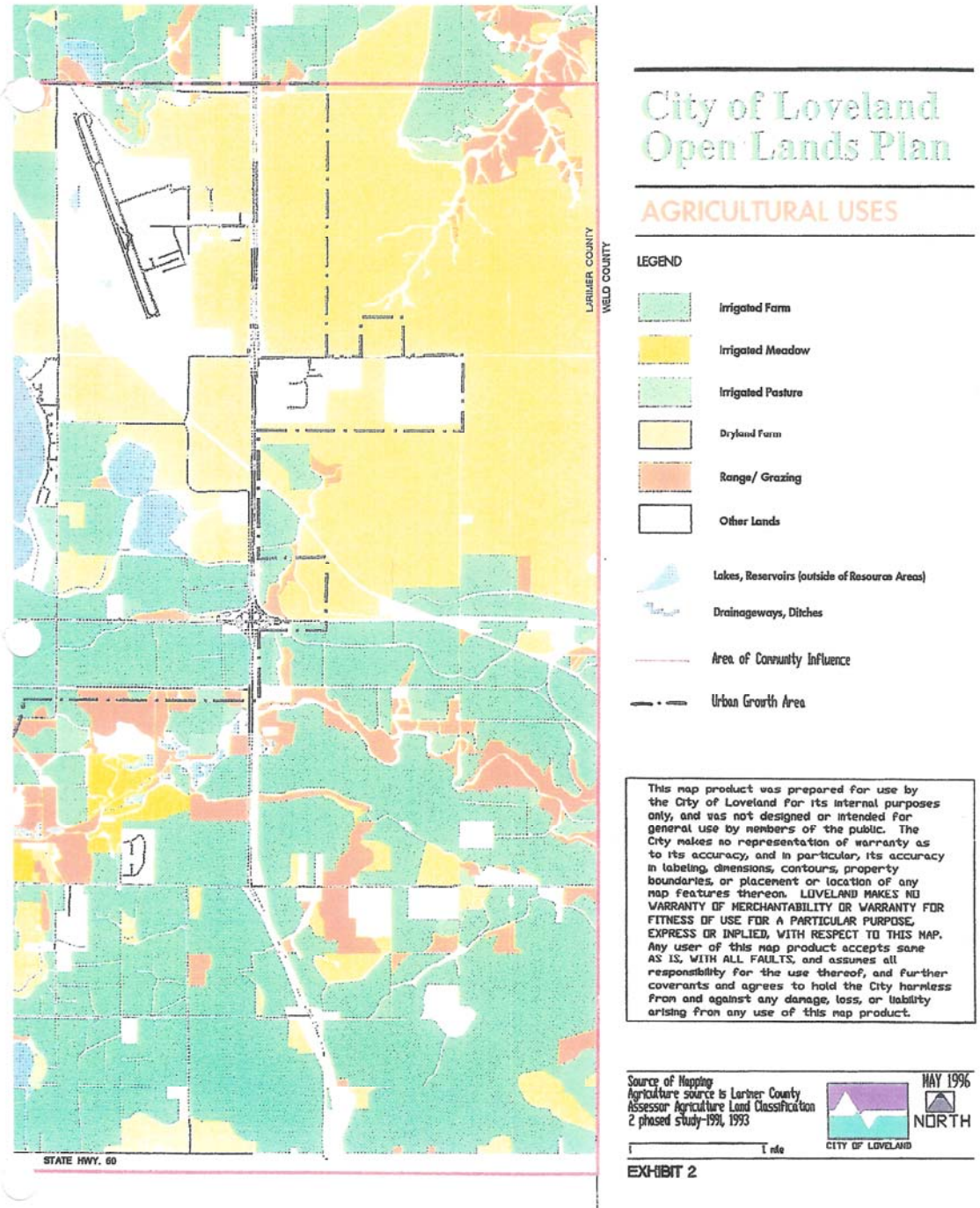


Figure 3. Agricultural Uses Map. *City of Loveland Open Lands Plan.* June 1996. Long Range Planning Division, City of Loveland.

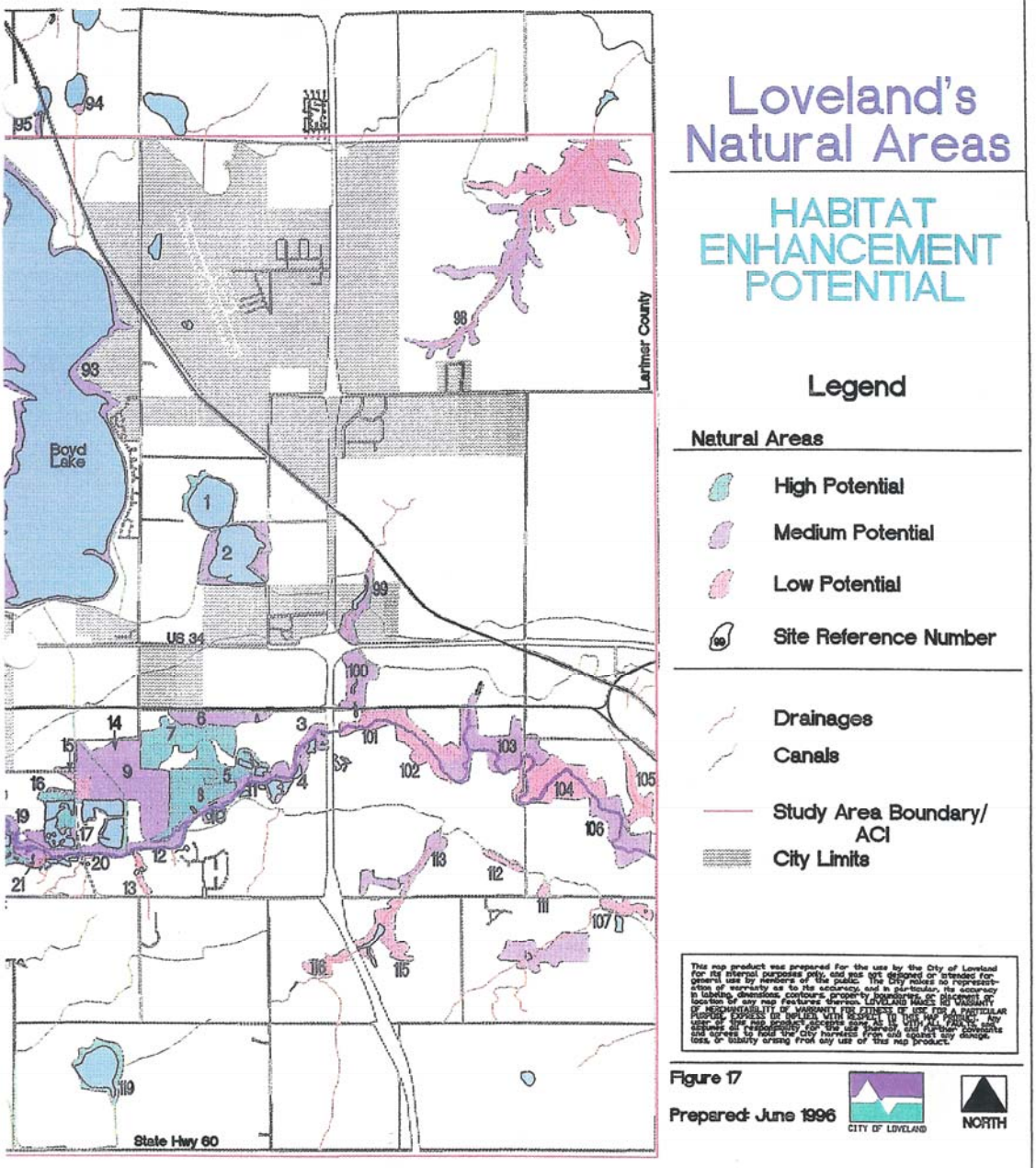
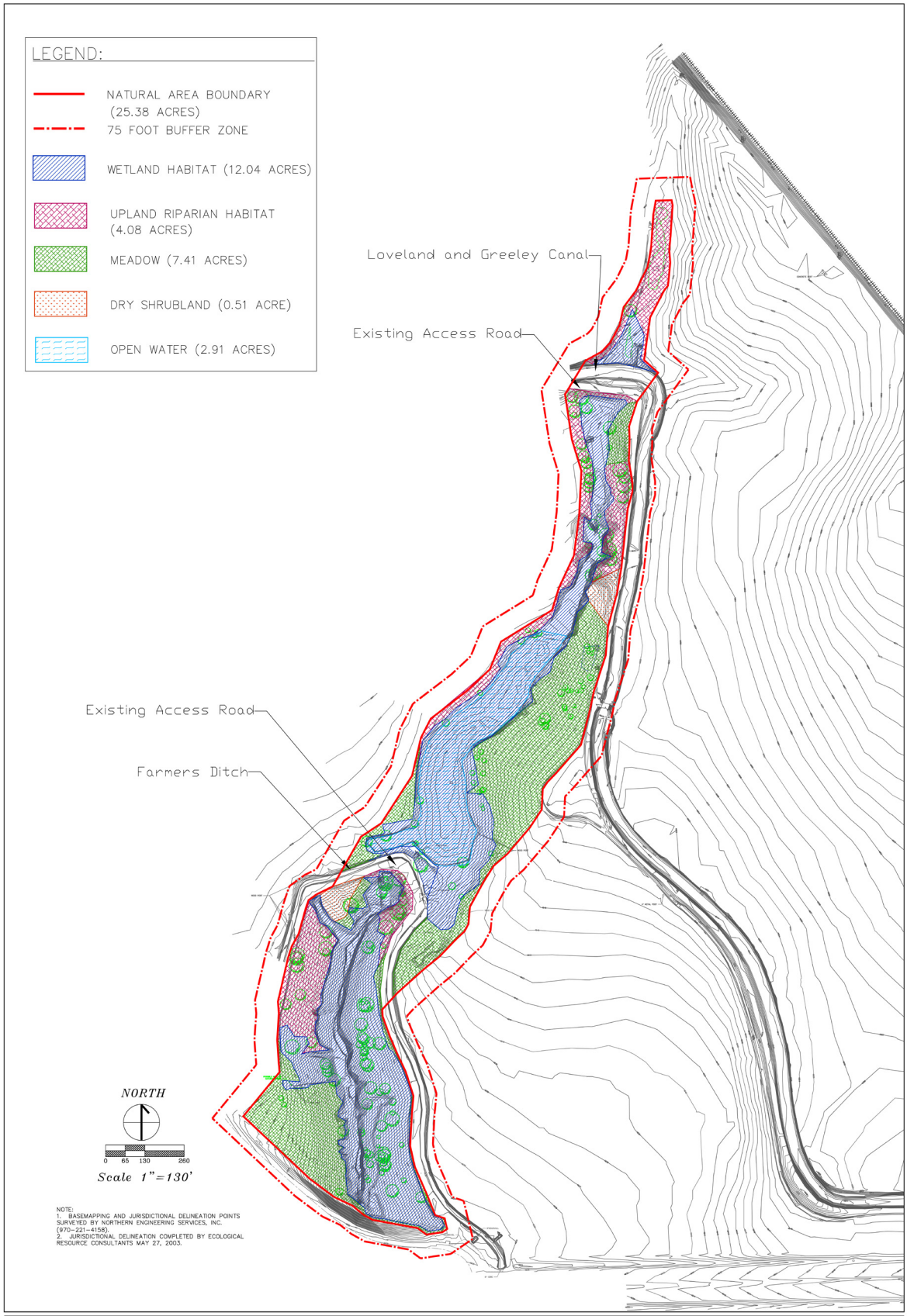


Figure 4. Habitat Enhancement Potential Map. *In The Nature of Things: Loveland's Natural Areas.* Revised October 1996. City of Loveland.

NATURAL AREA AND BUFFER ZONE MAP



Ecological Resource Consultants, Inc.
4920 Tesla Court, Boulder, CO 80301
(720) 564-0788

Designed By: ERC
Drawn By: ERC
Date: 7/8/03
Project No.:
File Path:

Revision No.:
Revision Date:
Approved By:
Comments:

Centerra East
Larimer County, Colorado

Natural Area and Buffer Zone Map

SHEET 1

APPENDIX A
PHOTOGRAPHIC DOCUMENTATION

Photo 1. The natural drainage onsite is narrow and densely vegetated.

Photo 2. A man-made pond north of the Farmers Ditch, used by various water fowl.

Photo 3. The densely vegetated natural channel north of the pond and south of the Loveland and Greeley Canal. Shrubland habitat is apparent on the east bank.

Photo 4. Farmers Ditch and the Ditch maintenance road bisecting the Natural Area south of the pond.

Photo 5. The Loveland and Greeley Canal bisecting the Natural Area.

Photo 6. The Loveland and Greeley Canal and Ditch maintenance road along the east Natural Area boundary.

Photo 7. The Loveland and Greeley Canal on the west perimeter of the Natural Area, bordered by dryland farming to the east.

Photo 8. Dryland farming along the northeast border of the Natural Area.

Photo 9. Irrigated crops along the northwestern Natural Area perimeter.

Photo 10. Dryland farming along the southeastern perimeter of the Natural Area in the background defined by the mature deciduous trees.

Photo 11. Ditch maintenance road along the eastern Natural Area boundary and west bank of Farmers Ditch, looking north.

Photo 12. Irrigated alfafa fields along the western Natural Area boundary. Dryland crops along the eastern Natural Area boundary are in the background.

APPENDIX B
JURISDICTIONAL WETLAND REPORT

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD
LITTLETON, COLORADO 80128-6901

July 11, 2003

Mr. David Blauch
Ecological Resource Consultants, Inc.
4920 Tesla Court
Boulder, CO 80301

RE: Centerra East Property, Preliminary Jurisdictional Determination, Unnamed Wetland Tributary to the Big Thompson River
Corps File No. 200380023

Dear Mr. Blauch:

I have reviewed this project located in the SE ¼ of Section 10, T5N, R68W, Larimer County, Colorado on behalf of McWhinney Enterprises. This review was in accordance with Section 404 of the Clean Water Act under which the U.S. Army Corps of Engineers regulates the discharge of dredged and fill material, and any excavation activities associated with a dredged and fill project, into waters of the United States. Waters of the United States include ephemeral, intermittent and perennial streams, their surface connected wetlands and adjacent wetlands and certain lakes, ponds, irrigation and drainage ditches that have a nexus to interstate commerce. Under the authority of the Clean Water Act, a preliminary Jurisdictional Determination has determined that the unnamed wetland tributary to the Big Thompson River may be waters of the U.S.

Based upon the ruling by the Supreme Court in the matter of Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, No. 99-1178 (January 9, 2001), the Department of the Army's (DA) regulatory authority over isolated, non-navigable, intrastate waters has been eliminated **if** the sole nexus to interstate commerce was use of the waters by migratory birds. It is apparent under the ruling above that the DA does not have the authority to regulate work in the Loveland and Greeley Canal or the Farmer's Ditch. No permit or other authorization by the DA is required for work in Loveland and Greeley Canal or the Farmer's Ditch. Although a DA permit will not be required for work in the Loveland and Greeley Canal or the Farmer's Ditch, this does not eliminate the requirement that you obtain any other applicable Federal, state, tribal or local permits as required.

Our office considers your July 9, 2003 wetlands delineation report and map for this project accurate and acceptable.

If a proposed activity requires work within the above-described waters of the U.S., a proponent of the project should notify this office for proper Department of the Army permits. This jurisdictional delineation is valid for a period of five years from the date of this letter unless new information warrants revision of the determination before the expiration date.

If you have any questions concerning this matter, please call me at (303) 979-4120 and **reference Corps File No. 200380023**.

Sincerely,

Terry McKee

Terry McKee
Natural Resource Specialist

tm

Copies Furnished:

EPA

JURISDICTIONAL WETLAND DELINEATION

FOR THE

CENTERRA EAST PROPERTY
LOVELAND, LARIMER COUNTY, COLORADO

JULY 11, 2003

Prepared By:
Ecological Resource Consultants, Inc.
4920 Tesla Court
Boulder, CO 80301
(720) 564-0788

INTRODUCTION

Ecological Resource Consultants, Inc. (ERC) completed a jurisdictional delineation on May 27, 2003 on the property known herein as the Centerra East Property (property) The property is located east of Interstate 25, east of the town of Loveland, in the east half of Section 10 and the southwest quarter of Section 11, Township 5 North, Range 68 West, Larimer County, Colorado (Latitude 40° 24' 30" N, Longitude 104° 59' 00" W). The property is on the northeast corner of the I-25 and Highway 34 intersection. The property can be accessed from two dirt roads that follow irrigation ditches. A Site Location Map is included as **Figure 1**. The jurisdictional delineation was completed at the request of the project engineer Northern Engineering Services, Inc. (420 South Howes, Suite 202, Fort Collins, CO, 80521, Contact Stan Myers (970-221-4158)). The Property is owned by McWhinney Enterprises (2725 Rocky Mountain Ave., Suite 200, Loveland, CO, 80538 (970.962.9990)).

Site Conditions

The Centerra East Property has an average elevation of approximately 4,950 feet above mean sea level (amsl). The property is comprised of fairly level farmland with the exception of the natural drainage crossing the property from the northeast to the southwest property corner. A majority of the property is cultivated land with two large, active irrigation ditches that convey water flowing southeast: the Farmers Ditch and the Loveland and Greeley Canal. The Farmers Ditch contained flowing surface water while the Loveland and Greeley Canal contained minimal stagnant water at the time of the field investigation (refer to Photos 5 and 9). The Union Pacific Railroad marks the north extent of the study area. The property is bounded by commercial property and the I-25 frontage road to the west, agricultural land to the north and east, and Highway 34 to the south. According to the USGS water feature description, the natural drainage is characterized as an intermittent drainage, the pond as a perennial pond, and the irrigation channels by name. The weather during the delineation was warm and sunny, soils were thawed and vegetation growth was in the early blooming stages.

Jurisdictional Delineation

The jurisdictional delineation was conducted following the methodology enumerated in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987). During the field inspection, dominant vegetation was recorded, representative hydrologic indicators were noted and soil samples were examined for hydric indicators. Areas determined jurisdictional were identified in the field with pink "WETLAND BOUNDARY" ribbon. Each point was sequentially labeled alpha-numerically (i.e. A1, A2). Each point was then surveyed by Northern Engineering Services, 420 South Howes Street, Suite 202, Fort Collins, Colorado (970-221-4158) and incorporated into the enclosed mapping (refer to Jurisdictional Wetland Delineation Maps, Sheets 1 and 2).

Identified Jurisdictional Areas

A total of 12.04 acres of jurisdictional habitat was delineated along the natural drainage corridor within the Centerra East Property boundaries. The natural drainage bisects the property from northeast to southwest and is fragmented (from north to south) by the Union Pacific Railroad, the Loveland and Greeley Canal and the Farmers Ditch.

The Farmers Ditch and the Loveland and Greeley Canal appear to have a significant affect on the local groundwater hydrology and therefore have a significant influence on the wetland hydrology within the project limits. The irrigation canals convey a significant quantity of water along

the upslope side of the low-lying wetlands associated with the natural drainage way identified on site. The extent to which sustaining wetland hydrology is from irrigation water, natural groundwater or irrigation recharge is unclear at this point and would require further groundwater hydrology analysis.

Although the wetland parameter of hydrology is in question throughout much of the area, the wetland boundary was determined based upon a dominance of hydrophytic vegetation, the presence of hydric soils and topography. The uncertainties associated with the hydrological influence of the irrigation canals on the local groundwater table limit the ability to differentiate between what may be the historic natural drainage corridor and what areas may be man-induced wetlands. Until irrigation is removed and a more detailed groundwater hydrology study can be conducted, the entire delineated wetland area must be considered jurisdictional. If irrigation is removed and a groundwater hydrology study indicates near surface groundwater is not present, then a portion of the delineated wetland areas may be considered non-jurisdictional and therefore not regulated under Section 404 of the Clean Water Act.

Upland inclusions exist within the overall mapped wetland boundary, should disturbances be proposed in these areas, a more detailed micro-delineation might be appropriate. Most of the upland inclusions are found on the east bank of Wetland A (refer to Photo 2). The upland areas are entirely encompassed by wetland habitat and are dominated by upland vegetation. Two prominent upland inclusions located in this area are estimated to measure 100 feet long by 30 feet wide, and 40 feet wide by 40 feet long.

WETLAND A PALUSTRINE EMERGENT PERSISTENT

The 5.71 acre area identified with wetland flags A1-A134 delineates the southern reach of the natural drainage and associated wetlands north until the Farmers Ditch crossing (refer to Sheet 2). At point A42 is the culvert from the Farmers Ditch into the wetland, controlled by a head gate. The wetland habitat is dominated by canary reed grass, broad-leaf cattail, common teasel (*Dipsacus sylvestris*), false Solomon's seal, water sedge, clustered field sedge, Baltic rush and curly dock (refer to Photo 1). Sustaining hydrology of this wetland appears to be from a naturally high groundwater table as well as a potential influence from the Farmers Ditch. Although primary hydrological indicators where not identified during the field analysis hydrology was assumed through secondary indicators of hydric soils in combination with a dominance of hydrophytic vegetation. The wetland boundary was determined by dominance of hydrophytic vegetation, presence of hydric soils and topographic breaks (refer to Data Forms T1-T9, T14). The wetland habitat continues on the north side of the Farmers Ditch and is delineated by flags C1-C10 and B1-B91.

WETLAND B RIVERINE/PALUSTRINE EMERGENT PERSISTENT

The 5.23 acre wetland habitat identified by flags B1-B91 delineates wetland habitat associated with the natural drainage, including a small pond (2.91 acres) immediately north of Wetland C and the Farmers Ditch (refer to Sheet 1). The pond is separated from Wetland C by a berm (refer to Photo 3). A narrow cattail fringe encompasses the pond and continues north along and within the drainage channel, creating a monotypic cattail stand with minimal surface water (refer to Photo 4). Dominant vegetation of this wetland is canary reed grass, broad-leaf cattail, Baltic rush, water sedge, clustered field sedge and peach-leaf willow. Sustaining hydrology of this wetland appears to be from a naturally high groundwater table as well as a potential influence from the irrigation canals. Although primary hydrological indicators were not identified during the field analysis hydrology was assumed through secondary indicators of hydric soils in combination with a dominance of hydrophytic vegetation. The wetland boundary was determined by hydrophytic

vegetation breaks, presence of hydric soils and topography (refer to Data Forms T10, T13, T15). The wetland habitat continues north to Wetland E (refer to Sheet 1).

WETLAND C PALUSTRINE EMERGENT PERSISTENT

Area C1-C10 is a 0.17 acre continuation of Wetlands A and B (refer to Sheet 1). This wetland is associated with the Farmers Ditch bank dividing Wetlands A and B, extending into a low-lying area of the north ditch bank. The Farmers Ditch contained approximately one foot of surface water during the site visit and headgates that control hydrology to and from Wetlands A and B (refer to Photo 5). Dominant vegetation in this wetland includes canary reed grass, water sedge, broad-leaf cattail and peach-leaf willow. The wetland hydrology is the Farmers Ditch and the pond north of the berm. The wetland boundary was determined by dominance of hydrophytic vegetation and presence of hydric soils (refer to Data Form T11). Wetland habitat continues south into Wetland A and north to Wetland B.

WETLAND E PALUSTRINE EMERGENT PERSISTENT

The 0.60 acre wetland identified with flags E1-E19 is a continuation of Wetland B to an area surrounded by barbed wire fencing (refer to Sheet 1). Dominant vegetation of this wetland is broad-leaf cattail, Baltic rush, clustered field sedge, smooth scouring rush, water sedge, false Solomon's seal, and peach-leaf willow (refer to Photo 7). Sustaining hydrology of this wetland appears to be from a naturally high groundwater table as well as a potential influence from the Loveland and Greeley Canal. Although primary hydrological indicators where not identified during the field analysis hydrology was assumed through secondary indicators of hydric soils in combination with a dominance of hydrophytic vegetation. The wetland boundary was determined by the presence of hydric soils, dominance of hydrophytic vegetation and topography. Wetland habitat continues north across the Loveland and Greeley Canal as Wetland F.

Wetland F Palustrine Emergent Persistent

The 0.33 acre wetland identified with flags F1-F9 is associated with the Loveland and Greeley Canal and the natural drainage (refer to Sheet 2). The wetland habitat extends from the north bank of the Canal into the large plains cottonwood stand in the remnant drainage channel (refer to Photo 8). Dominant plant species of this wetland include canary reed grass, sandbar willow, plains cottonwood, and water sedge. Sustaining hydrology of this wetland appears to be from a naturally high groundwater table as well as a potential influence from the Loveland and Greeley Canal. Although primary hydrological indicators where not identified during the field analysis hydrology was assumed through secondary indicators of hydric soils in combination with a dominance of hydrophytic vegetation. The wetland boundary was determined by the presence of hydric soils, dominance in hydrophytic vegetation and topography (refer to Data Form T13).

Hydrophytic Vegetation

Table 1 lists the dominant hydrophytic vegetation identified in the above delineated wetlands.

Table 1. Identified Hydrophytic Vegetation

Scientific Name	Common Name	Rg. 5 Indicator Status*
Carex aquatilus	water sedge	OBL
Carex praegracilis	clustered field sedge	FACW
Carex nebrascensis	Nebraska sedge	OBL
Elaeagnus angustifolia	Russian olive	FAC
Juncus balticus	Baltic rush	OBL
Lemna minor	lesser duckweed	OBL
Phalaris arundinacea	reed canary grass	FACW+
Populus deltoides	plains cottonwood	FAC
Salix amygdaloides	peach-leaf willow	FACW
Typha latifolia	broad-leaf cattail	OBL
Smilacina stellata	false Solomon's seal	FAC
Rumex crispus	curly dock	FACW
Agrostis stolonifera	creeping bentgrass	FAC+
Cynoglossum officinale	houndstongue	NI
Scientific Name	**Common Name**	**Rg. 5 Indicator Status***
Toxicodendron rydbergii	poison ivy	FAC

*OBL=obligate wetland-occurs an estimated 99% in wetlands
FACW=facultative wetland-occurs an estimated 67%-99% in wetlands
FAC=facultative-equally occurs in non-wetlands as wetlands
NI=No indication

UPLANDS

The majority of the land within the parcel limits consists of active farmland. Upland habitat adjacent to the wetland habitat on the Centerra East Property consists of native and weedy plant species. The upland plant species include choke cherry (*Prunus virginiana*), Wood's rose (*Rosa woodsii*), wild licorice (*Glycyrrhiza lepidota*), common teasel, Canada thistle (*Cirsium arvense*), musk thistle (*Carduus nutans*), snowberry (*Symphoricarpos albus*), flixweed (*Descurainia sophia*), rabbit brush (*Chrysothamnus nauseosus*), smooth brome (*Bromus inermis*), hare barley (*Hordeum leporinum*), alfafa (*Medicago sativa*), and crested wheat grass (*Agropyron cristatum*).

AREA D

The 0.07 acre area delineated by flags D1-D7 is an isolated area with a slight dominance of hydrophytic plant species and may receive hydrology from the upslope Loveland and Greeley Canal (refer to Photo 6). Soils in this area do not meet the criteria established defining hydric soils and therefore do not meet the criteria of a jurisdictional wetland area (refer to Data Form T12). This area is located upslope from and east of the natural drainage and west of the adjacent Canal (refer to Sheet 1). The dominant vegetation includes young plains cottonwood trees, Russian olive, clustered field sedge, Canadian thistle, smooth brome, and a small 4 square foot patch of broad-leaf cattail remnants in a small man-made hole associated with irrigation. This area does not meet the hydric soil characteristics in defining a jurisdictional wetland.

Summary

ERC has identified 12.04 acres of jurisdictional habitat within the limits of the Centerra East Property. Five jurisdictional areas have been delineated in the field and mapped on the enclosed Jurisdictional Delineation Maps (Sheets 1 and 2). Much of the wetland habitat delineated is influenced by irrigation practices but all areas exhibit jurisdictional wetland characteristics, with the exception of Area D. In the event further hydrological studies are conducted and determine the sole source of sustaining hydrology is irrigation induced, jurisdictional wetland habitat may be reduced. No characteristics of significantly high quality wetland have been identified such as the presence of histosols or fens. The identified Jurisdictional wetland areas are regulated by the US Army Corps of Engineers (Corps). Activities that result in disturbance of these areas will require prior authorization from the Corps under Section 404 of the Clean Water Act.

Sincerely,

Ecological Resource Consultants, Inc.

Senior Principal, Ecologist

Celine Pliessnig
Staff Ecologist

Enclosures: Photographic Documentation
Figure 1. Site Location Map
Jurisdictional Delineation Maps
Wetland Determination Data Forms

Cc: Stan Myers, Northern Engineering Services, Inc.

REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet, & E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States (FWS/OBS-79/31)*. Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.

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

Kollmorgen Instruments Corp. 1990. *Munsell Soil Color Charts.* Baltimore, MD

Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. Colorado Rare Plant Field Guide. Prepared for the Bureau of Land Man genet, the U.S. Forest Service and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.

U.S. Fish & Wildlife Service. 1994. *National List of Plant Species that Occur in Wetlands (Regions 4, 5 & 8)*, published by Resource Management Group, Inc., Grand Haven, MI

Western Society of Weed Science, The Western United States Land Grant Universities Cooperative Extension Services and the University of Wyoming. Weeds of the West. 9th addition, 2000.

PHOTOGRAPHIC DOCUMENTATION

Photo 1. Wetland A, looking north up the drainage from the frontage road.

Photo 2. Looking east across Wetland A from the upland habitat.

Photo 3. The pond in Wetland B, north of the berm between the Wetland C and Wetland B.

Photo 4. The main channel of Wetland B, looking north.

Photo 5. Wetland C and the associated Farmers Ditch, looking to the east.

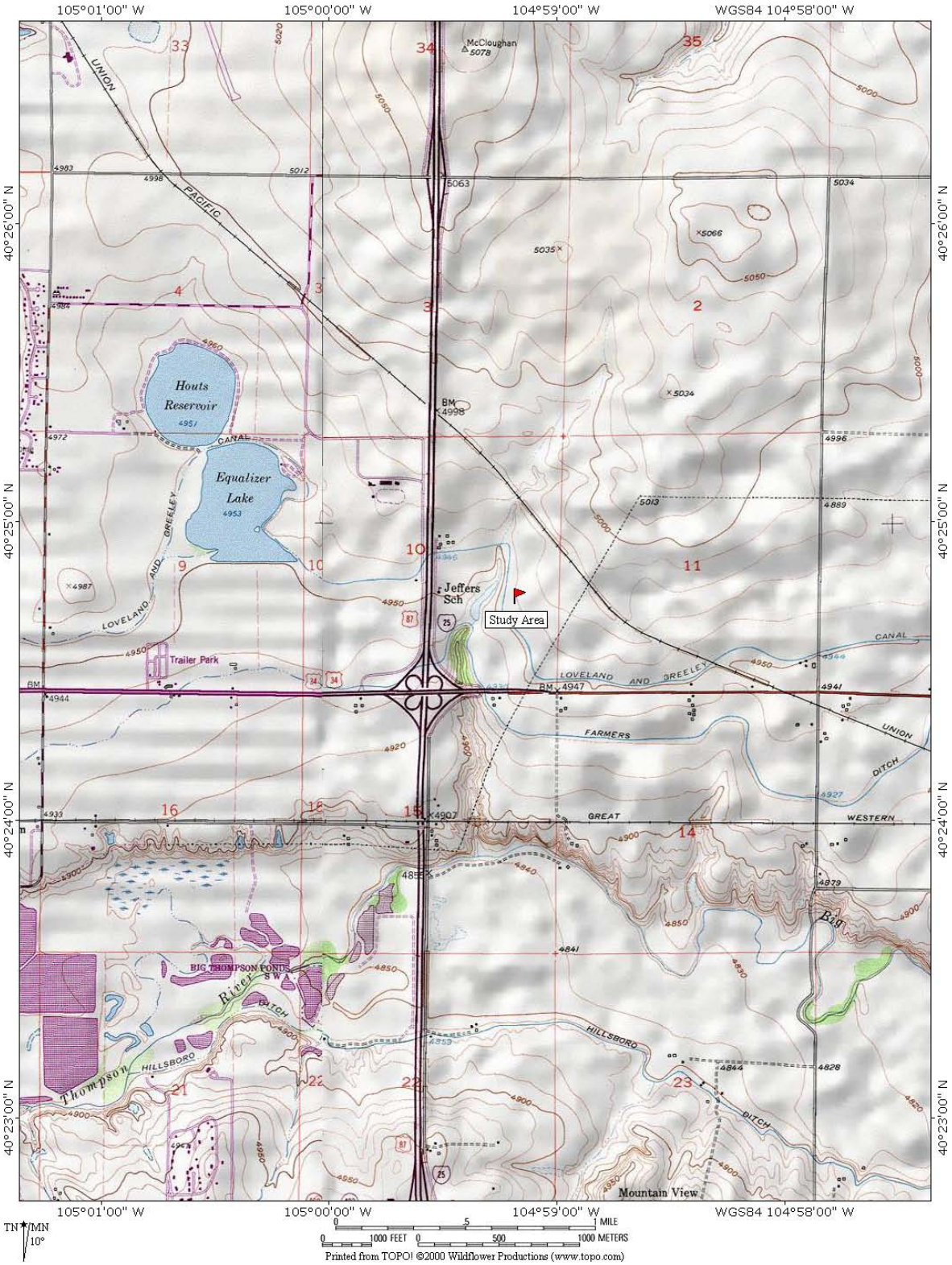
Photo 6. Area D, upslope from Wetland B and downslope from the Loveland and Greeley Canal.

Photo 7. Wetland E looking south at Wetland B from the Loveland and Greeley Canal.

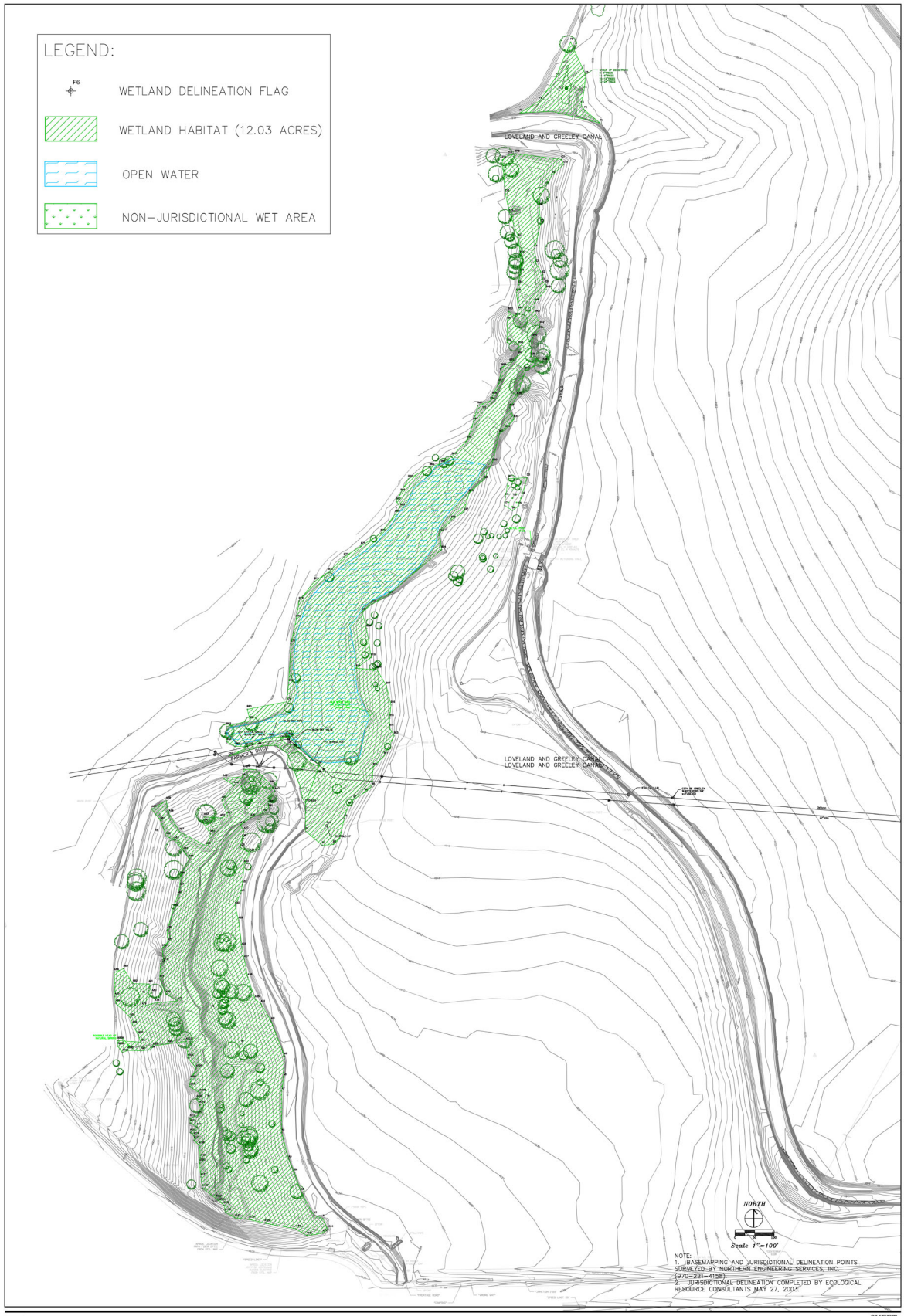
Photo 8. Wetland F on the north bank of the Loveland and Greeley Canal.

Photo 9. The Loveland and Greeley Canal, looking south, with the natural drainage channel (Wetland B) to the east.

FIGURE 1. Site Location Map



JURISDICTIONAL DELINEATION MAPS



Ecological Resource Consultants, Inc.
4920 Tesla Court, Boulder, CO 80301
(720) 564-0788

Designed By: ERC
Drawn By: ERC
Date: 7/1/03
Project No.:
File Path:

Revision No:
Revision Date:
Approved By:
Comments:

Centerra East
Larimer County, Colorado

Delineation Map
Jurisdictional Wetland

SHEET 1

APPENDIX C
COLORADO NATURAL HERITAGE PROGRAM ENVIRONMENTAL REVIEW

June 23, 2003

David Blauch
Ecological Resource Consultants, Inc.
4920 Tesla Court
Boulder, CO 80301

Dear David:

The Colorado Natural Heritage Program (CNHP) is in receipt of your request for information regarding the proposed Centerra East project. In response, I have searched our Biological and Conservation Datasystem (BCD) for natural heritage elements (occurrences of significant natural communities and rare, threatened or endangered plants and animals) documented from the vicinity of the area specified in your request, specifically the east half of Section 10 and the southwest quarter of Section 11, Township 5 north, Range 68 west, Larimer County, Colorado.

The enclosed report describes natural heritage resources known from this area and gives location (by Township, Range, and Section), precision information, and the date of last observation of the element at that location. This report includes elements known to occur within the specified project site, as well as elements known from similar landscapes near the site. Please note that "precision" reflects the resolution of original data. For example, an herbarium record from "4 miles east of Colorado Springs" provides much less spatial information than a topographic map showing the exact location of the occurrence. "Precision" codes of Seconds, Minutes, and General are defined in the footer of the enclosed report.

The report also outlines the status of known elements. We have included status according to Natural Heritage Program methodology and legal status under state and federal statutes. Natural Heritage ranks are standardized across the Heritage Program network, and are assigned for global and state levels of rarity. They range from "1" for critically imperiled or extremely rare elements, to "5" for those that are demonstrably secure.

You may notice that some occurrences do not have sections listed. Those species have been designated as "sensitive" due to their rarity and threats by human activity. Peregrine falcons, for example, are susceptible to human breeders removing falcon eggs from their nests. For these species, CNHP does not normally provide location information beyond township and range. Please contact us should you require more detailed information for sensitive occurrences.

There is one CNHP designated Potential Conservation Areas located within the vicinity of your project area (see enclosed map). In order to successfully protect populations or occurrences, it is necessary to delineate conservation areas. These conservation areas focus on capturing the ecological processes that are necessary to support the continued existence of a particular element of natural heritage significance. Conservation areas may include a single occurrence of a rare element or a suite of rare elements or significant features.

The goal of the process is to identify a land area that can provide the habitat and ecological processes upon which a particular element or suite of elements depends for their continued existence. The best available knowledge of each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features, vegetative cover, as well as current and potential land uses. The proposed boundary does not automatically exclude all activity. It is hypothesized that some activities will cause degradation to the element or the process on which they depend, while others will not. Consideration of specific activities or land use changes proposed within or adjacent to the preliminary conservation planning boundary should be carefully considered and evaluated for their consequences to the element on which the conservation unit is based.

The Colorado Division of Wildlife has legal authority over wildlife in the state. CDOW would therefore be responsible for the evaluation of and final decisions regarding any potential effects a proposed project may have on wildlife. If you would like more specific information regarding these or other vertebrate species in the vicinity of the area of interest, please contact the Colorado Division of Wildlife.

The information contained herein represents the results of a search of Colorado Natural Heritage Program's (CNHP) Biological and Conservation Data System (BCD), and can be used as notice to anticipate possible impacts or identify areas of interest. Care should be taken in interpreting these data. Sensitive elements are currently known from within the proposed project area, and additional, but undocumented, elements may also exist (see enclosed report). Please note that the absence of data for a particular area, species, or habitat does not necessarily mean that these natural heritage resources do not occur on or adjacent to the project site, rather that our files do not currently contain information to document their presence. CNHP information should not replace field studies necessary for more localized planning efforts, especially if impacts to wildlife habitat are possible.

Although every attempt is made to provide the most current and precise information possible, please be aware that some of our sources provide a higher level of accuracy than others, and some interpretation may be required. CNHP's data system is constantly updated and revised. Please contact CNHP for an update or assistance with interpretation of this natural heritage information.

The data contained in the report is the product and property of the Colorado Natural Heritage Program (CNHP), a sponsored program at Colorado State University (CSU). The data contained herein are provided on an as is, as available basis without warranties of any kind, expressed or implied, including (but not limited to) warranties of merchantability, fitness for a particular purpose, and non-infringement. CNHP, CSU and the state of Colorado further expressly disclaim any warranty that the data are error free or current as of the date supplied.

Sincerely,

Michael Menefee
Environmental Review Coordinator

Enc.

Colorado Natural Heritage Program Environmental Review

Locations and Status of Rare and / or Imperiled Species known from or likely to occur within the vicinity of the Centerra East Project Area in Larimer County, Colorado

Report Generated: 24 June 2003

taxonomic group	scientific name	common name	prec	last obs	town/range	section	grank	srank	ESA	fed stat	st stat
Birds	GRUS AMERICANA	WHOOPING CRANE	G	1982-02-28	006N067W	16	G1	SAN	(LE,XN)		E
Birds	HIMANTOPUS MEXICANUS	BLACK-NECKED STILT	G	1981-06-11	006N067W	16	G5	S3B,S2N	(PS)		
Mammals	ZAPUS HUDSONIUS PREBLEI	MEADOW JUMPING MOUSE SUBSP.	G	1895-07-23	005N069W		G5T2	S1	LT	FS	T
Mollusks	ANODONTA GRANDIS	GIANT FLOATER	M	1993-09-22	006N068W	32	G5	S1			
Vascular Plants		DWARF MILKWEED									
Vascular Plants	RORIPPA COLORADENSIS	COLORADO WATERCRESS	G	1895-06-99	006N067W	20	GH	SH			

precision codes: S = "seconds", location known within 100m; M = "minutes", location known within 1 mile; G = "general", location known within 5 miles

NATURAL AREA 99 RATING AND USES

Prepared for:

McWhinney Enterprises
2725 Rocky Mountain Avenue, Suite 200
Loveland, Colorado

Prepared by:

FlyWater consulting, inc.
4900 Dakota Drive
Fort Collins, CO 80528

November 6, 2006

INTRODUCTION

This report documents the findings of the Habitat Ratings of the northern and southern sections of Natural Area 99 (NA99), presents Sensitive Area Zones that include buffers, and recommends permitted uses within each Sensitive Area Zone. NA99 and the surrounding development are shown in Figure 1. The zoning and use recommendations are based on several City of Loveland (City) regulatory documents.

REGULATORY

NA99 and the buffer that surrounds it are not regulated by the U. S. Army Corps of Engineers (Corps), U. S. Fish and Wildlife Service or the Colorado Division of Wildlife. Only the City regulates the natural area and the surrounding buffer. The Corps does take jurisdiction of the wetlands identified within the natural area under Section 404 of the Clean Water Act.

CITY OF LOVELAND GUIDANCE

Several City documents present guidance for development around and uses within a natural or sensitive area. The documents include:

- In the Nature of Things 1993 – revised 1996
- Loveland Municipal Code – amended 9/26/2006
- Parks and Recreation Master Plan 2001
- Open Lands Plan – March 2003

In the Nature of Things identified NA99 as having an overall rating of "7" ("10" represents pristine); animal diversity rating of "6"; wetland rating of "7"; and a plant diversity rating of "7". A complete summary of the above documents is presented in Appendix A.

PREVIOUS STUDIES

Several documents have been combined into the Millennium Document GDP to guide development with regards to NA99. The documents and previous studies are located in Section 14 Environmental Sensitive Area Reports (ESAR) of the Millennium Document and include:

- Cedar Creek – January 1999
- Ecological Resource Consultants (ERC) – July 2003 revised November 2003

The Cedar Creek study divided NA99 into a north section and a south section with the GLIC ditch being the divide. The north section received an overall rating of "4" due to a lack of plant diversity, narrow configuration and no buffer area to active agriculture. A setback of 50 feet was proposed for the north section. The south section received an overall rating of "7" and was in agreement with what was posted in the *In the Nature of Things* and recommended a 300 foot setback.

The ERC study confirmed the overall habitat rating of "7" for the south section. It also proposed a reduced setback of 75 feet for both the north and south sections from the 300 foot setback proposed in

the Cedar Creek study due to the observation ". . .the existing buffer zone is highly disturbed by irrigation easements as well as active farming and lacks vegetative structural diversity." A complete summary of the above documents is presented in Appendix B.

RECENT SITE EVALUATION

Wetland impacts associated with essential elements for the Centerra development (including roadway access, utilities, and stormwater improvements) were permitted through the Corps and completed on site. The natural area north of GLIC was comprised of a small wetland and a grove of mature cottonwoods. Impacts to the small wetland for stormwater improvements have eliminated the wetland component of the north NA99 area. Therefore, a reevaluation of the habitat rating for the north area was performed.

The original habitat ratings were completed as a relative assessment with other natural areas. In order to maintain this relative assessment, the south section of NA99 was also assessed using the information from the previous studies. FlyWater consulting, inc. (FlyWater) performed site assessments on 8/1/06, 8/14/06, 8/29/06, and 10/19/06. The north section of NA99 was observed to exhibit an overall habitat rating of "2" due to the lack of plant diversity, lack of scrub cover for small mammal habitat, and lack of wetland area for reptiles and amphibians. The complete site assessments for the north and south sections of NA99 are presented in Appendix C. A figure showing the north and south areas of NA99 is presented as Figure 2.

SENSITIVE AREA ZONES

Following the ERC study, a drawing showing open water, wetland, natural area, and buffer areas was produced for NA99. This drawing is presented as Figure 3. Although the sensitive area was broken into several habitat zones as described, little regulatory guidance was presented relating to acceptable public uses within each zone. Following is a description of each habitat zone:

Zone 1A and 1B

Zones 1A and 1B are defined by Corps jurisdictional boundaries. Zone 1A is the open water component and is defined by the extents of open water. Zone 1B is defined by the jurisdictional extents of the vegetated wetland areas within NA99. The vegetation consists of wet meadow, cattail and sedge/rush marshes.

Zone 2

Zone 2 represents the natural area. The boundaries of Zone 2 extend from the jurisdictional wetland boundary to the delineated boundary of NA99. The vegetation is upland meadow, shrub thickets and mature stands of trees –particularly cottonwoods.

Zones 3A and 3B

Zones 3A and 3B delineate the buffer boundaries for the natural area. Zone 3A extends from the natural area boundary outward and is intended as a buffer for the natural area. Zone 3B extends from the 3A boundary outward and is intended as a transition zone.

As a result of the recent site evaluations of the north and south sections of NA99, a revised drawing showing the proposed habitat zones for NA99 is presented as Figure 4. The proposed buffer is maintained and totally encloses the natural area.

RECOMMENDATIONS

Using guidance from the City regulations and the site specific Millennium Plan, the following are enhancement and activity recommendations for each of the habitat zones.

Zone 1A and 1B

Zone 1A will be managed to maintain areas of open surface water. Removal of accumulated sediment and control of the invasive spread of cattails are a priority for this zone enhancement. Because of the sensitive nature of this zone, no public activities are recommended. Zone 1B will be enhanced by the control of weedy species. Once the native wetland plants have been established in the disturbed areas, no long term enhancements are recommended. Again, the sensitive nature of these zones results in the recommendation of passive wildlife viewing from other zones or bridges.

Zone 2

Natural Areas with an overall habitat rating of "6" and above should have a weed eradication plan implemented for enhancement. Further enhancement opportunities could result from additional native plantings of grasses/herbs, shrubs, and trees. Acceptable public activities in the higher rated natural areas include hard trails on a case by case basis, soft trails, pedestrian bridges, educational signage, benches, sculptures, and wildlife viewing. The intent is a passive or observatory use by the public.

Areas with overall ratings of "5" and below should employ a management plan to eradicate weeds and increase the diversity of plant life within the natural area. In particular for the north section of NA99, focus should be placed on planting shrubs and utilizing drainage to increase the potential of wetland plants. These areas can be used in a more programmatic or active/interactive way. Acceptable public activities include hard and soft trails, pedestrian bridges, educational signage, benches, sculptures, and wildlife viewing.

Zones 3A and 3B

In natural areas with an overall habitat rating of "6" and above in Zones 3A and 3B, enhancement should focus on weed eradication and developing the buffer for wildlife screening. Wildlife screening employs the use of native shrubs and trees to develop thickets and groves in the buffer areas. Public activities acceptable within Zones 3A and 3B include hard and soft trails (low level path lighting is

acceptable adjacent to developed areas for public safety), educational signage, benches, nodes, sculptures, and wildlife viewing.

Areas having a rating of "5" and below should employ weed eradication and developing the buffer for wildlife screening in Zones 3A and 3B. Trees and shrubs should be planted in these zones especially adjacent to buildings, parking facilities, and/or roads. Public activities acceptable in Zones 3A and 3B for areas with ratings of "5" or below include hard and soft trails (low level path lighting is acceptable adjacent to developed areas for public safety), water features, educational signage and out-buildings, benches, nodes, sculptures, and wildlife viewing.

In general, NA99 south of GLIC should focus on planting native vegetation, and focus public activities toward the passive use of the area including the use of minimal soft trails in the natural area, and perimeter trails in the buffers to protect the valuable sensitive area. NA99 north of GLIC is less sensitive receiving a rating of "2" and can therefore be used to "immerse" the public in the natural areas. Enhancement including the planting of trees and shrubs can greatly improve the diversity of the sensitive area.

Figures

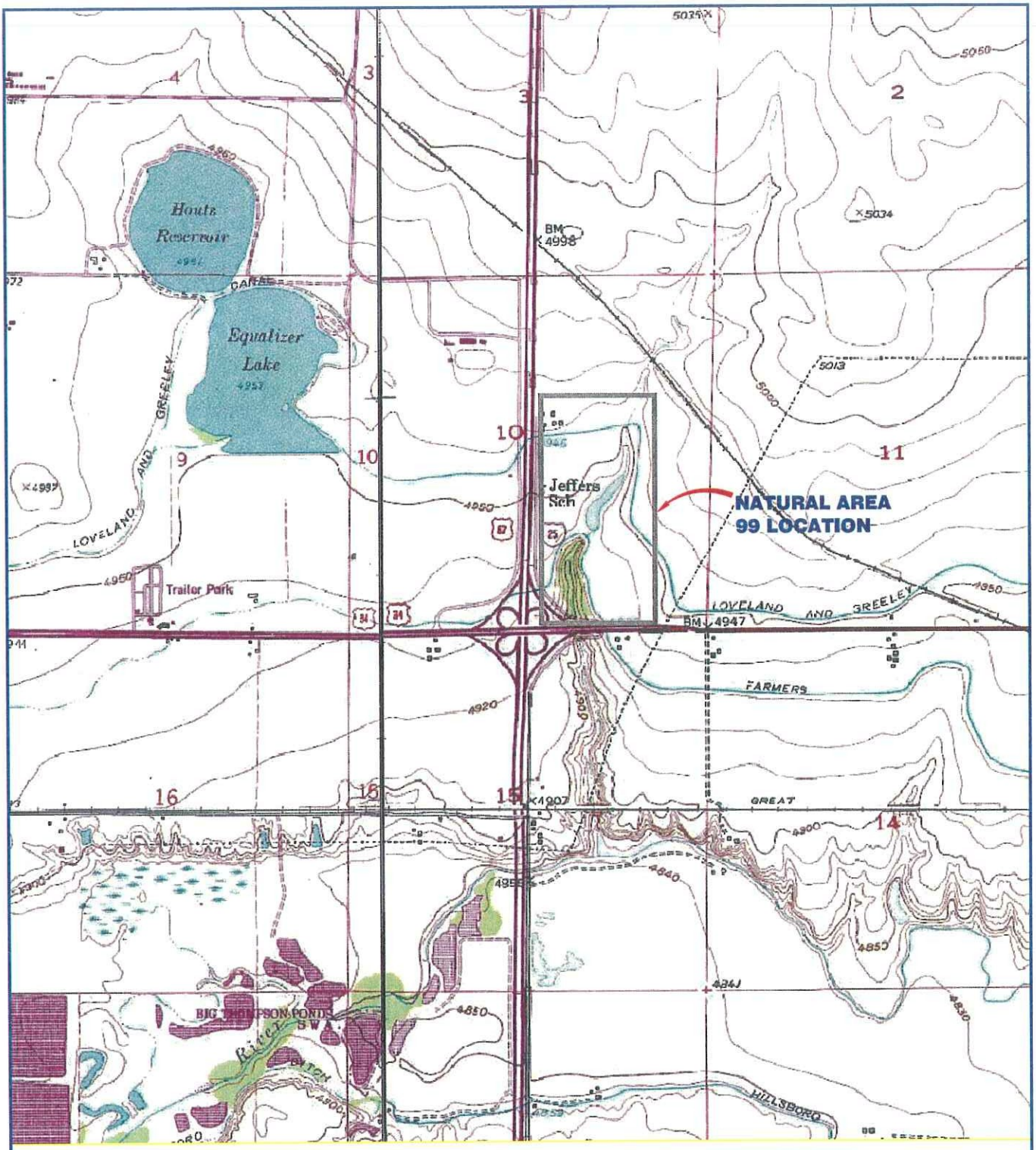


FIGURE 1: VICINITY MAP

Date:	11/01/06
Job No:	05-211
Drawn:	CBF
Design:	CBF
Checked:	CBF
File:	NA99 Vicinity Map
Scale:	1"=8000'+/-

McWhinney Enterprises

NATURAL AREA 99

Loveland, Colorado

FlyWater consulting, inc.
4900 Dakota Drive
Fort Collins, Colorado 80528
Corey Engen
(970) 217-5182
corey@flywaterconsulting.com
Brad Florentin
(970) 231-5498
brad@flywaterconsulting.com

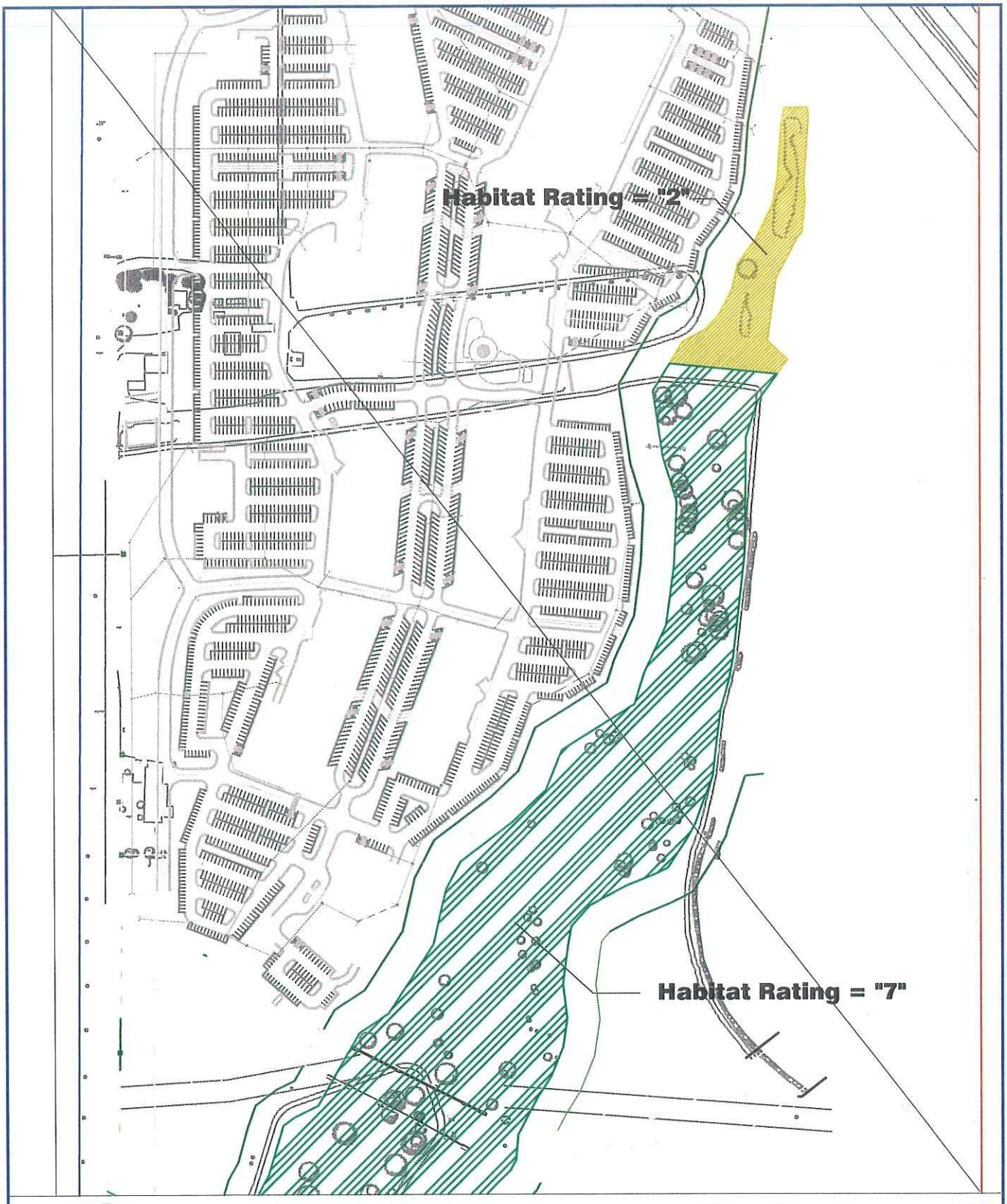


FIGURE 2: NATURAL AREA 99 RATINGS

Date:	11/06/06
Job No:	05-211
Drawn:	cbf
Design:	
Checked:	cbf
File:	
Scale:	1"=300'+/-

McWhinney Enterprises

NATURAL AREA 99

Loveland, Colorado

FlyWater consulting, inc.
4900 Dakota Drive
Fort Collins, Colorado 80528
Corey Engen
(970) 217-5182
corey@flywaterconsulting.com
Brad Florentin
(970) 231-5498
brad@flywaterconsulting.com

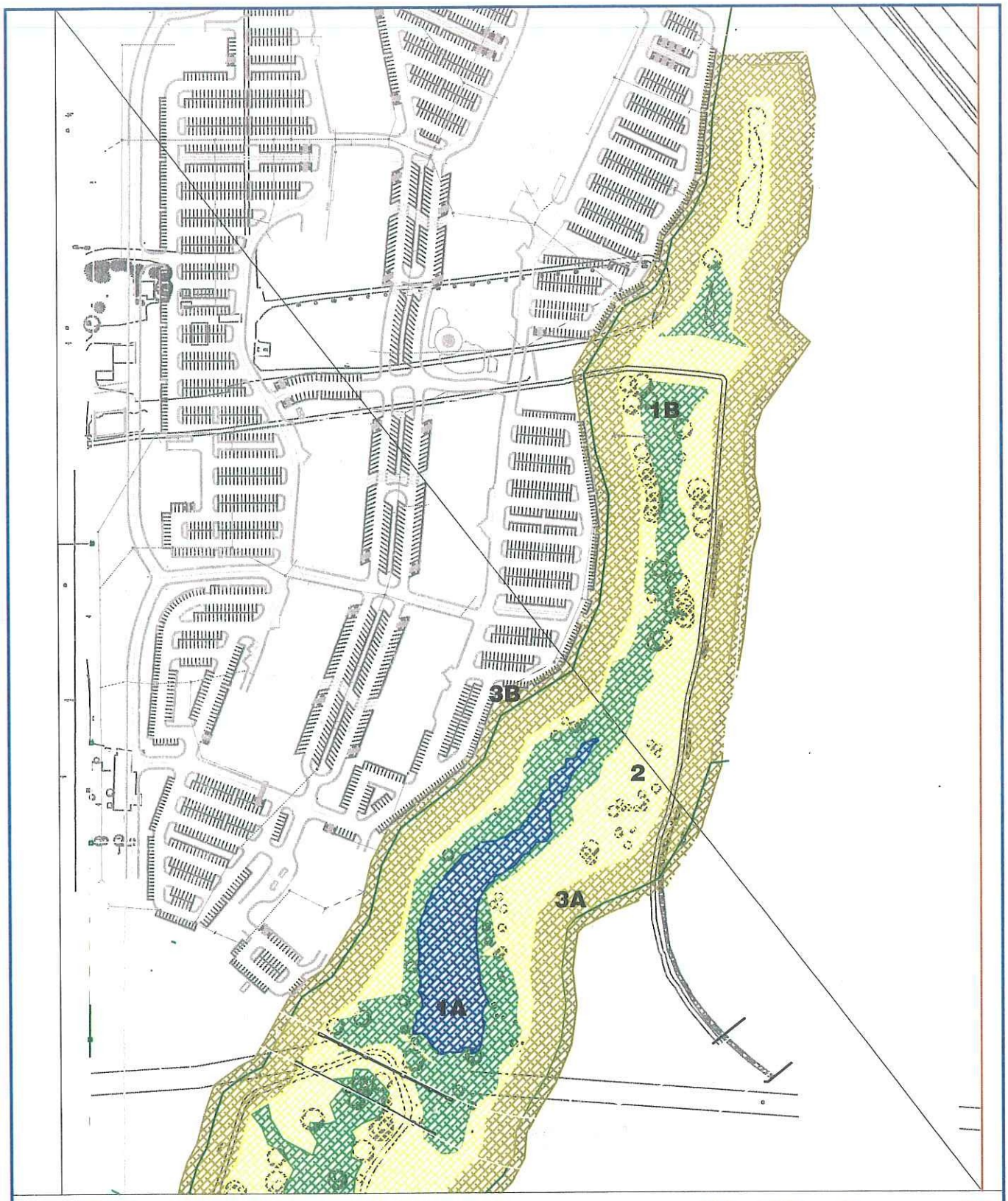


FIGURE 3: PREVIOUS HABITAT ZONES

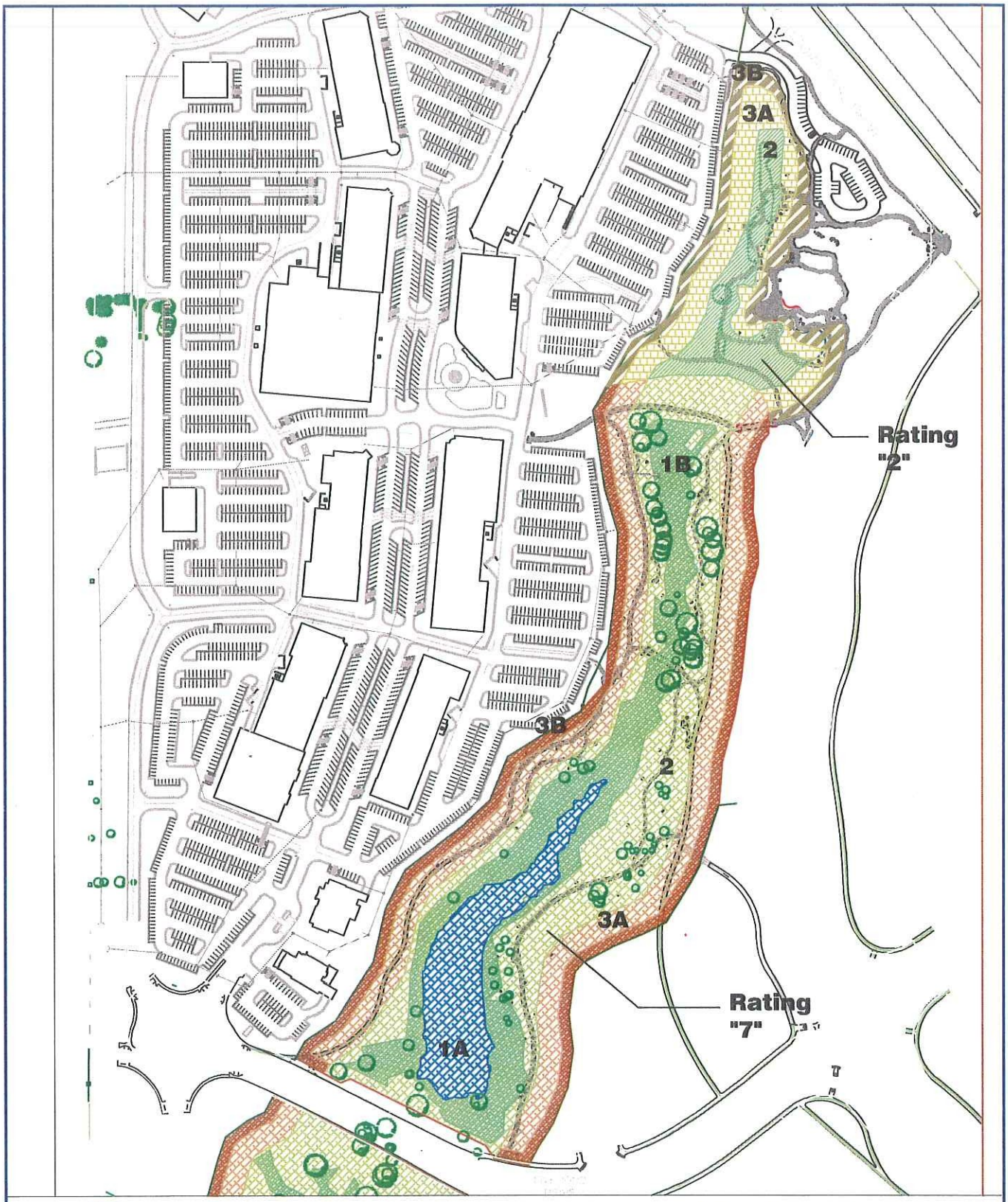
Date:	11/06/06
Job No:	05-211
Drawn:	cbf
Design:	
Checked:	cbf
File:	
Scale:	1"=300'+/-

McWhinney Enterprises

NATURAL AREA 99

Loveland, Colorado

FlyWater consulting, inc.
4900 Dakota Drive
Fort Collins, Colorado 80528
Corey Engen
(970) 217-5182
corey@flywaterconsulting.com
Brad Florentin
(970) 231-5498
brad@flywaterconsulting.com



300 150 0 300

SCALE IN FEET

FIGURE 4: REVISED HABITAT ZONES

Date:	01/16/07
Job No:	05-211
Drawn:	cbf
Design:	
Checked:	cbf
File:	
Scale:	1"=300'+/-

McWhinney Enterprises

NATURAL AREA 99

Loveland, Colorado

FlyWater consulting, inc.
4900 Dakota Drive
Fort Collins, Colorado 80528
Corey Engen
(970) 217-3182
corey@flywaterconsulting.com
Brad Florentin
(970) 231-5498
brad@flywaterconsulting.com

Appendix A

In the Nature of Things

In the Nature of Things was a report of a study completed in 1993 and updated in 1996 that defined and identified Natural Areas within the City. The following is a summary from the document pertaining to NA99 and guidance to acceptable uses within a sensitive area:

- Evaluations do not, in any way, imply future land uses, development constraints, property values, or acquisition potential.
- NA99 has overall rating of 7; animal diversity rating of 6; wetland rating of 7; and a plant diversity rating of 7.
- Wetlands in NA99 are supported by irrigation runoff and seepage from adjacent irrigation ditch.
- NA99 enhancement possibilities rated at medium.
- If development occurred adjacent to NA99, the site could provide an excellent open space and buffer area – should be planted with riparian shrubs and native trees to improve buffer.
- Visitors to Natural Areas can:
  - Tread lightly
  - Avoid disturbing wildlife
  - Keep pet under control so as to not disturb wildlife
- Developers near Natural Areas can:
  - Obtain information on the wildlife and plants and make such information a central part of the development planning process
  - Accept the challenge of using the development process to protect and sustain nature.
  - Protect and enhance Natural Areas

Parks and Recreation Master Plan 2001

Introduction - Natural Areas (Open Space) The Natural Areas Division is involved with the planning, management, acquisition and operations of the Open Lands Program. Funding for the program is received from a quarter-cent Larimer County sales tax through 2018 for the operation, maintenance and acquisition activities.

Inventory - Natural Areas - In 1999, the Parks and Recreation Department assumed management responsibility for the City's Open Space/Natural Areas Program. Loveland's natural areas are funded through the Larimer County Open Space Sales Tax, a portion of which is allocated to each municipality in the county based on a population/sales tax formula. This tax is in effect until 2018 for the planning, acquisition, management and maintenance of open land areas. The Natural Areas program works with interested landowners and forms partnerships with other local and state governments and land trusts to preserve significant open lands characterized by unique natural environments. Twenty-seven natural areas have currently been preserved as open space including land along the Big Thompson River and City recreational trail, agricultural lands, and former gravel ponds, providing unique natural features and scenic view sheds.

Condition of Existing Facilities – Natural Areas - It is the goal of the natural areas program to restore and maintain natural areas properties to a status as near as possible to their native condition. Several recent property acquisitions required significant cleanup of debris and noxious weeds. Planting of native vegetation, including grasses, forbs, shrubs, and trees, follows these cleanups to prevent the reestablishment of weeds. Following restoration, certain natural areas are accessible to the public. Agricultural properties will continue to be farmed following acquisition whenever possible.

Standards, Guidelines, and Policies – Open Space/Natural Areas - Conservation and preservation of natural areas; no defined service area; resource determines size, use and accessibility. The City manages open space areas separately from the park system, but there are open space areas within and bordering several park and trail locations. A separate Open Lands Master Plan governs the Open Lands Program.

Standards, Guidelines, and Policies – Trails - Trails are off-road (non-motorized) recreational routes typically constructed of concrete, which are 10 feet in width. Paved trails supplement commuter routes and provide linkages within the community. Most trails are located along drainage ways, irrigation canals or through acquired open space. The Recreation Trail may also be constructed through residential developments with the intent to encircle the City in a connecting loop. Loveland's trail standard is one-half paved mile of trail per 1,000 population.

Non-Paved or soft surface trails will be constructed where possible along all new trail routes. These trails generally run parallel to the paved trails and will vary in width and will be constructed to avoid impacts to environmentally sensitive areas. Demand for non-paved trails is increasing to accommodate walkers, joggers and mountain bikers where appropriate.

Implementation Plan - Natural Areas -
Rewrite and update the City of Loveland Open Lands Plan of 1996 Staff will analyze results from the first 5 years of the Open Lands Plan and assess the next 5 to 10 years for preservation of additional open space, as well as the management of open space currently owned. City Council needs to provide priority direction for use of limited resources and varied possibilities for focus including growth management, natural area and wildlife habitat preservation and public use of these areas. This will be a 2002 staff project with the Open Lands Commission.
Restoration of Recently Acquired Open Space Parcels Management and maintenance plans will be established and implemented for three recently acquired parcels along the Big Thompson River, as well as for additional properties acquired in the future.
Assist with Trail Connections and Corridors on or Near Open Space Natural Areas staff will coordinate with Parks staff to identify and acquire trail easements on open space and natural areas and vice versa.
Acquire and Preserve Open Lands and Natural Areas Based on the priorities of the Open Lands Plan, lands will be purchases or preserved as they become available and funding permits. If development plans are proposed in or around Loveland, discussions with the developers will occur during the planning and development review process.

Policy Questions - Use of Natural Areas - There are several policy questions, that exist regarding the use of purchased or conservation easements of natural areas. Are these areas a growth management tool? Should natural areas be more available for public use and environmental education? As Loveland continues to increase its inventory of natural areas, these questions will need answers to adequately prepare maintenance and management plans for each site. The 2002 updated Open Lands Plan should address these issues.

Open Lands Plan – March 2003

Introduction - The purpose of this plan is to present the current status of the open lands program and to outline future land preservation in the Loveland area.

Vision - Loveland's vision is that the community will continue to view parks and open lands as important for humans and all living things, and these special places will remain an integral part of the lifestyles of the City's

citizens and visitors. This philosophy will include a balanced approach to planning, seeking ways to conserve natural resources while meeting the needs of a community that will continue to grow in coming years. The City looks forward to the day when the existing system of developed and undeveloped parks, trails and open lands will be expanded throughout the community, becoming part of Loveland's image and identity. Some open lands should be accessible to all people for recreational use while others should be left relatively undisturbed, preserving their natural values. The City will protect open lands that are contiguous, and will add new lands that are connected to previously protected areas, to allow wildlife movement and thus better protect high-value habitat. When appropriate, open lands in and around the community will be used for educational purposes as well as for relaxation, beautification and recreation.

Public Access - To protect sensitive wildlife habitat, wetlands and other natural resources, some open lands may not be open to direct public access, but may instead be of great value by providing visual access. Natural areas that have higher natural resource values may be accessible from viewing areas along the edges, while areas of lower habitat quality may have more direct public access. Trails and other facilities will be developed in open lands areas with less sensitive resources to accommodate public uses such as hiking, picnicking, wildlife viewing and other recreational uses. Future facilities will be designed to minimize undue impact to natural resources.

Proposed Natural Areas Trails - The City's Natural Areas Program may develop trails on open lands. These trails will be planned with consideration of wildlife and other natural resource values and will not enter areas that are of particular importance or sensitivity. Decisions regarding which areas will receive trails, and their exact alignment, will be determined in the future on a case-by-case basis, as part of the management planning process. . . .It is anticipated that most of these trails would be natural soft surface trails.

Environmentally Sensitive Areas Reports - Title 18 of the Loveland Municipal Code covers zoning, the development review process, performance standards, and zoning districts. Currently, the City is revising and updating this section of the code. The City of Loveland 1994 Comprehensive Master Plan Section 4.2 and Municipal Code Section 18.41 state that all proposed developments in or adjacent to natural areas, as identified by In The Nature Of Things and updated in this Open Lands Plan, are required to submit an Environmentally Sensitive Areas Report (ESAR) for review and approval by the Current Planning Division and the Parks and Recreation Department.

Natural Areas Division Policies

14. Hunting shall not be permitted on open lands or natural areas owned by the City of Loveland (Section 9.48.010 of the Loveland Municipal Code).

21. Signage for natural areas and open lands shall identify the property as open lands and provide rules and regulations applicable to the property.

23. Restoration and revegetation of open lands, if necessary, shall be performed in accordance with a baseline inventory and management plan prepared by staff or outside contractors for each property.

Appendix A —Recommendations for Big Thompson Corridor are split into whether the natural area has a rating of "6" or above or "5" and below. Ratings of "6" and above will be included in the Resource Protection Area and development will not be allowed; buffer widths are 50 feet. Ratings of "5 and below will be included in the 50 foot buffer to the Resource Protection Area.

Recommendations for Lake Edges and Ditches are also split into whether the natural area has a rating of "6" or above or "5" and below. Ratings of "6" and above should have buffer widths are 300 feet. Ratings of "5 and below should have 75 foot buffer widths and can have trails.

Comprehensive Master Plan – December 2003

Concept of Plan - LU:2.8 The current natural areas system includes the foothills, the lakes, parks and recreation areas, streams and irrigation canals, and the Big Thompson River floodplain. As the city grows out from the center, these natural areas need to be preserved and enhanced.

Use Plan Details - The Land Use Plan identifies critical natural areas in the city and within the city's future growth areas. These include the many lakes, the Hogback, and the Big Thompson River Flood Plain. In addition, there are many irrigation canals, streams, and tributaries that are important opportunities to provide linear open spaces as development takes place.

Future Planning Opportunities - This approach is important if the City wishes to accomplish its objective of proactively planning for areas under development pressure, while preserving natural areas. There are areas that need to be looked at more specifically by the City Council and Planning Commission, working with the property owners, to develop a strategy for the future that all can agree on.

Loveland Municipal Code – amended 9/26/2006

The Loveland Municipal Code also provides guidance in relation to natural and sensitive areas. The following is a summary from the document pertaining to NA99 and guidance to acceptable uses within a sensitive area:

Section 7.18.030 - Weeds, cutting & removal - It shall be an affirmative defense to a violation of this section that the land upon which the vegetation is growing is City owned property and has been designated by the Director of the Parks and Recreation Department of the City as a natural area, wildlife corridor, or wetlands, or that the land upon which the vegetation is growing is dedicated public or private open lands as determined by the manager of the City's Long Range Planning and Natural Resources Division. (Ord. 4274 § 1 (part), 1997)

Section 16.08.010 - Definitions - "Environmentally sensitive areas" means an area with one or more of the following characteristics: (1) slopes in excess of twenty percent; (2) floodplain; (3) soils classified as having high water table; (4) soils classified as highly erodible, subject to erosion or highly acidic; (5) land incapable of meeting percolation requirements; (6) land formerly used for landfill operations or hazardous industrial use; (7) fault areas; (8) stream corridors; (9) estuaries; (10) mature stands of vegetation; (11) aquifer recharge and discharge areas; (12) habitat for wildlife; or any other area possessing environmental characteristics similar to those listed here.

Section 16.16.030 A. 2. - Review procedures, general – Concept Review of a Sketch Plan – Concept Review Team Meeting – i. The location and extent of any known environmentally sensitive areas, any reasonably anticipated impacts on these areas, and any other proposed corresponding mitigation. Another concept review team meeting may be necessary if the applicant makes substantial changes to the original sketch plan. The

concept review team may discuss with the applicant the submittal requirements, and waivers to the submittal requirements, if appropriate.

Section 16.20.030 - Subdivision review standards – C. The subdivision preserves natural features and environmentally sensitive areas of the site to the extent possible.

Section 16.24.080 - Water courses - In the event that the subdivision is traversed by any water course or channel, stream or creek, or is contiguous to the shoreline of a lake or a reservoir the subdivider shall provide sufficient easements, by dedication, or tracts of land separate for individual lots, acceptable to the city, to care for such surface and storm water and the disposal thereof and sufficient building setbacks or landscape or natural buffers as determined by the city. (Ord. 4444 § 1 (part), 1999; Ord. 4298 § (part), 1997)

Section 16.40.015 - Grading permit allowed - (2) for overlot grading that meets the criteria for the issuance of a grading permit set forth in the building code adopted by the City, provided that the Director finds (i) that the grading activity will not disturb any natural areas as defined in the City of Loveland Comprehensive Master Plan, and (ii) that the grading activity will not disturb any environmentally sensitive areas as defined in the Loveland Municipal Code. (Ord. 5107 § 1, 2006)

Section 18.30.040A. 2. - Development standards – Campus-Type Character - Unified Open Space: Projects shall include a unifying internal system of pedestrian-oriented paths, open spaces and walkways that function to organize and connect buildings, and provide connections to common origins and destinations (such as transit stops, restaurants, child care facilities and convenience shopping centers). The development plan shall utilize open space and natural features that serve as buffers and transitions to adjacent area(s). Development plans shall include at least 20 percent of the gross site area devoted to common open space features, including features such as common area landscaped buffers, parks or plaza spaces, entrance treatments, natural areas, or wetlands, but excluding any open space or landscaped areas within required building setbacks or parking lots. Areas dedicated to storm water drainage may also be counted toward meeting the open space requirement, provided they are designed to be recreation space or as an attractive site feature incorporating a naturalistic shape and/or landscaping.

Section 18.32.020 - Definitions - H. Open Lands/ Natural Area – Shall mean all areas as described in the City of Loveland Open Lands Plan or as further described in the Parks and Recreation Master Plan, as these plans are adopted and may be amended.

Section 18.32.030 - Uses permitted by right - E. Open Lands/Natural Areas

Appendix B

Cedar Creek – January 1999

- Active cultivation approaches to the edges of most segments of the ditches and there is minimal vegetation cover, these ditches have little value as wildlife movement corridors or wildlife habitat.
- Area between the Loveland and Greeley Canal and Highway 34 has rating of 7 due to diversity of wildlife habitat created by mix of wetlands, riparian uplands, and grasslands. Rating would have been higher if connected to other natural areas.
- Area North of Loveland and Greeley Canal has a rating of 4 due to reduced vegetation, narrow configuration, and adjacent cropland.
- There are no wildlife movement corridors to other Natural Areas – movement blocked by I-25 and Hwy 34.
- Setback of 300 feet recommended – from City of Fort Collins general guidance.
- Setback of 50 feet for Natural Area north of GLIC
- Trails and picnic areas appropriate in buffer zones
- No development within buffer zone
- Planted and maintained with native upland vegetation
- Detailed preliminary plans and specs for planting, soil prep, and weed control will be submitted prior to approval of Preliminary Plat
- Since surrounding development is commercial, free roaming cats and dogs are minimized – lease law should be implemented

Ecological Resource Consultants – July 2003 revised November 2003

- Natural Area 99 is a remnant and fragmented tributary drainage to the Big Thompson River.
- No TES species or CNHP Potential Conservation Areas were documented on the Centerra East Property.
- Drainage is intermittent and pond is perennial
- Ratings are as follows:

Natural Attribute	*Numerical Rating**
Overall Habitat Rating	7
Wetland Rating	7
Animal Diversity	6
Plant Diversity	7
Songbird Rating	7
Raptor Rating	5
Waterbird Rating	6
Mammal Rating	6
Reptile. Amphib. Rating	7
Enhancement Potential	medium

- Natural Area 99 is entirely surrounded bordered by agricultural lands and Ditch maintenance roads.
- The Natural Area 99 habitat has been fragmented by irrigation channels, ditch maintenance road crossings, intrusion by agricultural practices as well as surrounding roadways and development.
- The majority of the hydrology in the area drains towards the natural drainage with limited treatment.
- The upland habitat is suffering from the encroachment of aggressive weedy plant species.
- Generally the existing buffer zone is highly disturbed by irrigation easements as well as active farming and lacks vegetative structural diversity.

- City of Loveland Development Code recommends 180-300 foot buffer zone associated with Wetlands with a rating of 6 or higher for water birds, wetland or overall habitat which have been identified in Natural Area 99.
- Proposes a 75 foot buffer zone between the edge of development and the edge of the Natural Area. By establishing a site specific, higher functional value buffer zone, the buffering capabilities of the zone can be achieved over less of a horizontal distance. The following were recommended:
  - All non-native/noxious weed species should be eliminated from the buffer zone and Natural Areas.
  - The buffer zone should be reseeded with a native seed mix which promotes vegetative structural diversity, species richness, runoff retention and wildlife forage and cover.
  - Native trees and shrubs such as cottonwood trees, peach-leaf willow and chokecherry should be strategically planted to provide a shading, visual/noise screen as well as to reduce light from entering the natural areas. Dense groupings of shrub planting are recommended which also create additional structural diversity promoting wildlife habitat.
  - The buffer zone should be identified within the development plan through the use of an open type fence such as split rail and signs, to discourage routine human disturbance.
  - The buffer zone should be managed, eliminating routine mowing, and implementing weed control and routine litter control.
  - All developmental stormwater runoff should be treated prior to discharge into local drainages.
  - Wildlife habitat improvement structures could be installed throughout the Natural Area.

Appendix C

Sensitive Area Habitat Evaluation Sheet

Site ID: Natural Area 99 – North of GLIC

Dates of Field Evaluation (investigator):

8/1/06 (Matt Schlitzer), 8/14/06 (Matt Schlitzer), 8/29/06 (Bradley Florentin)
10/19/06 (Bradley Florentin)

Overall Habitat Rating:	2	**Wetland Rating:**	0
Animal Diversity:	2	**Plant Diversity:**	1

Site Location: *S10, T5N, R68W*

Site Description:

Small grove of cottonwoods surrounded by weedy grasses and forbes.

Habitat Types:

FOR

Forest – Riparian Forest, Cottonwood Grove, Scattered Deciduous Trees:

Mature cottonwood Grove – no other species of native trees present

GRA

Grassland – Grass/Forb:

smooth brome, creeping bentgrass, kochia, prickly lettuce

Miscellaneous Types

Weedy/Disturbed,

This area has been historically cultivated. Cultivation has ceased and the areas have been disturbed for use as water quality and detention ponds required for surrounding development.

Threatened and Endangered Species:

None

Songbirds: 3

nesting habitat – observed: black-billed magpie, American robin, American goldfinch

Raptors: 2

perch sites – observed red-tailed hawk

Waterbirds: 1

nesting habitat – none observed

Mammals: 1

This area has no scrub community for small mammal cover and is fragmented and narrow – observed raccoon

Herptiles (amphibians and reptiles): 0

There is not persistent surface water or wetland habitat for reproduction and shelter. The water source is runoff from the surrounding development. There may be intermittent pools of water in the bottom of the detention and water quality basins and some fringe wetlands may develop.

Other Wildlife: 0

Nearby Habitats:

I-25 & Development

Pristine Quality: 0

Human Use: 0

Human Disturbance: 0

Enhancement Possibilities:

Medium

Wetland Functions:

Special Features:

Wildlife Conflict:

Corridor:

This portion of Natural Area 99 is disconnected from any wildlife corridors.

Any critical INFO needed?

Literature:

Ownership:

Private

Sensitive Area Habitat Evaluation Sheet

Site ID: Natural Area 99 – South of GLIC

Dates of Field Evaluation (investigator):

8/1/06 (Matt Schlitzer), 8/14/06 (Matt Schlitzer), 8/29/06 (Bradley Florentin)
10/19/06 (Bradley Florentin)

Overall Habitat Rating:	7	**Wetland Rating:**	7
Animal Diversity:	6	**Plant Diversity:**	7

Site Location: *S10, T5N, R68W*

Site Description:

Very diverse wetland swale with open water, large trees & shrub canopy.

Habitat Types:

AQA

Aquatic – Open Water, Ephemeral Drainage: Vegetation listed below observed on site by FlyWater.

". . .coyote willow, common cattail, pondweed, watercress, Baltic rush, threesquare, Nebraska sedge, swamp milkweed, smartweed, and willowherb."[2]

"canary reed grass, broad-leaf cattail, Baltic rush, water sedge, clustered field sedge, peach-leaf willow, plains cottonwood, common teasel, houndstongue, false Solomon's seal, Nebraska sedge, and curly dock."[3]

FOR

Forest – Riparian Forest, Cottonwood Grove, Scattered Deciduous Trees: Vegetation listed below observed on site by FlyWater.

". . .mature plains cottonwood and peachleaf willow..."[2]

". . . mature trees species identified include plains cottonwoods and peach-leaf willow trees. . ."[3]

GRA

Grassland – Grass/Forb: Vegetation listed below observed on site by FlyWater.

". . .smooth brome, cheatgrass, western wheatgrass, slender wheatgrass, crested wheatgrass, Indian grass, Canada wildrye, Kentucky bluegrass, Canada thistle, and Virgin's bower."[2]

". . .smooth brome, creeping bentgrass, clustered field sedge, false Solomon's seal, Canada thistle, poison ivy, common teasel, yellow sweet clover, musk thistle, leafy spurge, houndstongue, wild licorice crested wheatgrass, orchard grass, stinging nettle, hare barley, wild lettuce, curly dock, showy milkweed, smooth scouring rush, and downy brome.."3

WET

Wetland – Cattail Marsh, Sedge/Rush, Willow Shrubland: Vegetation listed below observed on site by FlyWater.

". . .reed canarygrass, teasel, clustered field sedge, Emory sedge, swithcgrass, foxtail barley, hemp dogbane, alkali muhly, field mint, showy milkweed, and Nuttall's sunflower. . ."[2]

". . .houndstongue, common teasel, Canada thistle, , musk thistle, and Russian olive trees."[3]

SHR

Shrubland – Plains Shrubland, Riparian Shrubland: Vegetation listed below observed on site by FlyWater.

"chokecherry, Wood's rose, western snowberry, rubber rabbitbrush, and skunkbush sumac"[2]

". . .dense chokecherry stands, Wood's rose, snowberry, rabbit brush, and scarlet falsemallow."[3]

AGR

Agricultural – Irrigation Ditch

". . .since active cultivation approaches to the edges of most segments of these ditches and there is minimal vegetation cover, these ditches have little value as wildlife movement corridors or wildlife habitat, except where they are in close proximity to Natural Area #99."[2]

Threatened and Endangered Species:

None

Songbirds: 7

"nesting and foraging habitat – observed belted kingfisher, northern flicker, blue jay, black-billed magpie, American robin, western meadowlark, black-capped chickadee, American goldfinch"[2]

"The shrubs and trees within the riparian area are used by songbirds for nesting – Observed: kill deer, red wing blackbird, barn swallow, western tanager"[3]

Observed Red winged blackbird - FlyWater

Raptors: *5*

"perch sites and hunting habitat – observed red-tailed hawk, American kestrel, great horned owl"[2]

"The shrubs and trees within the riparian area are used by . . .raptors for roosting and hunting the nearby agricultural fields and meadow habitat – observed: red-tail hawk and great-horned owl"[3]

Observed red-tailed hawk - FlyWater

Waterbirds: *6*

"nesting and foraging habitat – observed mallard"[2]

"Waterfowl use the pond area for foraging and possibly nesting. Observed: white pelican, blue heron, double-breasted cormorant, mallard"[3]

Mammals: *6*

"small mammal and hunting habitat – observed Nuttall's cottontail"[2]

"The fragmented habitat limits the mammalian use of the area to primarily small mammals. Observed: cottontail, and coyote"[3]

Raccoon - FlyWater

Herptiles (amphibians and reptiles): *7*

"breeding and foraging habitat"[2]

"The reptiles and amphibians require surface water and wetland habitat for reproduction and shelter. Observed: Snakes, frogs"[3]

Other Wildlife: *0*

Nearby Habitats:

I-25 & Agricultural

Pristine Quality: 0

Human Use: 0

Human Disturbance: 0

Enhancement Possibilities:

Medium

Wetland Functions:

This site is a long, relatively narrow unit with a core of cattail marsh supported by irrigation runoff and seepage from the adjacent irrigation ditch. The site forms an interesting complex of vegetation types, including scattered large mature plains cottonwoods, extensive understory of snowberry and large stands of cattails. Other shrub stands also provide habitat for wildlife. The northern portion of the site supports a large shallow pond with wetland margins. This site potentially could be considered part of a corridor associated with the irrigation ditch. Potential improvements for this site could include use of the irrigation water to further enhance or expand wetlands and maintenance of the pond. If development occurred adjacent to the site, the site could provide an excellent open space and buffer area, but should be planted with riparian shrubs and native trees to further protect and buffer the area. The wetlands here provide water quality benefits, including sediment and nutrient retention, and provide important wildlife habitat. Portions of the site appear to receive heavy applications of herbicide most likely associated with irrigation ditch maintenance.[1]

Special Features:

Wildlife Conflict:

Corridor:

"There are no wildlife movement corridors from natural areas in the Eastern Portion to other natural areas."[2]

Any critical INFO needed?

Literature:

Design Workshop, Inc., ERO Resources Corp., Stoecker Ecological Consulting, Inc., "In the Nature of Things – Loveland's Natural Areas". December 1993. Revised October 1996.
Phelan, T. Michael, "Environmentally Sensitive Areas and Wetland Report for the Rocky Mountain Villages III Properties", Cedar Creek Associates. January 1999.
Ecological Resource Consultants, Inc., "Centerra East Property City of Loveland Natural Area 99 Analysis". November 2003.

Ownership:

Private

MILLENNIUM GDP –AMENDMENT # 2

Sign-off sheet

Indicated Type of Amendment:	~~Major~~ Minor
If Major, date of City Council Approval:	Not Applicable
Indicate Sections Effected by Amendment:	~~1 2 3 4 5 6 7 8 9 10 11 12 13~~ 14 ~~15~~
Footer Date Corresponding to Updated, Amended Sections:	November 6, 2006 – Section 14, Natural Area 99 Rating and Use

Description of the Amendment:

Section 14, shall be amended to add the Natural Area 99 revised rating and associated acceptable uses. The revised ratings and acceptable uses have been approved by the Centerra DRC. The following items are included for review and reference regarding the Minor Amendment:

1. Natural Area 99 Rating and Use
2. Appendix A – City of Loveland Guidance
3. Appendix B – Previous Studies
4. Appendix C – Site Evaluation
5. DRC approval letter

The Section references above are revised and reprinted with approval of this amendment. A complete copy of the amendment is filed with the City of Loveland Planning Department. A copy of this "Sign-off Sheet" shall be included in **Appendix 'D' in Section 14 of the Millennium GDP**.

Owner Signatures:

The following signatures provide acknowledgement that the above reference amendment was received and approved by the ownership team and is now incorporated into the Millennium General Development Plan:

Douglas Hill — 12.19.06

Doug Hill
McWhinney Enterprises

Date

Staff Use Only:

The following signature provides acknowledgement that the above reference amendment was received and approved through the appropriate City process and is now incorporated into the Millennium General Development Plan:

City of Loveland Director of Community Services
(or his/her designee)

1/19/07

Date

ENVIRONMENTALLY SENSITIVE AREAS REPORT
FOR
PARCELS E, F, AND G OF THE MILLENNIUM GDP

Prepared
by
Cedar Creek Associates, Inc.
Fort Collins, Colorado

Prepared
for
McWhinney Enterprises
Loveland, Colorado

August 17, 2000

TABLE OF CONTENTS

1.0 INTRODUCTION AND LOCATION

This report documents the evaluation of environmental conditions at Parcels E, F, and G of the Millennium GDP in accordance with City of Loveland Planning Department guidelines for preparation of an Environmentally Sensitive Areas Report (ESAR).

The parcels addressed by this report consist predominantly of agricultural land in Sections 3, 4 and 10 of Township 5 North, Range 68 West. Parcel E occupies approximately 128 acres in the South 1/2 of the North 1/2 of Section 4. Parcel F consists of approximately 89 acres in the Southeast 1/4 of Section 3. Parcel G is located in the Northeast 1/4 of the Southwest 1/4 of Section 10 and includes approximately 1 acre. The parcel locations are depicted on Figure 1.

Parcels E and F are bordered by existing roadways, agricultural land, and a Union Pacific Railroad right-of-way. An existing roadway, commercial development, an irrigation canal, and agricultural land adjoin Parcel G. The following sections describe the methodology used to complete the field work and summarize the findings of the surveys.

2.0 METHODOLOGY

A reconnaissance of the parcels and evaluation of habitat conditions was completed on August 15, 2000 by Cedar Creek Associates, Inc. (Cedar Creek) personnel. The objective of this survey was to collect sufficient habitat characterization data to prepare an Environmentally Sensitive Areas Report for submittal to the City of Loveland.

The field survey completed for the ESAR included walking transects through the parcels and vehicular travel on perimeter roads so that the entire area within and adjacent to each parcel was viewed. Habitat unit boundaries were delineated on existing color aerial photographs obtained for each parcel (date of photography: September 22, 1999). Habitat boundaries were based primarily upon the dominant vegetation present and/or land use within each development parcel. Observations recorded during the field survey included: major vegetation communities / wildlife habitats present within the property; dominant flora associated with each community / habitat; unique habitat features; and observations of wildlife species and/or definitive sign. Wildlife presence and habitat use was based on on-site observations and habitat presence in conjunction with the known habitat requirements of potential wildlife species. A qualitative assessment of drainage patterns, irrigation canals, slopes over 20 percent, and other site characteristics associated with environmentally sensitive areas defined by City of Loveland guidelines was also completed in the field. *Soils of Larimer County Area, Colorado* (SCS 1980) was consulted to determine site-specific soil conditions of each parcel.

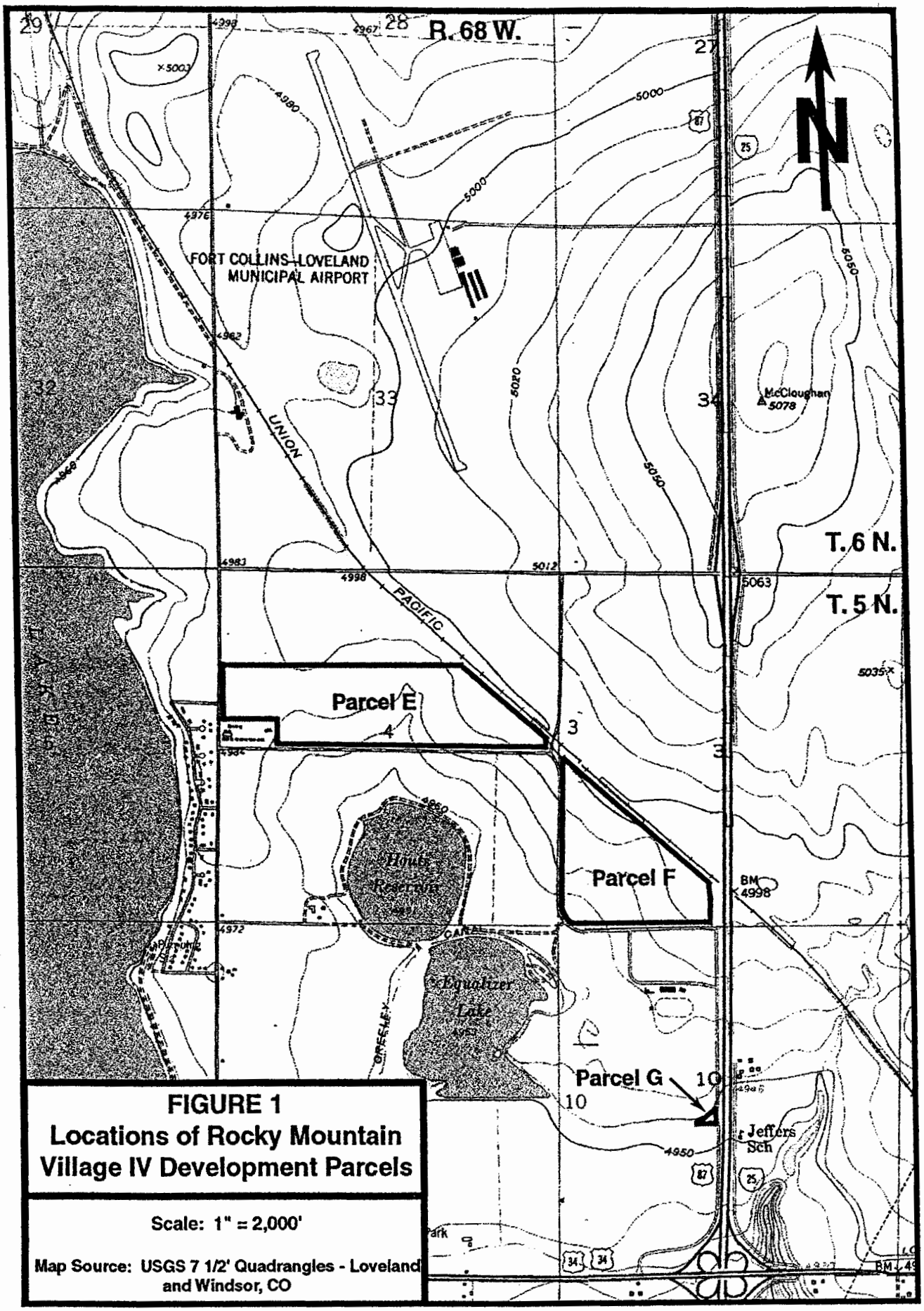


FIGURE 1
Locations of Rocky Mountain Village IV Development Parcels

Scale: 1" = 2,000'

Map Source: USGS 7 1/2' Quadrangles - Loveland and Windsor, CO

3.0 HABITAT CONDITIONS AND ENVIRONMENTALLY SENSITIVE AREAS

The nearly level to gently sloping parcels addressed by this report are composed primarily of agricultural fields except for Parcel G which consists of a house, large garage, and associated formal landscaping bordered on the north by the Loveland and Greeley Canal. Row cropland and residential were the only habitat types identified in Parcels E, F, G. The location and extent of these habitats within the parcel boundaries are shown on Figures 2, 3, and 4. Row cropland and residential areas do not meet any criteria for classification of environmentally sensitive areas. In addition, there are no environmentally sensitive areas (as defined by City of Loveland guidelines) adjacent to any of the parcels except for the Loveland and Greeley Canal along the northern and western edge of Parcel G. The following sections summarize the habitat characteristics within Parcels E, F, and G and address environmentally sensitive areas on or near each development parcel.

3.1 Parcel E Habitat Discussion

Parcel E is bordered by the Union Pacific Railroad right-of-way and row cropland on the east, row cropland on the north, County Road 24E and row cropland on the south, and Boyd Lake Avenue and existing residences on the west. As indicated on Figure 2, row cropland occupies the entire parcel. At the time of the survey the property was comprised of alternating strips of fallow cropland and wheat stubble. Cultivation practices have resulted in the removal of native vegetation and establishment of agricultural crops as well as the invasion of plants consisting primarily of non-native, weedy grass and forb species in fallow sites and around the perimeter of the fields. The strips of fallow cropland were dominated by weedy species including field bindweed (*Convolvulus arvensis*), kochia (*Kochia scoparia*), common sunflower (*Helianthus annuus*), and Canada thistle (*Cirsium arvense*). The field borders were dominated by these species in addition to cheatgrass (*Bromus tectorum*), crested wheatgrass (*Agropyron desertorum*), and Russian thistle (*Salsola kali*). The strip of right-of-way land between cropland and the railroad bed was vegetated primarily by crested wheatgrass and kochia. Photos 1 and 2 provide representative views of row cropland in Parcel E and the railroad right-of-way, respectively.

No woody vegetation is present on Parcel E except for a single plains cottonwood (*Populus sargentii*) tree near the southwest corner (see Figure 2). This tree is approximately 2 feet in diameter at breast height (dbh) and 40 feet tall. No evidence of past raptor nesting activity was noted in the tree, and it is unlikely that it would provide a suitable raptor nest site because of its proximity to Boyd Lake Avenue. A single tree does not meet the environmentally sensitive area criteria for mature stands of vegetation, although it has some wildlife value for perching and possibly nesting by songbirds. The only other woody vegetation adjacent to Parcel E are the stands of trees associated with an existing residence and other housing at the southwest property corner. A number of large Russian olive (*Elaeagnus angustifolia*) and

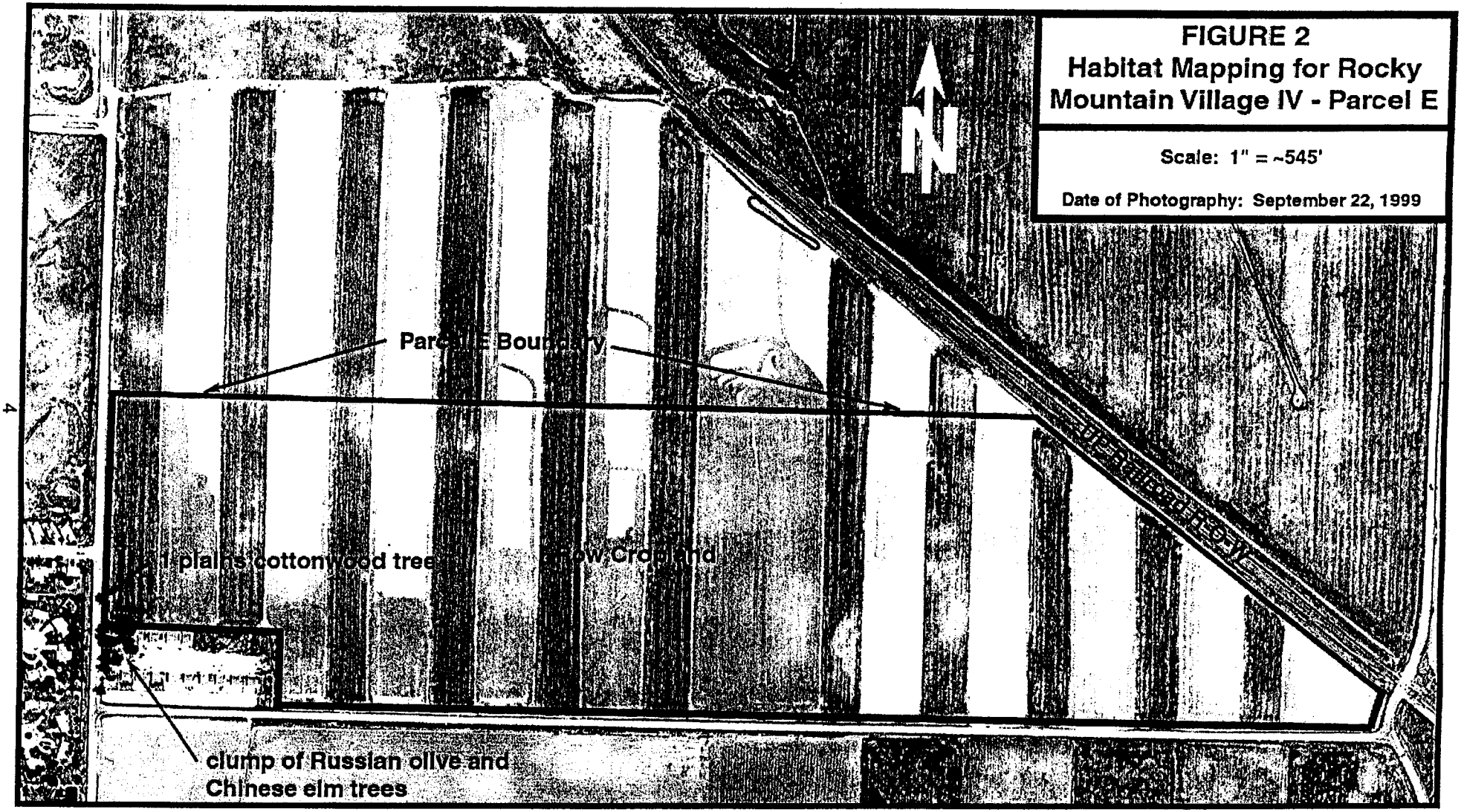


FIGURE 2
Habitat Mapping for Rocky Mountain Village IV - Parcel E
Scale: 1" = ~545'
Date of Photography: September 22, 1999
N
Parcel E Boundary
plains cottonwood tree
clump of Russian olive and Chinese elm trees

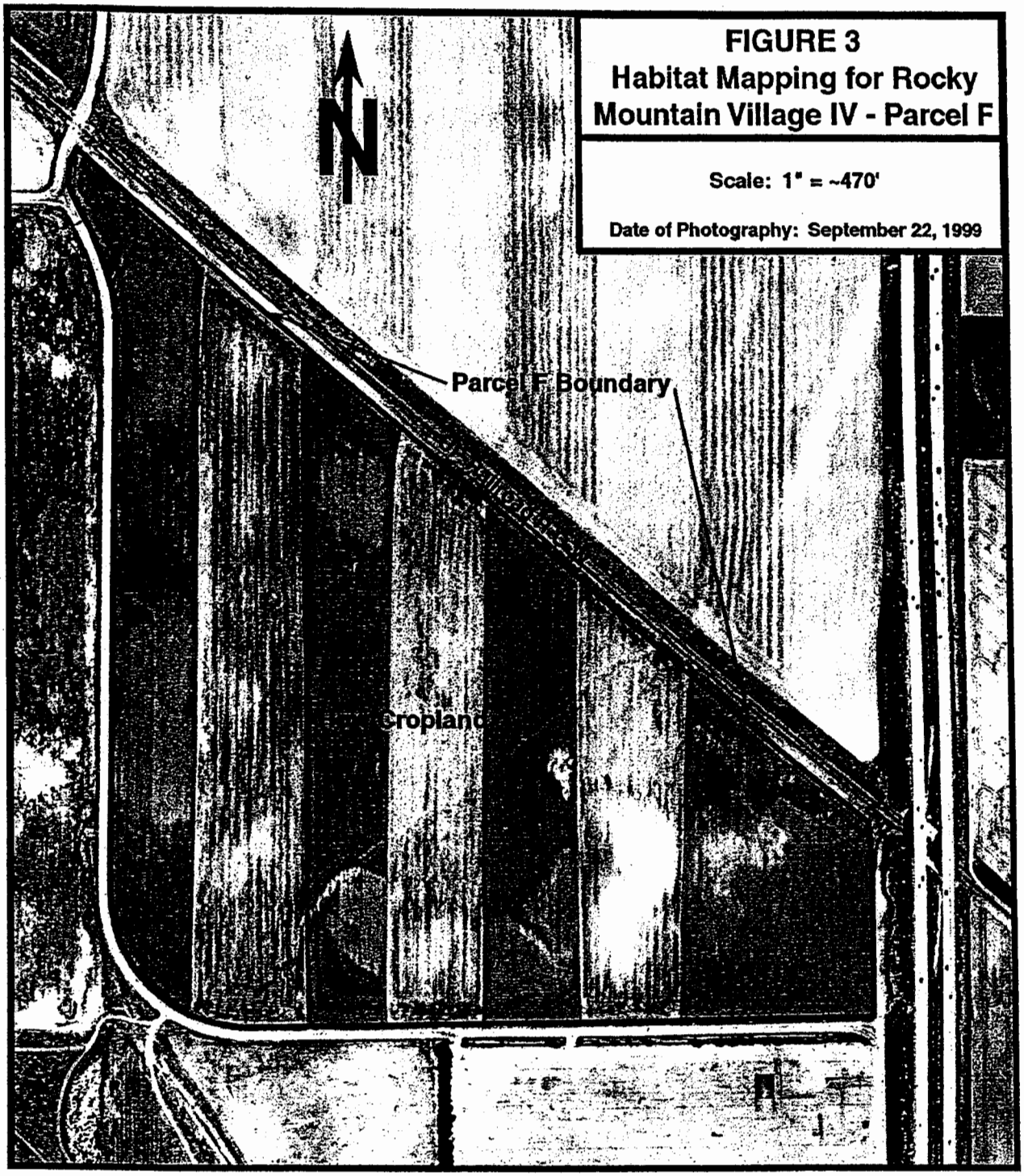


FIGURE 3
Habitat Mapping for Rocky Mountain Village IV - Parcel F
Scale: 1" = ~470'
Date of Photography: September 22, 1999
N
Parcel F Boundary
Cropland

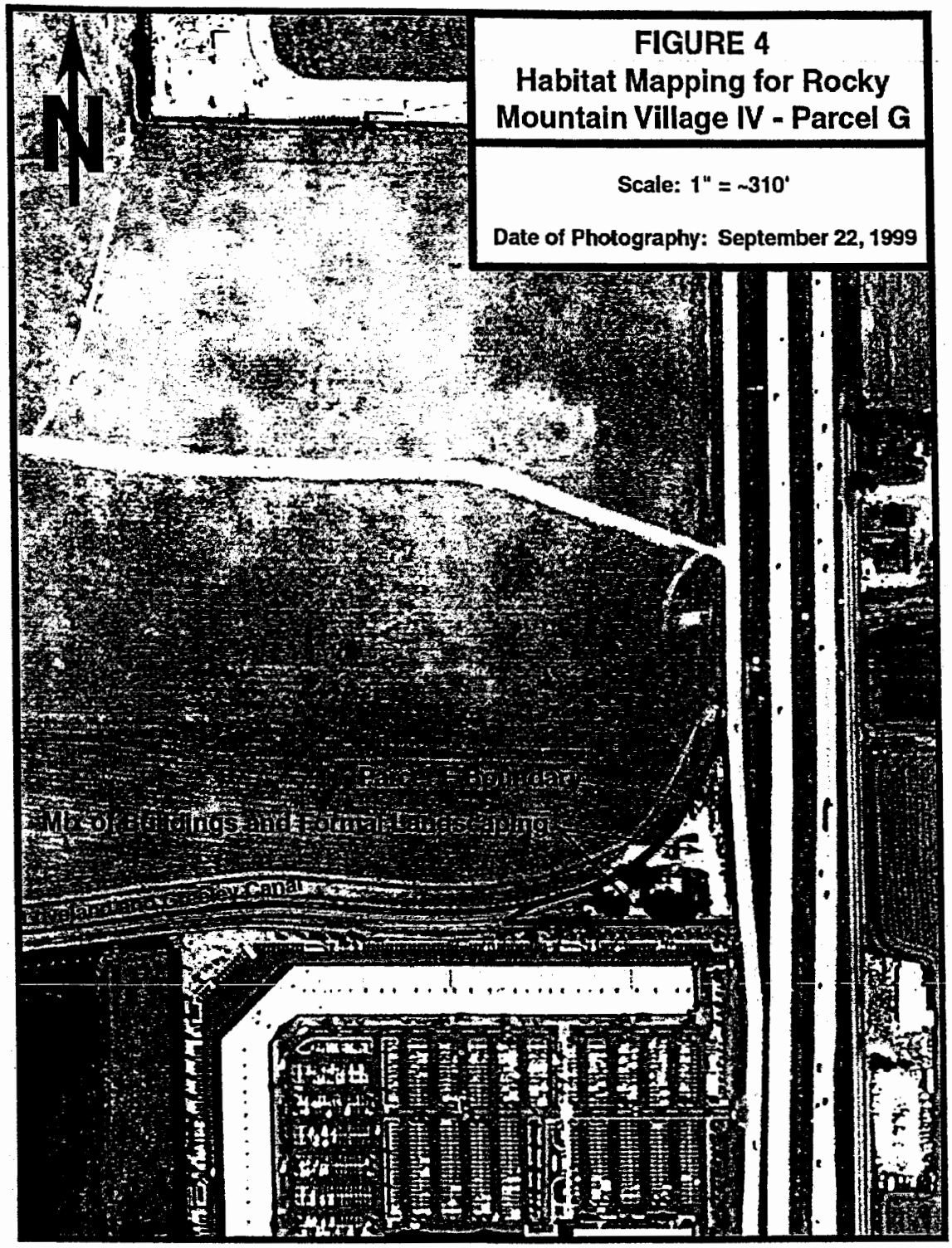

N
FIGURE 4
Habitat Mapping for Rocky Mountain Village IV - Parcel G
Scale: 1" = ~310'
Date of Photography: September 22, 1999

Photo 1. Representative View of Row Cropland in Parcel E. (View is from southeast corner of the parcel looking west.)

Photo 2. View of Union Pacific Railroad Right-of-way Along the East Side of Parcel E. (View is from southeast corner of the parcel looking northwest.)

Chinese elm (*Ulmus pumila*) trees exist as part of the formal landscaping of this area. Both species are non-native to the region. No evidence of raptor nesting activity was also observed in these trees, and it is unlikely they would be suitable for raptor nesting use because of their proximity to human activity, buildings, and Boyd Lake Avenue.

Slopes are nearly level to gently sloping throughout all of Parcel E. Soil Conservation Service soil map units within Parcel E are Nunn clay loam, 1 to 3 percent slopes; Ulm clay loam, 0 to 3 percent slopes; and Wiley silt loam, 1 to 3 percent slopes. Runoff on these soils is slow to medium and the hazard of erosion is moderate. No problem erosion areas were noted during the field survey.

Row cropland has limited value as wildlife habitat, especially when it is not near areas of natural habitat, since vegetation cover and food sources are present primarily on a short-term basis due to seasonal harvesting and cultivation. Vegetation cover is generally lacking from fall through early spring.

3.2 Parcel F Habitat Discussion

Parcel F is bordered by the Union Pacific Railroad right-of-way and row cropland on the north; Interstate 25 on the east; County Road 24E, the Clover Leaf Dog Track, and fallow cropland on the south; and County Road 7 and row cropland on the west. As indicated on Figure 3, row cropland occupies the entire parcel. At the time of the survey the property was comprised of alternating strips of fallow cropland and wheat stubble, and habitat conditions on this parcel and in the adjacent railroad right-of-way were similar to those described for Parcel E. No woody vegetation is present on or adjacent to Parcel F. Photo 3 provides a representative view of row cropland in Parcel F.

Slopes are nearly level to gently sloping throughout all of Parcel F. Soil map units within Parcel F are Stoneham loam, 3 to 5 percent slopes; Weld silt loam, 0 to 3 percent slopes; and Wiley silt loam, 3 to 5 percent slopes. Runoff on these soils is slow to medium and the hazard of water erosion is moderate. No problem erosion areas were noted during the field survey.

Wildlife use and habitat value of row cropland in Parcel F is similar to that described for Parcel E.

3.3 Parcel G Habitat Discussion

This small, approximate 1 acre parcel is comprised primarily of a residential building, large garage, paved and graveled driveways, and residential landscaping (see Figure 4 and Photo 4). Parcel G is bordered by the Loveland and Greeley Canal and row cropland on the north; a frontage road and Interstate 25 on the east; and shopping mall outlet stores on the south. Parcel G currently serves as the business office for the Greeley and Loveland Irrigation Company. Vegetation within this area consists of primarily of turf lawn and plantings of ornamental trees and shrubs. Stands of scattered patches of weeds also grow around

Photo 3. Representative View of Row Cropland in Parcel F. (View is from southeast corner of the parcel looking west.)

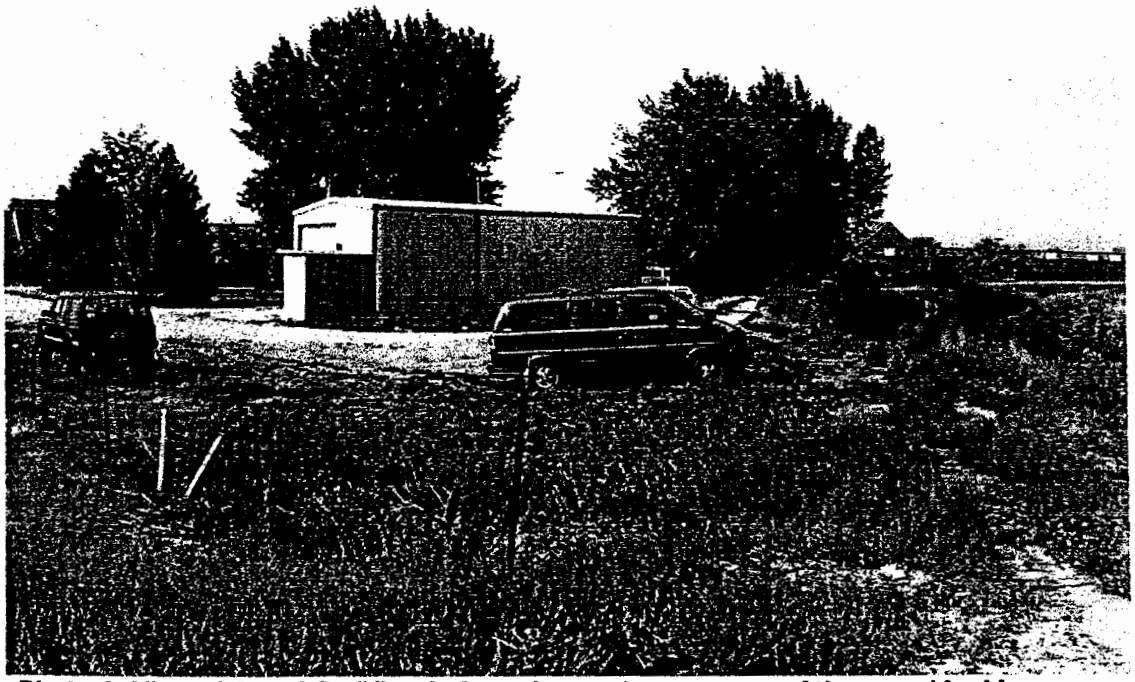


Photo 4. View of Parcel G. (View is from the northeast corner of the parcel looking southwest. Note Loveland and Greeley Canal on right side of photo and outlet mall buildings in far background.)

the perimeter of the sites as well as along the upland edges of the Loveland and Greeley Canal. A few mature plains cottonwood trees also grow the periphery of the residence (see Figure 4 and Photo 4). There is minimal vegetation and no woody vegetation cover along segment of the Loveland and Greeley Canal that borders Parcel G. The canal was classified as environmentally sensitive, however, because irrigation ditches and canals are identified as environmentally sensitive areas by City of Loveland guidelines (Appendix D).

Slopes are relatively level on all of Parcel G. The only soil map unit within this parcel is Nunn Clay loam, 1 to 3 percent slopes. Runoff on this soil is slow to medium, the hazard of wind erosion is slight, and the hazard of water erosion is moderate. No problem erosion areas were noted during the field survey.

Because of existing human disturbance in this area as well as adjacent shopping mall outlet store development and roadways, the primary value of this area as wildlife habitat is for perching and nesting use by urban adapted songbirds. Mature native cottonwood trees in this parcel qualify as an environmentally sensitive feature based on City of Loveland guidelines.

3.4 Wetlands

None of the soil mapping units within the parcels are classified as hydric soils although some units can contain hydric inclusions. The field reconnaissance determined that no wetlands were present within any of the development parcels based on the lack of any evidence of soil, vegetation, or hydrologic characteristics indicating wetland presence. A thin strip of wetland vegetation consisting primarily of reed canarygrass (*Phalaris arundinacea*), Emory's sedge (*Carex emoryi*), and showy milkweed (*Asclepias speciosa*) grows along the inside edge of the Loveland and Greeley Canal embankment where it borders the north boundary of Parcel G. These canal wetlands would not likely be considered jurisdictional wetlands by the Corps of Engineers since water in the canal is used primarily for irrigation purposes.

3.5 Land Within Or Affecting Floodway and Flood Fringe Boundaries

The existing drainage pattern is the result of a relatively shallow gradient to the southwest. Since there are no defined drainages on any of the parcels, runoff occurs primarily as sheet flow across croplands toward the southwest. No evidence of floodways was noted on the parcels. Flood features and flood fringe boundaries, if such exist, are discussed in separate documents submitted for these parcels.

3.6 Irrigation Canals and Ditches

No irrigation canals occur within the boundaries of the project area, however, the Loveland and Greeley Canal runs along the north and west boundaries of Parcel D (see Figure 1 and 4). Row cropland portions

of Parcels E and F have been cultivated for dryland winter wheat production, and no irrigation ditches were evident on these two parcels.

3.7 Water Courses, Stream Corridors, or Estuaries

No estuaries or perennial or intermittent streams are located within or near the parcel boundaries.

3.8 Operating High Water Line

There are no water bodies on the three parcels, therefore there are no operating high water lines within the parcel boundaries.

3.9 Existing Slopes Over Twenty Percent

The project area is characterized by a nearly level to gently sloping topography having overall slopes ranging from nearly level to a maximum of 5 percent. No slopes over 20 percent occur within any of the parcel boundaries.

3.10 Soils With a High Water Table, Being Highly Erodible, Subject to Erosion, or Highly Acidic

Soils overlying the project area, as mapped by the SCS (now the Natural Resources Conservation Service, 1980), are comprised entirely of upland soil series. These are not classified as hydric soils or as having a seasonal high water table. Erosion hazards range from slight to moderate. None of the soils within the development parcels are classified as highly acidic.

3.11 Aquifer Recharge and Discharge Areas, Land Incapable of Meeting Percolation Requirements, Land Formerly Used for Landfill Operations or Hazardous Industrial Use, and Fault Areas

These topics were not included as a part of the work assigned to Cedar Creek, and no discussions related to these topics are presented in this report.

4.0 WILDLIFE USE AND CORRIDORS

As indicated, row croplands have limited value for wildlife because of seasonal cultivation and the lack of forage and cover. As a wheat crop matures, croplands may receive limited use by a few species for foraging purposes. Once the crop is harvested and cover is removed, crop residue remaining after harvest provides a food source for small mammals, songbirds, and some waterfowl and game bird species. These areas may also be occasionally hunted by open-country raptors. Vegetation cover is generally lacking from fall through early spring.

4.1 Wildlife Observed on Site

Winter wheat had already been harvested at the time of the field reconnaissance, and as a consequence there was little wildlife cover available. The only species observed on Parcel E and F were western meadowlark and mourning dove. Parcel G was not surveyed for wildlife because of private property considerations. Expected wildlife use of this area is described in the following section.

4.2 Representative Wildlife Expected to Occur on Site

Deer mouse, western harvest mouse, prairie vole, and ground squirrels are the only species likely to establish resident populations in row cropland and the weedy edge areas. Songbirds such as western meadowlark, Brewer's blackbird, American crow, common grackle, and horned lark will also occasionally use cropland habitats. Species such as raccoon, striped skunk, ring-necked pheasant, mourning dove, and Canada goose will occasionally move into croplands to seek prey or feed on leftover grain. Dryland or unflooded cropland is of limited foraging value for most waterfowl species, however. Raptors potentially hunting over row croplands include American kestrel, red-tailed hawk, northern harrier, and Swainson's hawk.

In Parcel G planted trees and shrubbery are likely to be used by urban adapted avian species such as northern flicker, black-billed magpie, European starling, American robin, common grackle, black-capped chickadee, house finch, and house sparrow.

4.3 Habitat for Threatened and Endangered Species

Because of past cultivation practices or residential and commercial development, habitat for threatened, endangered or other sensitive species does not exist on or adjacent to Parcels E, F, and G.

4.4 Movement Corridors and Physical Linkages to Other Natural Areas or Open Space

Cultivation and residential development has resulted in the loss of native vegetation, and there is little opportunity for the development of suitable security or movement cover for most species of wildlife. The properties are surrounded by roadways, actively cultivated cropland, and commercial development, and the only possible wildlife movement corridors exist along the Loveland and Greeley Irrigation Ditch and the Union Pacific Railroad right-of way. However, the suitability of these features as wildlife corridors is limited by a general lack of suitable vegetation cover. Active cultivation approaches right to the edge of the railroad right-of-way and the irrigation canal. The I-25 underpass for the Union Pacific Railroad right-of-way is large enough to permit wildlife passage, but there is no suitable cover along the right-of-way between the northeast corner of Boyd Lake (Natural Area #93) and Natural Area #99 (Design Workshop et al. 1993) on the east side of Interstate 25.

The Loveland and Greeley Canal provides a hydrologic connection between the south end of Boyd Lake and the southeast corner of Equalizer Lake (Natural Area #2) and then connects to the north end of Natural Area #99 east of the development parcels and Interstate 25. Again, there is little vegetation cover along these segments of the canal due to cultivation practices, and the canal currently has minimal value as a wildlife movement corridor. The continuity of the canal is also disrupted by Boyd Lake Avenue and Interstate 25 The canal was classified as environmentally sensitive, however, because irrigation ditches and canals are identified as environmentally sensitive areas by City of Loveland guidelines (Appendix D).

Open space borders portions of each development parcel (see Figures 2, 3, and 4), but this open space occurs primarily in the form of agricultural fields. The closest non-cultivated areas of open space to Parcels E, F, and G exist around the perimeters or Houts Reservoir and Equalizer Lake. A characterization of these areas was provided in an earlier environmentally sensitive areas report (Cedar Creek Associates, Inc. 1999) submitted previously to the City of Loveland for the Millennium GDP.

5.0 ASSESSMENT OF POTENTIAL IMPACTS OF PROPOSED DEVELOPMENT

Although specific development plans have not been developed for Parcels E, F, and G, development of these parcels would not result in any impacts to important wildlife habitats, corridors, or natural areas because these parcels and adjacent sites are comprised entirely of row cropland, roadways, and residential and commercial developments.

6.0 RECOMMENDED MITIGATION

Specific mitigation measures cannot be completed at this time because development plans have not been finalized. However, because of current land uses and habitat conditions within each parcel, the need for development of wildlife mitigation measures will be limited. A few general mitigation recommendations are provided below based on existing habitat conditions within and adjacent to the the development parcels.

- The mature cottonwood tree at the southwest corner of Parcel E and in Parcel G should be preserved unless there is a potential risk of falling decadent trees or limbs to human safety. It is recommended that these trees be incorporated into open space portions of the project area to maintain their suitability for nesting and perching habitat for songbirds. Their suitability as raptor perch sites will be marginal, except for urban-adapted species such as great horned owl and red-tailed hawk, once project development occurs.

- Woody plantings and setbacks should be employed along the Loveland and Greeley Canal and the Union Pacific Railroad right-of-way to enhance these features as potential wildlife movement corridors. As development progresses in this area the canal and railroad right-of-way may remain as the only potential movement linkages between Natural Areas #2, #93, and #99.

7.0 REFERENCES CITED

Cedar Creek Associates, Inc. 1999. Environmentally sensitive areas and wetland report for the Rocky Mountain Village III properties. Revised May 1999. Report previously submitted to the City of Loveland as part of the millennium GDP.

Design Workshop, Inc., ERO Resources Corp., and Stoecker Ecological Consultants, Inc. 1993. In the Nature of Things - Loveland's Natural Areas. Prepared for the City of Loveland, Loveland, Colorado, 37 pp. + Appendices.

Soil Conservation Service (SCS). 1980. Soil Survey of Larimer County Area, Colorado. Soil Conservation Service. Fort Collins, Colorado. 174 pp. + maps.

APPENDIX A

RESUME OF PREPARER

CEDAR CREEK ASSOCIATES, INC.

T. MICHAEL PHELAN

EXPERIENCE ABSTRACT

Employed since 1974 as an environmental consultant. Responsibilities include service as corporate officer, project manager, permitting specialist, wildlife ecologist, vegetation survey technical assistant, and technical editor. Project management activities include client/agency liaison, project risk analyses, interdisciplinary coordination, subcontractor supervision, personnel management, cost control, and quality assurance.

Career accomplishments include authorship of, or technical contribution to:
45 EIS/EA Documents • **75** Wetland Delineations/Evaluations • **8** Mine Permit Reviews/Revisions • Permit Strategy Development/Preparation for Numerous Projects • **80** Wildlife Baseline or Monitoring Studies/Technical Sections • **50** Threatened and Endangered or "High Federal Interest" Wildlife Species Studies • Over **100** Wildlife Surveys Emphasizing Big Game, Raptors, Waterfowl, or Upland Game Birds • **32** Wildlife Impact Assessments • **27** Wildlife Mitigation/Habitat Management Plans • **7** Biological Assessments • **10** Vegetation Surveys • **3** Published Wildlife Manuals, **2** for the USFWS and **1** for the Office of Technology Assessment, U.S. Congress

Types of projects have included:
Hard Rock Mines • Coal Mines • Wetland Delineations/Enhancement • Corridor Analyses • Water Developments • Oil, Gas, and Synfuels Projects • Abandoned Mines • Power and other Industrial Plants • Timber Harvest • Housing Developments

Involved in over **250** projects including work in:
Rocky Mountains • Desert Southwest • Pacific Northwest • Intermountain Region • Northern Great Plains • Appalachia • Alaska • California • Missouri • Kansas • Oklahoma • Texas

EDUCATION AND CERTIFICATIONS

B. A., Zoology, University of California, Los Angeles, 1971
Post-graduate Studies, Biology and Ecology, San Diego State University, 1972-1974
Certified Wildlife Biologist - The Wildlife Society
Certified in Habitat Evaluation Procedures (HEP) - U.S. Fish and Wildlife Service
Certified in Black-footed Ferret, Southwestern Willow Flycatcher, and Preble's Meadow Jumping Mouse Survey Techniques - U.S. Fish and Wildlife Service
Desert Tortoise Survey and Examination Techniques

EMPLOYMENT HISTORY

Cedar Creek Associates, Inc. - 1982 to Present
Environmental Research and Technology, Inc. - 1976 to 1982 (presently ENSR Corporation)
Self-employed Environmental Consultant - 1974 to 1976

REPRESENTATIVE CLIENTS

Atlantic Richfield Co. (CO) • Atlas Minerals, Inc. (OR) • BHP-Utah International Inc. (UT) • Carlota Copper Co. (AZ) • Chevron Shale Oil Co. (CO) • Cities of Boulder, Fort Collins, and Loveland (CO) • Diamond Shamrock Corp. (AK) • Energy Fuels Co. (CO, SD) • Exxon Minerals Co. (NM) • FMC Corp. (NV, WY, MT) • Freeport Gold Co. (NV) • Getty Mining Co./Twentymile Coal Co. (CO) • Getty Oil Co. (CO) • Homestake Mining Co. (NV) • Kensington Venture (AK) • Koppers Co. (TN) • LAC Minerals, Inc. (NV) • L. Berger/Federal Bureau of Prisons (CO) • Meridian Minerals Co. (SD, CA, ID) • Montana DEQ (MT) • Newmont Gold Co. (OR, NV) • North American Coal Co. (ND) • Northern Border Pipeline (IA) • Office of Technology Assessment, U.S. Congress (Western U. S.) • Peabody Coal Co. (AZ, CO, WY) • Rocky Mountain Energy Co. (WY) • Simons, Li & Associates, Inc. (CO, UT, WA, Africa) • TerraMatrix Inc./ACZ (CO, NV, UT, WA) • U.S. Bureau of Land Management (MT, NV, UT) • U. S. Fish and Wildlife Service (Western U.S., WVA) • U.S.Forest Service (AK, CO, ID, MT, NV, WA) • U.S. Sprint (CA, OR, WA) • Utah Division of Oil, Gas and Mining (UT) • Western Area Power Administration (CO, NE)

EXPERIENCE SPECIFICS

Mr. Phelan's education and several years of environmental and regulatory compliance experience has facilitated his development of specialized multi-disciplinary skills for projects in mining (coal, hard rock, and synfuels), industrial and urban developments, corridor assessments, wetland evaluation and restoration, and water developments. Areas of expertise include permitting and project management, wildlife ecology, wildlife impact assessment and mitigation planning, habitat evaluation and enhancement, range ecology, bond determination, report/permit document preparation, literature review, and technical editing.

PERMITTING AND PROJECT MANAGEMENT. Mr. Phelan has been actively involved in all phases of permit development. Permitting and management responsibilities have included personnel scheduling and management, strategy formulation, client/agency liaison, regulatory compliance evaluation, subcontractor supervision, cost control, quality assurance, and technical document editing for a variety of projects, including development of, or input to, mine permit applications and NEPA compliance documents (EAs and EISs). In addition, Mr. Phelan has successfully reviewed, edited, and revised sections of mine permit applications to achieve compliance for applications previously submitted by other firms and deemed inadequate by the regulatory agency. Mr. Phelan's permitting experience and related interactions with regulatory agencies for development projects and associated permit submittals have provided him with a working understanding of the policies and regulations of state and federal agencies such as the BLM, COE, OSMRE, WDEQ, CMLRD, UDOGM, USFS, USFWS and NRC, among others. Mr. Phelan's project management experience has been gained on projects ranging from single discipline to large interdisciplinary studies for mining and other development projects.

WILDLIFE ECOLOGY. Mr. Phelan has completed wildlife studies for a wide range of projects including: hard rock mines, surface and underground coal mines, synfuel developments, wetland assessments and restoration, corridor analyses, water developments, abandoned mines, and municipal disturbances. Technical capabilities include: baseline inventories; habitat assessment and restoration; wetland delineation; evaluation of threatened and endangered species populations; wildlife impact assessment and mitigation planning; literature review, and authorship of wildlife technical manuals. Wildlife mitigation plans prepared by Mr. Phelan have emphasized restoration and mitigation for wildlife habitats in desert, rangeland, shrubland, woodland, subalpine, and wetland ecosystems. Specific areas of concern addressed by these plans have included raptor nesting habitat, upland game bird and waterfowl breeding and nesting areas, big game winter range, and critical habitat for threatened and endangered species as well as species of "High Federal Interest." Beyond the capabilities listed above, Mr. Phelan's technical skills include the design and implementation of: big game aerial surveys, big game browse utilization transects, aerial and ground surveys for raptor nests, daytime and night spotlight surveys for black-footed ferrets, other predator inventories, small and medium-sized mammal trapping, avian strip transects, surveys for migratory birds of "High Federal Interest," upland game bird breeding and nesting surveys, waterfowl counts and nesting surveys, wetland mapping and habitat evaluation, herpetofauna surveys, aquatic sampling studies, and tissue sample collection for trace element analysis. In addition, Mr. Phelan has reviewed and analyzed mitigation options for waterfowl mortality on toxic mine tailings ponds.

RANGE ECOLOGY. Technical capabilities in this field include photo interpretation/community mapping and field measurement of plant density, ground cover, plant composition, and current annual production. Mr. Phelan has participated in the design and establishment of revegetation test plots constructed to determine the effects that season of seeding, slope, species selection, and seedbed material characteristics would have on revegetation success. He also has been involved in soil sampling projects to assess soil characteristics and nutrient levels.

PUBLICATIONS

Phelan, T. M., S. R. Viert, and S. G. Long. 1986. Wildlife technologies for western surface coal mining. Office of Technology Assessment, U. S. Congress, Washington, D. C. 183 pp.+ appendices.

Phelan, T. M. and S. R. Viert. 1986. Prairie dog and black-footed ferret surveys in northeast and east-central Utah. Cedar Creek Associates, Inc., Fort Collins, Colorado. Report prepared for the Bureau of Land Mangement, Salt Lake City, Utah. 31 pp. + appendices.

Contributing Author to:

Moore, R., and T. Mills. 1977. An environmental guide to western surface mining, part two: impacts, mitigation, and monitoring. Western Energy and Land Use Team, U. S. Fish and Wildlife Service Publication FWS/OBS - 78/04. Misc. pagings.

Mountain West Research, Inc. 1979. Fact book for western coal/energy development. Missouri River Basin Commission, Resource and Land Investigations program (RALI). Misc. pagings.

ENVIRONMENTAL AND NATURAL AREAS ASSESSMENT REPORT- CLOVERLEAF ADDITION

Prepared For:
Landmark Engineering. Ltd.
3521 West Eisenhower Blvd.
Loveland, Colorado 80537

Prepared By:
Wildland Consultants, Inc.
622 East 8th Street
Loveland, CO 80537

January, 2000

Table of Contents

Environmental and Natural Areas Assessment- Cloverleaf Addition

1.0 Introduction and Description of the Study Area

This Environmental and Natural Areas Assessment Report was completed to comply with requirements of the City of Loveland Long Range Planning and Natural Resources Division. The Long Range Planning and Natural Resources Division has developed guidelines for preparing environmental assessments for developments that have the potential to impact natural areas. This report summarizes potential impacts to the environment from construction of the Cloverleaf Addition. The proposed development includes 6 development parcels, including the existing Cloverleaf Kennel Club (see attached site plan). The total annexation area is approximately 120 acres. The development will include commercial, retail, and light industrial uses. Approximately 20 acres will be planned open space in the form of landscaped detention areas and small parks. Approximately 41 acres will be zoned DR (Developing Resource), with no plans for further development at this time. The exact development design will be determined during future planning.

The project is located in eastern Loveland just east of Interstate 25. The project is bordered on the west by a proposed extension of Rocky Mountain Avenue, on the east by the Interstate 25 Frontage Road, on the south by the Loveland-Greeley Canal, and on the north by County Road 24. The attached site plan details the project location and site specifications. The development site includes agricultural lands, and the existing site of the Cloverleaf Kennel Club.

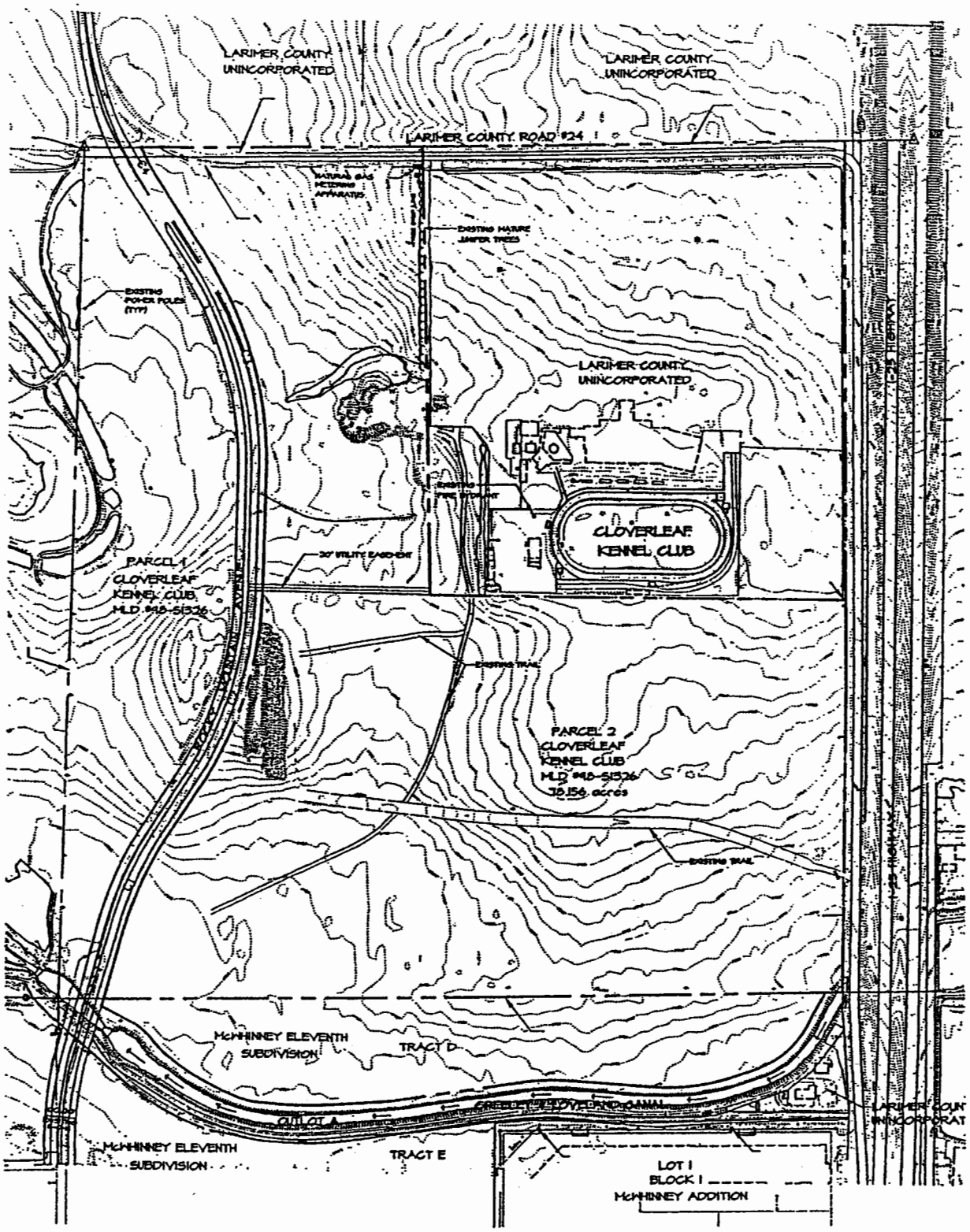
The nearest identified natural areas to the project include Equalizer Lake (#2) located approximately 100 to 400 feet west of the project area, Houts Lake (#1) located approximately 900 feet northwest of the project area, and a wetland drainage (#99) located approximately 600 feet east of the project area (Design Workshop et al. 1996).

For this report the study area includes the development site and also the three nearest natural areas (1,2,99).

2.0 Site Inventory

2.1 Vegetation Types, Wetlands-

Except for the Cloverleaf Kennel Club, the entire site is fallow agricultural land used in the recent past for growing winter wheat (Attachment A, Photograph 1). Weedy plants dominate this fallow land. Common plants include sunflower, kochia, field bindweed, Canadian thistle, wheat, and Russian thistle. The margins of the Loveland-Greeley Canal support a mix of introduced and native plant species including smooth brome grass, volunteer ryegrass, foxtail barley, showy milkweed, dandelion, salsify, and other grasses and forbs (Attachment A, Photograph 2). The canal supports limited wetland vegetation near the waterline, including prairie cordgrass, sedge, and American threesquare. The



CLOVERLEAF ADDITION

SITE MAP EXHIBIT

NORTH

NTS

vegetation along the ditch is controlled by annual burning and spraying. The ditch banks are heavily rip-rapped. There are no trees or shrubs along the ditch.

Two small wetlands have developed in small drainage ditches that receive water from the Kennel Club parking lot (Attachment A, Photograph 3). These wetlands are located just west of the Kennel Club parking lot. These wetlands are very small, less than 0.02 of an acre in size. The wetlands are of poor quality. Dominant plants include cattail, curly dock, Canadian thistle, and blue vervain.

The only trees and shrubs on the site are associated with the Cloverleaf Kennel Club. The entire Kennel Club is surrounded by tree and shrub plantings. Except for landscaped areas there is no vegetation on the Kennel Club site.

There are no rare plant species on the site. The site does not support any rare plant communities, or native plant communities.

2.2 Wildlife and Wildlife Corridors-

The project area provides habitat to wildlife species adapted to agricultural lands. No unique or key wildlife habitats occur on the site. Wildlife species likely to use the area periodically include: coyote; red fox; raccoon; striped skunk; a variety of small mammals (deer mouse, house mouse, jackrabbit, cottontail rabbit); a variety of birds (mallard, Canada goose, meadow lark, mourning dove, house finch, English sparrow, horned lark, black-billed magpie, starling, American kestrel, ring-necked pheasant, killdeer and others); and a few reptiles (western terrestrial garter snake, gopher snake)(Andrews and Righter 1992, Colorado Division of Wildlife 1990, Fitzgerald et al. 1994, Hammerson 1982). Wildlife species or signs of species observed on the site during a December , 1999 field reconnaissance included: English sparrow, domestic pigeon, ring-necked pheasant, Canada goose, deer mouse, red fox, cottontail rabbit, muskrat, and raccoon. The most common nesting bird species on the site are likely to be the meadow lark, and mourning dove. No raptor nests occur on the site. Raptors use the area occasionally for foraging.

Canada geese use the agricultural lands for feeding and resting. Mallards and a few other duck species use the Loveland-Greeley Canal in small numbers.

The site does not provide habitat to any threatened, endangered, or rare wildlife or plant species. There are no prairie dogs on the project area.

Currently wildlife can move freely through the area. The Loveland-Greeley Canal provides a marginal movement corridor through the area for small mammals and some bird species. Raccoon, muskrat, striped skunk, and deer mice are the most common mammals along the ditch. However, the habitat value of the canal is low. The vegetation adjacent to the canal is limited in extent and quality. There are no trees or shrubs along the canal.

Nearby identified natural areas include numbers 1,2, and 99 (Design Workshop et al. 1993). Equalizer Lake (#2) has a moderate overall habitat rating of 6 and is located approximately 100 to 400 feet west of the project area. Houts Lake (#1) has a moderate overall habitat rating of 5 and is located approximately 900 feet northwest of the project area. The wetland drainage and pond (#99) has a high overall habitat rating of 7 and is located approximately 600 feet east of the project area (Design Workshop et al. 1996). The proposed development parcels are separated from Houts and Equalizer Reservoirs by existing agricultural lands, the proposed extension of Rocky Mountain Avenue, and intensive proposed development. The proposed development parcels are separated from the wetland drainage and pond by Interstate-25.

2.3 Soils and Geologic Hazards-

Dominant soils on the site include the Nunn clay loam, the Wiley silt loam, and the Stoneham loam (SCS 1980). The Nunn clay loam and Wiley loam cover the majority of the site. These farmland soils occur on nearly level ground, runoff is slow to medium, and wind and water erosion hazard is slight to moderate. The Nunn clay loam soils exhibit moderate limitations for dwellings with basements, and severe limitations for building without basements, small commercial buildings, and local roads and streets. The limitations are due to shrink-swell potential, and low strength soils. The Wiley loam exhibits moderate limitations for dwellings with basements, buildings without basements, small commercial buildings, and local roads and streets. A moderate limitation indicates that soil problems can be minimized with planning and engineering features. A severe limitation indicates that soil problems will require intensive planning, design, and maintenance features during and after construction.

There are no known geologic hazards on or near the project area. The site is nearly level with no steep slopes, or rock outcrops.

2.4 Drainage Patterns, Floodway, and Flood Fringe Boundaries

The project area drains generally to the south and east. There are no natural drainage areas on the site. The project area is located outside all 100-year floodplains of local streams, rivers, and lakes. The entire project area is located upslope of the Loveland-Greeley canal. Canal flooding will drain to the south and east to lower elevations off of the project area

3.0 Assessment of Project Impacts

3.1 Vegetation Types, Wetlands-

Construction of the Cloverleaf General Development Plan will result in the conversion of approximately 92 acres of agricultural land to urban uses. Of these 92 acres, 78 acres are included with this annexation, and 13.7 acres were previously annexed (McWinney 11th Subdivision). No native plant communities, or rare plants will be impacted by project construction.

Two small wetlands (less than 0.02 acres) will be filled by project construction. These small wetlands were formed by stormwater runoff from the Kennel Club Parking lot. These wetlands are of poor quality and provide limited vegetation diversity. Because of their small size and poor quality, wetland avoidance and or mitigation should not be a priority. The Army Corps of Engineers will not require wetland mitigation to fill these small wetlands.

3.2 Wildlife and Wildlife Corridors-

Project construction will result in the conversion of approximately 78 acres of agricultural land to urban uses. Some wildlife species currently using the area will be displaced and replaced with species adapted to urban areas (American robin, house finch, English sparrow, starling). No unique or key wildlife habitats will be lost with project construction. Canada geese should continue to utilize landscaped open space areas on the site after construction.

The corridor associated with the Loveland-Greeley Canal will be buffered from development with detention and open space areas. As urban development in the area increases animals sensitive to human presence (red fox, coyote, great blue heron, and raptors) will use and move along the canal with less frequency. However, the current habitat values of the canal are low. Project construction should have minimal impacts to wildlife movement along the canal.

The wildlife values of the two small wetlands on the site are low. The wetlands are isolated and are not large enough to provide important wildlife habitat. No special protection measures or mitigation is recommended for removal of the wetlands on the site.

Nearby identified natural areas include numbers 1,2, and 99 (Design Workshop et al. 1993). Equalizer Lake (#2) is located approximately 100 to 400 feet west of the project area. Houts Lake (#1) is located approximately 900 feet northwest of the project area. The proposed development parcels are separated from Houts and Equalizer Reservoirs by existing agricultural lands, the proposed extension of Rocky Mountain Avenue, and intensive proposed development. The wetland drainage and pond (#99) is located approximately 600 feet east of the project area (Design Workshop et al. 1996). The proposed development parcels are separated from the wetland drainage and pond by Interstate-25.

No direct impacts to these natural areas and the wildlife using these areas will occur with construction of this subdivision. As the general area becomes more urbanized these natural areas may be not be used as extensively by species that are sensitive to human presence and development.

3.3 Soils and Geologic Hazards

The moderate to severe soil limitations on the site will require special design features for streets and building foundations. The nearly level site will not be subject to significant soil erosion. There are no geologic hazards on the site. No impacts to the project are expected due to soil limitations or geologic hazards. Project construction will result in the loss of approximately 78 acres of farmland soils.

3.4 Drainage Patterns, Floodway and Flood Fringe Boundaries

All storm water drainage systems will conform with requirements of the City of Loveland. Stormwater runoff will be channeled to an open space/detention areas around the periphery of the site. The detention areas will allow the stormwater to naturally settle and filter before discharge.

No impacts to the project from future flooding are anticipated. The project is located outside of the 100-year floodplain of all local streams, rivers, and lakes. The project is located above the Loveland-Greeley Canal. The majority of any potential canal flooding will move to the south and east to lower elevations off of the project area.

4.0 Recommendations: Protection Measures, Mitigation, Enhancement

No developments of open lands are possible without impacts to the environment. Project construction will result in the conversion of approximately 78 acres of agricultural land to urban uses. Some wildlife species using the development area will be displaced. Urban adapted wildlife species will continue to use the subdivision. The project will impact no unique or key wildlife habitats, native vegetation communities, or identified natural areas. Two very small poor quality wetlands will be removed. Wildlife use of the wildlife corridor associated with the Loveland-Greeley Canal will continue after project construction. As the area becomes more urbanized wildlife species that are sensitive to human presence will use the canal with less frequency.

No major mitigation or enhancement measures are proposed for the site because no important natural area will be impacted. The following general enhancement measure is proposed for the canal buffer zone and open space/detention areas on the site:

- A buffer zone will be created between the development lots and the Loveland-Greeley Canal. This buffer zone will contain detention areas, and a trail. The canal buffer zone will be landscaped with native shrubs and trees (chokecherry, rabbitbrush, wild rose, plains cottonwood, willow, and possibly other species) as appropriate. All plantings will be completed outside of the area where the ditch company completes vegetation maintenance and control. To reduce water usage and costs the buffer area will be planted with drought tolerant grass species. No impact to vegetation associated with the Loveland-Greeley Canal will occur with project construction.

- Detention areas will include native plant species in the landscape design. Plantings of native trees and shrubs will be made along detention areas to provide visual enhancements and wildlife habitat. Where possible wetlands will be allowed to develop naturally within detention areas.
- Appropriate permits will be obtained from the Army Corps of Engineers for filling the small wetlands on the site. Because of the small size and poor quality of the wetlands no mitigation or wetland buffer zones are proposed.

5.0 Literature Cited

Andrews, R. and R. Righter. 1992. Colorado Birds. Museum of Natural History, Denver, CO. 442pp.

Colorado Division of Wildlife. 1990. Colorado Mammal Distribution, Latilong Study. Denver, CO.

Design Workshop, Inc., ERO Resources Corp., and Stoeker Ecological Consulting, Inc. 1993. In the Nature of Things, Loveland's Natural Areas. 37pp.

Fitzgerald, J.P., C.A. Meaney, D.M. Armstrong. 1994. Mammals of Colorado. Denver Museum of Natural History and University Press of Colorado. 467pp.

Hammerson, G.A. 1982. Amphibians and Reptiles in Colorado. Colorado Division of Wildlife. Denver, CO. 130pp.

Soil Conservation Service. 1980. Soil Survey of Larimer County.

U.S. Army Corps of Engineers. 1989. Wetland Delineation Manual.

Attachment A
Site Photographs

Photo 1- View to north across fallow agricultural land.

Photo 2- View to the east of small wetland.

Photo 3- View to east of the Loveland-Greeley Canal, southern site boundary.

Attachment B
Wildland Consultants, Inc.
Qualifications

Wildland Consultants, Inc. (WCI) was established in 1993 to provide high quality environmental and ecological consulting services to private industry, cities, counties, and government agencies. We specialize in helping clients to comply with the National Environmental Policy Act (NEPA), the Endangered Species Act, the Clean Water Act (Section 404 wetlands regulations), city and county zoning and land use regulations, and other federal, state, and local environmental regulations. WCI has completed work throughout the western states. We specialize in working with land use planning, real estate development, oil and gas, mining and other large development projects. Our mission is to provide quality environmental and ecological consulting services at a reasonable rate.

PROFESIONAL CAPABILITIES

Wildland Consultants, Inc. offers the following services:

- Preparation of Environmental Impact Statements and Environmental Assessments
- Wetland delineations, wetland mitigation planning, 404 Permitting with the Army Corps of Engineers
- Endangered Species Act compliance including rare species inventories, Section 7 Consultation with the U.S. Fish and Wildlife Service, and preparation of Biological Assessments
- Mitigation Planning
- Baseline ecological studies (terrestrial and aquatic)
- Project Management

REPRESENTATIVE PROJECT EXPERIENCE

Land Use, Construction and Development

- City of Loveland and EDAW Corporation – Big Thompson Corridor Study. Completed an analysis of wildlife values of natural areas along the Big Thompson River from the foothills east to Interstate 25 through Loveland, Colorado. Each natural area was ranked for value to wildlife.

- City of Fort Collins, Larimer County, and EDAW Corporation- Fossil Creek Reservoir Regional Park Management Plan. Ecological advisors for a management plan for a regional natural area and park along Fossil Creek Reservoir. Key issues included buffer zones for bald eagle roosts, grreat blue heron rookeries, and waterbird habitats. Developed shoreline, grassland, and riparian revegetation plans.

- City of Loveland, Horseshoe Lake Development. Advised the City of Loveland concerning development buffer zones to protect sensitive resources including wetlands, a heron rookery, and other wildlife habitat. Negotiated with developer to develop buffer zones to protect wildlife and wetlands.

- City of Loveland - Spite Natural Area. Completed a baseline inventory and general enhancement plan for a city owned natural area along the Big Thompson River.

- City of Berthoud and Balloffet and Associates, Inc. - Heron Lakes Development. Completed a Wildlife Impact Evaluation for a proposed housing and golf course development along Lonetree, McNeil, and Welch Reservoirs. Key issues included buffer zones to protect a heron rookery, wetlands and riparian habitat, and important waterfowl and waterbird habitat. Advised the City of Berthoud on buffer zone widths and uses needed to protect sensitive wildlife species.

- Mariana Butte LLC and the City of Loveland- Lakeside Nine Development EA. Completed an EA to evaluate environmental impacts from the 7-acre lakeside development in Loveland, Colorado. Key issues included lakeside buffer zones, water quality impacts, and wildlife habitat loss.

- McStain Enterprises, Inc. and the City of Loveland- Rocky Mountain Village II Development EA. Completed an EA to analyze environmental impacts from the proposed 70-acre residential development in Loveland, Colorado. Key issues included impacts to prime farmlands, and adjacent natural areas.

- Taft Carlisle LLC and the City of Loveland- Thompson Valley Addition EA. Completed an EA to analyze environmental impacts from the proposed 130-acre shopping center development in Loveland, Colorado. Key issues included wetlands, and riparian buffer zones, and rare species.

- Waterford Place LLC and the City of Loveland- Waterford Place Development EA, and Wildlife Enhancement Plan. Completed an EA to analyze environmental impacts from the proposed 80-acre development along the Big Thompson River. Key issues included riparian habitats, and buffer zones. Developed a wildlife enhancement plan to improve habitat values of the riparian zone along the Big Thompson River.. Worked with the City of Loveland and the developer to negotiate a donation of 10-acres of riparian habitat to the City.

- Fountainhead II and the City of Loveland- Silver Shores Subdivision EA, and Enhancement Plan. Completion an EA to analyze environmental impacts from the 5 acre development located adjacent to Westerdall Lake. Key issues included wetlands, and buffer zones. Prepared an enhancement plan for shoreline wetland and riparian vegetation.

- Country Club Plaza LLC and the City of Greeley- Country Club Plaza Development EA. Completed an EA, wetland permitting, and enhancement plan for an EA to analyze impacts from the 80-acre shopping center development. Key issues included impacts to a prairie dog colony, and riparian habitat adjacent to a small drainage. Developed an enhancement plan to improve habitat values of a riparian zone on the site.

Wetlands

- Boxelder Sanitation District- Sewage Plant Bank Stabilization Project. Completed a wetland delineation, wetland mitigation plan, 404 Permitting, Preble's meadow jumping mouse and Ute ladies' tresses surveys for a bank stabilization and stream bed alteration project along the Cache la Poudre River, Fort Collins, Colorado.

- Boxelder Sanitation District- CDOT Utility Easement Wetland Permitting. Completed a wetland delineation, and 404 Permitting with the Corps of Engineers for the sewage line expansion along I-25 east of Fort Collins, CO.

- City of Greeley, Public Works Department, Country Club West Wetland Delineation, Wetland Mitigation Plan, 404 Permitting. Completed a wetland delineation for a City of Greeley natural area and wetland mitigation site. Purpose of the delineation was to determine if Corps of Engineers mitigation requirements were met on the site. Prepared a wetland mitigation plan to meet COE requirements. Completed 404 Permitting for the project.

- Drexel Barrel & Co. and Mountain Vista LLC- Mountain Vista Development. Completed a wetland delineation, wetland mitigation plan, 404 permitting, Ute ladies' tresses surveys for the 180-acre multifamily development in Greeley, Colorado.

- Donaldson and Company, and Cooper Slough Hunting Club. Completed a wetland delineation along Cooper Slough in eastern Fort Collins, CO.

- Donaldson and Company, Wisemen Brothers Development. Completed a wetland mitigation plan and 404 Permitting with the Corps of Engineers, for a 10.8 acre wetland area along a tributary to Sheep Draw in Greeley, Colorado.

- Western Property Advisors, Inc., Mountain Vista Development. Completed wetland delineation, wetland mitigation plan, and wetland permitting with the Army Corps of Engineers for the 80-acre golf course development.

- Public Service Company- Front Range Gas Transmission Project. Completed wetland delineation and 404 permitting for the 53-mile long natural gas pipeline located in Greeley, Colorado.

- Taft Carlisle, LLC- Thompson Valley Addition. Completed wetland delineation and 404 Permitting for the 160 acre shopping center and housing development in Loveland, Colorado. Completed surveys for Preble's meadow jumping mice and Ute ladies' tresses orchids on the site.

- Stream Team Ltd. and Coal Ridge LLC, Coal Ridge Golf Course Development. Completed a wetland delineation and permitting for the proposed 321-acre golf course development, Firestone, Colorado.

Threatened and Endangered Species-

- Development Projects Colorado Front Range- Preble's meadow jumping mouse trapping, Ute Ladies tresses surveys. Project management and principal investigators for completing Preble's meadow jumping mouse and Ute ladies' tresses orchid surveys for over 30 development, pipeline, and related projects along the Colorado Front Range. Coordinated survey requirements and results with the U.S. Fish and Wildlife Service, and Army Corps of Engineers. Clients included: Public Service Company of Colorado, Diamond Shamrock, City of Greeley, City of Loveland, Everitt Companies, McLeod USA, EDAW, Landmark Engineering Ltd., and Western Property Advisors, Inc.

- Threatened and Endangered Species Surveys, and Section 7 Consultation- Completed rare species surveys, raptor surveys, preparation of Biological Assessments, and consultation with the U.S. Fish and Wildlife Service for over 30 large oil and gas projects, mining projects, and utility projects in the western states. Clients included: Diamond Shamrock, Chevron, Northern Colorado Water Conservancy District, Public Service Company of Colorado, AT&T, Conoco, Exxon, McLeod USA, City of Broomfield, City of Loveland, City of Greeley, and many others.

KEY PERSONEL

Eric Berg, President, Project Manager, Wildlife Biologist

Education, Certifications: B.S. Wildlife Biology, Colorado State University
M.S. Range/Wildlife Management, Washington State University
Certified Wildlife Biologist, Certified Professional Wetland Scientist

Expertise – Over 18 years of experience in:

- Preparation of Environmental Impact Statements and Environmental Assessments
- Threatened and Endangered Species studies, Section 7 Consultation with the U.S. Fish and Wildlife Service, preparation of Biological Assessments
- Baseline wildlife and vegetation studies
- Wetland delineations, permitting, and wetland mitigation planning
- Mitigation planning
- Project management

Rollin Daggett, Aquatic Ecologist, Project Manager

Education, Certifications: B.S. Zoology, Syracuse University
M.S. Aquatic Biology, University of Newfoundland

Expertise – Over 20 years of experience in:

- Preparation of Environmental Impact Statements and Environmental Assessments
- Threatened and Endangered Species studies
- Baseline aquatic and fisheries studies
- Mitigation planning
- Project management

Troy Gerhardt, Ph.D, Terrestrial Ecologist

Education, Certifications: M.S. Zoology, Duke University
Ph.D. Ecology, Colorado State University

Expertise - Over 7 years of experience in:

- Baseline ecological studies
- Threatened and endangered species studies
- Wetland studies

Brad Johnson, Ph.D, Terrestrial Ecologist

Education, Certification: Ph.D. Ecology, Colorado State University
Certified Professional Wetland Scientist

Expertise- Over 10 years experience in:

- Wetland delineations, and wetland permitting with the COE
- Wetland mitigation plans, wetland revegetation plans, wetland restoration
- Wetland inventories and analysis
- Baseline vegetation studies
- Threatened and endangered species studies

AFFILIATIONS, CERTIFICATIONS, LICENSES

Certified Wildlife Biologist, The Wildlife Society
Certified Professional Wetland Scientists, Society of Wetland Scientists
Approved by the U.S. Fish and Wildlife Service to complete surveys for Ute ladies tresses orchid, Preble's meadow jumping mouse, black-footed ferret, desert tortoise, and Mexican spotted owl
Licensed by the Colorado Division of Wildlife, and U.S. Fish and Wildlife Service to complete trapping for Preble's meadow jumping mouse
Approved by the Corps of Engineers to complete wetland delineations and permitting

Ecological Resource Consultants, Inc
5672 Juhls Drive~Boulder, Colorado~80301~720.564.0788

Preliminary

Environmentally Sensitive Areas Report

for the

Myers Group No. 949 3rd Subdivision Property

Loveland, Larimer County Colorado

February 4, 2005

Prepared for:
McWhinney Enterprises
2725 Rocky Mountian Avenue, Suite 200
Loveland, Colorado 80538

ERC Project # 175-051

Preliminary Environmentally Sensitive Areas Report

INTRODUCTION

Ecological Resource Consultants, Inc. (ERC) has prepared this Preliminary Environmentally Sensitive Areas Report for a parcel of land proposed for potential future development, known herein as the Myers Group No. 949 3rd Subdivision Property (Site). The Site is located in the vicinity of City of Loveland in Larimer County Colorado. This assessment was conducted to identify natural features and/or, ecologically sensitive areas which may occur on or around the Site. Natural features and/or ecologically sensitive areas in the context of this assessment may include: City of Loveland Natural Areas, stream corridors, wetlands, mature stands of vegetation, natural vegetation communities, significant habitat for wildlife and threatened, endangered or species of concern.

ERC performed an onsite assessment of the Site on February 2, 2005 with subsequent literature review. The weather was sunny, clear and cool, soils thawed and vegetation was dormant. The onsite assessment included documentation of potential wetland habitat, major vegetation communities, dominant flora associated with each community, unique natural features, wildlife habitats and observations of wildlife species.

GENERAL SITE DESCRIPTION

The Site is located in the northwest ¼ of Section 3, Township 5 North, Range 68 West in Loveland, Larimer County, Colorado (40° 25' 53" Latitude, 105° 59' 48" Longitude). The Site is bound by I-25 to the east, Crossroads Blvd to the north, Rocky Mountain Ave to the west and the Union Pacific Railroad to the south. The Site includes approximately 170-acres of relatively level, undeveloped agricultural land at an average elevation of 5020 feet above mean sea level (msl). No structures, facilities or buildings were present on the Site although earthwork and building construction was underway on adjacent properties. The Site is devoid of any significant natural features, vegetation or habitat as a result of historic agricultural land practices. Dominant vegetation across the site consists of weeds and cover crop stubble. The Site has been in agricultural production at least dating back to the 1960's.

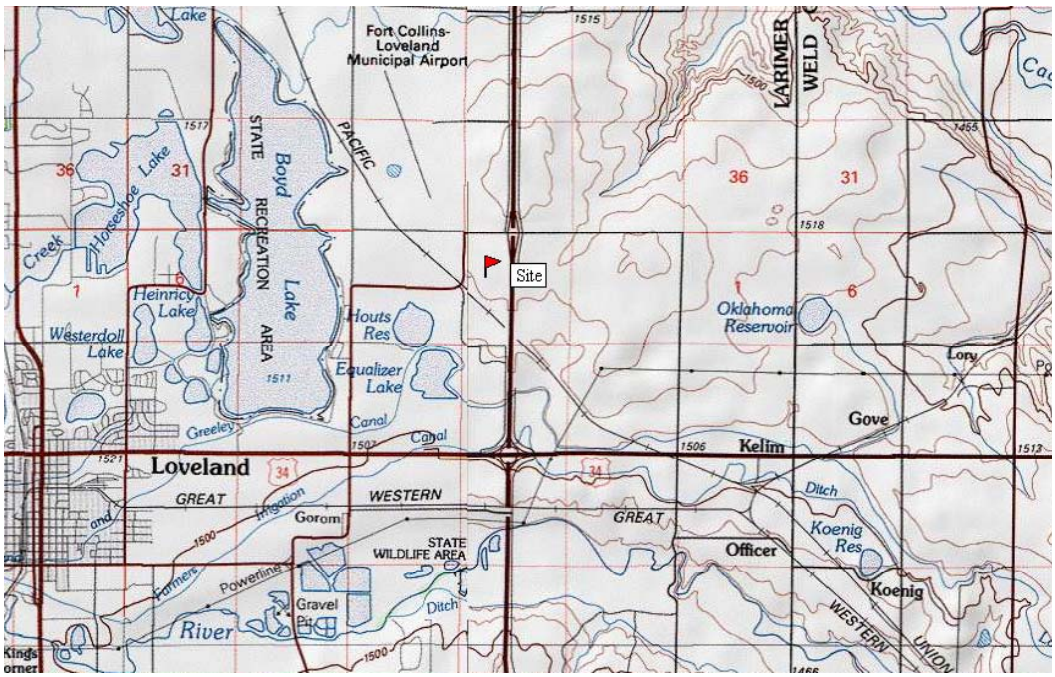


Figure 1. Vicinity Map

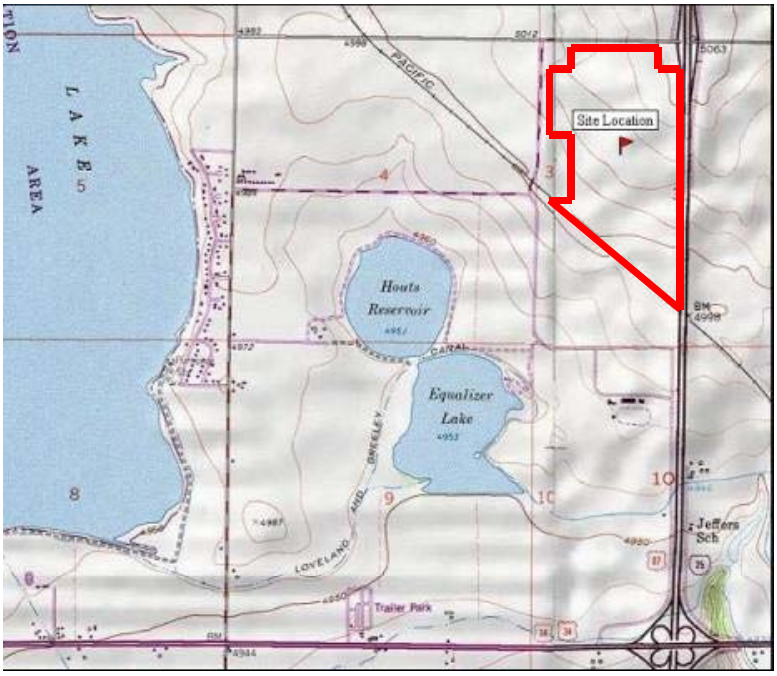


Figure 2. USGS 7.5 Minute Series Topographic Map of the Site

ARMY CORPS OF ENGINEERS JURISDICTIONAL WETLANDS

The US Army Corps of Engineers (USACE) regulates wetlands under Section 404 of the Clean Water Act. The Clean Act (33CFR Sec 328.3 b) defines wetlands as "*those areas that are inundated or saturated by surface or ground water 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*". ERC conducted a preliminary routine wetland delineation on the Site following the methodology enumerated in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) to identify the presence/absence of jurisdictional wetlands. During the field inspection, dominant vegetation was recorded, representative hydrologic indicators were noted and soil samples were examined for hydric indicators. In order for an area to be classified as a jurisdictional wetland the following three parameters must be present: (1) >50% of the dominant vegetation must be hydrophytic, (2) soils must exhibit hydric characteristics within the upper 12" of the soil profile and (3) indications of wetland hydrology must be present.

The Site does not contain jurisdictional wetlands. The Site is devoid of natural vegetation from agricultural land practices. No hydrophytic vegetation was identified. No natural defined drainages or topographic low-lying areas are present. Review of USGS topographic maps and aerial photography do not depict the presences of drainages, streams, ponds, lakes or marsh areas on the Site. The Larimer County Soil Survey identifies the dominant soil type as Weld Silt Loam (0-3% slope) with inclusions of Wiley Silt Loam (0-3% slope). The Weld Series consists of deep, well drained soils that formed in uniform textured silty, wind-deposited materials and are found on uplands. Weld series soils have a slow runoff potential and slight hazard of erosion. Weld or Wiley soil series are not listed as Hydric Soils in Colorado (NRCS, 1995) nor were hydric soil characteristics identified onsite.

- **No jurisdictional wetlands occur on the Site**

CITY OF LOVELAND NATURAL AREAS

The City of Loveland has established standards to protect known natural habitat areas and special features prior to City approval of a proposed development plan. The standards are intended to protect natural habitat areas and special features both on a site and in the vicinity of a site. Any proposed development site that contains, or is within 500 feet of a natural habitat area or special feature requires an ecological characteristic study to document existing ecological condition of a site. The location of natural areas have been identified in The City of Loveland's, In the Nature of Things (Revised Oct, 1996). This document defines Natural Areas as undeveloped lands containing potential natural values such as wildlife habitat, plant diversity and wetlands. 129 Natural areas are identified in the study and rated. Numeric quality ratings were given to 14 environmental attributes. The ratings range from 1 (considered low) to 10 (considered high).

No City of Loveland Natural Areas are identified on the Site. Houts Reservoir (Natural Area 1) and Equalizer Lake (Natural Area 2) are located over 2,000 feet southeast from the closest corner of the Site. Houts Reservoir is of relatively high ecological value but has an overall habitat rating of 5. Boyd Lake (Natural Area 93) at its shortest distance is approximately 1-mile west of the Site. Boyd Lake Natural Area is considered of relatively high ecological value with an overall habitat rating of 8.

- **No City of Loveland Natural Areas are identified on or within 500 feet of the Site.**

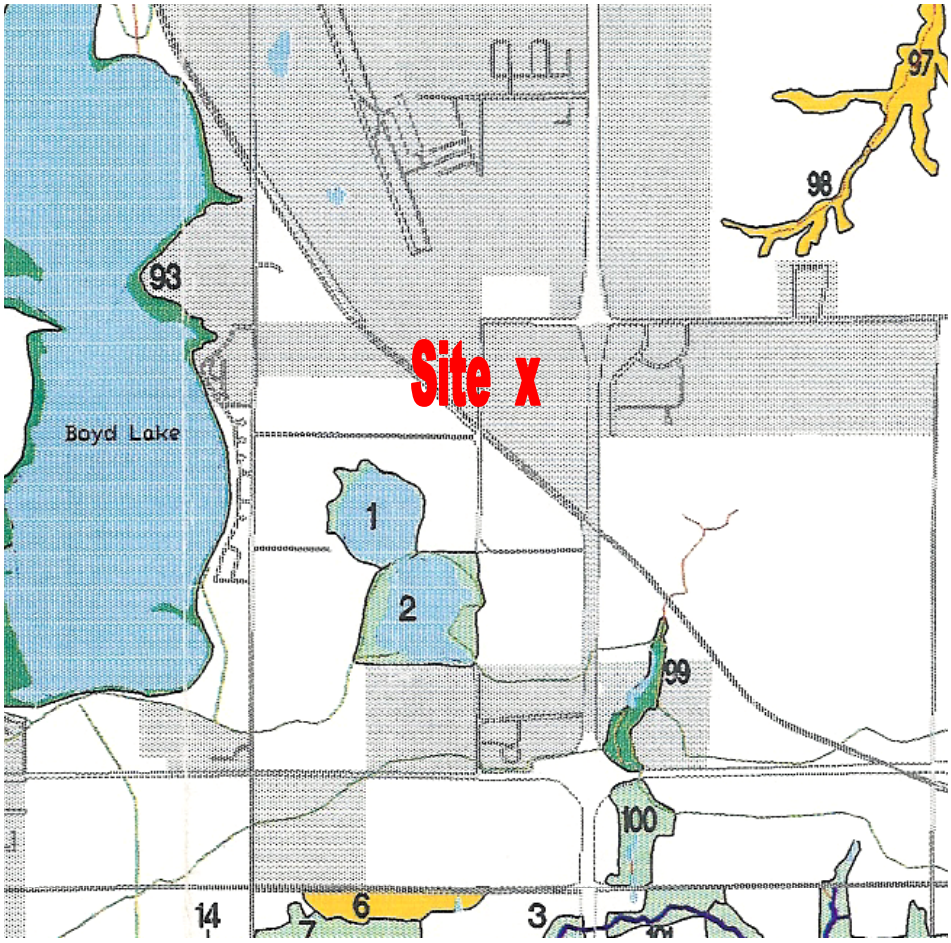


Figure 3. City of Loveland Natural Areas *(In the Nature of Things, 1996)*

SCREENING OF THREATENED, ENDANGERED, AND SPECIES OF CONCERN

The Endangered Species Act (ESA) of 1973 was enacted by the United States to conserve the ecosystems upon which endangered and threatened species depend and to conserve and recover listed species. Under the law, species may be listed as either "endangered" or "threatened". The ESA is administered by the US Fish and Wildlife Service. The following threatened, endangered or of concern species have been identified as potential inhabitants or that the county is within the historical range of the species based on general habitat requirements and US Fish and Wildlife Service Ecological Services Colorado Field Office Summary Charts (F*ederally Listed and Candidate Species and Their status in Colorado Summary Chart for Larimer County, effective May 20, 2003*),

- Bald Eagle (*Haliaeetus leucocephalus)*- Listed Threatened
- Interior least tern (*Sterna antillarum athalossos*)- Listed Endangered
- Piping plover (*Charadruis melodus*)- Listed Threatened
- Colorado butterfly plant (*Guara neomexicana* ssp. *coloradensis*)-Listed Threatened
- Preble's meadow jumping mouse (*Zapus hudsonius preblei*)-Listed Threatened
- Ute ladies'-tresses (*Spiranthes diluvialis*)-Listed Threatened
- Whooping crane (*Grus americana*)-Listed Endangered
- Black-tailed prairie dog (*Cynomys ludovicianus*)-State Species of Concern
- Other State Species of Concern

A brief species profile and presence/absence determination is provided for each species based on literature review and specific habitat requirements.

Bald eagle

The bald eagle is listed as federally threatened under the ESA. Bald eagles are usually winter residents of Colorado. These raptors are commonly found in lower elevation grasslands and semi-deserts near prairie dog towns and open water (i.e. rivers, reservoirs). Neither Bald eagle nests nor individuals were observed on or near the Site during the assessment. Bald eagles are known to frequent the lands immediately surrounding Houts Reservoir, Equalizer Lake and Boyd Lake. Any change of land use on the Site should not adversely affect the continued existence or available habitat of this species.

Interior least tern

The interior least tern (Tern) is listed as a federally endangered species under the ESA. Tern habitat consists of sparsely vegetated sand and gravel bars in wide river channels or salt flats along shorelines. The breeding range of the Tern has extended from Texas to Montana and from eastern Colorado and New Mexico to southern Indiana. Nesting habitat is usually located well above the water line on wide, sparsely vegetated sandbars and shores. Any change in land use on Site should not adversely affect the continued existence or available habitat of this species.

Piping plover

The piping plover (Plover) is listed as federally endangered under the ESA. The Colorado Plover population is a breeding population arriving in April and leaving by the end of May. Breeding habitat includes sparsely vegetated, wide sandy shorelines, sandbars in rivers and sandy wetland pastures. Typically, vegetative cover in potential nesting habitat is less than five percent. Any change in land use on the Site should not adversely affect the continued existence or available habitat of this species.

Colorado butterfly plant

The Colorado butterfly plant is listed as federally threatened under the ESA. This plant species is a short-lived, perennial herb endemic to moist soils in mesic or wet meadows of floodplain areas in southeastern Wyoming, north central Colorado, and extreme western Nebraska, between elevations of 5,800 feet and 6,000 feet (Spackman et. al., 1997). This early to mid-seral stage species occurs primarily in habitats created and maintained by streams active within their floodplains, with vegetation that is relatively open and not overly dense or overgrown. Site elevation and existing vegetation on the Site is atypical of the butterfly plant habitat. Any change in land use on the Site should not adversely affect the continued existence or available habitat of this species.

Preble's meadow jumping mouse

The Preble's meadow jumping mouse (PMJM) is listed as a federally threatened species under the ESA. The PMJM range extends from southwestern Wyoming through eastern Colorado generally below 7,600 feet. Armstrong et.al. (1997) described typical PMJM habitats as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." Also noted was a preference for "dense herbaceous vegetation consisting of a variety of grasses, forbes and thick shrubs" (Fish and Wildlife Service, 2004). PMJM habitat does not exist on the Site. Any change in land use on the Site should not adversely affect the continued existence or available habitat of this species.

Ute ladies'-tresses

The Ute ladies'-tresses orchid (Orchid) is listed as federally threatened under the ESA. The Orchid occurs in seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated floodplains below 6,500 feet elevation in certain areas in Utah, Colorado, Idaho, Wyoming, and Nevada. Typical sites include old stream channels and alluvial terraces, subirrigated meadow and other sites where the soil is saturated to within 18" of the surface at least temporarily during the spring or summer growing seasons. Orchids do not typically occur on highly disturbed or modified sites such as highway rights-of-way, upland sites including prairie dog towns, shortgrass prairie and sagebrush rangeland, sites entirely inundated by standing water including monocultures of cattails or Olney's three-square. The Site does not exhibit characteristics typical of the Orchid habitat. Any change in land use on the Site should not adversely affect the continued existence or available habitat of this species.

Whooping crane

The whooping crane (Crane) is listed as a federally endangered species under the ESA. Cranes typically live in mudflats around reservoirs and in agricultural areas. While wintering they live on salt flats that are dominated by coastal salt grass. Their nesting grounds are wetland communities dominated by bulrush. In Colorado the Crane occurs only as a migrant, stopping over in the San Luis Valley for four to six weeks during February and March and in the western valleys, especially Mesa, Delta and Gunnison Counties (CDOW). The Site does not contain habitat typically utilized by the Crane. Any change in land use on the Site should not adversely affect the continued existence or available habitat of this species.

Black-tailed prairie dog

The black-tailed prairie dog is currently listed as a state species of special concern by the CDOW. Prairie dogs have become an important political, social, economic, and ecological issue in the Front Range region of Colorado. Nationally, less than 2 percent of pre-settlement prairie dog populations exist today, due to a combination of habitat loss and targeted extermination. Short-grass species commonly eaten by prairie dogs include buffalo grass and blue grama. Prairie dogs play an important role in the overall ecosystem, not only creating an unique ecosystem for their species, but they also create habitat and are a food source for a number of other federally and state-listed threatened or endangered species. No prairie dog colonies exist on the Site. Any

change in land use on the Site should not adversely affect the continued existence or available habitat of this species.

Other State Species of Concern

The Colorado Division of Wildlife (CDOW) has identified State Species of Special Concern, which are species or subspecies of native wildlife populations that are currently vulnerable in their Colorado range and have the potential to become threatened or endangered species (CNHP, 1999). State Species of Special Concern are not protected under State regulations but the 'take' of individuals and disturbance of their habitat is strongly discouraged. Colorado Species of Special Concern which may exist on or utilize the Site are listed as follows, although these species were not directly observed on the Site. Any potential land use changes are recommended to avoid disturbance or the 'take' of these species.

- Common garter snake (*Thamnophis sirtalis*)
- Ferruginous hawk (*Buteo regalis*)
- Mountain plover (*Charadrius montanus*)
- Swift fox (*Vulpes velox*)
- Western snowy plover (*Charadrius alexandrinus nivosus*)

- **The Site does not exhibit the presence or potential habitat of threatened, endangered or species of concern.**

GENERAL HABITAT DESCRIPTION AND WILDLIFE USE

An assessment was conducted on the Site to identify and document the presence of natural vegetation communities, the presence of wildlife and potential wildlife use or habitat. The Site was traversed on February 2, 2005 by ERC and observations documented.

Wildlife can utilize the general landscape in a multitude of ways. Wildlife can use specific habitats as areas of permanent inhabitance, seasonal inhabitance, migratory routes or as a temporary shelter, or for foraging. Agricultural land typically is not considered of high ecological value to wildlife but this type of habitat does provide many beneficial values. These lands can provide forage and hunting grounds, refuge, nesting, food sources and provide general "open space".

The Site is comprised entirely of active agricultural land, primarily historically utilized for dryland farming. Routine cultivation has prohibited the development of any significant natural features or vegetation on the Site. No natural grasslands or shrub and tree communities exist on the Site. Dominant vegetation across the Site consists of weeds and cover crop stubble. Noxious weeds are present along the perimeter of the Site. Agricultural land, although limited in habitat and vegetation species diversity, does provide a unique and important component in the environment. Surrounding residential and commercial development and roadways accompanied by lack of vegetation cover limits the utilization of the Site by wildlife. The Site is primarily utilized by avian species and small mammals for foraging. Some waterfowl may also use the site for resting and foraging due to its close proximity to Houts Reservoir, Equalizer Lake and Boyd Lake due to the open undeveloped nature of the Site. During the site assessment numerous locally common upland birds were observed across the Site.

Houts Reservoir (Natural Area 1), the adjacent property to the southwest provides habitat for a wide array of waterfowl and raptors including red-tailed hawks (*Buteo jamaicensis*), bald eagles (*Haliaeetus leucocephalus*), geese (*Branta canadensis*), blue heron (Andea herodias), mallards, teals and American White Pelican (*Pelecanus erthrorhynchos*) which may only utilize the Site in passing. The use of the Site by any wildlife is limited due to the lack of structure, cover, natural vegetation and routine agricultural land practices. Mammal use is also limited on the Site due to the relatively lack of any significant connecting movement corridors. The Site is relatively isolated by surrounding development and roadways. Although not directly observed smaller mammals common to the region such as coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), skunk (*Mephitus spp*.), rabbits (*Sylvilagus spp*.), squirrels (*Sciurus spp*.), mice (*Peromysucus spp*.), and voles (*Microtus spp.*) may utilize the Site.

- **No significant natural vegetation communities, wildlife habitat (or wildlife) exist on the Site.**

MIGRATORY BIRD TREATY ACT

Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. 730-712). The MBTA makes it illegal for anyone to *take, possess, import, export, transport, sell, purchase barter, or offer for sale, purchase, or barter any migratory bird, or the parts, nests, or eggs of such a bird* except under the terms of a valid permit issued pursuant to Federal regulations. In Colorado all birds except for the European starling (*Sturna vulgaris*), house sparrow (*Passer domesticus*), and rock dove (*Columba livia*) are protected under the MBTA. A total of 523 migratory bird species are known to occur in the Mountain-Prairie Region (Region 6, Montana, Wyoming, Utah, North Dakota, South Dakota, Nebraska, Kansas and Colorado); 320 of the 523 migratory bird species are known to breed in USFWS Region 6.

This screening does not guarantee migratory bird nests do not exist or will not be encountered during future activities. If the "take" of any migratory bird species or nests is required in the future, notification for examination should be made to ERC or the USFWS, Non-game Migratory Bird Coordinator (Stephanie Jones) at (303) 236-8155 ext 253. Future coordinators of land use activities should be aware that the "take" of an occupied nest requires a Nest Depredation Permit, issued by the U.S. Fish and Wildlife Service, before removing, disturbing or destroying any occupied nest on the Property.

- Migratory birds do exist in the general vicinity of the Site and may potentially nest in the open agricultural lands within the Site. Such birds are protected under the MBTA, and killing or possession of these birds (or their parts and nests) is prohibited under the MBTA.

Figure 4. Site Aerial Photography June 2003.
Depicts current agricultural land use practices and lack of natural features or environmentally sensitive areas onsite.

Photo 1. View east along the southern Site boundary and UP Railroad towards I-25 in the background.

Photo 2. View southwest across the Site towards Houts Reservoir, Equalizer Lake and Long's Peak in the distance.

Photo 3. View south along the western Site boundary (Rocky Mountain Ave).

Photo 4. View northwest across the Site. Note the lack of any natural features.

Photo 5. View north across the Site. Note the agricultural land use and lack of any natural features.

Photo 6. View south across the Site. Note the agricultural land use and lack of any natural features.

SUMMARY

Ecological Resource Consultants, Inc. has prepared this Preliminary Environmentally Sensitive Areas Report for the Myers Group No. 949 3rd Subdivision Property (Site). This Report was conducted to identify natural features and/or, ecologically sensitive areas which may occur on or around the Site. Natural features and/or ecologically sensitive areas in the context of this Report may include: City of Loveland Natural Areas, stream corridors, wetlands, mature stands of vegetation, natural vegetation communities, significant habitat for wildlife and threatened, endangered or species of concern.

A summary of findings is provided as follows:

- The Site is primarily abandon agricultural land with no significant natural features or vegetation
- No jurisdictional wetlands exist on the Site
- No City of Loveland Natural Areas are identified on the Site or within 500 feet
- No significant natural vegetation communities, wildlife habitat or wildlife was identified on the Site
- The Site does not exhibit the presence or potential habitat of threatened, endangered or species of concern protected under the Endangered Species Act
- Migratory birds do exist in the general vicinity of the Site and may potentially nest in the open agricultural lands within the Site. Such birds are protected under the Migratory Bird Treaty Act (MBTA), and killing or possession of these birds (or their parts and nests) is prohibited under the MBTA.
- Any proposed future land use changes should not have a potential adverse effect on "environmentally sensitive areas" as defined by the City of Loveland.

This study has been prepared by:

Ecological Resource Consultants, Inc.

David J. Blauch, Senior Ecologist

REFERENCES

Andrews, J.M., and R. Righter. 1992. *Colorado Birds: a reference to their distribution and habitat*. Denver Mus. Nat. Hist., Denver.

Armstrong, D.M., et. al. Edited by M.E. Bakeman. May 1997. *Report on Habitat Findings of the Preble's Meadow Jumping Mouse*. Presented to the US Fish and Wildlife Service and the Colorado Division of Wildlife.

City of Loveland Open Lands Plan. City of Loveland. June 1996.

Colorado Division of Wildlife. Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern. May 2003.

Cowardin, L.M., V. Carter, F.C. Golet, & E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States (FWS/OBS-79/31)*. Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.

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

Gray, Mary T. *The Guide to Colorado Birds*. Westcliffe Publishers, Inc. Englewood CO. 1998.

Hammerson, Geoffrey A. Amphibians and Reptiles in Colorado. University Press of Colorado & Colorado Division of Wildlife. 2nd ed. 1999.

In the Nature of Things, Loveland's Natural Areas. Design Workshop, Inc., ERO Resources Corp., Stoecker Ecological Consulting, Inc. December 1993. (Revised October 1996).

Kingery, Hugh. *Colorado Breeding Bird Atlas*. Colorado Bird Atlas Partnership 1998.

Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. *Colorado Rare Plant Field Guide*. Prepared for the Bureau of Land Management, the US Fish and Wildlife Service. July 13, 1992. Interim Survey Requirements for *Spiranthes diluvialis*.

U.S. Department of Agriculture. *Soil Survey of Larimer County Area, Colorado*. December 1980

U.S. Fish and Wildlife Service. *Preble's Meadow Jumping Mouse (Zapus hudsonius Preblei) Survey Guidelines*. Revised April 2004.

U.S. Fish & Wildlife Service. 1994. *National List of Plant Species that Occur in Wetlands (Regions 4, 5 & 8)*, published by Resource Management Group, Inc., Grand Haven, MI.
U.S. Fish & Wildlife Service. Nov. 23, 1992. *Interim Survey Requirements for Spiranthes Diluvialis.*

Western Society of Weed Science, The Western United States Land Grant Universities Cooperative Extension Services and the University of Wyoming. *Weeds of the West*. 9th edition, 2000.

Ecological Resource Consultants, Inc
5672 Juhls Drive~Boulder, Colorado~80301~720.564.0788

Preliminary Ecological Assessment

for the

Colorado College Property

and the

Spreng Property

Loveland, Colorado

June 8, 2004

Prepared for:
McWhinney Enterprises
2725 Rocky Mountain Avenue, Suite 200
Loveland, Colorado 80538

ERC Project # 175-047

Preliminary Ecological Assessment

INTRODUCTION

Ecological Resource Consultants, Inc. (ERC) has prepared this Preliminary Ecological Assessment for two individual parcels of land proposed for potential future development, known herein as the Colorado College Property and the Spreng Property. The properties are located in the vicinity of City of Loveland in Larimer County Colorado. This assessment was conducted to identify natural features and/or, ecologically sensitive areas which may occur on or around the properties. Natural features and/or ecologically sensitive areas in the context of this assessment may include: stream corridors, wetlands, mature stands of vegetation, natural vegetation communities, significant habitat for wildlife and threatened, endangered or species of concern.

ERC performed an onsite assessment of each property on May 14, 2004 with subsequent literature review. The weather was sunny, clear and warm, soils thawed and vegetation was emerging and/or in bloom. Onsite assessments included documentation of wetland habitat, major vegetation communities, dominant flora associated with each community, unique natural features, wildlife habitats and observations of wildlife species.

GENERAL SITE DESCRIPTION

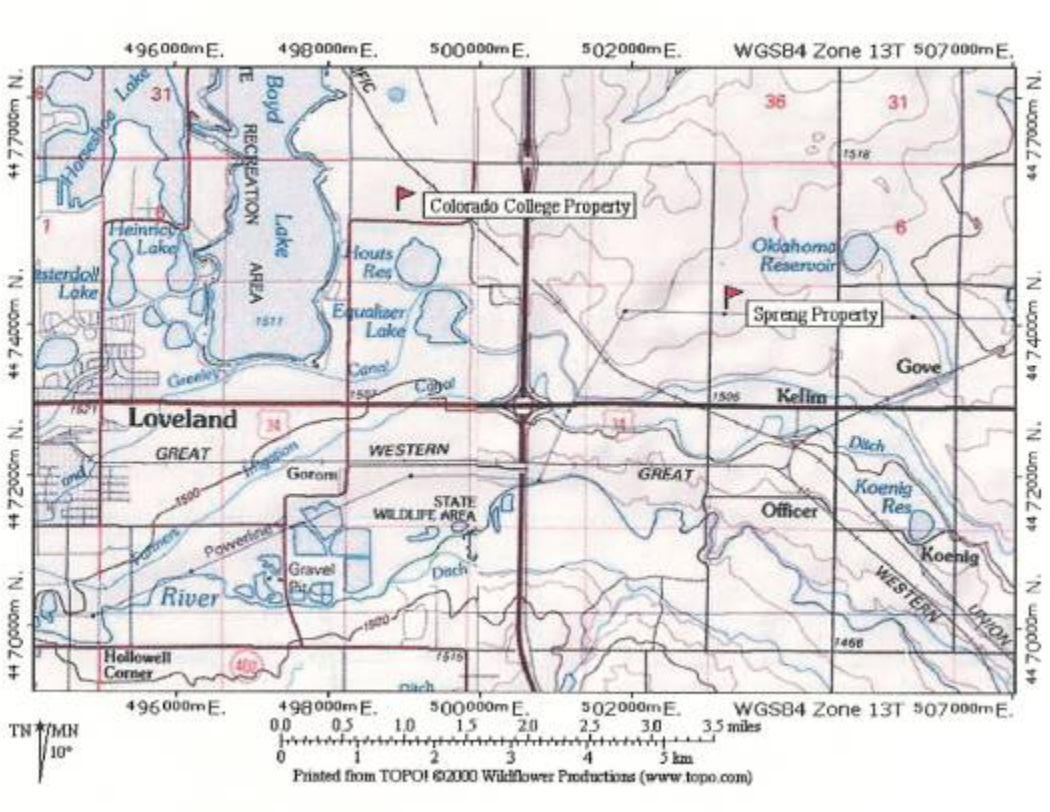
Colorado College Property

The Colorado College Property is located in the northern half of Section 4, Township 5 North, Range 68 West in Loveland, Larimer County, Colorado (40° 22’ 56” Latitude, 105° 08’ 57” Longitude), on the north side of County Road 24E. The property includes 127.1 acres of relatively level, undeveloped agricultural land at an average elevation of 4975 feet above mean sea level (msl). No structures, facilities or buildings were present on the property. The Union Pacific Railroad borders the property along the northeast, County Road 24E forms the southern property boundary and County Road 9 (Boyd Lake Avenue) forms the western boundary. The property is devoid of any significant natural features, vegetation or habitat as a result of routine agricultural land practices. The property has been in agricultural production at least dating back to the 1960’s.

Spreng Property

The Spreng Property is located east of Interstate 25, east of the City of Loveland, in the northeast quarter of Section 11, Township 5 North, Range 68 West, Larimer County, Colorado (Latitude 40° 25’ 52” N, Longitude 104° 58’ 52” W) at an average elevation of 5000 feet msl. The property can be accessed from the intersection of HWY 34 and CR 3. From the intersection follow CR 3 north, approximately 0.5 miles. The property is located on the west side of CR 3. A high tension power line bisects the center of the property from east to west. A dirt road encompasses the northern, western and southern boundaries providing access. The property occupies 160.4 acres of land and is devoid of any significant natural features, vegetation or habitat as a result of routine agricultural land practices. The property has been in agricultural production at least dating back to the 1960’s.

Figure 1. Vicinity Map



ARMY CORPS OF ENGINEERS JURISDICTIONAL WETLANDS

The US Army Corps of Engineers (USACE) regulates wetlands under Section 404 of the Clean Water Act. The Clean Act (33CFR Sec 328.3 b) defines wetlands as "*those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and that under normal circumstance4s do support, a prevalence of vegetation typically adapted for life in saturated soil conditions*". ERC conducted a preliminary routine wetland delineation on each of the two properties following the methodology enumerated in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) to identify the presence/absence of jurisdictional wetlands. During the field inspection, dominant vegetation was recorded, representative hydrologic indicators were noted and soil samples were examined for hydric indicators. In order for an area to be classified as a jurisdictional wetland the following three parameters must be present: (1) >50% of the dominant vegetation must be hydrophytic, (2) soils must exhibit hydric characteristics within the upper 12" of the soil profile and (3) indications of wetland hydrology must be present.

Colorado College Property

The Colorado College property does not contain jurisdictional wetlands. The property is devoid of natural vegetation from agricultural land practices. No hydrophytic vegetation was identified. No defined drainages or topographic low-lying areas are present. Review of USGS topographic maps and aerial photography do not depict the presences of drainages, streams, ponds, lakes or marsh areas on the property. The Larimer County Soil Survey identifies the dominant soil type as Ulm Clay Loam (0-3% slope) with inclusions of Wiley Silt Loam and Nunn Clay Loam. Ulm Clay Loam is a nearly level, deep, well-drained soil that formed in mixed alluvium from shale.

Nunn and Wily soils are also deep, well drained soils. These soils are typically used for irrigated and dryland farmed crops and for pasture and native grasses. Ulm, Wiley or Nunn soil series are not listed as Hydric Soils in Colorado (NRCS, 1995) nor were hydric soil characteristics identified onsite.

- **No jurisdictional wetlands occur on the Colorado College Property**

Photo 1 and 2. Example of dryland agricultural practices on the Colorado College Property and absences of potential wetland habitat.

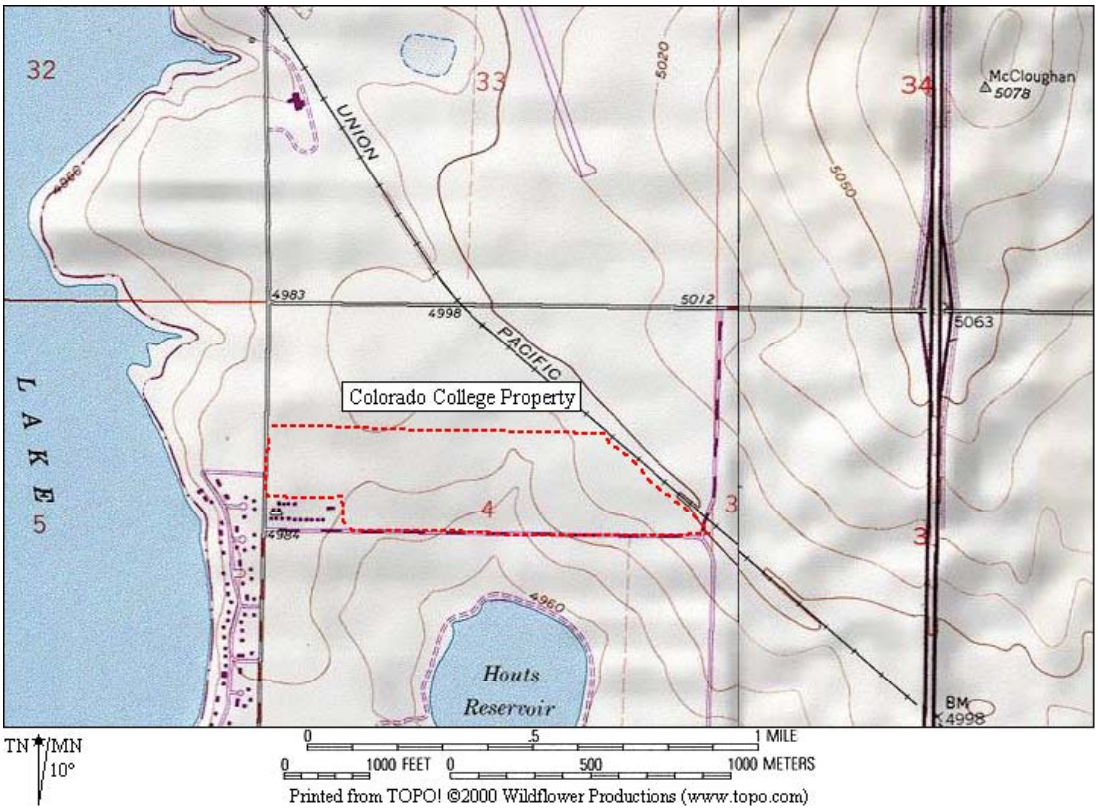


Figure 2. USGS 7.5 Minute Series Topographic Map of the Colorado College Property

Spreng Property

The Spreng property does not contain jurisdictional wetlands. The property is devoid of natural vegetation from routine agricultural land practices. No hydrophytic vegetation was identified. No defined drainages or topographic low-lying areas are present. Review of USGS topographic maps and aerial photography do not depict the presences of drainages, streams, ponds, lakes or marsh areas on the property. The Larimer County Soil Survey identifies the dominant soil type as Weld Silt Loam with inclusions of Wiley Silt Loam. Weld Silt Loam is a nearly level, deep, well-drained soil that formed in uniform textured, silty, wind deposited material. Wiley soils are also deep, well drained soils. These soils are found in upland areas and are typically used for irrigated and dry land farmed crops. Weld and Wiley soils are not listed as Hydric Soils in Colorado (NRCS, 1995) nor were hydric soil characteristics identified onsite.

- **No jurisdictional wetlands occur on the Spreng Property**

Photo 3 and 4. Example of dryland agricultural practices of the Spreng Property and absence of potential wetland habitat.

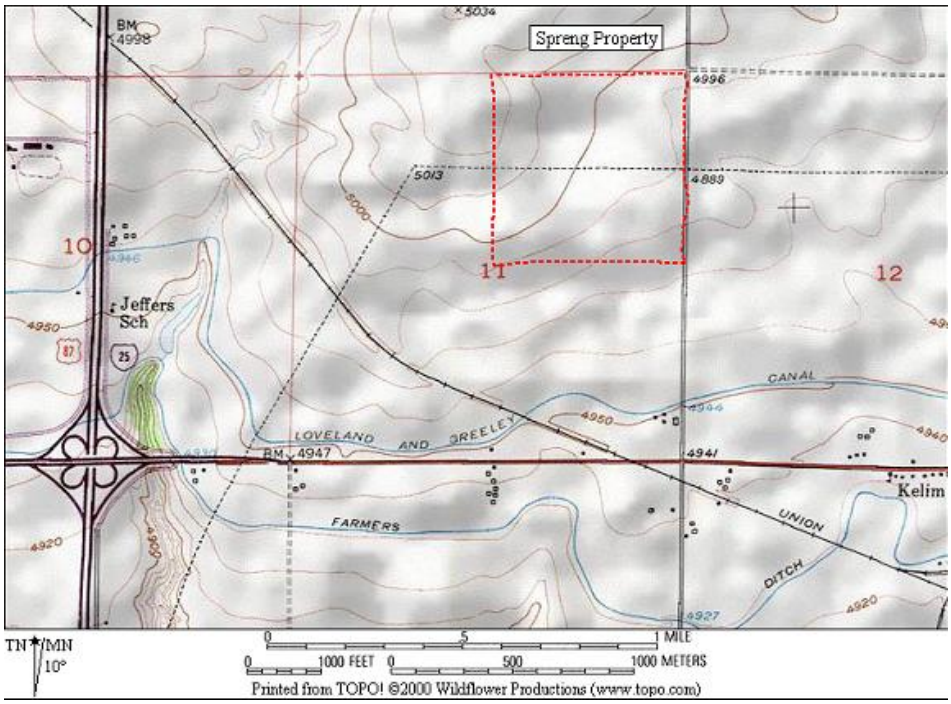


Figure 3. USGS 7.5 Minute Series Topographic Map of the Spreng Property

CITY OF LOVELAND NATURAL AREAS

The City of Loveland has established standards to protect known natural habitat areas and special features prior to City approval of a development plan. The standards are intended to protect natural habitat areas and special features both on a site and in the vicinity of a site. Any proposed development site that contains, or is within 500 feet of a natural habitat area or special feature requires an ecological characteristic study to document existing ecological condition of a site. The location of natural areas have been identified in The City of Loveland's, In the Nature of Things (Revised Oct, 1996). This document defines Natural Areas as undeveloped lands containing potential natural values such as wildlife habitat, plant diversity and wetlands. 129 Natural areas are identified in the study and rated. Numeric quality ratings were given to 14 environmental attributes. The ratings range from 1 (considered low) to 10 (considered high).

Colorado College Property

No City of Loveland Natural Areas are identified on the Colorado College Property. Boyd Lake (Natural Area 93) at its shortest distance is approximately 1,100 feet south of the property. Houts Reservoir (Natural Area 1) is located approximately 850 feet south of the property. Boyd Lake Natural Area is considered of relatively high ecological value with an overall habitat rating of 8. Houts Lake is also of relatively high ecological value but has an overall habitat rating of 5.

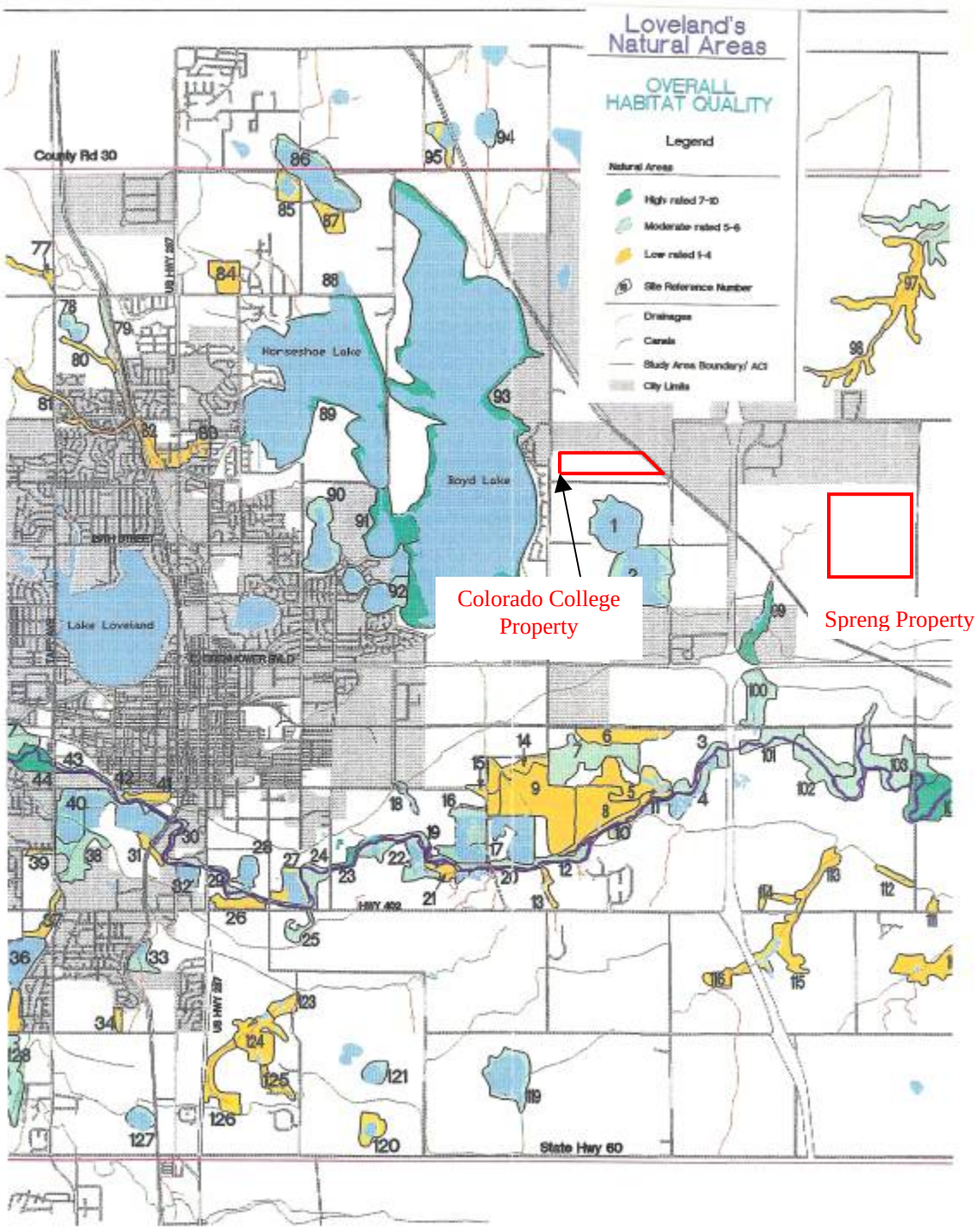
- **No City of Loveland Natural Areas are identified on the Colorado College Property nor within 500 feet of the property.**

Spreng Property

No City of Loveland Natural Areas are identified on the Spreng Property. Natural Area 99 is the closest Natural Area to the property located over 4,000 feet to the southwest.

- **No City of Loveland Natural Areas are identified on the Spreng Property nor within 500 feet of the property.**

Figure 4. City of Loveland Natural Areas *(In the Nature of Things, 1996)*



SCREENING OF THREATENED, ENDANGERED, AND SPECIES OF CONCERN

The Endangered Species Act (ESA) of 1973 was enacted by the United States to conserve the ecosystems upon which endangered and threatened species depend and to conserve and recover listed species. Under the law, species may be listed as either "endangered" or "threatened". The ESA is administered by the US Fish and Wildlife Service. The following threatened, endangered or of concern species have been identified as potential inhabitants or that the county is within the historical range of the species for each of the two properties based on general habitat requirements and US Fish and Wildlife Service Ecological Services Colorado Field Office Summary Charts (F*ederally Listed and Candidate Species and Their status in Colorado Summary Chart for Larimer County, effective May 20, 2003*),

- Bald Eagle (*Haliaeetus leucocephalus)*- Listed Threatened
- Black-footed ferret (*Mustela nigripes*)-Listed Endangered
- Black-tailed prairie dog (*Cynomys ludovicianus*)-Candidate for Listing
- Colorado butterfly plant (*Guara neomexicana* ssp. *coloradensis*)-Listed Threatened
- Eskimo curlew (*Numenius borealis*)-Listed Endangered
- Preble's meadow jumping mouse (*Zapus hudsonius preblei*)-Listed Threatened
- Ute ladies'-tresses (*Spiranthes diluvialis*)-Listed Threatened
- Whooping crane (*Grus americana*)-Listed Endangered

A brief species profile and presence/absence determination is provided for each species based on literature review and specific habitat requirements.

Bald eagle

The bald eagle is listed as federally threatened under the ESA. Bald eagles are usually winter residents of Colorado. These raptors are commonly found in lower elevation grasslands and semi-deserts near prairie dog towns and open water (i.e. rivers, reservoirs). Neither Bald eagle nests nor individuals were observed within or near each of the two properties during the assessment. Therefore any change of land use on the properties should not adversely affect the continued existence or available habitat of this species.

Black-footed ferret

The black-footed ferret is listed as federally endangered under the ESA. The ferret is dependent on black-tailed prairie dog colonies for food, shelter and rearing young. According to the *Black-footed Ferret Survey Guidelines for Compliance with the Endangered Species Act* (US Fish and Wildlife Service, 1989), black-footed ferrets require over 80 acres of active black-tailed prairie dog towns or complex for a sustainable population. A prairie dog town or complex of this size does not exist on either of the properties nor in the surrounding areas. Neither black-footed ferrets nor their specific habitat was observed on or surrounding the properties. Therefore any change in land use on the properties should not adversely affect the continued existence or available habitat of this species.

Black-tailed prairie dog

The black-tailed prairie dog is currently a candidate species for listing under the ESA. Prairie dogs have become an important political, social, economic, and ecological issue in the Front Range region of Colorado. Nationally, less than 2 percent of pre-settlement prairie dog populations exist today, due to a combination of habitat loss and targeted extermination. The US Fish and Wildlife Service has determined that adding the black-tailed prairie dog to the federal list of threatened or endangered species is "warranted but precluded" at this time due to administrative and fiscal limitation within the agency (City of Broomfield, 2001). Short-grass species commonly eaten by prairie dogs include buffalo grass and blue grama. Prairie dogs play

an important role in the overall ecosystem, not only creating an unique ecosystem for their species, but they also create habitat and are a food source for a number of other federally and state-listed threatened or endangered species. No prairie dog colonies exist on the properties; therefore any change in land use should not adversely affect the continued existence or available habitat of this species.

Colorado butterfly plant

The Colorado butterfly plant is listed as federally threatened under the ESA. This plant species is a short-lived, perennial herb endemic to moist soils in mesic or wet meadows of floodplain areas in southeastern Wyoming, north central Colorado, and extreme western Nebraska, between elevations of 5,800 feet and 6,000 feet (Spackman et. al., 1997). This early to mid-seral stage species occurs primarily in habitats created and maintained by streams active within their floodplains, with vegetation that is relatively open and not overly dense or overgrown. The disturbance of riparian areas that contain native grasses by agricultural conversion, water diversions, channelization, and urban development threaten the species existence (Federal Register, 2000). Vegetation within the properties is atypical of the butterfly plant habitat. The average elevation of the properties is uncharacteristic of typical habitats. Any change in land use on the properties should therefore not adversely affect the continued existence or available habitat of this species

Eskimo curlew

The Eskimo curlew is listed as federally endangered under the ESA. This avian species is nearly extinct due to over hunting. Further, winter and migratory stopover habitat has been degraded by agricultural and commercial development. Historic migration patterns suggest a spring route through central plains with stopovers in tallgrass prairies and less frequently in mixed-grass prairies. Typical stopover habitats are not present on the properties or in surrounding properties and the curlew is not known to use the area as a migration corridor (Bird Atlas, 1998). Any change in land use on the properties should therefore not adversely affect the continued existence or available habitat of this species.

Preble's meadow jumping mouse

The Preble's meadow jumping mouse (PMJM) is listed as a federally threatened species under the ESA. The mouse's range extends from southwestern Wyoming through eastern Colorado generally below 7,600 feet. Armstrong et.al. (1997) described typical mouse habitats as "well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity." Also noted was a preference for "dense herbaceous vegetation consisting of a variety of grasses, forbes and thick shrubs" (Fish and Wildlife Service, 2004). The Colorado Natural Heritage Program database search resulted in one observation of the PMJM in 1895 (Report Generated: June 24, 2003). The location is not section-specific due the time period and the credibility of the observer is unknown. The US Fish and Wildlife Service (USFWS) PMJM database lists two trapping efforts proximate to the properties with negative results. Farmer's Ditch at County Road 17 was trapped in 2001 with no evidence of PMJM populations and the Big Thompson, west of I-25 was trapped with negative results. Preble's meadow jumping mouse habitat does not exist on the properties. Therefore, any change in land use should not adversely affect the continued existence or available habitat of this species.

Ute ladies'-tresses

The Ute ladies'-tresses orchid (Orchid) is listed as federally threatened under the ESA. The Orchid occurs in seasonally moist soils and wet meadows near springs, lakes, or perennial streams and their associated floodplains below 6,500 feet elevation in certain areas in Utah, Colorado, Idaho, Wyoming, and Nevada. Typical sites include old stream channels and alluvial terraces, subirrigated meadow and other sites where the soil is saturated to within 18" of the surface at least temporarily during the spring or summer growing seasons. Orchids do not

typically occur on highly disturbed or modified sites such as highway rights-of-way, upland sites including prairie dog towns, shortgrass prairie and sagebrush rangeland, sites entirely inundated by standing water including monocultures of cattails or Olney's three-square. The properties do not exhibit characteristics typical of the Orchid habitat. Any change in land use on the properties should therefore not adversely affect the continued existence or available habitat of this species

Whooping crane

The whooping crane is listed as a federally endangered species under the ESA. The adult crane is a relatively large white bird approximately 50 to 56 inches tall with a wingspan of 87 to 90 inches and an average weight of 15 pounds. The bird is distinguished by its outstretched neck in flight. Cranes typically live in mudflats around reservoirs and in agricultural areas. While wintering they live on salt flats that are dominated by coastal salt grass. Their nesting grounds are wetland communities dominated by bulrush. In Colorado the crane occurs only as a migrant, stopping over in the San Luis Valley for four to six weeks during February and March and in the western valleys, especially Mesa, Delta and Gunnison Counties (CDOW). The Colorado Natural Heritage Program database search lists a whooping crane observation in 1982 in Section 16 most likely in the vicinity of the Big Thompson River. The properties do not contain habitat typically utilized by the whooping crane. Due to atypical habitat and no evidence of whooping crane use on the properties, any change in land use on the properties should not adversely affect the continued existence or available habitat of this species.

- **The properties do not exhibit the presence or potential habitat of threatened, endangered or species of concern.**

COLORADO NATURAL HERITAGE PROGRAM ENVIRONMENTAL REVIEW

A review of the Colorado Natural Heritage Program (CNHP) Biological and Conservation Data system for natural heritage resources (occurrence of significant natural communities and rare, threatened or endangered plants and animals) was conducted for the general vicinity of the two properties. The CNHP maintains a state-wide database recording identified species, status, location, and the date of last observation of rare and/or imperiled species. Review of the data identified several known occurrences of rare and/or imperiled species known or likely to occur within the general vicinity of the properties. Grouped taxonomically the species that occur in the general vicinity includes one species of amphibian- *Bufo Boreas* (Southern Rocky Mountain population), one species of mammal- *Zapus Hundsonius preblei*, two plant species- *Physaria Bellii and Rorippa coloradensis* and one natural plant community- Foothills Ponderosa Pine Scrub woodlands (CNHP, 2004). These occurrences are not located on or in the immediate vicinity of the properties.

- **No known rare and/or imperiled species are documented in the Colorado Natural Heritage Program Biological and Conservation Database System on the properties.**

GENERAL HABITAT DESCRIPTION AND WILDLIFE USE

An assessment was conducted on each of the two properties to identify and document the presence of natural vegetation communities, the presence of wildlife and potential wildlife use or habitat. Each property was traversed on May 14, 2004 by ERC and observations documented.

Wildlife can utilize the general landscape in a multitude of ways. Wildlife can use specific habitats as areas of permanent inhabitance, seasonal inhabitance, migratory routes or as a temporary shelter, or for foraging. Agricultural land typically is not considered of high ecological

value to wildlife but this type of habitat does provide many beneficial values. These lands can provide forage and hunting grounds, refuge, nesting, food sources and provide general "open space".

Colorado College Property

The Colorado College Property is comprised entirely of active agricultural land. The property appears to be utilized primarily for dryland farming. Routine cultivation prohibits the development of any significant natural features or vegetation on the property. No natural grasslands or shrub and tree communities exist on the property. Noxious weeds are present along the perimeter of the property. Agricultural land, although limited in habitat and vegetation species diversity, does provide a unique and important component in the environment. Surrounding residential and commercial development and roadways accompanied by lack of vegetation cover limits the utilization of the property by wildlife. The property is primarily utilized by avian species and small mammals for foraging. Some waterfowl may also use the site for resting and foraging due to its close proximity to Houts and, Equalizer Reservoirs and Boyd Lake due to the open undeveloped nature of the property. During the site assessment numerous common upland birds were observed across the property including western kingbird (*Tyrannus verticalis*), killdeer (*Charadrius vociferus*), American robin (*Turdus migratorius*), sparrows and wrens.

Houts Reservoir (Natural Area 1), the adjacent property to the south provides habitat for a wide array of waterfowl and raptors including red-tailed hawks (*Buteo jamaicensis*), bald eagles (*Haliaeetus leucocephalus*), geese (*Branta canadensis*), blue heron (Andea herodias), mallards, teals and American White Pelican (*Pelecanus erthrorhynchos*) which may only utilize the property in passing. The use of the property by mammals is limited due to the lack of structure, cover, natural vegetation and routine agricultural land practices. Mammal use is also limited on the property due to the relatively lack of any significant connecting movement corridors. The property is relatively isolated by surrounding development and roadways. Although not directly observed smaller mammals common to the region such as coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), skunk (*Mephitus spp*.), rabbits (*Sylvilagus spp*.), squirrels (*Sciurus spp*.), mice (*Peromysucus spp*.), and voles (*Microtus spp.*) may utilize the property.

- **No significant natural vegetation communities, wildlife habitat (or wildlife inhabit) exist on the Colorado College Property.**

Photo 5. View north along Boyd Lake Ave

Photo 6. View west along CR 24E

Photo 7. View north across the property

Photo 8. View northwest along RR tracks

Photo 9. View northwest across property

Photo 10.View south from Boyd Lake Ave

Photo 5-10. View of agricultural land of the Colorado College Property. Note the lack of any natural features or vegetation.

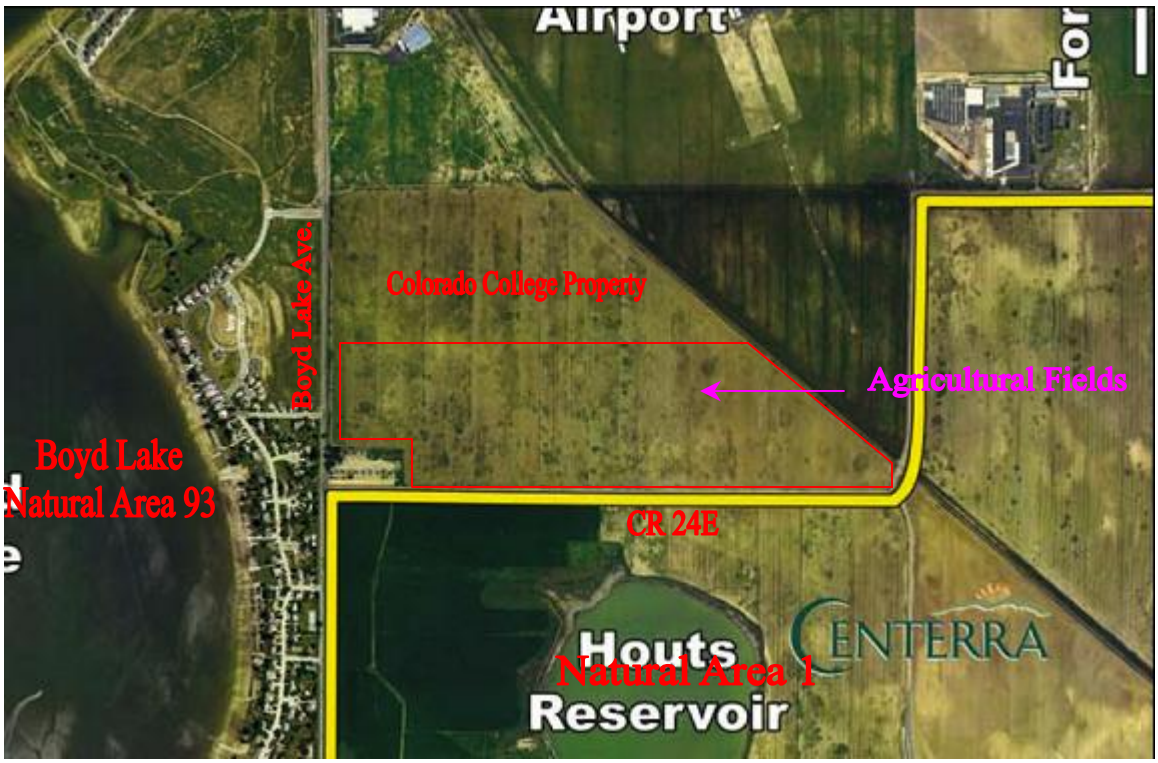


Figure 5. Colorado College Property Aerial Photography June 2003. Depicts current agricultural land use practices and lack of natural features or environmentally sensitive areas onsite. Also depicts location of nearby Boyd Lake (Natural Area 93) and Houts Reservoir (Natural Area 1).

Spreng Property

The Spreng Property is comprised entirely of active agricultural land. The property appears to be utilized primarily for dryland farming. Routine cultivation prohibits the development of any significant natural features or vegetation on the property. No natural grasslands or shrub and tree communities exist on the property. Agricultural land, although limited in habitat and vegetation species diversity, does provide a unique and important component in the environment. Surrounding residential and commercial development and roadways accompanied by lack of vegetation cover limits the utilization of the property by wildlife. The property is primarily utilized by avian species and small mammals for foraging. During the site assessment numerous common upland birds were observed across the property including western kingbird (*Tyrannus verticalis*), killdeer (*Charadrius vociferus*), American robin (*Turdus migratorius*), magpie (*Pica pica*) and red-tailed hawk (*Buteo jamaicensis*). The use of the property by mammals is limited due to the lack of structural cover, natural vegetation and routine agricultural land practices. Mammal use is also limited due to the relative lack of any significant connecting movement corridors. Surrounding development and roadways relatively isolates the property. Although not directly observed smaller mammals common in the region such as coyote (*Canis latrans*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), skunk (*Mephitus spp.*), rabbits (*Sylvilagus spp.*), squirrels (*Sciurus spp.*), mice (*Peromysucus spp.*), and voles (*Microtus spp.*) may utilize the property.

- **No significant natural vegetation communities, wildlife habitat or (or wildlife inhabit) on the Spreng Property.**

Photo 11. View west from CR3

Photo 12. View west from CR3

Photo 13. View north along CR3

Photo 14. View south west

Photo 11-14. View of agricultural land of the Spreng Property. Note the lack of any natural features or vegetation.

Figure 6. Spreng Property Aerial Photography June 2003. Depicts current agricultural land use practices and lack of natural features or environmentally sensitive areas.

SUMMARY

Ecological Resource Consultants, Inc. has prepared this Preliminary Ecological Assessment for the Colorado College and Spreng Properties located in the vicinity of the City of Loveland, Larimer County, Colorado. The assessment was conducted to identify potential natural features and/or, ecologically sensitive areas which may occur on or around each property.

A summary of findings is provided as follows:

Colorado College Property

- The property is primarily agricultural land with no natural features or vegetation
- Jurisdictional wetlands do not exist
- No significant natural vegetation communities, wildlife habitat or wildlife was identified
- No City of Loveland Natural Areas are identified on the property or within 500 feet
- The property does not exhibit the presence or potential habitat of threatened, endangered or species of concern protected under the Endangered Species Act

Spreng Property

- The property is primarily agricultural land with no natural features or vegetation
- Jurisdictional wetlands do not exist
- No significant natural vegetation communities, wildlife habitat or wildlife was identified
- No City of Loveland Natural Areas are identified on the property or within 500 feet
- The property does not exhibit the presence or potential habitat of threatened, endangered or species of concern protected under the Endangered Species Act

REFERENCES

Andrews, J.M., and R. Righter. 1992. *Colorado Birds: a reference to their distribution and habitat*. Denver Mus. Nat. Hist., Denver.

Armstrong, D.M., et. al. Edited by M.E. Bakeman. May 1997. *Report on Habitat Findings of the Preble's Meadow Jumping Mouse*. Presented to the US Fish and Wildlife Service and the Colorado Division of Wildlife.

City of Loveland Open Lands Plan. City of Loveland. June 1996.

Colorado Division of Wildlife. Colorado Listing of Endangered, Threatened and Wildlife Species of Special Concern. May 2003.

Colorado Natural Heritage Program. Colorado State University. (Database research report). Colorado Natural Heritage Program Environmental Review. Locations and Status of Rare and/or Imperiled Species 2004.

Cowardin, L.M., V. Carter, F.C. Golet, & E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States (FWS/OBS-79/31).* Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior, Washington, D.C.

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

Federal Register. March 24, 1998. Department of the Interior. U.S. Fish & Wildlife Service.

Gray, Mary T. *The Guide to Colorado Birds*. Westcliffe Publishers, Inc. Englewood CO. 1998.

Hammerson, Geoffrey A. Amphibians and Reptiles in Colorado. University Press of Colorado & Colorado Division of Wildlife. 2nd ed. 1999.

In the Nature of Things, Loveland's Natural Areas. Design Workshop, Inc., ERO Resources Corp., Stoecker Ecological Consulting, Inc. December 1993. (Revised October 1996).

Kingery, Hugh. *Colorado Breeding Bird Atlas*. Colorado Bird Atlas Partnership 1998.

Kollmorgen Instruments Corp. 1990. *Munsell Soil Color Charts.* Baltimore, MD

Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. *Colorado Rare Plant Field Guide*. Prepared for the Bureau of Land Management, the US Fish and Wildlife Service. July 13, 1992. Interim Survey Requirements for *Spiranthes diluvialis*.

U.S. Department of Agriculture. *Soil Survey of Larimer County Area, Colorado*. December 1980

U.S. Fish and Wildlife Service. *Preble's Meadow Jumping Mouse (Zapushudsonius Preblei) Survey Guidelines*. Revised April 2004.

U.S. Fish and Wildlife Service. Mountain-Prairie Region. *The Black-tailed Prairie Dog Conservation Assessment and Strategy*. Fifth Draft. September 9, 1999.

U.S. Fish & Wildlife Service. 1994. *National List of Plant Species that Occur in Wetlands (Regions 4, 5 & 8),* published by Resource Management Group, Inc., Grand Haven, MI.

U.S. Fish & Wildlife Service. Nov. 23, 1992. *Interim Survey Requirements for Spiranthes Diluvialis.*

Western Society of Weed Science, The Western United States Land Grant Universities Cooperative Extension Services and the University of Wyoming. *Weeds of the West*. 9th edition, 2000.

This study has been prepared by:

Ecological Resource Consultants, Inc.

David J. Blauch, Senior Ecologist

McWhinney Enterprises, Inc.
Loveland, Colorado

Enviromentally Sensitive Areas Report - Rocky Mountain Village II Development (North Boyd Lake and East Eisenhower Boulevard)

ENSR Corporation
January 2000
Document Number 8711-135-200

8711-135-200

ENVIRONMENTALLY SENSITIVE AREAS REPORT - ROCKY MOUNTAIN VILLAGE II DEVELOPMENT (NORTH BOYD LAKE AND EAST EISENHOWER BOULEVARD)

Prepared for

MCWHINNEY ENTERPRISES, INC.
Loveland, Colorado

Prepared by

ENSR
Fort Collins, Colorado

Karen Caddis-Bennett
Prepared By

Phil Hackney
Reviewed By

January 2000

CONTENTS

LIST OF FIGURES

1.0 STUDY AREA

This report summarizes the evaluation of environmental conditions at the Rocky Mountain Village II property in Loveland based upon guidelines established by the City of Loveland Planning Department for preparation of an Environmentally Sensitive Areas Report as defined in Attachment D (City of Loveland 1998). The subject property proposed for development is an approximately 26-acre area located southwest of Equalizer Lake in Larimer County, Colorado. The property is located in the City of Loveland (City) in the SW¼ of Section 9 (SW¼ S9), Township 5 North, Range 68 West (T5N, R68W), at approximately 40° 24' 30" north latitude and 105° 01' 00" west longitude. The location of the property is shown on Figure 1.

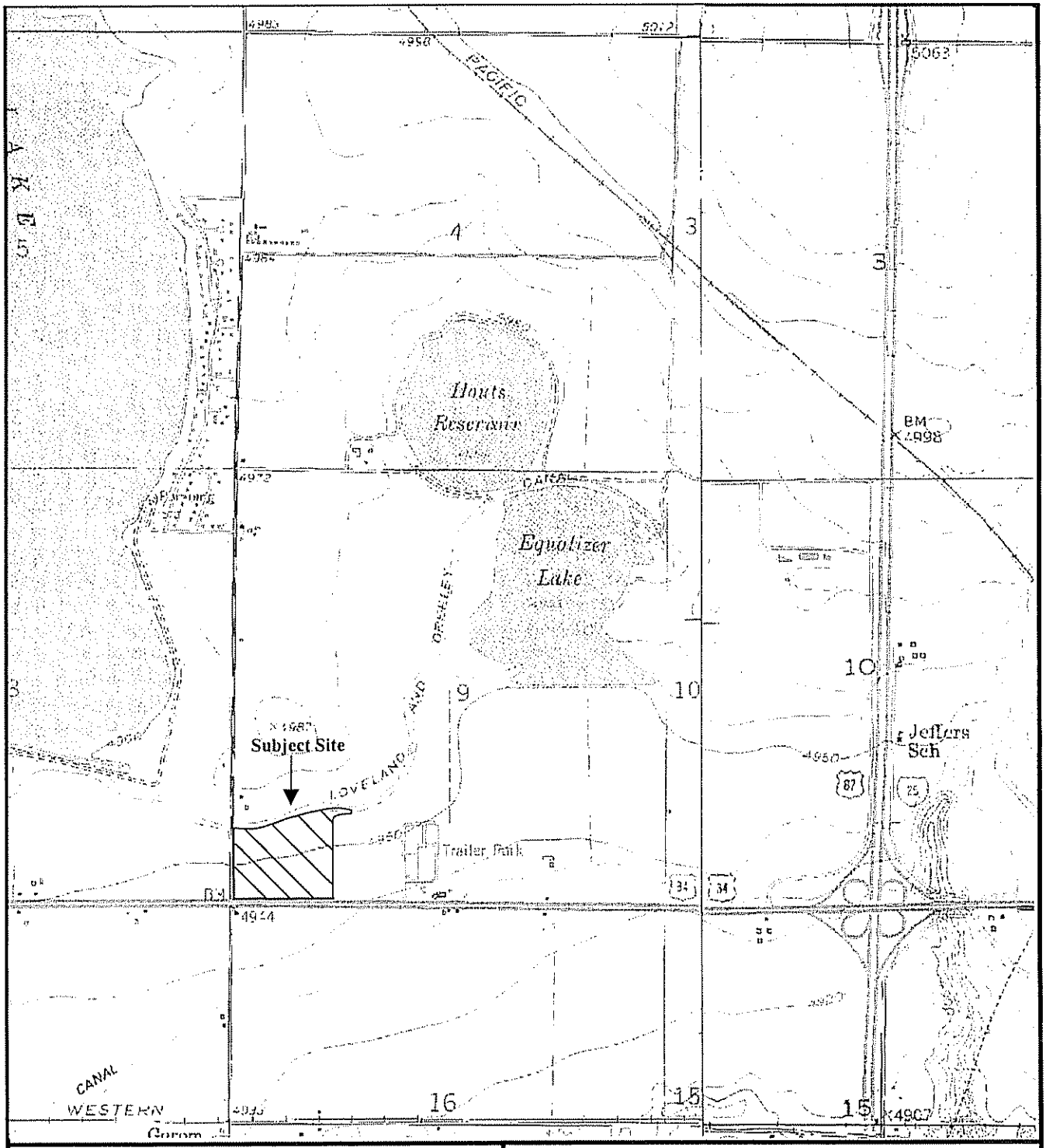
Retail facilities are proposed for development on the property. Two 2-laned paved roadways, McWhinney Boulevard and Piney River Road, are also being proposed for construction along the eastern boundary of the subject property (Figure 1). According to McWhinney Enterprises representatives, potential environmental effects from these highways have been previously evaluated under the Rocky Mountain Village Second Subdivision environmental report.

A field survey of the property was conducted by Karen Caddis-Burrell, a field biologist with ENSR Corporation, on September 16, 1999. Credentials for Ms. Caddis-Burrell are provided in Appendix A. Observations recorded included: major vegetation types and wildlife habitats found on the property, dominant flora, wildlife species and/or wildlife sign observed, unique habitats (including water features), and the presence of dumping or other potentially hazardous material disposal activities.

Prior to the site visit, the City of Loveland's planning reports, In the Nature of Things, Loveland's Natural Areas and the Open Lands Plan, were reviewed to determine if the property is located within areas identified by the City as significant natural areas (City of Loveland 1996a,b). The review indicated that the property was not included in the City's listing of locations containing important natural areas.

Although habitat quality in the property area was not ranked by the City in its planning documents, a portion of the development property lies adjacent to the Loveland and Greeley Canal (Canal) and within the area defined in the City's planning document Open Lands Plan as a long term project area targeted for protection of viable agricultural lands (City of Loveland 1996a).

According to the Open Lands Plan, the City is interested in ditch and canal areas for their environmental importance as wildlife habitat, wildlife corridors, recreation/trail linkages, and for their function as irrigation water suppliers. In an effort to protect agricultural use, agricultural



Source: USGS 7 1/2 Minute Topographic Quadrangles, Loveland, Colorado 1962 (Revised 1984), Windsor, Colorado 1950 (Revised 1969)

N

SCALE
1:24,000

0 — 1 mile

ENSR

FIGURE 1
SITE LOCATION MAP
McWhinney Enterprises
Rocky Mountain Village II Development Property
Larimer County, Colorado

DATE:	PROJECT NO.:	REV
9/20/99	8711-135-200	

activity is encouraged by the City in areas identified as Viable Agricultural Lands (City of Loveland 1996b).

Currently, the property consists of irrigated cropland. The site is bordered on the east by cropland and on the west by Boyd Lake Road and Crystal Rapids Water Slide Park. The property is bordered on the north by the Canal, an abandoned farmstead, and irrigated pasture and on the south by U.S. Highway 34 (Eisenhower Boulevard) and cropland (see photographs in Appendix B).

Although no wetland delineations were conducted as part of the field reconnaissance, approximately 2,950 linear feet of non-jurisdictional waters of the U.S. associated with the Canal were identified on the northern border of the property. The Canal carries water from Boyd Lake to Equalizer Reservoir and east towards Greeley. A small seep area associated with leakage from an irrigation pipe draining from the south side of the Canal also was identified on the northern portion of the property. The results of these observations are summarized in Chapter 2.0 of this report. This report also discusses other field observations, identifies environmentally sensitive areas on the property, identifies potential impacts associated with the proposed project, and provides recommendations for mitigation of potential impacts.

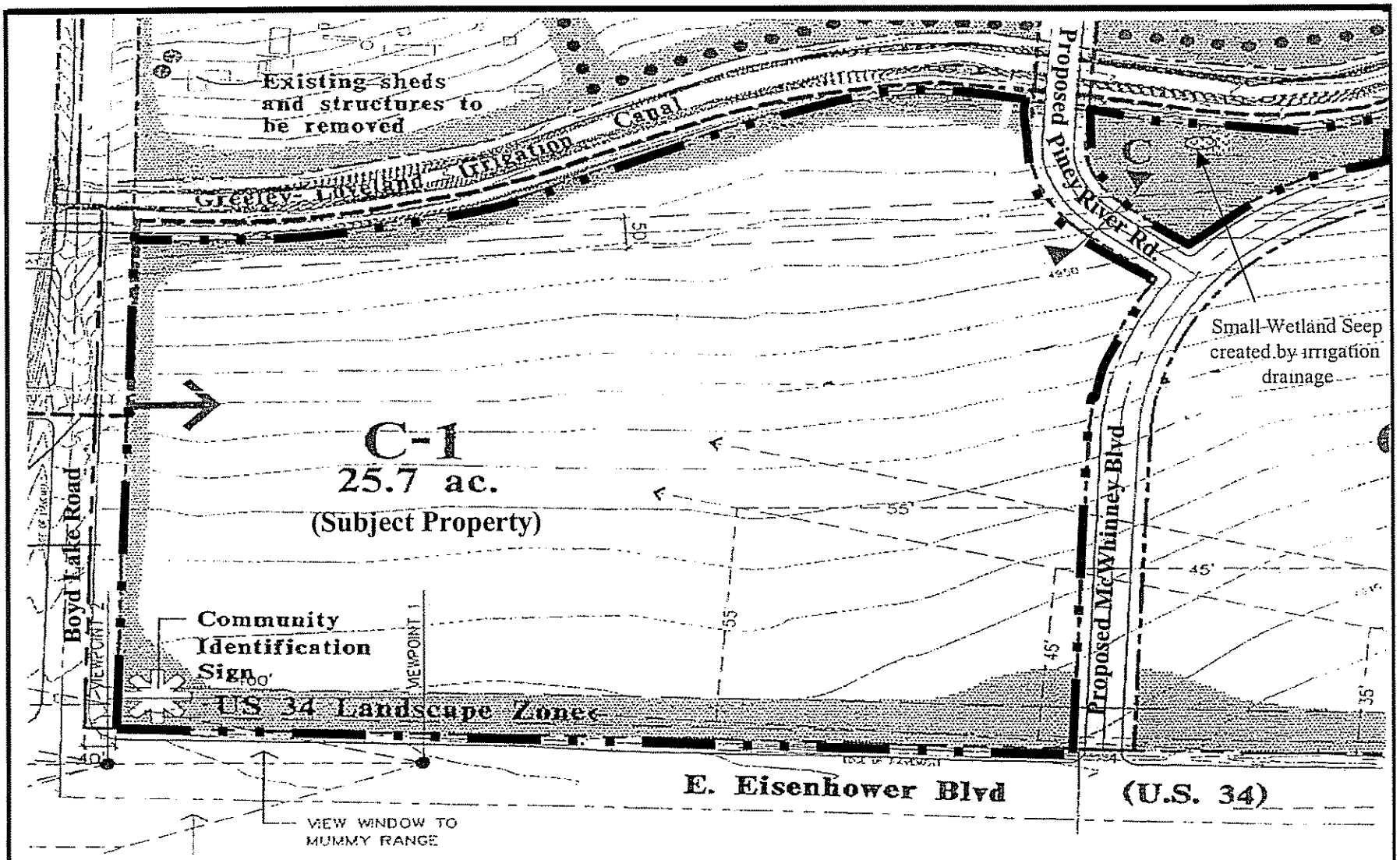
2.0 SITE INVENTORY

The subject property currently consists of actively cultivated irrigated cropland. The property is bordered on the north by the Canal (see Figure 2). The Canal is considered environmentally sensitive according to the City of Loveland's guidelines. Based upon review of City planning documents, no other areas of wildlife habitat or Natural Areas were identified on the property that would qualify as environmentally sensitive areas (City of Loveland 1996a,b).

The property was planted in sugar beets during the site survey and is generally level. The City's open lands goals for irrigated croplands include keeping prime farmland in agriculture, particularly irrigated cropland (City of Loveland 1996b). Cropland may receive limited use by wildlife, such as the American robin, striped skunk, and raccoon. Once the crop is harvested, use would decline except for limited foraging of remnant crops.

No mature stands of deciduous trees were identified in the cropland; however, several large, mature plains cottonwood trees (*Populus sargentii*) were observed along the section of the Canal that lies adjacent to the property, particularly in the area adjacent to an existing abandoned farmstead. Herbaceous vegetation along the Canal's interior banks is characterized by reed canarygrass (*Phalaris arundinacea*), prairie cordgrass (*Spartina pectinata*), sunflower (*Helianthus* sp.), foxtail barley (*Hordeum jubatum*), showy milkweed (*Asclepias speciosa*), curly dock (*Rumex crispus*), and broad-leaved cattail (*Typha latifolia*). Vegetation along the outer banks of the Canal included kochia (*Kochia scoparia*), sunflower, curly dock, showy milkweed, field bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), prairie cordgrass, and bluegrass (*Poa* sp.).

The main canal is approximately 50 feet wide with a second, smaller canal lying approximately 10 feet to the south. A two-track roadway runs between the two ditches. The top banks of the main canal lie about 5 to 8 feet above open water. Open water in the main canal was approximately 25 feet wide. The width of the smaller canal was about 10 feet. Water depth in both canals could not be determined due to turbidity. Within the ordinary high water level in the main canal, which lies approximately 2 feet higher than the open water on either side of the ditch, wetland vegetation, including reed canarygrass and prairie cordgrass, was observed. Both of these species are facultative wet hydrophytic indicator plants. Although no formal wetland delineation was conducted as part of this environmental site review, it appears that an area of approximately 2 feet in width on each side of both canals supports poor to moderate quality wetlands. As described in 33 Code of Federal Regulations Section 328 and based on discussions with U.S. Army Corps of Engineers (COE) personnel, irrigation ditches and canals located in uplands are considered non-jurisdictional waters of the U.S. and wetlands located



Source: McWhinney Enterprises 10/13/99

Approximate Scale - 1" = 200'

- Subject Property

- Wetland

N

ENSR

FIGURE 2
Property Map
McWhinney Enterprises
Rocky Mountain Village II Development Property, Larimer Co., CO

DATE:	PROJECT NO.:	REV
1/4/00	8711-135-200	

within these areas are not regulated by the COE. However, these areas are considered potential environmentally sensitive areas as defined in the City of Loveland's Environmentally Sensitive Areas Report, Attachment D, since they support wetlands and mature trees. Although the Canal is not rated by the City, the rating system identified in In the Nature of Things, Loveland's Natural Areas (City of Loveland 1996a) was used by ENSR's field biologist to rate the area. On a scale of 1 to 10, with 1 indicating the lowest value, that portion of the Canal located on the subject property was given a rating of 3. Although wetlands and several mature trees are located in the Canal, its value is restricted by its narrow linear configuration, prior disturbance, limited plant and animal diversity, and bisection by the Boyd Lake Road.

Although the Canal crosses Boyd Lake Road, it still appears to provide limited wildlife habitat and a corridor connection between Boyd Lake and Equalizer Reservoir as evidenced by wildlife sign observed along the Canal. Boyd Lake Road is a low to moderately traveled two-lane paved roadway that would allow limited wildlife movement.

Wildlife using the Canal area include small and medium-sized mammals, amphibians, and birds. Raccoon tracks and scat were observed on the Canal banks. Ground squirrels and their burrows were seen on the canal slopes and a pied-billed grebe, several mallards, and bullfrogs were observed swimming in the Canal.

No evidence of past raptor nesting activity (stick nests, cavity nests, whitewash) was observed during the field survey; however, a female American kestrel and a male northern harrier were seen flying over the study area during the site visit. Leaves were present on the trees during the time of the survey, making it more difficult to locate nests. Raptors may use the mature trees in the area for perching. Other animals that may frequent the property could include red fox, coyote, voles, field mice, pheasant, garter snakes, bull snakes, and various bird species such as meadow larks, sparrows, pigeons, Canada geese, and mourning doves.

No suitable habitat for Ute Ladies'-tresses orchid (*Spiranthes diluvialis*), a Federally threatened species, was observed in the study area. The evaluation was completed by Karen Caddis-Burrell, a U.S. Fish and Wildlife Service (USFWS)-certified orchid surveyor. Orchid habitat evaluation criteria used during the survey followed that identified in the November 1992 letter from the USFWS outlining survey requirements (USFWS 1992). No habitat for other state or Federally listed threatened or endangered species was observed within or adjacent to the property. Wintering bald eagles may perch in the mature cottonwoods along the ditch; however, no suitable winter foraging habitat was identified on the property or on adjacent cropland.

A small seep area associated with seepage from an irrigation pipe was observed on the south bank of the Canal approximately 2,000 feet east of Boyd Lake Road. The seep area lies adjacent

to the cultivated field. The ground is saturated in the seep area, which is approximately 15 feet long by 10 feet wide. Coyote willow (*Salix nigra*) and showy milkweed were observed in the area. Both of these species are wetland indicator plants. No formal wetland delineation was conducted in this area.

As identified on Natural Resources Conservation Service (NRCS) maps of the area, soils in the subject property predominantly consist of the Nunn clay loam association with 0 to 1 percent slopes and 1 to 3 percent slopes. Erosion hazard is slight on these soils and run-off is slow to medium. No eroded areas were observed during the site visit. The shrink swell potential of the soil is moderate to severe. Nunn clay loam soils are not susceptible to flooding in this area with a depth to the seasonal high water table of 6 feet or greater (NRCS 1980). According to U.S. Geological Survey (USGS) documents, depth to the water table in the study area is 10 to 20 feet below the general land surface (Hillier and Schneider, Jr. 1979). Drainage is generally towards the Big Thompson River to the south. No aquifer recharge and discharge areas, high water lines, or percolation restrictions have been identified for the property (Shelton and Rogers 1987).

No slopes over 20 percent, areas located in close proximity to downstream waterbodies, or land formerly used for landfill operations or hazardous industrial use were observed during the site visit. No fault areas were identified in the vicinity of the property during review of USGS maps of the area (Shelton and Rogers 1987).

Historic aerial photographs taken in 1973, 1979, and 1985 indicated that the primary historic use of the property has been agriculture. No evidence of hazardous material dumping or industrial use was observed on these photographs or was identified during a hazardous industrial use review conducted in the vicinity of the subject property in 1997 (EDR 1997).

Boyd Lake and Equalizer Reservoir lie within 1,000 feet and 2,000 feet, respectively, of the property. Both areas have been classified as Natural Areas with a rating of 8 and 6, respectively, in In the Nature of Things, Loveland's Natural Areas report (City of Loveland 1996a). These areas are connected with the property and each other by the Canal.

3.0 POTENTIAL IMPACTS OF PROPOSED DEVELOPMENT

Specific development plans were not available at the time this report was prepared; however, a general assessment of potential impacts was made based upon general development scenarios identified by McWhinney Enterprises, Inc. Development currently proposed at the property includes construction of retail facilities. Two paved two-lane roadways (McWhinney Boulevard and Piney River Road) are also proposed for construction adjacent to the property. According to McWhinney Enterprises, effects from this highway development have been evaluated under other Environmentally Sensitive Areas Reports (ESAR's), including the Rocky Mountain Village Second Subdivision Environmental Report. As currently designed, the proposed McWhinney Boulevard would parallel approximately 500 feet of the Canal along the northeastern boundary of the subject property (see Figure 2) before turning south and connecting with U.S. Highway 34. The roadway would be located within 100 to 300 feet of the Canal for approximately 500 feet of its length. The proposed Piney River Road would cross the Canal and intersect with McWhinney Boulevard at the northeast corner of the property.

Indirect effects could occur as a result of construction noise and increased access to the area. Construction of the proposed development would result in the loss of approximately 26 acres of prime farmland soils to urban use. No native plant communities or significant wildlife habitats would be directly impacted.

The severe to moderate soil limitations associated with shrink-swell soils may require special construction design features for streets and building foundations on the property. The potential for heavy erosion should be limited and no geologic hazards were identified for the area.

The project area is located outside of the 100-year floodplain for local streams, rivers, and lakes. Potential flooding of the Canal could result in run-off south onto the property. The Canal has an elevated berm along its length that should prevent surface runoff from developed areas from reaching the ditch and potentially affecting water quality.

The City recommends a construction setback of 25 to 75 feet from the operating high water line of lake, ditch, and canal areas that have a natural areas rating of 5 or less (City of Loveland 1996b). The subject property is currently not rated by the City; however, evaluation by the ENSR field biologist suggests a proposed natural area rating of "3" for the Canal area. This rating is based mainly upon the lack of species diversity, limited habitats available for wildlife, and its existing disturbance levels.

Construction noise could potentially disturb wildlife and nesting birds along the Canal if conducted during the breeding and nesting period; construction could also disturb raptors foraging in the

area. The increase in traffic and human activity and noise in the area following completion of the development could disturb or reduce hunting, nesting, and breeding by wildlife in the canal area. Wildlife movement along the Canal may be reduced due to increased human presence and construction.

The nearest identified natural area, Boyd Lake, is separated from the property by Boyd Lake Road and fields. No direct impacts to this natural area and the wildlife utilizing the lake are expected to occur as a result of construction on the property. As the general area becomes more urbanized, wildlife species sensitive to human presence and development may not use the area as extensively.

The proposed development would remove the irrigation piping supplying water to the small seep area located along the northern portion of the property. This would remove the seep's water source and probably result in the loss of the seep area.

4.0 PROTECTION MEASURES AND MITIGATION

Based upon review of the City's Natural Areas plan, the City recommends that development near lakes or waterways that have a natural areas rating of 5 or lower by the City, such as the Canal, include a setback or easement area of 25 to 75 feet from the operating high waterline. The City also recommends that any development proposals submitted to the City that involve ditches or lake edges should include a restoration and enhancement plan. The City also recommends that irrigation as provided by the ditches be protected and that some of the ditches could serve as recreation and trail linkages (Loveland 1996b).

McWhinney Enterprises' development plans for the area would include a buffer zone of approximately 25 to 75 feet from the Canal's southern normal operating high water line boundary.

A bike trail is proposed for construction along the Canal as described in a separate environmental and natural areas assessment report for the Rocky Mountain Village II Development proposed by McStain Enterprises, Inc. (Wildland Consultants 1998). The Canal buffer zone would be landscaped with native shrubs and trees, including chokecherry, rabbitbrush, wild rose, as appropriate. All planting would be completed outside of the area where ditch maintenance would occur.

Breeding and nesting birds probably use the Canal area most heavily between the end of March and the end of September. Raptors would likely forage in the area year round; however, it is expected that the heaviest foraging use would occur between mid to late November and early March. Wherever feasible, construction near the Canal area would be scheduled to occur during the non-breeding and nesting seasons.

Construction techniques appropriate for development in the expansive soils in the property area would be implemented. Standard construction mitigation techniques and Best Management Practices, such as silt fences, catchment basins, should prevent sediment transport or runoff into the Canal. The Canal has an elevated berm along its length that should prevent surface runoff from developed areas from reaching the ditch and potentially affecting water quality. Overall water quality could be improved due to a reduced volume of water for commercial landscaping versus agricultural irrigation, and reduced quantities of agricultural chemical application.

Since only commercial development is planned on the property, predation of wildlife species by cats and dogs should not be a significant problem. Lease laws, however, should be strictly enforced along developed trail systems to minimize domestic animal and wildlife interactions.

Development of the proposed action could result in the disturbance of the small seep area associated with leakage from irrigation pipes and the canal that lies on the northern portion of the property. This area, which is approximately 10 feet by 15 feet in size, has not been delineated and appears to be of poor quality in regards to vegetative diversity and potential use by wildlife. Construction of the development would remove the seep's water source and result in the probable loss of the seep. The seep area would not be filled as part of the construction and development work is expected to be located at least 25 feet away from the area. No mitigation related to this seep area is recommended.

5.0 REFERENCES

City of Loveland. 1996a. In the Nature of Things, Loveland's Natural Areas. December 1993, revised 1996. Report and Appendix.

_____. 1996b. City of Loveland Open Lands Plan. June 1996.

_____. 1998. Environmentally Sensitive Areas Report, Attachment D. Revised September 23, 1998.

E Data Resources, Inc. (EDR). 1997. EDR Radius Map Report. September 1, 1997.

Hillier, D. and P. Schneider, Jr. 1979. Depth to the Water Table in the Boulder-Fort Collins-Greeley Area, Front Range Urban Corridor, Colorado. US Geological Survey Map I-855-I. Miscellaneous Investigations Series.

Shelton, D. and W. Rogers. 1987. Environmental and Engineering Geology of the Windsor Study area, Larimer and Weld Counties, Colorado. Colorado Geological Survey Publication, Environmental Geology 6.

USDA-NRCS-FS. Soil Survey of Larimer County Area, Colorado. December 1980.

U.S. Fish and Wildlife Service. Ute Ladies-Tresses' Orchid Survey Guidelines. L. Carlson, Colorado State Supervisor. November 23, 1992.

Wildland Consultants, Inc. 1998. Rocky Mountain Village II Environmental and Natural Areas Assessment Report. Prepared for McStain Enterprises, Inc. June 1998.

APPENDIX A

FIELD BIOLOGIST AND REPORT PREPARER'S RESUME

Karen M. Caddis-Burrell

Years Experience: 19

Technical Specialties

- NEPA Permitting and Compliance
- Project Coordination and Management of Multidisciplinary Environmental Studies
- Wetland Delineation
- Environmental, Biological, and Geological Research, Lab and Field Support
- Technical Writing and Editing
- Environmental Assessments
- Mapping and Surveying

Professional History

- ENSR
- Parsons & Associates
- Cominco American
- Salisbury & Dietz

Education

- BS (Resource Management/Conservation Education) Colorado State University
- BA (Major - Physical Geography and Journalism; Minor - Anthropology) Eastern Washington University, cum laude

Professional Registrations and Affiliations

- National Association of Wetland Scientists
- USFWS Certified for Black-Footed Ferret Clearance Surveys
- USFWS Certified for Mexican Spotted Owl Clearance Surveys
- Completed US Army Corps of Engineers Wetland Delineation Training
- USFWS Certified for Ute Ladies'-Tresses Orchid Surveys
- OSHA 29 CFR 1910.120(e) (3)(i) 40-hour Health and Safety Training

Representative Project Experience

TransColorado Gas Transmission Co., BLM, and Forest Service, Wetlands Delineation/Listed Species Surveys, Colorado, New Mexico Field supervisor and biologist supervising and conducting wetland delineations and surveys for federally-listed threatened and endangered plant and animal species as required by the U.S. Fish & Wildlife Service in compliance with the Endangered Species Act. Surveys included Mexican spotted owl, Unita Basin hookless cactus, Debeque milkvetch, giant hellaborine,and maidenhair fern. The project consisted of a third-party EIS for the 300-mile TransColorado Natural Gas Pipeline and over 100 miles of access roads between Meeker, Colorado, and Bloomfield, New Mexico, for the BLM and Forest Service. Surveys included aerial reconnaissance, use of GPS, parabolic dishes, and owl call imitations. Also worked with the NRCS and the US Army Corps of Engineers and

researched and prepared revegetation tables as part of a reclamation plan for the proposed pipeline route. Supervised up to 15 field technicians transplanting Unita Basin hookless cactus as part of pipeline mitigation. Over 1,500 cactus were transplanted with a 90 percent survival rate as of 1999. The number of new populations identified during the surveys have resulted in review by the USFWS of the cactus' listed status. Wetland delineations identified over 200 wetlands. Also served as cultural resources task supervisor for the $3.5 million cultural resources effort along the route.

TST, Inc. of Denver, Wetlands Delineation, Colorado. Wetlands delineator for a proposed condominium development located adjacent to the Wolf Creek Pass Ski Area. The delineation involved survey of approximately 300 acres of subalpine peat bog wetlands. The US Army Corps of Engineers provided a jurisdictional determination on the site that concurred with all field findings.

Wolf Creek Pass Ski Corporation, Ski Area Expansion Wetlands Delineation, Colorado. Wetlands delineator for a proposed expansion of the Wolf Creek Pass Ski Area located in the Alberta Park area near Wolf Creek Pass, Colorado. The assessment involved evaluation of approximately 100 acres of subalpine wetland areas located approximately 10,000 feet above sea level.

Karsh and Fulton, P.C., Wetlands Investigation at Winterpark, Colorado, Colorado. Wetlands investigation of a proposed real estate development property in the Village of Winterpark. Investigation included an evaluation of the need for additional wetlands delineation at the property.

McWhinney Enterprises, Inc., Equalizer Lake Development, Colorado Wetlands delineator and biological investigator for a proposed development located near Equalizer Lake, Colorado. Investigation at the site involved conducting a wetlands delineation survey and preparing a weltands report for the appoximately 10-acre site, preparing an environmental and natural areas report to be submitted to the City of Loveland, completing a Ute Ladies'-Tresses Orchid survey and report for the site, and conducting a site visit with City of Loveland planning representatives.

McWhinney Enterprises, Inc., Biological Assessment/Wetland Delineation, Colorado. Biological investigator and wetland delineator for a proposed business development located west of the Loveland Outlet Mall near Loveland, Colorado. Investigation involved preparing an environmental and natural areas assessment report to be submitted to the City of Loveland as part of the client's development plan.

Western Mobile, Inc., Gravel Pit Wetlands Delineation, Colorado. Wetlands delineator for a proposed gravel pit located north of Greeley, Colorado. Survey identified several acres of wetlands and provided information on proposed wildlife mitigation and habitat enhancement at the site.

BHA Design, Inc., Biological Consulting, Colorado. Provided biological consulting regarding the proposed Eagle Condominium development adjacent to Equalizer Lake along Colorado's Front Range. Met with City of Loveland, Colorado officials regarding the potential for a variance to the city's requirement for 300-foot buffers along lake edges.

Lost Creek Oil and Gas Company, Oil and Gas, Species Surveys, Wetland Delineation, Wyoming. Field biologist, recreation and visual resources task specialist, and wetlands delineator for a 200-mile long pipeline route from Lysite, Wyoming south to Wamsutter, Wyoming. Conducted presence/absence surveys, including helicopter reconnaissance, for sage grouse and raptors. Assisted in prairie dog town density surveys and in black-footed ferret surveys. Wetland delineations included 5 proposed and alternative crossings of the Sweetwater River.

Duke Energy, Wetlands Delineation/Sensitive Species Survey, Oklahoma. Wetlands delineator and field biologist for a proposed power plant project. Conducted delineations along the South Canadian River, south of Oklahoma City, Oklahoma, and surveyed for interior least tern and shiner habitat.

Northern Border, oil and gas/FERC/wetlands delineation and reclamation, Illinois, Iowa, Indiana. Wetlands delinetor and reclamation monitoring along pipeline route through Iowa and Illinois (Chicago Project) and Illinois and Indiana (Project 2000). Supervised 3 teams of wetlands delineators conducting review of over 200 wetlands along the pipeline routes. Completed over 50 wetland delineations along the two routes.

KN Energy, Sensitive Plant Surveys, Colorado. Field biologist responsible for conducting sensitive plant surveys, including the DeBeque milkvetch, Debeque phacelia, and Unita Basin hookless cactus, along the proposed DeBeque Spur Line Pipeline route adjacent to the Colorado River near DeBeque, Colorado.

ENRON Corp., Sensitive Species Surveys, Arizona, New Mexico. Field biologist responsible for delineating habitat and surveying for sensitive species, including desert tortoise, black-footed ferret, and threatened and endangered plants, along proposed Transwestern Pipeline Project routes in northern Arizona and New Mexico.

DOE and Washington Water Power Co., WWP/B.C. Hydro Transmission Interconnect EIS, Washington. Measured and typed vegetation, evaluated wetlands, and assessed hydrological data through aerial photo interpretation along transmission lines from Spokane, Washington, to Trail, British Columbia.

BLM and Uintah and Grand Counties Special Districts, Cisco to Ouray Highway (U.S. 191) EIS, Utah. Soils task specialist for a BLM third-party EIS for construction of a proposed 88-mile highway across Book Cliffs between Cisco and Ouray, Utah. Researched, wrote, and edited soils baseline, impact, and mitigation sections. Also assisted with editing of project description.

Brohm Mining Corp. and Forest Service, Gilt Edge Mine, Anchor Hill Expansion Project EIS, South Dakota. Assistant project manager for third-party EIS and field biologist for raptor and vegetation ground surveys on the project site and within the surrounding 5-mile study area near Deadwood, South Dakota. Also conducted audio call-response surveys for goshawks. The vegetation survey consisted of inventorying plant species and communities and locating rare plants, including an endangered club moss. The surveys were part of a 2-year study required by the state for the gold mine expansion project. Hydrology impacts were the main issue in the EIS.

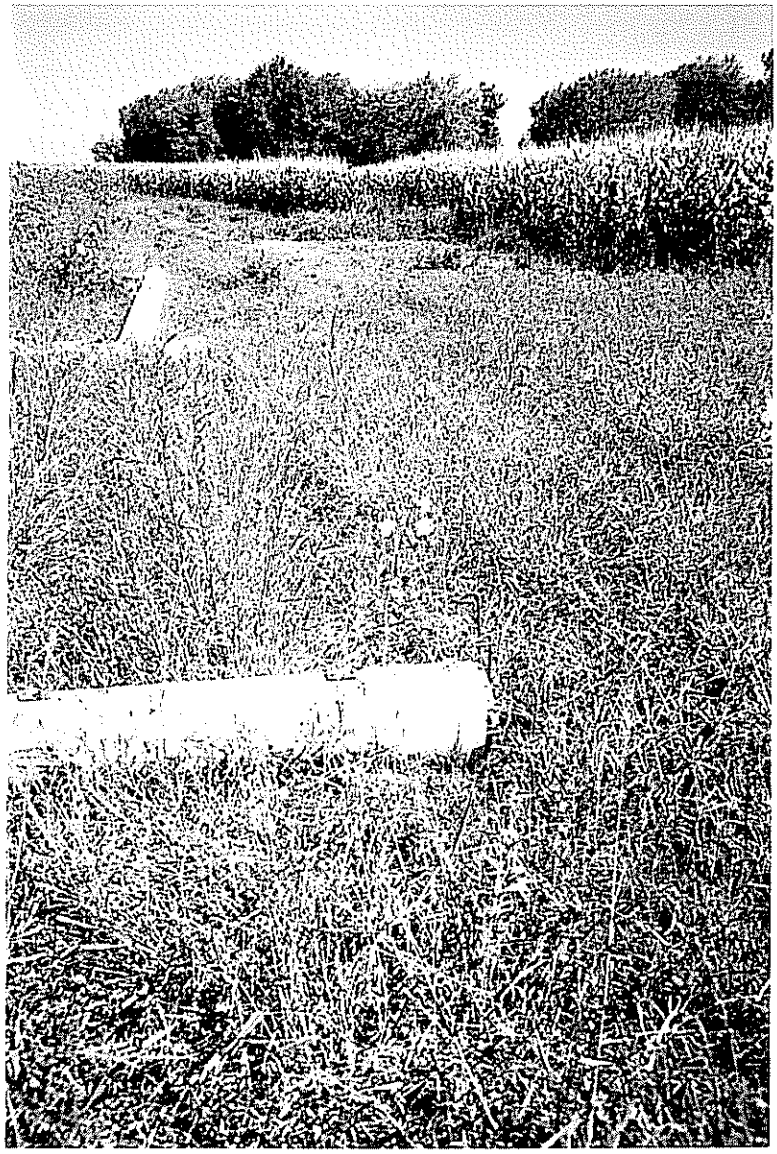
APPENDIX B

PHOTOGRAPHS

Southeast Corner of Subject Property Looking Northwest.

Northwest Corner of Subject Property Looking Southeast
Loveland and Greeley Canal in Foreground.

Seep Area on the Northern Border of Subject Property Looking East.



Southern Boundary of Subject Property Along Highway 34 Looking West.

Northeast Corner of Subject Property Looking Southwest.

FlyWater consulting, inc.

October 11, 2007

Environmentally Sensitive Areas Report

This report documents the findings of the field investigations performed by FlyWater consulting, inc. (FlyWater) on three parcels making up the Grange Addition for the presence of environmentally sensitive areas on October 2 and 3, 2007 by Bradley Florentin. Parcel B-13 (approx. 150 acres) lies on the south side of Highway 34 east of Boyd Lake Avenue, the parcel in addition to Parcel A-1 (approx. 17 acres) lies on the north side of Highway 34 east of Centerra Parkway, and Parcels A-6 and A-7 (approx. 79 acres) lies north of Highway 34 west of High Plains Boulevard as shown in Figure 1.

Study Area

Parcel B-13

A tract of land located in the Northeast Quarter of Section 16, Township 5 North, Range 68 West of the 6th Principal Meridian, County of Larimer, State of Colorado.

Addition to Parcel A-1

A tract of land located in the Southwest Quarter of Section 11, Township 5 North, Range 68 West of the 6th Principal Meridian, County of Larimer, State of Colorado.

Parcels A-6 and A-7

A tract of land located in the Southeast Quarter of Section 11, Township 5 North, Range 68 West of the 6th Principal Meridian, County of Larimer, State of Colorado.

Site Inventory

This section describes the natural characteristics of the site with respect to any "environmentally sensitive areas".

Parcel B-13

The Parcel B-13 is currently irrigated using water from the Farmer's Ditch to cultivate alfalfa and hay. Kochia grows between the irrigated crop fields within the parcel. There are no natural drainages on the parcel. The Farmer's Ditch flows through the northwestern corner and approximately 150 feet of the ditch are located on the parcel before flowing under Highway 34 and continuing in a concrete lined channel north of the highway. The ditch sustains a three to four foot buffer monoculture of reed canary grass on either side on the parcel. The buffer is shown in Figure 2. There are a few lone trees planted in association with farm buildings existing on the property.

Canals and ditches can provide access and movement corridors for wildlife when they connect larger habitat areas. Active cultivation on the parcel approaches the edges of the Farmers Ditch on Parcel B-13 and there is minimal vegetative cover outside the three to four foot reed canary grass buffer. The ditch

is concrete lined with landscaped areas to the edge of the ditch north of Highway 34. The Farmer's Ditch is enclosed in a box culvert in several locations between Highway 34 and Centerra Parkway. Access and movement of wildlife is extremely limited if not nonexistent along the Farmer's Ditch as a result. The vegetation along the Farmer's Ditch is thought by the U.S. Army Corps of Engineers (COE) staff to be non-jurisdictional (official determination is expected in November 2007) further reducing the habitat value of the parcel.

Addition to Parcel A-1

The addition to Parcel A-1 is currently not being utilized and appears to have been a gravel parking area in the past. The GLIC irrigation ditch flows from west to east along the southern portion of this parcel. Kochia and upland grasses grow in the area outside the GLIC. There are no natural drainages on the parcel. Approximately 550 feet of the ditch are located on the parcel. The ditch sustains wetland vegetation including reed canary grass within the banks of the GLIC as shown in Figure 3. There is no stands of mature trees or shrubs on the parcel.

Canals and ditches as discussed above can provide access and movement corridors for wildlife when they connect larger habitat areas. Upland weeds and grasses extend to the edge of the GLIC where an old gravel parking lot and dry land farming previously existed. The GLIC has no wetland vegetation outside the steep ditch banks. Access and movement of wildlife can only occur within the banks of the GLIC – as a result access and movement of wildlife is extremely limited if not nonexistent. The GLIC is thought by the U.S. Army Corps of Engineers staff to be non-jurisdictional (official determination is expected in November 2007) further reducing any habitat value of the parcel.

Parcels A-6 and A-7

Parcels A-6 and A-7 are currently being dry farmed. At the time of observation, the parcels had been recently plowed. No vegetation was observed. There are no natural drainages on the parcel. No areas within Parcels A-6 or A-7 qualify as a jurisdictional wetland. There are no characteristics that indicate Parcels A-6 and A-7 have any environmentally sensitive areas associated with them.

Assessment of Potential Impacts of Proposed Development

Parcel B-13

Potential widening of Highway 34, development, and/or the addition of a cross street impacting the Farmer's Ditch will have little impact to wildlife utilizing the Farmer's Ditch as a movement corridor due to its proximity to Highway 34 and the lack of any significant tree and/or shrubs. Only approximately 150 feet of the ditch extend south of Highway 34, limiting the amount of wildlife in this portion of the ditch. Further limiting the use of the ditch by wildlife on this parcel is the fact that the ditch is culverted under Highway 34 and is concrete lined north of the highway eliminating a destination for the wildlife. Development will have little or no effect on the wildlife utilizing the Farmer's Ditch on Parcel B-13.

Addition to Parcel A-1

Past utilization of the parcel as a gravel parking area and dry land farming to the edge of the GLIC significantly limited the use of the GLIC as a wildlife corridor. Development, whether manicured landscaping or paved areas to the edge of the GLIC, would have little impact to the potential of wildlife using the GLIC as a corridor.

Parcels A-6 and A-7

There are no environmentally sensitive areas on Parcels A-6 and A-7 so there will be no impact to environmentally sensitive areas due to development of Parcels A-6 and A-7.

Recommendation: Protection Measures, Mitigation, Enhancement

The habitats encountered on Parcel B-13 and the addition to Parcel A-1 are extremely limited and were only investigated to determine if the areas were considered jurisdictional by the COE and because canals are labeled as environmentally sensitive areas in the Loveland Municipal Code. The canals (Farmer's Ditch and GLIC, respectively) are rarely used as corridors due to multiple culverts, limited vegetative cover near the canals, and the canals location near large transportation corridors such as Highway 34 and I-25. As such, there is little to protect or mitigate. Enhancement options such as buffers vegetated with native shrub and/or tree species would be isolated and ineffective for these parcels.

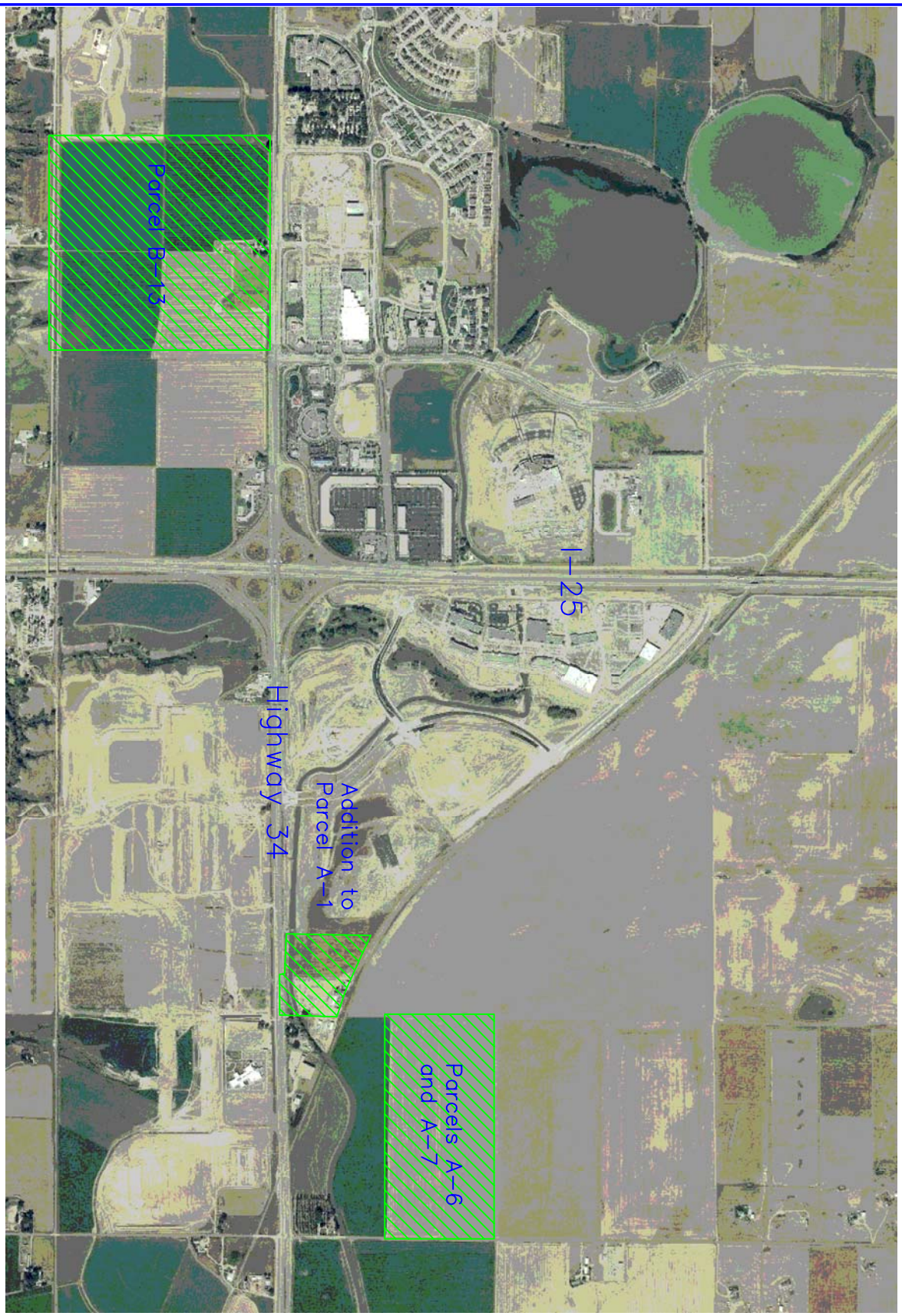


Figure 1: Vicinity Map

Date:	10/10/07
Job No:	
Drawn:	
Design:	
Checked:	
File:	
Scale:	N.T.S.

McWhinney Enterprises

Environmentally Sensitive Areas

FlyWater consulting, inc.
4605 South CR 3F
Fort Collins, Colorado 80528
(970) 231-5498
www.flywaterconsulting.com

by: LineDesign

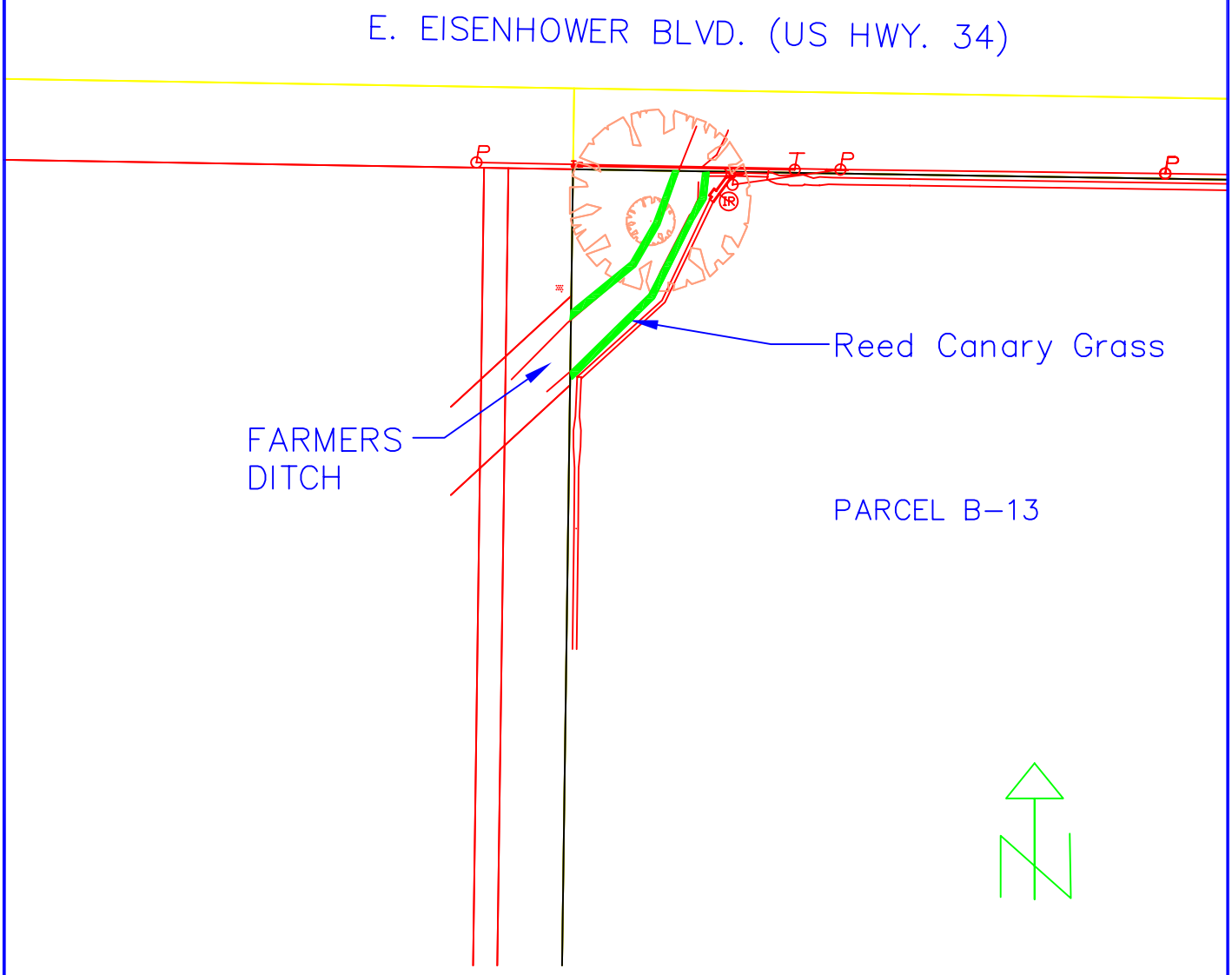


Figure 2: Farmer's Ditch

Date:	10/11/07
Job No:	
Drawn:	
Design:	
Checked:	
File:	
Scale:	N.T.S.

McWhinney Enterprises
Parcel B-13
Environmentally Sensitive Areas

FlyWater consulting, inc.
4605 South CR 3F
Fort Collins, Colorado 80528
(970) 231-5498
www.flywaterconsulting.com

by: LineDesign

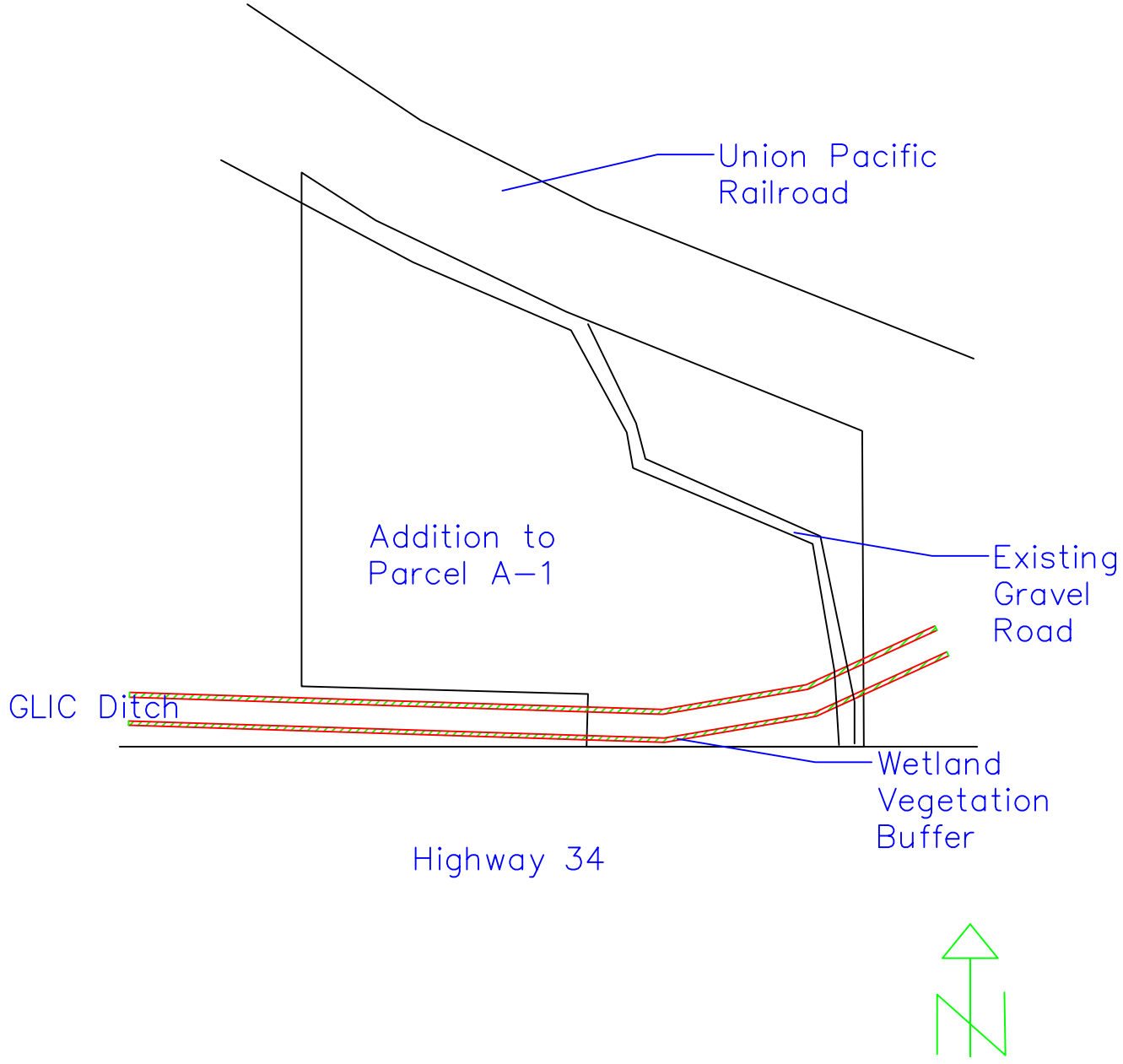


Figure 3: GLIC Ditch

Date:	10/11/07
Job No:	
Drawn:	
Design:	
Checked:	
File:	
Scale:	N.T.S.

McWhinney Enterprises
Addition to Parcel A-1
Environmentally Sensitive Areas

FlyWater consulting, inc.
4605 South CR 3F
Fort Collins, Colorado 80528
(970) 231-5498
www.flywaterconsulting.com

by: LineDesign

February 12, 2008

Environmentally Sensitive Areas Report

This report documents the findings of the field investigations and previous environmental report review (Environmental and Natural Areas Assessment Report – Cloverleaf Addition Jan 2000 by Wildland Consultants) performed by FlyWater consulting, inc. (FlyWater) on two additional parcels for the Grange Addition for the presence of environmentally sensitive areas on January 10, 2008 and February 6, 2008 by Bradley Florentin. Cloverleaf East (approx. 40 acres) lies on the west side of the I-25 Frontage Road and north of the Greeley-Loveland Irrigation Canal (GLIC). The Cloverleaf West parcel (approx 5 acres) lies on the northeast corner of Boyd Lake Avenue and East 37th Street. Each of these parcels is shown in Figure 1.

Study Area

Cloverleaf East

A tract of land located in the Northwest Quarter of Section 10, Township 5 North, Range 68 West of the 6th Principal Meridian, County of Larimer, State of Colorado.

Cloverleaf West

A tract of land located in the Northwest Quarter of Section 4, Township 5 North, Range 68 West of the 6th Principal Meridian, County of Larimer, State of Colorado.

The study area also includes the nearest City of Loveland Natural Areas – 1, 2, and 99. Natural Area 1 is Houts Reservoir (approx. 1,000 feet northwest of Cloverleaf East and 1,000 southwest of Cloverleaf West), Natural Area 2 is Equalizer Lake (approx. 400 feet west of Cloverleaf East), and Natural Area 99 is approx. 600 feet east and across I-25 from Cloverleaf East.

Site Inventory

This section describes the natural characteristics of the site including vegetation type, soils types, drainage patterns and wildlife corridors.

Cloverleaf East

The Cloverleaf East parcel has planted trees and shrubs along with minimal landscaped areas. The remainder of the parcel is paved or building. According to the SCS soils map the parcel is mainly made up of Nunn clay loam, 1 to 3 percent slopes which has the following properties and qualities: Slope: 1 to 3 percent, Depth to restrictive feature: More than 80 inches, Drainage class: Well drained, Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr), Depth to water table: More than 80 inches, Frequency of flooding: None, Frequency of ponding: None, Calcium carbonate, maximum content: 15 percent, Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm), Available water capacity: Very high (about 18.9 inches) . The drainage tends to sheet flow to the west and is collected in a small depression on the next parcel west. The drainage finally drains to Equalizer Lake.

The parcel has fallow agricultural land that is adjacent to it. Therefore, wildlife adapted to agricultural lands or suburban development may utilize the property as a corridor. Wildland

Consultants (January 2000) identified several animals that may utilize the site including: coyote, red fox, raccoon, striped skunk, deer mouse, house mouse, jackrabbit, cottontail rabbit, and muskrat. Birds that may utilize the parcel include: mallard, Canada goose, meadowlark, mourning dove, American kestrel, black-billed magpie, starling, horned lark, English sparrow, house finch, ring-necked pheasant, domestic pigeon, and killdeer. No raptor nests have been observed on the parcel but use the surrounding areas for foraging. No rare, threatened or endangered species have been observed or are thought to utilize the parcel. There are no prairie dogs on this parcel.

Cloverleaf West

The Cloverleaf West parcel contains a home and several sheds historically used to house greyhounds. The areas of the parcel not taken up by buildings are landscaped yard, dirt parking and dirt exercise areas for the dogs now covered in kochia. According to the SCS soils map the parcel is mainly made up of Nunn clay loam, 0 to 1 percent slope which has the following properties and qualities: Slope: 0 to 1 percent, Depth to restrictive feature: More than 80 inches, Drainage class: Well drained, Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr), Depth to water table: More than 80 inches, Frequency of flooding: None, Frequency of ponding: None, Calcium carbonate, maximum content: 15 percent, Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm), Available water capacity: Very high (about 18.9 inches)

The parcel has active agricultural land that is adjacent to it. Therefore, wildlife adapted to agricultural lands or suburban development may utilize the property as a corridor. The animals that may utilize the site including: coyote, red fox, raccoon, striped skunk, deer mouse, house mouse, jackrabbit, cottontail rabbit, and muskrat. Birds that may utilize the parcel include: mallard, Canada goose, meadowlark, mourning dove, American kestrel, black-billed magpie, starling, horned lark, English sparrow, house finch, ring-necked pheasant, domestic pigeon, and killdeer. No raptor nests have been observed on the parcel but use the surrounding areas for foraging. No rare, threatened or endangered species have been observed or are thought to utilize the parcel. There are no prairie dogs on this parcel.

Assessment of Potential Impacts of Proposed Development

Cloverleaf East

The parcel is already developed as a dog track with landscaped areas and a large parking lot. Redevelopment of this parcel will have no additional impact to native vegetation species. The redevelopment will also not change how the parcel is currently utilized by wildlife. There are no wetlands or canals so the Army Corps of Engineers will not take any jurisdiction over any parts of the parcel. Furthermore, there will be no additional adverse impacts to Natural Areas 1, 2, or 99 through the re-development of this parcel.

Cloverleaf West

Past utilization of this parcel to house and exercise greyhounds left most of the vegetation stripped. Recent inactivity has allowed a large population of kochia to establish. The parcel is already developed and redevelopment of this parcel will have no additional impact to native vegetation species. The redevelopment will also not change how the parcel is currently utilized

by wildlife. There are no wetlands or canals so the Army Corps of Engineers will not take any jurisdiction over any parts of the parcel. Furthermore, there will be no additional adverse impacts to Natural Areas 1, 2, or 99 through the re-development of this parcel.

Recommendation: Protection Measures, Mitigation, Enhancement

Each of these parcels has been developed in the past. There are no "open areas" associated with wildlife or native vegetation. There are no jurisdictional wetlands or environmentally sensitive areas on either of the parcels. Redevelopment of the parcels will result in no greater impact to the wildlife or vegetation than currently exists. Therefore, mitigation is not necessary.

Figure 1: Vicinity Map

Date:	2/12/08
Job No:	
Drawn:	
Design:	
Checked:	
File:	
Scale:	N.T.S.

McWhinney Enterprises
Environmentally Sensitive Areas
Grange Addition Addendum #1

FlyWater consulting, inc.
4605 South County Road 3F
Fort Collins, Colorado 80528
(970) 231-5498
www.flywaterconsulting.com

by: LineDesign

Ecological Resource Consultants, Inc.
5672 Juhls Drive ~ Boulder, CO ~ 80301 ~ (303) 679-4820

ENVIRONMENTALLY SENSITIVE AREAS REPORT

FOR
HOUTS RESERVOIR "AREA 4"
LARIMER COUNTY, COLORADO

FEBRUARY 6, 2018

Prepared By:
Diane Wright, Project Ecologist
Ecological Resource Consultants, Inc. (ERC)
5672 Juhls Drive
Boulder, Colorado 80301
(303) 679-4820 x106
diane@erccolorado.net

Prepared For:
McWhinney
Contact: Kim Perry
2725 Rocky Mountain Avenue, Suite 200
Loveland, CO 80538
Phone: 970-776-4055

ERC Project #175-1704

CONTENTS

1.0 INTRODUCTION

Ecological Resource Consultants, Inc. (ERC) has prepared this Environmentally Sensitive Areas Report for the Houts Reservoir "Area 4" (study area). This report (herein 2018 ESAR) was prepared on behalf of McWhinney. This assessment was conducted to identify natural features and/or environmentally sensitive areas which may occur on or within the vicinity of the study area as well as to define reservoir buffer zone setbacks. The 2018 ESAR has been prepared to specifically address elements outlined in the *City of Loveland's Current Planning Division – Environmentally Sensitive Areas Report* document (updated June 2016) (herein Loveland ESAR). The requirement for this information is in accordance with the following policies and codes: The Loveland Colorado 2005 Comprehensive Plan (Section 3.2), the 2014 Parks and Recreation Master Plan (Appendix E) and the Loveland Municipal Code (Chapters 18.41 and 16.20). Specifically, the 2018 ESAR addresses the following items:

1) Study Area
2) Site Inventory
    - Mature stands of vegetation
    - Jurisdictional (USACE) or non-jurisdictional wetlands
    - Wildlife habitat areas and corridors
    - Natural Areas identified in the City of Loveland Natural Areas Sites Report (2008)
    - Physical linkages to other natural areas or open spaces
    - Existing drainage patterns and floodway and flood fringe boundaries
    - Irrigation canals, ditches, and watercourses
    - Existing slopes over 20%
    - Soils having a high water table or being highly erodible
    - Land formerly used for landfill operations or hazardous industrial use
    - Fault areas, aquifer recharge or discharge areas
    - Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))
    - Stream corridors or estuaries
    - Land incapable of meeting percolation requirements
3) Assessment of Potential Impacts of the Proposed Development; and
4) Recommendations for Protection Measures, Mitigation and Enhancement.

Cedar Creek Associates, Inc. previously completed an Environmentally Sensitive Areas and Wetland Report for the study area dated January 1999. The 1999 Report identified environmentally sensitive areas on a large scale covering three parcels (including all of Houts and Equalizer Reservoirs) totaling over 2,105 acres. For Houts Reservoir, the 1999 Report re-evaluated the City Natural Areas Report established Overall Habitat Rating value of "5" with new rating values ranging from "1" to "6." Specifically for Area 4 and the study area subject of this 2018 ESAR, the 1999 Report assigned an Overall Habitat Rating of "6" and recommended a 300 foot setback from the operating high water mark. During initial assessment of the study area as part of the 2018 ESAR, it was noted that conditions may have changed from the 1999 Report and therefore warranted an update. The findings and recommendations of the 1999 Report have been

considered as a baseline herein while also considering current existing conditions. The following 2018 ESAR report serves as an update to the 1999 Report to evaluate in more detail current physical characteristics of environmentally sensitive areas specific to Area 4 in accordance with the most current and up to date methodologies, available data, guidelines and regulations.

2.0 STUDY AREA

According to the Loveland ESAR the study area must include all land within the proposed development boundary plus adjacent land identified as natural areas or wetlands or as other significant natural features included in the definition of "environmentally sensitive areas" that are likely to be affected by the proposed development. The study area and location are described as follows.

This 2018 ESAR is specifically intended to evaluate the shoreline and associated wetlands along Houts Reservoir "Area 4" and therefore does not include an evaluation of adjacent lands or specific parcels associated with potential future development or offsite Area 5 (to the east) or Area 3 (to the southwest). The study area is located on the east side of North Boyd Lake Avenue approximately 1.5 miles north of the intersection with East Eisenhower Boulevard in the City of Loveland, Larimer County, Colorado in the *Big Thompson* watershed (HUC 10190006). More specifically, the study area is located in **Section 4, Township 5 North, Range 68 West**, in Larimer County (**latitude 40.426288° north, longitude -105.012959° west**). The study area is located within a small area on the east side of North Boyd Lake Avenue, south of East 37th Street and comprises cultivated cropland (mowed hay field), upland herbaceous grassland and an emergent wetland fringe along the north side of Houts Reservoir. Refer to **Figure 1** and **Figure 2** for a location map and US Geological Survey (USGS) topographic map of the study area.

A 6 to 8 foot wide gravel trail bisects the western portion of the study area, along the edge of the mowed hay fields. The majority of the study area is comprised of upland herbaceous grassland. The eastern boundary of the study area comprises the open water and emergent wetland perimeter of Houts Reservoir. In addition, it appears that an upland swale was recently constructed through the study area that comes from a culvert under East 37th Street and drains to Houts Reservoir. The swale is approximately 20 feet wide at the bottom, non-vegetated, and was dry with no signs of flow at the time of the field evaluation. The swale was likely constructed as part of regional drainage improvements for future development in the vicinity of the study area. The vicinity of the study area is predominantly agricultural land exhibiting similar characteristics and land use as the study area.

The following section provides a summary of elements evaluated for the City of Loveland ESAR requirements, as outlined below in **Table 1**. Based on the Loveland ESAR assessment results, the Site Inventory Map is provided as **Figure 3**.

Table 1. Site Inventory Elements and Loveland ESAR Assessment Results.

Site Inventory Elements	Assessment Results
Mature stands of vegetation	**Refer to Section 2.1, Figure 3.** An abandoned tree farm within the western portion of the study area contains sparse overstory saplings that are either dead or in very poor condition. Because the trees were planted with the intent of being sold commercially and are currently in deteriorated condition, they have not been considered mature stands of vegetation and should not be considered natural features.
Jurisdictional (USACE) or non-jurisdictional wetlands	**Refer to Section 2.2, Figure 3.** The study area contains potentially jurisdictional palustrine emergent wetland (PEM) and palustrine open water (POW) habitats associated with Houts Reservoir.
Wildlife habitat areas and corridors	**Refer to Section 2.3, Figure 3.** No wildlife migration corridors are mapped by the CPW within the study area or within the vicinity of the study area (CPW 2017). Generally, there are features within the study area that provide a variety of habitat components for waterfowl, local songbirds, raptors, amphibians, reptiles and small mammals; however, the majority of habitat within the study area comprises upland herbaceous grassland and cultivated cropland which is somewhat degraded with regards to wildlife use and is limited in use by current land use activities, community composition and habitat fragmentation. Within the study area, the herbaceous wetland vegetation community and open water of Houts Reservoir provide a variety of important wildlife habitat values.
Natural Areas identified in the City of Loveland Natural Areas Sites Report (2008)	**Refer to Section 2.4, Figure 3.** The eastern portion of the study area and immediate vicinity are located within/adjoining Houts Reservoir which is identified as a City of Loveland natural area (City of Loveland 2008). Houts Reservoir has been given an overall rating of "5" in the City of Loveland Natural Areas Sites Report (2008).
Physical linkages to other natural areas or open spaces	**Figure 3.** Wetland/open water habitat associated with Houts Reservoir continues outside of the study area to the northeast and southeast therefore is considered a physical linkage to other natural areas such as downstream wetlands.
Existing drainage patterns and floodway and flood fringe boundaries	There is no mapped FEMA floodway within the study area or vicinity (City of Loveland 2017).

Site Inventory Elements	Assessment Results
Irrigation canals, ditches, and watercourses	A recently constructed upland swale occurs within the study area. This swale appears to be a man-made stormwater feature; however, does not appear to convey flows at this time therefore has not been considered a natural feature.
Existing slopes over 20%*	The study area does not contain any existing slopes over 20% (NRCS 2017).
Soils having a high water table or being highly erodible*	**Figure 3.** The NRCS soil survey identifies two soil types within the study area, outside of the open water, and includes Ulm clay loam, 0 to 3 percent slopes and Nunn clay loam, wet, 1 to 3 percent slopes. The two mapped soil types are not classified highly erodible (NRCS 2017). Hydric soils do exist within the PEM wetland fringe of Houts Reservoir.
Land formerly used for landfill operations or hazardous industrial use*	Based on previous environmental reports (Cedar Creek Associates, Inc. 1999), review of available Google Earth imagery (1999-2017) and historic topographic mapping (1905-1985) (USGS 2017c) the study area does not appear to have been formerly used for landfill operations or hazardous industrial use.
Fault areas, aquifer discharge areas*	The study area is not located in a fault area (USGS 2017a) or aquifer discharge area (USGS 2017b).
Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))	**Refer to Section 2.5, Figure 3.** The operating high water line of Houts Reservoir occurs within the study area. The boundary was delineated based on site-specific characteristics of OHWM.
Stream corridors or estuaries	**Figure 3.** There are no stream corridors or estuaries located within the study area or vicinity.
Land incapable of meeting percolation requirements*	The study area does not contain land incapable of meeting percolation requirements (NRCS 2017).

*Literature based review. ERC has not completed detailed site specific analysis for this Site Inventory.

Prepared By:

ERC

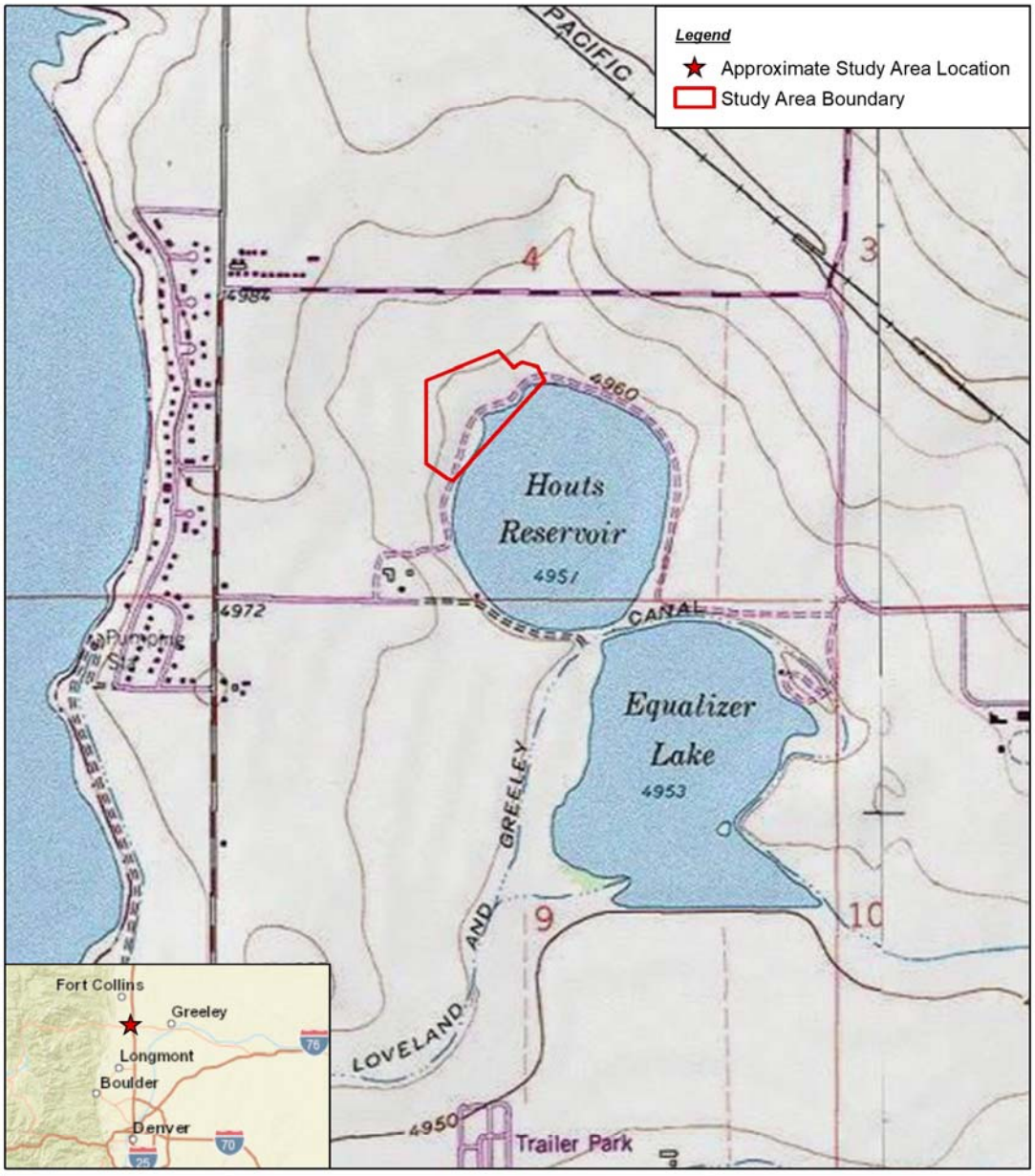
5672 Juhls Drive
Boulder, CO 80301
(303) 679-4820

ERC #: 175-1704

FIGURE 1.
LOCATION MAP

HOUTS RESERVOIR "AREA 4"
LARIMER COUNTY, COLORADO

Prepared For:
McWhinney



Prepared By:
ERC
5672 Juhls Drive
Boulder, CO 80301
(303) 679-4820
ERC #: 175-1704

FIGURE 2.
USGS TOPOGRAPHIC MAP

HOUTS RESERVOIR "AREA 4"
LARIMER COUNTY, COLORADO

0 1,000 2,000 Feet

Prepared For:
McWhinney

2.1 MATURE STANDS OF VEGETATION

Vegetation within the study area is comprised predominantly of upland herbaceous grassland dominated by tall wheatgrass (*Thinopyrum ponticum*) intermixed to a lesser degree with western wheatgrass (*Pascopyrum smithii*), mexican-fireweed (*Bassia scoparia*), lamb's-quarters (*Chenopodium album*), prickly lettuce (*Latuca serriola*), smooth brome (*Bromus inermis*) and field pennycress (*Thlaspi arvense*). This community occurs throughout the central portion of the study area. The eastern boundary of the study area is comprised of emergent wetland habitat dominated by broad-leaf cat-tail (*Typha latifolia*) and reed canary grass (*Phalaris arundinacea*) and open water of Houts Reservoir. The western boundary of the study area is comprised of cultivated cropland dominated by mowed mixed herbaceous vegetation used for the agricultural production of hay and an abandoned tree farm. The tree farm contains rows of approximately 10 foot tall green ash (*Fraxinus pennsylvanica*) saplings and honey locust (*Gleditsia triacanthos*) saplings which are either dead or in very poor condition. Because the trees were likely planted with the intent of being sold commercially and are currently in deteriorated condition, they have not been considered mature stands of vegetation and should not be considered natural areas.

- An abandoned tree farm within the western portion of the study area contains sparse overstory saplings that are either dead or in very poor condition. Because the trees were planted with the intent of being sold commercially and are currently in deteriorated condition, they have not been considered mature stands of vegetation and should not be considered a natural features. Refer to **Figure 3** for the location of the abandoned tree farm.
- The immediate vicinity of the study area exhibits similar land use and vegetative cover, and has been determined to not contain any mature stands of vegetation.

2.2 JURISDICTIONAL (USACE) OR NON-JURISDICTIONAL WETLANDS

A previous wetland delineation was completed within the study area as outlined in the 1999 Report which identified wetland habitat as part of field work completed in 1998 along the shoreline of Houts Reservoir. Wetland delineation methodology, level of accuracy or detailed physical characteristics were not provided in the 1999 Report. Generally, the US Army Corps of Engineers (USACE) considers wetland delineations to be valid for a period of 5 years as habitat characteristics can change over time. Upon initial evaluation, it was determined that site specific characteristics of wetland habitat may have changed since the 1999 Report and therefore warranted an up to date, detailed, aquatic resource delineation and identification of the ordinary high water mark (OHWM) (or operating high water line) of the reservoir.

On August 29, 2017, ERC conducted a formal routine onsite delineation of aquatic resources within the approximately 15 acre study area located in the City of Loveland, Larimer County, Colorado. A total of 5.21 acres of aquatic resources were identified and mapped within the study area characterized as palustrine emergent (PEM) and palustrine open water (POW) wetland habitat. The aquatic resource area characterized as POW wetland habitat comprises the northern portion of Houts Reservoir defined by OHWM and the PEM portion comprises adjoining fringe wetland habitat.

Methodology

The aquatic resource delineation was conducted following the methodology enumerated in the *1987 Corps of Engineers Wetlands Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (herein referred to as "Supplement") (Environmental Laboratory 1987, USACE 2010).* During the field inspection, dominant vegetation was recorded, representative hydrologic indicators were noted and soil samples were examined for hydric indicators. At the time of the field evaluation, the conditions observed within the survey area were typical for the region and sufficient indicators of vegetation, soils and hydrology were observed to make a wetland determination.

The USACE and the Environmental Protection Agency (USEPA) jointly define wetlands as: "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [40 CFR 230.3(t)]. Three general environmental parameters define a wetland. These parameters must include the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Except under certain situations, evidence of a minimum of one positive wetland indicator from each of the above parameters must be identified in order to make a positive wetland determination.

In addition, waters of the US are also defined as areas that *"include essentially all surface waters such as rivers, streams and their tributaries, all wetlands adjacent to these waters, and all ponds, lakes and reservoirs".* The boundaries of some waters of the US (i.e., such as streams or lakes) are further defined by the ordinary high water mark (OHWM). The OHWM is characterized as "the line on the shores established by the fluctuations of water and indicated by physical characteristics such as: a clear natural line impressed on the bank, shelving, changes in the character of the soil, wetland vegetation, the presence of litter and debris, and other appropriate means that consider the characteristics of the surrounding areas" (USACE 2005). These definitions are the basis of this delineation method.

Areas that do not meet any one of the wetland parameters (hydrophytic vegetation, hydric soils and/or wetland hydrology) or non-vegetated stream channel/open water (OHWM) were classified as a non-wetland (upland) and mapped as such.

Any area determined to be potential waters of the US was delineated in the field with pink pin flags and ribbon identified with 'WETLAND BOUNDARY' printed on it and sequentially labeled alpha-numerically (i.e. A1, A2…). In addition to the outer wetland boundary, the inner OHWM boundary along Houts Reservoir was also field flagged as part of the delineation, specifically for this 2018 ESAR. The wetland boundary and OHWM boundary were later surveyed by King Surveyors, Inc. of Windsor, Colorado. All areas that have been investigated in the field are mapped on the Aquatic Resource Delineation Map dated August 29, 2017 included as **Appendix A**.

A formal aquatic delineation report has not been completed for this project and verification from the USACE has not been obtained; however, the aquatic resource delineation mapping is considered current and accurate per USACE current standards.

Results

The PEM fringe wetland habitat comprises an area extending landward from within the POW of Houts Reservoir. Hydrology within this area appears to be supported by Houts Reservoir when water storage within the reservoir is at nearly full capacity. This fringe wetland area is defined by subtle topographic depressions that blend in to the OHWM of Houts Reservoir. At the time of delineation, water levels within the reservoir were high and the PEM fringe was saturated to the surface and/or contained surface water (approximately 2-12 inches) throughout a majority of the wetland boundary. The vegetation community within the PEM fringe habitat is dominated by reed canary grass (*Phalaris arundinacea*), broad leaf cattail (*Typha latifolia*) coastal salt grass (*Distichlis spicata*), fox-tail barley (*Hordeum jubatum*), and Baltic rush (*Juncus Balticus*), intermixed with few other non-dominant herbaceous hydrophytic species. Soils within this area are clay loam textured, depleted, and contained redox concentrations within both the pore linings and matrix meeting criteria for hydric soil indicator F3 (Depleted Matrix). At the time of delineation, primary wetland hydrology indicators of A1 (Surface Water) and C3 (Oxidized Rhizospheres Along Living Roots) were observed, in addition to secondary hydrology indicators of D2 (Geomorphic Position), and D5 (FAC-Neutral Test). The PEM wetland habitat within the study area meets the criteria for wetland based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Refer to **Photos 1-2** below for characteristics of the PEM wetland fringe habitat within the study area. It should be noted that the PEM wetland fringe habitat is highly variable containing a mix of hydrophytic (wetland species) as well as upland weed species and bare ground. This mix of species indicates seasonal variations in soil moisture (both wet and dry) directly correlating to varying water surface elevations of Houts Reservoir.

Photo 1. Overview southwest at PEM fringe habitat in the eastern portion of the study area. Approximate wetland boundary depicted by the blue line. Approximate OHWM of Houts Reservoir depicted in yellow.

Photo 2. Overview north from the southern boundary of the study area. Approximate PEM wetland fringe boundary shown in blue and approximate OHWM of Houts Reservoir depicted in yellow.

The POW wetland habitat within the study area comprises the northern portion of Houts Reservoir, as defined by the OHWM. The delineation of OHWM at Houts Reservoir was based on physical characteristics that correspond to the line on the shore established by the fluctuations of water including changes in character of the soil, and changes in species and overall health of wetland vegetation.

At the time of delineation, Houts Reservoir appeared to be at nearly full water storage capacity. A narrow band of vegetation dominated by broad leaf cattail (*Typha latifolia*) exists within the OHWM that ranges from 10 to 30 feet wide which defines a majority of the OHWM boundary. Few areas of the OHWM boundary were defined by subtle topographic breaks. Water levels along the OHWM varied throughout the boundary from approximately 2 to 6 inches in areas where it was clearly defined by topographic breaks, and other areas contained approximately 12 inches of surface water where the OHWM was defined by the narrow band of cattail vegetation. Cattails within this narrow band appear to be healthy in terms of growth and vigor, whereas cattails within the PEM wetland fringe exhibited sparse cover and stunted growth, indicating a lack of hydrology to support this obligate species within the dryer, emergent fringe due to fluctuating water levels within Houts Reservoir. Vegetation along the OHWM fringe is variable containing a mix of cattails as well as upland weed species indicating seasonal variations in hydrology (both wet and dry) directly correlating to varying water surface elevations of Houts Reservoir. In addition, there appears to be a discontinuous berm along the outer OHWM boundary that has eroded over time allowing additional hydrology from Houts Reservoir to infiltrate into the PEM wetland fringe habitat. Refer to **Photos 3-4** below for characteristics of the POW habitat within the study area.

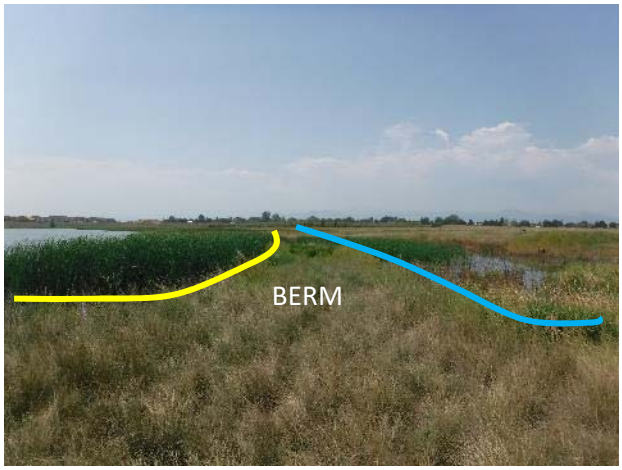


Photo 3. Overview west of the OHWM of Houts Reservoir (depicted in yellow) comprising a narrow band of healthy cattail vegetation. Approximate boundary of PEM fringe wetland habitat depicted in blue.

Photo 4. Overview south at the OHWM of Houts Reservoir (depicted in yellow) defined by a narrow band of dense cattail vegetation. The foreground of the photo shows the sparse and stunted cattail vegetation typical within the inundated portions of the PEM wetland fringe habitat.

2.3 WILDLIFE HABITAT AREAS AND CORRIDORS

Historic and current land use associated with agricultural practices has restricted the development of any significant natural vegetation communities within the study area, which limits the overall quality of potential wildlife habitat. The cultivated cropland habitat which is present across the western portion of the study area has largely replaced the native shortgrass prairie habitat which would have been present in this region. Herbaceous non-native species or ruderal native species which permeate the upland grassland vegetation community generally do not provide quality habitat for most wildlife. In general, agriculture practices have altered the structure, function, community composition, and habitat value of

land within the study area. Upland habitat within the study area exhibits no (natural) overstory canopy trees, no midstory shrubs, and only a moderate herbaceous understory cover. The upland herbaceous vegetation community can provide a variety of wildlife habitat features such as cover, forage and nesting habitat, and acts as a movement corridor for various mammals, raptors, and migratory birds.

Wetlands can provide a variety of wildlife habitat features such as cover, forage or nesting habitat, and can act as a movement corridor for various small mammals, amphibians, birds and reptiles. The predominant wetland habitat type which occupies the eastern portion of the study area is emergent wetland dominated by broad-leaf cat-tail, soft-stem club-rush and reed canary grass. Although somewhat limited in vegetative diversity, a number of wildlife values are associated with this wetland habitat type including food, nesting, brooding, cover and refuge for wildlife (Gucker 2008). The general structural characteristics of the open water including a large unobstructed water surface area, seasonal water source and emergent vegetation does create a relatively unique and higher quality habitat in an otherwise arid and agricultural landscape. The central portions of the wetland are typically inundated seasonally which provides added wildlife benefits from habitat variety and deeper seasonal water for amphibians, birds and reptiles. Broad-leaf cat-tail is extremely important to common muskrats. It provides a major food source and important nesting habitats and materials. Waterfowl and other marsh birds throughout the region use broad-leaf cat-tail habitats extensively. In Colorado, broad-leaf cat-tail habitats are important nesting cover and habitat for soras, Virginia rails, blackbirds, and marsh wrens (Kingery 2008). Many waterfowl including: American white pelican (*Pelecanus erythrorhynchos*), blue-winged teal (*Anas discors*) and great blue heron (*Ardea herodias*) among others are known to regularly utilize the open water portions of Houts Reservoir.

- Generally, there are features within the study area and the surrounding area that provide a variety of habitat components for waterfowl, local songbirds, raptors, amphibians, reptiles and small mammals; however, the majority of habitat within the study area comprises upland herbaceous grassland and cultivated cropland which is somewhat degraded with regards to wildlife use and is limited in use by current land use activities, community composition and habitat fragmentation.
- Within the study area, the herbaceous wetland vegetation community and open water of Houts Reservoir provide a variety of important wildlife habitat values. Refer to **Figure 3** for the approximate location of potential wetland habitat mapped within the study area.

2.4 NATURAL AREAS IDENTIFIED IN THE CITY OF LOVELAND NATURAL AREAS SITES REPORT (2008)

The City of Loveland along with several consultants issued a report in July 2008 titled *In the Nature of Things: City of Loveland Natural Areas Sites* (City of Loveland 2008) that identifies natural areas in and around Loveland. Natural areas are defined as undeveloped lands containing potential natural values such as wildlife habitat, plant diversity, and wetlands. ERC reviewed the report and associated mapping to determine if the study area or the vicinity is located within or adjacent to any of these designated natural areas. The results are summarized below.

- The fringe wetland habitat within the study area is located within Site 1 – Houts Lake natural area (City of Loveland 2008) (see below).

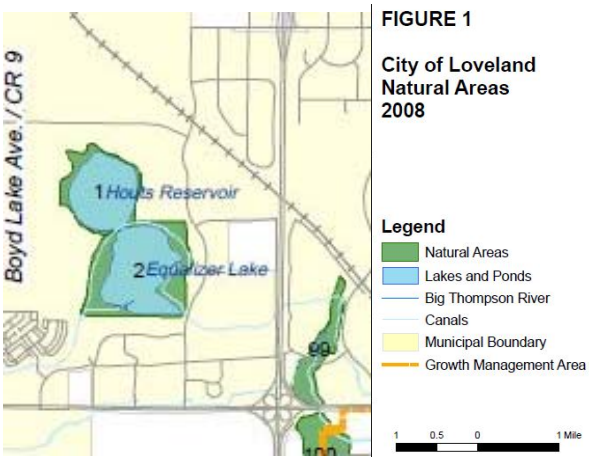


FIGURE 1

City of Loveland Natural Areas 2008

- The lake is described as a large open water body surrounded by active agricultural lands. Trees and shrubs and generally lacking. A fringe of wetland vegetation is present along the northwest shoreline. The large amount of open water is valuable to waterfowl, especially as resting habitat for migrating species. A portion of the adjacent agricultural lands appears to be inundated, which would provide feeding habitat for shorebirds as well as waterfowl. The agricultural lands themselves provide feeding habitat for waterfowl using the lake. The CPW notes that ducks and geese rest on the lake and feed extensively in nearby fields. The lack of significant emergent wetland vegetation limits the lake's potential for water-quality improvement. The creation of large wetland areas would improve this function. This may be an important enhancement suggestion for the long-term health of the aquatic ecosystem, as it appears that runoff from the agricultural lands enters the lake and may overload it with nutrients over time. The addition of shrubs and trees around the lake would increase songbird and raptor habitat (City of Loveland 2008).
- Houts Reservoir has been given an overall rating of "5" in the City of Loveland Natural Areas Sites Report (2008).
- Site 1 is located within the study area therefore is depicted on the Site Inventory Map (**Figure 3**).

2.5 OPERATING HIGH WATER LINE

The 2014 City of Loveland Parks & Recreation Master Plan (Appendix E) defines the operating high water line as that elevation which is arrived at by taking the sum of the high water elevation in the months of May and June for the last 5 years and dividing by 10. The Master Plan further notes that every lake and its surrounding area are unique, and actual lake shore configurations will need to be adapted to fit individual circumstance. To define the operating high water line, ERC first attempted to contact the reservoir operator, Greely and Loveland Irrigation Company (GLIC); however, no information was available as to a defined legal operating high water line elevation. Based on survey data, the spillway on Equalizer Reservoir (Houts and Equalizer are connected via culvert and headgate) is known to be at elevation 4954.4 feet. This spillway elevation does not appear to correspond to the site-specific characteristics observed during the aquatic resource delineation. It should be noted that the Equalizer Reservoir (and therefore Houts Reservoir) water surface elevation is controlled by adjustable headgates operating below the

spillway, and the spillway is only intended for emergency overflow. Therefore, ERC defined the operating high water line based on site-specific characteristics utilizing the USACE definition of ordinary high water mark (OHWM as described in **Section 2.2**). The operating high water line and OHWM appear to be at a slightly lower elevation (approximately 4953.8 feet) as compared to the spillway elevation (4954.4 feet). This slightly lower elevation, based on site-specific characteristics, corresponds well with the normal operation of Equalizer Reservoir, which is just below the spillway elevation via releases from the lower headgate.

As part of the formal aquatic resource delineation completed by ERC on August 29, 2017 (refer to **Section 2.2**), the OHWM was mapped based on specific physical characteristics observed in the field which correspond to the line on the shore established by the fluctuations of water which included changes in the character of the soil, changes in the vegetation community and a dense ring of cattail vegetation along the shoreline. Based on the field evaluation, the delineated OHWM (as mapped by ERC in **Appendix A**) is considered to be the operating high water line for Houts Reservoir as defined by the Master Plan.

- The operating high water line of Houts Reservoir occurs within the study area therefore is depicted on the Site Inventory Map (**Figure 3**). The boundary was delineated based on site-specific characteristics of OHWM.

3.0 ASSESSMENT OF POTENTIAL IMPACTS OF PROPOSED DEVELOPMENT

Based on review of City of Loveland ESAR criteria, results of the Site Inventory have determined that potentially "environmentally sensitive areas" occur within the study area, specifically associated with Houts Reservoir and fringe wetland habitat. Per the Site Inventory, these elements include:

- Potentially jurisdictional wetlands along the shoreline of the reservoir
- Wildlife habitat areas associated with the open water and emergent wetlands
- Houts Reservoir and the shoreline which is identified as a Natural Area (Site #1) in the City of Loveland Natural Areas Sites Report (2008)
- Physical linkages to other natural areas or open spaces (i.e., offsite fringe wetlands of Houts Reservoir)
- Soils having a high water table (within the emergent wetland habitats)
- Operating high water line (as defined in the 2014 Parks & Recreation Master Plan (Appendix E)

As depicted on the Site Inventory Map (**Figure 3**) environmentally sensitive areas occur within Houts Reservoir and its associated fringe wetland habitat which is identified as natural area Site #1 with an Overall Habitat Rating value of "5" (between 1-low and 10-high) in the City of Loveland Natural Areas Sites Report (2008). Based on the results of this 2018 ESAR, the current Overall Habitat Rating value as identified by the City is likely appropriate for Houts reservoir as the emergent wetland and open water does provide a variety of important wildlife habitat components for waterfowl, local songbirds, raptors, amphibians, reptiles and small mammals. Based on the findings of this 2018 ESAR, we see no need to alter or revise the Overall Habitat Rating value of "5" as documented in the City 2008 Report. While the emergent

wetland habitat does provide wildlife habitat and shoreline function, it is somewhat limited in species and structural diversity which does provide a potential for enhancement to improve the overall habitat rating.

ERC has not reviewed a specific development plan for the study area. Per the City of Loveland ESAR criteria and 2014 Master Plan:

- Any future development should avoid impacts to environmentally sensitive areas, specifically the wetland as depicted on the Site Inventory Map (**Figure 3**).
- For lake edges that have natural areas rated "5" and below, development should be setback 75 feet in order to protect water quality by minimizing the impacts of sediment input.
- No additional buffer areas are required for potentially environmentally sensitive areas however should be considered as part of protection measures, mitigation, and enhancement (refer to **Section 4.0**).

4.0 RECOMMENDATION: PROTECTION MEASURES, MITIGATION, AND ENHANCEMENT

Houts Reservoir and the adjacent fringe wetland habitat is considered an "environmentally sensitive area". The 1999 Report states that wetlands in Area 4 extended nearly 400 feet from the reservoir edge, recommending a 300 foot setback from the reservoir edge. With this 300 foot setback, upwards of 100 feet of the wetland would not have a protective buffer. Therefore, ERC has proposed a new setback that would encompass the entire wetland habitat as currently delineated while also providing shoreline protection consistent with the surrounding established 75-setback around all of Houts Reservoir. A description of the recommended setback based on current conditions is provided as follows.

According to Appendix E: Guidelines for Protection of Environmentally Sensitive Areas, for lake edges that have natural areas with an Overall Habitat Rating value of 5 and below, development should be setback 75-feet (from the operating high water line) in order to protect water quality by minimizing the impacts of sediment input. A naturally vegetated buffer zone of this width can usually catch and retain sediment containing metals and toxic substances that have been carried over land from developed areas. This recommended 75-foot setback is consist with other established setbacks around the entire Houts Reservoir, specifically in Areas 2 and 3 (to the southwest) and Area 5 (to the east).

In addition to the recommended 75-foot setback, ERC recommends an additional 25-foot setback from the delineated fringe wetland habitat. While this additional 25-foot setback is not a regulation, it has been recommended herein as a voluntary added protection measure. The wetland fringe is considered an environmentally sensitive area and therefore should be further protected from potential future development. By including a 25-foot setback from the wetland edge as well as a 75-foot shoreline setback, a maximum combined recommended development setback which varies from 75 feet to 160 feet from the operating high water line can be established which meets the objectives for protecting environmentally sensitive areas while allowing for reasonable site development. An existing trail is located within a portion of the 75-foot setback. Per the 2014 Master Plan, an easement should be considered for the trail to provide a link between neighborhoods, parks, and other trails.

Mitigation measures should also be employed for construction activities such as erosion and sediment control and proper stormwater management. Human disturbance from the development should be minimized within the recommended buffer zones by discouraging pedestrian and pet use off-trail.

As identified in the City of Loveland Natural Areas Sites (2008), Houts Reservoir is listed as a high potential for enhancement. The overall quality of existing vegetation within the wetland and the recommended buffer zone is somewhat degraded with regards to species richness and diversity. Non-native and/or weedy species are prevalent throughout the study area. The buffer zone and wetland provides an opportunity for enhancement through native plantings to increase species and structural diversity which in-turn would improve wildlife habitat value. Native plantings within the buffer zone should be considered as part of future proposed development plans. Wetland buffers can vary in size based on factors such as adjacent land use, ownership, topography, wetland area and ecological functions. Width, length and vegetation composition of buffer areas are key features that enhance many functions essential to establishing and maintaining healthy wetlands. Generally speaking, buffers that are wider, longer and more densely vegetated with herbaceous, shrub and tree layers provide more benefits than buffers that are narrower, shorter and sparsely vegetated with only herbaceous species (City of Boulder 2007).

Potentially jurisdictional wetland habitat is located within the study area and has been formally delineated as part of this 2018 ESAR. Formal verification from the USACE has not been obtained for the delineation, but may be appropriate for future project planning. No disturbances should occur within delineated wetland habitats without formal review under Section 404 of the Clean Water Act (CWA) and prior authorization from the USACE. Further, a 25-foot setback should be maintained from the boundary of the potentially jurisdictional wetland habitat and a 75-foot setback should be maintained from the operating high water line/OHWM of Houts Reservoir. Refer to the Site Inventory Map (**Figure 3**) for the recommended buffer zone set-backs.

5.0 SUMMARY

ERC has prepared this 2018 ESAR in compliance with the City of Loveland Environmentally Sensitive Areas Report criteria for the Houts Reservoir "Area 4". This 2018 ESAR is intended as a screening to identify environmentally sensitive areas within the study area and the vicinity. The following provides a summary of findings specific to the study area and the vicinity of the study area.

1. **Mature stands of vegetation** – An abandoned tree farm within the western portion of the study area contains sparse overstory saplings that are either dead or in very poor condition. Because the trees were planted with the intent of being sold commercially and are currently in deteriorated condition, they have not been considered mature stands of vegetation and should not be considered natural features. Refer to **Figure 3**.
2. **Jurisdictional (USACE) or non-jurisdictional wetlands** – The eastern portion of the study area comprises potentially jurisdictional POW and PEM wetland habitat associated with Houts Reservoir. According to the Loveland ESAR, wetland habitats are considered environmentally sensitive areas. A specific development plan has not been reviewed for the study area. No disturbances should occur within delineated wetland habitats without formal review under

Section 404 of the Clean Water Act (CWA) and prior authorization from the USACE. Although the City of Loveland does not specifically require a setback from environmentally sensitive areas, such as wetlands, a 25-foot buffer is recommended from the boundary of the potentially jurisdictional aquatic resource habitat and a 75-foot setback should be maintained from the operating high water line/OHWM of Houts Reservoir. Refer to **Figure 3** and **Appendix A**.

1. **Wildlife habitat areas and corridors** – No wildlife migration corridors are mapped by the CPW within the study area or within the vicinity of the study area (CPW 2017). Generally, there are features within the study area that provide a variety of habitat components for waterfowl, local songbirds, raptors, amphibians, reptiles and small mammals; however, the majority of habitat within the study area comprises upland herbaceous grassland and cultivated cropland which is somewhat degraded with regards to wildlife use and is limited in use by current land use activities, community composition and habitat fragmentation. Within the study area, the herbaceous wetland vegetation community provides a variety of important wildlife habitat values therefore a 25-foot buffer is recommended from the vegetated wetland and a 75-foot setback should be maintained from the operating high water line/OHWM of Houts Reservoir. Refer to **Figure 3**.
2. **Natural Areas identified in the City of Loveland Natural Areas Site Report (2008)** – The eastern portion of the study area and immediate vicinity are located within/adjoining Houts Reservoir which is identified as a City of Loveland natural area. Houts Reservoir has been given an Overall Habitat Rating value of "5" in the City of Loveland Natural Areas Sites Report (2008). Based on the results of this 2018 ESAR, the current Overall Habitat Rating value is likely appropriate for the Houts reservoir natural area. According to Appendix E: Guidelines for Protection of Environmentally Sensitive Areas, for lake edges that have natural areas rated "5" and below, development should be setback 75 feet in order to protect water quality by minimizing the impacts of sediment input. This recommended buffer is considered appropriate for the shoreline habitat within the study area. Refer to **Figure 3**.
3. **Physical linkages to other natural areas or open spaces** – Wetland/open water habitat associated with Houts Reservoir continues outside of the study area to the northeast and southeast therefore is considered a physical linkage to other natural areas such as downstream wetlands. Refer to **Figure 3**.
4. **Existing drainage patterns and floodway and fringe boundaries** – There is no mapped FEMA floodway within the study area or vicinity (City of Loveland 2017).
5. **Irrigation canals, ditches, and watercourses** – A recently constructed upland swale occurs within the study area. This swale appears to be a man-made stormwater feature; however, does not appear to convey flows at this time therefore has not been considered a natural feature.
6. **Existing slopes over 20%** - The study area does not contain any existing slopes over 20% (NRCS 2017). Refer to **Figure 3.**
7. **Soils having a high water table or being highly erodible** – The NRCS soil survey identifies two soil types within the study area, outside of the open water, and includes Ulm clay loam, 0 to 3 percent

slopes and Nunn clay loam, wet, 1 to 3 percent slopes. The two mapped soil types are not classified highly erodible (NRCS 2017). Hydric soils do exist within the PEM wetland fringe of Houts Reservoir.

8. **Land formerly used for landfill operations or hazardous industrial use** – Based on previous environmental reports (Cedar Creek Associates, Inc. 1999), review of available Google Earth imagery (1999-2017) and historic topographic mapping (1905-1985) (USGS 2017c) the study area does not appear to have been formerly used for landfill operations or hazardous industrial use.
9. **Fault areas, aquifer discharge areas** – The study area is not located in a fault area (USGS 2017a) or aquifer discharge area (USGS 2017b).
10. **Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))** – The operating high water line/OHWM of Houts Reservoir occurs within the study area and has been mapped by ERC. Refer to **Figure 3** and **Appendix A.**
11. **Stream corridors or estuaries** – There are no stream corridors or estuaries located within the study area or vicinity. Refer to **Figure 3.**
12. **Land incapable of meeting percolation requirements –** The study area does not contain land incapable of meeting percolation requirements (NRCS 2017).

Recommendations:

- Any future development should avoid impacts to environmentally sensitive areas, specifically the wetland and buffer zone as depicted on the Site Inventory Map (**Figure 3**).
- For lake edges that have natural areas rated "5" and below, development should be setback 75 feet in order to protect water quality by minimizing the impacts of sediment input.
- This recommended 75-foot setback (for shoreline protection) is consistent with other established setbacks around the entire Houts Reservoir, specifically in Areas 2 and 3 (to the southwest) and Area 5 (to the east).
- In addition to the recommended 75-foot setback (for shoreline protection), ERC recommends an additional 25-foot setback from the delineated fringe wetland habitat. This would establish a maximum combined recommended development setback which varies from 75 feet to 160 feet from the operating high water line.
- The buffer zone and wetland provides an opportunity for enhancement through native plantings to increase species and structural diversity which in-turn would improve wildlife habitat value. Consider native plantings within the buffer zone as part of future proposed development plans.

This report has been prepared by:

ECOLOGICAL RESOURCE CONSULTANTS, INC.

Diane Wright, Project Ecologist

(303) 679-4820 x106

diane@erccolorado.net

Reviewed and approved by:

David J. Blauch, V.P., Senior Ecologist (PWS # 2130)

Table 1. Site Inventory Elements and Loveland ESAR Assessment Results.

Site Inventory Elements	Assessment Results
Mature stands of vegetation	Refer to Section 2.1, Figure 3. An abandoned tree farm within the western portion of the study area contains sparse overstory saplings that are either dead or in very poor condition. Because the trees were planted with the intent of being sold commercially and are currently in deteriorated condition, they have not been considered mature stands of vegetation and should not be considered natural features.
Jurisdictional (USACE) or non-jurisdictional wetlands	Refer to Section 2.2, Figure 3. The study area contains potentially jurisdictional palustrine emergent wetland (PEM) and palustrine open water (POW) habitats associated with Houts Reservoir.
Wildlife habitat areas and corridors	Refer to Section 2.3, Figure 3. No wildlife migration corridors are mapped by the CPW within the study area or within the vicinity of the study area (CPW 2017). Generally, there are features within the study area that provide a variety of habitat components for waterfowl, local songbirds, raptors, amphibians, reptiles and small mammals; however, the majority of habitat within the study area comprises upland herbaceous grassland and cultivated cropland which is somewhat degraded with regards to wildlife use and is limited in use by current land use activities, community composition and habitat fragmentation. Within the study area, the herbaceous wetland vegetation community and open water of Houts Reservoir provide a variety of important wildlife habitat values.
Natural Areas identified in the City of Loveland Natural Areas Sites Report (2008)	Refer to Section 2.4, Figure 3. The eastern portion of the study area and immediate vicinity are located within/adjoining Houts Reservoir which is identified as a City of Loveland natural area (City of Loveland 2008). Houts Reservoir has been given an overall rating of "5" in the City of Loveland Natural Areas Sites Report (2008).
Physical linkages to other natural areas or open spaces	Figure 3. Wetland/open water habitat associated with Houts Reservoir continues outside of the study area to the northeast and southeast therefore is considered a physical linkage to other natural areas such as downstream wetlands.
Existing drainage patterns and floodway and flood fringe boundaries	There is no mapped FEMA floodway within the study area or vicinity (City of Loveland 2017).
Irrigation canals, ditches, and watercourses	A recently constructed upland swale occurs within the study area. This swale appears to be a man-made stormwater feature; however, does not appear to convey flows at this time therefore has not been considered a natural feature.
Existing slopes over 20%*	The study area does not contain any existing slopes over 20% (NRCS 2017).
Soils having a high water table or being highly erodible*	Figure 3. The NRCS soil survey identifies two soil types within the study area, outside of the open water, and includes Ulm clay loam, 0 to 3 percent slopes and Nunn clay loam, wet, 1 to 3 percent slopes. The two mapped soil types are not classified highly erodible (NRCS 2017). Hydric soils do exist within the PEM wetland fringe of Houts Reservoir.
Land formerly used for landfill operations or hazardous industrial use*	Based on previous environmental reports (Cedar Creek Associates, Inc. 1999), review of available Google Earth imagery (1999-2017) and historic topographic mapping (1905-1985) (USGS 2017c) the study area does not appear to have been formerly used for landfill operations or hazardous industrial use.
Fault areas, aquifer discharge areas*	The study area is not located in a fault area (USGS 2017a) or aquifer discharge area (USGS 2017b).
Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))	Refer to Section 2.5, Figure 3. The operating high water line of Houts Reservoir occurs within the study area. The boundary was delineated based on site-specific characteristics of OHWM.
Stream corridors or estuaries	Figure 3. There are no stream corridors or estuaries located within the study area or vicinity.
Land incapable of meeting percolation requirements*	The study area does not contain land incapable of meeting percolation requirements (NRCS 2017).

*Literature based review. ERC has not completed detailed site specific analysis for this Site Inventory.

Prepared By:

ERC

5672 Juhls Drive
Boulder, CO 80301
(303) 679-4820

ERC # 175-1604

Legend

- Study Area
- Tree Farm

Upland Vegetation Communities

- Cultivated Cropland
- Upland Herbaceous Grassland

Aquatic Resource Delineation (ERC 2017)

- Operating High Water Line
- Delineated Aquatic Resource Boundary

Potentially Jurisdictional Waters of the US/ Natural Area City of Loveland (2008) (Approx)

- Delineated PEM & POW Habitat

Recommended Development Set-Back

- 25' Natural Area Buffer
- 75' Operating High Water Line Buffer
- Maximum Combined Buffer 75' & 25'

City of Loveland GIS

- GLIC Parcel

FIGURE 3. SITE INVENTORY MAP

HOUTS RESERVOIR "AREA 4"
LARIMER COUNTY, COLORADO

Date: February 6, 2018

1 inch = 150 feet

0 150 300 Feet

6.0 REFERENCES

Bailey, R. G. 1976. Ecoregions of the United States, US Forest Service, Ogden, Utah. (Map only; scale 1:7,5000,000.)

Cedar Creek Associates, Inc. 1999. Environmentally Sensitive Areas and Wetland Report for the Rocky Mountain Villages III Properties. January.

Cederstrand, Joel R.; Becker, Mark F. 1999. Digital map of geologic faults for the High Plains Aquifer in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming: USGS Open-File Report: 99-261 Data Set

City of Loveland. 2017. GIS and Mapping Information. Available online at: http://www.ci.loveland.co.us/departments/information-technology/gis-and-mapping/map-gallery

City of Loveland. 2016. Environmentally Sensitive Areas Report. Updated June 2016. Available online at: http://www.cityofloveland.org/Home/ShowDocument?id=14865

City of Loveland. 2014. Parks and Recreation Master Plan. Adopted July 15. Available online at: http://www.cityofloveland.org/home/showdocument?id=19612

City of Loveland. 2008. *In the Nature of Things: City of Loveland Natural Areas Sites.* An update to the citizens and officials of Loveland, Colorado on the City's most significant natural areas. Cedar Creek Associates, Inc. July 2008.

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia.

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

ITIS. Integrated Taxonomic Information System. 2014. The Integrated Taxonomic Information System. Available online at: www.itis.gov/.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

NatureServe 2017. NatureServe Explorer Central Database. Ecological Association Comprehensive Report. Available online at: http://explorer.natureserve.org. December.

Qi, S.L., 2010, Digital map of the aquifer boundary of the High Plains aquifer in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming: U.S. Geological Survey Data Series 543

US Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter, Subject: Ordinary High Water Mark. RGL 05-05. Department of the Army, Washington, D.C. http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf.

_____. 2010. USACE. 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-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center. Available online at: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/gp_supp.pdf

_____. 2016. Great Plains Regional Wetland Plant List, version 1. Available online at: http://rsgisias.crrel.usace.army.mil/nwpl_static/data/DOC/lists_2016/Regions/pdf/reg_GP_2016v1.pdf

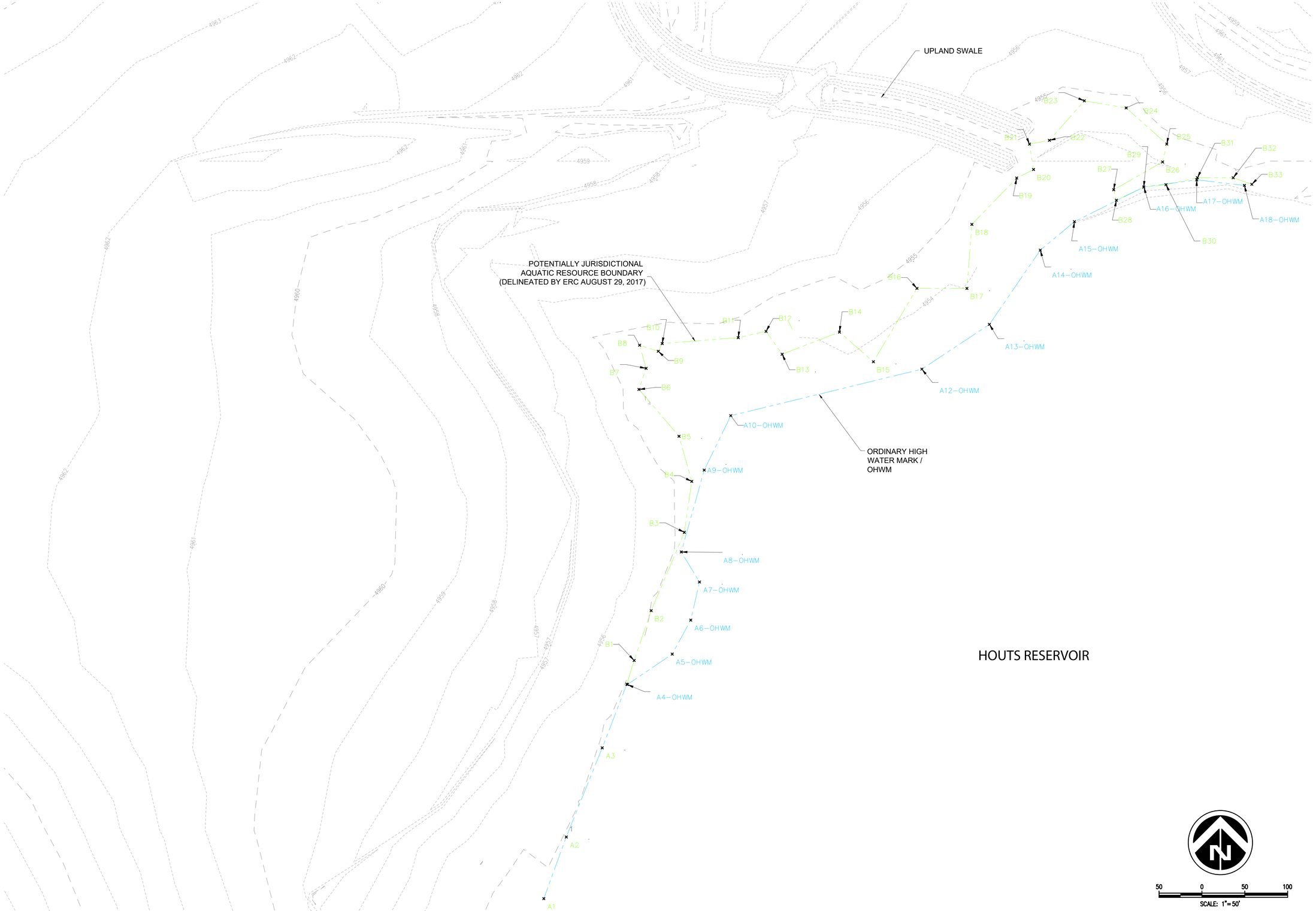
US Department of Agriculture Natural Resources Conservation Service (NRCS). 2017. Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/.

US Geological Survey (USGS). 2017a. Quaternary Faults GIS Map. Available online at https://earthquake.usgs.gov/hazards/qfaults/map/#qfaults.

US Geological Survey (USGS). 2017b. Aquifers: Map of the Principal Aquifers of the United. Available online at: https://water.usgs.gov/ogw/aquifer/map.html.

US Geological Survey (USGS). 2017c. Historical Topographic Map Explorer. Available online at: http://historicalmaps.arcgis.com/usgs/.

APPENDIX A



T:_JOBS\WOHNNEY\MILLENNIUM GDP\WETLANDS MAP\LAKES AT WETLAND MAP 9-15-17.DWG, Plotted By:BRETT WOOLARD, 9/22/2017 4:14 PM

Date	Description
	DOCUMENT AMENDMENTS

THE LAKES AT CENTERRA NORTH

AQUATIC RESOURCE DEIINEATION

CWC CONSULTING GROUP
CIVIL ENGINEERING - LAND SURVEYING - CONSTRUCTION SERVICES
9360 TEDDY LANE, SUITE 203
LONE TREE, COLORADO 80124
TELEPHONE: 303-395-2700
FAX 303-395-2701

Project Number:	130-00040
Designed By:	KP
Drawn By:	BAW
Reviewed By:	KP/JN
Date:	8-29-17
Sheet Number:	1

Ecological Resource Consultants, Inc.
5672 Juhls Drive ~ Boulder, CO ~ 80301 ~ (303) 679-4820

ENVIRONMENTALLY SENSITIVE AREAS REPORT

FOR

PFIEFF PROPERTY

LARIMER COUNTY, COLORADO

APRIL 17, 2017

Prepared By:
Kyle Medash, Project Ecologist, WPIT
Ecological Resource Consultants, Inc. (ERC)
5672 Juhls Drive
Boulder, Colorado 80301
(303) 679-4820 x105
kyle@erccolorado.net

Prepared For:
PFLVD, LLC
Contact: Dave Betley
2725 Rocky Mountain Avenue, Suite 200
Loveland, CO 80538
Phone: 970-962-9990
Fax: 970-635-3003

ERC Project #175-1604

CONTENTS

1.0 INTRODUCTION

Ecological Resource Consultants, Inc. (ERC) has prepared this Environmentally Sensitive Areas Report for the Pfieff Property (study area). This report was prepared on behalf of PFLVD, LLC. This assessment was conducted to identify natural features and/or environmentally sensitive areas which may occur on or within the vicinity of the study area. This report has been prepared to specifically address elements outlined in the *City of Loveland's Current Planning Division – Environmentally Sensitive Areas Report* document (updated June 2016) (herein Loveland ESAR). The requirement for this information is in accordance with the following policies and codes: The Loveland Colorado 2005 Comprehensive Plan (Section 3.2), the 2014 Parks and Recreation Master Plan (Appendix E) and the Loveland Municipal Code (Chapters 18.41 and 16.20). Specifically, this report addresses the following items:

1) Study Area
2) Site Inventory
    - Mature stands of vegetation
    - Jurisdictional (USACE) or non-jurisdictional wetlands
    - Wildlife habitat areas and corridors
    - Natural Areas identified in the City of Loveland Natural Areas Sites Report (2008)
    - Physical linkages to other natural areas or open spaces
    - Existing drainage patterns and floodway and flood fringe boundaries
    - Irrigation canals, ditches, and watercourses
    - Existing slopes over 20%
    - Soils having a high water table or being highly erodible
    - Land formerly used for landfill operations or hazardous industrial use
    - Fault areas, aquifer recharge or discharge areas
    - Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))
    - Stream corridors or estuaries
    - Land incapable of meeting percolation requirements
3) Assessment of Potential Impacts of the Proposed Development; and
4) Recommendations for Protection Measures, Mitigation and Enhancement.

ERC previously completed environmental studies within the study area including an Aquatic Resource Delineation, State and Federal Threatened and Endangered Species Screening, and a Phase 1 Environmental Site Assessment (ESA). Reports were issued in December 2016 and January 2017 and the results are referenced herein.

2.0 STUDY AREA

According to the Loveland ESAR the study area must include all land within the proposed development boundary plus adjacent land identified as natural areas or wetlands or as other significant natural features

included in the definition of "environmentally sensitive areas" that are likely to be affected by the proposed development. The study area and location are described as follows.

The study area is located on the west side of North Boyd Lake Avenue approximately 0.3 miles south of the intersection with East Eisenhower Boulevard in the City of Loveland, Larimer County, Colorado in the *Big Thompson* watershed (HUC 10190006). More specifically, the study area is located in **Section 17, Township 5 North, Range 68 West**, in Larimer County (**latitude 40.402981° north, longitude -105.021308° west**). From the intersection of I-25 and East Eisenhower Boulevard, the study area can be accessed by heading west for approximately 1.5 miles on East Eisenhower Boulevard, then south on North Boyd Lake Avenue for approximately 0.3 miles. The study area is located on the west side of North Boyd Lake Avenue and comprises a farm with a residential home, several farm storage buildings/structures, and agricultural fields. Refer to **Figure 1** and **Figure 2** for a location map and US Geological Survey (USGS) topographic map of the study area.

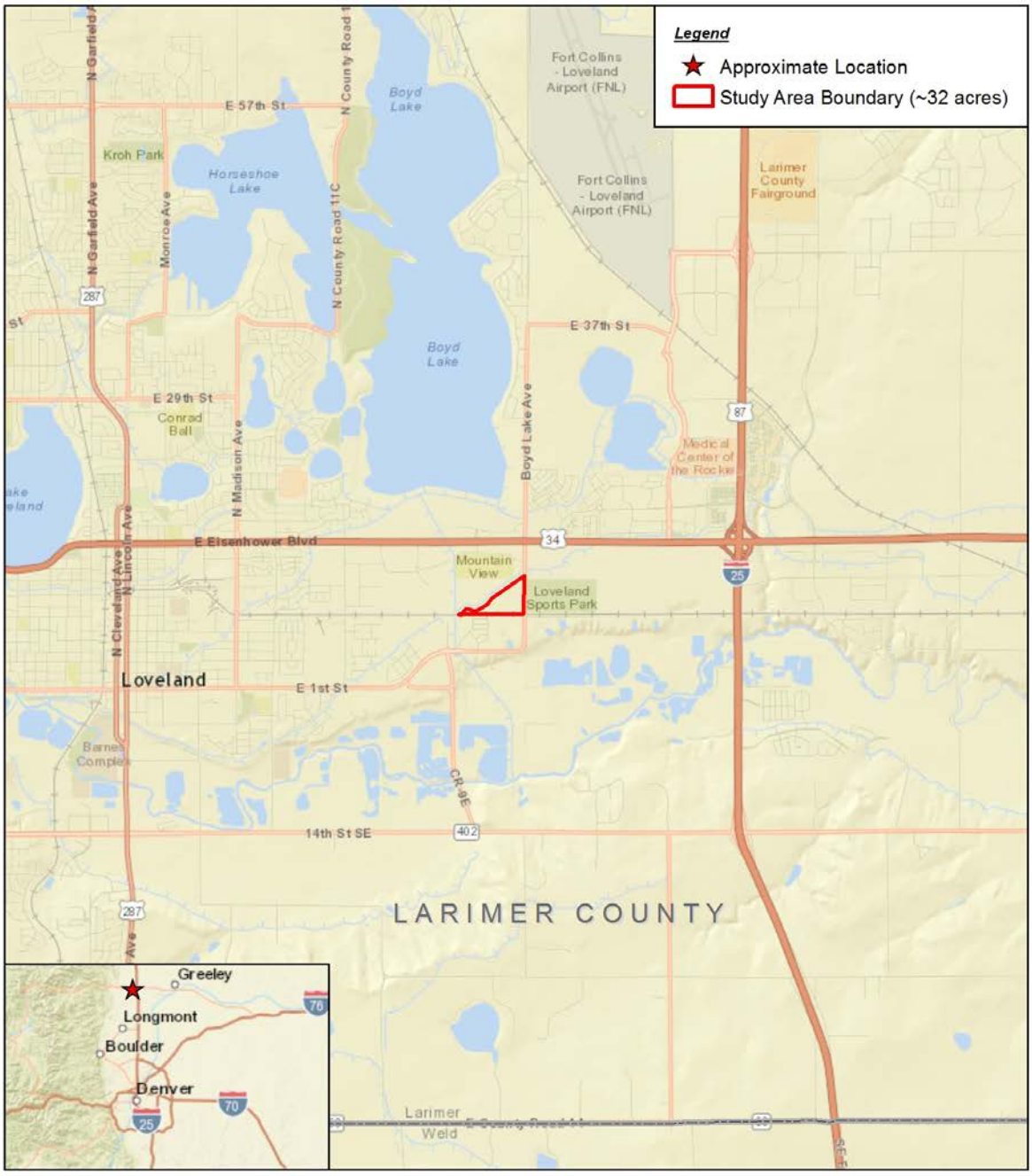
A man-made irrigation ditch known as Farmer's Ditch is located approximately 50 feet north of the study area boundary. Because no impacts are proposed within this ditch or outside of the identified study area boundary, this report has not considered the ditch a significant natural area or "environmentally sensitive area" that is likely to be affected by the proposed development. In addition, there are no mapped natural areas that adjoin and/or are located in the immediate vicinity of the study area. The vicinity of the study area is predominantly agricultural land exhibiting similar characteristics and land use as the study area. Refer to **Figure 3** for a map of the Study Area.

The following section provides a summary of elements evaluated for the City of Loveland ESAR requirements, as outlined below in **Table 1**. Based on the Loveland ESAR assessment results, the Site Inventory Map is provided as **Figure 3**.

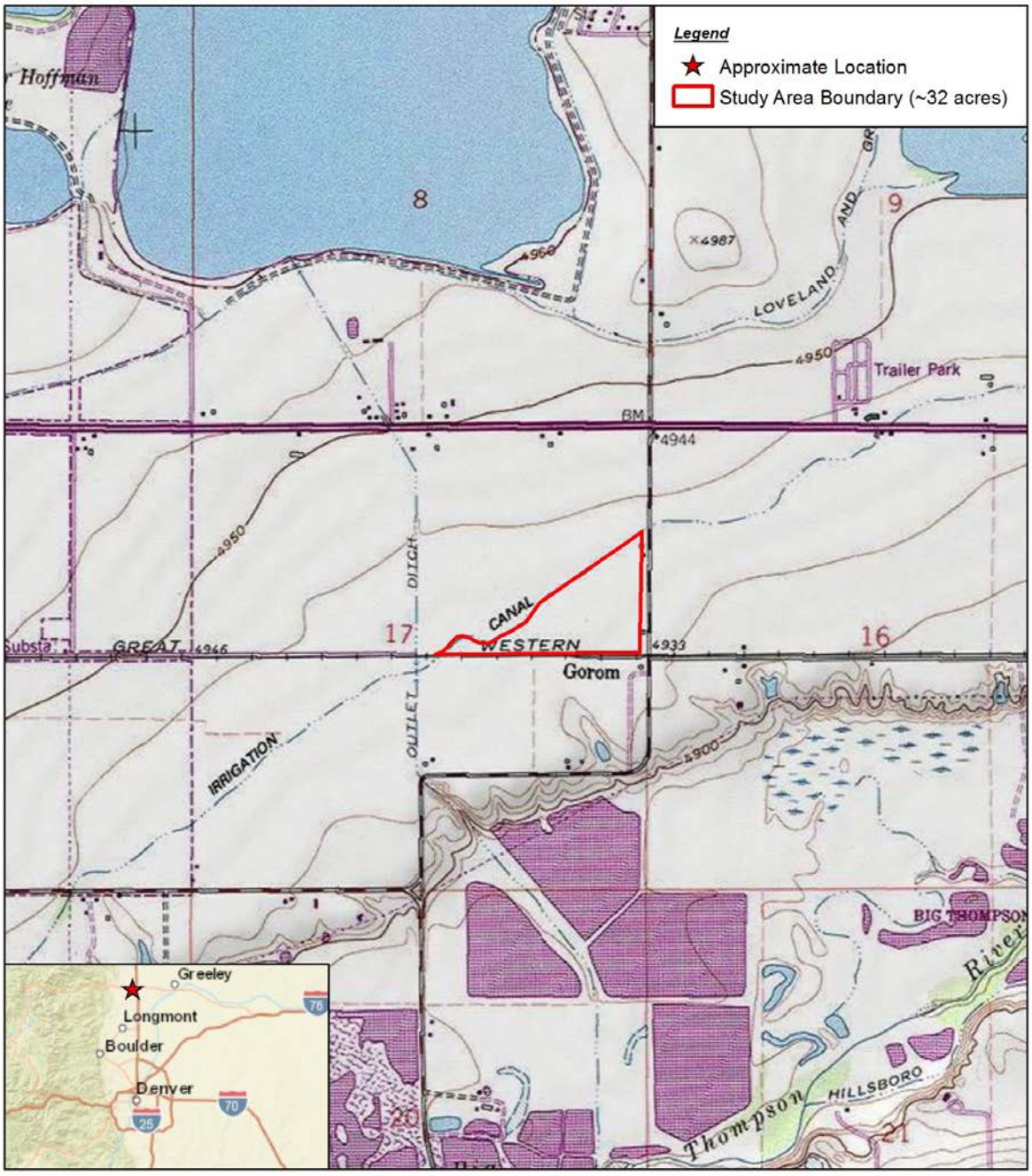
Table 1. Site Inventory Elements and Loveland ESAR Assessment Results.

Site Inventory Elements	Assessment Results
Mature stands of vegetation	**Refer to Section 2.1, Figure 3.**
Jurisdictional (USACE) or non-jurisdictional wetlands	**Refer to Section 2.2** The study area does not contain any jurisdictional or non-jurisdictional wetlands.
Wildlife habitat areas and corridors	**Refer to Section 2.3** Habitat within the study area is somewhat degraded and of lower ecological value from a wildlife perspective due to historic and current land use for agricultural production. No wildlife migration corridors are mapped by the CPW within the study area or within the vicinity of the study area (CPW 2016).
Natural Areas identified in the City of Loveland Natural Areas Sites Report (2008)	**Refer to Section 2.4** The study area and immediate vicinity are not located within any of the mapped natural areas (City of Loveland 2008)

Site Inventory Elements	Assessment Results
Physical linkages to other natural areas or open spaces	**Refer to Section 2.5, Figure 3.** Farmer's Ditch, located outside the study area to the north, may be considered a physical linkage to other natural areas such as downstream wetlands. However, no disturbances are proposed to Farmer's Ditch.
Existing drainage patterns and floodway and flood fringe boundaries	There is no mapped FEMA floodway within the study area or vicinity (City of Loveland 2017).
Irrigation canals, ditches, and watercourses	**Figure 3.** The study area does not contain any canals, ditches or watercourses. Farmer's Ditch, a man-made irrigation ditch, is located outside the study area to the north. No disturbances are proposed to Farmer's Ditch.
Existing slopes over 20%	**Figure 3.** The study area does not contain any existing slopes over 20% (NRCS 2017).
Soils having a high water table or being highly erodible	**Figure 3.** The study area does not contain any soils having a high water table or being highly erodible (NRCS 2017).
Land formerly used for landfill operations or hazardous industrial use	Per the Phase I ESA (ERC 2016) the study area does not appear to have been formerly used for landfill operations or hazardous industrial use.
Fault areas, aquifer discharge areas	The study area is not located in a fault area (USGS 2017a) or aquifer discharge area (USGS 2017b).
Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))	No lakes or ditches exist within the study area therefore no operating high water line occurs within the study area. Farmer's Ditch, a man-made irrigation ditch, is located outside the study area to the north. No disturbances are proposed to Farmer's Ditch and a 50 foot buffer is located between the ditch and the study area boundary.
Stream corridors or estuaries	**Figure 3.** There are no stream corridors or estuaries located within the study area or vicinity.
Land incapable of meeting percolation requirements	The study area does not contain land incapable of meeting percolation requirements (NRCS 2017).



Prepared By: ERC *5672 Juhls Drive* *Boulder, CO 80301* *(303) 679-4820* *ERC #: 175-1604*	**FIGURE 1.** **LOCATION MAP** **PFIEFF PROPERTY** **LARIMER COUNTY, COLORADO**	0 0.5 1 Miles *ENVIRONMENTALLY SENSITIVE AREAS REPORT APRIL 2017*



Prepared By: ERC 5672 Juhls Drive Boulder, CO 80301 (303) 679-4820 ERC #: 175-1604	**FIGURE 2.** **USGS TOPOGRAPHIC MAP** **PFIEFF PROPERTY** **LARIMER COUNTY, COLORADO**	0 1,500 3,000 Feet *ENVIRONMETALLY SENSITIVE AREAS REPORT APRIL 2017*

2.1 MATURE STANDS OF VEGETATION

Vegetation within the study area is comprised predominantly of agricultural crops consisting of alfalfa (*Medicago sativa*) for agricultural production of hay. This vegetation community is regularly harvested and would not qualify as a mature stand of vegetation. The fallow edges of the agricultural fields are vegetated mostly with non-native grasses and ruderal herbaceous vegetation which would also not qualify as mature. Around the residential home in the northeast corner of the study area there are few eastern cottonwood (*Populus deltoides*) and Norway spruce (*Picea abies*) trees that would potentially qualify as a mature stand. In addition, there are few Siberian elm (*Ulmus pumila*) and Russian olive (*Elaeagnus angustifolia*) trees within the northeast portion of the study area; however, these non-native species are undesirable and provide little value to the environment and natural areas. Therefore, these species have not been included as a mature stand on the Site Inventory Map provided as **Figure 3.**

- The mature trees (eastern cottonwood and Norway spruce) located in the northeast corner of the study area may be considered environmentally sensitive areas (Refer to **Figure 3**) by the City of Loveland.
- The vicinity of the study area exhibits similar land use and vegetative cover, and has been determined to not contain any mature stands of vegetation.

2.2 JURISDICTIONAL (USACE) OR NON-JURISDICTIONAL WETLANDS

ERC performed a formal onsite aquatic resource delineation within the study area on December 5, 2016 to identify potential aquatic resources within the study area. A report was issued dated December 23, 2016 summarizing the results (ERC 2016a). The report has not been submitted and/or verified by the US Army Corps of Engineers (USACE) at this time. The aquatic resource delineation was conducted following the methodology enumerated in the *1987 Corps of Engineers Wetlands Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (herein referred to as "Supplement") (Environmental Laboratory 1987, USACE 2010).*

The aquatic resource delineation identified approximately 32 acres of cultivated cropland upland vegetation within the study area. The wetland delineation field work did not identify any potential waters of the US and/or wetland habitat within the study area (Environmental Laboratory 1987, USACE 2010). A summary of the habitat within the study area is summarized as follows.

Cultivated Cropland Vegetation Community

The cultivated cropland vegetation community within the study area includes land that is currently used for the agricultural production of hay which appears to be irrigated. This area appears to be somewhat degraded due to the historic and current land use for agricultural production, which makes it difficult to identify the natural vegetation community that once occupied the area. The study area is relatively consistent in elevation, slightly sloping downward to the south. The vegetation community across the study area is very similar. The cultivated, central portion of the study area comprises approximately 70% vegetative cover dominated by recently mowed alfalfa (*Medicago sativa*) intermixed with small percentages of common dandelion (*Taraxacum officinale*) and non-native grass species. The perimeter of the study area can be characterized as fallow land comprising approximately 100% vegetative cover

dominated by smooth brome (*Bromus inermis*), Mexican fireweed (*Bassia scoparia*), and prickly lettuce (*Latuca serriola*), intermixed with smaller percentages of non-native grasses and ruderal herbaceous species. Few tree/shrub species occur within the study area, mainly along the northern and western boundaries, and in the northeast corner near the home and farm buildings/structures and include Russian olive, Siberian elm, Norway spruce, and eastern cottonwood.

The upland habitats across the study area are dominated by FAC-UPL species with dry, light colored clay loam soils. In general, the cultivated cropland habitat across the study area did not meet the criteria for wetland based on lack of all three required parameters including hydrophytic vegetation, hydric soils, and/or wetland hydrology.

A small (20 foot x 10 foot), isolated, marginal area dominated by reed canary grass (*Phalaris arundinacea*) (FACW) and Indian-hemp (*Apocynum cannabinum*) (FAC) hydrophytic vegetation is located in a topographic depression at the southwest corner of the study area. This topographic depression likely receives seasonal surface water runoff from irrigation/precipitation that is sufficient to support a dominance of hydrophytic vegetation. This was the only area exhibiting a dominance of hydrophytic vegetation within the study area. This area was determined to be upland based on lack of hydric soil indicators and absence of wetland hydrology.

An irrigation ditch, identified on USGS topographic mapping as Farmer's Ditch, occurs offsite and parallel to the northwestern boundary of the study area. The irrigation ditch is not within the study area boundary and therefore has not been included as an aquatic resource. There is an approximate 50 foot buffer between the study area and the southeast boundary of Farmer's Ditch. Farmer's Ditch appears to be man-made and constructed wholly in uplands for irrigation purposes. The ditch was dry and contained no surface water at the time of the delineation.

- The study area encompasses entirely upland habitat, no aquatic resources exist within the study area. Therefore the enclosed Site Inventory Map (**Figure 3**) does not depict any jurisdictional or non-jurisdictional wetlands.

Refer to **Photos 1-4** below for characteristics of the study area.

Photo 1. View southwest at a concave depression dominated by reed canary grass and Indian-hemp. This area was mapped as upland due to lack of hydric soils and wetland hydrology.

Photo 2. View southeast at an upland fallow area near the northeast portion of the study area.

Photo 3. View west across the cultivated cropland (upland) portion of the study area dominated by alfalfa. This photo is representative of a large portion of the study area.

Photo 4. An overview looking southwest along the northwestern boundary of the study area. An offsite irrigation ditch (Farmer's Ditch) can be seen at the right of the photo (not within study area boundary). The upland fallow area on the left of the photo is representative of the perimeter of the study area.

2.3 WILDLIFE HABITAT AREAS AND CORRIDORS

ERC completed a Threatened and Endangered Species Screening Report for the study area dated December 23, 2016 (ERC 2016b). The results of the screening report concluded that wildlife habitat within the study area was degraded due to historic land use for agriculture, no federal or state listed threatened and endangered species and/or habitat or was present within the study area, and no wildlife migration corridors and/or environmentally sensitive wildlife habitat exists within the study area (CPW 2016). A brief summary of the 2016 ERC Threatened and Endangered Species Screening Report for the study area is provided as follows.

Wildlife utilizes the general landscape in a multitude of ways and uses a variety of habitats as areas of permanent inhabitance, seasonal inhabitance, breeding grounds, migratory routes, for foraging purposes, or as temporary shelter. Potential wildlife habitat includes lands characterized as Cultivated Cropland. Degraded agricultural land/ruderal herbaceous vegetation which is dominated by crop vegetation and/or non-native or weedy species is not typically considered of high ecological value to wildlife, but this habitat type has beneficial values to certain wildlife species. These areas at a minimum are considered "open space" providing limited foraging and hunting grounds, refuge and limited areas for nesting.

Historic and current land use associated with agricultural practices have restricted the development of any significant natural vegetation communities within the study area, which limits the overall quality of potential wildlife habitat. The cultivated cropland habitat which is present across the study area has largely replaced the native shortgrass prairie habitat which would have been present in this region. Herbaceous non-native species or ruderal native species which permeate the vegetation communities generally do not provide quality habitat for most wildlife. In general, agriculture practices have altered the structure, function, community composition, and habitat value of land within the study area. Habitat within the study area exhibits few overstory canopy trees, few midstory shrubs, and within the fallow perimeter, a moderate herbaceous understory cover. Overstory canopy trees and midstory shrubs, situated near an agricultural landscape, can provide potential roosting and nesting habitat for visiting and residential raptors and smaller migratory birds. This area can provide a variety of wildlife habitat features such as cover, forage and nesting habitat, and acts as a movement corridor for various mammals, raptors, and migratory birds. Some local wildlife species that may use this habitat within the study area includes coyote (*Canis latrans*), red fox (*Vulpes vulpes*), rabbit (*Lepus sp*.), cottontail (*Sylvilagus sp.*), raccoon (*Procyon lotor*), black tailed prairie dog (*Cynomys ludovicianus*), white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), deer mouse (*Peromyscus maniculatus*), meadow vole (*Microtus pennsylvanicus*), red-winged blackbird (*Agelaius phoeniceus*), mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferous*), western meadowlark (*Sturnella neglecta*), barn owl (*Tyto alba*), hawks (*Buteo sp*.), and osprey (*Pandion haliaetus*).

The following provides key items identified as part of the Threatened and Endangered Species Screening Report:

- One primary vegetation community exists within the study area and is comprised of Cultivated Cropland. Historic and current land use for agricultural production has led to degradation and limited the development of native vegetation community.
- Generally, there are features within the study area and the surrounding area that provide general habitat for local songbirds, raptors, and small to mid-size mammals. However, the majority of the

habitat within the study area is classified as Cultivated Cropland which is somewhat degraded from a wildlife perspective by historic and current land use practices.

- Based upon literature review and field evaluation of the study area, ERC has determined that some migratory birds likely utilize the study area. These birds are protected under the MBTA, and killing or possession of these birds is prohibited. Generally, the active nesting season for most migratory birds in this region of Colorado occurs between April 1 and August 31. Construction activities that may occur within the study area that remove vegetation during the active nesting season should first ensure that active nests are not disturbed.
- Raptor nest sites are further protected by the CPW. The CPW has established recommended buffer zones and seasonal activity restrictions for a variety of Colorado raptors. While no active nests were observed and no CPW mapped buffer zones are located within the study area (CPW 2016), raptors could potentially establish nesting in the vicinity of the study area. Future land use changes should ensure that no active raptor nest sites have established generally (depending on species) within a ½ mile of the study area.
- No federally listed threatened and endangered species and/or habitat protected under the ESA were identified within the study area. The vegetation communities and features within the study area were investigated as potential habitat for federally listed species. Potential threatened and endangered species habitat was found to lack one or more habitat components critical for the federally listed species likely to occur in the area. Furthermore, connectivity to known populations is limited due to geographic, hydrologic, and other habitat constraints. No individuals or habitat for federally listed threatened and endangered species would likely be impacted by any future development.
- Any future project which may be water related or determined to be a water depletion to the South Platte River Basin may potentially be considered an adverse effect to water depletion species. The specific details of a future project must be reviewed to determine water depletion status and compliance with the ESA.
- No State listed threatened or endangered species and/or habitat protected under CPW under Colorado Statute 33 were identified within the study area. The vegetation communities within the study area were investigated as potential habitat for state listed species. Potential threatened and endangered species habitat was found to lack one or more habitat components critical for the state listed species likely to occur in the area. Furthermore, connectivity to known populations was limited due to geographic, hydrologic, and other habitat constraints. No other individuals or habitat for state listed threatened and endangered species would likely be impacted by any future development.

2.4 NATURAL AREAS IDENTIFIED IN THE CITY OF LOVELAND NATURAL AREAS SITES REPORT (2008)

The City of Loveland along with several consultants issued a report in July 2008 titled *In the Nature of Things: City of Loveland Natural Areas Sites* (City of Loveland 2008) that identifies natural areas in and around Loveland. Natural areas are defined as undeveloped lands containing potential natural values such as wildlife habitat, plant diversity, and wetlands. ERC reviewed the report and associated mapping to determine if the study area or the vicinity is located within or adjacent to any of these designated natural areas. The results are summarized below.

- The study area and immediate vicinity are not located within any of the mapped natural areas (City of Loveland 2008).

- The closest mapped natural area is Site 14 – Uplands/Wetlands E. of CR 9E, located approximately 0.25 miles south of the study area. Site 14 contains a diversity of grasses and forbs. It also contains several large trees which, in combination with adjacent grass/forb areas, create a good hunting area for raptors. Some of the forested areas contain a dense shrub understory which provides good overall songbird habitat and cover habitat for mammals. The wetlands on site consist, primarily, of a cattail drainage. Although the monoculture of cattails is rated low in regard to wildlife habitat, cattail stands have moderate to high potential for water quality improvement. This site contains a diversity of plant species as well as structural diversity that is not found in surrounding agricultural lands or adjacent sites. Consequently, the site likely functions in part as a wildlife movement corridor (City of Loveland 2008).
- The study area is separated from Site 14 by a railroad ROW, roadways, fences, and residential development, limiting wildlife movement corridors between the study area and Site 14.
- Site 14 is not located within the vicinity of the study area therefore is not depicted on the Site Inventory Map (**Figure 3**).

2.5 PHYSICAL LINKAGES TO OTHER NATURAL AREAS OR OPEN SPACES

No significant natural areas or open spaces are located within the study area or adjoining the study area. Farmer's Ditch, a man-made irrigation ditch, is located outside the study area to the north. Farmer's ditch may be considered a physical linkage to other natural areas such as downstream wetlands therefore is depicted on the Site Inventory Map (**Figure 3**). No disturbances are proposed to Farmer's Ditch. Therefore, any physical linkages to other natural areas or open spaces will not be impacted by proposed development within the study area.

3.0 ASSESSMENT OF POTENTIAL IMPACTS OF PROPOSED DEVELOPMENT

No specific development plan has been reviewed by ERC as part of this report. Based on review of City of Loveland ESAR criteria the limited amount of mature trees within the northeast portion of the study area could potentially qualify as a mature stand of vegetation. This is the only feature within the study area that may be considered an "environmentally sensitive area" per Loveland ESAR. The nearby Farmer's Ditch may also qualify as an "environmentally sensitive area" however, the Ditch is located outside of the study area and no disturbances are expected to occur outside of the study area as part of the proposed development. The location of the stand of mature trees and Farmer's Ditch are depicted in **Figure 3**. No other "environmentally sensitive areas" occur within the study area or within the vicinity of the study area.

4.0 RECOMMENDATION: PROTECTION MEASURES, MITIGATION, AND ENHANCEMENT

Mature trees exist within the study area and may be considered "environmentally sensitive areas". Removal of these trees for future development should be avoided to the maximum extent practicable to maintain natural characteristics and reduce adverse environmental effects from future development in the area. All landscaping associated with the proposed development should be designed to utilize native species of trees, shrubs, and herbaceous vegetation.

No impacts are proposed to Farmer's Ditch as it is located outside of the study area. A 50 foot ROW exists between the ditch and the study area boundary which will not be developed and would serve as a buffer along this feature. Therefore any future development should not impact ditch. No mitigation measures or enhancements are proposed for impacts to "environmentally sensitive areas" at this time, as no "environmentally sensitive areas" are anticipated to be impacted by the proposed development.

No wetlands, streams, or specific wildlife habitat is located within the study area. Therefore, no specific clearances from the CPW and/or US Army Corps of Engineers Section 404 permit are required for the proposed development.

5.0 SUMMARY

ERC has prepared this report in compliance with the City of Loveland Environmentally Sensitive Areas Report criteria for the Pfieff Property. This report is intended as a screening to identify environmentally sensitive areas within the study area and the vicinity. The following provides a summary of findings specific to the study area and the vicinity of the study area.

1. **Mature stands of vegetation** – There are few eastern cottonwood and Norway spruce trees located in the northeast corner of the study area that could be considered an environmentally sensitive are by the City of Loveland. Removal of these trees for future development should be avoided to the maximum extent practicable to maintain natural characteristics and reduce adverse environmental effects from future development in the area.

2. **Jurisdictional (USACE) or non-jurisdictional wetlands** – The study area does not contain any jurisdictional or non-jurisdictional wetlands. A US Army Corps of Engineers Section 404 permit is not required for proposed development within the study area.

3. **Wildlife habitat areas and corridors** – Habitat within the study area is somewhat degraded and of lower ecological value from a wildlife perspective due to historic and current land use for agricultural production. No wildlife migration corridors are mapped by the CPW within the study area or within the vicinity of the study area (CPW 2016). No federally listed threatened and endangered species and/or habitat protected under the ESA were identified within the study area. No State listed threatened or endangered species and/or habitat protected under CPW under Colorado Statute 33 were identified within the study area (ERC 2016b). No specific clearances from the USFWS and/or CPW are required for proposed development within the study area.

4. **Natural Areas identified in the City of Loveland Natural Areas Site Report (2008)** – The study area and immediate vicinity are not located within any of the mapped natural areas (City of Loveland 2008). Site 14 is the closest mapped natural area, located 0.25 miles south of the study area. Site 14 and the study area are separated by a variety of features that limit wildlife movement corridors between Site 14 and the study area.

5. **Physical linkages to other natural areas or open spaces** – Farmer's Ditch, located outside the study area to the north, may be considered a physical linkage to other natural areas such as downstream wetlands. However, no disturbances are proposed to Farmer's Ditch. Refer to **Figure 3**.

6. **Existing drainage patterns and floodway and fringe boundaries** – There is no mapped FEMA floodway within the study area or vicinity (City of Loveland 2017).

7. **Irrigation canals, ditches, and watercourses** – The study area does not contain any canals, ditches, or watercourses. Farmer's Ditch, a man-made irrigation ditch, is located outside the study area to the north. No disturbances are proposed to Farmer's Ditch. Refer to **Figure 3**.

8. **Existing slopes over 20%** - The study area does not contain any existing slopes over 20% (NRCS 2017). Refer to **Figure 3.**

9. **Soils having a high water table or being highly erodible** – The study area does not contain any soils having a high water table or being highly erodible (NRCS 2017). Refer to **Figure 3.**

10. **Land formerly used for landfill operations or hazardous industrial use** – Per the Phase 1 ESA (ERC 2016) the study area does not appear to have been formerly used for landfill operations or hazardous industrial use.

11. **Fault areas, aquifer discharge areas** – The study area is not located in a fault area (USGS 2017a) or aquifer discharge area (USGS 2017b).

12. **Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))** – No lakes or ditches exist within the study area therefore no operating high water line occurs within the study area. Farmer's Ditch, a man-made irrigation ditch, is located outside the study area to the north. No disturbances are proposed to Farmer's Ditch and a 50 foot buffer is located between the ditch and the study area boundary.

13. **Stream corridors or estuaries** – There are no stream corridors or estuaries located within the study area or vicinity. Refer to **Figure 3.**

14. **Land incapable of meeting percolation requirements –** The study area does not contain land incapable of meeting percolation requirements (NRCS 2017).

This report has been prepared by:

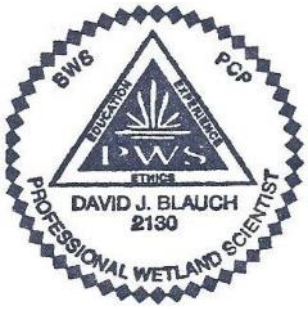
ECOLOGICAL RESOURCE CONSULTANTS, INC.

Kyle Medash, Ecologist, WPIT

(303) 679-4820 x105

kyle@erccolorado.net

Reviewed and approved by:



David J. Blauch, V.P., Senior Ecologist (PWS # 2130)

6.0 REFERENCES

Bailey, R. G. 1976. Ecoregions of the United States, US Forest Service, Ogden, Utah. (Map only; scale 1:7,5000,000.)

Cederstrand, Joel R.; Becker, Mark F. 1999. Digital map of geologic faults for the High Plains Aquifer in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming: USGS Open-File Report: 99-261 Data Set

City of Loveland. 2017. GIS and Mapping Information. Available online at: http://www.ci.loveland.co.us/departments/information-technology/gis-and-mapping/map-gallery

City of Loveland Current Planning Division. Environmentally Sensitive Areas Report. Updated June 2016. Available online at: http://www.cityofloveland.org/Home/ShowDocument?id=14865

City of Loveland Natural Areas Sites. *In the Nature of Things: City of Loveland Natural Areas Sites.* An update to the citizens and officials of Loveland, Colorado on the City's most significant natural areas. Cedar Creek Associates, Inc. July 2008.

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow, and J. Teague. 2003. Ecological Systems of the United States: A Working Classification of U.S. Terrestrial Systems. NatureServe, Arlington, Virginia.

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

ITIS. Integrated Taxonomic Information System. 2014. The Integrated Taxonomic Information System. Available online at: www.itis.gov/.

Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X

NatureServe 2016. NatureServe Explorer Central Database. Ecological Association Comprehensive Report. Available online at: http://explorer.natureserve.org. December.

Qi, S.L., 2010, Digital map of the aquifer boundary of the High Plains aquifer in parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming: U.S. Geological Survey Data Series 543

US Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter, Subject: Ordinary High Water Mark. RGL 05-05. Department of the Army, Washington, D.C. http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf.

_____. 2010. USACE. 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-10-1. Vicksburg, MS: U.S. Army Engineer Research and Development Center. Available online at: http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/gp_supp.pdf

_____. 2016. Great Plains Regional Wetland Plant List, version 1. Available online at: http://rsgisias.crrel.usace.army.mil/nwpl_static/data/DOC/lists_2016/Regions/pdf/reg_GP_2016v1.pdf

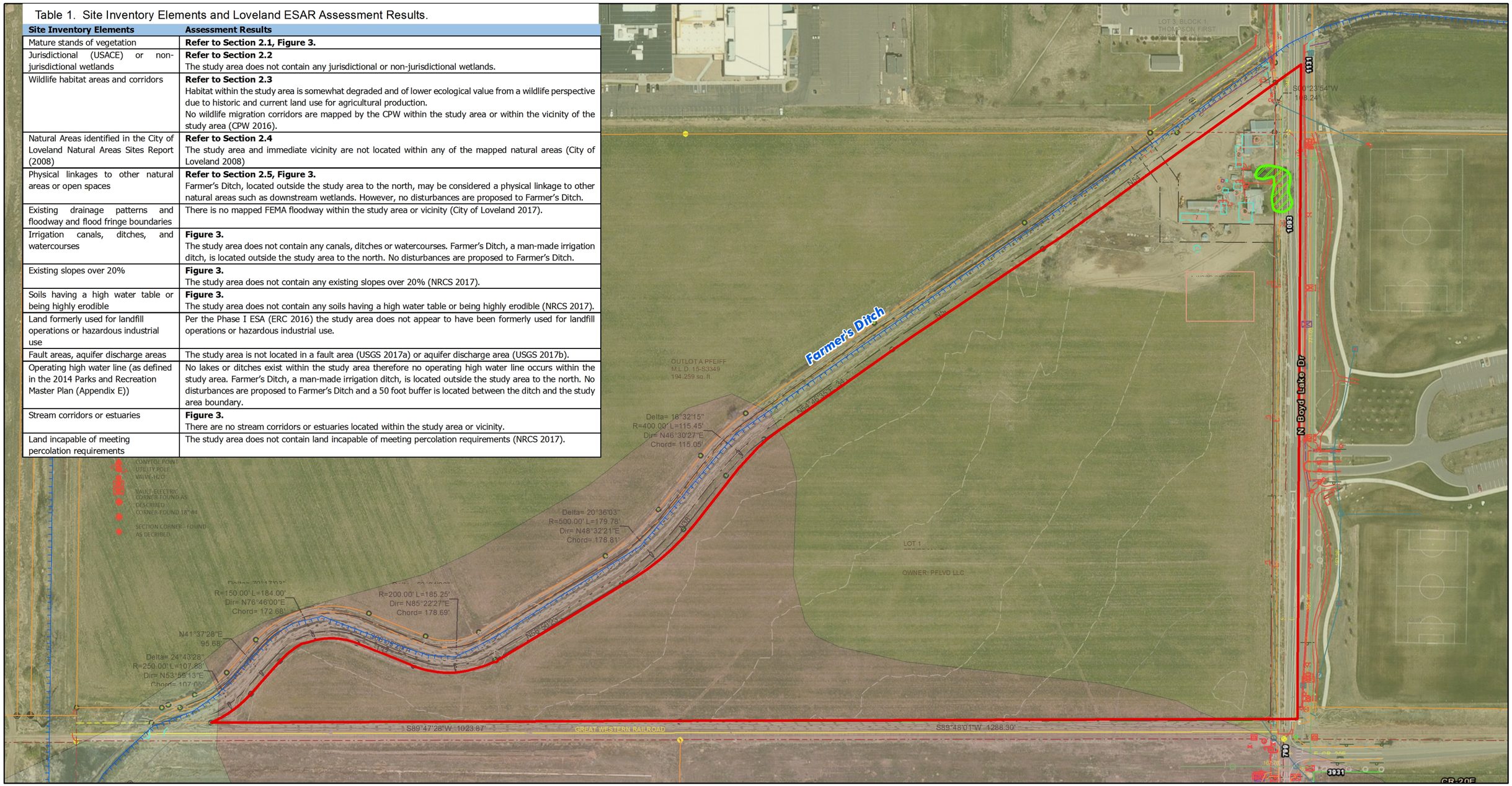
US Department of Agriculture Natural Resources Conservation Service (NRCS). 2017. Web Soil Survey. Available online at: http://websoilsurvey.sc.egov.usda.gov/.

US Geological Survey (USGS). 2017a. Quaternary Faults GIS Map. Available online at https://earthquake.usgs.gov/hazards/qfaults/map/#qfaults.

US Geological Survey (USGS). 2017b. Aquifers: Map of the Principal Aquifers of the United

Table 1. Site Inventory Elements and Loveland ESAR Assessment Results.

Site Inventory Elements	Assessment Results
Mature stands of vegetation	**Refer to Section 2.1, Figure 3.**
Jurisdictional (USACE) or non-jurisdictional wetlands	**Refer to Section 2.2** The study area does not contain any jurisdictional or non-jurisdictional wetlands.
Wildlife habitat areas and corridors	**Refer to Section 2.3** Habitat within the study area is somewhat degraded and of lower ecological value from a wildlife perspective due to historic and current land use for agricultural production. No wildlife migration corridors are mapped by the CPW within the study area or within the vicinity of the study area (CPW 2016).
Natural Areas identified in the City of Loveland Natural Areas Sites Report (2008)	**Refer to Section 2.4** The study area and immediate vicinity are not located within any of the mapped natural areas (City of Loveland 2008)
Physical linkages to other natural areas or open spaces	**Refer to Section 2.5, Figure 3.** Farmer's Ditch, located outside the study area to the north, may be considered a physical linkage to other natural areas such as downstream wetlands. However, no disturbances are proposed to Farmer's Ditch.
Existing drainage patterns and floodway and flood fringe boundaries	There is no mapped FEMA floodway within the study area or vicinity (City of Loveland 2017).
Irrigation canals, ditches, and watercourses	**Figure 3.** The study area does not contain any canals, ditches or watercourses. Farmer's Ditch, a man-made irrigation ditch, is located outside the study area to the north. No disturbances are proposed to Farmer's Ditch.
Existing slopes over 20%	**Figure 3.** The study area does not contain any existing slopes over 20% (NRCS 2017).
Soils having a high water table or being highly erodible	**Figure 3.** The study area does not contain any soils having a high water table or being highly erodible (NRCS 2017).
Land formerly used for landfill operations or hazardous industrial use	Per the Phase I ESA (ERC 2016) the study area does not appear to have been formerly used for landfill operations or hazardous industrial use.
Fault areas, aquifer discharge areas	The study area is not located in a fault area (USGS 2017a) or aquifer discharge area (USGS 2017b).
Operating high water line (as defined in the 2014 Parks and Recreation Master Plan (Appendix E))	No lakes or ditches exist within the study area therefore no operating high water line occurs within the study area. Farmer's Ditch, a man-made irrigation ditch, is located outside the study area to the north. No disturbances are proposed to Farmer's Ditch and a 50 foot buffer is located between the ditch and the study area boundary.
Stream corridors or estuaries	**Figure 3.** There are no stream corridors or estuaries located within the study area or vicinity.
Land incapable of meeting percolation requirements	The study area does not contain land incapable of meeting percolation requirements (NRCS 2017).



Prepared By:

ERC

5672 Juhls Drive
Boulder, CO 80301
(303) 679-4820

ERC # 175-1604

Legend

- Study Area
- Irrigation Ditch
- Mature Trees

Soil Types (NRCS 2017)

- Nunn clay loam, 0 to 1 percent slopes
- Nunn clay loam, 1 to 3 percent slopes

FIGURE 3. SITE INVENTORY MAP

PFIEFF PROPERTY
LARIMER COUNTY, COLORADO

1 inch = 200 feet

0 200 400 Feet