Appendix E. Noxious Weed Management Plan

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This Noxious Weed Management Plan (Plan) has been prepared to support the US 34 improvement project between US 287 and LCR 3 and to comply with procedures outlined in Federal Highway Administration (FHWA) Guidance on Invasive Species and Executive Order 13112 (1999); the Colorado Department of Transportation's (CDOT) Integrated Noxious Weed Management Plan (INWMP) 1999–2000; and other federal, state, and local regulations. As outlined in FHWA guidelines, this Plan:

- Identifies the noxious weeds present in the project area
- Outlines measures to prevent, control, and monitor weed spread
- Makes recommendations for reclamation of disturbed areas

The intent of the Plan is to address the elimination or control of existing noxious weed species and to prevent the introduction and spread of existing weeds as a result of project implementation.

E.1 Weed Species Present

E.1.1 Colorado Noxious Weed List

The State of Colorado list of plant species that are designated as noxious weeds shall be designated by rule and shall be managed under the provisions of the Colorado Noxious Weed Act (C.R.S. 35-.5.5-101). The designated noxious weed list in the State of Colorado is broken down into three categories:

- **List A species.** List A species are rare noxious weeds that are subject to eradication wherever detected statewide in order to protect neighboring lands and the State as a whole.
- **List B species.** List B species are those with discrete statewide distributions that are subject to eradication, containment, or suppression in portions of the State designated by the commissioner in order to stop the continued spread of these species.
- **List C species.** List C species are those that are widespread and well established for which control is recommended but not required by the State, although local governing bodies may require management.

E.1.2 Findings

Two species of noxious weeds, Canada thistle (*Cirsium arvense*) and field bindweed (*Convolvulus arvensis*), were found in the project area. Canada thistle is listed on the "B" list of noxious weeds for Colorado, and field bindweed is listed on the "C" list. Patches of these weeds were scattered along the US 34 right-of-way.

Exhibit E-1 illustrates the locations of two noxious weed species identified along US 34 during the survey conducted by CDOT in July 2006.

E.1.2.1 Canada Thistle (*Cirsium arvense*)

Canada thistle is one of the most feared noxious weeds in the United States because it can infest many land types, from roadsides, ditch banks, riparian zones, pastures, irrigated cropland, to the most productive dry cropland. Canada thistle is the most widespread noxious weed in Weld County.

Description

Canada thistle is a deep-rooted perennial that spreads by seeds and aggressive creeping, horizontal root stocks (rhizomes). The seeds have a tuft of hairs attached to their tips that greatly assists in dispersal by wind. Stems are 1 to 4 feet tall, erect, rigid, and only slightly hairy. Leaves are alternate on the stems, oblong or lance-shaped, and deeply cut into spiny-tipped, irregular lobes. They are a bright green and only slightly hairy on the undersurface. Flowers are small, bristly clusters (but bracts are spineless) varying in color from light lavender to a bright rose-purple. The heads are about one-half inch across, tubular-shaped, and arranged on a flat-top inflorescence.

Phenology

Canada thistle develops from seeds or vegetative buds in its root systems. Horizontal roots may extend 15 feet or more, and vertical roots may grow 6 to 15 feet deep. Canada thistle emerges from its root system in middle to late spring (late April through May) and forms rosettes.

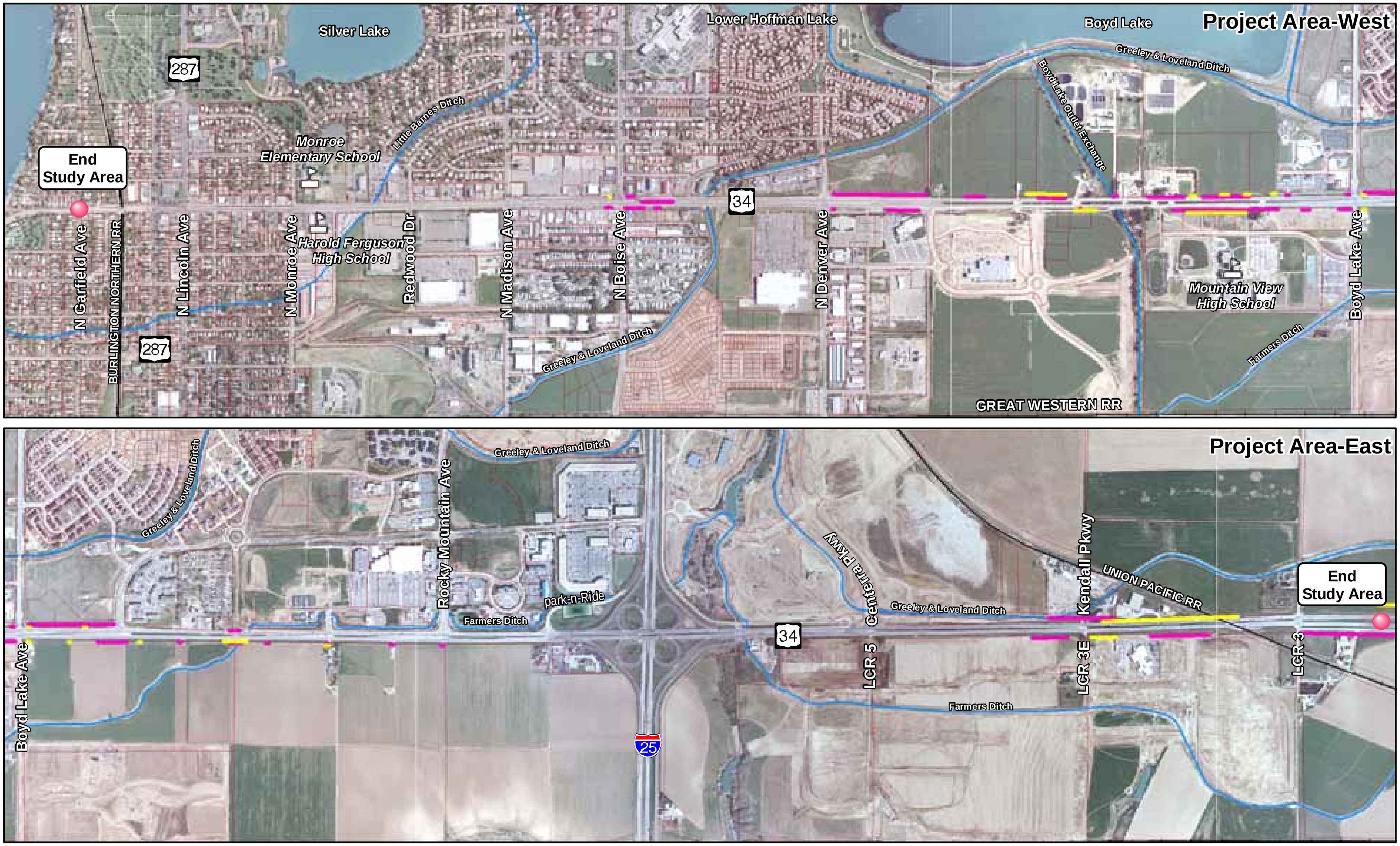
E.1.2.2 Field Bindweed (*Convolvulus arvensis*)

Description

Field bindweed is a long-taprooted herbaceous forb with prostate twining stems that typically grows in dense mats in fields or climbs along fence lines (Whitson, et al.1996; CNAP 2000). While favored by some wildlife species, it is considered one of the world's worst weeds and is difficult to control due it its lengthy taproots (FEIS 1996).

Phenology

Flowers occur from June to September and occasionally to the first fall frost. Seeds mature within two weeks after pollination during hot summer days. Germination can occur in the fall or spring, over a wide range or temperature (FEIS 1996). Field bindweed can reproduce both by seed and vegetatively.

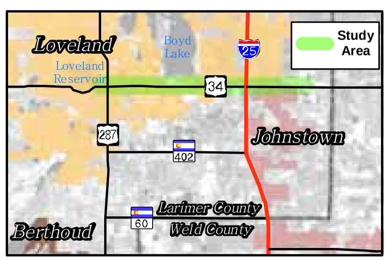

Project Area-West
Silver Lake
Lower Hoffman Lake
Boyd Lake
Greeley & Loveland Ditch
Boyd Lake Outlet Exchange
Little Barnes Ditch
Monroe Elementary School
Harold Ferguson High School
Mountain View High School
End Study Area
N Garfield Ave
BURLINGTON NORTHERN RR
N Lincoln Ave
N Monroe Ave
Redwood Dr
N Madison Ave
N Boise Ave
N Denver Ave
Boyd Lake Ave
287
34
Farmers Ditch
GREAT WESTERN RR
Project Area-East
Boyd Lake Ave
Greeley & Loveland Ditch
Rocky Mountain Ave
Farmers Ditch
park-n-Ride
25
34
Centerra Pkwy
LCR 5
Kendall Pkwy
LCR 3E
UNION PACIFIC RR
LCR 3
End Study Area

Legend

- RTD park-n-Ride
- Railroads
- Canals & Ditches
- Schools
- Lakes
- Parcels

Noxious Weeds

- Field Bindweed (*Convolvalus Arvensis*)
- Canada Thistle (*Cirsium Arvense*)



0 883 1,766 Feet

1 Inch = 1,766 Feet Or 1:21,200

Source: 2005 aerial photography provided by City of Loveland. Parks, schools, parcels, canals and ditches, lakes, roads, and railroads provided by City of Loveland. Noxious weed information provided by CDOT.

Map created February 23, 2007.

US 34 Environmental Assessment
US 287 to Larimer County Road No. 3

Exhibit E-1

Noxious Weed Locations Identified In US 34 Corridor CDOT July 2006, Survey

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E.2 Integrated Weed Management

Successful weed management combines the most effective means of control for a noxious weed species and typically uses two or more methods of control whether mechanical, cultural, chemical, or biological (Beck 2001). Regardless of the degree of infestation, effective control depends on a sound monitoring program used consistently over multiple growing seasons. A summary of integrated weed management practices for each of the major species in the project area follows.

E.2.1 Canada Thistle (*Cirsium arvense*)

E.2.1.1 Control

The key to successful control is the development of a sound management plan. Canada thistle is best controlled by a combination of monthly mowing and herbicides (clopyralid, 2,4-D, or a combination of these). Herbicides are best applied in the late spring as plants are entering the bud stage or in the fall when roots are actively growing. Herbicides are ineffective under dry soil conditions. Treatment should be repeated for two or more years (CNAP 2000).

Chemical. The following herbicides have been shown to provide good control: 2,4 D, Tordon, Curtail, Clarity, Tordon 22K, and Banvel. Areas can also be spot treated with glyphosate in mid-July during active growing or bud stage. Herbicides are to be sprayed at the rate recommended by the manufacturer's label. In addition, only herbicides rated to be used in water shall be used where wetlands, waters of the US, and groundwater table are present.

Mechanical. Hand-pull when it first appears.

Biological/Cultural. Tortoise beetle, stem weevil, and stem gallfly (*Cassida rubiginosa, Coutorhynucus litura,* and *Urophora cardui*) larvae are effective insects that have been used for biological control against Canada thistle. In addition, planting competing grasses or grazing goats can also be used as biological/cultural control.

E.2.1.2 Timing of Action

Apply herbicide from rosette to bud stage (follow up with a fall application if needed); only herbicides rated to used in water will be used where wetlands, waters of the US, and groundwater table are present.

E.2.1.3 Extent of Infestation

More than 10 percent of Canada thistle is primarily located adjacent to a natural wetland/drainage area along US 34.

E.2.1.4 Weed List

- Colorado List B
- Larimer County
- CDOT Statewide Maintenance List

E.2.2 Field Bindweed (*Convolvulus arvensis*

E.2.2.1 Control

Field bindweed can be successfully controlled using a combination of biological (fungal pathogens and insects) and herbicidal methods.

Chemical. Applications of Clarity, Tordon 22K, Roundup Pro, Paramount, and 2,4-D. Herbicides should be applied during early flowering and when soil moisture is low. Herbicide can also be used in the fall just before a hard freeze. Repeated applications are recommended (CNAP 2000). Herbicides are to be sprayed at the rate recommended by the manufacturer's label.

Mechanical. Hand-pull when it first appears.

Biological/Cultural. The field bindweed mite (*Aceria malherbae*), a microscopic mite from southern Europe, is used in the biological control of field bindweed. This mite can aid in the suppression or control of field bindweed. Cultural control techniques typically include planting competing grasses.

E.2.2.2 Timing of Action

Early cool season grass planting will out-compete bindweed at early stages of growth. Mites are typically applied in the summer. Only herbicides rated to be used in water will be used where wetlands, waters of the US, and groundwater table are present.

E.2.2.3 Extent of Infestation

More than 40 percent of field bindweed is located primarily along the right-of-way, in empty fields, and scattered throughout the median along US 34.

E.2.2.4 Weed List

- Colorado List C
- CDOT Statewide Maintenance List

E.3 Recommendations and Commitments

The degree of infestation by noxious weeds in the project area is relatively light and manageable through integrated weed management, which includes prevention of additional infestations during construction. Prevention measures will include cleaning equipment before entering the construction site to prevent the spread of seeds or roots by wind, water, or accidental transport on construction vehicles.

Strict topsoil management in the project area is important to prevent further infestation. It is recommended that no topsoil will be imported to the project site.

Noxious weed management and monitoring in the project area coincidental with land clearing and impacts associated with roadway construction will greatly enhance the existing conditions associated with the area. Reseeding efforts (with native species) will be phased throughout construction.

CDOT best management practices (BMPs) will be used for reclamation and revegetation. CDOT will reclaim areas disturbed for construction, staging, and storage activities. BMPs will include the following:

- Equipment will be cleaned before entering the construction site to prevent weed spread by wind, water, or accidental transport on construction vehicles.
- Strict topsoil management in the project area is important to prevent further infestation. No topsoil will be imported to the project site.
- Topsoil will be removed from site if it is heavily infested with noxious weeds.
- In accordance with the Colorado Weed-Forage Certification Act, mulches or erosion bales used for erosion control purposes will be certified weed-free.
- All seed mixes, soil, and nursery material used for reclamation will be free of noxious weed seeds, roots, and rhizomes.
- The project area will be surveyed for noxious weeds during design and throughout the construction phase to identify and treat weeds.
- Reseeding efforts will consist of native grasses and forbs. Seeding should be phased throughout construction.
- No fertilizer will be used on site.
- Herbicides shall be applied by use of wicks or sponges to avoid off-target injury.
- Broadcast herbicide spraying will be approved only through written consent of the Engineer.
- All herbicides will be applied in accordance to label instructions. In addition, only herbicides rated to be used in water will be used where wetlands, water of the US, and groundwater table are present.

E.4 References

Beck, K.G. 2001. Natural Resources Online Fact Sheets. No.3.105. Range and Pasture Weed Management. Colorado State University Cooperative Extension. http://www.ext.colostate.edu/pubs/natres/03105.htm. Accessed April 9, 2002.

CNAP. 2000. Creating an Integrated Weed Management Plan: A Handbook for Owners and Managers of Lands with Natural Values. Colorado Natural Areas Program, Colorado State Parks, Colorado Department of Natural Resources; and Division of Plant Industry, Colorado Department of Agriculture. Denver, Colorado. 349 pages.

FHWA 1999. Federal Highway Administration Guidance on Invasive Species. August 10, 1999. http://www.fhwa.dot.gov/environment/inve_guid.htm. Accessed April 9, 2002.

FEIS. 1996. Fire Effects Information System. Prescribed Fire and Fire Effects Research Unit, Rocky Mountain Research Station. US Forest Service. http://www.fs.fed.us/database/feis/plants/forb/kocsco/value_and_use.html. Accessed June 21, 2006.

Whitson, T.D. (Ed.) et al. 1996. Weeds of the West. Western Society of Weed Science in cooperation with Cooperative Extension Services, University of Wyoming. Larimer, Wyoming. 360 pages.

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