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4.12 *Vegetation and Wildlife*

This section describes vegetation and wildlife resources within the project area. Information for this section was gathered from three sources. First, resource management agencies were contacted for information regarding the general area. Agencies contacted include the U.S. Fish and Wildlife Service (USFWS), Colorado National Heritage Program (CNHP), and the Colorado Division of Wildlife (CDOW). Second, both published and unpublished literature was used to supplement the agencies' information. Third, site-specific surveys of the study area to assess vegetation communities and wildlife habitat were conducted between April and June 2004.

The information gathered was used to identify impacts to vegetation and wildlife resources and to develop mitigation measures for these impacts. Impact assessment and mitigation measures were based on applicable federal and state statutes including:

- Executive Order 13112 Invasive Species
- Colorado Noxious Weed Act
- Endangered Species Act

4.12.1 **Current Conditions**

The project area is located in the plains grassland ecosystem. However, because of the high level of human development within the project area, little of this ecosystem remains. Most of the project area contains a mixture of industrial and residential areas with parks scattered throughout the area. The South Platte River generally flows northward throughout the project area. Because of the urbanized nature of the project area, wildlife habitat and wildlife are primarily limited to the South Platte River corridor.

Information on general wildlife habitat and species occurrences in the project area was provided by CDOW (CDOW, 2004; NDIS, 2004). Information about threatened and endangered species in the area was provided by the USFWS (USFWS, 2004a).

4.12.1.1 **VEGETATION**

Vegetative resources were categorized and mapped in the field by a qualified and experienced botanist. The botanist categorized vegetation in the study area into vegetation types appropriate for this analysis using best professional judgment. Five vegetation types were identified in the project area: industrial, urban landscape, xeric landscape, mixed grasslands, and riparian (i.e.; along rivers and streams). Locations of these vegetation types are shown on **Figures 4.12-1, 4.12-2, and 4.12-3** for the northern, central, and southern portions, of the project area, respectively. A discussion of each vegetation type is provided below. Humans have influenced all of these vegetation types to one degree or another, from the mostly disturbed, weedy industrial areas to the woody riparian banks of the South Platte River dominated by non-native vegetation.



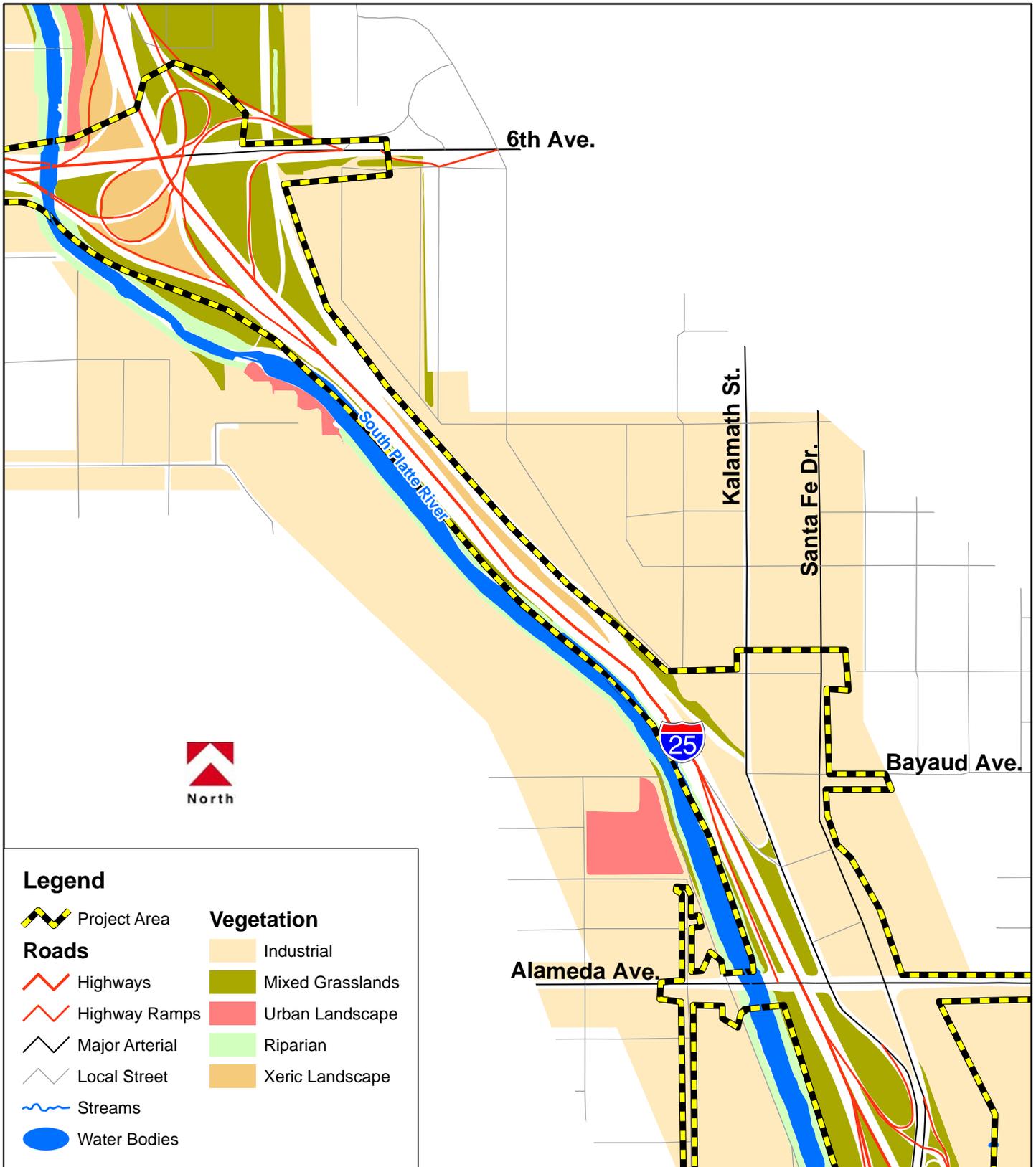
Valley Highway, 02-069, 10/27/2004

0 375 750 1,500
 Feet

Vegetation and Wildlife-Northern Project Area



Figure 4.12-1

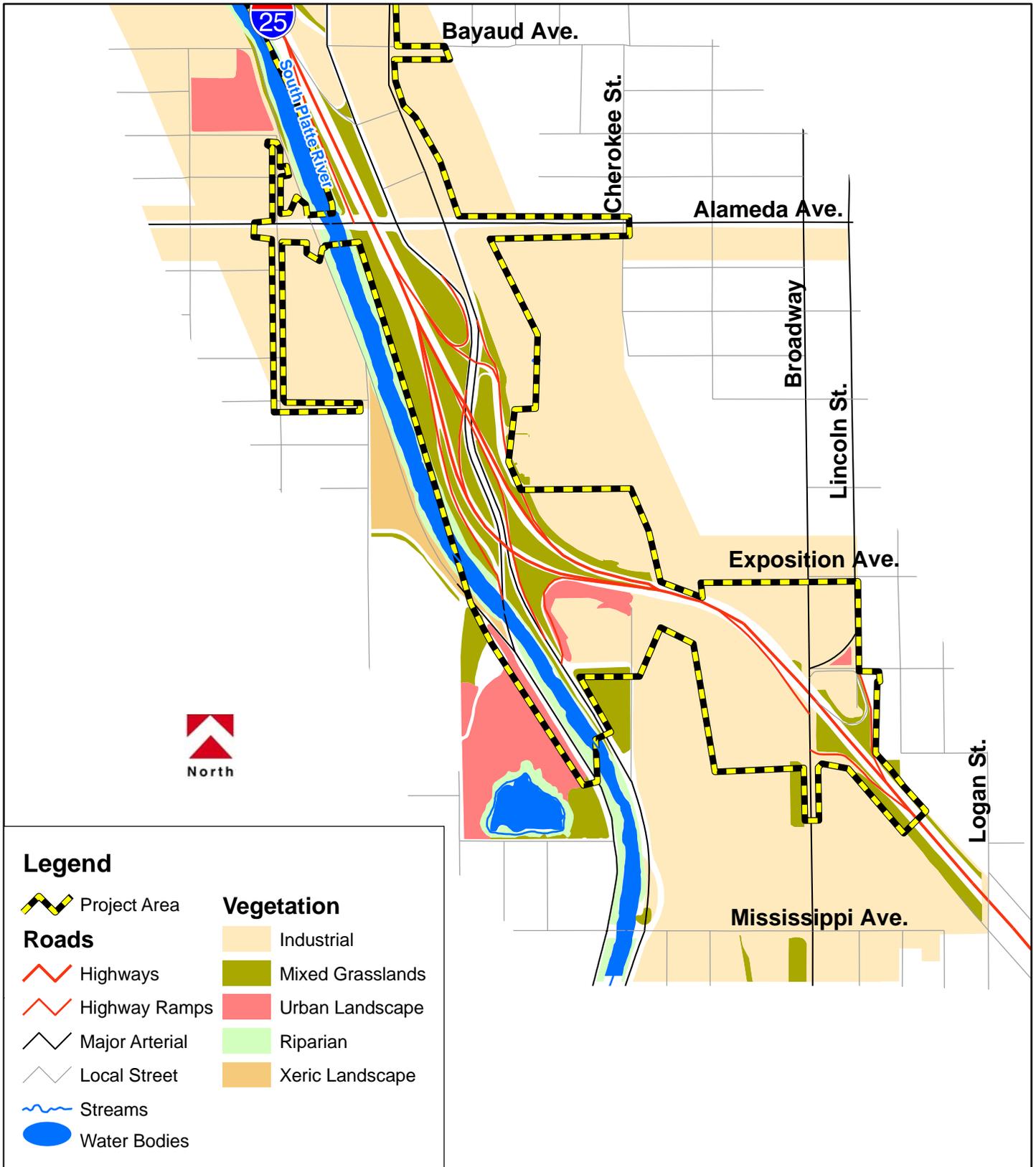


Valley Highway, 02-069, 10/27/2004

0 375 750 1,500
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Vegetation and Wildlife-Central Project Area

Figure 4.12-2



Valley Highway, 02-069, 10/27/2004

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Feet

Vegetation and Wildlife-Southern Project Area

Figure 4.12-3

Industrial

Railroads, factories, warehouses, and other industrial sites occur within the project area. Surrounding the buildings and other structures are sparsely vegetated weed patches dominated by kochia (*Kochia scoparium*), cheatgrass (*Bromus tectorum*), and other annual weeds. Small patches of irrigated Kentucky bluegrass (*Poa pratensis*) lawn, as well as planted ornamental trees and shrubs, are also scattered around the buildings.

Urban Landscape

This vegetation type mostly occurs in urban parks and neighborhoods consisting of mostly single-family houses. This maintained, irrigated landscape is dominated by Kentucky bluegrass lawns and ball fields and widely spaced ornamental trees such as Siberian elm (*Ulmus pumilus*).

Xeric Landscape

Some of the highway right-of-way areas and urban parks have been planted with xeric (drought-tolerant) species. These areas are dominated by native grasses, such as blue grama (*Bouteloua gracilis*) and western wheatgrass (*Pascopyrum smithii*), which are planted in formal patterns within the area. Some of these areas include limited irrigation for trees and shrubs. Irrigated areas are located at the 6th Avenue/I-25 interchange. Fully landscaped areas around this interchange include the western half, the southeast portion, and areas north of the interchange. Non-native grasses, such as smooth brome (*Bromus inermis*) and weeds such as kochia and cheatgrass also occur within this vegetation type.

Mixed Grasslands

Most of the I-25 and US 6 right-of-way areas and areas along other major roadways are covered with introduced pasture grasses such as smooth brome and crested wheatgrass (*Agropyron cristatum*). This vegetation type also occurs along the upper banks of the South Platte River and other areas throughout the project area. Annual weeds, such as kochia and cheatgrass, also occur in the area. The non-native Russian olive (*Elaeagnus angustifolia*) and other native and non-native trees are scattered throughout the grasslands. The native shrub, rubber rabbitbrush (*Chrysothamnus nauseosus*), is common along the upper banks of the South Platte River.

Riparian

Riparian vegetation occurs along the banks of the South Platte River and other waterways within the project area. Non-native trees, such as Siberian elm and Russian olive, dominate the riparian areas. Native trees, such as plains cottonwoods (*Populus deltoids*) and shrubs, such as snowberry (*Symphoricarpos occidentalis*) and sandbar willow (*Salix exigua*), are also common. Mostly introduced pasture grasses, such as smooth brome, dominate the understory (or vegetation below trees) on the upper banks. In some areas, the lower banks are dominated wetland vegetation such as reed canarygrass (*Phalaris arundinacea*) and cattails (*Typha latifolia*). Wetlands also occur in small, scattered patches around ponds and in the smaller drainageways. Wetlands are described in more detail in **Section 4.11 Wetlands, Waters of the U.S., and Open Water**.

4.12.1.2 NOXIOUS WEEDS

Noxious weeds are non-native plant species that have been introduced into an environment with few, if any, natural biological controls. This gives them a competitive advantage in dominating and crowding out native plant species and can threaten the integrity of native plant communities. Noxious weeds are aggressive, spread rapidly, reproduce profusely, and resist control and management measures. Noxious weeds infestations can degrade wildlife habitat and forage for livestock, and are difficult and expensive to control once they are established (CNAP, 2000). Because of the adverse environmental effects of weeds, both the federal and state governments have issued regulation regarding noxious weeds, as described below.

Executive Order 13112 – Invasive Species

The purpose of *Executive Order 13112, Invasive Species*, is to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that result from invasive species. This order directs federal agencies (including FHWA) to prevent the introduction of invasive species, control and monitor invasive species, and restore native species and habitats that have been invaded (FHWA, 1999).

Colorado Noxious Weed Act

The Colorado Noxious Weed Act (effective May 3, 2004) states that all landowners must manage noxious weeds that may be damaging to adjacent landowners. Rules pertaining to administration of the Act include three lists of noxious weed species (Colorado Department of Agriculture, 2004a). The A List contains noxious weed species targeted for eradication within Colorado. If individuals or populations of A List species are found, the local governing body (in this case CDOT) must provide the State Weed Coordinator with mapping that includes information on location and density of the infestation. The B List contains species that the State of Colorado has targeted for control rather than eradication. The C List contains species for which the State will provide support and funding for local control efforts. In addition, most counties in Colorado, including the City and County of Denver have established its own list of targeted species, which may not be on the state lists.

Due to federal, state, and local laws, all CDOT projects are surveyed for state- and county-listed noxious weeds. Additionally, CDOT has its own list of noxious weeds for which it monitors and controls as part of its maintenance program (CDOT, 2000). If listed noxious weeds are identified within the project area, an integrated noxious weed management plan must be developed to manage weeds before, during, and after project construction and to prevent them from spreading. Weed management plans identify, map, and prioritize the targeted noxious weed species and provide recommended treatments for control.

A reconnaissance-level survey for noxious weeds on the Colorado A, B, and C lists; the CDOT maintenance list (CDOT, 2004c); and the City and County of Denver list (Colorado Department of Agriculture, 2004b) was conducted in May 2004 as part of this EIS. Nine listed species were found during the survey. No species on the A list were found. The species and the lists on which they are found are as follows:

- Diffuse knapweed (*Centaurea diffusa*) – State B, CDOT and the City and County of Denver Lists: Diffuse knapweed is scattered along the upper banks of the South Platte River and within the grasslands and industrial areas throughout the project area.
- Canada Thistle (*Cirsium arvensis*) – State B, CDOT and the City and County of Denver Lists: This noxious weed occurs in small to large patches along the South Platte River and other drainage ways and in moist areas scattered throughout the project area.
- Russian olive (*Elaeagnus angustifolia*) – State B, CDOT and the City and County of Denver Lists: This large thistle occurs in patches scattered around the South Platte River and other areas.
- Red-stem filaree (*Erodium cicutarium*) – State B List: This weed is very common in disturbed portions of industrial areas and mixed grasslands in the project area.
- Whitetop/hoary cress (*Cardaria draba*) – State B List: This weed occurs along the upper banks of the South Platte River.
- Downy brome (*Brome tectorum*) – State C Lists: Downy brome is common in disturbed portions of industrial areas and mixed grasslands in the project area.
- Poison hemlock (*Conium maculatum*) – State C List: Scattered pockets of poison hemlock are found along the South Platte River.
- Puncturevine (*Tribulus terrestris*) – State C List: Puncturevine is scattered along the South Platte River Greenway recreation trail.
- Common mullein (*Verbascum thapsus*) – State C List: Scattered individuals of common mullein are found on slopes leading to the South Platte River, generally in unmaintained areas.

More detailed noxious weed surveys and mapping (i.e; percent, coverage, dominance, etc.) will be performed during the preparation of the Integrated Weed Management Plan during the final design. The surveys and mapping will be performed at that time to ensure that the most up-to-date information is available for development of the Integrated Weed Management Plan and mitigation areas.

4.12.1.3 WILDLIFE

Many of the wildlife species that currently use the project area are primarily urban adapted and introduced species commonly associated with human development (Jones et al., 2003). Few studies of wildlife have been conducted in urban areas. The South Platte River corridor through Denver has received little scientific attention, and wildlife studies are limited. This area of the South Platte has been heavily impacted by development, industrialization, and recreation facilities, and as a result, the plant communities and associated wildlife communities have been altered. Even in the midst of this heavy urbanization, the South Platte River still provides habitat shelter, nesting, forage, denning, and breeding for many species of wildlife.

Wildlife habitats within the project area are correlated with vegetation communities. Because wildlife will use a variety of vegetation communities, several communities have been combined for the evaluation of wildlife habitat. Mixed and xeric grasslands have been combined into a single grassland habitat, and residential and urban landscape communities have been combined into an urban/residential landscape habitat. Wildlife habitats within the project area

include: aquatic/open water, riparian woodlands (including wetlands), grasslands, urban/residential landscapes, and industrial areas.

The aquatic/open water habitat provides habitat for fish [common carp (*Cyprinus carpio*), white sucker (*Catostomus commersoni*), fathead minnow (*Pimephales promelas*)], reptiles [snapping turtle (*Chelydra serpentina*), painted turtle (*Chrysemys picta*)], and a variety of waterfowl and shore birds. This habitat is more critical during the winter months as an open-water habitat for wintering or migrant waterfowl than during the summer. It is common to find Canada goose (*Branta Canadensis*), horned grebes (*Podiceps auritus*), double-crested cormorants (*Phalacrocorax auritus*), gadwalls (*Anas strepera*), green-wing teal (*Anas crecca*), northern shovelers (*Anas clypeata*), and American coots (*Fulica americana*) swimming in the South Platte River (Jones et al., 2003). Shore birds, such as killdeer (*Charadrius vociferous*), American avocets (*Recurvirostra americana*), and western sandpiper (*Calidris mauri*), are occasionally observed along the South Platte River (Jones et al., 2003).

The riparian habitat along the South Platte River provides the most diverse and productive habitat within the project area. Mammals found along the riparian corridor include eastern fox squirrels (*Sciurus niger*), cottontail rabbits (*Sylvilagus floridians*), common raccoon (*Procyon lotor*), striped skunks (*Mephitis mephitis*), red fox (*Vulpes vulpes*), domestic dogs and cats, and mule deer (*Odocoileus hemionus*). The corridor provides habitat for rodents such as deer mice (*Peromyscus maniculatus*), house mouse (*Mus musculus*), and meadow vole (*Microtus pennsylvanicus*). Studies conducted along the South Platte River through City and County of Denver found a relatively low diversity of rodents similar to that reported for other urban areas (Jones et al., 2003). Avian species found along the riparian corridor include: northern flicker (*Colaptes auratus*), America robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), lark sparrow (*Chondestes grammacus*), song sparrow (*Melospiza melodia*), great horned owl (*Bubo virginianus*), and the American goldfinch (*Carduelis tristis*).

Both native (blue grama) and non-native (smooth brome, cheatgrass, and crested wheatgrass) plant species dominate the grassland habitat. This area primarily provides a habitat for fossorial (ground-dwelling) rodents such as the deer mouse and voles and foraging areas for wildlife that breed or winter in the adjacent riparian or aquatic habitats, such as geese, red fox, and northern flicker.

4.12.1.4 WILDLIFE CORRIDORS

The South Platte River is mapped by the Colorado Natural Diversity Information Source (NDIS) as a mule deer migration corridor (NDIS, 2004). The river also provides a travel corridor for numerous bird and mammal species, including coyotes (*Canis latrans*), red fox (*Vulpes vulpes*), raccoons, cottontail rabbits, eastern fox squirrel, waterfowl, and waders (Jones et al., 2003).

4.12.1.5 AQUATIC LIFE

The South Platte River has been impacted by past and current human disturbances. Low species diversity indicates that poor water quality and habitat degradation are impairing the health of the aquatic communities (USGS, 2002). The metro Denver section of the river contains primarily warm water and introduced species. Surveys conducted by the USGS (2002) between 1993 and 1995 found ten species of fish, dominated by common carp, white sucker, longnose sucker (*Catostomus catostomus*), creek chub (*Semotilus atromaculatus*), and fathead minnow.

The river also supports crawfish, painted turtles, snapping turtles, and numerous aquatic insects.

4.12.1.6 THREATENED AND ENDANGERED SPECIES

Federally threatened and endangered species of vegetation or wildlife are protected under the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq.). Significant adverse effects to a federally listed species or its habitat resulting from a federal action would require consultation with the USFWS under Section 7 of the Endangered Species Act. There are no federal regulations that require consultation for effects to candidate species, but if the species were to become listed during construction, consultation with the USFWS would be required. Because the status of candidate species may change over the course of a project, CDOT policy requires addressing candidate species during the environmental clearance process.

Following a review of relevant literature, a wildlife biologist visually assessed the project area for the presence of potential habitat for species listed as threatened or endangered and for species considered to be candidates for listing under the Endangered Species Act by the USFWS. The following list of threatened, endangered, and candidate species (listed species) with potential to occur in the project area was provided by the USFWS (2004a).

- *Whooping crane (*Grus americana*), Endangered
- *Least tern, interior population (*Sterna antillarum*), Endangered
- *Piping plover (*Charadrius melodus*), Endangered
- *Western prairie fringed orchid (*Platanthera praeclara*), Threatened
- Bald eagle (*Haliaeetus leucocephalus*), Threatened
- Ute ladies'-tresses orchid (*Spiranthes diluvialis*), Threatened
- Colorado butterfly plant (*Gaura neomixcana coloradensis*), Threatened

The USFWS states that actions that result in new water depletions to the Platte River System may affect listed species downstream as well as designated critical habitat for whooping crane and piping plover in Nebraska. Listed species impacted only by water depletions of the Platte River are identified by an asterisk (*). No water-depleting actions would occur from the proposed project. Additionally the whooping crane, least tern, piping plover, pallid sturgeon, and western prairie fringed orchid do not occur in the City and County of Denver and the project area completely lacks any potential habitat to support these species.

The project area is located within an area identified as a "block clearance zone" for the Ute ladies'-tresses orchid. This block clearance was recently renewed for another three years, until October 2008, by the USFWS (USFWS, 2005). A block clearance zone is an area that is exempted from assessment and trapping requirements for a listed species under the Endangered Species Act because studies have shown that the species or adequate habitat for the species does not exist. The project area is also within the block clearance zones for two other species: the Preble's meadow jumping mouse and black-footed ferret, which were not included on the USFWS list because the project area is in block clearance zones for these species. Since there would be no water depletions associated with this project and because there are no plover, pallid sturgeon, and western prairie fringed orchid or potential habitat for

these species in the project area, these species are not addressed further. Species with potential habitat in the project area are discussed below.

Bald Eagle

The bald eagle is a large North American bird with a historical distribution throughout most of the United States (USFWS, 1983). The bald eagle was listed as an endangered species in 1978. Population declines are attributed to habitat loss, the use of organochlorine pesticides, and mortality from shooting. Since its listing, the bald eagle population has been increasing. The bald eagle was down-listed from endangered to threatened in 1995 and USFWS is proposing to de-list the bald eagle due to population recovery. If the bald eagle is removed from the list of the threatened and endangered species, it will continue to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Bald eagles are primarily winter residents in Colorado. They typically roost in large trees near water bodies or prairie dog towns where prey is abundant. Nesting bald eagles generally select large cottonwood trees along rivers or near lakes. According to CDOW (NDIS, 2004), known nest sites nearest to the project area are at Barr Lake State Park (20 miles), Rocky Mountain Arsenal (22 miles), and Standley Lake (12 miles). The nearest known winter roost sites are at Bluff Lake near the Stapleton redevelopment (7 miles) and along the South Platte River near 104th Street (8 miles). Bald eagles may occasionally forage or perch in the project area, but the area contains no suitable nesting or winter roost habitat.

Colorado Butterfly Plant

The Colorado butterfly plant is a short-lived perennial herb found in moist areas of the floodplains within a small area in southeastern Wyoming, western Nebraska, and north-central Colorado. Its historical and current distribution includes Boulder, Douglas, Larimer, and Weld counties. The USFWS has no definition of suitable Colorado butterfly plant habitat or survey criteria, but colonies are often found in low depressions or along bends in wide, active, meandering stream channels a short distance upslope of the actual channel (Spackman et al., 1999). Typical Colorado butterfly plant habitat is relatively open without dense or overgrown vegetation. No Colorado butterfly plant habitat is present in the project area.

Raptors and Migratory Birds

The Migratory Bird Treaty Act commits to the protection “*of the many species of birds that traverse certain parts of the United States and Canada in their annual migration.*” Unless permitted by regulations, the Migratory Bird Treaty Act provides that it is unlawful to “*pursue, hunt, take, capture or kill; attempt to take capture or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried or receive any migratory bird, part, nest, egg or product, manufactured or not.*” In Colorado, all birds except for the European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), and feral rock dove pigeon are protected under the Act. Because migratory songbirds, raptors, and waterfowl are protected, any active nests that are disturbed by the proposed project would require obtaining a nest depredation permit from the USFWS.

One potential inactive raptor nest adjacent to the South Platte River was identified during an April 2004 site reconnaissance survey within the project area. A study conducted along the South Platte River by the Denver Museum of Nature and Science (Jones et al., 2003) identified 65 species of birds using the river through urban Denver. Thirty-two species were identified at Habitat Park located within the project area. The industrial and urban/residential landscape habitats primarily provide habitat for urban-adapted and introduced birds and species such as the rock dove (pigeon), European starling (*Sturnus vulgaris*), and house sparrow (*Passer domesticus*); species not protected by the Migratory Bird Treaty Act. Barn swallows are known to use artificial structures, such as bridges or highway overpasses, and their nests are located on bridges in the project area.

Most migratory birds within the project area occupy open water habitat associated with ponds and the South Platte River, riparian/wetland habitats, and grasslands. Common nesting migratory bird species in the project area include mallard (*Anas platyrhynchos*), Canada goose (*Branta Canadensis*), common grackle (*Quiscalus quiscula*), American robin (*Turdus migratorius*), northern flicker (*Colaptes auratus*), black-capped chickadee (*Poecile atricapilla*), and house finch (*Carpodacus mexicanus*).

4.12.2 Consequences of the Alternatives

Impacts to vegetation and wildlife habitat from the No Action Alternative as well as the system alternatives, which include System Alternative 1, 2, 3, and the Preferred Alternative, are summarized below.

4.12.2.1 VEGETATION

The No Action Alternative would result in no direct impacts to vegetation.

Given the level of preliminary design and the mixture of industrial, commercial, and residential land use within the project area, it is difficult to quantify vegetation impacts by vegetation type. Direct permanent impacts to vegetation would result from the increased footprint of the highway facilities in each system alternative, including the Preferred Alternative, through widened bridges, reconfigured interchanges, and the widening of I-25 and US 6. Temporary impacts to vegetation will occur throughout the project area during construction due to equipment movement, material storage, and staging area disturbances.

Of the five vegetation types identified, the majority of disturbance will occur in the industrial and riparian areas. Industrial impacts will occur throughout the project area. Impacts to riparian areas will occur at the 6th Avenue, Alameda Avenue, and Santa Fe Drive bridges over the South Platte River and at storm water outfalls. Impacts to mixed grassland vegetation will occur in the areas of the Santa Fe/I-25 and 6th Avenue/I-25. Xeric landscape vegetation will be impacted along the I-25 mainline and in the area of the 6th Avenue/I-25 interchange. Urban landscape vegetation impacts are discussed in **Section 4.3 Parks and Recreation** and **Section 4.4 Aesthetics and Urban Design**.

An indirect impact to vegetation in the project area is the introduction and spread of noxious weeds associated with ground-disturbing activities. As a result of construction disturbance, existing noxious weeds in the project area may spread and new noxious weeds may be introduced. Noxious weeds frequently invade disturbed areas, establish quickly, and out-compete native species if left unchecked.

4.12.2.2 WILDLIFE

The No Action Alternative would cause the fewest adverse impacts to wildlife species in general as no new construction or disturbance to wildlife habitats is proposed. However, this alternative also would offer the fewest potential benefits for wildlife since bridges would not be raised, and visual screen would not be constructed.

The major wildlife impacts, in the form of alteration of habitat, under all system alternatives, including the Preferred Alternative, would be temporary construction impacts during construction/improvement of the US 6, Alameda Avenue, Santa Fe Drive, and new pedestrian bridges.

Under all system alternatives including the Preferred Alternative, the western edge of the existing I-25 highway would be maintained as the western construction limit, thereby avoiding any new construction impacts to the South Platte River and its riparian corridor. Several bridge replacements/improvements are proposed under all system alternatives that would temporarily disturb some wetland, riparian, and other open water habitat.

All system alternatives, including the Preferred Alternative, also would provide some benefit to wildlife. Improvements to US 6 and Santa Fe Drive bridges would improve the horizontal and vertical clearances over the South Platte River, moving traffic farther away from wildlife habitat. This could reduce noise and light disturbance, providing a minor benefit for wildlife using the river as a travel corridor. Screening I-25 from the pedestrian trail between 2nd and 3rd Avenues would also provide an improved sound barrier between traffic and South Platte River wildlife habitat areas.

4.12.2.3 MIGRATORY BIRDS

Under all system alternatives including the Preferred Alternative, most construction would occur within the industrial and urban/residential habitats. These areas provide limited, poor quality habitat for nesting migratory birds, primarily providing habitat for unprotected pigeon, starlings, and house sparrow populations. Higher quality bird habitat associated with open water, riparian, and mixed/xeric grasslands would largely be avoided. Bridge construction/improvements over the South Platte River could potentially result in a take, or loss of, active migratory bird nests, such as barn swallows. The barn swallow is not threatened or endangered but is protected by the Migratory Bird Treaty Act. No permit from the USFWS is required for removal of inactive nests, and USFWS generally will not permit removal of an active nest unless justifiable to protect human health and safety.

4.12.2.4 WILDLIFE CORRIDORS

All system alternatives, including the Preferred Alternative, would retain the western edge of the existing I-25 highway; thus, there would be no long-term impacts to the South Platte River migration corridor. Minor temporary impacts would occur during bridge construction/improvements to the US 6, Alameda Avenue, Santa Fe Drive, and new pedestrian bridges. Wildlife inhabiting or migrating along the river through metropolitan Denver have adapted to constant human presence and disturbance; therefore, any temporary construction disturbance would be of relatively low magnitude and short duration.

4.12.2.5 AQUATIC LIFE

Bridge construction/improvements also could adversely impact fish and other aquatic life in the South Platte River. Direct disturbance of spawning beds or increased sedimentation during construction activities could reduce breeding success and productivity over the short-term.

4.12.2.6 THREATENED AND ENDANGERED SPECIES

As discussed earlier (**Section 4.12.1.6**), no potential habitat for any federal threatened or endangered plant species occurs within the project area, nor is there any suitable breeding, wintering, or important foraging habitat for any federally listed threatened or endangered animal species. Since no water depletions of the South Platte River would occur under the proposed project, there would be no impacts to downstream South Platte River species or critical habitat. Therefore, neither the No Action Alternative nor any of the system alternatives, including the Preferred Alternative, would adversely impact any threatened or endangered species.

4.12.3 Mitigation Measures

4.12.3.1 VEGETATION

Under all of the system alternatives including the Preferred Alternative, improvements are proposed primarily along the east side of the South Platte River, thus avoiding potential impacts in many places to riparian vegetation and aquatic wildlife habitat.

To minimize the adverse effects of disturbance to vegetation, the Preferred Alternative will follow CDOT revegetation practices. Disturbed areas will be seeded in phases throughout construction with a CDOT landscaped architect-approved native seed mix. Seeding will occur during appropriate seeding windows. If out of season, the slopes will be temporarily protected from erosion with mulch and mulch tackifier.

Permanent seeding will occur throughout the project, bringing areas to completion as soon as possible. Mitigation for impacts to riparian areas will be coordinated with CDOW as required by Senate Bill 40 (33-5-101-107 CRS 1973) as amended. Replacement ratio for trees greater than 2 inches diameter in breast height will be one-to-one. Existing shrubs will be replaced with native species to their pre-construction area/coverage. Existing irrigation systems will be maintained and/or modified appropriately such that existing landscape features are preserved.

Impacts to existing landscaped areas (irrigated and otherwise) will be mitigated by incorporating replacement landscaped areas into the final design. Where existing landscaped areas are impacted, the design will include re-landscaping such that the existing landscape does not become fragmented. This landscape design will be coordinated with urban design elements discussed in **Section 4.4 Aesthetics and Urban Design**.

To address the requirements of Executive Order 13112 and the Colorado Noxious Weed Act, an Integrated Weed Management Plan will be prepared and implemented under any system alternative. The plan will include a variety of control methods depending on species found, size of the populations, and the surrounding landscape. Some of these methods may include cutting and removing the noxious weeds, mowing, and using carefully selected herbicides that are targeted for the particular species and growth stage (for example, Canada thistle at bud stage).

The Integrated Weed Management Plan will be prepared during final design and will include the following steps to control weeds in the project area:

- Construction vehicles must be cleaned of soil and plant parts before entering the construction site to avoid the spreading of noxious weeds.
- Disturbance to existing vegetation will be limited as much as practicable.
- Topsoil salvaged from the project area for reuse will be from areas free of noxious weeds. Areas free of weeds will be identified in the Integrated Weed Management Plan and project drawings.
- Temporary fences will be installed to limit construction traffic in an effort to reduce erosion and weed invasion.
- If topsoil remains stockpiled for more than one month, the stockpile will be seeded with annual oats.
- Only certified weed-free mulch will be used. The mulch must be certified under the Colorado Department of Agriculture Weed Free Forage Certification Program and inspected, as regulated by the Weed Free Forage Act, Title 35, Article 27.5, CRS.
- A weed specialist will survey the area just before, during, and immediately after construction.
- The Integrated Weed Management Plan will be reviewed and updated during construction as needed.
- Appropriate control methods for sensitive areas, such as wetlands and riparian corridors will be identified.

Following construction, the site will be monitored for the need for follow-up weed control at least twice after the first growing season.

4.12.3.2 WILDLIFE

There would be no impacts to threatened or endangered species under any of the system alternatives, including the Preferred Alternative. Since the majority of the impacts to wildlife habitats would be low quality grasslands, the Preferred Alternative would result in only minor disturbance to wildlife. Strategies to maintain wildlife corridors will be further considered during final design, and could include constructing sound/visual barriers (including earthen berms) or vegetation screens.

To avoid disturbing or “take” of a migratory bird nest, any trees or structures, such as bridges or highway overpasses, that would be removed during the nesting season will be surveyed for the presence of active bird nests. If no active nests are observed, the trees can be removed. No permit from the USFWS is required for removal of inactive nests and the USFWS generally will not permit the removal of an active nests unless justifiable to protect human health and safety; however, if active nests are present, habitat-disturbing activities, such as tree removal, grading, scraping, grubbing, etc, will be conducted in the riparian area along the South Platte River during the non-breeding season (August-March). Where practicable, construction of bridges over the South Platte River will be conducted during the non-breeding season (August-March) to avoid impacts to spawning fish and spawn beds.

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