



December 22, 2016

Dear Members of the Boulder County Planning Commission and Board of County Commissioners and Boulder City Council and Planning Board,

As part of our request for a Boulder Valley Comprehensive Plan land use designation change on our properties near Twin Lakes in Gunbarrel, the Boulder County Housing Authority (BCHA) and Boulder Valley School District (BVSD) are providing the attached proposal to include significant wildlife buffers across these properties. The proposed wildlife buffers came out of discussions at the September 21<sup>st</sup> Planning Commission hearing during which many Commissioners expressed a desire to have a north-south wildlife buffer (and others) defined and included as part of any land use designation change for the properties. We took these discussions to heart and are committed to including the following wildlife buffers should you approve the staff recommendation of a medium-density land use designation for the parcels. The proposed wildlife buffers include:

- A 70-foot wide landscaped zone to provide a buffer from the Boulder and White Rock Ditch centerline on the northern edge of the BCHA property.
- An approximate 160-foot wide landscaped zone to provide a buffer from the southern parcel boundary of O Kahlua Rd. to facilitate wildlife movement and potentially areas needed for drainage and water quality best management practices.
- A 70-foot wide landscaped zone which will provide a buffer between the existing parcel boundary and any site development features on the eastern edge of all three parcels (note that this is similar to the existing opening at the southeastern corner of the 0 Kahlua Rd. parcel).
- Site-appropriate native landscaping, micro-topography grading, cover, etc., to provide natural wildlife habitat in all three corridors.

Please see the attached draft technical memorandum and concept drawings for more detail on our proposed wildlife buffer. We appreciate your consideration of this information as part of our proposal. Please don't hesitate to reach out with any questions.

Sincerely,

Frank Alexander, Director Boulder County Housing Authority

Norrie Boyd, Deputy Director Boulder County Housing Authority

Don Orr, Chief Facilities Officer Boulder Valley School District

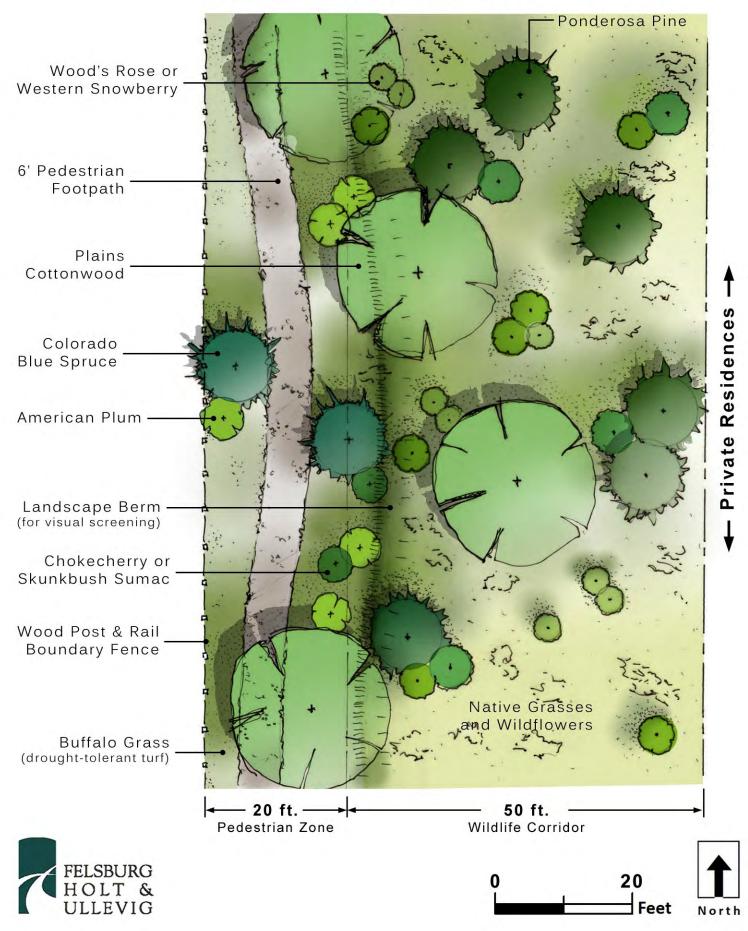




## **Existing Conditions**



## BCHA Property Wildlife-Recreation Hybrid Concept Typical Section for Plant Layout



# BOULDER COUNTY WILDLIFE CORRIDORS TECHNICAL MEMORANDUM FOR 6655 TWIN LAKES ROAD, 6500 TWIN LAKES ROAD, AND 0 KALUA ROAD



**Prepared for:** Boulder County Housing Authority 2025 14<sup>th</sup> Street Boulder, CO 80302





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22 FHU Reference No. 116168-01 24 December 2016

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## 1 1.0 INTRODUCTION

This wildlife corridor technical memorandum was compiled for the Boulder County Housing Authority (BCHA) to identify preliminary areas that are compatible for wildlife and residents to travel through 6655 Twin Lakes Rd, 6500 Twin Lakes Rd, and 0 Kalua Rd without barriers, such as privacy fencing or vertical structures. This memorandum is meant to support site design and to facilitate concerns from the community about wildlife movement through the aforementioned parcels.

8 This memorandum uses information provided as part of, and expands upon recommendations 9 identified in, the *Boulder County Habitat Assessment for 6655 Twin Lakes Road, 6500 Twin* 10 *Lakes Road, and 0 Kalua Road* (FHU 2016).

- 11 1.1 Site Description
- 12 The project site consists of three parcels of land bisected by Twin Lakes Rd:
- 6655 Twin Lakes Rd is 9.97 acres in size and is undeveloped. The parcel is owned by
   BCHA, and has a Boulder County Assessor Parcel Identification Number of
   #146311300011.
- 6500 Twin Lakes Rd is 3.95 acres in size and is also undeveloped. 6500 Twin Lakes Rd is owned by Boulder Valley School District (BVSD), and has a Boulder County Assessor Parcel Identification Number of #146311300009.
- 0 Kalua Rd is 6.08 acres in size and is undeveloped. 0 Kalua Rd is owned by BVSD, and has a Boulder County Assessor Parcel Identification Number of #146314200001.

The project is located in Boulder County, Colorado, in Sections 11 and 14, Township 1 North,
 Range 70 West (Latitude 40.05908° and Longitude -105.19868°). See Figure 1: Vicinity Map.

The project site is bordered by residential developments to the south, east, and west. The Twin

Lakes Open Space, Boulder and Left Hand Ditch, and Boulder and Whiterock Ditch are located north of 6655 Twin Lakes Rd, and the 6500 Twin Lakes Rd parcel is located to the south, just

25 north of 6655 Twin Lakes Rd, and the 6500 Twin Lakes Rd parcel is located to the south, just 26 south of the paved Twin Lakes Rd. The 6500 Twin Lakes Rd parcel is also bordered by

- 27 residential developments to the east and west and the paved Twin Lakes Rd abuts the parcel to
- the north. The 0 Kalua Rd parcel abuts the 6500 Twin Lakes Rd parcel to the south.
- 29 The 0 Kalua Rd parcel has residential developments to the east, west, and south along with a
- 30 drainage ditch just north of the southern residential properties. The Coen/Johnson Trust, a large
- 31 undeveloped parcel of land owned by the Gunbarrel Public Improvement District and managed
- 32 by Boulder County Parks and Open Space, is also located outside of the project site to the
- 33 southeast (Figure 2: Project Location and Vicinity Map).



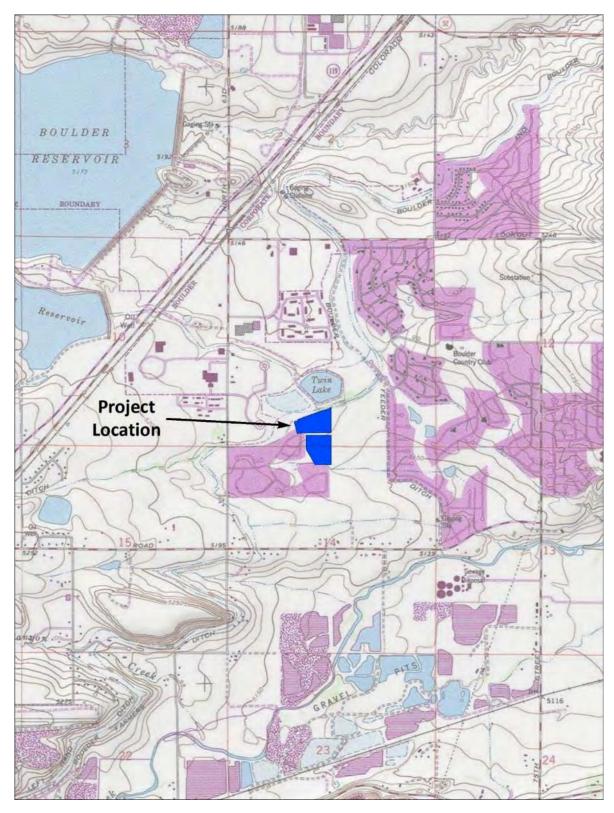
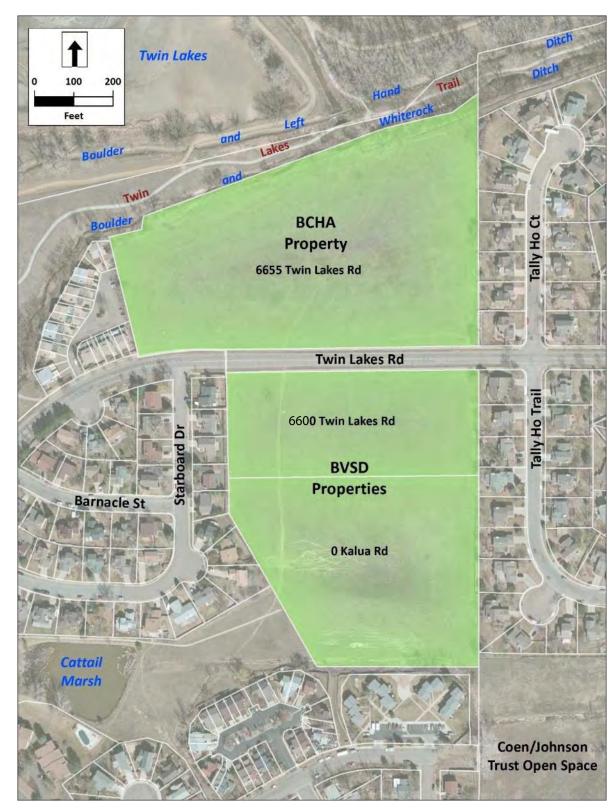


Figure 1 Project Location and Vicinity Map









## 1 2.0 WILDLIFE MOVEMENT CORRIDORS

#### 2 2.1 Importance of Wildlife Corridors

A wildlife corridor links wildlife habitat, contains native vegetation, and joins two or more larger
areas of similar wildlife habitat. Wildlife corridors provide various wildlife species with an
opportunity to traverse between islands of habitat where development has occurred or when
future development is possible. As identified by the U.S. Fish and Wildlife Service (USFWS):

7 "Wildlife corridors are tracts of land or habitat that are linked and allow wildlife 8 to travel from one location to another to find food, shelter, a mate and a place 9 to raise their young. They are especially important because they ensure genetic 10 exchange between wildlife populations. The human population is growing and wildlife is getting crowded out. Urbanization, highways and agriculture are just 11 12 some of the challenges that keep wildlife from dispersing and make them 13 vulnerable to predators and many other dangers. Wildlife corridors help wildlife travel to the places where they can find what they need." (USFWS 2016) 14

15 Wildlife corridors not only provide the above benefits, they are also necessary to maintain

16 ecosystem health, species migration & dispersal, nutrient cycling, plant pollination, reduce

17 human-wildlife conflicts, etc.

18 The importance of wildlife corridors has been captured in numerous laws and regulations across

19 the United States, at the state and federal levels focusing on public lands. Many laws and

20 regulations also focus on making roadways more permeable to wildlife across regional

21 landscapes (FAST, Map 21, etc.). One current effort (December 2016) in the House of

22 Representatives includes an effort to introduce the Wildlife Corridors Conservation Act to

23 Protect Biodiversity (Representative Beyer, Virginia, (D)).

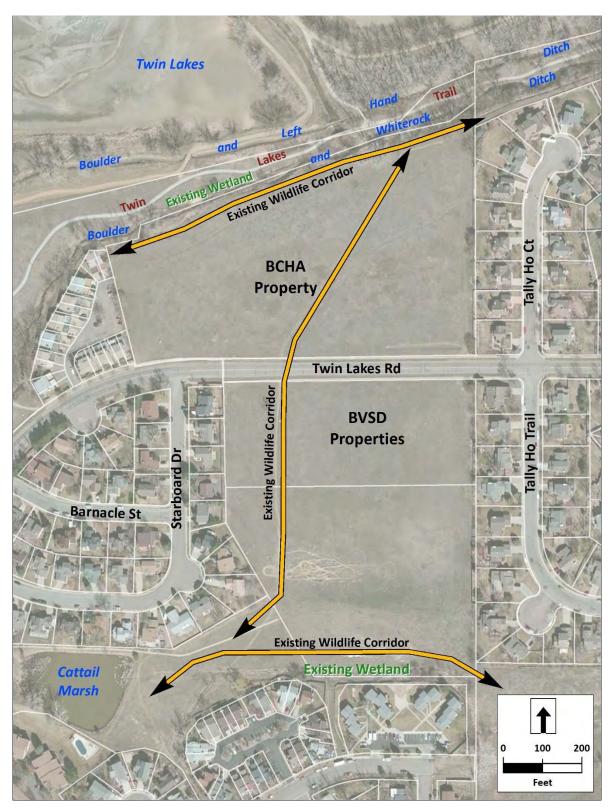
### 24 2.2 Existing Wildlife Corridors across the Project Parcel Boundaries

FHU staff identified several localized movement areas where wildlife movement was
concentrated on man-made paths or associated with wetland and riparian areas, and not diffuse
across the entirety of the parcels.

Three separate existing wildlife corridors were identified based on observed wildlife sign and location of blocks of undeveloped land (**Figure 3: Twin Lakes Wildlife Movement**). These wildlife corridors are considered local corridors and facilitate small movements through the neighborhood. The overall movement corridors across these three parcels are not of the same scale or quality as movement corridors across a pristine grassland or regional landscape as the parcels are surrounded on all four sides by either residential development or water bodies. Instead movement is constrained by access into the three parcels.

The first wildlife corridor runs from the northeast corner of 6655 Twin Lakes Rd, across
 Twin Lakes Rd. and continues to the southwest corner of 0 Kalua Rd, on the informal
 trail. Coyote scat was identified on this wildlife corridor. This area was heavily used by
 recreationalists, destroying any potential tracks left by other wildlife species.





## 1 Figure 3 Twin Lakes Wildlife Movement

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- While this corridor seems to be used often by wildlife, it appears wildlife use it based on
   ease of travel, rather than any habitat features it provides. This corridor follows the
   informal recreation trail and connects the Twin Lakes Open Space to the un-named
   drainage ditch which runs by Boulder Twin Lakes Inn, as well as the second wildlife
   corridor identified below.
- The second wildlife corridor parallels the southern boundary of 0 Kalua Rd. This corridor runs along the ditch which has a wet, clay like substrate which contained several animal tracks, including raccoon, deer, and coyote. This corridor connects the un-named drainage ditch, which runs by the Boulder Twin Lakes Inn, to the Coen/Johnson Trust, a large conservation easement to the southeast of the project site.
- 11 The third wildlife corridor runs east-west at the northern boundary of the project site. • 12 Several species of mammals and birds were encountered in this corridor, as well as a diversity of tree and shrub species. This corridor is at the southern edge of the Boulder 13 and Whiterock Ditch, which is adjacent to the Twin Lakes Open Space and Boulder and 14 15 Left Hand Ditch and regional trail. These open space and riparian corridors found to the north and south of our project site contain a large diversity of species. These two 16 17 corridors connect to a large undeveloped property east of the project site to a series of 18 smaller undeveloped properties west of the project site.

## 19 **3.0 BCHA'S EFFORT TO INTEGRATE WILDLIFE MOVEMENT CONCERNS**

- 20 The BCHA has listened to concerns of the Twin Lakes community and reviewed the
- recommendations provided in the Boulder County Habitat Assessment for 6655 Twin Lakes
- 22 Road, 6500 Twin Lakes Road, and 0 Kalua Road (FHU 2016).
- 23 The BCHA will incorporate environmental protection areas in future site plans to maintain
- 24 corridors that can be used for wildlife and residents to move through these three parcels so that
- 25 wildlife and residents are able to access the Twin Lakes Open Space, the Johnson/Coen Trust
- 26 Open Space, and areas beyond. The width of these corridors focuses on high-level planning
- and the width can potentially change based on site-specific conditions (drainage, micro-
- 28 topography, grading, development codes, etc.).
- 29 Fencing associated with these wildlife corridors will be minimal and focus on split-rail fences or
- 30 fences that do not create barriers to wildlife like the privacy fences do that are already in place
- 31 on the eastern, southern, and western boundaries of the three parcels.
- 32 3.1 Summary of Wildlife Corridor Protection Areas
- 33 The areas that will provide enhancements for wildlife include:
- A 70-foot wide landscaped zone to provide a buffer from the Boulder and White Rock
   Ditch centerline on the northern edge of the BCHA property.
  - An approximate 160-foot wide landscaped zone to provide a buffer from the southern parcel boundary of 0 Kahlua Rd. to facilitate wildlife movement and potentially areas needed for drainage and water quality best management practices.
- A 70-foot wide landscaped zone which will provide a buffer between the existing parcel boundary and any site development features on the eastern edge of all three parcels



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37 38

- (note that this is similar to the existing opening at the southeastern corner of the 0
   Kahlua Rd. parcel).
- Site appropriate native landscaping, micro-topography grading, cover, etc. to provide
   natural wildlife habitat in all three wildlife corridors.

Each of these planned wildlife corridors is described in further detail below and are shown in
Figure 4: Proposed Wildlife Corridors and Figure 5: Wildlife Corridors with Topography
below. In addition, FHU has also compiled conceptual graphics to provide to BCHA that show
potential options (in plan view and ground-level view format) of what these wildlife corridors
could potentially look like. These conceptual views are provided in Appendices A – C.

## 10 3.2 Northern Wildlife Corridor

- 11 Currently there is an existing easement along the Boulder & White Rock Ditch that provides a
- buffer of 35 feet from the centerline of the ditch. BCHA will maintain that buffer and increase it to
- 13 70 feet from the northern parcel boundary limits. This buffer will provide areas for wildlife to
- 14 move on the south side of the ditch as well as residents of the neighborhood.
- 15 Currently there is approximately a 20-foot buffer between the ditch and existing residences east
- 16 of the parcel and approximately a 0-foot buffer (as residences directly abut the ditch) between
- 17 the ditch and existing residences on the west side of the parcel.
- 18 This buffer provides additional environmental protection areas to reduce the potential for
- 19 impacts to occur to wildlife that travel or inhabit the riparian area around these ditches. This also
- 20 facilitates the continuing presence of species such as the western tiger salamander
- 21 (Ambystoma mavortium) that nearby residents say exist in the areas surrounding the ditches.

## 22 3.3 Southern Wildlife Corridor

- 23 Currently there is an existing drainage swale/ditch that is present at the southern end of 0
- 24 Kahlua Rd. which contains wetlands and standing water. As identified by parcel boundaries, 0
- Kahlua Rd.'s southern boundary is approximately in the center of this ditch, and the nearest
   residential fence is located between 10 20 feet from the center of the ditch. This area is also
- 27 the low point across all three parcels.
- 28 Signs of wildlife use was located primarily on the north side of the existing wetlands. BCHA will
- 29 incorporate an approximate 160-foot buffer from the southern parcel boundary line. This
- 30 additional buffer will facilitate wildlife movement, use by residents, and to fulfill any on-site
- 31 drainage or water quality best management practices (BMPs).

## 32 3.4 Eastern Wildlife Corridor

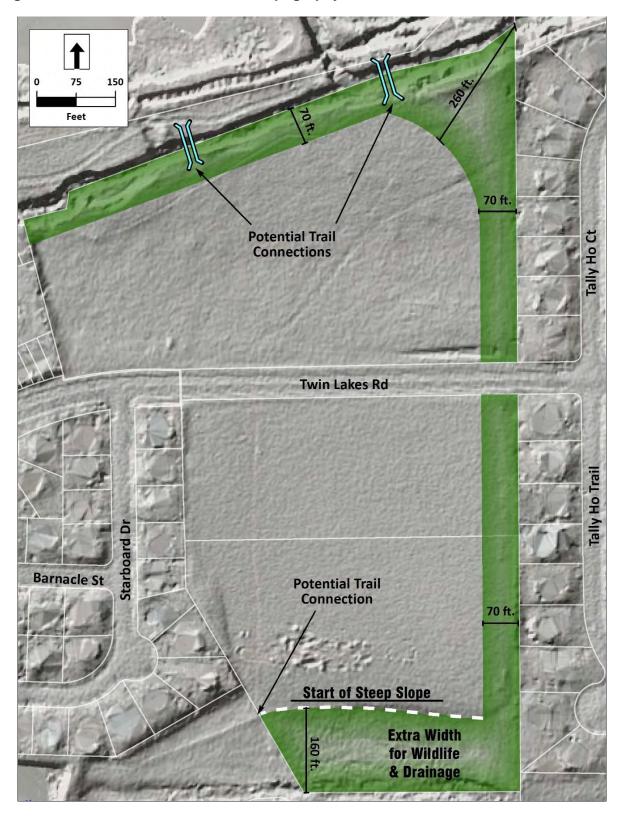
- 33 BCHA will incorporate a 70-foot north-south buffer on the east side of the three parcels to
- 34 facilitate wildlife movement and connect wildlife to habitat present at Twin Lakes Open Space,
- 35 Johnson/Coen Trust, and areas beyond. The width of this corridor closely matches the existing
- 36 width of the opening located at the southeastern corner of 0 Kahlua Rd. as it connects to the
- 37 Johnson/Coen Trust.



### 1 Figure 4 Proposed Wildlife Corridors







1 Figure 5 Wildlife Corridors with Topography



1 Currently there is an opening of approximately 75 feet between property fences at the

2 southeastern corner of 0 Kahlua Rd for wildlife to move between the Johnson/Coen Trust and 0

- 3 Kahlua Rd., with the wetlands and open water portion of this opening taking up approximately
- 4 30 feet of that spacing. The 70-foot landscaped zone identified for the eastern wildlife corridor
- 5 will provide areas for wildlife habitat to connect to other habitats outside of the three parcels.
- 6 In addition, BCHA will incorporate a 260-foot buffer (at its widest point) in the northeastern
- 7 corner of 6655 Twin Lakes Rd. This expanded buffer provides additional distance between the
- 8 Great Horned Owl nest and future site development, which is more than seven (7) times the
- 9 distance between the Great Horned Owl nest and current residential property fences.

#### 10 3.5 Potential Trail Connections

BCHA will also incorporate the appropriate number of trail connections across the three parcels for wildlife and residents to connect to existing trails or to cross waterways. This includes two connections to the Twin Lakes Open Space, one connection crossing in the middle of the parcels northern boundary and another one further east, crossing closer to the eastern wildlife corridor (but sufficiently away from the Great Horned Owl nest and the presence of additional ditch features). Another potential trail connection will connect to an existing concrete trail that ends abruptly at the southwestern corner of 0 Kahlua Rd.

#### 18 3.6 Trail Design Elements

FHU recommends that trail design and planning within these wildlife corridors follow the 19 20 Planning Trails with Wildlife in Mind: A Handbook for Trail Planners (Colorado State Parks 21 1998). This report acts as a manual for how to best create wildlife-friendly trails. It identifies that 22 the narrower the trail is, the less the impact to habitat is and wildlife in general. Trails that are 23 made with crusher fines are permeable for water and preferred by wildlife. Providing such things 24 as small slash piles near the trails provide cover for wildlife that would be disturbed by pedestrians or pets. While trails may be required to meet specific standards, trail alignments, 25 widths, and materials can facilitate less impacts to wildlife then extra-wide, concrete trails would. 26

- 27 3.7 Other Site Planning Enhancements
- BCHA will incorporate enhancements specific to site conditions as site planning continues.
   These enhancements will be focused on, but not limited to, the following:
- Incorporating native vegetation at varying levels of vegetation height and foraging value to provide cover for wildlife in the eastern wildlife corridor.
- Grading to create more varying degrees of micro-topography in the eastern wildlife corridor.
- Enhancing the northern and southern wildlife corridors with additional native vegetation.
- 35 Conceptual examples of what these wildlife corridors could look like along with potential native
- 36 species that could be planted are provided in **Appendices A C**. Final design of the wildlife
- 37 corridors will be completed as the site design of these parcels is undertaken.



#### 1 4.0 LITERATURE CITED

- 2 Colorado State Parks. 1998. Planning Trails with Wildlife in Mind: A Handbook for Trail
- 3 *Planners*. <u>http://atfiles.org/files/pdf/Trails-for-Wildlife-Handbk.pdf</u> September.
- Felsburg Holt & Ullevig (FHU). 2016. Boulder County Habitat Assessment for 6655 Twin Lakes
  Road, 6500 Twin Lakes Road, and 0 Kalua Road. August.
- 6 NatureServe Explorer. 2016. Website Accessed on June, 2016.
- 7 <u>http://explorer.natureserve.org/statusus.htm</u>
- 8 U.S. Fish and Wildlife Service (USFWS). 2016. Creating a Wildlife Corridor.
- 9 <u>https://www.fws.gov/refuge/Lower\_Rio\_Grande\_Valley/resource\_management/wildlife\_corridor.</u>
- 10 <u>html</u>

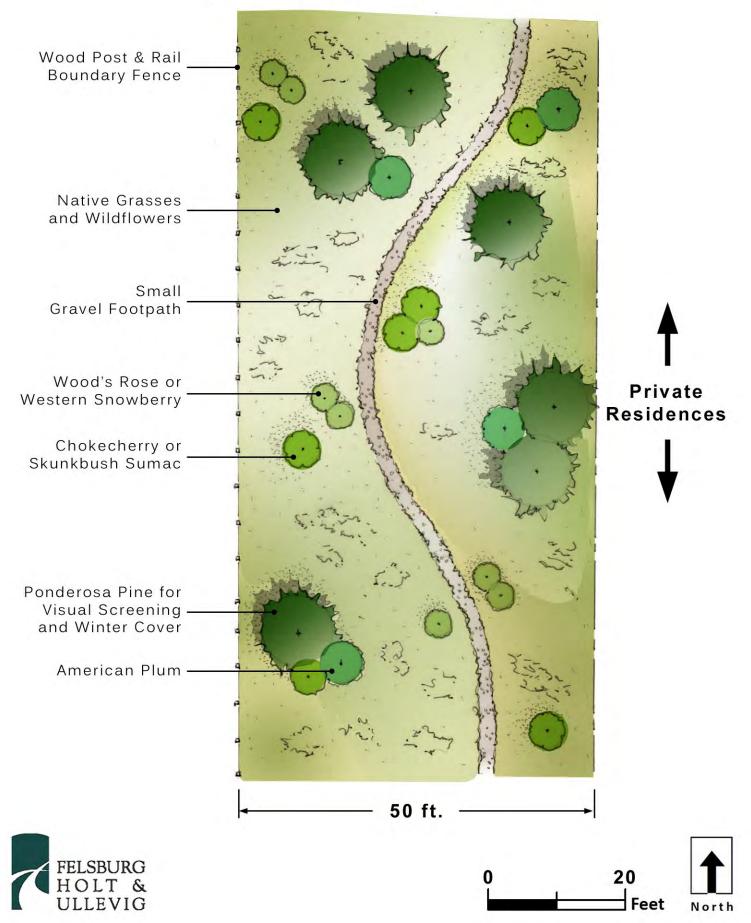


1	Appendix A

2 Wildlife Centric Wildlife Corridor Conceptual Design Graphics



## BCHA Property Wildlife Corridor Concept Typical Section for Plant Layout



## Boulder County Housing Authority

Wildlife-Centric Conceptual Plant List

#### Recommended Upland Herbaceous, Shrub and Tree Species

Common Name	Scientific Name	Seeding Rate	Pay item	Description
Western Wheatgrass	Agropyron smithii	5 oz./1000 sf	212-00005	Seeding (Native)
Leadplant	Amorpha canescens	5 oz./1000 sf	212-00005	Seeding (Native)
Sideoats Grama	Bouteloua curtipendula	5 oz./1000 sf	212-00005	Seeding (Native)
Blue Grama	Bouteloua gracilis	5 oz./1000 sf	212-00005	Seeding (Native)
Buffalo Grass	Buchloe dactyloides	5 oz./1000 sf	212-00005	Seeding (Native)
Mountain Mahogany	Cercocarpus montanus	1 gal @ 48" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
White Prairieclover	Dalea dandida	5 oz./1000 sf	212-00005	Seeding (Native)
Junegrass	Koeleria macrantha	5 oz./1000 sf	212-00005	Seeding (Native)
Dotted Gayfeather	Liatris punctata	5 oz./1000 sf	212-00005	Seeding (Native)
Ponderosa Pine	Pinus ponderosa	5 gal @ 96" O.C. min.	214-00450	Evergreen Tree (5 Gallon Container)
American Plum	Prunus americana	1 gal @ 48" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Chokecherry	Prunus virginiana	1 gal @ 36" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Prairie Coneflower	Ratibida columnifera	5 oz./1000 sf	212-00005	Seeding (Native)
Skunkbush Sumac	Rhus trilobata	1 gal @ 36" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Wood's Rose	Rosa woodsii	1 gal @ 24" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Little Bluestem	Schizachyrium scoparium	5 oz./1000 sf	212-00005	Seeding (Native)
Western Snowberry	Symphoricarpos occidentalis	1 gal @ 24" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Soapweed Yucca	Yucca glauca	5 oz./1000 sf	212-00005	Seeding (Native)

# **Existing Conditions**

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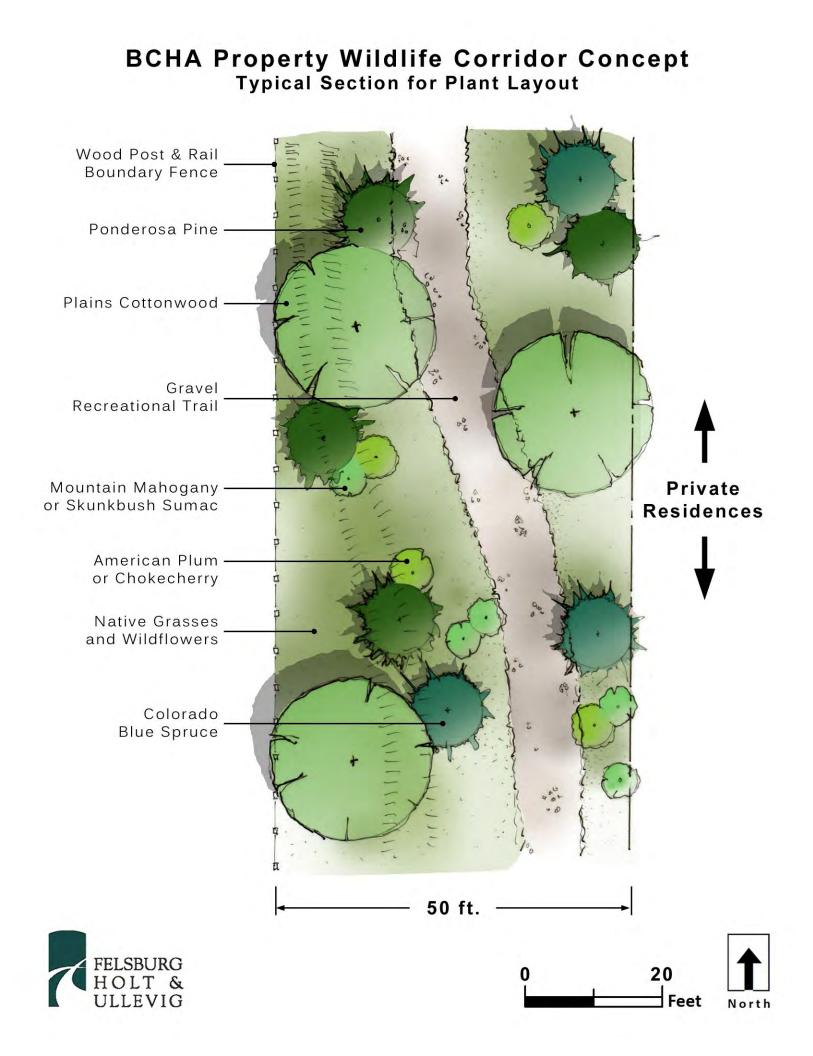
# **Proposed Wildlife-Centric Concept**

WILDLIFE

1	Appendix B	
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## 2 Recreation Centric Wildlife Corridor Conceptual Design Graphics





## Boulder County Housing Authority

Recreation-Centric Conceptual Plant List

### Recommended Upland Herbaceous, Shrub and Tree Species

Common Name	Scientific Name	Seeding Rate	Pay item	Description
Blue Grama	Bouteloua gracilis	5 oz./1000 sf	212-00005	Seeding (Native)
Buffalo Grass	Buchloe dactyloides	5 oz./1000 sf	212-00005	Seeding (Native)
Mountain Mahogany	Cercocarpus montanus	1 gal @ 48" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
White Prairieclover	Dalea dandida	5 oz./1000 sf	212-00005	Seeding (Native)
Junegrass	Koeleria macrantha	5 oz./1000 sf	212-00005	Seeding (Native)
Colorado Blue Spruce	Picea pungens	5 gal @ 96" O.C. min.	214-00450	Evergreen Tree (5 Gallon Container)
Ponderosa Pine	Pinus ponderosa	5 gal @ 96" O.C. min.	214-00450	Evergreen Tree (5 Gallon Container)
Plains Cottonwood	Populus deltoides	2 in. @ 25' O.C. min.	214-00220	Deciduous Tree (2 Inch Caliper)
American Plum	Prunus americana	1 gal @ 48" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Chokecherry	Prunus virginiana	1 gal @ 36" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Prairie Coneflower	Ratibida columnifera	5 oz./1000 sf	212-00005	Seeding (Native)
Skunkbush Sumac	Rhus trilobata	1 gal @ 36" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Little Bluestem	Schizachyrium scoparium	5 oz./1000 sf	212-00005	Seeding (Native)
Western Snowberry	Symphoricarpos occidentalis	1 gal @ 24" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)

# **Existing Conditions**

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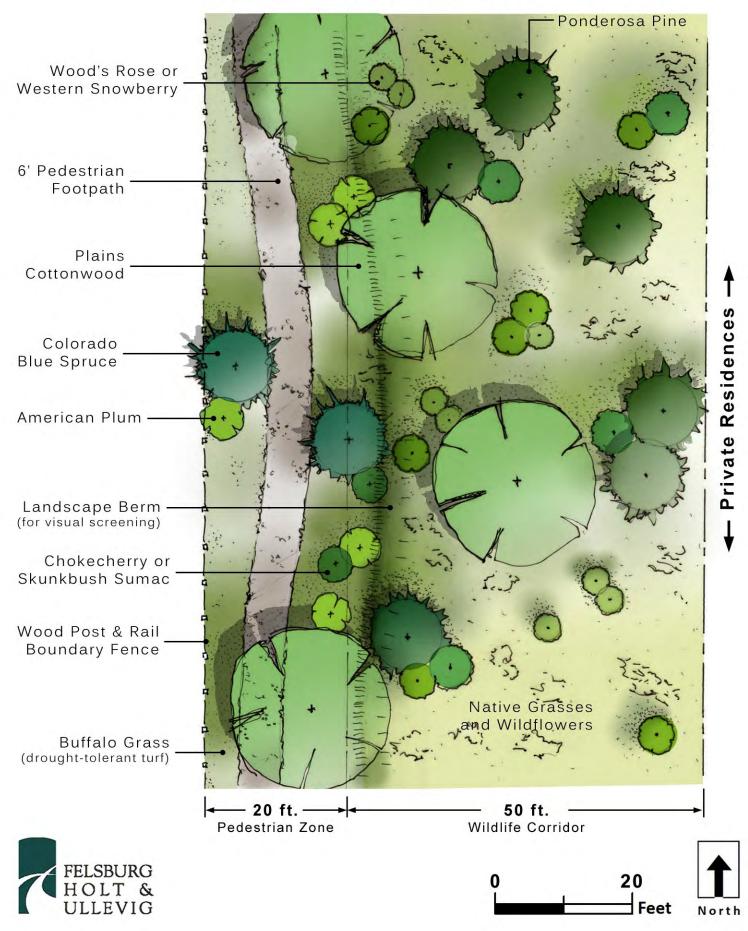
# **Proposed Recreational-Centric Concept**

TRI

1	Appendix C
2	Hybrid Wildlife Corridor Conceptual Design Graphics



## BCHA Property Wildlife-Recreation Hybrid Concept Typical Section for Plant Layout



## Boulder County Housing Authority Hybrid Conceptual Plant List

#### Recommended Upland Herbaceous, Shrub and Tree Species

Common Name	Scientific Name	Seeding Rate	Pay item	Description
		5 az /1000 af	212 00005	Cooding (Native)
Western Wheatgrass	Agropyron smithii	5 oz./1000 sf	212-00005	Seeding (Native)
Leadplant	Amorpha canescens	5 oz./1000 sf	212-00005	Seeding (Native)
Sideoats Grama	Bouteloua curtipendula	5 oz./1000 sf	212-00005	Seeding (Native)
Blue Grama	Bouteloua gracilis	5 oz./1000 sf	212-00005	Seeding (Native)
Buffalo Grass	Buchloe dactyloides	5 oz./1000 sf	212-00005	Seeding (Native)
Mountain Mahogany	Cercocarpus montanus	1 gal @ 48" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
White Prairieclover	Dalea dandida	5 oz./1000 sf	212-00005	Seeding (Native)
Junegrass	Koeleria macrantha	5 oz./1000 sf	212-00005	Seeding (Native)
Colorado Blue Spruce	Picea pungens	5 gal @ 96" O.C. min.	214-00450	Evergreen Tree (5 Gallon Container)
Ponderosa Pine	Pinus ponderosa	5 gal @ 96" O.C. min.	214-00450	Evergreen Tree (5 Gallon Container)
Plains Cottonwood	Populus deltoides	2 in. @ 25' O.C. min.	214-00220	Deciduous Tree (2 Inch Caliper)
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Chokecherry	Prunus virginiana	1 gal @ 36" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
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Skunkbush Sumac	Rhus trilobata	1 gal @ 36" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Little Bluestem	Schizachyrium scoparium	5 oz./1000 sf	212-00005	Seeding (Native)
Western Snowberry	Symphoricarpos occidentalis	1 gal @ 24" O.C. min.	214-00310	Deciduous Shrub (1 Gallon Container)
Soapweed Yucca	Yucca glauca	5 oz./1000 sf	212-00005	Seeding (Native)

## **Existing Conditions**



