



Special-Status Plant Survey Report

Wheatland Regional Sewer Pipeline

Wheatland, Yuba County, California

August 2022



Prepared for:

City of Wheatland
Community Development Department, Planning Division
111 C Street
Wheatland, California 95692

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1.0 INTRODUCTION

This report presents the results of a special-status plant survey conducted for the approximately 180-acre Wheatland Regional Sewer Pipeline Study Area (Study Area). The Study Area is an approximately eight-mile-long corridor of varying widths, beginning in the City of Wheatland in the south and ending in the north in an area of unincorporated Yuba County. The Study Area is generally located through portions of the City of Wheatland (south on Malone Avenue to east of State Route 65) and unincorporated Yuba County (north on Jasper Lane, west through farmland, and north towards South Beale Road) (Figure 1). The Project is located within portions of Sections 24 and 25, Township 14 North, Range 4 East; and Sections 19 and 30, Township 14 North, Range 5 East (MDB&M) of the "Wheatland, California" 7.5-Minute Series USGS Topographic Quadrangle (USGS 2022).

2.0 METHODOLOGY

Madrone Ecological Consulting, LLC (Madrone) botanist Daria Snider and biologist Matt Shaffer conducted special-status plant surveys of the Study Area on 28, 29, and 30 June and 27 July 2021 and 2 May 2022. The special-status plant survey was conducted in accordance with the U.S. Fish and Wildlife Service's *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants* (USFWS 1996), California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFW 2018), and the *CNPS Botanical Survey Guidelines* (CNPS 2001).

A list of special-status plant species with potential to occur within the Study Area was developed by reviewing the following literature, and then refining the list based on habitats present within the Study Area:

- California Native Plant Society (CNPS) Rare and Endangered Plant Inventory (CNPS 2022) query of CRPR Lists 1A, 1B, 2A, 2B, and 3 within the "Wheatland, California" USGS topo quadrangle and eight surrounding quadrangles;
- USFWS Information for Planning and Conservation (IPaC) (USFWS 2022) query for the Study Area; and
- the California Natural Diversity Database occurrences of special-status plant species within 5 miles of the Study Area (CNDDDB 2022).

The target species for this survey were:

- Dwarf downingia (*Downingia pusilla*);
- Boggs Lake hedge hyssop (*Gratiola heterosepala*);
- Ahart's dwarf rush (*Juncus leiospermus* var. *aharti*);
- Legenere (*Legenere limosa*);
- Pincushion navarretia (*Navarretia myersii* ssp. *myersii*);
- Sanford's arrowhead (*Sagittaria sanfordii*); and
- Brazilian watermeal (*Wolffia brasiliensis*)

Meandering pedestrian surveys were conducted throughout the Study Area. The surveys were floristic in nature, which means that all plant species observed on-site were identified to the taxonomic level necessary to determine rarity. Thus, if a special-status plant was present but not on the target list, it would have been detected and documented. Plant taxonomy was based on the nomenclature in the *Jepson eFlora* (Jepson Flora Project 2022). Terrestrial vegetation communities were classified according to the *Manual of California Vegetation, Second Edition* (Sawyer et al. 2009). Qualifications for the biologists that conducted the survey are included in **Attachment A**, a list of reference populations of target plants visited is included in **Attachment B**, and a comprehensive list of all plant species observed during surveys of the Study Area is included in **Attachment C**.

3.0 EXISTING SITE CONDITIONS

The Study Area is located within and to the north and northeast of the City of Wheatland. The southern portion of the Study Area primarily runs along 6th Street, Spenceville Road, and Jasper Lane between urban and rural residences and agricultural fields (**Figure 3**). In the northern portion of the Study Area, the alignment runs west along farm roads through orchards and other agricultural fields and incorporates annual brome grassland and irrigated pastures. Ruderal and disturbed areas occur along the edges of fields and roadways.

The bulk of the aquatic resources mapped within the Study Area are roadside ditches along the roads, and irrigation ditches that service the agricultural fields in the area. Seasonal wetlands and seasonal wetland swales are present in the annual brome grasslands and hay fields. The Study Area crosses two major intermittent drainages: Dry Creek on Jasper Lane, and Best Slough in the northern portion of the Study Area.

The Study Area is extremely flat, with lower elevations along the Best Slough and Dry Creek channels. Elevations range from about 80 feet above mean sea level at Pump Station 1 to a high of about 110 feet at the Spenceville Road/Jasper Lane intersection near Pump Station 2. From Pump Station 2, the elevation gradually drops to a low of about 75 feet at Best Slough.

Surrounding land uses are largely consistent with land uses within the Study Area (rural residential and agriculture).

3.1 Terrestrial Vegetation Communities

3.1.1 Annual Brome Grassland

The annual brome grasslands within the Study Area occur primarily in the northern portion of the Study Area. Dominant plant species in this community includes soft brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), medusahead grass (*Elymus caput-medusae*), wild oat (*Avena fatua*), perennial ryegrass (*Festuca perennis*), brome fescue (*F. bromoides*), rattail fescue (*F. myuros*), filaree (*Erodium botrys*), rose clover (*Trifolium hirtum*), and hairy hawkbit (*Leontodon saxatilis*).

3.1.2 Hay Field

The hay fields are similar to the annual brome grasslands but are dominated by perennial ryegrass and are mowed regularly.

3.1.3 Canarygrass Grassland

An extensive floodplain area south of Best Slough in the northern portion of the Study Area is a canarygrass grassland. This area supports approximately 70% cover of Harding grass (*Phalaris aquatica*). Perennial ryegrass and broad-leaved pepperweed (*Lepidium latifolium*) co-dominate this area, and coyote brush (*Baccharis pilularis*) is scattered throughout. The density of these perennial species appears to preclude almost any other vegetation from establishing in this area.

3.1.4 Armenian Blackberry Bramble

The Armenian blackberry (*Rubus armeniacus*) brambles are monocultures of Armenian blackberry, as this species forms dense patches that shade out all other vegetation. These brambles occur primarily in the northern portion of the Study Area.

3.1.5 Eucalyptus Woodland

A Eucalyptus woodland occurs along the eastern edge of an irrigation ditch in the northern portion of the Study Area. This woodland is a monoculture of red gum (*Eucalyptus camaldulensis*), as these trees produce chemicals that have allelopathic effects on other plant species.

3.1.6 Riparian Woodland

Riparian woodland occurs along the edges of portions of Best Slough and Dry Creek. This vegetation community is dominated by Oregon ash (*Fraxinus latifolia*), Fremont's cottonwood (*Populus fremontii*) and buttonwillow (*Cephalanthus occidentalis*). Other common plant species in this community are black willow (*Salix gooddingii*), poison-oak (*Toxicodendron diversilobum*), Armenian blackberry, and South American vervain (*Verbena bonariensis*). This community is considered a Sensitive Natural Community by CDFW (CDFW 2018).

3.1.7 Sandbar Willow Riparian Scrub

Sandbar willow (*Salix exigua*) riparian scrub occurs along the edges of some of the irrigation ditches in the northern portion of the Study Area. This community is almost entirely a monoculture of sandbar willow, but other plants common in the adjacent ditches also occur, including tall nutsedge (*Cyperus eragrostis*) and slender willowherb (*Epilobium ciliatum*).

3.1.8 Valley Oak Woodland

A few stands of Valley oak (*Quercus lobata*) woodland have been mapped within the Study Area. These occur both as narrow strips along the edges of roadways and as larger stands in more natural settings. This community is typically mature Valley oak trees with an annual brome grassland understory, with an occasional shrub layer and very little herbaceous vegetation. Common shrubs observed in the Valley oak woodland within the Study Area include California rose (*Rosa californica*), olive (*Olea europaea*), and Armenian blackberry (*Rubus armeniacus*). This community is considered a Sensitive Natural Community by CDFW (CDFW 2022).

3.1.9 High Intensity Agriculture

A substantial portion of the Study Area is comprised of high intensity agricultural crops, including rice fields, irrigated field crops, orchards, and disced fields. Rice fields are primarily occupied by rice (*Oryza sativa*), but also support a number of marsh species such as broad-leaved arrowhead (*Sagittaria latifolia*) and blue mud plantain (*Heteranthera limosa*), especially around the edges. The irrigated field crops were freshly planted in grass that was unidentifiable at the time of the 2021 survey, and aerial photograph review indicates that these fields are regularly irrigated. They appear heavily maintained and likely support a monoculture of the crop plant. The orchards within the Study Areas support almost exclusively the tree crop being grown with very little herbaceous weedy vegetation in the understory. The predominant tree crop is European plum (*Prunus domestica*), but there are also some English walnut (*Juglans regia*) orchards. Quite a few fields in the northern portion of the Study Area were disced and being graded during the field survey. During a subsequent survey, it appeared that these fields were being prepared to be planted with a tree crop, but no planting had occurred. All of these high intensity agricultural crops are heavily maintained, and almost entirely comprised of cultivated non-native plants.

3.1.10 Irrigated Pasture

Irrigated pastures are located in the northern portion of the Study Area. The irrigated pastures are fields grazed by horses and cattle that are comprised of a variety of facultative plant species, such as perennial ryegrass (*Festuca perennis*), Baltic rush (*Juncus balticus*), and reed fescue (*Festuca arundinacea*).

3.1.11 Ruderal

Ruderal areas are areas dominated primarily by forbs that occur largely in the unmaintained areas adjacent to agricultural fields or roadways. Dominant plant species in the ruderal areas include Russian thistle (*Salsola tragus*), bristly ox-tongue (*Helminthotheca echioides*), cheese weed (*Malva neglecta*), toothpick weed (*Ammi visnaga*), panicled willow-herb (*Epilobium brachycarpum*), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), prickly wild lettuce (*Lactuca serriola*), and grass species typical of the annual brome grasslands.

3.1.12 Developed

Developed areas include areas mapped as Urban, Rural Residential, and Dirt Roads. These are areas of predominantly impermeable surfaces (pavement, buildings, etc.), regularly maintained dirt roadways, or areas of maintained landscaping adjacent to residential or commercial/industrial development.

3.2 Aquatic Resources

The Study Area supports perennial creeks, seasonal marsh, seasonal wetland, seasonal wetland swale, vernal pool, and three types of ditches (drainage ditch, irrigation ditch, and roadside ditch) (Figure 2).

3.2.1 Seasonal Marsh

Two areas of seasonal marsh are present in the Study Area. These features are dominated by perennial facultative wetland plant species such as Baltic rush and tall nutsedge.

3.2.2 Seasonal Wetland

A number of depressional seasonal wetlands are present in the Study Area. The seasonal wetlands are shallow depressional wetlands that are dominated by facultative grasses and forbs characteristic of disturbed areas, including perennial ryegrass, Mediterranean barley (*Hordeum marinum*), toad rush (*Juncus bufonius*), hyssop loosestrife (*Lythrum hyssopifolium*), coyote-thistle (*Eryngium castrense*), and shining peppergrass (*Lepidium nitidum*).

3.2.3 Seasonal Wetland Swale

Three seasonal wetland swales are present in the northern portion of the Study Area. These features are dominated by similar plant species as the depressional seasonal wetlands but are gently sloping wetlands as opposed to confined depressions.

3.2.4 Vernal Pool

A number of vernal pools occur within the Study Area. Vernal pools are seasonal wetlands underlain by a hardpan that results in a perched water table. This perched water table extends the hydroperiod of vernal pools, which results in a unique flora that occupies these features. The vernal pools within the Study Area are dominated by wavy-stemmed popcorn flower (*Plagiobothrys undulatus*), smooth goldfields (*Lasthenia glaberrima*), Great Valley coyote-thistle, and Mediterranean beard grass (*Polypogon maritimus*).

3.2.5 Perennial Creek

Two perennial creeks pass through the Study Area. These include Best Slough near the northern end of the pipeline alignment (Sheet 1 of Figure 2) and Dry Creek where the creek crosses under Jasper Lane (Sheet 5

of Figure 2). The perennial creeks are primarily unvegetated within the channel due to the depth of the water, but aquatic species, such as parrot's feather (*Myriophyllum aquaticum*), pond weed (*Potamogeton* species), and water primrose (*Ludwigia peploides*) occur sporadically. The banks support a diverse suite of perennial hydrophytes, such as rice cutgrass (*Leersia oryzoides*), smartweed (*Persicaria* species), Australian rush (*Juncus usitatus*), Santa Barbara sedge (*Carex barbarae*), and dallisgrass (*Paspalum dilatatum*).

3.2.6 Ditches

Three types of ditches occur within the Study Area. These include several segments of drainage ditch that convey runoff from developed and agricultural areas, irrigation ditches that convey irrigation water to local farming operations, and roadside ditches that convey stormwater runoff along paved roadways. The roadside ditches are either unvegetated or occupied by weedy ruderal vegetation; these features are ephemeral and convey flow only during and immediately following rain events. The irrigation ditches are mostly unvegetated within the channel as there are either dry (when not conveying flow to fields) or full of several feet of water in the summer when they are conveying flow to the fields. The edges of the irrigation channels support weedy wetland vegetation, such as tall nutsedge, dallisgrass, willowherb (*Epilobium brachycarpum*), and smartweed. The drainage ditches drain both agricultural runoff and stormwater, and they are generally vegetated by marshy vegetation, such as creeping spikerush (*Eleocharis macrostachya*) and cattails (*Typha latifolia*), and bordered by Fremont's cottonwood, black willow (*Salix gooddingii*) and South American vervain (*Verbena bonariensis*).

3.3 Soils

The Natural Resources Conservation Service identifies six soil mapping units within the Study Area (NRCS 2022) (Figure 3): Hollenbeck silty clay loam, 0 to 1 percent slopes (131); Conejo loam, 0 to 1 percent slopes, MLRA 17 (141); Conejo loam, 0 to 2 percent slopes, MLRA 17 (142); Horst silt loam, 0 to 2 percent slopes (170); Redding gravelly loam, 0 to 8 percent slopes, MLRA 17 (208); and San Joaquin loam, 0 to 1 percent slopes (214). None of the soil mapping units are considered moderately or strongly alkaline; however, units (208) and (214) are somewhat acidic, and unit (131) has a high clay content. No soils derived from serpentine or gabbro occur within the Study Area.

4.0 SURVEY RESULTS

4.1 Dwarf Downingia

Dwarf downingia (*Downingia pusilla*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It is a diminutive annual herb that is strongly associated with vernal pools and other seasonally inundated features at elevations ranging from sea level to approximately 1,500 feet (CNPS 2022). Dwarf downingia is typically associated with areas that experience a moderate degree of disturbance, and it blooms from March to May.

The vernal pools, seasonal wetlands and seasonal wetland swales within the Study Area represent suitable habitat for this species. Field surveys conducted by a botanist during the summer of 2021 and spring of 2022 failed to detect this species.

4.2 Boggs Lake Hedge-Hyssop

Boggs Lake hedge-hyssop (*Gratiola heterosepala*) is not federally listed, but it is a California endangered species and a CRPR List 1B.2 plant. Boggs Lake hedge-hyssop grows in vernal pools and around the perimeter of lakes and ponds between 30 and 7,800 feet (CNPS 2022). This small annual herb favors clay soils, and blooms from April to August (CNPS 2022).

The vernal pools and seasonal wetlands within the Study Area represent suitable habitat for this species. Field surveys conducted by a botanist during the summer of 2021 and spring of 2022 failed to detect this species.

4.3 Ahart's Dwarf Rush

Ahart's dwarf rush (*Juncus leiospermus* var. *ahartii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. Ahart's dwarf rush grows along the edges of seasonal wet habitats such as vernal pools and swales within valley and foothill grasslands between elevations of approximately 100 feet and 750 feet (CNPS 2022). This annual herb blooms from March to May (CNPS 2022).

The vernal pools, seasonal wetlands and seasonal wetland swales within the Study Area represent suitable habitat for this species. Field surveys conducted by a botanist during the summer of 2021 and spring of 2022 failed to detect this species.

4.4 Legenere

Legenere (*Legenere limosa*) is not federally or state listed, but it is classified as a CRPR List 1B.1 species. This annual herb is primarily associated with seasonal wetlands with a long hydroperiod, such as vernal pools and marsh and pond edges (CNPS 2022). Legenere occurs at elevations between sea level and 2,600 feet, and blooms from April to June (CNPS 2022).

The vernal pools, seasonal wetlands and seasonal marshes within the Study Area represent suitable habitat for this species. Field surveys conducted by a botanist during the summer of 2021 and spring of 2022 failed to detect this species.

4.5 Pincushion Navarretia

Pincushion navarretia (*Navarretia myersii* ssp. *myersii*) is not federally or state listed, but it is classified as a CRPR List 1B.1 plant. This species is found in vernal pools and other mesic areas in annual grasslands, often

on acidic soils (CNPS 2022). Pincushion navarretia is found between approximately 65 and 1,100 feet and blooms in April and May (CNPS 2022).

The vernal pools, seasonal wetlands and seasonal wetland swales within the Study Area represent suitable habitat for this species. Field surveys conducted by a botanist during the summer of 2021 and spring of 2022 failed to detect this species.

4.6 Sanford's Arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is not federally or state listed, but it is classified as a CRPR List 1B.2 plant. It generally occurs in shallow freshwater habitats associated with drainages, canals, and larger ditches that sustain inundation and/or slow moving water into early summer. This perennial rhizomatous species blooms from May to October, and occurs from sea level to approximately 2,000 feet (CNPS 2022).

The perennial creeks and ditches within the Study Area represent suitable habitat for Sanford's arrowhead. Field surveys conducted by a botanist during the summer of 2021 and spring of 2022 failed to detect this species.

4.7 Brazilian Watermeal

Brazilian watermeal (*Wolffia brasiliensis*) is not federally or state listed, but it is classified as a CRPR List 2B.3 plant. It is a very small, floating perennial herb that is found in a variety of perennial waterbodies. This species is identifiable throughout much of the year, and is found between approximately 65 and 330 feet (CNPS 2022).

The perennial creeks and ditches within the Study Area represent suitable habitat for Brazilian watermeal. Field surveys conducted by a botanist during the summer of 2021 and spring of 2022 failed to detect this species.

5.0 CONCLUSION

No special-status plant species were observed during the 2021 and 2022 protocol-level special-status plant survey of the Wheatland Regional Sewer Pipeline Study Area.

6.0 REFERENCES

- California Department of Fish and Wildlife (CDFW). 2018. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*. Dated March 2018.
- California Natural Diversity Database (CNDDDB). 2022. *RareFind 5*. California Department of Fish and Wildlife. Accessed July 2021 and January and February 2022.
- California Native Plant Society (CNPS). 2001. *CNPS botanical survey guidelines*. Pages 38-40 in California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California* (D.P. Tibor, editor). Sixth edition. Special Publication No. 1, California Native Plant Society, Sacramento, 387 pp.
- _____. 2022. *Inventory of Rare and Endangered Plants* (online edition, v9-01 0.0). California Native Plant Society, Sacramento, CA. Website <http://www.rareplants.cnps.org>. Accessed January and February 2022.
- Jepson Flora Project (eds.) 2022. *Jepson eFlora*, <http://ucjeps.berkeley.edu/eflora/> [accessed July 2021 - May 2022]
- Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation, Second Edition*. California Native Plant Society, Sacramento, CA. 1300 pp.
- Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture (NRCS). 2021. *Web Soil Survey*. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed February 2022.
- U.S. Geological Survey (USGS). 2022. "*Wheatland, California*" 7.5-Minute Series Topographic Quadrangle. U. S. Geological Survey. Denver, Colorado.
- U.S. Department of the Interior, Fish and Wildlife Service (USFWS). 1996. *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants*. Sacramento, CA.
- U.S. Department of the Interior, Fish and Wildlife Service (USFWS). 2022. *IPaC Trust Resource Report for the Study Area*. Generated from <http://ecos.fws.gov/ipac/>. Accessed January 2022.

Figures

Figure 1. Vicinity Map

Figure 2. Aquatic Resources

Figure 3. Natural Resources Conservation Service Soils

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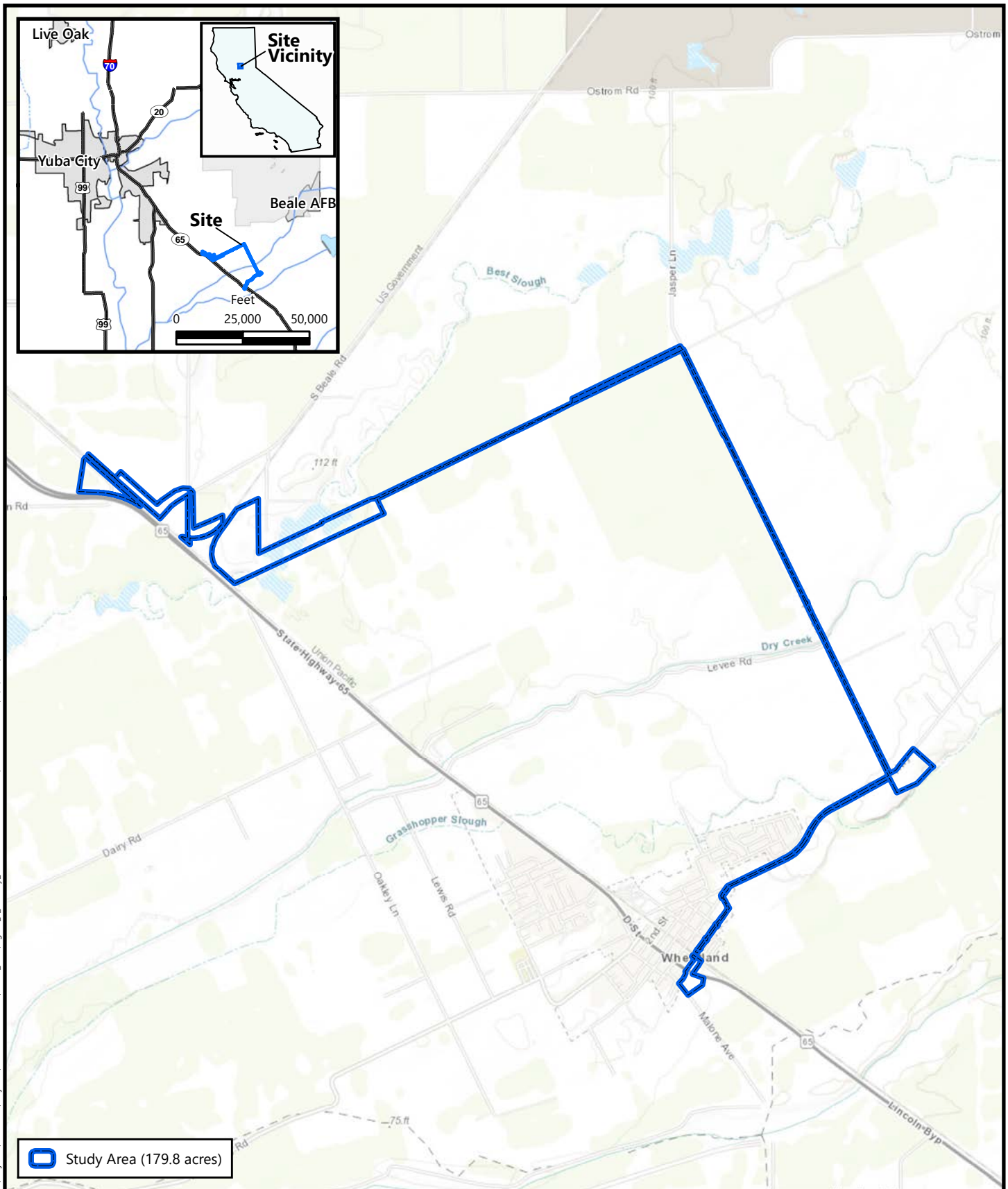
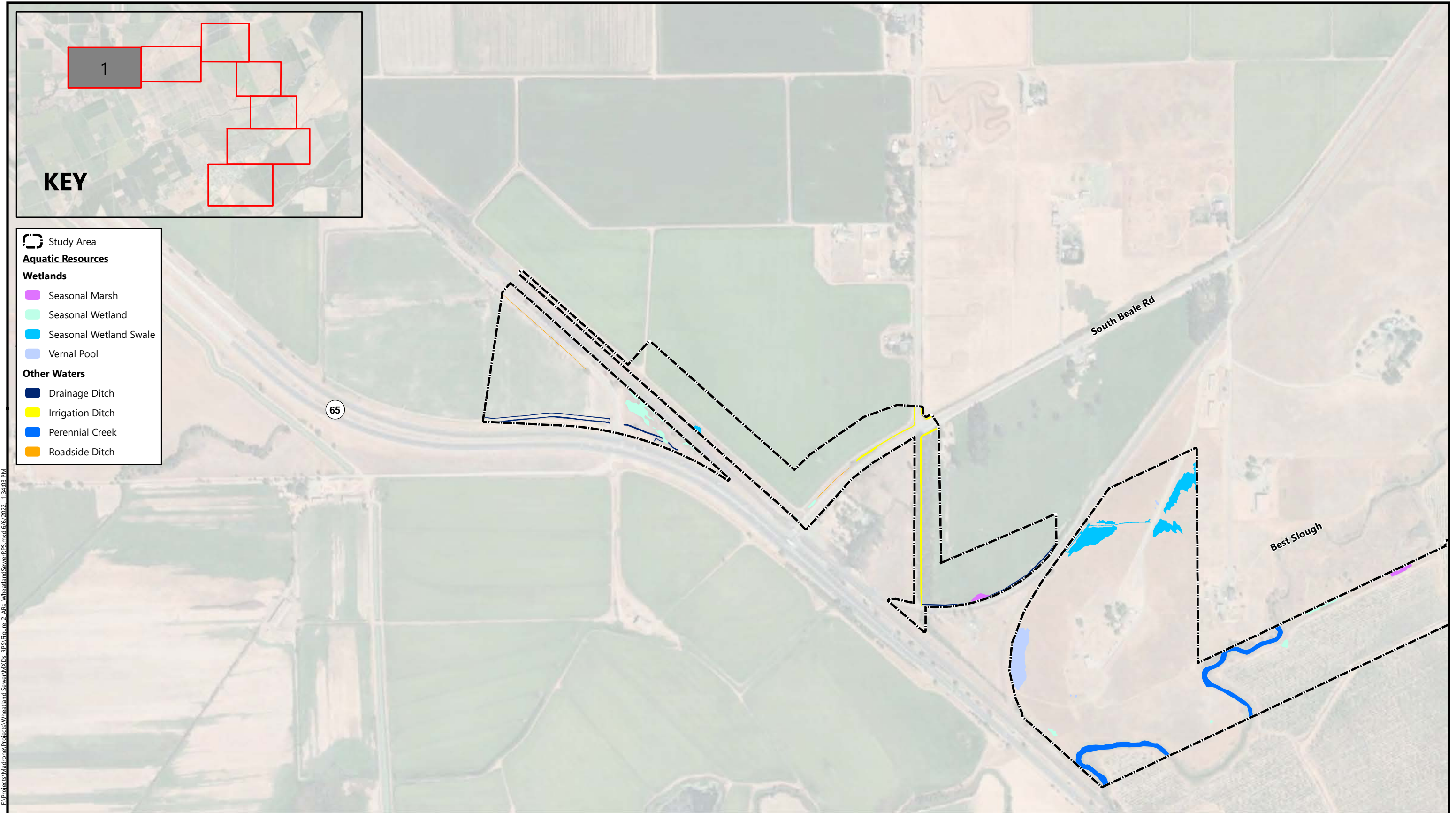


Figure 1
Site and Vicinity

Source: United States Geologic Survey, 2022
"Wheatland, California" 7.5-Minute Topographic Quadrangle
Section 24 and 25, Township 14 North, Range 4 East; and
Section 19 and 30, Township 14 North, Range 5 East, MDB&M
Longitude -121.448693, Latitude 39.037041

Wheatland Regional Sewer
Yuba County, California



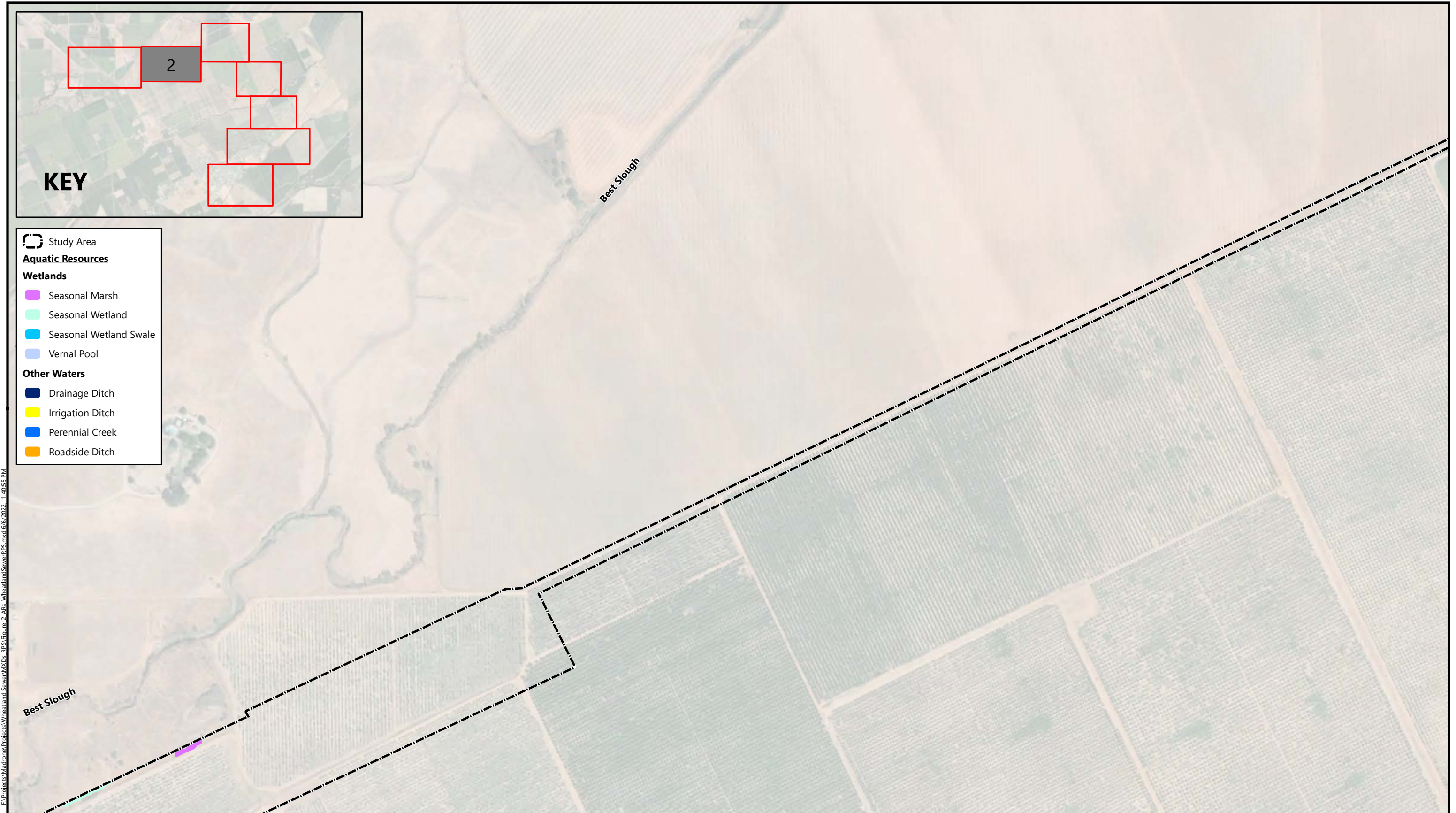


Aerial Source: Maxar, 22 October 2020

Figure 2
Aquatic Resources

Wheatland Regional Sewer
Yuba County, California





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Aerial Source: Maxar, 22 October 2020

Figure 2
Aquatic Resources

Wheatland Regional Sewer
Yuba County, California





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Aerial Source: Maxar, 22 October 2020

Figure 2
Aquatic Resources

Wheatland Regional Sewer
Yuba County, California

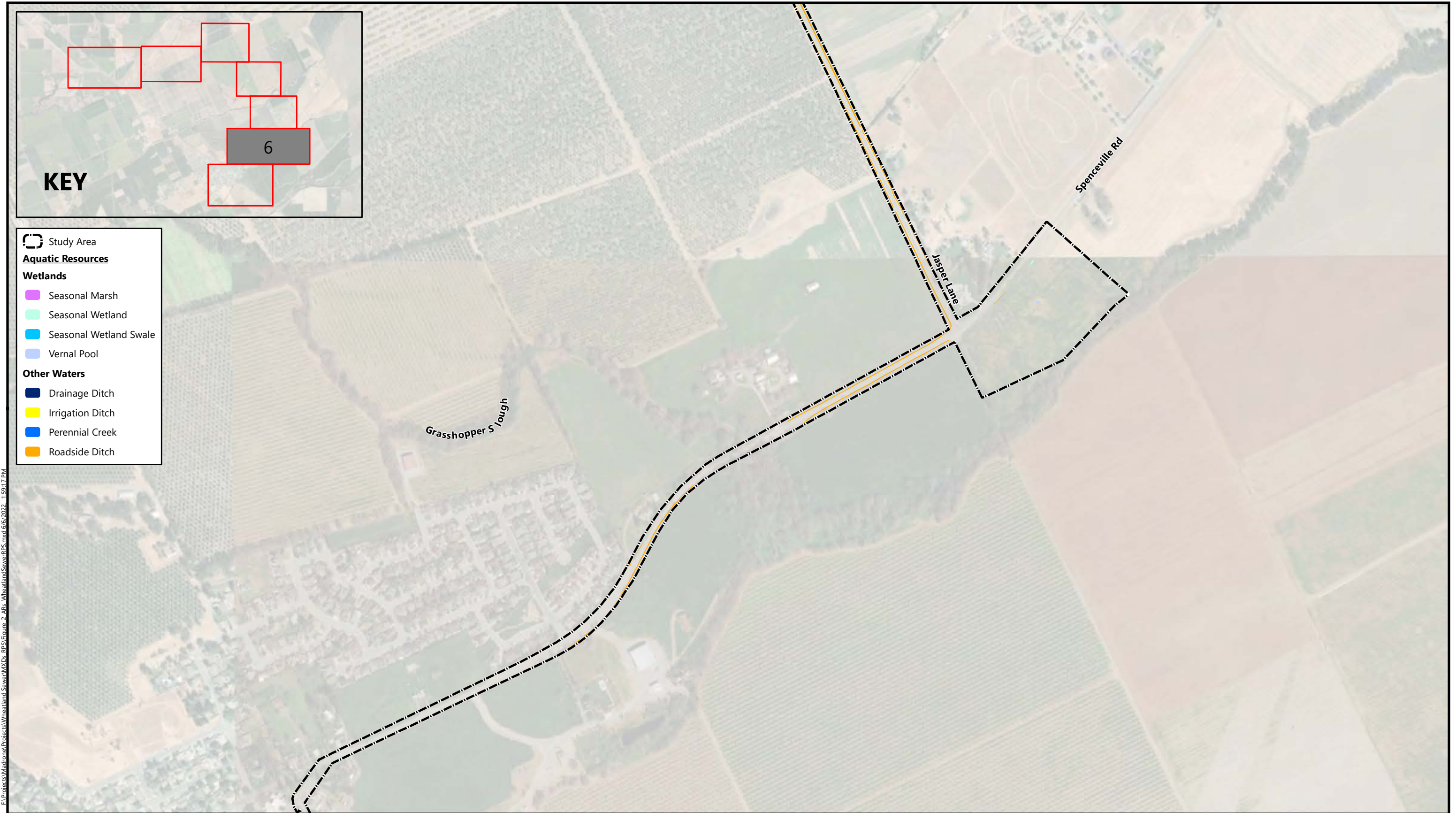




Figure 2
Aquatic Resources

Wheatland Regional Sewer
Yuba County, California





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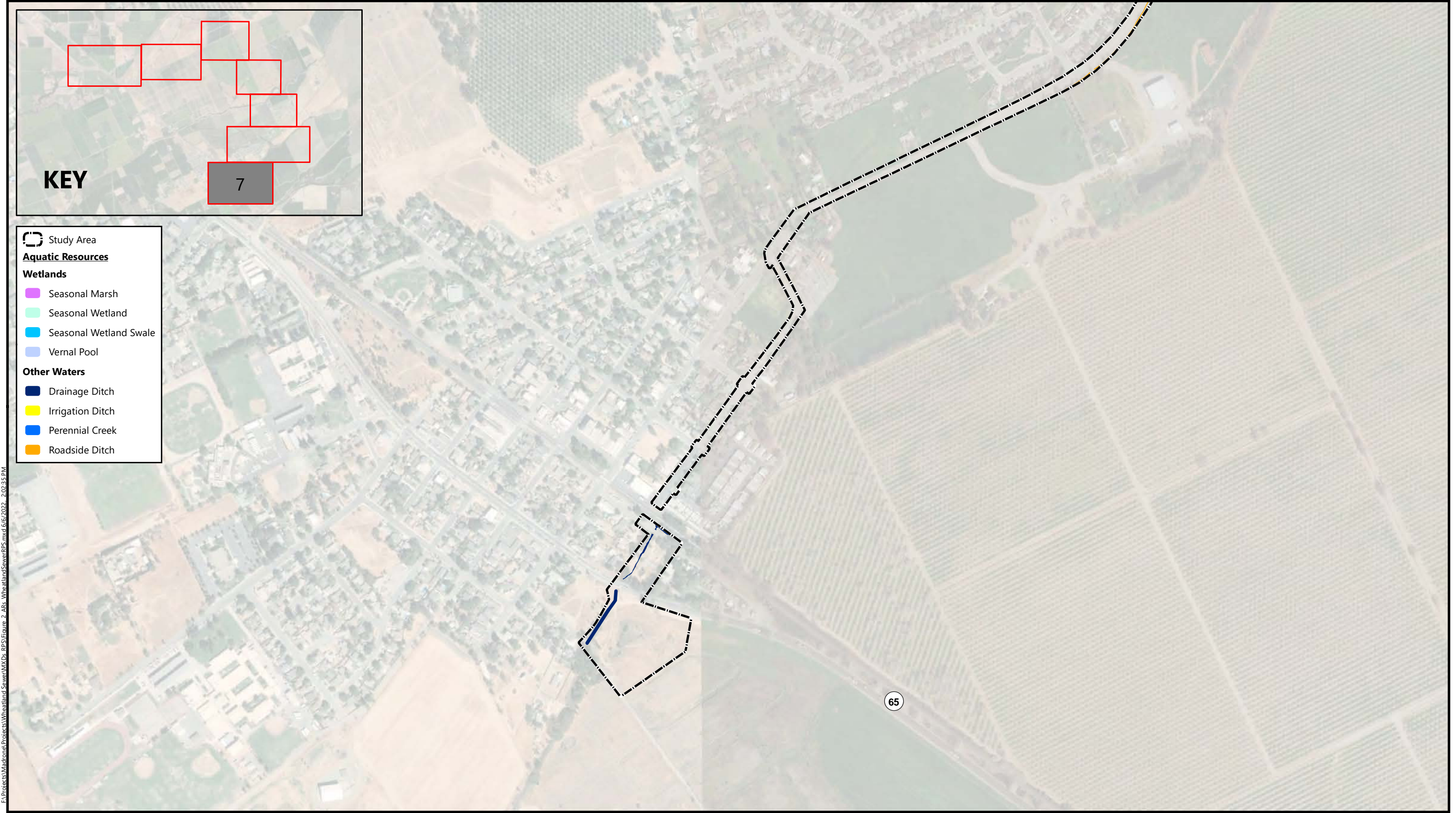


Aerial Source: Maxar, 22 October 2020

Figure 2
Aquatic Resources

Wheatland Regional Sewer
Yuba County, California





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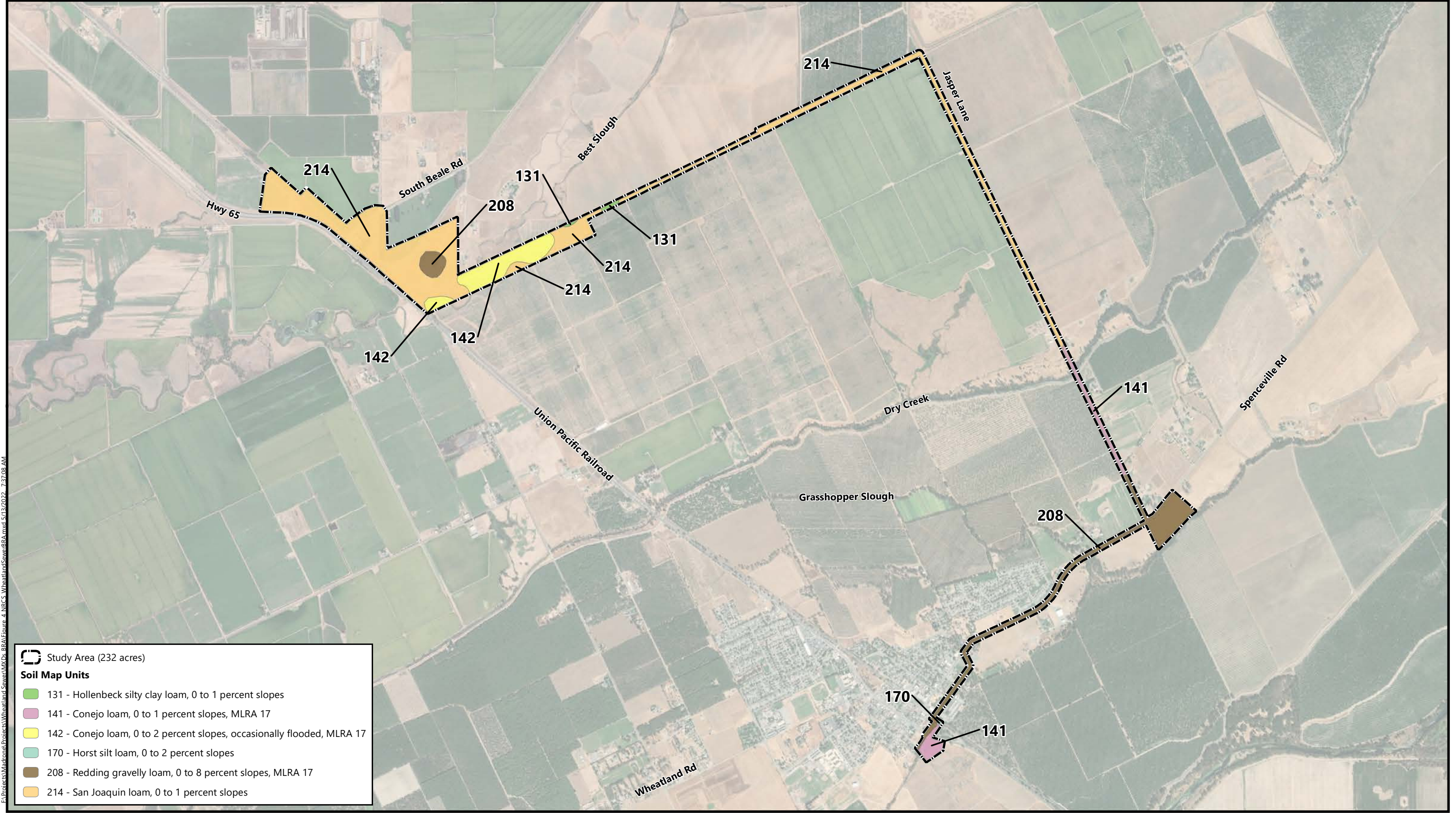


Aerial Source: Maxar, 22 October 2020

Figure 2
Aquatic Resources

Wheatland Regional Sewer
Yuba County, California

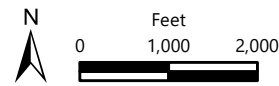




Study Area (232 acres)

Soil Map Units

- 131 - Hollenbeck silty clay loam, 0 to 1 percent slopes
- 141 - Conejo loam, 0 to 1 percent slopes, MLRA 17
- 142 - Conejo loam, 0 to 2 percent slopes, occasionally flooded, MLRA 17
- 170 - Horst silt loam, 0 to 2 percent slopes
- 208 - Redding gravelly loam, 0 to 8 percent slopes, MLRA 17
- 214 - San Joaquin loam, 0 to 1 percent slopes



Soil Survey Source: USDA, Soil Conservation Service.
 Aerial Source: Maxar, 22 October 2020

Attachments

Attachment A: Botanist Qualifications

Attachment B: Target Plant Species Reference Population Information

Attachment C: Plant Species Observed within the Wheatland Regional Sewer Pipeline Study
Area

Attachment A

Botanist Qualifications

Rare Plant Survey Botanist Qualifications

Daria Snider

Ms. Snider has more than 17 years of experience conducting botanical inventories. As a senior biologist, she specializes in rare plant surveys, wetland delineations, and general biological resource inventories. In addition to rare plant surveys, her botanical experience includes general vegetation surveys, aerial and field vegetation mapping, Certified Arborist tree inventories, CRAM Assessments, floristic monitoring, and invasive species identification and mapping. Ms. Snider's experience includes a wide variety of habitat types, including vernal pools, annual grasslands, oak woodland, riparian communities, coastal sage scrub, chaparral, cismontane and montane forests, and desert. Her geographic expertise covers much of California, from Shasta County in the north to the Mojave Desert and San Gabriel Mountains in the south, and from Napa County in the west to the Sierra Nevada foothills and mountains in the east. Her primary focus is on the Sacramento Valley and the adjacent Sierra Nevada foothills.

Attachment B

Target Plant Species Reference Population Information

**Target Plant Species Reference Population Information
for the Wheatland Regional Sewer Pipeline
Special-Status Plant Survey**

Plant Species	Location of Reference Population	Date of Visit	Phenology of Reference Population/ Distinctive Characteristics
<i>Downingia pusilla</i> Dwarf downingia	Westpark Open Space Preserve	2 March 2022	Most plants still vegetative with a few blooms.
	CNDDDB Occurrence #142	16 March 2022	Population is in full bloom quite early this year.
<i>Gratiola heterosepala</i> Bogg's Lake hedge-hyssop	Churchill Downs Wetland Preserve CNDDDB Occurrence #35	2 March 2022 10 March 2022 1 April 2022	The pool containing this species is usually still inundated in early April. This year, the pool was dry on April 1, a number of annual vernal pool plants were present in very low numbers (including the common <i>Gratiola ebracteata</i>), and the pool was quite bare. No <i>Gratiola heterosepala</i> were observed and it appears this plant did not emerge this year at all at this location. Other botanists reported similar results elsewhere in the region.
	Markham Ravine Mitigation Site ¹	29 March 2022	Numerous <i>Gratiola heterosepala</i> plants were observed growing in two pools. About a third of the plants were vegetative, a third in bloom, and a third in fruit; phenology depended on plant's moisture gradient in the pool.
<i>Juncus leiospermus</i> var. <i>ahartii</i> Ahart's dwarf rush	Mather Regional Park CNDDDB Occurrence #8	4 April 2022	The wetland in which we have previously observed this species is usually still quite wet at this time of year with very early season floristics, but during this visit, the feature was entirely dried out, and no <i>Juncus leiospermus</i> var. <i>ahartii</i> was observed. This plant may not have emerged at all at this location this year.

¹ *Gratiola heterosepala*-seed bearing soil was translocated to this site in the fall of 2020 under CDFW ITP 2081-2014-074-02.

Plant Species	Location of Reference Population	Date of Visit	Phenology of Reference Population/ Distinctive Characteristics
<i>Legenere limosa</i> Legenere	CNDDDB Occurrence #27 (Sacramento County)	1 April 2022 15 April 2022	On April 1, plants were numerous and large in size. Most were in fruit but some were observed in flower. By April 15 all plants were in fruit with seeds beginning to disperse.
<i>Navarretia myersii</i> ssp. <i>myersii</i> Pincushion navarretia	Herbarium specimen at UC Davis Center for Plant Diversity Online Jepson Manual and Calflora	23 April 2019 March through May 2022	Pressed specimen. Corollas for this species are quite long (12-21 mm vs 4-10 mm for the similar but more common <i>Navarretia leucocephala</i> ssp. <i>leucocephala</i>). In addition, the calyx lobes for this species are long-hairy as opposed to the generally glabrous calyx lobes for <i>N. leucocephala</i> ssp. <i>leucocephala</i> .
<i>Sagittaria sanfordii</i> Sanford's arrowhead	CNDDDB Occurrence #146	21 June 2021	Hundreds of plants were present at this site. Approximately 50% of the plants were in bloom but all were vegetative and exhibited emergent leaves with the characteristic petiole with a triangular cross-section.
<i>Wolffia brasiliensis</i> Brazilian watermeal	N/A Online Jepson Manual and Calflora	2021 through 2022	This plant has been documented in only a few locations in California. It can be differentiated from other, similar very small floating aquatic plants as it has no roots, the plant bodies are almost spheric instead of flat, and the top of the plant has a conical bump near the center.

Attachment C

Plant Species Observed within the Wheatland Regional Sewer Pipeline Study Area

Plant Species Observed within the
Wheatland Regional Sewer Pipeline Study Area
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Family / Species Name	Common name	Native / Non-Native
ADOXACEAE		
<i>Sambucus nigra</i> subsp. <i>caerulea</i>	Blue elderberry	Native
AGAVACEAE		
<i>Agave americana</i>	Century plant	Non-Native
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	Common soap plant	Native
ALISMATACEAE		
<i>Alisma triviale</i>	Northern water plantain	Native
<i>Sagittaria latifolia</i>	Broadleaf arrowhead	Native
ANACARDIACEAE		
<i>Pistacia vera</i>	Pistachio	Non-Native
<i>Toxicodendron diversilobum</i>	Western poison oak	Native
APIACEAE		
<i>Ammi visnaga</i>	Bisnaga	Non-Native
<i>Eryngium castrense</i>	Great valley coyote-thistle	Native
APOCYNACEAE		
<i>Asclepias fascicularis</i>	Narrow-leaf milkweed	Native
<i>Asclepias speciosa</i>	Showy milkweed	Native
ASTERACEAE		
<i>Anaphalis margaritacea</i>	Pearly everlasting	Native
<i>Anthemis cotula</i>	Mayweed	Non-Native
<i>Artemisia douglasiana</i>	Mugwort	Native
<i>Baccharis pilularis</i> subsp. <i>pilularis</i>	Coyote brush	Native
<i>Carduus pycnocephalus</i> subsp. <i>pycnocephalus</i>	Italian thistle	Non-Native
<i>Centaurea solstitialis</i>	Yellow star-thistle	Non-Native
<i>Centromadia fitchii</i>	Fitch's spikeweed	Native
<i>Cichorium intybus</i>	Chicory	Non-Native
<i>Dittrichia graveolens</i>	Stinkwort	Non-Native
<i>Erigeron canadensis</i>	Horseweed	Native
<i>Gnaphalium palustre</i>	Western marsh cudweed	Native
<i>Grindelia camporum</i>	Great Valley gumplant	Native

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Family / Species Name	Common name	Native / Non-Native
<i>Helminthotheca echioides</i>	Bristly ox-tongue	Non-Native
<i>Holocarpha virgata</i> subsp. <i>virgata</i>	Slender tarweed	Native
<i>Hypochaeris glabra</i>	Smooth cat's-ear	Non-Native
<i>Lactuca serriola</i>	Prickly lettuce	Non-Native
<i>Lasthenia glaberrima</i>	Smooth goldfields	Native
<i>Leontodon saxatilis</i> subsp. <i>saxatilis</i>	Hairy cat's ear	Non-Native
<i>Logfia gallica</i>	Daggerleaf cottonrose	Non-Native
<i>Madia elegans</i>	Common madia	Native
<i>Matricaria discoidea</i>	Pineapple weed	Native
<i>Psilocarphus brevissimus</i> var. <i>brevissimus</i>	Dwarf woollyheads	Native
<i>Psilocarphus oregonus</i>	Oregon woollyheads	Native
<i>Silybum marianum</i>	Milk thistle	Non-Native
<i>Sonchus asper</i> subsp. <i>asper</i>	Prickly sow thistle	Non-Native
<i>Sonchus oleraceus</i>	Common sow thistle	Non-Native
<i>Tragopogon porrifolius</i>	Salsify	Non-Native
<i>Xanthium strumarium</i>	Cocklebur	Native
BORAGINACEAE		
<i>Amsinckia menziesii</i>	Common fiddleneck	Native
<i>Plagiobothrys bracteatus</i>	Bracted popcornflower	Native
<i>Plagiobothrys greenei</i>	Greene's spiny-nut popcornflower	Native
<i>Plagiobothrys stipitatus</i> var. <i>micranthus</i>	Slender popcornflower	Native
<i>Plagiobothrys undulatus</i>	Wavy-stemmed popcornflower	Native
BRASSICACEAE		
<i>Brassica nigra</i>	Black mustard	Non-Native
<i>Cardamine oligosperma</i>	Little western bittercress	Native
<i>Hirschfeldia incana</i>	Shortpod mustard	Non-Native
<i>Lepidium didymum</i>	Lesser swine cress	Non-Native
<i>Lepidium latifolium</i>	Perennial pepperweed	Non-Native
<i>Lepidium nitidum</i>	Shining peppergrass	Native
<i>Raphanus sativus</i>	Radish	Non-Native
<i>Rorippa curvisiliqua</i>	Curvepod yellowcress	Native
CAMPANULACEAE		
<i>Downingia ornatissima</i>	Ornate downingia	Native

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Family / Species Name	Common name	Native / Non-Native
CARYOPHYLLACEAE		
<i>Silene gallica</i>	Small-flower catchfly	Non-Native
<i>Spergula arvensis</i>	Corn spurrey	Non-Native
<i>Spergularia rubra</i>	Red sand-spurrey	Non-Native
CHENOPODIACEAE		
<i>Dysphania ambrosioides</i>	Mexican tea	Non-Native
<i>Salsola tragus</i>	Russian thistle	Non-Native
CONVOLVULACEAE		
<i>Convolvulus arvensis</i>	Bindweed	Non-Native
CRASSULACEAE		
<i>Crassula aquatica</i>	Water pygmyweed	Native
<i>Crassula tillaea</i>	Moss pygmyweed	Non-Native
CYPERACEAE		
<i>Carex barbarae</i>	Santa Barbara sedge	Native
<i>Cyperus eragrostis</i>	Tall nutsedge	Native
<i>Eleocharis macrostachya</i>	Creeping spikerush	Native
<i>Eleocharis parishii</i>	Parish's spikerush	Native
<i>Schoenoplectus acutus var. occidentalis</i>	Common tule	Native
EUPHORBIACEAE		
<i>Croton setiger</i>	Turkey-mullein	Native
<i>Euphorbia maculata</i>	Spotted spurge	Non-Native
<i>Euphorbia serpillifolia</i>	Thyme-leafed spurge	Native
FABACEAE		
<i>Acemispia americanus var. americanus</i>	Spanish lotus	Native
<i>Lotus corniculatus</i>	Bird's-foot trefoil	Non-Native
<i>Lupinus bicolor</i>	Miniature lupine	Native
<i>Medicago lupulina</i>	Black medick	Non-Native
<i>Medicago polymorpha</i>	California burclover	Non-Native
<i>Medicago sativa</i>	Alfalfa	Non-Native
<i>Robinia pseudoacacia</i>	Black locust	Non-Native
<i>Trifolium dubium</i>	Little hop clover	Non-Native
<i>Trifolium fragiferum</i>	Strawberry clover	Non-Native

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<i>Trifolium glomeratum</i>	Clustered clover	Non-Native
<i>Trifolium hirtum</i>	Rose clover	Non-Native
<i>Trifolium hybridum</i>	Alsike clover	Non-Native
<i>Trifolium tomentosum</i>	Woolly clover	Non-Native
<i>Vicia villosa subsp. varia</i>	Winter vetch	Non-Native
FAGACEAE		
<i>Quercus lobata</i>	Valley oak	Native
<i>Quercus wislizeni var. wislizeni</i>	Interior live oak	Native
GENTIANACEAE		
<i>Zeltnera muehlenbergii</i>	Monterey centaury	Native
GERANIACEAE		
<i>Erodium botrys</i>	Filaree	Non-Native
<i>Erodium cicutarium</i>	Redstem filaree	Non-Native
<i>Geranium dissectum</i>	Cut-leaf geranium	Non-Native
<i>Geranium molle</i>	Soft geranium	Non-Native
HALORAGACEAE		
<i>Myriophyllum aquaticum</i>	Parrot's feather	Non-Native
HYPERICACEAE		
<i>Hypericum perforatum subsp. perforatum</i>	Klamathweed	Non-Native
JUGLANDACEAE		
<i>Juglans hindsii</i>	Northern California black walnut	Native
JUNCACEAE		
<i>Juncus bufonius</i>	Toad rush	Native
<i>Juncus usitatus</i>	Australian rush	Non-Native
<i>Juncus xiphioides</i>	Iris-leaved rush	Native
LAMIACEAE		
<i>Mentha pulegium</i>	Pennyroyal	Non-Native
<i>Trichostema lanceolatum</i>	Vinegar weed	Native

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Family / Species Name	Common name	Native / Non-Native
LIMNANTHACEAE		
<i>Limnanthes alba subsp. alba</i>	White meadowfoam	Native
LYTHRACEAE		
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife	Non-Native
<i>Lythrum tribracteatum</i>	Threebract loosestrife	Non-Native
MALVACEAE		
<i>Abutilon theophrasti</i>	Velvet-leaf	Non-Native
MARSILEACEAE		
<i>Marsilea vestita subsp. vestita</i>	Hairy water fern	Native
MORACEAE		
<i>Ficus carica</i>	Edible fig	Non-Native
<i>Morus alba</i>	White mulberry	Non-Native
MYRSINACEAE		
<i>Lysimachia arvensis</i>	Scarlet pimpernel	Non-Native
MYRTACEAE		
<i>Eucalyptus camaldulensis</i>	River red gum	Non-Native
<i>Eucalyptus globulus</i>	Blue gum	Non-Native
OLEACEAE		
<i>Fraxinus latifolia</i>	Oregon ash	Native
<i>Ligustrum species</i>	Privet	Non-Native
<i>Olea europaea</i>	Olive	Non-Native
ONAGRACEAE		
<i>Epilobium brachycarpum</i>	Willowherb	Native
<i>Epilobium campestre</i>	Smooth boisduvalia	Native
<i>Epilobium ciliatum subsp. ciliatum</i>	Slender willowherb	Native
<i>Epilobium torreyi</i>	Torrey's willowherb	Native
<i>Ludwigia peploides</i>	Water primrose	Non-Native
OROBANCHACEAE		
<i>Castilleja attenuata</i>	Valley tassels	Native

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OXALIDACEAE		
<i>Oxalis micrantha</i>	Dwarf wood-sorrel	Non-Native
PHYTOLACCACEAE		
<i>Phytolacca americana</i> var. <i>americana</i>	Pokeweed	Non-Native
PLANTAGINACEAE		
<i>Callitriche marginata</i>	Winged water starwort	Native
<i>Gratiola ebracteata</i>	Bractless hedge-hyssop	Native
<i>Kickxia elatine</i>	Sharp-leaved fluellen	Non-Native
<i>Plantago coronopus</i>	Buck's-horn plantain	Non-Native
<i>Plantago lanceolata</i>	English plantain	Non-Native
<i>Plantago major</i>	Common plantain	Non-Native
PLATANACEAE		
<i>Platanus racemosa</i>	Western sycamore	Native
POACEAE		
<i>Agrostis avenacea</i>	Pacific bent grass	Non-Native
<i>Aira caryophyllea</i>	Silver hair grass	Non-Native
<i>Andropogon virginicus</i> var. <i>virginicus</i>	Broomsedge bluestem	Non-Native
<i>Arundo donax</i>	Giant reed	Non-Native
<i>Avena barbata</i>	Slender wild oat	Non-Native
<i>Avena fatua</i>	Wild oat	Non-Native
<i>Briza maxima</i>	Rattlesnake grass	Non-Native
<i>Briza minor</i>	Annual quaking grass	Non-Native
<i>Bromus diandrus</i>	Ripgut grass	Non-Native
<i>Bromus hordeaceus</i>	Soft chess	Non-Native
<i>Bromus sterilis</i>	Sterile brome	Non-Native
<i>Cynodon dactylon</i>	Bermuda grass	Non-Native
<i>Deschampsia danthonioides</i>	Annual hair grass	Native
<i>Digitaria sanguinalis</i>	Hairy crab grass	Non-Native
<i>Echinochloa crus-galli</i>	Barnyard grass	Non-Native
<i>Elymus caput-medusae</i>	Medusa head	Non-Native
<i>Elymus ponticus</i>	Tall wheat grass	Non-Native
<i>Elymus triticoides</i>	Beardless wild-rye	Native
<i>Festuca arundinacea</i>	Tall fescue	Non-Native
<i>Festuca bromoides</i>	Brome fescue	Non-Native

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<i>Festuca myuros</i>	Rattail sixweeks grass	Non-Native
<i>Festuca perennis</i>	Rye grass	Non-Native
<i>Glyceria declinata</i>	Low manna grass	Non-Native
<i>Hordeum marinum subsp. gussoneanum</i>	Mediterranean barley	Non-Native
<i>Hordeum murinum</i>	Wall barley	Non-Native
<i>Leptochloa fusca subsp. fascicularis</i>	Bearded sprangletop	Native
<i>Oryza sativa</i>	Rice cutgrass	Non-Native
<i>Paspalum dilatatum</i>	Dallis grass	Non-Native
<i>Paspalum distichum</i>	Knot grass	Native
<i>Phalaris aquatica</i>	Harding grass	Non-Native
<i>Phalaris lemmonii</i>	Lemmon's canary grass	Native
<i>Phalaris paradoxa</i>	Hood canary grass	Non-Native
<i>Poa annua</i>	Annual blue grass	Non-Native
<i>Poa pratensis subsp. pratensis</i>	Kentucky blue grass	Non-Native
<i>Polypogon maritimus</i>	Mediterranean beard grass	Non-Native
<i>Polypogon monspeliensis</i>	Annual rabbitfoot grass	Non-Native
<i>Sorghum halepense</i>	Johnson grass	Non-Native
<i>Stipa miliacea var. miliacea</i>	Smilo grass	Non-Native
<i>Stipa pulchra</i>	Purple needle grass	Native
<i>Triticum aestivum</i>	Wheat	Non-Native
POLEMONIACEAE		
<i>Navarretia intertexta</i>	Needle-leaf navarretia	Native
<i>Navarretia tagetina</i>	Marigold navarretia	Native
POLYGONACEAE		
<i>Persicaria lapathifolia</i>	Willow weed	Native
<i>Polygonum aviculare subsp. depressum</i>	Prostrate knotweed	Non-Native
<i>Rumex crispus</i>	Curly dock	Non-Native
<i>Rumex pulcher</i>	Fiddle dock	Non-Native
PORTULACACEAE		
<i>Portulaca oleracea</i>	Purslane	Non-Native
RANUNCULACEAE		
<i>Ranunculus muricatus</i>	Spiny-fruit buttercup	Non-Native

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ROSACEAE		
<i>Prunus cerasifera</i>	Cherry plum	Non-Native
<i>Prunus dulcis</i>	Almond	Non-Native
<i>Prunus persica</i>	Peach	Non-Native
<i>Rosa setigera</i>	Climbing rose	Non-Native
<i>Rubus armeniacus</i>	Armenian blackberry	Non-Native
RUBIACEAE		
<i>Cephalanthus occidentalis</i>	California button willow	Native
<i>Galium aparine</i>	Goose grass	Native
<i>Galium parisiense</i>	Wall bedstraw	Non-Native
SALICACEAE		
<i>Populus fremontii</i> subsp. <i>fremontii</i>	Fremont cottonwood	Native
<i>Salix exigua</i>	Sandbar willow	Native
<i>Salix gooddingii</i>	Goodding's black willow	Native
<i>Salix laevigata</i>	Red willow	Native
<i>Salix lasiolepis</i>	Arroyo willow	Native
SCROPHULARIACEAE		
<i>Verbascum blattaria</i>	Moth mullein	Non-Native
SIMAROUBACEAE		
<i>Ailanthus altissima</i>	Tree of heaven	Non-Native
SOLANACEAE		
<i>Solanum elaeagnifolium</i>	White horse-nettle	Non-Native
THEMIDACEAE		
<i>Brodiaea elegans</i> subsp. <i>elegans</i>	Harvest brodiaea	Native
<i>Dichelostemma multiflorum</i>	Wild hyacinth	Native
<i>Dipterostemon capitatus</i> subsp. <i>capitatus</i>	Blue dicks	Native
TYPHACEAE		
<i>Typha angustifolia</i>	Narrow-leaved cattail	Non-Native
<i>Typha latifolia</i>	Broad-leaved cattail	Native

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VERBENACEAE		
<i>Phyla nodiflora</i>	Frogfruit	Native
<i>Verbena bonariensis</i>	South American vervain	Non-Native
VISCACEAE		
<i>Phoradendron leucarpum</i> subsp. <i>macrophyllum</i>	Mistletoe	Native
VITACEAE		
<i>Vitis californica</i>	California wild grape	Native
ZYGOPHYLLACEAE		
<i>Tribulus terrestris</i>	Puncture vine	Non-Native