APPENDIX E

RIO DEL ORO HABITAT ASSESSMENT

Rio del Oro

Habitat Assessment

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February 16, 2005

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Rio Del Oro

Habitat Assessment

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TABLE OF CONTENTS

Introduction **1**

Methods **2**
Prefield Investigation 2
Field Survey 3
Determining Overall Biological Value 3

Results **4**
Habitat Types 7
Wildlife 10
Sensitive Biological Resources 11
Determination of Overall Biological Value 23

Conclusion **26**

References **27**

Personal Communications **30**

Tables

1 Special-Status Plant Species Known from or with Potential to Occur on the Rio del Oro Project Site 13

2 Special-status Wildlife Species Known from or with Potential to Occur on the Rio del Oro Project Site 16

Exhibits

1 Habitat Types at the Rio del Oro Project Site 5

2 CNDDB Special-Status Plant Occurrences 19

3 CNDDB Special-Status Wildlife Occurrences 21

4 Habitat Areas Most Valuable for Preservation 27

Appendices

A Representative Photographs

B Data Sheets

C U.S. Fish and Wildlife Service Species List (2004)

INTRODUCTION

This habitat assessment was prepared to serve the following purposes:

- Assess baseline conditions for upland habitats at the project site;
- Prepare a habitat map encompassing the entire project site;
- Supplement biological resources data collected during wetland delineation and focused special-status species surveys at the site;
- Serve as the basis for determining potential impacts to biological resources resulting from implementation and construction of the development under the proposed Rio del Oro Specific Plan;
- Determine habitat value provided by different plant communities present on-site;
- Support California Environmental Quality Act (CEQA) and National Environmental Protection Act (NEPA) analysis of the proposed project;
- Document common and sensitive biological communities on-site in sufficient detail to allow for a determination of habitat quality throughout the site to aid in the development of a "low density alternative" (i.e., wetland and biological habitat minimization and avoidance) to the proposed project for CEQA and NEPA analysis; and
- Provide background information for use in the 404(b)1 alternatives analysis currently being conducted for the proposed project as part of an application for an individual permit from the U.S. Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (CWA).

The Rio del Oro project site is located in the City of Rancho Cordova, in Sacramento County and encompasses approximately 3,893 acres along the east side of Sunrise Boulevard from White Rock Road to Douglas Road. The natural elevation of the project site ranges from approximately 125 to 180 feet above mean sea level but the tailings piles present on the site are up to 60 feet higher.

Gold mining activities that consisted of dredging alluvial deposits occurred on the project site in the 1920s and 1950s. The dredging operations significantly altered the natural landscape creating massive tailings piles. Further alterations to the natural landscape occurred during use of the site for development and testing of rocket engines. In recent years large portions of the project site have mainly been used for livestock grazing (horse and cattle).

METHODS

PREFIELD INVESTIGATION

A list of special-status species with potential to occur on or near the project site was compiled using several sources of information. A list of endangered and threatened species that occur within, or may be affected by projects within the Buffalo Creek, Carmichael, Citrus Heights, and Folsom U.S. Geological Survey 7.5-minute quadrangles was obtained from the U.S. Fish and Wildlife Service (USFWS) (2004a). Additionally, database searches of the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California (CNPS 2004) and California Department of Fish and Game's (DFG) California Natural Diversity Database (CNDDB 2004) were performed for the Carmichael and Buffalo Creek quadrangles, in which the project site is located, as well as for the nine surrounding quadrangles. The CNDDB is a statewide inventory managed by DFG, which is continually updated with the locations and condition of the state's rare and declining species and habitats. Although the CNDDB and CNPS are reliable tools for site-specific information on sensitive biological resources, it should be noted that they contain only those records that have been submitted to DFG or CNPS and are not always up-to-date.

Other sources of information reviewed in support of this habitat assessment included aerial photographs (Sacramento County 2002) and the following documents:

- Jurisdictional Delineation, Rio del Oro Property (Gibson and Skordal 1999);
- Wetland Resource Assessment for Rio del Oro (Sacramento County, California) (ECORP Consulting, Inc. 2004a)
- Updated Wetland delineation Map for the Rio del Oro Project Site (ECORP Consulting, Inc. 2004b);
- Wetland Delineation for Rio del Oro, Sacramento County, California (ECORP Consulting, Inc. 2004b);
- Elderberry Survey, Rio del Oro Property (Gibson and Skordal 2000a);
- Listed vernal pool branchiopod survey reports prepared by Gibson and Skordal for the 2000 and 2001 wet seasons (Gibson and Skordal 2000b; Gibson and Skordal 2001);
- Rare Plant Survey, Rio del Oro Property (ECORP Consulting, Inc. 2003); and
- Tree Inventory for Rio del Oro Project (Sierra Nevada Arborists 2003).

FIELD SURVEY

Reconnaissance-level surveys of the project site were conducted by EDAW biologists on December 13, 2004 and January 12 and 13, 2005. The purpose of the surveys was to characterize and map biological resources present on the project site in sufficient detail to support a determination of overall habitat quality, and to collect baseline data to support project analysis on a variety of levels including CEQA and NEPA analysis and alternatives development.

To provide a thorough characterization of habitat types present on the project site, data were collected at 35 sampling points at the project site. Each habitat type present at the project site, as determined using aerial photographs, was documented with at least one sampling point. At each sampling point the biologists surveyed an area within an approximately 100-foot radius of the point. Photographs were taken in the four cardinal directions with additional photographs documenting rare or important biological features. The dominant plant species, percent cover, and estimated average height and diameter at breast height (DBH) of trees and shrubs was recorded within each sampling area. The nearest specimen in each cardinal direction was used to determine the average height and DBH for each species of tree and shrub present at a given sampling site. Habitat types were determined based on Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) and cross-referenced to A Guide to Wildlife Habitats of California (Mayer and Laudenslayer 1988). However, vegetation communities observed at the project site did not necessarily fit into the classification categories established by Holland or habitat type categories established by Mayer and Laudenslayer. Therefore, habitat type names and descriptions were developed specifically for this project. Wildlife species were recorded when observed or detected by diagnostic field sign. Habitats within the project site were assessed for their potential to support special-status plant and wildlife species and their overall biological value. All habitat types present within the project site were mapped onto a 1" = 400' aerial photograph acquired from Sacramento County (2002). The location and extent of each habitat type was later digitized into a geographic information system (GIS) database.

DETERMINING OVERALL BIOLOGICAL VALUE

A number of physical and biological factors were evaluated at each sampling point to determine the overall biological value of the area. On-site factors evaluated to determine the overall biological value included:

- presence/absence of sensitive habitats,
- presence/absence of special-status species,
- relative level of disturbance,
- health and regeneration of tree and shrub species,
- wildlife abundance and diversity,

- presence/absence of non-native species, and
- presence/absence of permanent or temporary surface water.

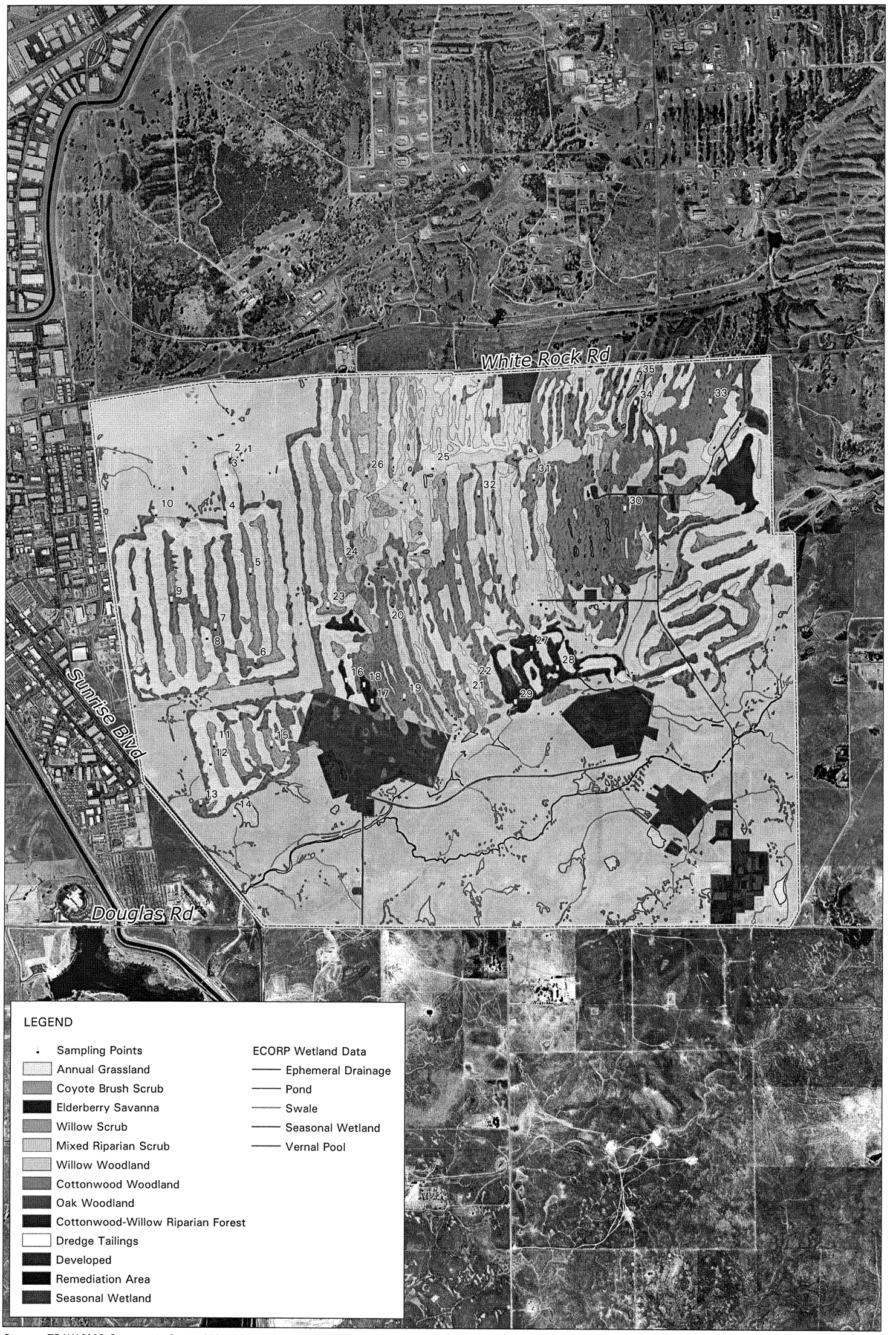
Based on this evaluation, the habitat on the project site with the highest overall biological value was identified. Descriptions of biological factors that contributed to the overall determination were developed and a GIS overlay showing the location of habitats identified as having the greatest overall biological value was created at the same scale as the habitat map.

After identifying the habitat type with the greatest overall biological value, further evaluation, including regional considerations such as proximity to urban development and lands designated or proposed for preservation, was completed to identify those areas containing habitat types most suitable for preservation as part of the Low Density Alternative.

RESULTS

Over half of the project site is characterized by linear rows of tailings piles with intervening basins. The tailings piles are sparsely vegetated with ruderal species that are typical of the surrounding annual grassland habitat. The basins between the tailings piles are characterized by a variety of riparian vegetation associations including coyote brush scrub, willow scrub, mixed riparian scrub, elderberry savanna, willow woodland, cottonwood woodland, oak woodland, and cottonwood-willow riparian forest. The remainder of the project site is characterized by annual grassland habitat interspersed with vernal pools and seasonal wetlands. Morrison Creek, a substantial ephemeral drainage, traverses the southern half of the project site in an east to west direction.

Although the riparian vegetation associations described in this report are referred to as riparian habitat they occur in isolated basins and are not associated with drainages characterized by a bed and bank. These riparian habitat types have evolved in response to the unique physical characteristics created on the project site by the historical dredging activities. Each of the riparian habitat types identified on the project site, as well as the surrounding annual grassland habitat, are described in detail below. For a detailed description of wetland habitat types occurring on the project site, please refer to Gibson and Skordal 1999 and ECORP Consulting, Inc. 2004a and 2004b. The location and extent of each habitat type and sample point locations are depicted in Exhibit 1. Representative photographs of each habitat type are provided in Appendix A and data sheets from all sample points are included in Appendix B.



Sources: EDAW 2005, Sacramento County 2002, ECORP Consulting, Inc. 2004(b)

Habitat Types at the Rio del Oro Project Site

EXHIBIT 1

Rio del Oro
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FEET

NORTH

EDAW

HABITAT TYPES

ANNUAL GRASSLAND

The most common habitat type on the project site is annual grassland, which comprises approximately 1,975 acres. This habitat type covers the unmined portions of the site and also characterizes the understory of the riparian communities. Annual grassland habitat on the project site is characterized by dense cover of nonnative grasses and forbs including soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), medusa head (*Taeniatherum caput-medusae*), Italian thistle (*Carduus pycnocephalus*), yellow starthistle (*Centaurea solstitialis*), dovefoot geranium (*Geranium molle*), rose clover (*Trifolium hirtum*), and vetch (*Vicia* spp.). Ruderal annual grassland is also present on the remnant soils of the tailings piles but cover here is sparse and includes a higher proportion of yellow starthistle. Annual grassland habitat outside of the tailings piles includes some native forbs such as narrow tarplant (*Holocarpha virgata*) and California poppy (*Eschscholzia californica*). In areas between tailings piles, the annual grassland habitat is often characterized by a high percentage of blessed milk thistle (*Silybum marianum*) giving the appearance of low shrub cover on the aerial photograph.

Annual grassland habitat within the project site contains a high number of vernal pools and swales and seasonal wetlands, especially in the southern portion of the project site. Ephemeral drainages, including Morrison Creek, also traverse the annual grassland habitat at the project site. These features are discussed in the "Sensitive Biological Resources" section of this report.

COYOTE BRUSH SCRUB

Approximately 23 acres of coyote brush scrub habitat occurs at the project site. It is found between some of the smaller tailings piles that are more widely spaced such as those located in the northeastern quadrant of the project site. It also occurs as patchy thickets in the mixed riparian scrub understory. This is a medium height shrub community dominated by coyote brush (*Baccharis pilularis*). Shrubs average approximately 4 feet in height and 1 inch in DBH. Percent cover of shrubs is approximately 55%. This habitat type includes occasional Fremont cottonwood trees (*Populus fremontii*) and willow shrubs (*Salix* spp.). The annual grassland understory is less dense in this community due to the dense shrub cover.

WILLOW SCRUB

Areas of willow scrub habitat totaling approximately 16 acres occur in basins at the foot of tailings piles at scattered locations on the project site. This habitat type is characterized by relatively dense stands (at least 50% cover) of willow (*Salix* spp.). A few cottonwood trees occur interspersed among the willow in one of the willow scrub habitat areas but no other shrubs besides willow are present. The average height of the willows in this habitat type is 10 feet and the average DBH is 2 inches. Structural diversity in this habitat type is low because it

consists almost exclusively of willows of similar size and shape. Soils underlying these areas were moist to the surface at the time of the field survey, but no pooled water was observed.

Mixed Riparian Scrub

Mixed riparian scrub habitat is common in the basins between the tailings piles. Approximately 190 acres of this habitat type are present at the project site. This habitat type consists of an open tree canopy characterized by Fremont cottonwood and moderate to dense shrub cover (15 to 45% cover) characterized by willows and coyote brush. Scattered interior live oak (*Quercus wislizenii*) and walnut trees and elderberry shrubs are often present in this habitat type as well. Structural diversity in this habitat type is good because of the variety of shrub sizes and shapes and distribution patterns vary from dense shrub thickets to more open stands of shrubs. The large cottonwoods within this habitat type provide good nesting and roosting opportunities for raptors. Plant species diversity within this habitat type, although greater than most of the habitat types at the project site, is much lower than that of typical mixed riparian habitats that are associated with streams. Soils in these areas were moist at the time of the surveys due to recent heavy rainfall but no pooled water was observed in this habitat type at points sampled.

Elderberry Savanna

Two small basin areas occupying approximately 16.5 acres in the southwest quadrant of the project site are dominated by elderberry savanna. This habitat type is characterized by open stands of elderberry (*Sambucus mexicana*) with an annual grassland understory. A high percentage of the elderberry shrubs observed in this habitat are old and decadent and do not appear to be rejuvenating. It appears that periodic flooding that once sustained this habitat type is no longer occurring in these areas. A few scattered cottonwood trees are present along the edges of this habitat type. Total shrub cover in this habitat type is very low (2 to 5%) and total tree cover is less than 1%. Structural diversity is also low because most of the elderberry shrubs are similar in size and shape, there are no other shrub species, and there are very few trees. The soil in these areas was moist at the time of the surveys due to recent heavy rainfall but no pooled water was observed during field surveys.

Willow Woodland

A single area approximately 4 acres in size and dominated by willow woodland is present between tailings piles near White Rock Road in the northeast quadrant of the project site (at sample point 35). This habitat type is characterized by open stands of willow trees and shrubs with interior live oak trees present along the edges of the basin. Total tree and shrub cover are each 5%. Average height of the willows within this habitat type is 17 feet and their average DBH is 4 inches. The live oaks average 25 feet in height and 9 inches in DBH. Structural diversity is moderate due to the varying sizes and shapes of willows, but no really large trees or dense shrub thickets are present. Willows appear to be healthy and regenerating well in this habitat. Two large pools of water

were observed in this habitat type at the time of this survey and were identified as seasonal wetlands during the wetland delineation that was verified by the USACE in 2004 (ECORP Consulting, Inc. 2004b).

COTTONWOOD WOODLAND

Cottonwood woodland is the most abundant habitat type present in the basins between the mounds of tailings. A total of approximately 597 acres of this habitat type are present at the project site. This open woodland community is dominated by Fremont cottonwood. A sparse subcanopy consisting primarily of arroyo willow is often present but generally does not constitute more than 5% canopy cover. Dense cover of annual grasses and forbs is present in the understory. Cottonwood trees in this habitat type tend to be of similar age/size but range from approximately 20 to 50 feet in height and from 8 to 32 inches in DBH at the various sampling points. Downed trees and branches and broken tree snags are a common component of this habitat type. In basins between tall, closely spaced tailings piles, such as those in the western half of the project site, the cottonwood trees and willows (when present) are mostly distributed along the edges of the basins and open grassland exists on the basin floors. In the eastern half of the project site, where the tailings piles are shorter and more widely spaced, cottonwood trees are distributed more randomly. Structural diversity in this habitat type is low to moderate depending on whether or not willow shrubs are present. The soil underlying these areas was moist due to recent heavy rainfall but no pooled water was observed at any points sampled in this habitat type. Some seasonal wetlands were mapped within this habitat type during the wetland delineation that was verified by the USACE in 2004 (ECORP Consulting, Inc. 2004b), particularly in the eastern half of the project site.

OAK WOODLAND

One 3-acre area dominated by oak woodland is present between tailings piles near White Rock Road in the northeast quadrant of the project site (at sample point 34). This habitat type is characterized by an open tree canopy (25% cover) that consists of interior live oak with scattered foothill pine (*Pinus sabiniana*). The shrub layer is dense (40% cover) and dominated by coyote brush with scattered willow and elderberry. The live oaks in this habitat type average 40 feet in height and 11 inches DBH and the coyote brush shrubs average 7 feet in height and 1 inch DBH. Structural diversity is good due to the variety of species and tree and shrub sizes, but there are no trees large enough to provide suitable nesting habitat for raptors. The soil underlying these areas was moist due to recent heavy rainfall but no pooled water was observed during field surveys.

COTTONWOOD-WILLOW RIPARIAN FOREST

Cottonwood-willow riparian forest occurs primarily amongst tailings piles in the southeast quadrant of the project site. Three smaller fragments of this habitat type are present on the project site, two of which are located within fenced and developed areas that were used extensively for rocket testing. There is a total of approximately 57 acres of this habitat type present at the project site. This habitat type is characterized by Fremont cottonwood

trees up to 60 feet tall that form a dense forest canopy and willow shrubs and trees up to 15 feet tall. Willow species present include arroyo willow, Pacific willow (*Salix lucida* ssp. *lasiandra*), and sandbar willow (*Salix exigua*). Trees and shrubs are well distributed across the basins and the annual grassland understory is less dense due to the dense shrub and tree layers (tree cover averages 35 to 40% and shrub cover averages 40 to 50%). Structural diversity in this habitat type is very good due to the variety of tree and shrub sizes and shapes, varying shrub distribution patterns from dense thickets to more scattered distribution, and downed woody debris. Cottonwood and willow regeneration is much better in this habitat type than in others present on the project site. Areas dominated by this habitat type are generally wetter than most of the other tailings pile basins and receive runoff from at least two ephemeral drainages. Several areas of pooled water were observed in this habitat type during the surveys. Seasonal wetlands were mapped within this habitat type during the wetland delineation that was verified by the USACE in 2004 (ECORP Consulting, Inc. 2004b).

WILDLIFE

The habitat types present on the project site provide foraging and nesting opportunities for numerous common and special-status wildlife species found in the region. Large portions of the project site are dominated by annual grassland which provides important foraging and breeding habitat for a variety of wildlife species. Raptors, including turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), and white-tailed kite (*Elanus leucurus*), forage in annual grassland in this region. Wildlife species known to breed in annual grasslands include western fence lizard (*Sceloporus occidentalis*), western rattlesnake (*Crotalus viridis*), western meadowlark (*Sturnella neglecta*), horned lark (*Eremophila alpestris*), and western burrowing owl (*Athene cunicularia hypugea*).

The areas of annual grassland containing vernal pools, swales, and seasonal wetlands provide important wildlife habitat, supporting numerous common and special-status wildlife species. A variety of bird, mammal, reptile, amphibian, and invertebrate species rely on such habitats for all or part of their life cycles. Further discussion of this habitat type and associated wildlife is included in the "Sensitive Biological Resources" section of this report.

Wildlife diversity and abundance is expected to be highest in riparian habitats (e.g., cottonwood-willow riparian forest), despite the fact that these areas are generally restricted to narrow corridors and smaller, isolated locations. Riparian habitats provide food, water, and escape, nesting, and thermal cover for wildlife (Mayer and Laudenslayer 1988). More than 225 species of birds, mammals, reptiles, and amphibians depend on California's riparian habitats and, while not dependent upon them, many other species also make use of these habitats (Riparian Habitat Joint Venture 2004). The more disturbed areas of the project site, including the tailings piles, are expected to support species adapted to a wider range of habitats.

SENSITIVE BIOLOGICAL RESOURCES

Sensitive biological resources include those that are afforded special protection through the CEQA, California Fish and Game Code, federal Endangered Species Act (ESA), California Endangered Species Act (CESA), and federal CWA. Sensitive biological resources also include those afforded protection under Sacramento County's General Plan Policies, such as riparian and wetland habitats. The CNDDB and CNPS inventories (2004), as well as preexisting environmental documents prepared for the project site, were reviewed for data on sensitive biological resources, including sensitive habitats and special-status species, that are known to occur in the vicinity of the project site.

WETLANDS AND OTHER WATERS OF THE UNITED STATES

A wetland delineation conducted by ECORP Consulting, Inc. in June 2004 and verified by the USACE in September 2004 identified a total of approximately 57 acres of jurisdictional wetlands and other waters of the United States at the project site. The site also includes approximately 13 acres of wetlands not subject to USACE jurisdiction due to their isolated nature (ECORP Consulting, Inc. 2004b). Wetland features were determined to be non-jurisdictional if considered "isolated" wetlands per the SWANCC decision (Solid Waste Agency of Northern Cook County vs. U.S. Army Corps of Engineers, No. 99-1178 [January 9, 2001]). According to the SWANCC decision, wetlands that are "non-navigable, isolated, and intrastate" may not be subject to USACE jurisdiction. Those wetlands that are not part of, or adjacent to (i.e., bordering, contiguous, or neighboring), the tributary system of traditional navigable waters or interstate waters are considered isolated (ECORP Consulting, Inc. 2004b).

Jurisdictional wetlands on the project site include vernal pools, ponds, seasonal wetland swales, and seasonal wetlands. Other waters of the United States identified on the project site consist of ephemeral drainages, including Morrison Creek. Wetlands and other waters of the United States, as mapped by ECORP Consulting, Inc., are included in Exhibit 1. A large majority of the vernal pools and seasonal wetland swales and all of the ephemeral drainages are concentrated within the annual grassland habitat in the southern portion of the project site. Approximately 460 acres of this habitat have been proposed as a wetland preserve.

SENSITIVE HABITAT

The wetland features discussed above are sensitive habitats, providing habitat for a variety of plant and animal species. Vernal pools and swales, for example, provide habitat for state and federally listed species including vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), Bogg's Lake hedge hyssop (*Gratiola heterosepala*), slender Orcutt grass (*Orcuttia tenuis*), and Sacramento Orcutt grass (*Orcuttia viscida*). Vernal pools and swales occur within an annual grassland matrix and, collectively, this habitat

type is referred to as vernal pool grassland. A total of approximately 57 acres of jurisdictional wetlands and 13 acres of non-jurisdictional wetlands are present on the project site (ECORP Consulting, Inc. 2004b).

Typically, riparian habitats are also considered sensitive habitats under Section 1602 of the California Fish and Game Code; however, the riparian habitats present on the project site are not associated with drainages characterized by a bed and bank and have evolved in response to the unique physical characteristics created on the project site by the historical dredging activities. Further consultation with DFG is recommended to determine the appropriate actions to be taken regarding the riparian habitat present on the project site.

In addition, 329 elderberry plants were identified at the project site during a survey conducted by Gibson and Skordal (2000a). Elderberry is the host plant, and thus habitat, for valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), a species that is federally listed as threatened.

SPECIAL-STATUS SPECIES

Special-status species include plants and animals that are legally protected or are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Special-status species addressed in this section include the following:

- Species listed or proposed for listing as threatened or endangered under ESA or CESA;
- Species considered as candidates for listing as threatened or endangered under ESA or CESA;
- Species identified by DFG as California Species of Special Concern or by USFWS as federal Species of Concern;
- Animals fully protected in California under the California Fish and Game Code;
- Plants listed as Endangered or Rare under the California Native Plant Protection Act; and
- Plants designated by CNPS Inventory as List 1B (plants rare, threatened or endangered in California and elsewhere) or List 2 (plants rare, threatened or endangered in California but more common elsewhere).

SPECIAL-STATUS PLANTS

Based on review of the CNDDB and CNPS database searches, previously prepared biological reports for the project, and the reconnaissance-level surveys conducted by EDAW, it was determined that the project site supports suitable habitat for dwarf downingia, Tuolumne button-celery, Bogg's Lake hedge hyssop, Northern California black walnut, Ahart's dwarf rush, Greene's legenere, pincushion navarretia, slender Orcutt grass,

Sacramento Orcutt grass, and Sanford's arrowhead. Brief descriptions of these species and their potential to occur at the project site are provided in Table 1.

Table 1
Special-Status Plant Species Known from or with Potential to Occur on the Rio del Oro Project Site

Species	Status 1			Habitat and Blooming Period	Potential for Occurrence
	USFWS	DFG	CNPS		
Plants					
Dwarf downingia *Downingia pusilla*	--	--	2	Mesic sites in valley and foothill grassland, vernal pools Blooms March-May	Unlikely to occur; suitable habitat is present in vernal pools and swales but this species was not found during previously conducted special-status plant surveys
Tuolumne button-celery *Eryngium pinnatisectum*	--	--	1B	Mesic sites in cismontane woodland and lower montane coniferous forest, vernal pools Blooms June-August	Unlikely to occur; suitable habitat is present but the project site is lower than the species known elevation range and it was not observed during special-status plant surveys
Bogg's Lake hedge hyssop *Gratiola heterosepala*	--	E	1B	Marshes and swamps, vernal pools Blooms April-August	Unlikely to occur; suitable habitat present in vernal pools and swales but this species was not found during previously conducted special-status plant surveys. There is a known population approximately 3 miles from the project site
Northern California black walnut *Juglans hindsii*	--	--	1B	Riparian scrub, riparian woodland Blooms April-May	Walnut trees were identified at the project site during the tree survey; likely hybrids between Juglans hindsii and English walnut (Juglans regia)
Ahart's dwarf rush *Juncus leiospermus var. ahartii*	--	--	1B	Mesic valley and foothill grassland Blooms March-May	Unlikely to occur; suitable habitat is present in vernal pools and swales but this species was not found during previously conducted special-status plant surveys
Legenere *Legenere limosa*	--	--	1B	Vernal pools Blooms April-June	Known to occur; three populations were documented on the project site during special-status plant surveys conducted in 2003
Pincushion navarretia *Navarretia meyersii ssp. meyersii*	--	--	1B	Vernal pools Blooms in May	Unlikely to occur; suitable habitat is present in vernal pools and swales but this species was not found during previously conducted special-status plant surveys

Table 1
Special-Status Plant Species Known from or with Potential to Occur on the Rio del Oro Project Site

Species	Status 1			Habitat and Blooming Period	Potential for Occurrence
	USFWS	DFG	CNPS		
Slender Orcutt grass *Orcuttia tenuis*	T	E	1B	Vernal pools Blooms May-October	Unlikely to occur; suitable habitat is present in vernal pools and swales but this species was not found during previously conducted special-status plant surveys
Sacramento Orcutt grass *Orcuttia viscida*	E	E	1B	Vernal pools Blooms April-July	Unlikely to occur; suitable habitat is present in vernal pools and swales but this species was not found during previously conducted special-status plant surveys
Sanford's arrowhead *Sagittaria sanfordii*	--	--	1B	Shallow freshwater marshes and swamps Blooms May-October	Unlikely to occur; suitable habitat may be present in seasonal wetlands and ponds but this species was not found during previously conducted special-status plant surveys

[1] Legal Status Definitions
U.S. Fish and Wildlife Service
E Endangered (legally protected)
T Threatened (legally protected)
FSC Federal Species of Concern (no formal protection)
California Department of Fish and Game
T Threatened (legally protected)
CSC California Species of Concern (no formal protection)
California Native Plant Society Categories
1B Plant species considered rare or endangered in California and elsewhere (but not legally protected under FESA or CESA)
2 Plant species considered rare or endangered in California but more common elsewhere (but not legally protected under FESA or CESA)

Source: EDAW 2005, CNPS 2004, CNDDB 2004

The rare plant survey conducted by ECORP Consulting, Inc. during spring 2003 identified three populations of Greene's legenere (*Legenere limosa*) on the project site. Occurrences of Greene's legenere have also been documented in the CNDDB for the project site. Greene's legenere is a federal species of concern and a CNPS List 1B species. No other special-status plant species were identified at the project site during the ECORP Consulting, Inc. survey or in the CNDDB and CNPS databases. A tree survey conducted by Sierra Nevada Arborists (2003) identified Northern California black walnut, a CNPS List 1B species, at the project site. Although there are accounts of this species at the project site, native Northern California black walnut is believed to be extirpated from Sacramento County and any specimens that have been identified are likely hybrids between Northern California black walnut and English walnut (*Juglans regia*). There are only two known stands of Northern California black walnut remaining. These stands are located in Contra Costa and Napa Counties. It is, therefore, unlikely that this species is present within the project site.

CNDDB occurrences of special-status plant species that have been documented within a 3-mile radius of the project site were plotted onto an aerial photograph of the project site provided as Exhibit 2. Bogg's Lake hedge hyssop, Ahart's dwarf rush, slender Orcutt grass, Sacramento Orcutt grass, and Sanford's arrowhead have all been documented within 3 miles of the project site. These are all species associated with vernal pools or seasonal wetlands. Despite known occurrences in close proximity to the project site and the presence of suitable habitat, these species are unlikely to occur at the project site because they were not detected during the special-status plant survey conducted in spring 2003 during the appropriate blooming periods when these species would be clearly identifiable (ECORP Consulting, Inc. 2003).

Additional special-status plant species identified in the CNPS and CNDDB quad searches for the project site (i.e., dwarf downingia and pincushion navarretia) are also considered unlikely to occur because they were not detected during the special-status plant survey conducted in spring 2003 during the appropriate blooming periods when these species would be clearly identifiable (ECORP Consulting, Inc. 2003). Tuolumne button celery is unlikely to occur because the known elevation range of this species is higher than the project site. Surveys conducted by ECORP Consulting, Inc. followed accepted guidelines for conducting rare plant surveys and included a complete floristic inventory of the project site. It is, therefore, reasonable to expect that any of the special-status plant species listed in Table 1 would have been identified during the focused surveys if they were present at the project site.

SPECIAL-STATUS WILDLIFE

Based on review of the CNDDB results, prior biological surveys conducted for the project site, and the reconnaissance-level surveys conducted by EDAW, a list of special-status wildlife species with the potential to occur in the project area was compiled and is presented in Table 2.

Several special-status wildlife species were identified on the project site during surveys performed by Gibson and Skordal and EDAW as noted in Table 2. Gibson and Skordal conducted listed vernal pool branchiopod surveys of an approximately 1,800-acre portion of the approximately 3,893-acre project site during the wet seasons of 2000 and 2001 (Gibson and Skordal 2000b, 2001). The southern portion, including the grassland surrounding Morrison Creek, and the extreme eastern portion of the project site were not included in the surveys. Federally listed branchiopod species identified during the 2000 survey included vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*). Vernal pool fairy shrimp were identified in one seasonal depression and vernal pool tadpole shrimp were documented in three seasonal depressions and two seasonal ponds. California linderiella (*Linderiella occidentalis*), a federal species of concern, was also observed during the survey, documented from 83 of the survey pools including seasonal depressions, riparian wetlands, and pond habitats. Vernal pool fairy shrimp and California linderiella were again identified during the 2001 survey. The former was identified in only one seasonal depression while the latter was widespread in the survey area. The

Table 2
Special-status Wildlife Species Known from or with Potential to Occur on the Rio del Oro Project Site

Species	Listing Status 1		Habitat	Potential for Occurrence
	Federal	State		
Birds				
White-tailed kite *Elanus leucurus*	FSC	FP	Grasslands, agricultural land, and open woodlands	Known to occur; suitable habitat present; year-round; identified on-site by EDAW biologists January 12, 2005
Northern harrier *Circus cyaneus*	--	CSC	Grasslands, marshes, agricultural land, and open woodlands	Likely to occur; suitable habitat present; year-round
Sharp-shinned hawk *Accipiter striatus*	--	CSC	Dense coniferous and riparian forest	Likely to occur; suitable habitat present; could occur in winter
Cooper's hawk *Accipiter cooperii*	--	CSC	Open woodlands and woodland margins	Likely to occur; could occur in winter
Swainson's hawk *Buteo swainsoni*	--	T	Forages in grasslands and agricultural land, nests in riparian and isolated trees	Likely to occur; suitable nesting and foraging habitat present
Ferruginous hawk *Buteo regalis*	FSC	CSC	Forages in grasslands, agricultural fields, and other open habitats; does not nest in California	Known to occur; suitable foraging habitat present; likely in winter; identified on-site by EDAW biologists January 24, 2005
Merlin *Falco columbarius*	--	CSC	Forages in a variety of open habitats; does not nest in California	Likely to occur; suitable foraging habitat present; could occur in winter
Prairie falcon *Falco mexicanus*	FSC	CSC	Forages in grasslands and other dry, open habitats; nests on cliffs	Likely to occur; suitable foraging habitat present; likely in winter; identified on-site by EDAW biologists January 24, 2005
Western burrowing owl *Athene cunicularia hypugea*	FSC	CSC	Grasslands, agricultural land, and open woodlands	Likely to occur; suitable habitat present; year-round
Short-eared owl *Asio flammeus*	--	CSC	Grasslands and other open habitats	Likely to occur; suitable habitat present; could occur in winter
Loggerhead shrike *Lanius ludovicianus*	FSC	CSC	Grasslands, shrublands, and open woodlands	Likely to occur; suitable habitat present; year-round
Tricolored blackbird Agelaius tricolor	FSC	CSC	Forages in agricultural land and grasslands; nests in marshes and other areas that support cattails or dense thickets	Likely to occur; foraging only; winter
Mammals				
American badger *Taxidea taxus*	--	CSC	Drier open shrub, forest, and herbaceous habitats with friable soils	Likely to occur; suitable habitat present
Amphibians and Reptiles				
California tiger salamander *Ambystoma californiense*	T	CSC	Vernal pools and other seasonal ponds in valley and foothill grasslands	Unlikely to occur; suitable habitat present but outside of species known range (USFWS 2004)
Western spadefoot *Scaphiopus hammondii*	FSC	CSC	Vernal pools and other seasonal ponds in valley and foothill grasslands	Likely to occur; suitable habitat present
Northwestern pond turtle *Clemmys marmorata marmorata*	FSC	CSC	Freshwater marsh, ponds, lakes, and rivers	Unlikely to occur; lacks suitable habitat

Table 2
Special-status Wildlife Species Known from or with Potential to Occur on the Rio del Oro Project Site

Species	Listing Status [1]		Habitat	Potential for Occurrence
	Federal	State		
Giant garter snake *Thamnophis gigas*	T	T	Freshwater marsh, sloughs, and slow-moving rivers	Unlikely to occur; no suitable habitat present (Hansen, pers. comm., 2004)
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	T	--	Vernal pools in valley and foothill grasslands	Known to occur; suitable habitat present; documented on-site during focused surveys (Gibson and Skordal 2000b, 2001)
Vernal pool tadpole shrimp *Lepidurus packardi*	E	--	Vernal pools in valley and foothill grasslands	Known to occur; suitable habitat present; documented on-site during focused surveys (Gibson and Skordal 2000b)
Longhorn fairy shrimp *Branchinecta longiantenna*	E	--	Grassland vernal pools; endemic to the eastern margin of the Central Coast Mountains in California	Unlikely to occur; outside of species range
Conservancy fairy shrimp *Branchinecta conservatio*	E	--	Large vernal pools in valley grasslands	Likely to occur; suitable habitat present; within species range but not documented on-site during focused surveys (Gibson and Skordal 2000b, 2001)
Midvalley fairy shrimp *Branchinecta mesovallensis*	FSC	--	Vernal pools in the Central Valley	Moderate chance of occurrence; suitable habitat present but not documented on-site during focused surveys (Gibson and Skordal 2000b, 2001)
California linderiella *Linderiella occidentalis*	FSC	--	Vernal pools in valley and foothill grasslands	Known to occur; documented on-site during focused surveys (Gibson and Skordal 2001)
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	--	Elderberry bushes below 3,000 feet in elevation	Likely to occur; suitable habitat present and beetle exit holes identified on-site during focused surveys (Gibson and Skordal 2000a)

[1] Legal Status Definitions

U.S. Fish and Wildlife Service

E Endangered (legally protected)

T Threatened (legally protected)

FSC Federal Species of Concern (no formal protection)

California Department of Fish and Game

T Threatened (legally protected)

CSC California Species of Concern (no formal protection)

FP Fully Protected (legally protected)

survey wetlands supporting vernal pool fairy shrimp and vernal pool tadpole shrimp are located in open grassland habitat adjacent to, but not within, the tailings piles (Gibson and Skordal 2000b). An elderberry survey of the entire project site was also completed by Gibson and Skordal (2000a). Of the 329 elderberry plants documented, 41 contained beetle exit holes suggesting that valley elderberry longhorn beetles (*Desmocerus californicus dimorphus*), a federally threatened species, are present on the project site. EDAW wildlife biologists identified

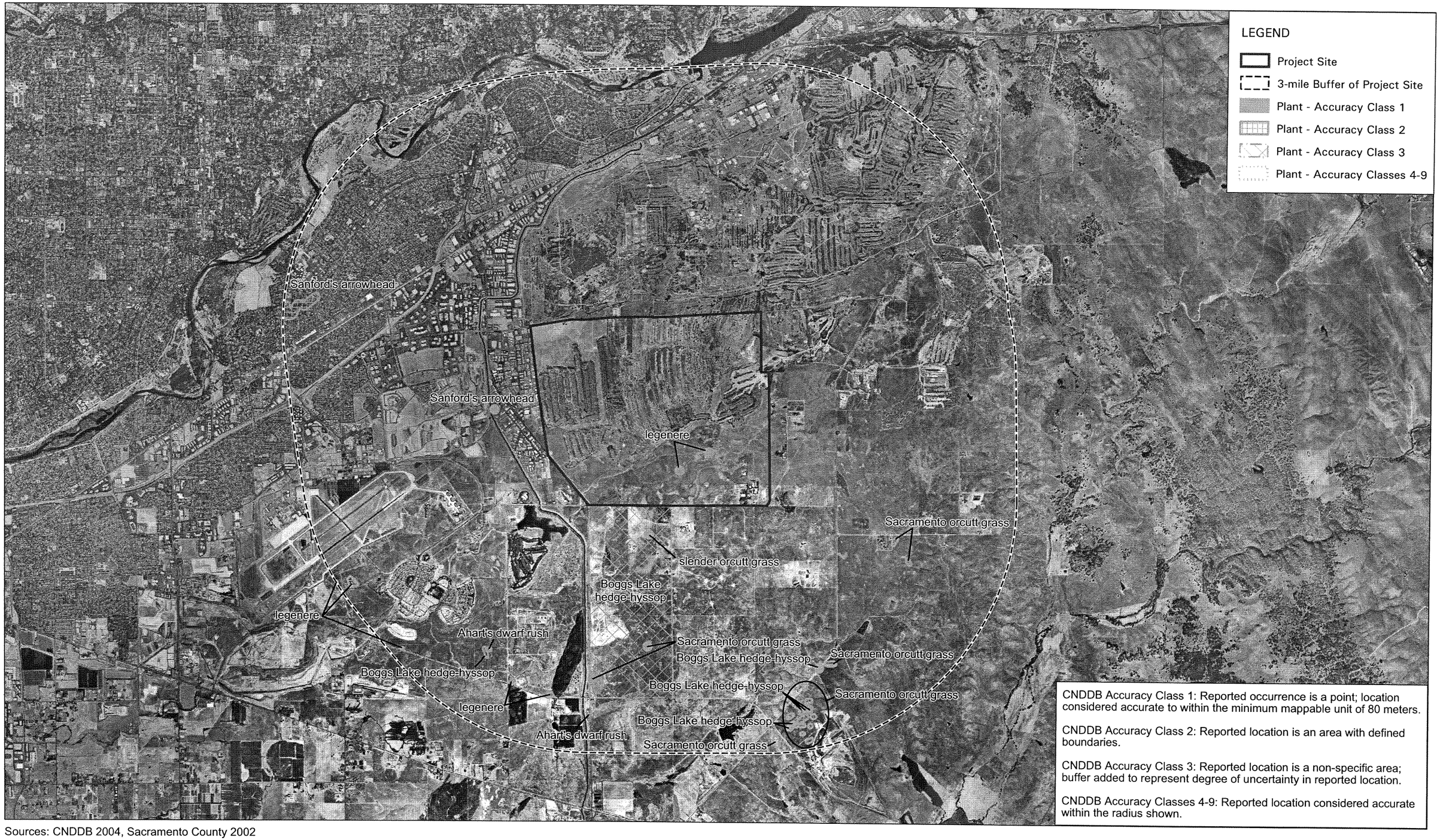
three additional special-status species during reconnaissance-level surveys. A white-tailed kite (*Elanus leucurus*), a federal species of concern and DFG fully protected species, was observed at sample point 22 foraging in annual grassland. A prairie falcon (*Falco mexicanus*) and ferruginous hawk (*Buteo regalis*), both federal and California species of concern, were observed in the southern portion of the site, in the vicinity of the proposed wetland preserve.

Special-status wildlife occurrences documented by the CNDDB within a 3-mile radius of the project site, plotted onto an aerial photograph, are shown in Exhibit 3. Based on CNDDB data, 17 special-status wildlife species in addition to those identified during surveys were evaluated for their potential to occur on the project site.

The project site provides suitable habitat for numerous special-status birds. Potentially suitable nesting and foraging habitat for Swainson's hawk, a species that is state listed as threatened is present on the project site. Swainson's hawk nest in riparian and isolated trees and forage in grasslands and agricultural lands. Sharp-shinned hawk, Cooper's hawk, merlin, short-eared owl, and tricolored blackbird could all potentially occur on the project site in the winter as suitable foraging habitat is present. All of these species are California species of concern and tricolored blackbird is also a federal species of concern. Cooper's hawk has been documented within 3 miles of the project site (Exhibit 3) (CNDDB 2004). Though known to nest in this region of Sacramento County, no suitable nesting habitat for tricolored blackbird, a species that typically nests in marsh habitat or blackberry thickets, is present on the project site. Grasslands and open woodlands on the project site provide suitable year-round habitat for northern harrier, western burrowing owl, and loggerhead shrike. Northern harrier is a California species of concern. Western burrowing owl and loggerhead shrike are both federal and California species of concern. Although no burrows, burrowing owls, or signs of burrowing owls were observed during reconnaissance surveys, this species is identified in several locations within 3 miles of the project site in the CNDDB and could move onto the project site prior to project implementation (Exhibit 3). Furthermore, reconnaissance surveys only covered representative areas of each habitat type and the entire project site was not surveyed at the level required to definitively determine presence or absence.

American badger, a California species of concern, prefer open grassland habitats with friable soils and an occurrence slightly south of the project site is identified in the CNDDB (Exhibit 3). There is suitable habitat for American badger on the project site, thus this species has the potential to occur on the site.

California tiger salamander was recently federally listed as threatened throughout its range (USFWS 2004). California tiger salamander use vernal pools and other seasonal ponds for reproduction and seemingly suitable habitat of this type is present on the project site. However, few burrows or crevices that would provide suitable habitat for tiger salamander are present. In addition, this species is only known from the southern edge of Sacramento County, south of the Cosumnes River (USFWS 2004). Therefore, California tiger salamander is not



Sources: CNDDB 2004, Sacramento County 2002

CNDDB Special-Status Plant Occurrences

Rio Del Oro

X 03110089.01 2/05

EXHIBIT 2

0 1.1 2.2

MILES

NORTH

EDAW

LEGEND

- Project Site
- 3 Mile Buffer of Project Site
- Animal - Accuracy Class 1
- Animal - Accuracy Class 2
- Animal - Accuracy Class 3
- Animal - Accuracy Classes 4-9

valley elderberry longhorn beetle
vernal pool fairy shrimp
California linderiella
white-tailed kite
bank swallow
northwestern pond turtle
valley elderberry longhorn beetle
vernal pool tadpole shrimp
valley elderberry longhorn beetle
California linderiella
vernal pool fairy shrimp
vernal pool tadpole shrimp
Cooper's hawk
vernal pool tadpole shrimp
burrowing owl
vernal pool fairy shrimp
vernal pool tadpole shrimp
vernal pool tadpole shrimp
California linderiella
California linderiella
vernal pool tadpole shrimp
California linderiella
vernal pool tadpole shrimp
California linderiella
vernal pool fairy shrimp
midvalley fairy shrimp
American badger
western spadefoot
burrowing owl
white-tailed kite
vernal pool tadpole shrimp
western spadefoot
western spadefoot
California linderiella
vernal pool fairy shrimp
vernal pool tadpole shrimp
California linderiella
vernal pool tadpole shrimp
western spadefoot
burrowing owl
vernal pool fairy shrimp
vernal pool tadpole shrimp
vernal pool tadpole shrimp
California linderiella
midvalley fairy shrimp
vernal pool tadpole shrimp
western spadefoot
western spadefoot
California linderiella
vernal pool tadpole shrimp
vernal pool tadpole shrimp
burrowing owl
vernal pool tadpole shrimp
white-tailed kite
vernal pool fairy shrimp
vernal pool tadpole shrimp
vernal pool tadpole shrimp
western spadefoot
California linderiella
vernal pool fairy shrimp
vernal pool tadpole shrimp
western spadefoot
vernal pool tadpole shrimp

CNDDB Accuracy Class 1: Reported occurrence is a point; location considered accurate to within the minimum mappable unit of 80 meters.

CNDDB Accuracy Class 2: Reported location is an area with defined boundaries.

CNDDB Accuracy Class 3: Reported location is a non-specific area; buffer added to represent degree of uncertainty in reported location.

CNDDB Accuracy Classes 4-9: Reported location considered accurate within the radius shown.

Sources: CNDDB 2004, Sacramento County 2002

CNDDB Special-Status Wildlife Occurrences

Rio Del Oro

X 03110089.01 2/05

EXHIBIT 3

0 1.1 2.2
MILES

NORTH

EDAW

expected to occur on the project site. Western spadefoot is a federal and California species of concern also associated with vernal pools and other seasonal ponds. Multiple occurrences of western spadefoot south of the project site fall within the 3-mile radius shown on Exhibit 3. Given the presence of suitable habitat on the project site and the proximity of known occurrences of western spadefoot, this species is likely to occur on the project site.

Northwestern pond turtle is a federal and California species of concern. Northwestern pond turtle could occur around Mather Lake to the southwest of the project site and is documented north of the site within 3 miles (Exhibit 3); however, there is no suitable aquatic habitat present within the project boundary and pond turtles are unlikely to nest there. Giant garter snake is federally and state listed as threatened. Giant garter snake is not expected to occur because adequate emergent vegetation required for foraging habitat is lacking from the project site and the wetlands on the project site are likely to dry up before the start of the species' active season (May 1 to September 30). The nearest potentially suitable habitat for giant garter snake is Mather Lake which is located a fair distance downstream from the project site.

The seasonal wetland depressions, riparian wetlands, vernal pools, and seasonal ponds on the project site could support vernal pool crustaceans that were not identified during the branchiopod surveys. It is important to note that these surveys did not cover the entire project site (see Gibson and Skordal 2000b, 2001). The wetland areas present provide suitable habitat for federally endangered conservancy fairy shrimp and midvalley fairy shrimp, a federal species of concern. Midvalley fairy shrimp are documented in the CNDDB as occurring near Mather Lake, slightly southwest of the project site and further southwest of that point (Exhibit 3). Although longhorn fairy shrimp, a federally endangered species, was a target species of the branchiopod surveys (Gibson and Skordal 2000b, 2001) it is unlikely to occur on the project site due to the fact that it is endemic to the eastern margin of the Central Coast Mountains in California and has not been documented in Sacramento County (Eriksen and Belk 1999).

DETERMINATION OF OVERALL BIOLOGICAL VALUE

HABITAT TYPES WITH HIGHEST BIOLOGICAL VALUE

The habitat types identified on the project site during the reconnaissance-level surveys were evaluated for overall biological value to allow determination of those habitats that would be most suitable for preservation. On-site factors evaluated to determine overall biological value included:

- presence/absence of sensitive habitats,
- presence/absence of special-status species,
- relative level of disturbance,

- health and regeneration of tree and shrub species,
- wildlife abundance and diversity,
- presence/absence of non-native species, and
- presence/absence of permanent or temporary surface water.

Based on these criteria, Cottonwood-willow riparian forest and vernal pool grassland have the greatest overall biological value of those habitat types present on the project site.

COTTONWOOD-WILLOW RIPARIAN FOREST

Cottonwood-willow riparian forest is characterized by a relatively high level of structural diversity as compared to other habitat types on the project site. The structural diversity of the cottonwood-willow riparian forest is created by the variety of tree and shrub sizes and shapes, varying shrub distribution patterns from dense thickets to more scattered distribution, and downed woody debris present. Areas supporting this habitat type are wetter than most of the other tailings pile basins, some receiving runoff from ephemeral drainages. Several areas of pooled water were observed in this habitat type during surveying and seasonal wetlands were mapped within this habitat type during the wetland delineation that was verified by the USACE in 2004 (ECORP Consulting, Inc. 2004b). The riparian vegetation comprising the cottonwood-willow riparian forest appeared healthier, and more closely resembled that of true riparian habitat associated with drainages as compared to other areas of riparian habitat formed by the tailings piles on the project site. Cottonwood and willow health and regeneration is much better in this habitat type than in others present on the project site. Cottonwoods and willows throughout much of the project site appeared old and decadent, with little regeneration occurring. It is apparent that hydrologic conditions that allowed riparian vegetation to originally establish within the basins have changed and no longer support regeneration. In reviewing maps of the area, it is clear that water features that were present on USGS quadrant maps approximately twenty years ago are no longer present. Although the causes of the changes in surface hydrology are not entirely clear, the wet periods appear to correspond with El Nino years, the last of which was in the 1990s. The thick, impermeable material resulting from dredging would likely allow the pooled water to remain for quite some time. The high structural diversity, presence of relatively large amounts of surface water, and overall health of this habitat make it more suitable for a variety of wildlife species than other habitat types at the project site. During reconnaissance surveys, numerous common bird species, including Nuttall's woodpecker, western bluebird, and white-crowned sparrow, were observed at sample points within cottonwood-willow riparian forest. This habitat is also particularly suitable for several special-status wildlife species including sharp-shinned hawks.

VERNAL POOL GRASSLAND

Vernal pool grassland provides habitat for a wide array of special-status plant and wildlife species including many that are endemic to vernal pools and swales. This habitat type also provides important foraging opportunities for special-status raptors. In addition to special-status species, vernal pool grassland has high habitat value for common wildlife, including foraging raptors such as red-tailed hawk. The vernal pool grasslands on the project site contain numerous vernal pools and swales, seasonal wetlands, and ephemeral drainages that are sensitive habitats protected under CEQA, CWA, and the Porter Cologne Act. The diversity of common wildlife and high number of special-status species that rely on this habitat type along with the presence of features that are protected as sensitive habitat because of their rarity make this habitat type more biologically valuable than other habitat types present at the project site.

HABITAT AREAS MOST VALUABLE FOR PRESERVATION

Regional considerations such as proximity to urban development and lands designated or proposed for preservation were evaluated in addition to size of habitat area, surrounding habitat types, and potential continuity with other natural habitats to determine which areas of cottonwood-willow riparian forest and vernal pool grassland are most suitable for preservation.

Four areas of cottonwood-willow riparian forest are present on the project site (see Exhibit 1). The three patches in the western portion of the project site are small isolated fragments. The southwestern most fragments of cottonwood-willow riparian forest occur within the fenced perimeter of a heavily disturbed site which limits this habitat's biological value. The cottonwood-willow riparian forest present in the southeastern quadrant of the project site is larger and is adjacent to open woodland and grassland which would provide valuable foraging habitat for some species, including special-status species, associated with the riparian forest (e.g., raptors). Additionally, this patch of cottonwood-willow riparian forest is in close proximity to the proposed wetland preserve which lies to the south. Maintaining connectivity between these two areas would increase the overall biological value of the area. It is also important that the current hydrology be maintained or enhanced so that riparian vegetation can continue to regenerate. This area of cottonwood-willow riparian forest also has good restoration potential, should restoration be pursued, given the health and vigor of the vegetation present and hydrologic connectivity that maintains this habitat type.

Vernal pool grassland occurs across the entire southern portion of the project site and smaller more isolated areas of vernal pool grassland occur in the northwest portion of the project site. A large area of vernal pool grassland in the southeast portion of the project site is currently proposed as a wetland preserve. Preserving the vernal pool grassland habitat adjacent to the east and west of the proposed wetland preserve and maintaining continuity between these areas would provide the most value for wildlife habitat. This area includes Morrison Creek and a

greater portion of the natural channel would be retained if these additional areas were preserved. Also, preservation of the whole southern portion of vernal pool grassland would increase habitat value because it would provide a larger, more contiguous patch and provide better opportunities for future restoration and/or mitigation.

CONCLUSION

The portions of the Rio del Oro project site most valuable for preservation are those containing the cottonwood-willow riparian forest in the southeastern quadrant of the site and the vernal pool grassland in the southwestern and southeastern quadrants of the project site (Exhibit 4). Adjacent lands consisting of open woodland and grassland should also be preserved to increase the land area as well as the diversity of habitat type and structure present. To maximize the value of the preserved land, connectivity with the proposed wetland preserve should be maintained to allow wildlife to move between the two.

Sources: EDAW 2005, Sacramento County 2002, ECORP Consulting, Inc. 2004(b)

Habitat Areas Most Valuable for Preservation

EXHIBIT 4

Rio del Oro

X 03110089.01 2/05

0 1,000 2,000
FEET

NORTH

EDAW

REFERENCES

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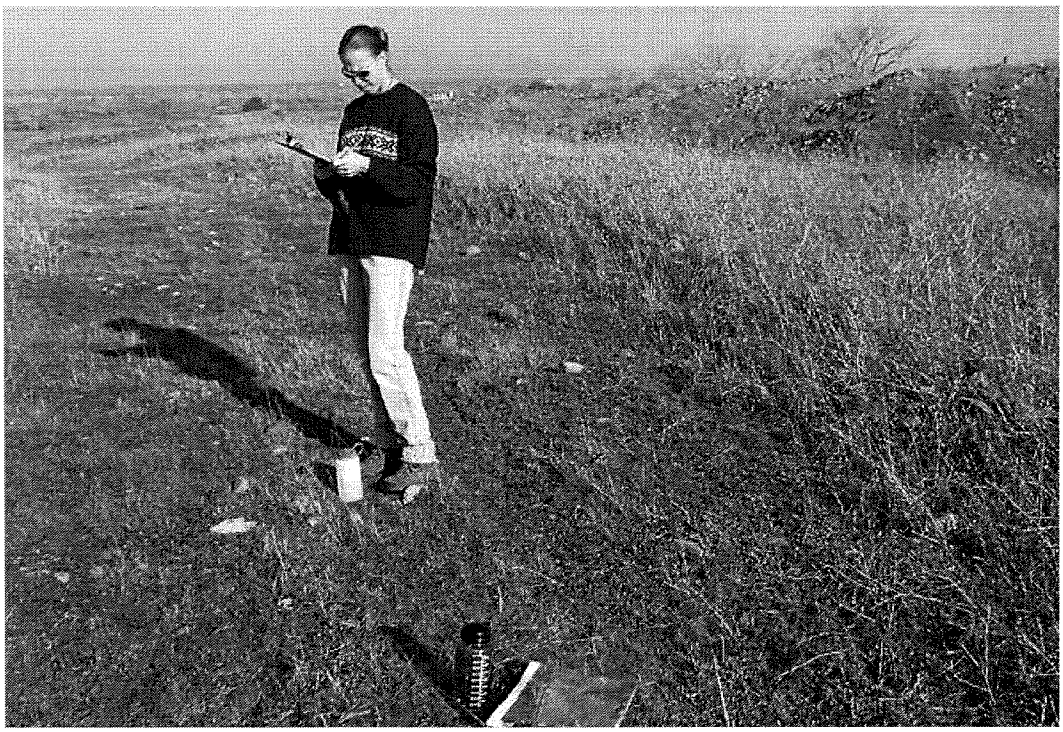
PERSONAL COMMUNICATIONS

Hansen, Eric. Consulting herpetologist. Sacramento, CA. January 27, 2005 – telephone conversation with Wendy Watson of EDAW regarding potential for occurrence of giant garter snake on the Rio del Oro project site.

APPENDIX A

REPRESENTATIVE PHOTOGRAPHS

Annual grassland habitat in the northwest quadrant of the project site at sample point 1. A tailings pile is visible in the background.



Ruderal vegetation occurs on dredge tailings. Yellow starthistle is common in this habitat.

Source: EDAW 2004

Representative Photographs

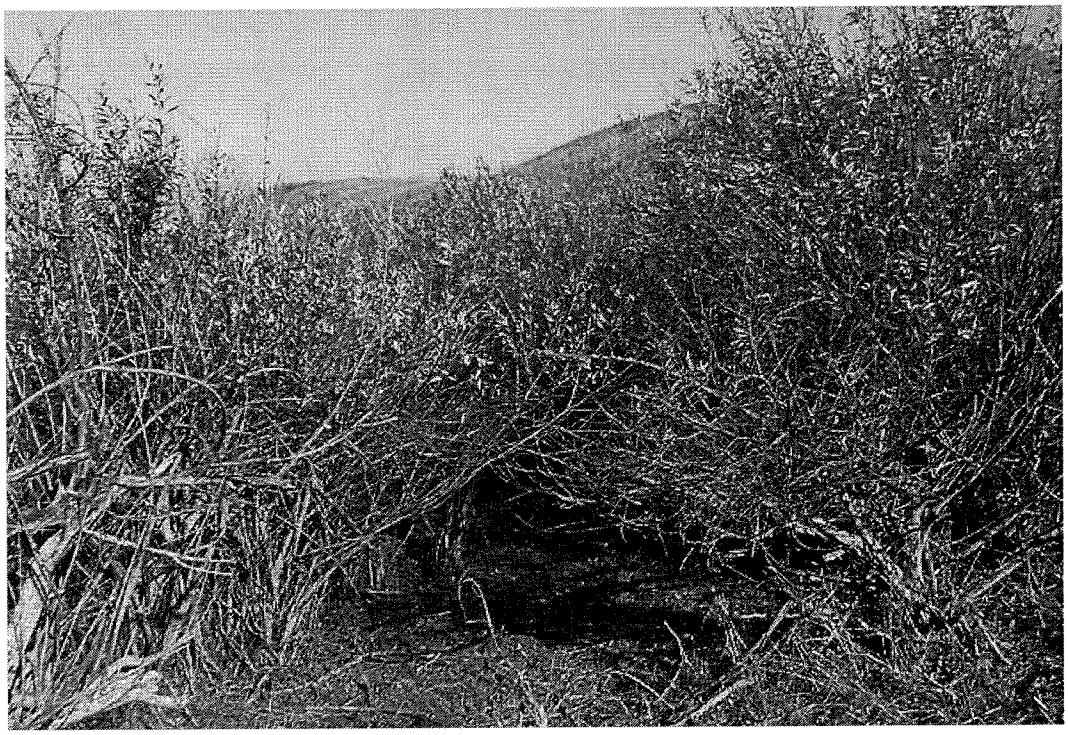
APPENDIX A

Vegetation is often sparse on the tailings piles due to the lack of soil and high percentage of cobble.

Coyote brush scrub at sample point 30. Willow and cottonwood are widely scattered in this habitat type.

Source: EDAW 2004

Representative Photographs



Willow scrub at sample point 4.

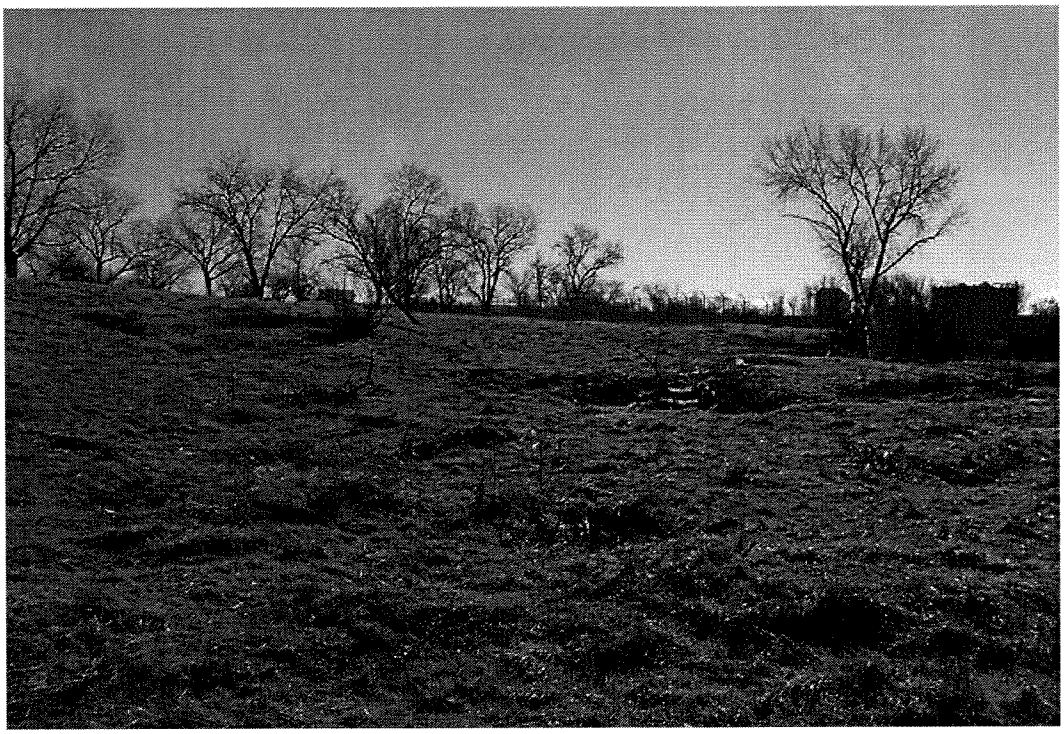
Mixed riparian scrub at sample point 5. Coyote brush, willow, and cottonwood are all common in this habitat type. Occasional oaks, elderberry, and various pines may also be present.

Source: EDAW 2004

Representative Photographs

APPENDIX A

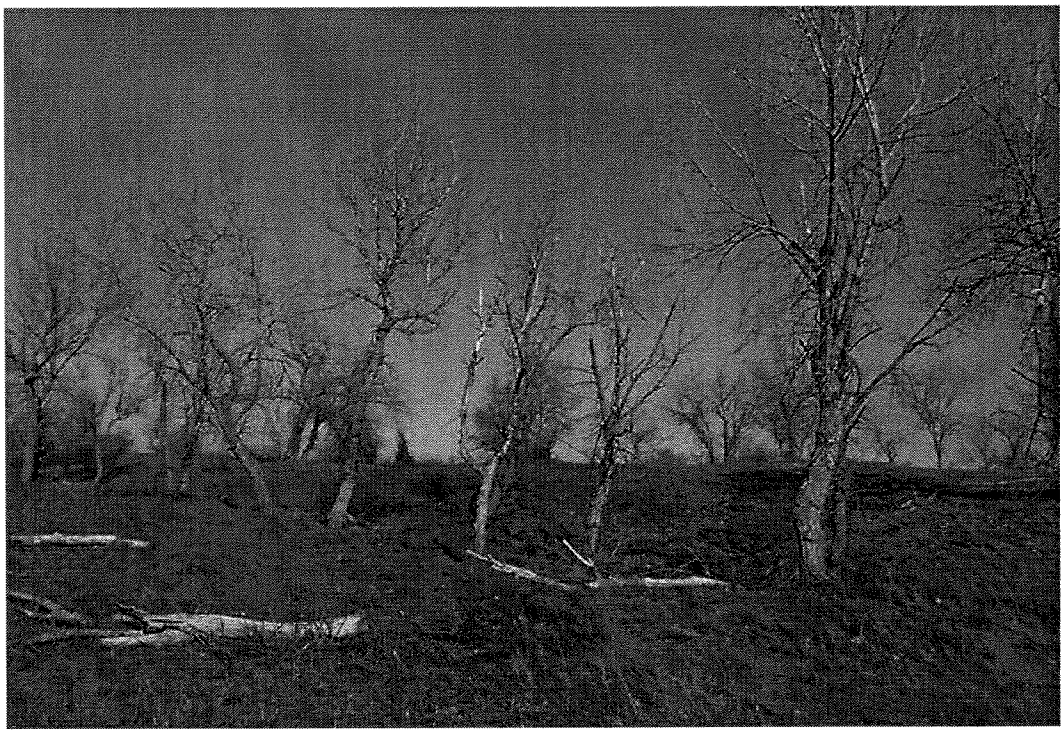
Elderberry shrub within elderberry savanna at sample point 16.



Many of the elderberry shrubs within the elderberry savanna at sample point 17 are dying and broken off. The gray piles of woody debris are dead elderberry shrubs.

Source: EDAW 2004

Willow woodland at sample point 35. This habitat type is characterized by an open canopy of tree-like willows.

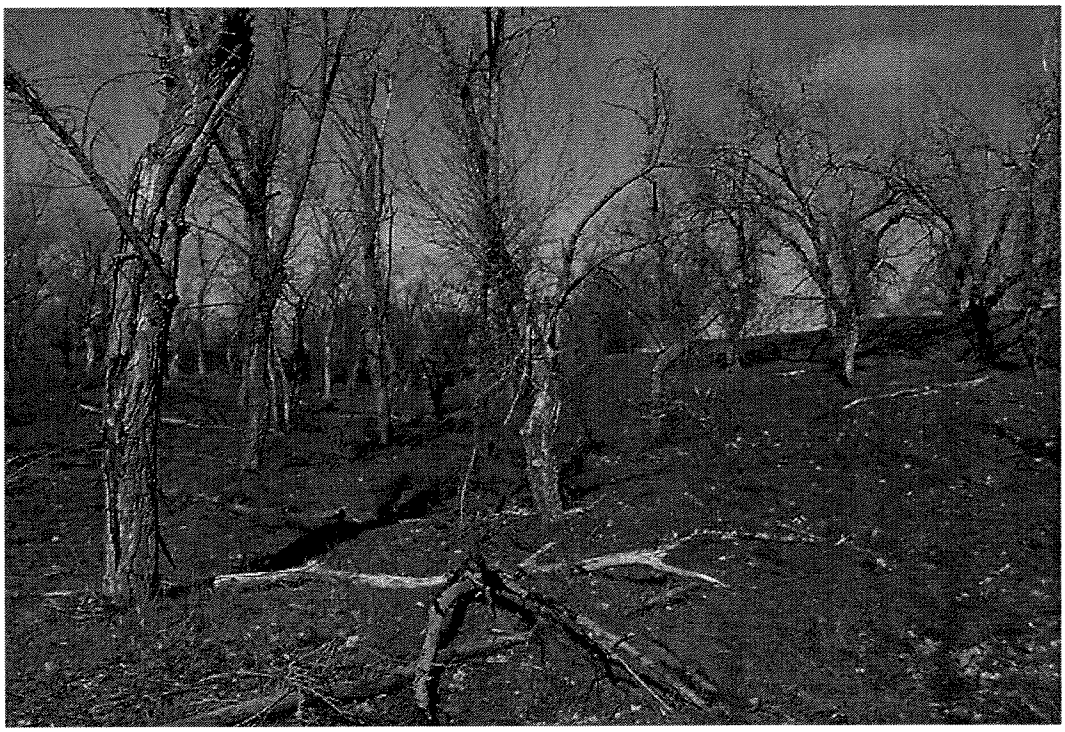


Cottonwood woodland at sample point 19. This habitat type is characterized by an open cottonwood tree canopy and an understory of annual grassland.

Source: EDAW 2004

Representative Photographs

APPENDIX A



Cottonwood woodland at sample point 20 has slightly denser tree cover than at sample point 19. The cottonwood trees are old and decadent with no regeneration occurring.

Oak woodland habitat at sample point 34. This habitat type is characterized by coyote brush and annual grassland in the understory, and interior live oak in the overstory.

Source: EDAW 2004

Representative Photographs

Shallow pools were present throughout the cottonwood–willow riparian forest habitat in the southeastern portion of the project site. This pool occurs at sample point 29.

Pool within cottonwood–willow riparian forest habitat at sample point 28.

Source: EDAW 2004

Representative Photographs

APPENDIX A

Structural diversity is high within cottonwood-willow riparian forest habitat.

Dense willow thickets occur within cottonwood–willow riparian forest as seen at sample point 29.

Source: EDAW 2004

Representative Photographs

APPENDIX A

Rio del Oro
P 03110089.01

EDAW

Tree density is high within the cottonwood–willow riparian forest as seen in this photo taken at sample point 29.

Regeneration within the cottonwood–willow riparian forest in the southeastern portion of the project site is good.

Source: EDAW 2004

Representative Photographs

Vernal pool grassland habitat in the southwestern portion of the project site.

Morrison Creek in the southwestern portion of the project site. The creek traverses the southern portion of the project site, flowing from east to west.

Source: EDAW 2004

Representative Photographs

APPENDIX A

Rio del Oro
P 03110089.01

EDAW

APPENDIX B

DATA SHEETS

Habitat Evaluation Data Form
Rio Del Oro

Sample Number		Date	12/13/24	Conditions	Partly cloudy; calm
Investigators					
Photos	1-3				

Habitat Type: Annual Grassland

Dominant Plant Species

Herb	Shrub	Tree
Medusa Head		
Rose Clovers		
Filaree		
Rumex: Fiddle dock		
Bromus: Soft Chess Brome		
R. ggut brome		
other sp observed:		
1) Holocarpha Virgata		

Total Cover

Herb	Shrub	Tree
99%	0	0

Individual Trees

Species	Height	Diameter

General Observations

Disturbances (type and degree)	grazing - low
Invasive Species	Medusa Head, r. ggut brome
Wildlife Observed	
Soil/Habitat Characteristics	Annual grassland dominated by nonnative grasses and forbs. High percentage of invasives, soil is moist (recent precipitation).
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	2	Date	12/13/04	Conditions	partly cloudy, calm
Investigators	Tammie Bessire, Wendy Watson				
Photos	4-7				

Habitat Type: Cottonwood Riparian woodland

Dominant Plant Species

Herb	Shrub	Tree
Italian Thistle	Willow (Salix lucida ssp. lasiandra)	Cottonwood
Storksbill (Geranium molle)		
Filaree		
Ripgut Brome		
Torilis arvensis		

Total Cover

Herb	Shrub	Tree
25%	20%	80%

Tree/Shrub Size
~~**Individual Trees**~~

Species	Average Height	Average Diameter
Shrub - Willow	10'	3"
Tree - Cottonwood	25-30'	20"

General Observations

Disturbances (type and degree)	At the base of tailings pile
Invasive Species	Italian thistle, ripgut brome
Wildlife Observed	
~~Soil~~ Habitat Characteristics	This is a very small, isolated basin with a few very large cottonwoods and mature willows that provide high percent cover for a very small area.
Other	

willows are old and decadent but resprouting

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	3	Date	12/13/04	Conditions	partly cloudy, calm
Investigators	Tammie Bennett, Wendy Watson				
Photos	8-10				

Habitat Type: Annual Grassland

Dominant Plant Species

Herb	Shrub	Tree
Star Thistle		
Italian Thistle		
Soft Chess Brome		
Medusa Head		
Rose Clover		
Ripgut brome		

Total Cover

Herb	Shrub	Tree
95%	0	0

Individual Trees

Species	Height	Diameter

General Observations

Disturbances (type and degree)	Historic dredging activities. Entire project site is grazed by cattle.
Invasive Species	Medusa Head, ripgut brome, star thistle, Italian thistle
Wildlife Observed	coyote scat
Soil Characteristics	rocky, cobbly
Other	Sample point is on top of tailings pile.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	4	Date	12/13/04	Conditions	partly cloudy, calm
Investigators	Tommy Beyer, Wendy Watson				
Photos	11-13				

Habitat Type: willow Riparian Scrub

Dominant Plant Species

Herb	Shrub	Tree
Italian Thistle	Willow (Salix lucida	
Geranium molle	ssp. lasiandra)	
Torilis arvensis		
Blessed milk thistle		
Grasses not flowering		

Total Cover

Herb	Shrub	Tree
40%	70%	Ø

Individual Trees

Species	Height	Diameter
Shrub-Willow	10'	2"

General Observations

Disturbances (type and degree)	cattle grazing - moderate
Invasive Species	Italian thistle
Wildlife Observed	
Soil Characteristics	clay loam, moist to surface (recent precipitation)
Other	in ravine @ base of tailing

mature willows that have broken off & resprouted many times

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	5	Date	12/13/04	Conditions	partly cloudy, calm
Investigators	Tammie Bense, Wendy Watson				
Photos	14 - 17				

Habitat Type: Mixed Riparian Scrub

Dominant Plant Species

Herb	Shrub	Tree
Soft chess Bromus	coyote brush	Interior live oak
Geranium molle	willows	Cottonwood
Rose Clover		
Spring vetch (Vicia sp.)		
medusa head		
ripgut brome		

Total Cover

Herb	Shrub	Tree
85%	45%	10%

~~Individual Trees~~

Species	Height	Diameter
Shrub - coyote brush/willow	8'	1"
Tree - Cottonwood/oak	20'	10"

General Observations

Disturbances (type and degree)	grazing - moderate
Invasive Species	medusa head, ripgut brome.
Wildlife Observed	turkey vultures
~~Soil~~ Habitat Characteristics	Shrub canopy is fairly dense consisting of varying sizes of coyote brush shrubs.
Other Tree	Canopy is very open with scattered cottonwood and live oaks, coyote brush dominates except at edges where willows become dominant.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	6	Date	12/13/04	Conditions	scattered thin clouds, gentle breeze
Investigators	Tammie Beyer, Wendy Watson				
Photos	18-22				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
Rose Clover	Coyote Brush	Cottonwood
Geranium molle	Willow	
Ripgut brome		
-Italian Thistle		
-Italian Rye Grass		
Filaree		
Non-Dominant:		
-fiddle dock		

Total Cover

Herb	Shrub	Tree
90%	1%	5%

Individual Trees

Species	Height	Diameter
Shrub	8'	
Trees - Cottonwood	30'	14"

General Observations

Disturbances (type and degree)	
Invasive Species	-Italian Thistle, ripgut brome
Wildlife Observed	
Soil Characteristics	
Other	-shrubs restricted to edges

Very open tree canopy, shrubs restricted to edges

(single large walnut growing on upper bank photo 1 & 5)

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	7	Date	12/13/04	Conditions	partly cloudy, calm
Investigators	T. Beterl, W. Watson				
Photos	23-26				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
Italian thistle	Ø	Fremont cottonwood
Rose clover		
Stork's bill (Geranium molle)		
Hordeum murinum		
ripgut brome		
yellow star thistle		

Total Cover

Herb	Shrub	Tree
90%	Ø	10%

Individual Trees

Species	Height	Diameter
Cottonwood	35 ft.	16 in.

General Observations

Disturbances (type and degree)	Cattle grazing - moderate
Invasive Species	Italian thistle, ripgut brome
Wildlife Observed	Western Bluebird (several) yellow-rumped warblers; meadowlark Dark-eyed junco; Note: numerous individuals present,
Soil Characteristics	
Other	open canopy, lots of woody debris

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	8	Date	12/13	Conditions	partly cloudy, slight breeze
Investigators	T Bennett, N. Watson				
Photos	27-28				

Habitat Type: Annual Grassland

Dominant Plant Species

Herb	Shrub	Tree
Italian Thistle		
Filaree		
Rose Clover		
Soft Chess brome		
blessed milk thistle		
other grasses not flowering		

Total Cover

Herb	Shrub	Tree
90%	0	0

Individual Trees

Species	Height	Diameter

General Observations

Disturbances (type and degree)	Point is on top of Dredge tailings
Invasive Species	Italian Thistle
Wildlife Observed	
Soil Characteristics	rocky, cobbly soil
Other	10% bare ground / rocks

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	9	Date	12/15/04	Conditions	partly cloudy, calm
Investigators	T. Beucel W. Watson				
Photos	29-32				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
Rip gut brome	Willow (S. lucida lasiandra)	Cottonwood
soft chess brome	Coyote brush	
*Italian Thistle		*Incidental
rose clover		Interior live oak
Vetch		
filaree		
*Geranium molle		

Total Cover

Herb	Shrub	Tree
95%	10%	15%

Individual Trees

Species	Height	Diameter
shrub - willow/coyote brush	2'	4"
trees - cottonwood	30'	8"

General Observations

Disturbances (type and degree)	grazing - moderate
Invasive Species	Italian Thistle, rip gut brome
Wildlife Observed	quail → not @ sample site but in willow a short distance away
Soil Characteristics	
Other	

- a couple of interior live oks through not a dominant
- shrubs restricted to edges

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	10	Date	12/13/04	Conditions	partly cloudy, gentle breeze
Investigators	T. Bewert, W. Watson				
Photos	33-36				

Habitat Type: annual grassland

Dominant Plant Species

Herb	Shrub	Tree
Medusa Head		
rose clover		
filaree		
Lasthenia virgata		
Other		
Fitchs Tarweed		

Total Cover

Herb	Shrub	Tree
90%	0	0

Individual Trees

Species	Height	Diameter

General Observations

Disturbances (type and degree)	grazing- moderate
Invasive Species	Medusa Head
Wildlife Observed	Western Bluebird, Red tailed hawk flew over
Soil Characteristics	
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	11	Date	12/13/04	Conditions	overcast, calm
Investigators	T. Benard, W. Watson				
Photos	37-40				

Habitat Type: Mixed Riparian Scrub

Dominant Plant Species

Herb	Shrub	Tree
Medusa Head	Willow	Cottonwood
Rose Clover	Coyote Brush	
Soft Chess Brome		
Filaree		
Geranium molle		
Italian Thistle		
Vetch (Vicia sp.)		

Total Cover

Herb	Shrub	Tree
95%	30%	<5%

Individual Trees

Species	Height	Diameter
Shrub - willow	7'	* 2"
Tree - cottonwood	20'	14"
coyote brush	4'	1"

General Observations

Disturbances (type and degree)	grazing - low
Invasive Species	Italian Thistle, Medusa Head
Wildlife Observed	
Soil Characteristics	
Other	* Willows are old shrubs that have broken off & resprouted, although many of them have large trunks, the large number of sprouts brings the average dbh down - Cottonwoods are sparse

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	12	Date	12/13/04	Conditions	overcast, slight breeze
Investigators	T. Bennett, D. Watson				
Photos	41-44				

Habitat Type: Annual Grassland

Dominant Plant Species

Herb	Shrub	Tree
Short Pod Mustard		
Italian Thistle		
white sweet clover		
rip gut brome		
rose clover		
Vetch		
Blessed milk thistle		

Total Cover

Herb	Shrub	Tree
20%	0	0

Individual Trees

Species	Height	Diameter

General Observations

Disturbances (type and degree)	
Invasive Species	Italian Thistle, rip gut brome
Wildlife Observed	
Soil Characteristics	*very rocky (top of tailing)
Other	- 1 coyote brush shrub present, 80% bare ground/rock

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	13	Date	12/13/14	Conditions	overcast, calm
Investigators	T Bennett, W. Watson				
Photos	45-50 (12 photos of willow sprouted from lateral stem)				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
Medusa Head	willow	willow
Italian thistle	coyote brush (scattered few)	Fremont cottonwood
Stork's bill (Geranium molle)		
soft chess		
filaree		
rose clover		
blessed milk thistle		

Total Cover

Herb	Shrub	Tree
95%	5%	20%

Individual Trees

Species	Height	Diameter
willow	10 ft	6"
cottonwood	50 ft	24"

General Observations

Disturbances (type and degree)	light grazing
Invasive Species	Medusa Head
Wildlife Observed	Red-tailed Hawk flew over; stick nest in crotch of cottonwood ~30 ft above ground (nest ~1½ ft diameter?); small stick nests (new growth) in willows ~20 ft
Soil Characteristics	moist surface, recent precipitation
Other	very tall, mature willows & cottonwoods; deep, bowl-shaped basin

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	14	Date	12/13/04	Conditions	dusky, calm, overcast
Investigators	T. Beard M. Watson				
Photos	51-54				

Habitat Type: Annual Grassland

Dominant Plant Species

Herb	Shrub	Tree
rose clover		
filaree		
Medusa Head		
Holocarpha vergata		
rip gut brome		

Total Cover

Herb	Shrub	Tree
90%	0	0

Individual Trees

Species	Height	Diameter

General Observations

Disturbances (type and degree)	grazing - moderate
Invasive Species	Medusa Head rip gut brome
Wildlife Observed	great horned owl (nest this site in Cottonwood) Starling
Soil Characteristics	
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	15	Date	12/13/11	Conditions	Dust overcast, calm
Investigators	T. Bo[illegible]				
Photos	55 - 58				

Habitat Type: Mixed Riparian Scrub

Dominant Plant Species

Herb	Shrub	Tree
Medusa Head	Coyote Brush	Cottonwood
Italian rye grass	Willow	
Geranium Mallow		
rose clover	other	other
Italian Thistle	salt cedar (1)	pine (1)
Soft Chess brome		
blessed milk-thistle		

Total Cover

Herb	Shrub	Tree
90%	35%	10%

Individual Trees

Species	Height	Diameter
Shrub -	4'	1"
Tree	40'	15"

General Observations	
Disturbances (type and degree)	grazing - moderate/low
Invasive Species	Italian Thistle, Medusa Head, salt cedar
Wildlife Observed	great horned owl recorded on site 14 moved into the area
Soil Habitat Characteristics	shrub layer dominated by coyote brush.
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	16	Date	1/12/05	Conditions	cool, foggy, precipitation in last 24hrs
Investigators	T. Beyerl, W. Watson				
Photos	1-4				

Habitat Type: Elderry Savanna

Dominant Plant Species

Herb	Shrub	Tree
medusahead	Sambucus mexicana	Fremont cottonwood
rose clover		
Geranium molle		
Vicia		
Lolium multiflorum		
Bromus diandrus		

Total Cover

Herb	Shrub	Tree
99%	2%	<1% (few scattered)

Tree/Shrub Size

Species	Average Height	Average DBH
elderberry	9 feet	2 inches
cottonwood	20 feet+	11 inches

General Observations

Disturbances (type and degree)	Historic dredging (point is between dredge piles), current light grazing (cattle)
Invasive Species	
Wildlife Observed	geese (flock), meadowlark, savannah sparrow
Soil Characteristics	moist to surface, high amount of recent precipitation
Other	there are many large elderberry shrubs (5" DBH) but high number of suckers (rings average down)

large cottonwoods suitable for nesting raptors, open grassland for foraging, no dense vegetation for cover

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	17	Date	1/12/05	Conditions	Sunny, clear
Investigators	T. Beyerl, W. Walson				
Photos	5-8				

Habitat Type: Elderberry Savanna

Dominant Plant Species

Herb	Shrub	Tree
B. hordeaceus	Sambucus mexicana	Fremont Cottonwood
Medusahead		
rose clover		
Italian thistle		
Geranium molle		
blessed milk thistle		

Total Cover

Herb	Shrub	Tree
99%	5%	<1%

Tree/Shrub Size

Species	Average Height	Average DBH
elderberry	2 feet	2 inches
cottonwood	20 feet	11 inches

*Cottonwoods are restricted to the edges of the site consist of only 4 trees.

General Observations

Disturbances (type and degree)	same as 16
Invasive Species	
Wildlife Observed	variety [illegible]
~~Soil~~ Characteristics	Cottonwoods suitable for raptor nesting and open grassland for foraging. No desnse shrub cover.
Other	elderberry shrubs are all dead & broken off at this sample point with minimal resprouting at the present time

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	18	Date	1/12/05	Conditions	
Investigators					
Photos	9-12				

Habitat Type: Mixed Riparian Scrub

Dominant Plant Species

Herb	Shrub	Tree
soft chess brome	Coyote brush	cottonwood
medusa head	willow	
Geranium molle		
rose clover		

Total Cover

Herb	Shrub	Tree
99%	40%	1%

Tree/Shrub Size

Species	Average Height	Average DBH
coyote brush	3 feet	1 inch
willow	10 feet+	3 inches
cottonwood	30 feet+	12 inches

General Observations

Disturbances (type and degree)	Same as pt 17
Invasive Species	
Wildlife Observed	3 Turkey Vultures; meadowlark
~~Soil~~ Habitat Characteristics	Cottonwoods are sparsely scattered, mostly restricted to edges: suitable for nesting raptors. Grassland for foraging
Other	and good shrub cover.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	19	Date	1/12/05	Conditions	sunny, clear, 50°F
Investigators					
Photos	13-16				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
soft chess brome	willow	cottonwood
medusa head		
Geranium molle		
blessed milk thistle		
Vicia		

Total Cover

Herb	Shrub	Tree
99%	<1%	10%

Tree/Shrub Size

Species	Average Height	Average DBH
willow	16 feet	2 inches
cottonwood	25 feet	12 inches

General Observations

Disturbances (type and degree)	Same as previous
Invasive Species	
Wildlife Observed	western bluebird, turkey vulture
~~Soil~~ Habitat Characteristics	Very open woodland with only a few widely scattered willow shrubs. Large cottonwood for nesting.
Other	Tailings piles are smaller and further apart so there are

wider, more contiguous expasses of woodland. Not [illegible] more soil is present in the tailings.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	20	Date	1/12/05	Conditions	
Investigators					
Photos	17-20				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
Soft chess	willow	cottonwood
medusa head		
Geranium molle		
rose clover		
Vicia		
Italian thistle		occasional Live Oak

Total Cover

Herb	Shrub	Tree
99%	<1%	20%

Tree/Shrub Size

Species	Average Height	Average DBH
willow	10 feet	4 inches
cottonwood	35 feet	15 inches

General Observations

Disturbances (type and degree)	same as previous
Invasive Species	
Wildlife Observed	[illegible]
~~Soil~~ Habitat Characteristics	Open woodland with lots of cottonwoods of varying sizes, very few shrubs.
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	21	Date	1/12/05	Conditions	
Investigators					
Photos	21-24				

Habitat Type: Willow Scrub

Dominant Plant Species

Herb	Shrub	Tree
Geranium molle	willow	cottonwood
Soft Chess		
medusa head		
Toril:s arvensis		

Total Cover

Herb	Shrub	Tree
95%	50%	2%

Tree/Shrub Size

Species	Average Height	Average DBH
Shrub willow	12 feet	2 inches
cottonwood	20 foot	10 inches

General Observations

Disturbances (type and degree)	Same as previous. Tailings piles are smaller and flatter than those on western side of site.
Invasive Species	
Wildlife Observed	
~~Soil~~ ~~Habitat~~ Characteristics	Very good shrub cover (all willows), very few cottonwoods not suitable for raptor nesting or foraging but good habitat for smaller birds. Soil moist to surface.
Other	

Fairly small wetted path (see map)

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	22	Date	1/12/05	Conditions	
Investigators					
Photos	25-28				

Habitat Type: Annual Grassland

Dominant Plant Species

Herb	Shrub	Tree
Yellow starthistle	—	cottonwood
rose clover		
Geranium molle		
soft chess		
medusa head		
Erod.ium sp.		

Total Cover

Herb	Shrub	Tree
99%	Ø	< 1%

Tree/Shrub Size

Species	Average Height	Average DBH
cottonwood (1 tree)	20 feet	12 inches

General Observations

Disturbances (type and degree)	low, relatively flat tailings pile
Invasive Species	
Wildlife Observed	Western Meadowlark; white-tailed kite hovering (low)
~~Soil~~ Habitat Characteristics	Open grassland with no shrubs & only one tree. Not cobbly or rocky on surface.
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	23	Date	1/12/05	Conditions	clear, cool, 45°
Investigators					
Photos	29-32				

Habitat Type: cottonwood/willow/CBS

Dominant Plant Species

Herb	Shrub	Tree
Medusahead	willow	cottonwood
soft chess		willow
Geranium molle		
rose clover		

Total Cover

Herb	Shrub	Tree
98%	15%	15%

Tree/Shrub Size

Species	Average Height	Average DBH
coyote brush	7 feet	1 inch
willow	10 feet	2 inches
cottonwood	25 feet	13 inches

General Observations

Disturbances (type and degree)	Historic - dredging (site is in a basin between tall tailing piles.
Invasive Species	Italian thistle, medusahead
Wildlife Observed	Western Meadowlark
~~Soil~~ Habitat Characteristics	mature tall cottonwoods, tall straight willows, and CB shrubs; good structural diversity
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	24	Date	1/12/05	Conditions	
Investigators					
Photos	33-36				

Habitat Type: Cottonwood/willow-CBS/elderberry (mixed riparian scrub)

Dominant Plant Species

Herb	Shrub	Tree
medusahead	willow	cottonwood
soft chess	coyote brush	
rose clover	elderberry	

Total Cover

Herb	Shrub	Tree
98%	15%	10%

Tree/Shrub Size

Species	Average Height	Average DBH
rose brush	6 feet	1 inch
elderberry	11 feet	2 inches
willow	10 feet	2.5 inches
cottonwood	30 feet	11 inches

General Observations

Disturbances (type and degree)	Basin between tailings piles
Invasive Species	fennel
Wildlife Observed	[illegible]
~~Soil~~ Habitat Characteristics	Open-dense; dense clumps of shrubs; varying sizes of cottonwoods; occasional live oaks
Other	[illegible]

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	25	Date	1/12/05	Conditions	
Investigators					
Photos	37-40				

Habitat Type: Annual Grassland

Dominant Plant Species

Herb	Shrub	Tree
soft chess	Ø	Ø
medusa head		
Vicia sp.		
rose clover		
blessed milk Thistle		

Total Cover

Herb	Shrub	Tree
99%	Ø	Ø

Tree/Shrub Size

Species	Average Height	Average DBH

General Observations

Disturbances (type and degree)	
Invasive Species	
Wildlife Observed	[illegible] raptor [illegible]
~~Soil~~ Habitat Characteristics	Open grassland with high percentage of blessed milk thistle. Large cottonwoods suitable for nesting
Other	ravens are nearby [illegible]

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	26	Date	1/12/05	Conditions	
Investigators					
Photos	41-44				

Habitat Type: willow / Elderberry / CBS (Mixed Riparian Scrub)

Dominant Plant Species

Herb	Shrub	Tree
soft chess	coyote brush	cottonwood
Vicia	elderberry	
Geranium molle	willow	

Total Cover

Herb	Shrub	Tree
99%	15%	<1%

Tree/Shrub Size

Species	Average Height	Average DBH
coyote brus	8 feet	1.5 inches
willow	12 feet	2.5 inches
elderberry	12 feet	2 inches
cottonwood	50 feet	20 inches

only a few cottonwoods

General Observations

Disturbances (type and degree)	
Invasive Species	
Wildlife Observed	; savannah sparrow
Soil Characteristics	mostly shrubs - dense to open; dense patches with intervening open grassland
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	27	Date	1/13/05	Conditions	foggy, cold (40°F)
Investigators	T. Beeri and Wendy Watson				
Photos	45-48				

Habitat Type: Cottonwood-Willow Riparian Forest

Dominant Plant Species

Herb	Shrub	Tree
soft chess brome	Shining willow	Fremont cottonwood
Geranium		Shining willow
Other grasses (NF)		

Total Cover

Herb	Shrub	Tree
90%	40%	30%

Tree/Shrub Size

Species	Average Height	Average DBH
willow	13 feet	3 inches
cottonwood	40 feet	13 inches

General Observations

Disturbances (type and degree)	Historic - dredging; point is in basin between tailings piles Current - light cattle grazing
Invasive Species	
Wildlife Observed	
~~Soil~~ Habitat Characteristics	good tree and shrub cover; good structural diversity; varying sizes of trees & shrubs. better cover and regeneration in the basin compared to other points where trees & shrubs were mostly restricted to edges.
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	28	Date	1/12/05	Conditions	
Investigators					
Photos	49-52				

Habitat Type: Cottonwood - willow Riparian Forest

Dominant Plant Species

Herb	Shrub	Tree
Rose clover	Shining willow	Fremont cottonwood
Geranium		Shining willow
Grasses (NF)		
Italian thistle		

Total Cover

Herb	Shrub	Tree
65%	40%	40%

Tree/Shrub Size

Species	Average Height	Average DBH
willow	14 feet	3 inches
cottonwood	40 feet	19 inches

General Observations

Disturbances (type and degree)	
Invasive Species	
Wildlife Observed	vocals of several sp. birds; Ruby-crowned kinglet, white crowned sparrow
Soil Characteristics	Much of basin is inundated creating large pools; willows & cottonwood are growing in pools and around. great structural diversity;
Other	Downed woody debris in pools creates additional habitat opportunities.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	29	Date	1/13/05	Conditions	Overcast, cold
Investigators					
Photos	53-56, 57 is an overview of the swampy area				

Habitat Type: Cottonwood-Willow Riparian Forest

Dominant Plant Species

Herb	Shrub	Tree
soft chess brome	Shining willow	Fremont cottonwood
medusa head		shining willow
ripgut brome		
Erodium		

Total Cover

Herb	Shrub	Tree
75%	50%	40%

Tree/Shrub Size

Species	Average Height	Average DBH
Shining willow	15 feet	3 inches
cottonwood	35 feet	16 inches

General Observations

Disturbances (type and degree)	Site is a bowl-shaped excavation near tailings piles. Light cattle grazing is ongoing.
Invasive Species	
Wildlife Observed	numerous birds present; Say's Phoebe; western Bluebird; Bewick's Wren;
Soil Characteristics	Great structural diversity; dense thickets of willows; tall tree-like willows as well as shrubby willows, ponded water
Other	(swampy), large cottonwoods. Good nesting opportunities for small birds and cover for small mammals in willow thickets.

[illegible] surveyed this habitat is [illegible] quality

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	30	Date	1/13/05	Conditions	Overcast, cold
Investigators	T. Beyerl & W. Watson				
Photos	58-61				

Habitat Type: Coyote brush scrub

Dominant Plant Species

Herb	Shrub	Tree
medusa head	coyote brush	Fremont cottonwood
soft chess	shining willow (not dominant, widely scattered)	
rose clover		
yellow starthistle		

Total Cover

Herb	Shrub	Tree
95%	55%	2%

Tree/Shrub Size

Species	Average Height	Average DBH
coyote brush	4 feet	1 inch
shining willow	11 feet	2 inches
cottonwood	35 feet	21 inches

General Observations

Disturbances (type and degree)	
Invasive Species	
Wildlife Observed	[illegible]; savannah sparrow
~~Soil~~ Habitat Characteristics	Characterized predominantly by coyote brush, few scattered willows and cottonwoods
Other	adjacent area w/ cottonwood [illegible]

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	31	Date	1/13/05	Conditions	overcast, cold
Investigators					
Photos	62-65				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
medusahead	shining willow	cottonwood
soft chess		
ripgut		
geranium		
Vicia sp.		

Total Cover

Herb	Shrub	Tree
99%	5%	1%

Tree/Shrub Size

Species	Average Height	Average DBH
shining willow	7.5 feet	1.5 inches
cottonwood	40 feet	32 inches

General Observations

Disturbances (type and degree)	Basin between tailings piles. Light cattle grazing.
Invasive Species	
Wildlife Observed	Western Bluebird; several unidentified small birds flew by quickly near [illegible]
~~Soil~~ Habitat Characteristics	Open woodland with scattered willow shrubs in the understory. The cottonwood trees are very large and widely scattered.
Other	One live oak. Trees are restricted to edge of basin.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	32	Date	1/13/05	Conditions	overcast, cold
Investigators					
Photos	66-69				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
ripgut	shining willow	cottonwood
medusahead		
Geranium		
Vicia		
±Italian thistle		

Total Cover

Herb	Shrub	Tree
99%	1%	1%

Tree/Shrub Size

Species	Average Height	Average DBH
shining willow	11 feet±	5 inches
cottonwood	45 feet±	27 inches

General Observations

Disturbances (type and degree)	Between tailings piles. Light cattle grazing ongoing.
Invasive Species	
Wildlife Observed	western Bluebird, Nuttall's woodpecker, White-crowned sparrow, savannah sparrow
Soil Characteristics	Very open woodland with sparse, scattered trees & shrubs primarily on the edge of the basin. Basin floor is
Other	open grassland.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	33	Date	1/13/05	Conditions	Overcast, cold
Investigators					
Photos	70-73				

Habitat Type: Cottonwood Woodland

Dominant Plant Species

Herb	Shrub	Tree
medusa head	Ø	Fremont cottonwood
yellow starthistle		
Vicia		
Erodium		

Total Cover

Herb	Shrub	Tree
99%	Ø	1%

Tree/Shrub Size

Species	Average Height	Average DBH
cottonwood	35 feet	25 inches

General Observations

Disturbances (type and degree)	Light cattle grazing; historic dredging
Invasive Species	
Wildlife Observed	starling; savannah sparrow; meadowlark;
Soil Habitat Characteristics	Flat, open woodland. Large cottonwood trees with herbaceous understory; no shrub layer. A lot of dead cottonwood and
Other	downed branches. Does not appear that cottonwoods are regenerating.

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	34	Date		Conditions	
Investigators					
Photos	74-77				

Habitat Type: Oak Woodland

Dominant Plant Species

Herb	Shrub	Tree
medusahead	Coyote brush	Interior live oak
Geranium		
	There are scattered	willow and elderberry
	shrubs and also gray pines.	

Total Cover

Herb	Shrub	Tree
98%	40%	25%

Tree/Shrub Size

Species	Average Height	Average DBH
Coyote brush	7 feet	1 inch
live oak	40 feet	1 inches

General Observations

Disturbances (type and degree)	Basin between tailings piles.
Invasive Species	
Wildlife Observed	Oak titmouse;
Soil Characteristics	Good shrub cover, tall live oaks but generally not suitable for raptor nests. Good cover for small mammals.
Other	

Habitat Evaluation Data Form
Rio Del Oro

Sample Number	25	Date		Conditions	
Investigators					
Photos	72-73				

mapped as MRS but maybe should add another category for this, maybe call it mixed riparian woodland or willow woodland - will have to edit the exhibit.

Habitat Type: Willow Woodland

Dominant Plant Species

Herb	Shrub	Tree
Medusahead	Shining willow	Shining willow
rose clover		interior live oak
yellow starthistle		
Some CA poppy coming up.		

Total Cover

Herb	Shrub	Tree
95%	5%	5%

Individual Trees

Species	Height	Diameter
willow	17 feet	4 inches
live oak	25+ feet	9 inches

General Observations

Disturbances (type and degree)	Close to White Rock Rd.; between tailings piles. Light cattle grazing.
Invasive Species	
Wildlife Observed	White-crowned sparrow; Savannah sparrow;
Soil Characteristics	Ponded water in basin; some very large (30 feet) willows as well as smaller shrubby willows; good willow regeneration.
Other	View over basin to White Rock Rd.

APPENDIX C

U.S. FISH AND WILDLIFE SERVICE SPECIES LIST (2004)

RECEIVED MAR 15 2004

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W2605
Sacramento, California 95825

IN REPLY REFER TO:
1-1-04-SP-1074

MAR 11 2004

Petra Unger
EDAW, Inc.
2022 J Street
Sacramento, California 95814

Subject: Species List for Rio del Ora, Rancho Cordova

Dear Petra Unger:

We are sending the enclosed list in response to your request for information about endangered and threatened species (Enclosure A). The list covers the U.S. Geological Survey 7.5 minute quad(s) where your project is planned.

Please read Important Information About Your Species List (Enclosure B). It explains how we made the list and describes your responsibilities under the Endangered Species Act. Contact Adam Zerrenner at (916) 414-6645, if you have any questions about the enclosed list or your responsibilities under the Endangered Species Act.

For the fastest response to species list requests, address them to the attention of Species Lists at this address. You may fax requests to (916) 414-6712 or 414-6713.

Sincerely,

for Chris Nagano, Chief
Endangered Species Division

Enclosures

ENCLOSURE A

Endangered and Threatened Species that May Occur in or be Affected by Projects in the Area of the Following California Counties

Reference File No. 1-1-04-SP-1074

Rio del Ora, Rancho Cordova

March 11, 2004

SACRAMENTO COUNTY

Listed Species

Mammals

riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS

Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS

Critical habitat, delta smelt, *Hypomesus transpacificus* (T)

Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

delta smelt, *Hypomesus transpacificus* (T)

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Invertebrates

Conservancy fairy shrimp, *Branchinecta conservatio* (E)

Critical habitat, valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

Critical habitat, vernal pool invertebrates, (X)

delta green ground beetle, *Elaphrus viridis* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Plants

Antioch Dunes evening-primrose, *Oenothera deltoides ssp. howellii* (E)

Critical habitat, vernal pool plants, (X)

Sacramento Orcutt grass, *Orcuttia viscida* (E)

slender Orcutt grass, *Orcuttia tenuis* (T)

soft bird's-beak, *Cordylanthus mollis ssp. mollis* (E) *

ENCLOSURE A

Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Selected Quads Listed Below
Reference File No. 1-1-04-SP-1074
Rio del Ora, Rancho Cordova
March 11, 2004

QUAD: 511B FOLSOM

Listed Species

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)

Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS

Invertebrates

Critical habitat, vernal pool invertebrates, (X)

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Plants

Critical habitat, vernal pool plants, (X)

Sacramento Orcutt grass, *Orcuttia viscida* (E)

Proposed Species

Amphibians

California tiger salamander, *Ambystoma californiense* (PT)

Candidate Species

Fish

green sturgeon, *Acipenser medirostris* (C)

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Critical habitat, Central Valley fall/late fall-run chinook, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

spotted bat, *Euderma maculatum* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

western burrowing owl, *Athene cunicularia hypugaea* (SC)

oak titmouse, *Baeolophus inornatus* (SLC)

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

Swainson's hawk, *Buteo Swainsoni* (CA)

ferruginous hawk, *Buteo regalis* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Vaux's swift, *Chaetura vauxi* (SC)

mountain plover, *Charadrius montanus* (SC)

black swift, *Cypseloides niger* (SC)

white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

prairie falcon, *Falco mexicanus* (SC)

American peregrine falcon, *Falco peregrinus anatum* (D)

loggerhead shrike, *Lanius ludovicianus* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)

long-billed curlew, *Numenius americanus* (SC)

Nuttall's woodpecker, *Picoides nuttallii* (SLC)

white-faced ibis, *Plegadis chihi* (SC)

bank swallow, *Riparia riparia* (CA)

rufous hummingbird, *Selasphorus rufus* (SC)

California thrasher, *Toxostoma redivivum* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

loggerhead shrike, *Lanius ludovicianus* (SC)
long-billed curlew, *Numenius americanus* (SC)
marbled godwit, *Limosa fedoa* (SC)
mountain plover, *Charadrius montanus* (SC)
oak titmouse, *Baeolophus inornatus* (SLC)
red-breasted sapsucker, *Sphyrapicus ruber* (SC)
rufous hummingbird, *Selasphorus rufus* (SC)
tricolored blackbird, *Agelaius tricolor* (SC)
western burrowing owl, *Athene cunicularia hypugaea* (SC)
white-faced ibis, *Plegadis chihi* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

Reptiles

California horned lizard, *Phrynosoma coronatum frontale* (SC)
northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
silvery legless lizard, *Anniella pulchra pulchra* (SC)
southwestern pond turtle, *Clemmys marmorata pallida* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylii* (SC)
western spadefoot toad, *Spea hammondii* (SC)

Fish

Kern brook lamprey, *Lampetra hubbsi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
Sacramento splittail, *Pogonichthys macrolepidotus* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)
river lamprey, *Lampetra ayresi* (SC)

Invertebrates

Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)
Sacramento anthicid beetle, *Anthicus sacramento* (SC)
San Joaquin dune beetle, *Coelus gracilis* (SC)
curved-foot hygrotus diving beetle, *Hygrotus curvipes* (SC)

Plants

Ahart's (dwarf) rush, *Juncus leiospermus var. ahartii* (SC)
Amador (Bisbee Peak) rush-rose, *Helianthemum suffrutescens* (SLC)
Boggs Lake hedge-hyssop, *Gratiola heterosepala* (CA)
Mason's lilaeopsis, *Lilaeopsis masonii* (SC)

Candidate Species

Fish

green sturgeon, *Acipenser medirostris* (C)

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

spotted bat, *Euderma maculatum* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

western burrowing owl, *Athene cunicularia hypugaea* (SC)

oak titmouse, *Baeolophus inornatus* (SLC)

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

Swainson's hawk, *Buteo Swainsoni* (CA)

ferruginous hawk, *Buteo regalis* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Vaux's swift, *Chaetura vauxi* (SC)

mountain plover, *Charadrius montanus* (SC)

black swift, *Cypseloides niger* (SC)

white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

prairie falcon, *Falco mexicanus* (SC)

American peregrine falcon, *Falco peregrinus anatum* (D)

greater sandhill crane, *Grus canadensis tabida* (CA)

loggerhead shrike, *Lanius ludovicianus* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)

long-billed curlew, *Numenius americanus* (SC)

Nuttall's woodpecker, *Picoides nuttallii* (SLC)

white-faced ibis, *Plegadis chihi* (SC)

bank swallow, *Riparia riparia* (CA)

rufous hummingbird, *Selasphorus rufus* (SC)

California thrasher, *Toxostoma redivivum* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

western spadefoot toad, *Spea hammondii* (SC)

Fish

Sacramento splittail, *Pogonichthys macrolepidotus* (SC)

longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)

California linderiella fairy shrimp, *Linderiella occidentalis* (SC)

Plants

Boggs Lake hedge-hyssop, *Gratiola heterosepala* (CA)

Ahart's (dwarf) rush, *Juncus leiospermus var. ahartii* (SC) *

legenere, *Legenere limosa* (SC)

QUAD: 512A CITRUS HEIGHTS

Listed Species

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)

Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS

Invertebrates

Critical habitat, vernal pool invertebrates, (X)

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Plants

Critical habitat, vernal pool plants, (X)

Proposed Species

Amphibians

California tiger salamander, *Ambystoma californiense* (PT)

Candidate Species

Fish

green sturgeon, *Acipenser medirostris* (C)

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

western burrowing owl, *Athene cunicularia hypugaea* (SC)

oak titmouse, *Baeolophus inornatus* (SLC)

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

Swainson's hawk, *Buteo Swainsoni* (CA)

ferruginous hawk, *Buteo regalis* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Vaux's swift, *Chaetura vauxi* (SC)

mountain plover, *Charadrius montanus* (SC)

white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

prairie falcon, *Falco mexicanus* (SC)

American peregrine falcon, *Falco peregrinus anatum* (D)

greater sandhill crane, *Grus canadensis tabida* (CA)

loggerhead shrike, *Lanius ludovicianus* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)

long-billed curlew, *Numenius americanus* (SC)

Nuttall's woodpecker, *Picoides nuttallii* (SLC)

white-faced ibis, *Plegadis chihi* (SC)

bank swallow, *Riparia riparia* (CA)
rufous hummingbird, *Selasphorus rufus* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

western spadefoot toad, *Spea hammondii* (SC)

Fish

Sacramento splittail, *Pogonichthys macrolepidotus* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)

Plants

valley sagittaria (=Sanford's arrowhead), *Sagittaria sanfordii* (SC)

QUAD: 512D CARMICHAEL

Listed Species

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)
Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS
winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS
Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS

Invertebrates

Critical habitat, vernal pool invertebrates, (X)
vernal pool fairy shrimp, *Branchinecta lynchi* (T)
Critical habitat, valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Plants

Critical habitat, vernal pool plants, (X)

Proposed Species

Amphibians

California tiger salamander, *Ambystoma californiense* (PT)

Candidate Species

Fish

green sturgeon, *Acipenser medirostris* (C)

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Critical habitat, Central Valley fall/late fall-run chinook, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

western burrowing owl, *Athene cunicularia hypugaea* (SC)

oak titmouse, *Baeolophus inornatus* (SLC)

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

Swainson's hawk, *Buteo Swainsoni* (CA)

ferruginous hawk, *Buteo regalis* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Vaux's swift, *Chaetura vauxi* (SC)

mountain plover, *Charadrius montanus* (SC)

white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

prairie falcon, *Falco mexicanus* (SC)

American peregrine falcon, *Falco peregrinus anatum* (D)

greater sandhill crane, *Grus canadensis tabida* (CA)

loggerhead shrike, *Lanius ludovicianus* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)

long-billed curlew, *Numenius americanus* (SC)

Nuttall's woodpecker, *Picoides nuttallii* (SLC)

white-faced ibis, *Plegadis chihi* (SC)

bank swallow, *Riparia riparia* (CA)
rufous hummingbird, *Selasphorus rufus* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

western spadefoot toad, *Spea hammondii* (SC)

Fish

Sacramento splittail, *Pogonichthys macrolepidotus* (SC)

longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)

California linderiella fairy shrimp, *Linderiella occidentalis* (SC)

Plants

Boggs Lake hedge-hyssop, *Gratiola heterosepala* (CA)

Ahart's (dwarf) rush, *Juncus leiospermus var. ahartii* (SC)

valley sagittaria (=Sanford's arrowhead), *Sagittaria sanfordii* (SC)

KEY:

(E)	*Endangered*	Listed (in the Federal Register) as being in danger of extinction.
(T)	*Threatened*	Listed as likely to become endangered within the foreseeable future.
(P)	*Proposed*	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX)	*Proposed Critical Habitat*	Proposed as an area essential to the conservation of the species.
(C)	*Candidate*	Candidate to become a *proposed* species.
(SC)	*Species of Concern*	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(SLC)	*Species of Local Concern*	Species of local or regional concern or conservation significance.
(MB)	*Migratory Bird*	Migratory bird
NMFS	NMFS species	Under the jurisdiction of the National Marine Fisheries Service. Contact them directly.
(D)	*Delisted*	Delisted. Status to be monitored for 5 years.
(CA)	*State-Listed*	Listed as threatened or endangered by the State of California.
(*)	*Extirpated*	Possibly extirpated from this quad.
(**)	*Extinct*	Possibly extinct.
	Critical Habitat	Area essential to the conservation of a species.

ENCLOSURE B

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute *quads*. The United States is divided into these quads, which are about the size of San Francisco. If you requested your list by quad name or number, that is what we used. Otherwise, we used the information you sent us to determine which quad or quads to use.

The animals on your species list are ones that occur within, *or may be affected by projects within*, the quads covered by the list. Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them. Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents. Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regard-less of whether they appear on a quad list.
Plants

Any plants on your list are ones *that have actually been observed* in the quad or quads covered by the list. We have also included either a county species list or a list of species in nearby quads. We recommend that you check your project area for these plants. Plants may exist in an area without ever having been detected there.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. For plant surveys, we recommend using the enclosed *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species*. The results of your surveys should be published in any environmental documents prepared for your project.

State-Listed Species

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. *However you should contact the California Department of Fish and Game for official information about these species.* Call (916) 322-2493 or write Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814.

Your Responsibilities Under the Endangered Species Act

All plants and animals identified as *listed* on Enclosure A are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the *take* of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal. Take may include significant habitat

conservation actions. Such conservation actions vary depending on the health of the populations and degree and types of threats. At one extreme, there may only need to be periodic monitoring of populations and threats to the species and its habitat. At the other extreme, a species may need to be listed as a Federal threatened or endangered species. Species of concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. We also continually strive to make our information as accurate as possible. Sometimes we learn that a particular species has a different range than we thought. This should not be a problem if you consider the species on the county that we have enclosed. If you have a long-term project or if your project is delayed, please contact us for a current list. You can also find out the current status of a species by going to the Service's Internet page: www.fws.gov.

a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project

b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.

c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.

d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.

6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.

7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than three years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.

8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An additional botanical inventory(ies) in a subsequent year(s) may be required if adverse conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.

9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.