

# Biological Resource Assessment

**Glen Brook Estates  
Redding, Shasta County, California**

May 2006



*Prepared for:*

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**Appendix A** – USFWS and CNDDDB Special-status Species Lists

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## Summary of Findings and Conclusions

As requested, Gallaway Consulting, Inc. performed a biological resource survey within the Glen Brook Estates biological survey area (BSA), in Redding, Shasta County, California. The survey was conducted on 27 January, 13 May and 20 June 2005 to determine the presence of sensitive biological resources within the project area and to determine if these resources would be impacted by the proposed project. No federal or state, endangered or threatened species were observed within the BSA; however, vernal pools were delineated onsite and therefore the presence of vernal pool species must be assumed and proper avoidance and mitigation measures will need to be implemented. Also, due to the presence of suitable nesting and foraging habitat for raptors, a pre-construction raptor survey should be conducted April-May, or prior to construction activities, to determine if nesting raptors occur in, or in close proximity to the BSA. Should nesting raptors be observed, appropriate mitigation or avoidance measures will be required per the California Department of Fish and Game. Raptors in the orders Falconiformes (hawks, eagles, and falcons) and Strigiforms (owls) are protected in varying degrees under the California Fish and Game Code, Section 3503.5, the Migratory Bird Treaty Act, as well as the state and federal Endangered Species Acts and the California Environmental Quality Act (CEQA). Oak woodlands occur in the survey area, which is considered a sensitive biological resource by the City of Redding and CDFG. Therefore, the applicant will be required to conform with the Natural Resources Element of the City of Redding General Plan, as well as Title 18.65 (Tree ordinance) of the Redding Municipal Code, which requires the documentation of all impacts to native oak trees, oak tree protection measures, and mitigation. There are approximately 2.478 acres of jurisdictional Waters of the U.S. that occur within the BSA and should be avoided to the greatest extent possible through the implementation of setbacks of enough width to adequately protect the resource. Where complete avoidance is not possible, impacts should be minimized to the greatest extent practicable. Before construction occurs that will impact Waters of the U.S., the project proponent will be required to notify the California Department of Fish and Game regarding construction within waters under their jurisdiction and obtain a water quality certification from the Regional Water Quality Control Board (Clean Water Act, Section 401); both of these requirements are contingent upon successfully completing the CEQA process. A nationwide or individual permit from U.S. Army Corps of Engineers (Clean Water Act, Section 404) will also be required.

## I. Introduction

As requested, Gallaway Consulting, Inc. performed a biological resource assessment within the Glen Brook Estates biological survey area (BSA) in Redding, CA on 27 January, 13 May and 20 June 2005. The BSA is located in Section 30, T32N, R4W of the USGS Enterprise Quadrangle (**Figure 1**). The project area is bordered by urban expansion including public roads, residential subdivisions, and commercial development as well as open space. Shirley Innecken, botanist, and Jody Gallaway and Sean Ziniker, biologists, conducted the field surveys, which included an examination of botanical resources, soils, and hydrologic features. Residential and commercial development is planned for the approximately 95-acre site.

## II. Methods

Prior to conducting the onsite survey, we created a list of potentially occurring special-status wildlife and plant species occurring within the BSA by accessing all pertinent databases, and contacting appropriate state and federal agencies. Topographic maps and aerial photos of the site were then reviewed and areas of potential impact noted. After reviewing the site, we reviewed and edited the lists taking into account existing conditions observed within the BSA during the field surveys.

### *Consultation with State and Federal Agencies*

#### **Special-status Species**

Gallaway Consulting, Inc. consulted with both the US Fish and Wildlife Service (USFWS) and California Natural Diversity Database (CNDDDB), a positive-sighting database managed by the California Department of Fish and Game (CDFG), to identify special-status species occurring, or potentially occurring within a 1-mile radius of the BSA.

The results of the search included species falling into one of the following categories (see **Appendix A** for a complete listing by USGS quadrangle):

- Designated as rare, threatened, endangered, proposed or candidates for listing by the state or federal governments (ESA, 50 CFR 17.12 for listed plants and various notices in the Federal Register, California ESA, 14 CCR 670.5)
- Listed as Species of Concern by state or federal governments
- Included on the California Native Plant Society (CNPS) List 1A, 1B, and 2 (Skinner and Pavlik, 2003).
- Plants and wildlife that meet the definitions of rare or endangered species under the California Environment Quality Act (CEQA) (State CEQA Guidelines, Section 15380).



## **Sensitive Natural Communities**

Gallaway Consulting, Inc. consulted the CNDDDB to identify sensitive natural communities occurring within a 1-mile radius of the BSA. The California Office of Planning and Research and the Office of Permit Assistance (1986) define project effects that substantially diminish habitat for fish, wildlife, or plants, or that disrupt or divide the physical arrangement of an established community as significant impacts under CEQA. This definition applies to certain natural communities because of their scarcity and ecological values and because the remaining occurrences are vulnerable to elimination. For this study, the term “sensitive natural community” includes those communities that, if eliminated or substantially degraded, would sustain a significant adverse impact as defined under CEQA.

Sensitive natural communities are important ecologically because their degradation and destruction could threaten populations of dependent plant and wildlife species and significantly reduce the regional distribution and viability of the community. If the number and extent of sensitive natural communities continue to diminish, the status of rare, threatened, or endangered species could become more precarious, and populations of common species (i.e., not special-status species) could become less viable. Loss of sensitive natural communities also can eliminate or reduce important ecosystem functions, such as water filtration by wetlands and bank stabilization by riparian woodlands.

## **Sensitive Species of Concern**

Sensitive Species of Concern are unlisted species that have the potential for listing under the state and/or federal Endangered Species Acts (ESA) if negative population trends continue. By considering them early in the planning process, problems can be avoided if these species are listed before the completion of a project.

## **Critical Habitat**

In addition to potentially occurring special-status wildlife and plant species, we determined whether or not USFWS-designated critical habitat occurs onsite. When the USFWS lists a species as threatened or endangered under the ESA, areas of habitat considered essential to its conservation and survival may be designated as *critical habitat*. These areas may require special consideration and/or protection due to their ecological importance. Although critical habitat may be designated on state or private lands, activities on them are not restricted unless there is federal involvement or direct impacts to listed species are expected.

## **Waters of the United States, Including Wetlands**

The U.S. Army Corps of Engineers (COE) and the U.S. Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into jurisdictional Waters of the U.S., under Section 404 of the Clean Water Act. The term “Waters of the United States” is an encompassing term that includes “wetlands” and “Other Waters of the U.S.” Wetlands have been defined for regulatory purposes as follows: “those areas that are inundated or saturated by surface or

groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” Other Waters of the United States are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (i.e., hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).

### *Field Surveys*

#### Biological Resources

A database search of CNDDDB via Rarefind3 was performed and the USFWS consulted to create a list of special-status wildlife species and sensitive natural communities potentially occurring within the BSA. On 27 January, 13 May and 20 June 2005, biological resource surveys were conducted, covering the prescribed BSA. Jody Gallaway and Sean Ziniker, biologists, conducted the biological resource surveys to determine the presence of sensitive biological resources within the project area.

#### Botanical Resources

Prior to conducting the onsite survey, lists of special-status and sensitive plant taxa were consulted, and species potentially occurring within the BSA were identified. On 13 May and 20 June 2005, botanical resource surveys were conducted, covering the prescribed BSA. Shirley Innecken, botanist, conducted the botanical resource surveys to determine the presence of sensitive botanical resources within the project area. The survey dates were extended to insure incorporation of appropriate floristic windows for sensitive species with the potential to occur onsite. All accessible portions of the survey area were examined using transects and spot-checks of high quality habitat.

## **III. Results**

### *Environmental Setting*

The BSA is located in Redding, Shasta County, California. The site is comprised of a series of ridges and drainages with elevations ranging from 600-680 feet above sea level with 3-30% slopes. Interstate 5 runs along the western periphery of the site. Open space occupies the northern boundary with residential subdivisions to the east and south. Boulder Creek, which is a tributary to Churn Creek, travels through the survey area along the northeastern edge and flows towards the east. Onsite habitat types include blue oak woodland, chaparral, valley-foothill riparian, and annual foothill grassland, with various, seasonal and vernal wetland features. Three soil series occur onsite – Newton, Clough, and Churn. Annual precipitation is 28 to 40 inches and annual temperatures range from 62° to 65°. The growing season is 200 to 325 days, depending on temperature.

## *Special-status Species*

No federal or state endangered or threatened species were observed within the project area during the field surveys; however, vernal pools were delineated within the BSA, therefore the presence of several federally and state listed vernal pool branchiopod species must be assumed in the absence of protocol level surveys. Also, suitable nesting habitat occurs for raptors within and adjacent to the project boundaries. Several other special-status species are known to occur within a 1-mile radius of the BSA (**Figure 2**); however, suitable habitat for these species does not occur onsite, therefore the potential for these species to occur is negligible. A summary of special-status species known to occur, or with the potential of occurring in the BSA, that could potentially be affected by project activities is presented in **Table 1**.

### **Special-status species known or expected to occur in, or adjacent to the BSA, that may be impacted by the project**

#### **Vernal Pool Branchiopods**

Three species of vernal pool branchiopods are assumed to occur within the vernal pool located in the southern portion of the BSA, these include: vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), and California linderiella (*Linderiella occidentalis*).

The vernal pool tadpole shrimp are small crustacean in the Triopsidae family and are federally listed as endangered. Their diet consists of organic debris and living organisms such as fairy shrimp or other invertebrates. Tadpole shrimp inhabit vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the former Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie. The vernal pool tadpole shrimp is known from 18 populations in the Central Valley, ranging from east of Redding in Shasta County south to the San Luis National Wildlife Refuge in Butte County, and from a single vernal pool complex on the San Francisco Bay National Wildlife Refuge in the City of Fremont, Alameda County (USFWS 1996).

The vernal pool fairy shrimp is federally listed as threatened and is widespread but not abundant. Known populations extend from Stillwater Plain in Shasta County through most of the length of the Central Valley to Pixley in Tulare County. Along the central coast, they range from northern Solano County to Pinnacles National Monument in San Benito County. Four additional, disjunct populations exist: one near Soda Lake in San Luis Obispo County, one in the mountain grasslands of northern Santa Barbara County, one on the Santa Rosa Plateau in Riverside County, and one near Rancho California in Riverside County. The vernal pool fairy shrimp occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, and turbid, alkaline, grassland valley floor pools. Although the species has been collected from large vernal pools, including one exceeding 25 acres, it tends to occur in smaller pools. It is most frequently found in pools measuring less than 0.05 acre. These are most commonly in grass or mud bottomed swales, or basalt flow depression pools in unplowed grasslands. Vernal pool fairy shrimp have been collected from early December to early May.



<b>Table 1</b>			
<b>Special-status species that occur, or may occur within the BSA.</b>			
<b>Species</b>	<b>Status</b>	<b>Associated Habitat</b>	<b>Potential for Occurrence</b>
<b><i>Sensitive Natural Communities</i></b>			
NORTHERN HARDPAN VERNAL POOL		Associated with low- to mid-elevation seasonally flooded depressions on impermeable soils.	<b>Occurs within the BSA</b>
<b><i>Fish</i></b>			
CENTRAL VALLEY STEELHEAD <i>(Oncorhynchus mykiss)</i>	FT, CSC	Occurs in the Sacramento and San Joaquin watersheds.	Low to moderate; marginal habitat only during high water events.
CENTRAL VALLEY FALL/LATE FALL-RUN CHINOOK SALMON <i>(Oncorhynchus tshawytscha)</i>	FC, CSC	Occur only in California, with virtually all spawning occurring in the main-stem Sacramento River. Chinook salmon spawning generally occurs in swift, relatively shallow riffles or along the edges of fast runs where there is an abundance of loose gravel.	Low to moderate; marginal habitat only during high water events.
CENTRAL VALLEY SPRING-RUN CHINOOK SALMON <i>(Oncorhynchus tshawytscha)</i>	FT, ST	Occurs in drainages within the Sacramento and San Joaquin watersheds.	Low to moderate; marginal habitat only during high water events.
SACRAMENTO RIVER WINTER-RUN CHINOOK SALMON <i>(Oncorhynchus tshawytscha)</i>	FE, SE	Occurs in drainages within the Sacramento River watershed.	Low to moderate; marginal habitat only during high water events.
<b><i>Invertebrates</i></b>			
CALIFORNIA LINDERIELLA <i>(Linderiella occidentalis)</i>	FSC	Northern hardpan vernal pools	High: Vernal pools on site, presence must be assumed in the absence of protocol level surveys
VERNAL POOL FAIRY SHRIMP <i>(Branchinecta lynchi)</i>	FT	Northern hardpan vernal pools	High: Vernal pools on site, presence must be assumed in the absence of protocol level surveys
VERNAL POOL TADPOLE SHRIMP <i>(Lepidurus packardi)</i>	FE	Northern hardpan vernal pools	High: Vernal pools on site, presence must be assumed in the absence of protocol level surveys

**Table 1**  
**Special-status species that occur, or may occur within the BSA.**

Species	Status	Associated Habitat	Potential for Occurrence
<b><i>Amphibians/Reptiles</i></b>			
FOOTHILL YELLOW-LEGGED FROG ( <i>Rana boylei</i> )	FSC	Typically found in partly-shaded, shallow streams and riffles with a rocky substrate in a variety of aquatic habitats including wet meadow. Elevation range extends from sea level to 6,000 ft in the Sierra. Needs at least some cobble-sized substrate for egg-laying. Generally prefer low to moderate gradient streams, especially for breeding and egg-laying.	Moderate; marginal habitat present on site
<b><i>Plants</i></b>			
RED BLUFF DWARF RUSH ( <i>Juncus leiospermus</i> var. <i>leiospermus</i> )	FSC, CNPS 1B	Chaparral, cismontane woodland, meadows and seeps, valley and foothill grassland, vernal pools / vernal mesic areas.	<u>LOW: not detected during protocol level surveys on 5/13/05 or 6/20/05</u>
SLENDER ORCUTT GRASS ( <i>Orcuttia tenuis</i> )	FT, SE CNPS 1B	Vernal pools and swales	<u>LOW: not detected during protocol level surveys on 5/13/05 or 6/20/05</u>
FOUR-ANGLED SPIKERUSH ( <i>Eleocharis quadrangulata</i> )	CNPS 2	Marshes and swampy areas.	<u>LOW: not detected during protocol level surveys on 5/13/05 or 6/20/05</u>
FOX SEDGE ( <i>Carex vulpinoidea</i> )	CNPS 2	Marshes and swampy areas.	<u>LOW: not detected during protocol level surveys on 5/13/05 or 6/20/05</u>
<b><i>Birds</i></b>			
WESTERN BURROWING OWL ( <i>Athene cunicularia hypugaea</i> )	CSC	Open, dry grassland and desert habitats, and in grass, forb and open shrub stages of pinyon-juniper and ponderosa pine habitats. Uses rodent or other burrow for roosting and nesting cover.	Moderate; suitable habitat present onsite

<b>Table 1</b>			
<b>Special-status species that occur, or may occur within the BSA.</b>			
<b>Species</b>	<b>Status</b>	<b>Associated Habitat</b>	<b>Potential for Occurrence</b>
OAK TITMOUSE <i>(Baeolophus inornatus)</i>	FSC	Prefers open woodlands of oak and pine and oak. Sometimes forages and breeds in riparian areas, and ventures into residential areas.	<u>High</u> ; optimal habitat present on site.
LAWRENCE'S GOLDFINCH <i>(Carduelis lawrencei)</i>	FCS	Open woodland or shrubland with a nearby source of water.	<u>High</u> ; optimal habitat present on site.
WHITE-TAILED KITE <i>(Elanus leucurus)</i>	FSC, CSC	Breed in lowland grasslands, agriculture, wetlands, oak-woodland and savannah habitats, and riparian areas associated with open areas. Believed to be resident, becoming nomadic during periods of low prey abundance.	<u>Moderate</u> ; suitable habitat present onsite.
LOGGERHEAD SHRIKE <i>(Lanius ludovicianus)</i>	FSC, CSC	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches. Occurs only rarely in heavily urbanized areas, but often found in open cropland.	<u>High</u> ; optimal habitat present on site.
LEWIS' WOODPECKER <i>(Melanerpes lewis)</i>	FSC	Suitable habitat includes open, deciduous and conifer habitats with a brushy understory, and scattered snags and live trees for nesting and perching. The species seasonally winters in blue-oak woodlands.	<u>Moderate</u> ; suitable habitat present onsite.

**Sources:**

- CNDDDB, California Department of Fish & Game, November 2005.
- *Restoring Central Valley Streams: A Plan for Action*, California Department of Fish & Game, 1993.
- California Native Plant Society (CNPS). 2003. Inventory of Rare and Endangered Plants (online edition). Rare Plant Scientific Advisory Committee, David P. Tibor, convening editor. CNPS. Sacramento, CA.
- California Department of Fish & Game website.
- US Fish and Wildlife Service, Sacramento Office website.
- NMFS (NOAA) website.
- California Partners in Flight, Point Reyes Bird Observatory, website.

## CODE DESIGNATIONS

<b>FE</b> = Federally-listed Endangered
<b>FT</b> = Federally-listed Threatened
<b>FPT</b> = Federally Proposed Threatened
<b>FPD</b> = Federally Proposed Delisted
<b>FC</b> = Federal Candidate Species
<b>FSC</b> = Federal Species of Concern
<b>SLC</b> = Species of Local Concern
<b>FD</b> = Federal Delisted
<b>SE</b> = State-listed Endangered
<b>ST</b> = State-listed Threatened
<b>SPT</b> = State Proposed Threatened
<b>CSC</b> = California Species of Concern
<b>CNPS 1B</b> = Rare or Endangered in California and Elsewhere
<b>CNPS 1A</b> = Plants presumed extinct in California
<b>CNPS List 2</b> = Rare, threatened, or endangered in California, but more common elsewhere.

The California Linderiella is federally listed as endangered and is the most common fairy shrimp in the Central Valley. It has been documented on most land forms, geologic formations and soil types supporting vernal pools in California, at altitudes as high as 3800 feet above sea level. They tend to live in large, fairly clear vernal pools and lakes. However, they can survive in clear to turbid water with pH from 6.1 to 8.5, and they have been found in very small pools. They are tolerant of water temperatures from 41° to 85° F, making them the most heat tolerant fairy shrimp in California. Their range extends from Shasta County south to Fresno County and across the valley to the Coast and Transverse Ranges from Willits in Mendocino County south to near Sulfur Mountain in Ventura County

### **Anadromous Fisheries**

Special-status anadromous fish are known to occur within the USGS Shasta Dam quadrangle in the Sacramento River and Churn Creek. Boulder Creek is hydrologically connected to Churn Creek which in turn is connected to the Sacramento River with no barriers to fish passage. Churn Creek and the Sacramento River are both designated critical habitat for Central Valley Spring Run, Central valley fall/late fall and Sacramento River winter run Chinook salmon (*Oncorhynchus tshawytscha*) as well as Central Valley steelhead (*Oncorhynchus mykiss*). Habitat within the BSA may not support a self sustaining population of steelhead or salmon. Non-natal anadromous fish may use Boulder Creek during a particularly wet rainy season; however, the intermittent nature of the stream prevents consistent utilization of this area. (pers. comm. Steve Baumgardner, May 2006).

### **Foothill Yellow-Legged Frog**

Foothill Yellow-Legged Frogs, are a state and federal listed species of concern and have the potential to occur within the BSA, specifically in Boulder Creek and the other intermittent streams. If any work is to be completed within this habitat a formal yellow-legged frog survey

may be necessary. The foothill yellow-legged frog is typically found in partly shaded, shallow streams and riffles with a rocky substrate in a variety of aquatic habitats. They generally prefer low- to moderate-gradient streams, especially for breeding and egg-laying, requiring at least some cobble-sized substrate for egg-laying. During the summer and fall, adult frogs prefer stream channels that provide exposed basking sites and cool shady areas.

## **Raptors**

Raptors in the orders Falconiformes (hawks, eagles, and falcons) and Strigiformes (owls) are protected in varying degrees under California Fish and Game Code, Section 3503.5, the Migratory Bird Treaty Act as well as state and federal ESA and CEQA. Suitable nesting habitat for several raptor species exists within the BSA and in the neighboring area.

## *Waters of the United States, Including Wetlands*

### **Jurisdictional Features**

Sites qualifying as jurisdictional wetland features are described below. There were a total of 2.472 acres of jurisdictional features delineated onsite including 0.215 of seasonal wetlands, 0.021 acres of fresh emergent wetlands, 0.817 acres of riparian, 0.166 acres of vernal pools, 0.027 acres of vernal swales and 1.220 acres of Other Waters of the United States (OW). For more information, please refer to the *Draft Delineation of Waters of the United States for Davis Ridge* (Davis Ridge is the previous name of this project) prepared by Gallaway Consulting, Inc.

*Jurisdictional Riparian:* Riparian wetlands consist of a gradient of hydrophytic vegetation and hydric soil conditions and are associated with OW features. Hydrophytes inhabiting the jurisdictional riparian onsite include Himalayan blackberry and mixed willows.

*Seasonal Wetlands:* These features allow water to pond for a long enough period of time to support hydrophytic vegetation and hydric soils. Seasonal wetlands tend to lack standing water during the late summer months, or during prolonged dry periods. They support hydrophytic species that require longer and typically deeper inundation periods, with respective soil requirements, than those of vernal species. Accordingly, seasonal wetlands tend to lack underlying hardpans common with vernal pools and swales. Hydrophytes inhabiting seasonal wetlands onsite include Baltic rush, spreading rush, western rush, tall cyperus, curly dock, Italian ryegrass, blue-eyed grass, Himalayan blackberry and mixed willows.

*Fresh Emergent Wetlands:* Fresh emergent wetlands are characterized by erect, rooted herbaceous hydrophytes and are flooded frequently enough that the roots of the plants flourish in an anaerobic environment (Mayer & Laudenslayer 1988). They are typically dominated by perennial monocots (Cheatham and Haller 1975, Cowardin et al. 1979). Hydrophytes supported by fresh emergent wetlands onsite include cattails and pointed rush.

*Vernal Pools:* In addition to supporting positive indicators for hydrophytic vegetation, hydric soil, and wetland hydrology, vernal pools exhibit unique characteristics. Vernal pools form where there is a soil layer below or at the surface that is impermeable or nearly impermeable (USFWS 2002). Precipitation and surface runoff become trapped or “perched” above this layer. Hardpans are formed by leaching, redeposition, and cementing of silica materials from high in the soil horizon to a lower (“B”) horizon (USFWS 2002). In addition, vernal pools typically occur in landscapes that, at a broad scale, are shallowly sloping or nearly level, but on a finer scale may be quite bumpy or uneven. Since appropriate combinations of climate, soil, and topography often occur over continuous areas rather than in isolated spots, vernal pools in the Central Valley tend to occur in clusters called “complexes.” Within these complexes, pools may be fed or connected by low drainage pathways called “swales”. Vernal pools may remain inundated until spring or early summer, sometimes filling and emptying numerous times during the wet season. Vernal pools gradually dry down during the spring, often forming a unique “bathtub ring” of flowers from endemic vernal pool plants blooming successively at the pool margins. Hydrophytes inhabiting vernal pools onsite include timwort, hyssop loosestrife, inch-high rush, and toad rush.

*Vernal Swales:* Vernal swales are distinctly different from vernal pools in their function as shallow conveyance channels. They typically connect vernal pools or convey shallow spring flows down gradual inclines often collecting water at the lowest extreme in the form of a vernal pool or seasonal wetland. Vernal swales and pools have hydrophytic species, successive rim blooms, and soils in common. Vernal swales are also prevalent in regions displaying mima topography. Hydrophytes supported by vernal swales onsite include slender rush, Baltic rush and leafy-bracted dwarf rush.

*Other Waters of The United States:* Other Waters are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (i.e., hydrophytic vegetation, hydric soil, and wetland hydrology-33) (CFR 328.4). There are a total of approximately 53142.2 linear feet of OW onsite.

## *Soils*

The following descriptions address the individual soil series within this complex according to the Soil Survey of Shasta County Area, California (1974).

*Newtown gravelly loam, 15 to 30% slopes:* Newton soils are well-drained that occur on high terraces from Cottonwood to Redding. Newton gravelly loam on 15 to 30 slopes (NeD) has slow permeability and medium runoff. There is 15 to 30% gravel in the surface layer. This Newton gravelly loam is used as range and watershed wildlife habitat.

*Churn gravelly loam, deep, 0 to 3% slopes:* Churn soils are well-drained to moderately well-drained soils that occur on low terraces and fans within the northern Sacramento River watershed and tributaries including Cow, Cottonwood, and Stillwater creeks. Churn gravelly loam, deep, 0 to 3% slopes (CfA) has slow permeability and runoff. There is 15 to 30% gravel throughout. This Churn soil is used as irrigated dry-land pasture.

*Clough gravelly loam, 3 to 8% slopes:* Clough series consists of moderately well-drained soils with an underlying hardpan. They occur on high terrace remnants. Clough gravelly loam, 3 to 8% slopes (CgB) has very slow permeability and slow to medium runoff. This Clough soil is used as dry-land or irrigated pasture.

### *Habitat Characterization*

#### Vegetation

A number of vegetation community types exist onsite. In addition to the wetland communities described previously, foothill grassland, blue oak woodland and non-jurisdictional (upland) foothill riparian also occur and are subsequently described according to A Guide to Wildlife Habitats of California (Mayer & Laudenslayer 1988).

*Foothill Grassland:* According to Mayer and Laudenslayer (1988), annual grassland habitats are open grasslands composed primarily of annual plant species, many of which extend into oak woodlands. Annual plant species observed within the project site foothill grassland include Tangier pea, wild hyacinth, round-toothed oocow, wild onion, pineapple-weed, Italian ryegrass, quaking-grass, medusa-head, soft chess, short-fruited stork's-bill, garden vetch, grass-pink, wild oats, and ripgut brome.

*Blue Oak Woodland:* According to Mayer and Laudenslayer (1988), these woodlands generally have an overstory of scattered to dense trees. Shrubs are often present but only represent a fraction of the overall vegetation. The blue oak woodland onsite has an underlying herbaceous layer of shallow-soil annual forbs and grasses, many of which extend into the foothill grassland.

*Mixed Chaparral:* Mixed Chaparral is a blend of various shrubs including scrub oaks, manzanita, ceanothus, poison oak, and various other shrubs. Height and growth of shrubs depends mainly on precipitation and the last burn. Areas that are not burned become impenetrable to large wildlife. Several small birds and mammals utilize the dense cover provided by the low shrubs for protection from predators. The mixed chaparral onsite is composed of manzanita stands amid blue oak and scattered gray pine woodland.

*Upland Valley Foothill Riparian:* According to Mayer and Laudenslayer (1988), canopy height in mature riparian woodland is approximately 98 ft. with a canopy cover of 20 to 80%. Most trees are winter deciduous (Mayer and Laudenslayer 1988). The upland valley foothill riparian onsite exists on the upper terraces and slopes immediately above the lower terraces which support jurisdictional riparian. Habitat composition includes a primary canopy of gray pine; a secondary canopy of mixed willow and blue oak; an understory of interior live oak, Himalayan blackberry, mixed willow, poison-oak, and buckbrush; and an herbaceous layer of mixed annual grasses and forbs. For further explanation of field notes pertaining to botanical resources, please contact Shirley Innecken at (530) 343-8327.

## IV. Potential Impacts and Mitigation

### *Vernal Pools*

Three vernal pools totaling 0.132 acres (WF03, WF07 and WF08) which are located in the southern portion of the BSA may be indirectly affected by the proposed project (**Figure 3**). Because of this, there is potential for indirect impacts to three vernal pool species including: vernal pool tadpole shrimp, vernal pool fairy shrimp, and California Linderiella fairy shrimp. Indirect effects are caused by or result from a proposed action, occur later in time, and are reasonably certain to occur. WF20 which is a vernal swale located along the western edge of the BSA does not provide suitable habitat for vernal pool species. It is not deep enough nor does it contain water for a long enough period of time so support vernal pool species. Potential indirect effects from the proposed action include:

Changes in hydrology: In addition to the direct impacts associated with filling, development can have impacts on the hydrology of remaining habitat (*e.g.*, pools/swales) and surrounding areas. Projects involving storm water drains, deep ripping, or the coverage of land surfaces with concrete, asphalt, or irrigated recreation parks, etc., can affect the amount and quality of water available to the perched water tables characteristic of vernal pool areas. Changes to the perched water table can lead to alterations in the rate, extent and duration of inundation (water regime) of remaining habitat. The biota of vernal pools and swales can change when the hydrologic regime is altered (Bauder 1996). Survival of aquatic organisms like fairy shrimp is directly linked to the water regime of their habitat (Zedler 1987). Therefore, development near vernal pool areas may, at times, result in the failure of local sub-populations of vernal pool organisms, including fairy shrimp and tadpole shrimp (USFWS 1996). The project proponent will ensure that activities inconsistent with the maintenance of remaining vernal pool habitat and the affected watershed are prohibited.

Roads: Grading for roads may affect the water regime of vernal pool habitat, especially when the substrata in or near habitat areas is cut or cut (USFWS 1996). Exposure of sub-surface layers of soil at road cuts may hasten the loss of water from adjacent habitat by mass flow through networks of cracks, layers of coarser material, mammal burrows, or old root channels. Any decrease in the duration of inundation of habitat can affect the reproductive success of vernal pool species. Other negative effects associated with roads include increased erosion and consequently, sedimentation and conversion of vernal pool habitat, and increases in surface runoff and contamination by petroleum pollutants (USFWS 1996). The project proponent will ensure that activities that are inconsistent with the maintenance of remaining vernal pool habitat and the affected watershed are prohibited.

Pesticides/Herbicides: Development often results in the introduction of pesticides or herbicides into the environment. These chemical compounds are believed to have negative effects on all of the listed vernal pool invertebrates and/or their cysts. Individuals may be killed directly or suffer reduced fitness through physiological stress or a reduction in their food base due to the presence of these chemicals (USFWS 1996).

The project proponent will ensure that activities that are inconsistent with the maintenance of remaining vernal pool habitat and the affected watershed are prohibited.

Human intrusion: Development frequently results in human intrusion into surrounding areas. Human intrusion is a mechanism by which trash or hazardous waste can be introduced into remaining areas. Improper disposal of waste materials can eliminate habitat, disrupt pool hydrology, or release substances into pools that are toxic or that adversely affect water chemistry. The project proponent will ensure that activities inconsistent with the maintenance of remaining vernal pool habitat and the affected watershed are prohibited.

If impacts, direct or indirect, are expected to occur within 250 feet of a vernal pool, consultation with the US Fish and Wildlife Service will be required. Appropriate mitigation includes avoidance if possible; if not, the creation or preservation of “in-kind” vernal pools onsite, or offsite within a certified mitigation bank per the USFWS (1996) (Table 2).

**Table 2. Mitigation ratios for credits in USFWS-approved mitigation banks or for acres of habitat outside of mitigation banks.**

	Bank	Non-bank
Preservation	2:1	3:1
Creation	1:1	2:1

### *Anadromous Fisheries*

Boulder Creek which travels through the BSA forms a confluence with Churn Creek downstream from the BSA. Churn Creek is designated critical habitat for 3 subspecies of Chinook salmon as well as Central Valley steelhead (pers. comm., Steve Baumgartner, May 2006). If impacts to Boulder Creek are expected to occur, consultation with the National Oceanic and Atmospheric Administration (NOAA) and CDFG may be required.

### *Foothill Yellow-legged Frog*

The BSA contains moderately suitable habitat for foothill yellow-legged frogs along Boulder Creek and other intermittent streams (pers. comm., Steve Baumgartner, May 2006). Construction within the stream channel and activities that cause erosion within the stream channel could potentially disturb breeding activities and/or destroy egg masses, especially during construction near these streams. To avoid adverse effects on foothill yellow-legged frogs, appropriate habitat areas and work sites should be surveyed for their presence and egg masses prior to construction. If egg masses are observed, they should be moved outside of the work area. If frogs are observed, they should be hazed from the work area and appropriate construction work windows should be implemented to avoid disturbing breeding activities.

## *Raptors*

### Raptors (including white-tailed kite):

Raptors in the orders Falconiformes (hawks, eagles, and falcons) and Strigiforms (owls) are protected in varying degrees under California Fish and Game Code, Section 3503.5, the Migratory Bird Treaty Act, and CEQA. Direct take of active nests, eggs, or birds is prohibited by CDFG and measures must be taken to minimize disturbance. Therefore, a qualified wildlife biologist should conduct a pre-construction raptor survey during April-May, or no more than 30 days prior to construction activities, to determine the Presence/absence of nesting raptors in the BSA. Should nesting raptors be observed, appropriate spatial and temporal buffers will be required by CDFG. In addition, larger trees (i.e.,  $\geq 12''$  dbh) to be removed should be removed between September 1 and March 1 to ensure that active raptor nests are not removed as a result of construction related activities.

### Migratory Songbirds/Passerines:

Oak woodland, riparian vegetation, and annual grassland habitats at the project site provide potential foraging habitat for the following species of special concern: oak titmouse, Lawrence's goldfinch, Lewis' woodpecker, and loggerhead shrike. Direct removal of trees, as well as noise and visual disturbances associated with construction activities occurring during the nesting season (March through July), can disrupt nesting individuals of the species listed above. Construction activities could lead to nest abandonment and nest failure. There is potential for one or more other special-status species to establish new nests at the site prior to the start of construction. This impact is considered **potentially significant** and is subject to the following mitigation measures:

All vegetation (i.e., trees, shrubs) that will need to be removed for construction shall be cut down between the months of August 1 and February 15 (outside the nesting season for the species listed above with potential to occur on the site) to ensure that active nests are not removed as a result of the project. To avoid potential erosion impacts, vegetation removal should be limited to cutting of shrubs and trees at ground level to maintain the root system. Once the rainy season has passed, the root systems can be removed. If all vegetation removal associated with construction activities is completed between August 1 and February 15, no pre-construction surveys or additional mitigation is required.

If vegetation removal cannot be accomplished between August 1 and February 15, the project proponent shall retain a qualified biologist to:

- Conduct a survey for the nesting bird species listed above in all suitable nesting habitat within the project site no more than 30 days prior to any construction activity. Active nests located within 500 feet of construction activities shall be mapped. If nesting migratory birds are not detected, no further mitigation will be necessary.
- If active nests are located in, or within 500 feet of, construction activities, appropriate no-disturbance buffer zones shall be established. Construction activities shall be prohibited within the

buffer zone until the end of the nesting season (late July to early August), or until the young have fledged. The qualified biologist shall monitor the nest to determine when the young have fledged and submit weekly reports throughout the nesting season. Also, signs will be placed locating areas to be avoided.

- If necessary, identified nest trees may only be removed prior to the onset of the nesting season (March) or after the young have fledged (late July to early August).

To protect the nesting habitat of Lewis' woodpeckers, the removal of oak trees should be minimized or avoided to the greatest extent practicable. Dead trees and snags provide nesting and foraging habitat for Lewis' woodpeckers. Whenever possible and when not in conflict with fire hazard policies and public safety, dead trees and snags should be left standing.

### *Blue Oak Woodland*

The removal of native trees, including blue oaks, is regulated by the City of Redding's Tree Preservation Plan described in section 18.45 of the Redding Municipal Code. A tree removal permit will be necessary for all trees removed and will be issued at the discretion of the City of Redding as part of the project approval.

### *Waters of the U.S., Including Wetlands and Other Waters of the U.S.*

The COE, under Section 404 of the Clean Water Act, regulates both wetlands and Other Water of the United States. Filling of wetlands, drainages, and Other Waters of the United States require various permits from regulatory agencies and potentially mitigation. Permitting requirements and potential mitigation do not necessarily constitute an insurmountable constraint to development. The information supplied in this report is neither comprehensive enough nor supported by sufficient data to be adequate for submittal to the COE for verification.

Before construction occurs that will impact Waters of the U.S., including wetlands and Other Waters, the project proponent will be required to notify CDFG regarding construction within waters under their jurisdiction and obtain a water quality certification from the Regional Water Quality Board (Clean Water Act, Section 401); both of these requirements are contingent upon successfully completing the CEQA process. A nationwide authorization or individual permit from COE (Clean Water Act, Section 404), and final approval by CDFG will also be required.

## **V. Regulatory Framework**

The following laws and regulations were identified as possible constraints to development within the BSA based on the identified resources:

## **Federal Endangered Species Act**

The USFWS and National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) (formerly the National Marine Fisheries Service or NMFS) have jurisdiction over species listed as threatened or endangered under Section 9 of the federal ESA. The ESA protects listed species from harm, or take, which is broadly defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct,” Under section 7 of the ESA, a federal agency must consult with the USFWS and NOAA Fisheries if the agency’s action may affect a threatened or endangered species and/or its critical habitat under the authority of each agency.

## **California Endangered Species Act**

CDFG has jurisdiction over species listed as threatened or endangered under Section 2080 of the California Fish and Game Code. Section 2080 prohibits the take of a species listed by CDFG as threatened or endangered. The state definition of take is similar to the federal definition, except that Section 2080 does not prohibit indirect harm to listed species by way of habitat modification. To qualify as take under the state ESA, an action must have direct, demonstrable detrimental effect on individuals of the species. Impacts on habitat that may ultimately result in effects on individuals are not considered take under the state ESA but can be considered take under the federal ESA.

Proponents of a project affecting a state-listed species must consult with CDFG and enter into a management agreement and take permit under Section 2081. The state ESA consultation process is similar to the federal process. California ESA does not require preparation of a state biological assessment; the federal biological assessment and the CEQA analysis or any other relevant information can provide the basis for consultation. California ESA requires that CDFG coordinate consultation for joint federally listed and state-listed species to the extent possible; generally, the state opinion for the listed species is brief and references provisions under the federal opinion.

## **Clean Water Act, Section 404**

The COE and the U.S. Environmental Protection Agency regulate the placement of dredged or fill material into “Waters of the United States” under Section 404 of the Clean Water Act. Waters of the United States include lakes, rivers, streams, and their tributaries, and wetlands. Wetlands are defined for regulatory purposes as “areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 Code of Federal Regulations [CFR] 328.3, 40 CFR 230.3).

The COE may issue either individual permits on a case-by-case basis or general permits on a program level. General permits are pre-authorized and are issued to cover similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits (NWP’s) are general permits issued to cover particular fill activities. All NWP’s have general conditions

that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each NWP.

### **Clean Water Act, Section 401**

Section 401 of the Clean Water Act requires water quality certification and authorization of placement of dredged or fill material in wetlands and Other Waters of the United States. In accordance with Section 401 of the Clean Water Act, criteria for allowable discharges into surface waters have been developed by the State Water Resources Control Board, Division of Water Quality. The resulting requirements are used as criteria in granting National Pollution Discharge Elimination System (NPDES) permits or waivers, which are obtained through the Central Valley Regional Water Quality Control Board (CVRWQCB). Any activity or facility that will discharge waste (such as soils from construction) into surface waters, or from which waste may be discharged, must obtain an NPDES permit or waiver from the CVRWQCB. The CVRWQCB evaluates an NPDES permit application to determine whether the proposed discharge is consistent with the adopted water quality objectives of the basin plan.

### **California Fish and Game Code, Sections 1600-1616**

Section 1602 of the California Fish and Game Code requires a state or local governmental agency, public utility, or private entity to notify CDFG before it begins a construction project that will: (1) divert, obstruct, or change the natural flow or the bed, bank, channel, or bank of any river, stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. Once the notification is filed and determined to be complete, CDFG issues a streambed alteration agreement that contains conditions for construction and operations of the proposed project.

### **California Fish and Game Code, Section 3503.5**

Under the California Fish and Game Code, Section 3503.5, it is unlawful to take, possess, or destroy any birds in the orders Falconiformes (hawks, eagles, and falcons) or Strigiformes (owls). Take would include the disturbance of an active nest resulting in the abandonment or loss of young.

### **Migratory Bird Treaty Act**

The MBTA (16 United States Code [USC] 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorized the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. The MBTA sets seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10).

### **City of Redding**

The project will require complete compliance with CEQA and the City of Redding will serve as the lead agency. As such, the City will conduct an environmental review, which will include a

review of all studies conducted in compliance with CEQA, and the creation and adoption of appropriate mitigation measures. The applicant will be required to conform with any Conservation, Open Space and Parks Element in the City's General Plan, which protects sensitive natural resources. Other discretionary permits issued by the City may include a grading permit and a tree removal permit.

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## **Personal Communications**

Baumgartner, Steve. Biologist, CDFG, May 31, 2006.

# **Appendix A**

USFWS and CNDDDB Special-status Species Lists for  
Glen Brook Estates BSA and Surrounding Area

[Available in hard copy only](#)