NATURAL HISTORY & ECOLOGY OF LAFFERTY RANCH

The following is a general overview of the Property's significant and unique natural, ecological, and habitat features.

Watershed

The Lafferty Ranch includes the headwaters of Adobe Creek and contains numerous springs and seeps which are the primary reasons it was developed as a water source. The site was developed for a water supply about 1870. A succession of private water companies managed the site as a watershed. Water was diverted from the site to the Lawler Reservoir (located east of Adobe Creek and downstream of the project site). In 1959, the City of Petaluma purchased the property, the Lawler Reservoir, and other portions of the water system from California Water Services.

The system included a water diversion facility near the south end of the Lafferty Ranch property. This diversion was used to divert water from Adobe Creek to the Lawler Reservoir. Water from the reservoir was treated in a treatment facility and then transported to the City for domestic use. In 1985/1986, the California Division of Dam Safety required improvements to the embankment at the Lawler Reservoir. The embankment was subsequently raised, and other improvements made. In 1989, the State Division of Dam Safety required a geotechnical evaluation of the reservoir. This study found that the Rodgers Creek fault was located beneath the dam. The Division of Dam Safety required additional improvements that would have cost $450,000, with the possibility that more improvements might be needed in the future. At this same time, the State amended the requirements for treatment of surface waters which would have required extensive improvements to the water treatment facility. The cost to the City for all required improvements would have been approximately $1.5 million with the potential for additional costs for upgrading the Lawler Reservoir. (p. 67)
Streams

The property contains the headwaters of Adobe Creek. There are several tributary channels which join to form the main stem of the creek before it leaves the property. Several of these channels appear to carry water on a year-round basis, due to springs or seeps which continue to supply water after the winter rains have ceased. The channel of the main stem of the creek from the southern property line to a point approximately 3,000 feet to the north contains steep, often high banks. (p 68)

Habitat Types

The plant communities present on the Lafferty Ranch include Central Coast Live Oak Riparian Forest, Coast Live Oak Forest, Non-native Grassland, Freshwater Seep and Northern Claypan Vernal Pool. The names used to describe the communities follow the classification by Holland (1986).

Central Coast Live Oak Riparian Forest
This riparian woodland is dominated by coast live oak (Quercus agrifolia). Other tree species present in the riparian forest include big-leaf maple (Acer macrophyllum), white alder (Alnus rhombifolia), Oregon oak (Quercus garryana), California black oak (Quercus Kelloggii) and California bay laurel (Umbellularia califomica). Most of the trees within the riparian corridor are mature and form a dense canopy which lets in little sun. The sparse understory consists primarily of native grasses, herbs, and fems. The actual creek bed is rocky and very little vegetation grows there.

Coast Live Oak Forest
This woodland is the principal woodland plant community on the Lafferty Ranch. It is a mature forest dominated by coastal live oak. In some areas Oregon oak co-dominates, while in others California bay laurel is a co-dominant. In most areas it integrates with the riparian corridor so that it is hard to distinguish any real boundary between the two. California black oak, Madrone (Arbutus menziesii), and California buckeye (Aesculus californica) are also present within the Coast Live Oak Forest. A variety of native and non-native grasses, herbs, ferns, and shrubs grow in the understory. Some oak regeneration is present, but it is not especially successful in the areas most accessible to cattle.

Non-native Grassland
This community is a complex one consisting of many non-native and native species. It is not homogeneous within the site but varies from areas consisting solely of non-native annual grasses to other areas that have significant populations of both native grasses and herbs. The most common native grass is purple needlegrass (Nassella pulchra). It is a perennial bunchgrass and appears to be well established on the steeper slopes and in areas of poor or shallow soil.

Freshwater Seep
Several Freshwater Seeps occur on the Lafferty Ranch. They are characterized primarily by the presence of perennial species growing in permanently wet soil. Rushes (Juncus sp.), common horsetail (Equisetum arvense), American brooklime (Veronica americana), large monkeyflower (Mimulus guttatus), and water cress (Rorippa nasturtium-aquaticum) are the predominant species found in this community.

Northern Claypan Vernal Pool
The Northern Claypan Vernal Pool community as described by Holland does not accurately describe the pools and swales found in Sonoma County, however, it is probably the closest to what we have in this geographic region. Northern Claypan Vernal Pool is described as a low, amphibious herbaceous community dominated by annual herbs and grasses. This seasonal wetland typically pools water in the rainy season; this condition precludes upland species from growing within the pool. Vernal pools typically contain a diversity of plant species, many native and endemic to the vernal pool environment. Vernal pools are one of the most threatened wetland ecosystems in California.
Several seasonal wetlands within the grassland at the Lafferty Ranch are best described as degraded vernal pools and swales. These include a swale immediately west of the pond and several areas within the grasslands near the northwestern edge of the property. These areas contain few species associated with vernal pools, and those present are not special status species. Species found in these areas include manna grass (Glyceria occidentalis), perennial ryegrass (Lolium perenne), and popcorn flower (Plagiobothrys bracteatus).

Pond

Though not treated as a plant community in Holland (1986) ponds can support a variety of wetland vegetation. The pond on the Lafferty Ranch supports a large population of mosquito fem (Azolla filiculoides) which grows on the water surface. An assortment of non-native herbs, grasses, and horticultural trees surround the pond.

THREATENED, ENDANGERED, AND SENSITIVE SPECIES

Plants

During the survey period of April 27 through June 25, 215 species of vascular plants were identified. These included 140 native plants (65%) and 69 (32%) non-natives. Six plants were not identified to species and could not be classified as native or non-native.

Mount Diablo cottonweed (Micropus amphibolus), a special status species, was found growing on the property. Another plant, coyote mint (Monardella viridis ssp. viridis), also a special status species, has been previously identified from Lafferty Ranch (Arnold et. al., 1971). Although one coyote mint plant was found, the species could not be determined since the plant had not bloomed as of the date of this report. For the purposes of this report, however, this plant will be treated as if it is a special status species.

1. Mount Diablo cottonweed is listed by the California Native Plant Society (CNPS) as a list 4 plant (Skinner and Pavlik, 1994). This is an annual herb restricted to eight Bay area counties. It was found growing in abundance in several areas of Lafferty Ranch. It is most common in exposed areas with bare, gravely soil and in grasslands dominated by shorter and/or sparser grasses and wildflowers.

2. Coyote mint (Monardella viridis ssp. viridis) is also listed by CNPS as a List 4 plant (Skinner and Pavlik, 1994). This perennial herb is restricted to four counties: Sonoma, Lake, Napa, and Solano. It blooms from July to September and is found in oak woodland, chaparral, and rocky slopes. On the Lafferty Ranch one plant was found growing on a rocky slope with purple needlegrass, California poppy, and lupine. The R-E-D code for

Another special status species, Lobb's buttercup (Ranunculus lobbii), was not seen, but did occur on the property when botanists, Dr. Charles Quibell and Dr. Ken Stocking, surveyed Lafferty Ranch (Arnold et.al., 1971). It most likely occurred in ponds and/or vernal pools. Although it was not seen during the survey, it may have bloomed and gone to seed before the first visit in late April. Alternatively, it may have been out competed by Mosquito fern (Awllafiliculoides) which grows in a thick mat on the surface of the pond. It is noted in the 1971 survey that Mosquito fern did not occur on the Lafferty Ranch.

3. Lobb's buttercup is also a CNPS List 4 plant. It grows in shallow, still waters and blooms from March through May.

Wildlife

Overall Wildlife Habitat

Lafferty Ranch contains a considerable amount of relatively undisturbed wildlife habitat. A year-round, mostly shaded stream runs lengthwise through the property, and there are several other wetland areas.

Terrestrial habitats represented include grasslands (mostly introduced annual grasses), oak woodland, broad-leaf evergreen forest, and stream riparian habitat.

Analysis of bird records for the project site by habitat shows that oak woodland, broad-leaf evergreen forest, and riparian forest avifaunas (i.e., birds) are best represented here. In spite of large amounts of grassland, the avifauna in this habitat is less well-represented than the above-mentioned habitats. The sparseness of the grassland avifauna may be due to two factors: 1) almost complete replacement of native perennial grasses by Mediterranean annual species, and 2) the grassland present is mostly high ridge upland, with little valley grassland, which reduces the diversity of this habitat type.

The initial review of wildlife concentrated on whether there were rare, threatened, or endangered species on the site that might be adversely affected by increased public use of the property. The potential species identified for review include golden eagle, tiger salamander, red-legged frogs, steelhead, and several invertebrate species. Each of these species is discussed below.

Golden Eagle

The golden eagle is a regular permanent resident of most of Sonoma County. It frequents open woodlands as well as mountainous areas in the least populated parts of the county. The Sonoma County Breeding Bird Atlas (Burridge, 1995) reports nesting evidence in 26 three-mile by three-mile blocks in the county during 1986-1991. These locations are scattered throughout the county, some being in coastal areas, some in mountainous areas, particularly in the northern part of the county, and others in open woodlands of the southern section of the county. The heavily populated Highway 101 corridor seems to have been avoided. Six records were confirmed nesting events, nine were considered probable (based on observed courtship and territorial behavior of pairs in appropriate habitat), and eleven were considered possible (adult bird present in appropriate nesting habitat during breeding season).

Golden eagles are common in the poorly censused northwestern part of the county, so the actual numbers of nesting pairs may be double that indicated by the Atlas (Alan Buckmann, CDFG biologist, personal communication). This number of nesting and possible nesting occurrences is much greater than the "maximum of four or five pairs" estimated by Granger Hunt in 1992 (in a report on golden eagles on the Lafferty Ranch; letter/report on file with the City Planning Department).

There is at least one adult pair regularly inhabiting and breeding on the north portion of Sonoma Mountain. These birds (or their descendants) have been observed for many years. Sightings have been made by many people from Sonoma Mountain Road, Liebau Road, Fairfield-Osborne Preserve, Mitsui Ranch, and the neighboring Pfendler property. Mr. Pfendler photographed both adults and young perched on his property. Both adults and an immature eagle were observed flying over Lafferty Ranch during the research for this report.

The nesting site (or sites, since this species often alternates between two or more permanent nest structures) has not been discovered. Investigations by CDFG biologist, Alan Buckmann, and by Mr. Stafford have failed to find evidence of nest location on Lafferty Ranch, nor have the birds been observed perching on the property. Golden eagles almost always avoid the windward side of ridges in their nest placement. Both Lafferty and Pfendler Ranches are located on the windward slope of Sonoma Mountain. It is assumed that the nest is not within or immediately adjacent to Lafferty Ranch. Mr. Buckmann believes it may be northeast of the ranch on the lee (east) side of one of the ridges running down the north or northwest slope of Sonoma Mountain, probably one mile or more away from Lafferty Ranch. It is likely, however, that the Ranch is within the defended territory (several square miles around the nest site) of the pair. Adequate grassland for hunting exists on the Ranch. The configuration of Adobe Creek canyon in relation to frequent up canyon flow of marine air from the west produces excellent updrafts

which can be exploited by the birds in foraging and watching over their territory. Potential nest sites (particularly mature coast live oak trees) do exist on Lafferty Ranch.

Steelhead

At present, Adobe Creek within Lafferty Ranch offers poor habitat for steelhead trout (Bill Cox, CDFG biologist, personal communication). There are several reasons for this condition. The darn/diversion facility near the lower border of Lafferty Ranch includes a 10–12-foot vertical drop which, according to Mr. Cox, is a 100 percent effective block to upstream migration of salmonids. The only way to have steelhead upstream from the diversion facility now would be by planting, which Mr. Cox thinks would probably be illegal at present. Also, the amount of good nursery habitat decreases above the diversion facility. Mr. Cox estimates that only one-eighth mile of suitable habitat exists above the diversion facility before reaching the extensive slide area with low-quality habitat. In addition, July field surveys show the stream is dry approximately 100 yards above the diversion facility (though there is surface flow further upstream). Another factor reducing the quality of steelhead habitat is the extensive amount of unstable material adjacent to Adobe Creek in the landslide area. Heavy rains will create siltation problems downstream. Finally, the location of the Ranch at the head of the watershed is a negative factor.

Migrating steelhead would have to move 1,200 vertical feet up a steep slope just to reach the lower boundary of the Ranch below the diversion facility, with many possible obstructions along the way.
In the spring and summer of 1997, several fingerling trout were observed below the diversion facility in Adobe Creek near the site's southern border. Also, one fingerling, possibly a steelhead, was found in a pool upstream from the landslide area above the diversion facility. There apparently has been recent fish planting in the area. Although the stream is quite small during the dry season, there are a few adequate-sized shaded pools with appropriately sized gravel substrate for steelhead nursery sites along the length of Adobe Creek within Lafferty Ranch.

Red-legged Frog

Potential habitat exists for red-legged frog within Lafferty Ranch, particularly at the sag pond near the Ranch entrance. This small pond may not always be permanent. It is lined with non-native willows and planted walnut trees. Nearby is a seasonal wetland that probably does not retain water long enough for red-legged frog production. Also, Adobe Creek, seeps within the landslide zone, and the sedge marsh southeast of the Pfendler residence are potential sites that could support this frog.

Surveys conducted in June 1997 did not produce any sightings of this species. Pacific tree frogs were abundant at the pond and along Adobe Creek. A western toad occurred at the pond a few weeks after the tree frog hatched. One adult foothill yellow-legged frog was observed at the edge of a shaded pool in Adobe Creek upstream from the landslide zone. Several bullfrog adults were observed at the pond. However, there was no evidence of red-legged frogs on the site.
Bullfrogs are suspected of negatively affecting red-legged frog populations (California's Wildlife, Volume I, CDFG, 1988). Bullfrogs require permanent water for the development of their larva. It has been observed that wetlands with diverse habitats and a combination of permanent and seasonal water can support both bullfrogs and red-legged frogs (Alan Buckmann, CDFG, personal communication). At present, water from the springbox near the pond is diverted to Adobe Creek. If that water were channeled to the pond and seasonal wetland area near the entrance of the Ranch, a rather large and diverse wetland could be developed. If such a plan is considered in the future, attention should be given to the bullfrog/red-legged frog dynamic.

Tiger Salamander

The tiger salamander is found most in annual grassland or oak savannah near seasonal water. The area of Lafferty Ranch around the sag pond and nearby seasonal wetland is of this habitat type. Most California populations are below 1,000 feet in elevation. The habitat in Lafferty is about 1,300 feet in elevation.

Surveys for this species were conducted in June 1997 at Lafferty Ranch. No evidence of this species was found. However, it is very possible that the salamander is present and was undetected because of the seasonal lateness of the survey. Tiger salamanders are hidden from human view most of the year. The adults crawl out of the ground during early winter rains at night and migrate to pools of water. Most adults remain at the pools only a few days before completing breeding. They then return to subterranean burrows and remain hidden until the next wet season. The aquatic larva transforms in late spring and early summer, then migrate at night to upland underground retreats.