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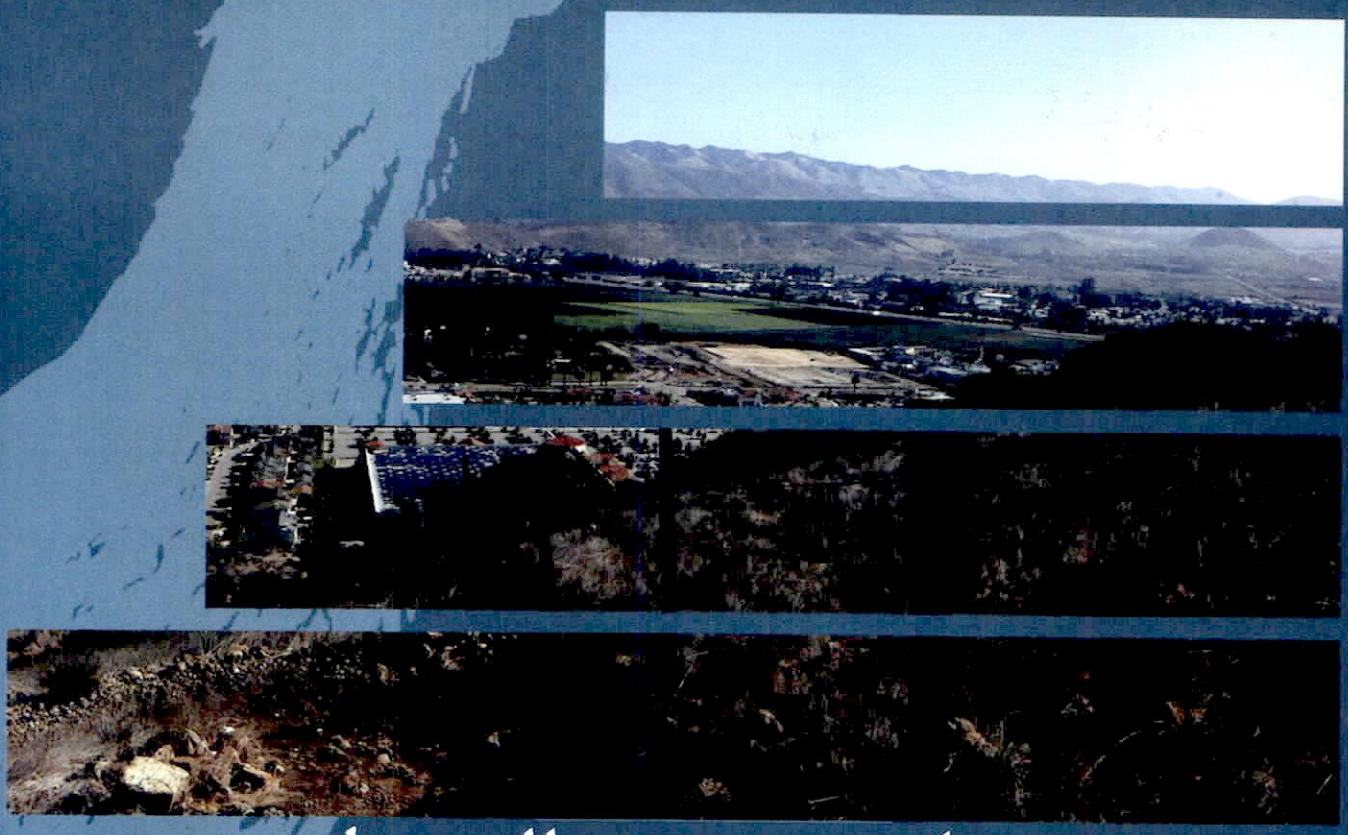

Irish Hills Natural Reserve Conservation Plan Update

= 6 - 2011

City of San Luis Obispo

Natural Resources Protection Program
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Irish Hills Natural Reserve Conservation Plan Draft 2011 Update

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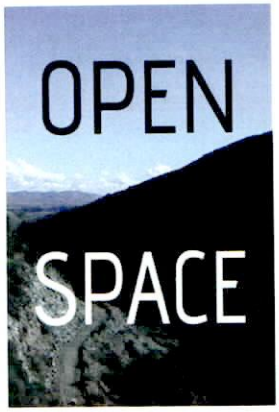
June 2011 Draft Update



The Conservation Plan protects existing resources at Irish Hills Natural Reserve and balances recreational use, fire safety, and resource protection.

Executive Summary

The Irish Hills Natural Reserve (IHNR) is a 1110-acre area in the City of San Luis Obispo, west of Los Osos Valley Road.

It consists of serpentine hill lands dominated by chaparral, oak woodland, and grassland. Two perennial streams, Prefumo Creek and Froom Creek, cross portions of the Reserve.

The site is known for its views, its relatively pristine landscape, and trail system, which is a holdover from past mineral exploration.

The property was acquired by the City of San Luis Obispo in several individual stages between 1998-2011.

Important Natural Features

IHNR contains a number of sensitive or otherwise important natural and historical features, including:

> Threatened Steelhead trout in the two streams;

> Endangered plant species (Chorro Creek bog thistle);

> Several rare plant and animal species;

> Chaparral, oak woodland, and grassland on serpentine soils;

> 4 former mine sites; and

> Large tracts of intact, high quality wildlife habitat.

Goals and concerns associated with IHNR include:

Issues and concerns related to IHNR were generated through feedback from community workshops.

> Erosion problems associated with the Froom Creek jeep road;

> Need for fire and fuel load management at the wildland/urban interface;

> Maintenance of existing high quality habitat within IHNR;

> Protection of sensitive resources and habitats; and

> Proper development and functioning of trail systems.

The 2003 Conservation Plan has begun to achieve these goals by:

> Completion of King Trail and Mariposa Trail loops, serving access point;

> Closure and revegetation of a portion of Froom Creek Jeep Road;

> Closure and revegetation of several sections of trail with excessive erosion problems;

> Continued fire management programs, involving management of fuel loading, especially at the urban/ wildland interface; and

> Installation of an interpretive and informational kiosk at the Madonna trailhead.

The Updated Conservation Plan will continue to achieve these goals by calling for:

> Completion of trail linkages to establish several new loop systems;

> Complete decommissioning and revegetation of the Froom Creek jeep road and several other roads and trails;

> Continued development of interpretive and informational trailhead signage to assist visitors; and

> A continued fire management program, involving management of fuel loading, at the urban/ wildland interface and possible use of prescribed burning in certain locations.

The Conservation Plan's primary aim is to protect the existing resources at IHNR and to balance recreational use, fire safety, and resource protection. The plan is considered not to have a significant effect upon the environment.

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The Irish Hills support a rich and diverse wildlife population

1. Introduction

This Conservation Plan Update lays out the general practices and policies for the continued preservation of natural resources in the Irish Hills Natural Reserve.

The protection of natural resources, development of a green belt, and provision of passive recreation opportunities are all stated goals of the open space element of the City of San Luis Obispo general plan. The conservation of land as open space is a desirable and effective means of meeting these goals. Planners and officials for the City of San Luis Obispo have envisioned the creation of an open space greenbelt around the City and have actively pursued this objective. The creation of the Irish Hills Natural Reserve (IHNR) is the result of efforts to conserve five contiguous parcels of land in the eastern section of the Irish Hills to the west of the City of San Luis Obispo (Fig. 1).

The City-owned Irish Hills Natural Reserve (IHNR) encompasses 1110 acres of land consisting of grasslands, oak woodland, and chaparral, on generally steep terrain ranging from 140 feet to just under 1,160 feet at the highest point (Fig. 2). The substrate is mostly derived from heavily serpentinized parent materials, which have given rise to a thin serpentine soil supporting a unique vegetation complex of serpentine adapted grassland, woodland and chaparral. The area is drained by two small coastal streams, both tributaries of San Luis Obispo Creek. The water quality in these streams is generally good, and they support populations of threatened southern steelhead trout and other native fishes.

The Irish Hills area was identified as a significant natural resource in a study carried out by the Nature Conservancy of California (Nature Conservancy of California 2001), and the area has also recently been recognized by both the State Coastal Conservancy and the Wildlife Conservation Board as an area of interest. The Irish Hills support a rich and diverse wildlife population and the entire range, including that portion under city ownership, is excellent habitat. Over two hundred species of birds have been identified in the area and many amphibians, reptile and mammal species occur there as well. Deer are commonly seen and local residents occasionally report mountain lion sightings.

IHNR is one of several areas of serpentine-derived soils in the San Luis Obispo region. Those soils have unusual chemical characteristics to which only a few species of plants have been able to adapt. As a result, the serpentine areas support a vegetative community quite different from the surrounding non-serpentine sites. These areas are also usually free of weed species. Because of the relative scarcity of serpentine habitats, many of the plants found there are considered rare or threatened.

The earliest record of historical use of the Irish Hills dates back to chromite deposit mining activities in the late 1800's and early 1900's (Smith & Griggs, 1944). Several abandoned

The City of San Luis Obispo lies midway between San Franciso and Los Angeles on California's Central Coast. Irish Hills Natural Reserve is southwest of town.

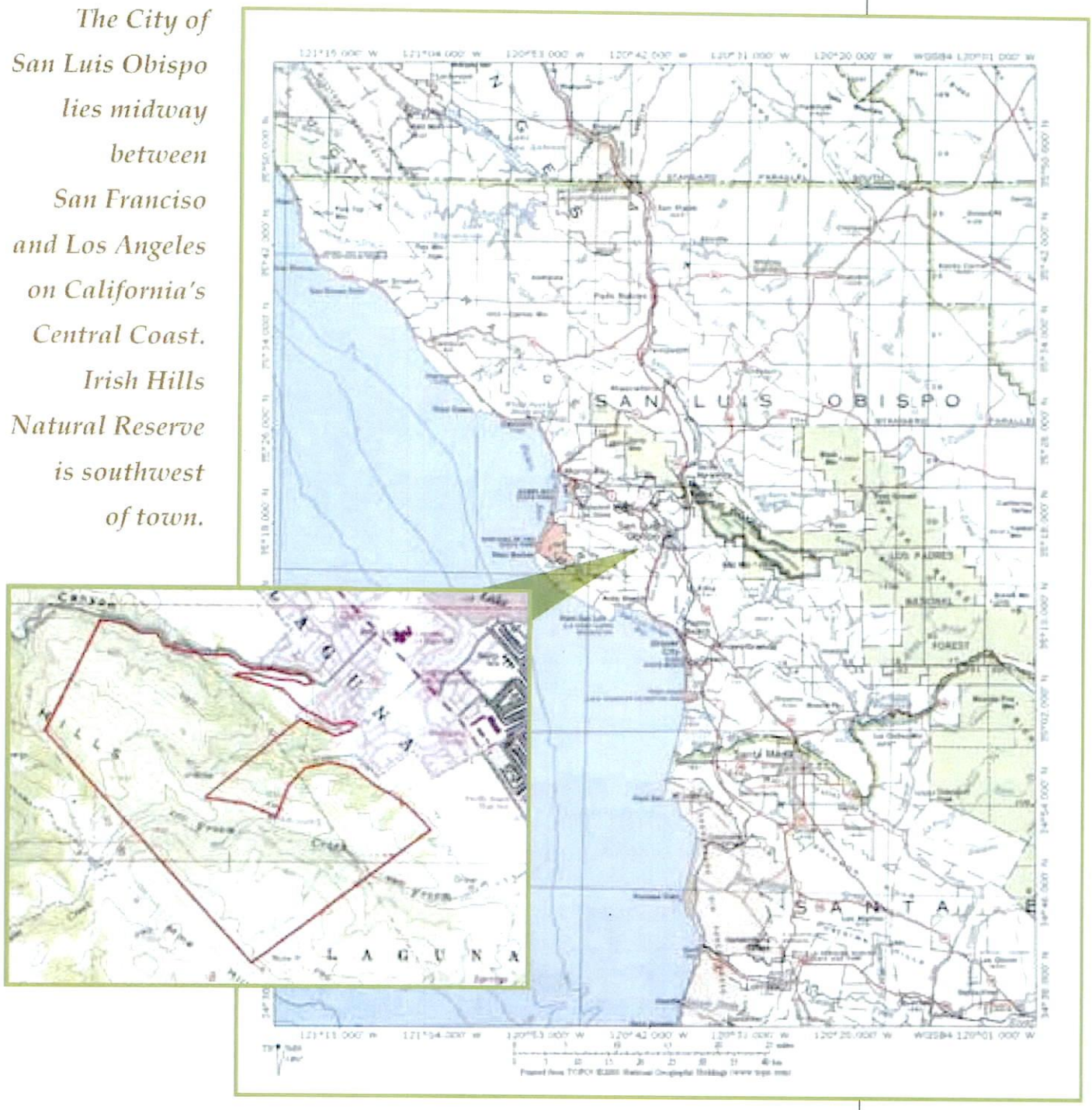


Figure 1.

Regional Setting of the Irish Hills Natural Reserve

open-faced mine sites and prospects exist within the Irish Hills Natural Reserve (coordinates: 35°15'18"/ 120°42'45"). In more recent years, the primary use patterns have involved recreational activities for City residents and visitors to the area. An extensive trail network has been established consisting of narrow trails (commonly referred to as 'single-track') linking dirt roads and a 1.2 mile section of sealed asphalt. The primary recreational activities currently occurring within IHNR are hiking, mountain biking, and limited equestrian use.

2. Inventory

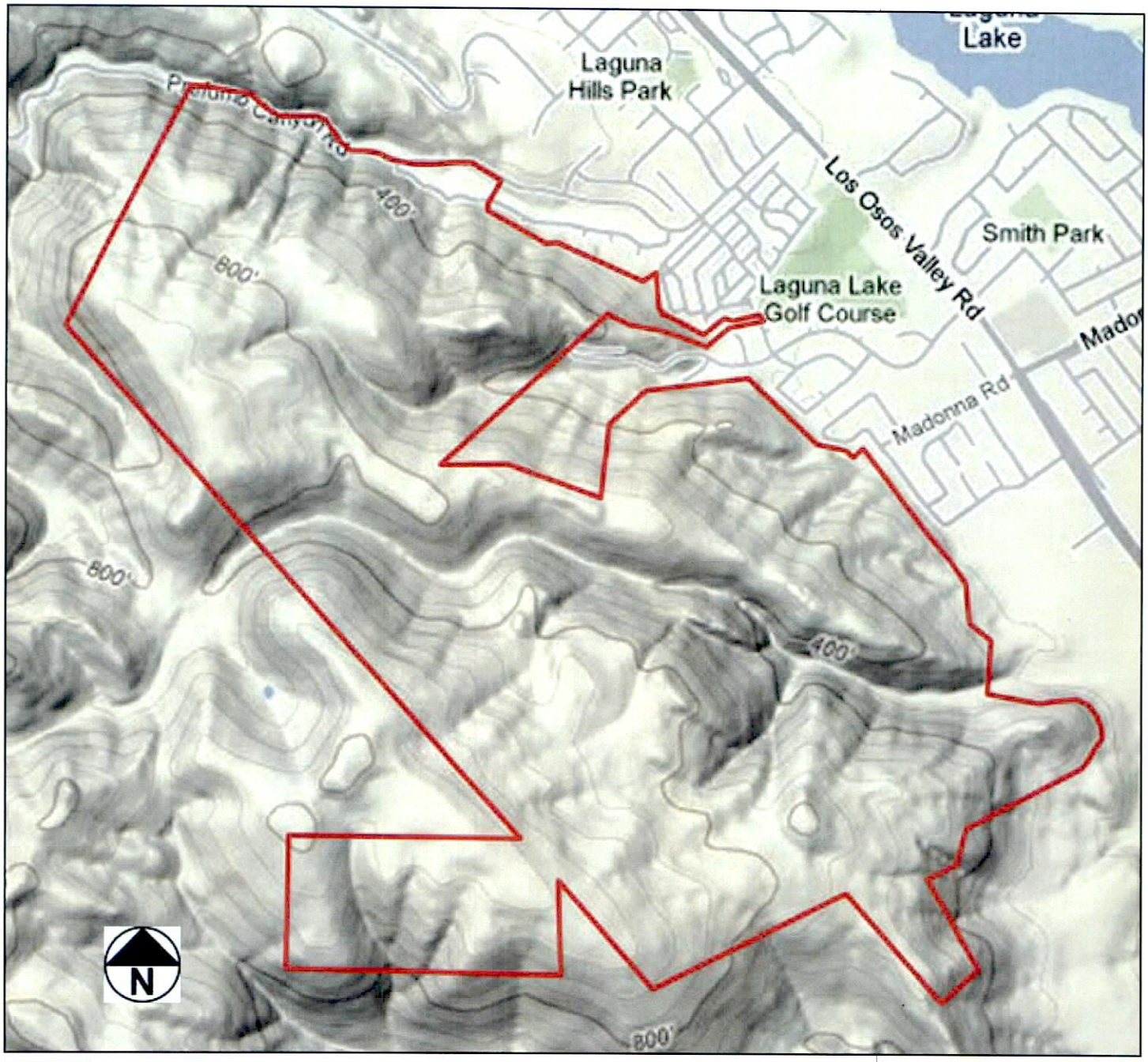
IHNR contains a variety of soil types providing habitat for over four hundred and fifty species of plants and animals. An inventory of these resources has been compiled through a variety of means including information from The Soil Conservation Service's 1984, a biological survey performed by Tenera Consulting, and an archeological studies performed by Gibson's Archeological Consulting, and Heritage Discovaries, Inc.

2.1. SOILS

There are a variety of soil types within IHNR, providing a variety of habitat opportunities (Fig 3.)

Survey maps (U.S. Soil Conservation Service, 1984)) indicate that more than 75% of the area within IHNR consists of Obispo-Rock outcrop complex soils (Fig. 4), derived from serpentine parent materials. Other soil types listed within IHNR include Los Osos-Diablo complex 15 to 30% slopes; Lodo clay loam, 30 to 50% slopes; Gaviota sandy loam, 50 to 75% slopes; Salinas silty clay loam, 0 to 2% slopes; Lodo- Rock outcrop complex, 30 to 75% slopes; and Diablo and Cibo clays, 30 to 50% slopes. These soils are present in relatively small areas (<50 acres) on the lower slopes along the northeastern boundary of IHNR. They are composed of material weathered from sandstone, shale, red rock, mudstone, and sedimentary rocks. Soil depths range from shallow to very deep and most are described as well drained (see Appendix 1 for a full description of soil types).

Within IHNR area there is an abundance of Serpentine soil. The term Serpentine refers to a group of minerals that make up serpentinite rock. Serpentinite is a type of ultramafic rock consisting predominantly of magnesium silicate and iron oxide minerals. Most ultramific rocks, including serpentinite, contain naturally occurring asbestos (NOA) particles.



IHNR Boundary

0 0.7 Miles

Figure 2.

Topography of the Irish Hills Natural Reserve

NOA particles are a known human health risk. Asbestos has been classified as a carcinogen by state and federal agencies and if encountered proper measures should be taken. If trail work is performed in areas with serpentine soils, protective measures should be taken.

2.2. HABITAT TYPES

Both vegetative and aquatic habitats exist within IHNR (Fig. 4).

Serpentine Chaparral, Black Sage, and Coyote Brush Scrub Habitat

Serpentine chaparral covers 832 acres of IHNR, making it the predominant natural community by area. Black sage/coyote brush scrub covers an additional 22 acres. Leather oak is endemic to serpentine soils and is found extensively throughout IHNR in scrub and chaparral habitats.

A number of seep areas are present in chaparral and scrub habitats. Water from these seeps descend hundreds of feet in some areas through watercourses carved into underlying serpentine rock. These seep areas constituted an important water source for birds, mammals, reptiles and amphibians, and habitat for the endangered Chorro Creek bog thistle.

Coast Live Oak Woodland Habitat

Oak woodlands cover approximately 166 acres of IHNR. As with scrub and chaparral habitats, the species composition, density, and height of the coast live oak community varies considerably. The live oak woodland habitat is primarily found on non-serpentine soils along hillsides and swales that face north/northeast. Oak woodland habitat vegetates the slopes around riparian areas and upwards to grasslands or scrub/chaparral habitats. Generally, a mixed coast live oak/toyon community vegetates the drier upper slopes and a coast live oak/California bay laurel community is present on lower slopes adjacent to and within the riparian corridor.

Prefumo Canyon Road and Madonna Road will be designated as official gateways to the Irish Hills Natural Reserve.

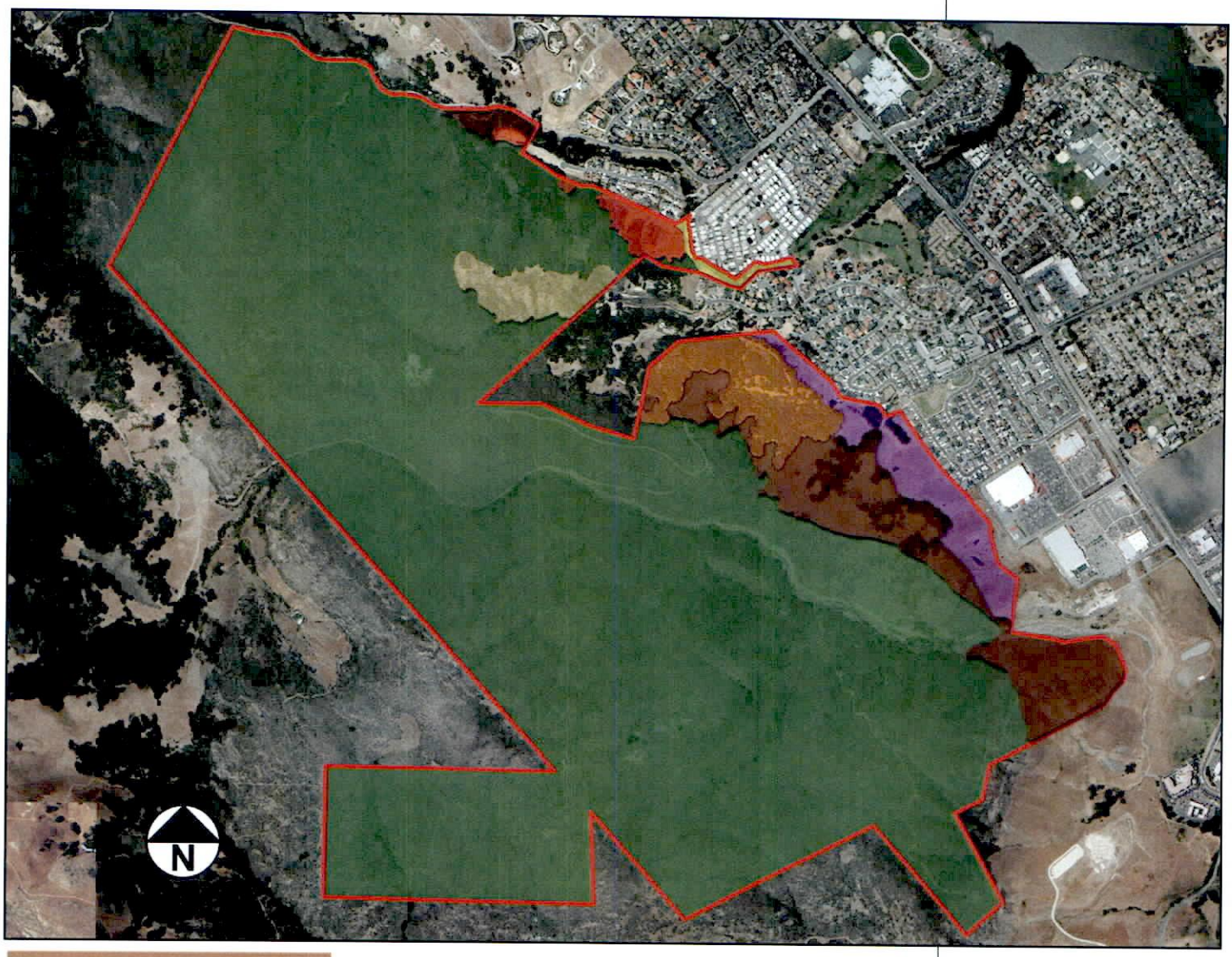
Grassland Habitat

This habitat type is present in patches and discontinuous bands in the northeastern and north-central regions of IHNR, and occupies a combined area of approximately 74 acres. Areas identified as grassland habitat consist of a variable mixture of native and non-native grass species. Generally, grasslands on the lower slopes are dominated by annual grasses; however, in serpentine areas native bunch grasses are much more prevalent.

Riparian Habitat

Riparian habitat exists as a narrowband of vegetation lining the stream banks of Prefumo Creek, Froom Creek and the unnamed tributary of Prefumo Creek that flows past Sterling Drive. This riparian habitat occupies a total area of approximately 30 acres within IHNR.

The main stem of Prefumo Creek is a relatively low gradient stream segment with a diverse riparian canopy of mature coast live oak, willow, and sycamore. The understory consists of toyon, blue elderberry, blackberry, poison oak, coyote brush and monkey flower. Several introduced species are



0 0.6 Miles

- IHNR Boundary
- CONCEPCION
- LODO
- DIABLO
- CIBO
- LOS OSOS
- GAVIOTA
- ROCK OUTCROP

Figure 3.

Soil Types in the Irish Hills Natural Reserve

also present, including: blue gum, Monterey cypress, date palm, fennel, French broom and chicory.

The unnamed tributary to Prefumo Creek has a higher gradient than the main stem, with a riparian corridor dominated in the lower reaches by California bay laurel, coast live oak and toyon. Understory vegetation in the shade of these mature trees is sparse but includes poison oak, wood ferns and California blackberry.

Oak woodlands cover about 140 acres of the Irish Hills Natural Reserve.

The reach of Froom Creek located within IHNR has a low gradient and supports mature coast live oaks, California bay laurel, and an occasional young sycamore. Understory vegetation is dominated by willows (including the serpentine endemic Coulter willow), poison oak, grasses and a variety of herbaceous species.

Aquatic Habitat

The major aquatic habitats represented on the site include 1 mile of Prefumo Creek and 0.5 miles of an unnamed tributary, both of which are seasonal, having sections that are dry during the summer months. The 1.8 miles of Froom Creek in IHNR is perennial. The water quality in all three creeks appears to be good, with water temperatures in the range of 16.7 to 17.8°C recorded on midsummer afternoons.

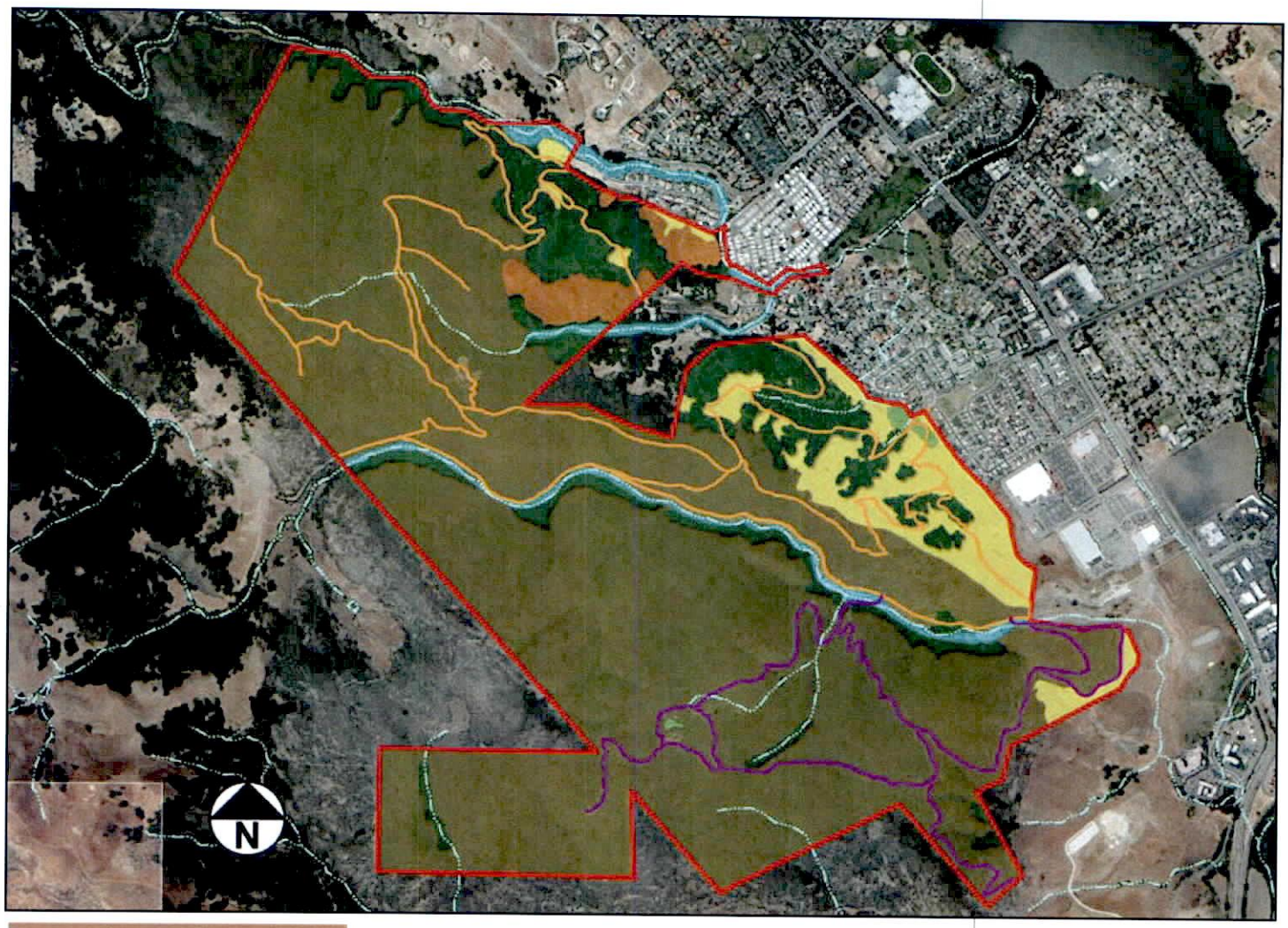
The bed of all three creeks consists of combinations of small boulders, cobble and sand. Overall, the aquatic systems represent excellent wildlife habitat, and threatened steelhead trout have been observed in both Froom and Prefumo creeks.

In addition, a number of seasonal seeps exist on the site, which are considered sensitive aquatic habitats (Dugan, 2002). These seep areas are associated with stands of the endangered Chorro Creek bog thistle and are habitat for large populations of unidentified amphibian larva (Clarke, 2002; pers obs).

2.3. WILDLIFE

IHNR is host to over four hundred and fifty species of plants and animals (Fig. 5).

Focused wildlife surveys within IHNR



- IHNR Boundary
- Creeks and Seeps
- Trails
- Proposed Trails
- Eucalyptus Woodland
- Black Sage/Coyote Brush Scrub
- Grassland Habitat
- Riparian Habitat
- Live/Leather Oak Woodland
- Chaparral/Scrub Habitat

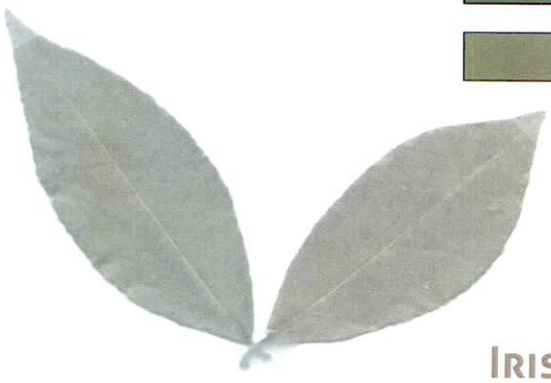


Figure 4.

Habitats Within the Irish Hills Natural Reserve

Overall, the aquatic systems in the IHNR represent excellent wildlife habitat, and endangered steelhead trout have been observed in both Froom and Prefumo creeks.

were conducted during June, July and August 2002 by Tenera Environmental. The primary objective of these surveys was to determine if listed or special status species occurred on the property. Each of the major habitat types within IHNR was canvassed thoroughly on foot during both day and nighttime surveys. Wildlife species were identified through direct observation, calls, or signs such as tracks, scat pellets, nests or dens. Sampling was also conducted from various vantage points within each of the major habitat types by stationary observers. Points were sampled in the morning and/or evening during daylight hours for a duration of between 15 to 30 minutes.

Riparian areas were surveyed using generally accepted methods for stream surveys. The banks and surface of each stream were scanned with binoculars as surveyors moved slowly upstream.

Small mammal trapping was conducted in one grassland, two oak woodlands, one riparian, and three chaparral habitat areas. A total of ten Tomahawk live traps or Havahart live traps were placed at various points within the sampling area.

Four hundred and fifty-nine species of plants and animals have been identified as potentially occurring on or directly adjacent to IHNR. Two hundred and sixty two species have been positively identified as occurring within the boundary of IHNR (Appendix 3).

Birds

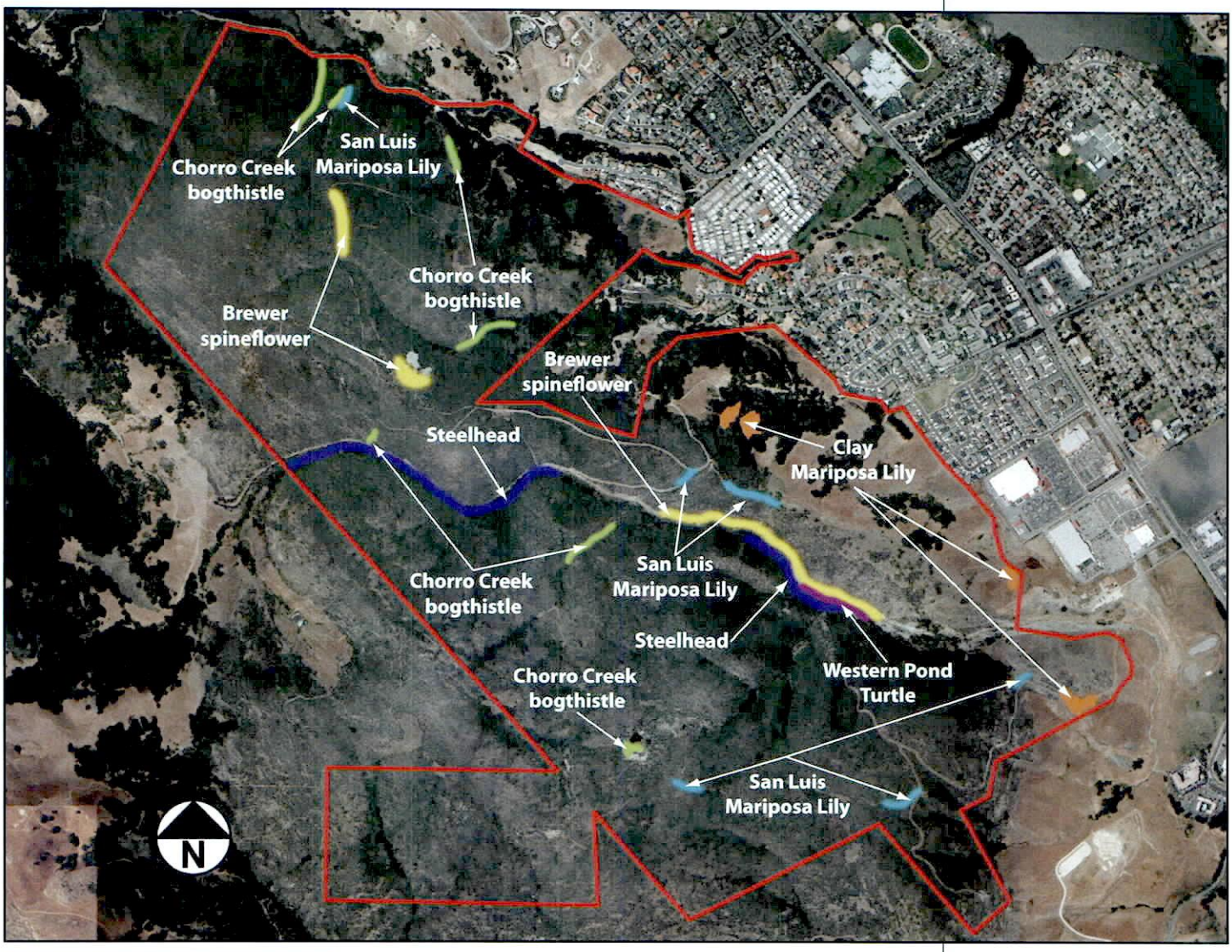
A wide variety of birds have been observed during surveys of IHNR. Seventy-four bird species are listed as potentially occurring on, or directly adjacent to, IHNR (Appendix 3). Forty-two species of birds have been positively identified within the boundary of IHNR by City appointed biologists (Table 1).

Mammals

Twenty-six mammal species are identified as potentially occurring on, or directly adjacent to, IHNR (Appendix 3). Fourteen of these species have been positively identified as occurring within the boundaries of IHNR by City appointed biologists (Table 2). Most of the mammals observe were found in the riparian and scrub/ chaparral habitats.

Reptiles

Seventeen reptile species have been listed as potentially occurring on or directly adjacent to IHNR (Appendix 3). Seven of these species have been identified as occurring within the boundary of IHNR, including: western pond turtle (Clemmys marmorata); western rattlesnake (Crotalus viridis); ringneck snake (Diadophis punctataus); Southern alligator lizard (Elgaria mulitcarinatus); common king snake (Lampropeltis getulus); gopher snake (Pituophis melanoleucus); and the western fence lizard (Sceleoporus occidentalis).



0 0.6 Miles

Figure 5.

Sensitive Species Within the Irish Hills Natural Reserve

There are 262 species of plants and animals that have been identified within the boundary of the Irish Hills Natural Reserve.

Amphibians

Six species of amphibians have been identified as potentially occurring on or directly adjacent to IHNR (Appendix 3). However, only the Pacific tree frog (Hyla regilla) has actually been observed within the boundaries of IHNR.

Fish

Threatened steelhead trout (Onchorhynchus mykiss), and speckled dace (Rhinichthys osculus) have both been observed in the sections of Froom and Prefumo creeks that run through IHNR.

Invertebrates

No surveys have been performed which focus specifically on the invertebrate fauna of IHNR, consequently current estimates are severely lacking. However, four notable invertebrate species have been identified as occurring in the Reserve, including: tarantula spider (Aphonopelma spp); Monarch butterfly (Dananus plexippus); tarantula wasp (Hemipepsis spp); and Callippee fritillary butterfly (Speyeria callippe). A non-endangered subspecies of the Morro shoulderband snail (Helminthoglypta walkeriana morroensis) has been found within IHNR and in several other areas around the city.

Species of Special Concern

Seven species of special concern (as identified by the City or other state and federal agencies) have been identified as occurring within the boundaries of IHNR (Fig. 6). These include: Chorro Creek bog thistle (Cirsium fontinale var. obispoense); Brewer spineflower (Chorizanthe breweri); San Luis mariposa lily (Calochortus obispoensis); Club-footed mariposa lily (Calochortus clavatus var. clavatus); Leopard lily (Lilium pardalinum var. pardalinum); western pond turtle (Clemmys marmorata); and steelhead trout (Onchorhyncus mykiss irideus).

2.4. BUILT FEATURES

There have been a number of man-made changes to the face of IHNR over that past century.

Physical changes to the landscape resulting from past human activities within IHNR include: an established trail and dirt road system; installation of high-tension power lines and associated towers across the property;

and several abandoned open faced chromite mines dating from the early 1900's. No other major development sites exist within IHNR.

Trails

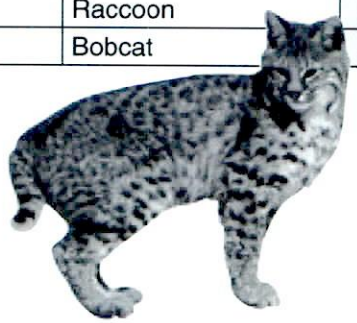
IHNR has an established network of walking and hiking trails extending for 8.5 miles, with 3.5 miles of proposed

Table 1. List of BIRD Species Identified Within the IHNR

Scientific Name	Common Name	Scientific Name	Common Name
Aphelocoma californica	Western scrub jay	*Hirundo pyrrhonta*	Cliff swallow
Aquila chrysaetos	Golden eagle	*Junco hyemalis*	Dark-eyed junco
Bubo virginianus	Great horned owl	*Melospiza lincolnii*	Lincoln's sparrow
Buteo lineatus	Red-shouldered hawk	*Mimus polyglottis*	Northern mockingbird
Buteo jamaicensis	Red-tailed hawk	*Parus inornatus*	Plain titmouse
Callipepla californica	California quail	*Parus rufescens*	Chestnut-backed chickadee
Calypte anna	Anna's hummingbird	*Passerculus sandwichensis*	Savanna sparrow
Carduelis psaltria	Lesser goldfinch	*Picoides nuttallii*	Nuttall's woodpecker
Carduelis tristis	American goldfinch	*Picoides pubescens*	Downey woodpecker
Carpodacus mexicanus	House finch	*Pipilo crissalis*	California towhee
Cathartes aura	Turkey vulture	*Pipilo erythrophthalmus*	Spotted towhee
Catherpes mexicanus	Canyon wren	*Polioptila caerulea*	Blue-gray gnatcatcher
Ceryle alcyon	Belted kingfisher	*Psaltriparus minimus*	Bushtit
Contopus sordidulus	Western wood-pewee	*Regulus calendula*	Ruby-crowned kinglet
Corvus brachyrhynchos	American crow	*Sayornis nigricans*	Black phoebe
Cyanocitto stelleri	Steller's jay	*Selasphorus sasin*	Allen's hummingbird
Elanus leucurus	White-tailed kite	*Thryomanes bewickii*	Bewick's wren
Empidonax difficilis	Pacific-slope flycatcher	*Toxostoma redivivum*	California thrasher
Euphagus cyanocephalus	Brewer's blackbird	*Tyto alba*	Common barn-owl
Falco sparverius	American kestrel	*Vireo huttoni*	Hutton's vireo
Geococcyx californianus	Greater roadrunner	*Zenaida macroura*	Mourning dove

Table 2. List of MAMMAL Species Identified Within the IHNR

Scientific Name	Common Name	Scientific Name	Common Name
Canis latrans	Coyote	*Mephitis mephitis*	Striped skunk
Didelphis virginiana	Virginia opossum	*Neotoma fuscipes*	Dusky-footed woodrat
Peromyscus boylei	Brush mouse	*Odocoileus herionus*	Mule deer
Peromyscus californicus	California mouse	*Spermophilus beecheyi*	California ground squirrel
Peromyscus maniculatus	Deer mouse	*Sylvilagus bachmani*	Brush rabbit
Procyon lotor	Raccoon	*Thomomys bottae*	Botta's pocket gopher
Lynx rufus	Bobcat	*Urocyon cinereoargenteus*	Gray fox



The San Luis mariposa lily (Calochortus obispoensis) is one of eight species of special concern within the boundaries of Irish Hills Natural Reserve.

trails to be constructed in the future (Fig. 6). Trails range from single-track, less than 1 ft. in width, to trails up to 4 ft. wide. Historically, the main uses of the trail network have been for hiking, mountain biking, and limited equestrian activities and they will continue to remain as such.

Several potential changes to existing trails include a realignment of portions of trail where grades are excessive and improvements can be made without undue environmental damage. Candidate trails for these improvements include Poppy Trail, Mine Trail, Sterling Trail, and Ocean View Trail. Any trails with a grade in excess of 12%-15% will be a candidate for realignment if possible to do without undue environmental damage i.e. without the need for bridges, heavy grading, shoring and passage through wetlands or endangered plant communities.

New Trails

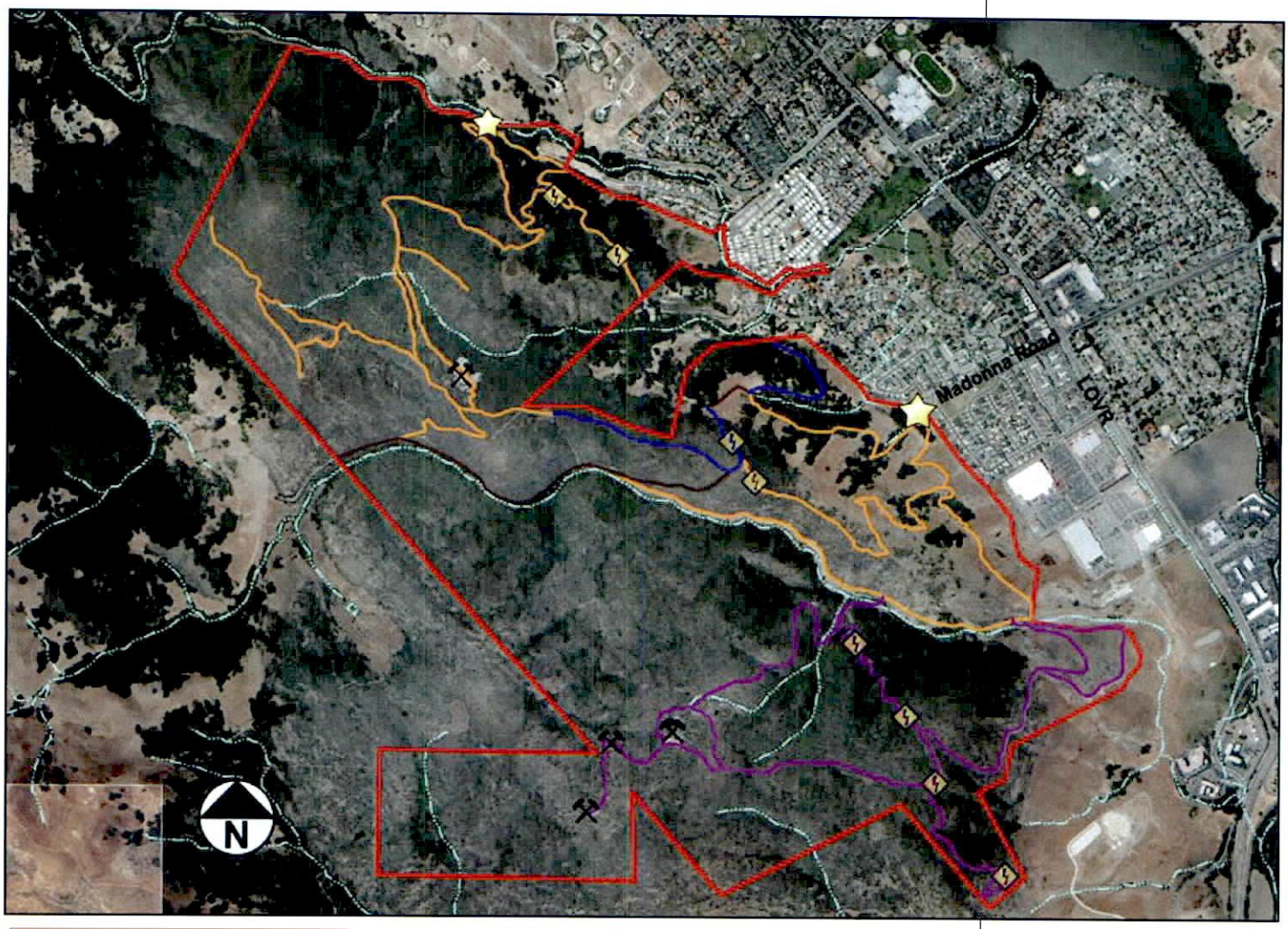
Potential for the incorporation of several new trails within IHNR include a "short cut" connector from Froom Creek to upper portions of the proposed Froom property trails, Ocean View Trail from the lower gate to the road, a connector from Tower Trail to Froom Creek, a loop trail at Froom Mine, and a connector from Froom Mine to Froom Creek via Old Prospectors Road and the continued exploration of other possible trail extensions.

Unpaved Roads

There are 0.6 miles of unpaved roads within the conservation area with one additional mile of unpaved road, that has recently been decommissioned and reduced down to single-track trail within IHNR. These roads were originally established primarily as a means of moving cattle and farm equipment through the area (Fig. 6). Today many of these roads are in a state of disrepair, with some sections inaccessible to vehicular traffic. Portions of roads that have been cut into steep hillsides have become major sources of soil erosion, causing sediment loading into the creek system. Due to the environmental impacts on the Froom Creek system, some road segments have been decommissioned and converted to single-track trails in order to prevent further erosion and sedimentation to the creek system.

Paved Roads

A single paved road exists on IHNR. The road extends from a gated access point at the end of Sterling Drive up the hillside to an abandoned development site just below the abandoned chromite mine (Fig. 6). The road is 1.2 miles in length, sealed, approximately 10 ft wide, and generally in good repair. However, one steep stretch of approximately 650 ft remains unpaved. The upper portion of the paved road is being encroached upon by chaparral and will need regular brushing in order to maintain vehicular access.

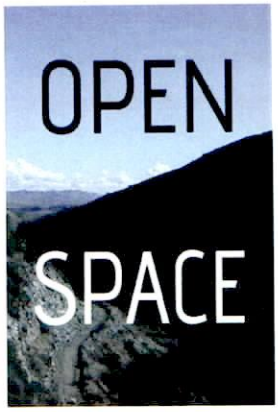


0 0.6 Miles

- IHNR Boundary
- Creeks and Seeps
- Trails
- Unpaved Roads
- Paved Roads
- Proposed Trails
- Access Points
- Mines
- Power Line Towers

Figure 6.

Physical Features
Irish Hills Natural Reserve



The Irish Hills Natural Reserve should be expanded when possible, with the eventual goal of linking City-owned open space with the State-owned Montana De Oro State Park.

Electrical Utility Towers

Eight (8) PG&E electrical utility towers span the site and support high-tension electrical cables (Fig. 6). Easements exist which allow PG&E to access the towers and cables to perform maintenance, repair work, and management of vegetation below the cables.

Access Points

IHNR currently has access at two points from public streets. Primary access is located at the terminus of Madonna Road and secondary access is located on Prefumo Canyon Road, off of Los Osos Valley Road. Where necessary, parking facilities will be upgraded in these areas and informational signage installed. New access points to IHNR will be updated as they become available.

Access from Sterling Drive (coordinates: 35°15'22"/120°42'07" is limited to City maintenance crews, local residents, and special access for the handicapped, which can be achieved by contacting the Parks and Recreation Department.

Power Driven Mobility Devices

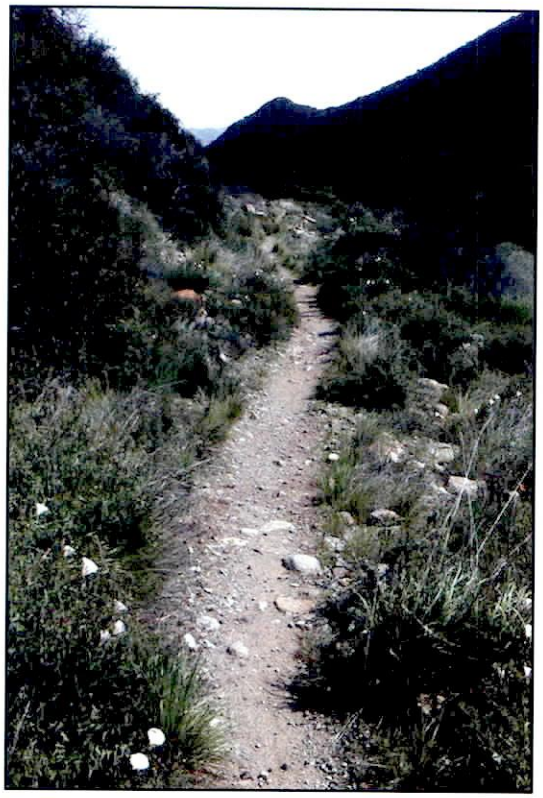
The City of San Luis Obispo is committed to include the disabled in all of its services, programs and activities. Although the use of Power Driven Mobility Device (PDMD) are permitted within IHNR, use is still subject to all Open Space rules and regulations as stated in Chapter 12.22 of the Open Space Regulations. PDMD access will be provided upon written request to the Parks and Recreation Department dependent upon and subject to approval by the Parks and Recreation Director.

2.5. CULTURAL RESOURCES

Chromite mining has left a number of abandoned mine sites within IHNR (Fig. 6). The four mine sites within IHNR are a remnant of the early 1900's when chromite (Cr_2O_3) was mined extensively in the area. Up to 1944 the total production of chromite ore and concentrates in San Luis Obispo County was greater than that from any other county in California (Smith and Griggs, 1944). The open-face mine site covers approximately 3 acres of steeply graded hillside. Several prospects associated with the mines have been reported within IHNR. A recent Study (Stantec 2009), searched for evidence of elevated chromium levels in Froom Creak and the study found no evidence of chromium or other contamination, leaching, etc. For the precise locations of these mines refer to figure 6.

2.6. ARCHEOLOGICAL RESOURCES

IHNR has a number of archeological sites within its boundaries. Several archeological sites have been identified in areas near IHNR, but only one small site has been identified within IHNR, in studies conducted for various projects in the past and by studies commissioned by the City since the past two years (Gibson 2009, Heritage Discoveries 2010 and 2011). None of the sites are affected by anticipated trail alignments, and because of slops and the nature of the vegetation of trail routes



no further archeological studies are considered necessary (Heritage Discoveries 2011).

The one site within IHNR will remain unmarked in order to preserve its existing natural condition and prevent disturbance or vandalism.

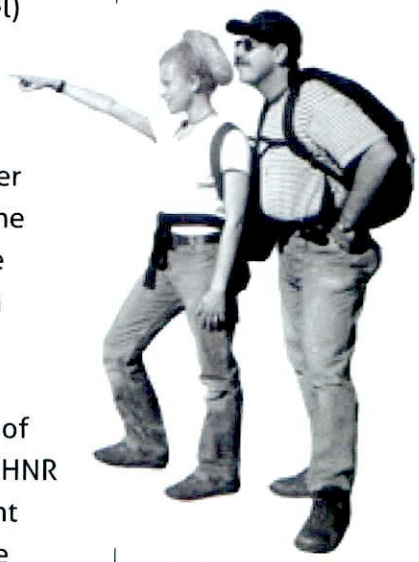
2.7. LEGAL AGREEMENTS

The nature of land acquisitions that have led to the creation of IHNR have resulted in a number of legal agreements. Legal agreements affecting the Irish Hills Natural Reserve fall into three categories: (1) easements allowing certain physical improvements by other parties; (2) conservation easements or other deed restrictions restricting the ability of the City of San Luis Obispo to undertake actions not consistent with those easements, and (3) other types of easements or deed restrictions.
By far the most important of the first category above is the transmission line easement in favor of the Pacific Gas and Electric Company (PG&E). This easement allows the construction and maintenance of power transmission lines across a portion of IHNR. The easement is 100 feet wide and extends across IHNR for a distance of approximately 9,500 feet. A total of eight transmission towers occur along this easement within the boundaries of IHNR. The easement also allows PG&E reasonable access to the towers for maintenance purposes. Access occurs primarily along several roads constructed by PG&E when the transmission line was installed in the 1960's. These roads are therefore considered permanent and are incorporated into the trail system of IHNR as much as practical.

There are several other easements or similar land-use restricting covenants that affect all or portions of IHNR, some of which overlap one another. These include:

1. Enrollment of the entire property (except the BLM parcel) under CFR 6 (f)3. This enrollment is a requirement of Federal grant monies obtained under the Land and Water Conservation Fund program. The requirement restricts the entire property to park and recreation purposes in perpetuity.
2. Deed restriction for the former Foster property portion of IHNR. The 154 acre portion of IHNR was acquired in part with a grant from the State Coastal Resource Assistance Grant program. A requirement of that program is a deed

Provide the public with a safe and pleasing natural environment in which to pursue passive recreational activities, while minimizing the impact on the wildlife and habitats represented.



restriction restricting the property to park and recreation purposes in perpetuity.

3. Deed restriction for the Froom Ranch portion of IHNR. This 310 acre portion of IHNR was acquired in part with funds granted by the Nature Conservancy of California, which required a restrictive covenant restricting that portion of the property to park and open space uses, with a penalty clause should any part of said property be lost to such use, whether or not the City of San Luis Obispo had any control over such loss.

4. Conservation easement for the Froom Ranch portion of IHNR. This was another requirement of the Nature Conservancy grant. The easement is held by the Land Conservancy of San Luis Obispo County, and restricts the property to open space and passive recreational uses. The easement further gives the Land Conservancy the right to prevent or stop certain uses which it deems inconsistent with the purposes of the easement, upon reasonable meet and confer requirements.

The net effect of these restrictions is to make permanent protection of the natural resources of the property the cornerstone of land use. Reasonable recreational uses consistent with the wildland character of the site (i.e., hiking, biking, equestrian) uses are considered consistent with the conservation purposes of the property.

In keeping with the City's commitment to the conservation of native wildlife and vegetation, 76.5% of the Irish Hills Natural Reserve has been designated as 'Habitat.'

The land-use designations proposed for the IHNR are shown in Fig. 7. Four designations are represented:

Habitat	1046.5 acres	94.3%
Cultural/Historic	3 acres	0.2%
Management/Trail Corridor	47 acres	4.2%
Restoration	13.5 acres	1.3%

Agricultural land is not represented as there is none within the current boundaries of the IHNR that meet the criteria for agricultural land as defined in the *"Conservation Guidelines for Open Space Lands of the City of San Luis Obispo."*

The primary example of the third type of easement is an avigation easement in favor of the County of San Luis Obispo. This easement permits the use of the airspace over IHNR for low-flying aircraft on approaches to, or departures from, the San Luis Obispo County Airport, which is about four miles

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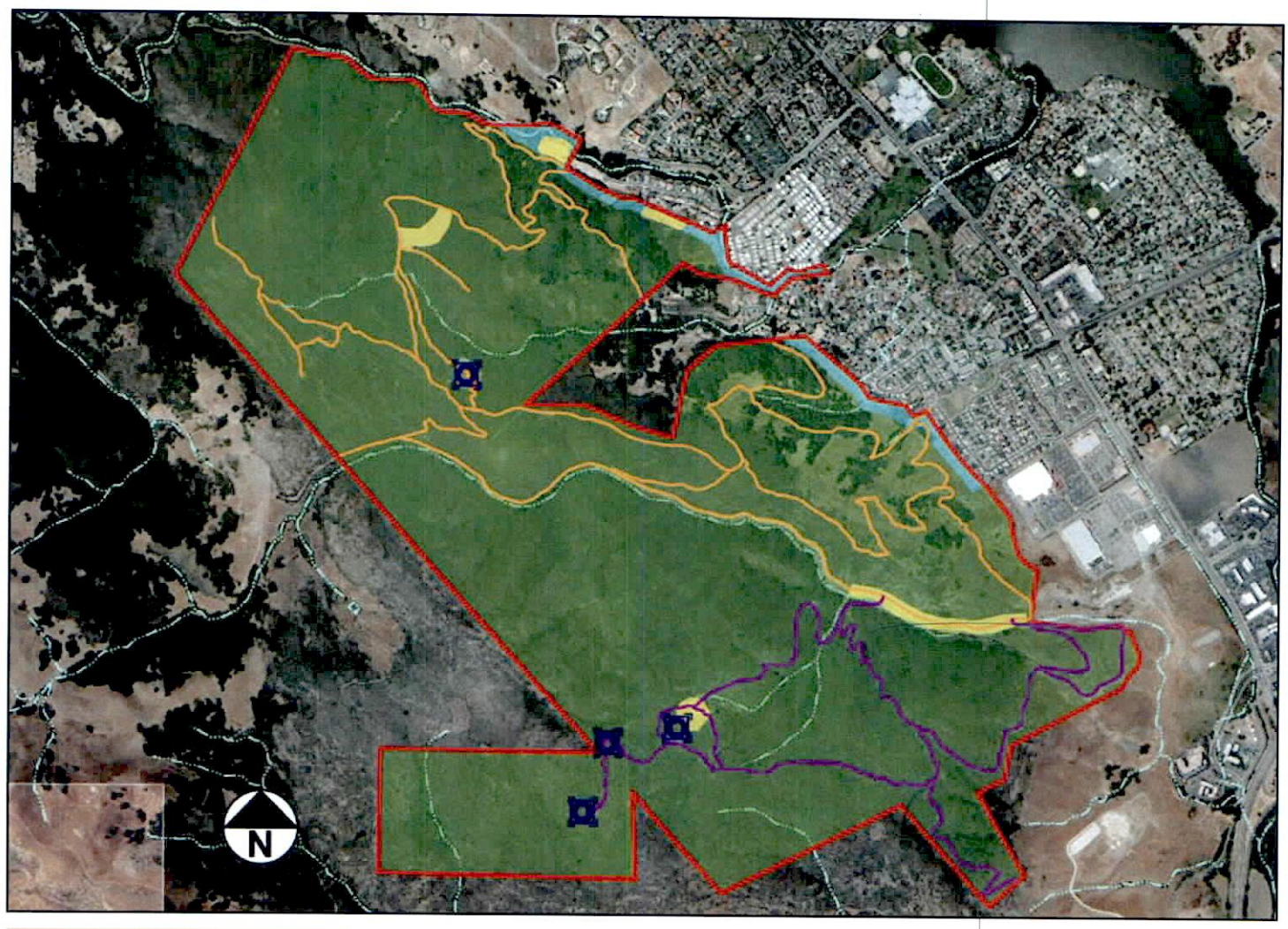


0 0.6 Miles

- IHNR Boundary
- Creeks and Seeps
- Trails
- Proposed Trails
- Management Area
- Habitat Area
- Restoration Ares
- Cultural Area (Mines)

Figure 7.

System Map - Land Use Designations within the Irish Hills Natural Reserve

These tasks will be undertaken over the next 5- to 7-year cycle, to accomplish the stated City goals as well as recommendations from the general public.

to the east of IHNR. It would limit certain urban uses of the land, but given the open space and recreation designation, the easement does not significantly restrict the use of the reserve.

3. Goals & Recommendations

The document "Conservation Guidelines for Open Space Lands of the City of San Luis Obispo" describes management guidelines and policies designed to achieve the stated goals of the Conservation and Open Space Element of the City's General Plan, which was updated in 2006. Among the policies in the Element that are relevant to IHNR are the following:

- To conserve, enhance, and restore natural plant communities; to protect sensitive and endangered plant species and their habitats; and to maintain biodiversity of native plants and animals.

- To provide the public with a safe and pleasing natural environment in which to pursue passive recreational activities, while maintaining the integrity of the resource and minimizing the impact on the wildlife and habitats represented.

- To preserve and restore creeks, wetlands and ephemeral seeps or springs in a natural state, and provide suitable habitat to all native aquatic and riparian species. To minimize the impacts of harmful activities, such as the release of pollutants, while maintaining the creek system as a means of conveying storm water within urban areas.

- To conserve and protect native plant and animal species and enhance their habitats, in order to maintain viable wildlife populations within balanced ecosystems.

- To minimize the use of existing roads as hiking trails by properly planning, designing, and executing the construction of single-track trails in areas where such construction can be done without undue environmental impact

These goals will be achieved by the designation of land use categories within IHNR as described in the "Conservation Guidelines." Designation of land use categories for IHNR is shown on the system map in figure 7.

4. Conservation Plan

The Conservation Plan describes how the City intends to manage IHNR to fulfill adopted City goals and the recommendations of the community for the property. The land use designations proposed for IHNR are shown on the system map (Fig. 7). The general day-to-day management of these areas will be in accordance with the City-adopted document "Conservation Guidelines for Open Space Lands of the City of San Luis Obispo." The conservation plan also describes a series of tasks

to be implemented in order to achieve the recommendations from the general public.

4.1. SYSTEM MAP

94% of IHNR has been designated as 'Habitat.' This figure will increase to approximately 95.4% as restoration projects are completed and the restored land upgraded.

Three large tracts of uninterrupted, wildlife habitat exist in the northwest and southern regions of IHNR (Fig. 7). In the interest of wildlife conservation and the protection of several sensitive species, these areas shall be maintained in their present condition and human intrusion discouraged.

The areas identified as 'Management' include land adjacent to the open space/urban interface lying to the east of IHNR. Portions of these areas may require periodic pruning, mowing, or clearing of vegetation to reduce fuel hazards for adjacent properties, maintain defensible spaces for fire fighting capabilities, and protect power lines traversing the area.

The 'Restoration' areas identified in figure 7 include: two grasslands requiring a program of exotic vegetation removal, one bootleg trail which has been created along a stream bed, exotic plant control near the mine site, and the decommissioning of the remainder of the Froom Creek jeep Road.

4.2. NEEDS ANALYSIS

The following tasks were identified through comments made by the public in community workshops and were incorporated into the updated Conservation Plan to accomplish the stated City goals and recommendations, identified in appendix 2.

To achieve the previously mentioned goals IHNR must be managed in accordance with the City adopted policies described in "Conservation Guidelines for Open Space Lands of the City of San Luis Obispo."

Many of the policies described in "Conservation Guidelines for Open Space Lands of the City of San Luis Obispo" are designed to protect City open space by restricting activities that may negatively impact valuable resources (e.g. prohibition of trail construction in 'Habitat' areas. Implementation of such restrictions requires no active management or changes in prevailing conditions or activities. However, several other policies do require active management and will result in changes of resource conditions or their use. Policies requiring active management are:

4.2.1. Maintenance vegetation thinning will be undertaken in 'Management/Trail Corridor' areas as identified in figure 7. Thinning of native vegetation will only occur when necessary to improve public safety on trails, reduce fuel loads at the urban/open space interface, or as occasional maintenance under power lines.

4.2.2. Erosion control practices will continue to be utilized in 'Trail Corridor' areas and 'Restoration'

Space is to place as eternity is to time.

– Joseph Joubert

areas identified in figure 7. This will involve the implementation of acceptable trail modifications to reduce erosive forces caused by the accumulation of water on the trail. Erosion control measures will also incorporated into the restoration plan for Froom Creek Trail.

4.2.3. Prescribed burning may be utilized as a management tool to reduce vegetative fuel loads in identified 'Management' areas and 'Habitat' areas where these activities can be controlled in extent. Such activities will be conducted in accordance with the Wildfire Preparedness Plan for IHNR (Section 4.3), and shown on figure 8.

4.2.4. Defensible spaces will be maintained at the urban/open space interface in 'Management' areas. The width and location of these spaces will be in accordance with the Wildfire Preparedness Plan (Section 4.3).

4.2.5. All areas of IHNR may be closed to the public during periods of extreme fire hazard or other emergencies.

4.2.6. Hiking; bird watching etc. will be permitted and encouraged in areas designated as 'Management/ Trail Corridors' and 'Cultural/Historic' in Fig. 7. Passive recreation will be discouraged in all other areas. Mountain biking; equestrian activities etc. will only be permitted on designated trails located in 'Management/Trail Corridor' areas identified in Fig. 7. Trails which are susceptible to erosion, pass through sensitive habitat, or are in restoration areas may be closed to active recreational activities.

The current trail system shall be maintained as is, with the option to add a loop should the necessary land be acquired at a future date.

4.2.7. Official trailheads have been established at Prefumo Canyon Road and Madonna Road, as shown in figure 6.

4.2.8. Sections of trail identified as 'Proposed' will be constructed over the next 7 year cycle of this Conservation Plan.

4.2.9. Restoration activities have been completed in six of the seven previously determined 'Restoration' areas identified in the 2003 IHNR Conservation Plan. These included the closure and re-vegetation of degraded sections of the trail network, a program of exotic species removal (e.g. broom [Cytisus] and pampas/jubata grass [Cortaderia], and a program to stabilize an eroding section of Froom Creek Road.

4.2.10. It has been deemed infeasible to allow for livestock grazing within the grasslands in IHNR due primarily to excessive infrastructure cost. The costs associated with the installation and maintenance of fencing, provisions of adequate water, and gates needed to keep cattle within the designated grazing area outweighed the benefits of doing so. Approximately 1 mile of fence was needed to enclose the designated grazing area, at an estimated to cost roughly $20,000 in 2005.

The following additional policies have been and will continue to be implemented to address recommendations made by the public.

4.2.11. As funding and purchasing opportunities arise IHNR will be expanded, with the eventual goal of

The 'Restoration' areas included an abandoned jeep road requiring extensive re-grading to address severe erosion problems, and three sections of trail which are also experiencing excessive erosion.

linking the property by trail with Montana De Oro state park. In addition, the boundaries of IHNR will be expanded if feasible to facilitate the development of a 'loop' trail system originating and terminating at official access points and connecting to the Johnson Ranch Open Space one mile south of IHNR (recommendation 3.5).

4.2.12. An IHNR web link will continue to be posted to the Parks and Recreations website with information about the open space to keep the public informed of the ongoing progress of implementation of the Conservation Plan (recommendations 3.6; 3.8).

4.2.13. A monitoring program shall be implemented to gather data on the intensity of visitor use;

Active fire fighting areas act as a buffer between surrounding urban developments and pristine habitat where heavy equipment and fuel breaks can be utilized to protect life and property from an advancing wildfire.

patterns of visitor use (e.g. hiking; mountain biking; equestrian, etc.); changes in trail width; and population dynamics of the endangered Chorro Creek bog thistle. Monitoring programs will be designed to identify changes in the condition of a given resource. Identification of such changes beyond an acceptable level will result in the implementation of corrective measures. Update: General observations have been and will continue to be made by the Ranger Service as well as City registered volunteers as to the state and needs of trails and these needs will be addressed by the Ranger Service as they arise.

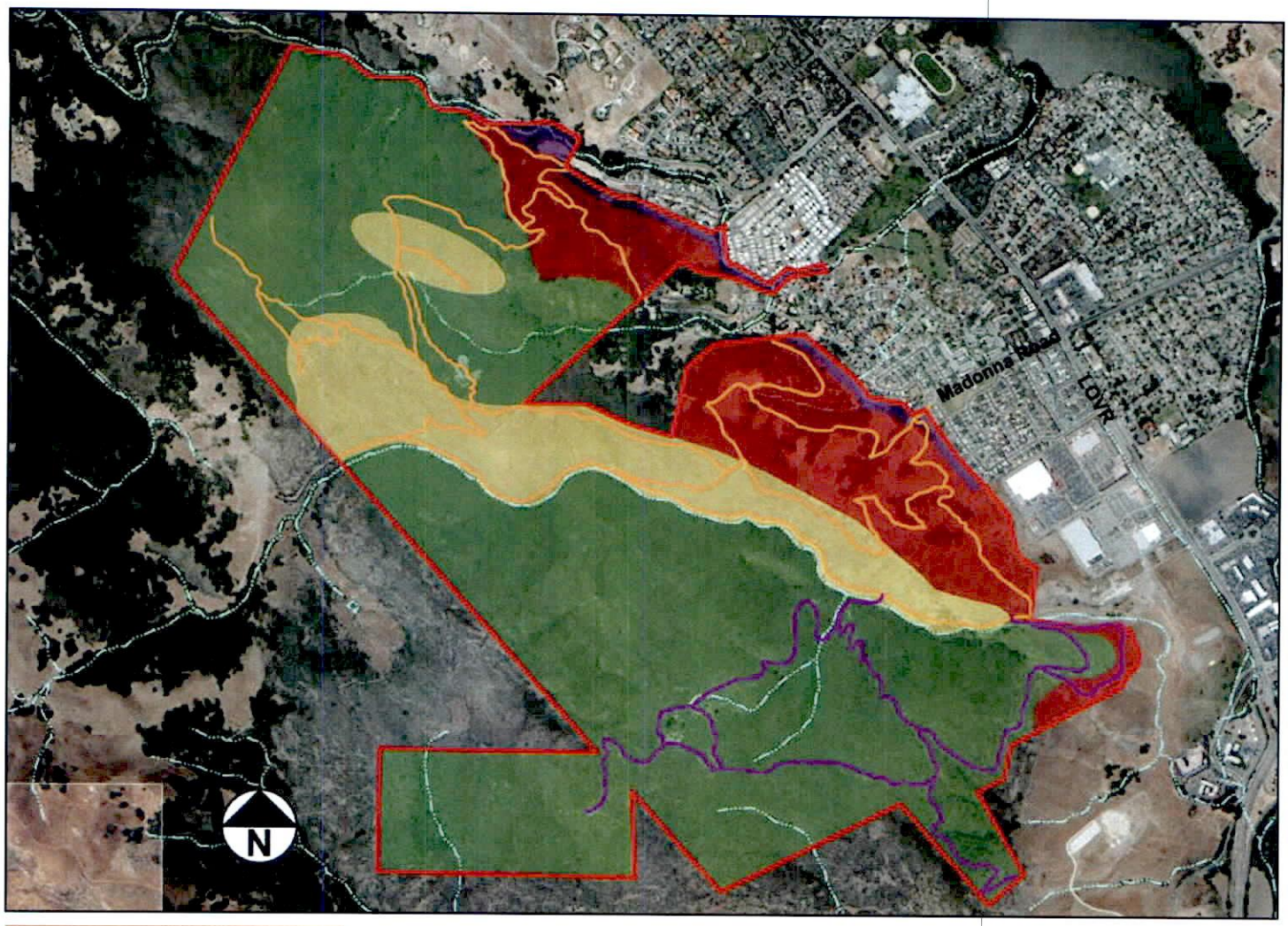
4.2.14. Fire risk warning signs have been and will continue to be posted at official access points to the property from May through October.

4.2.15. The current trail system shall be maintained, with the option to add additional loops should the necessary land be acquired at a future date, or if deemed necessary.

4.2.16. The paved road extending from Sterling Drive will be retained, but the unpaved section shall not be paved as access to IHNR for disabled persons and for emergencies is currently accessible, even closely after rain events. Access via this point will be restricted and gate keys will be available by request to the Parks and Recreation Department (recommendation 3.11).

4.2.17. The trail systems have been and will continue to be mapped and routes identified with trail markers. All signage will be unobtrusive and of a consistent style. Maps of approved routes and access points have been made available at the Madonna trailhead in the form of an informational kiosk, in IHNR brochure, and will be made available at the Prefumo Canyon trailhead in the future.

4.2.18. Vegetation alongside trails will be managed to increase visibility on blind corners and reduce the risk of collisions. Additionally, a code of trail etiquette will be published on IHNR brochure, and at the official trailheads, in addition, "Bell Boxes" have been installed at both the Madonna and Prefumo Canyon trailheads and bells have donated for mountain bike use, in order to notify hikers of their presence upon approach.



0 0.6 Miles

- IHNR Boundary
- Creeks and Seeps
- Trails
- Proposed Trails
- Fuel Management Area
- Active Fire Fighting Area
- Potential Prescribed Burn Area
- Passive Fire Fighting Area

Figure 8.

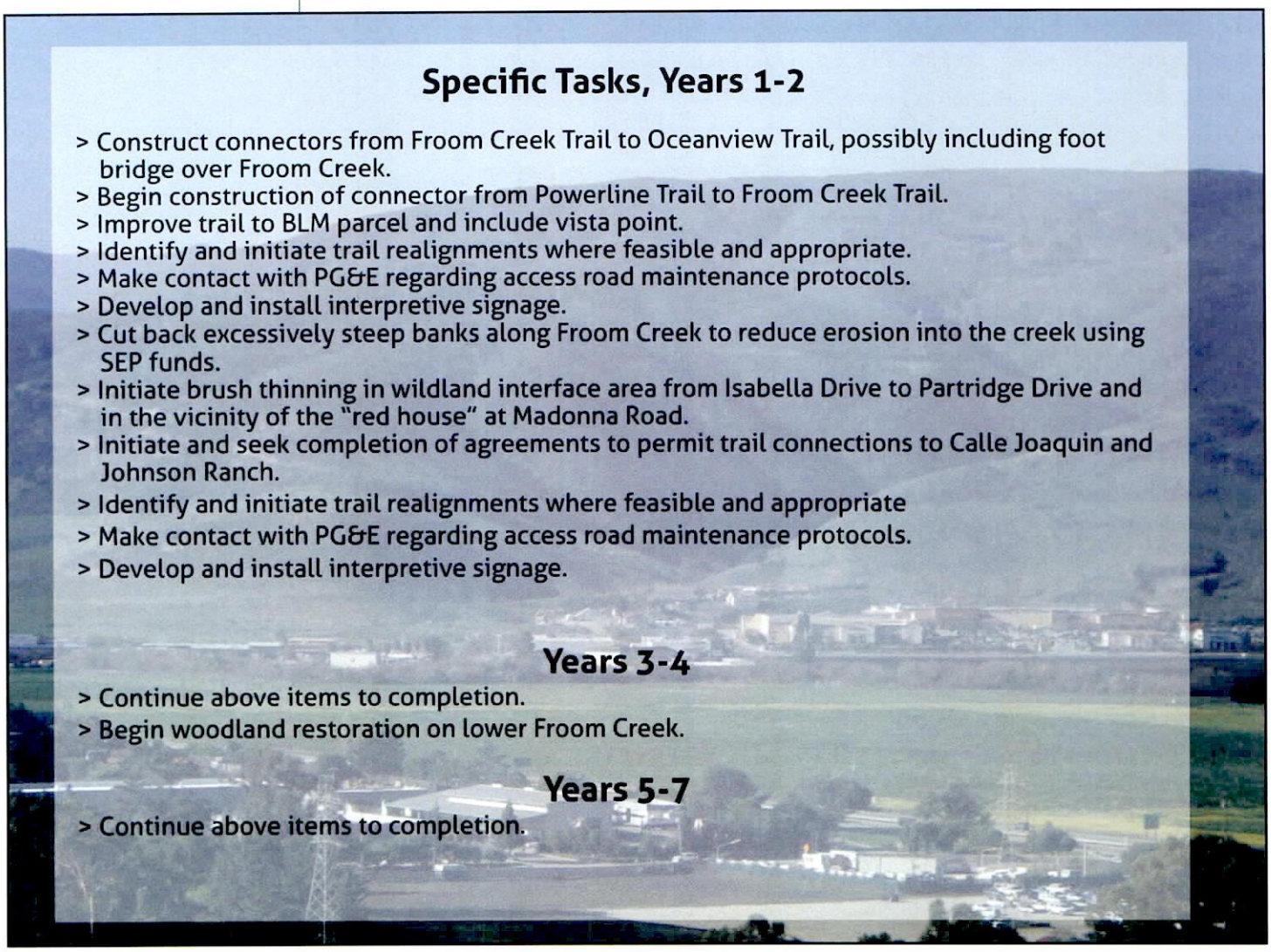
Wildfire Preparedness Plan for the Irish Hills Natural Reserve

4.2.19. Funding in the form of State, federal and private educational grants shall be pursued to provide educational resources on the site. Alternatively, funds may be collected to contribute to a single educational center providing information about the entire open space system planned for in the Laguna Lake Park development plan. Educational resources will be made available via IHNR brochure, and on trailhead signage.

4.2.20. In the interest of public safety the location of all mine openings on IHNR will be identified and fenced off if they constitute a hazard. However, openings will not be completely sealed due to the potential for gas accumulation within the openings and the fact that such areas may represent habitat for sensitive wildlife species such as bats.

4.2.21. No trash cans or toilet facilities will be provided within IHNR. At trailheads, and on all IHNR educational materials, users will be encouraged to adopt the 'pack-in, pack-out' philosophy with regards to garbage and waste. This principal has worked well at other City open spaces in the past.

4.2.22. The City biologist, in conjunction with consultants and students from Cal Poly, will expand the current biological inventory for IHNR. Spe-



Specific Tasks, Years 1-2

> Construct connectors from Froom Creek Trail to Oceanview Trail, possibly including foot bridge over Froom Creek.
> Begin construction of connector from Powerline Trail to Froom Creek Trail.
> Improve trail to BLM parcel and include vista point.
> Identify and initiate trail realignments where feasible and appropriate.
> Make contact with PG&E regarding access road maintenance protocols.
> Develop and install interpretive signage.
> Cut back excessively steep banks along Froom Creek to reduce erosion into the creek using SEP funds.
> Initiate brush thinning in wildland interface area from Isabella Drive to Partridge Drive and in the vicinity of the "red house" at Madonna Road.
> Initiate and seek completion of agreements to permit trail connections to Calle Joaquin and Johnson Ranch.
> Identify and initiate trail realignments where feasible and appropriate
> Make contact with PG&E regarding access road maintenance protocols.
> Develop and install interpretive signage.

Years 3-4

> Continue above items to completion.
> Begin woodland restoration on lower Froom Creek.

Years 5-7

> Continue above items to completion.

cifically, data will be collected on the temporal dynamics of Chorro Creek bog thistle populations; and further identification of invertebrate, amphibian and reptile species.

4.2.23. Ongoing control of Coyote Brush will be performed in identified areas, to ensure that the brush does not take over open meadows where native wild flowers occur. In specific the City will undertake brush thinning/ removal in identified meadows on King Trail, where Coyote Brush is taking over grasslands and where excessive growth can lead to high fuel loads.

4.2.24. Existing access roads will be used as part of the trail system where appropriate. However, steep stretches of such roads will be considered for ancillary, easier gradient trails if such trails can be constructed with limited environmental impact. Existing trails will also be surveyed for their potential for reducing grades.

4.2.25. The City will continue to pursue the acquisition of mechanized trail construction equipment as a more efficient means of expanding its trail network.

4.2.26. When possible the City will abandon and decommission old roads due to their poor trail potential and environmental impact. In particular the City will continue the decommissioning of Froom Creek jeep road.

4.2.27. As opportunities arise the City will expand access points to trails to relieve pressure on existing trailheads.

4.2.28. If possible, connection loop trail may be constructed between dead end trails in order to minimize potential trespassing issues that are foreseen to arise from such trails.

4.2.29. Appropriate fuel management practices will continued to be

performed, along all areas of the Irish Hills Open Space abutting residential areas.

4.2.30. Continue vegetation enhancements at old quarry.

4.2.31. Continue exotic species control efforts at various locations within IHNR. Some exotic species include Castor Bean, Star Thistle, French Broom, and Pampas Grass.

4.2.32. Undertake establishment of "dry riparian" corridor on lower Froom Creek.

4.2.33. Consider grading along certain reaches of Froom Creek to improve flow conditions (i.e. uncover buried portions of creek) and reduce further potential for sediment entry from the decommissioned road.

4.2.34. Decommission BMX jumps and track behind Costco and along trails

4.2.35. Continue efforts to close bootleg trails as problems arise.

4.2.36. As deemed necessary, the construction of a connection loop trail may be constructed between the top of Froom Road and the BLM property to minimize potential trespassing issues that are foreseen to arise from dead end trails.

4.3 WILDFIRE PREPAREDNESS PLAN

"Conservation Guidelines for Open Space Lands of the City of San Luis Obispo" recommend that a Wildfire Preparedness Plan be developed for City open space lands. After consultation with the City's fire department, four areas have been identified that will receive specific treatment with respect to fighting wildfires and prescribed burning (Fig. 8). The process of identification of these areas takes into account a number of factors including: the topography of the land; proximity to urban developments; vegetation type; and the presence of sensitive species. The areas are:

Potential prescribed burning area – areas identified as supporting a high load of vegetative fuel that could be safely reduced by burning under specified weather and wind conditions.

Fuel management area – areas adjacent to the urban/wildland interface that could not be safely burned in a controlled manner. These areas will require active pruning, mowing and/or other active management of the vegetation to reduce fuel loads adjacent to developed areas.

Active fire fighting area - areas acting as a buffer between the surrounding urban developments and the pristine habitat lying to the west of IHNR. Active fire fighting techniques such as the use of heavy machinery and cutting of fuel breaks can be utilized to protect life and property from an advancing wildfire. These areas have also been identified because the physical resources and topography are conducive to successful restoration efforts following a wildfire.

Passive (habitat sensitive) fire fighting area – areas of important wildlife

habitat, mostly on steep hillsides and thin serpentine-derived soils. These areas are also somewhat removed from urban development. They are particularly sensitive to aggressive fire fighting techniques such as the use of heavy machinery. Therefore, wherever practicable, fire-fighting strategies in these areas should be limited to low impact methods. The City will conduct annual mowing in grassland areas behind homes on Isabella, Partridge, Eto, and DeVaul Ranch Drives at a width of 20-30 feet. The City will also continue to mow the meadow at the North end of Isabella Street on an annual basis as well as conduct regular (every 5+ years) brush abatement in the previously stated areas behind homes up to a distance of 200 feet from homes and as deemed necessary.

4.4 IMPLEMENTATION

The priority and order in which various tasks will implemented is detailed in the table identified as "Specific Tasks, Tears 1-2" on page 28.

5. Fiscal Statement

The fiscal impact of the adoption of the Conservation Plan is expected to be minor. It will consist of routine patrol and monitoring of the property at essentially the same scale as occurs now, and implementation of several capital improvements.
These include:

5.1 Continued decommissioning of the Froom Creek jeep road and associated activity.

5.2 Construction of several new trail connections.

5.3 Closure and revegetation of unsuitable roads and trails.

5.4 Exotic plant removal or control along Froom Creek, the mine sites, and adjacent to urban areas
At this time, ongoing open space trail maintenance costs are not presently budgeted for, they are however completed on an as needed basis by the Parks and Recreation Ranger and his part-time temporary staff. With the new proposed projects associated with the development of the trails in Froom Ranch there is some minor funding anticipated is anticipated in 2011-2012. The first of the above projects is the most costly and will require specific funding to construct.

The City Council is expected to allocate an additional $85,000 during fiscal 2011-2013 to provide funding support for the other project types listed. This funding support will primarily be in the form of funds for materials, funding for part time temporary ranger hours, and for minor use of contractors where necessary.

The anticipated trail projects will mostly be constructed using volunteer labor, coordinated by Ranger Services; therefore no formal timetable is set for their completion. This expansion of the trail system results in an increase in responsibilities for the City's Natural Resources and Ranger staffs and equipment

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> City of San Luis Obispo, Natural Resources Program (2002) ***Conservation Guidelines for Open Space Lands of the City of San Luis Obispo*** 25 pp

needs, and some increase especially of the latter may become necessary in the future.

The Wildfire Preparedness Plan has certain maintenance costs associated with regular (annual in some cases, every few years in others) mowing or pruning of vegetation to ensure an acceptable level of fuel load management between IHNR and adjacent developed properties. Larger scale efforts such as prescribed burning or significant vegetation manipulation (such as meadow restoration) will be pursued as resources become available.

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Appendix 1.

Soil Type Descriptions for the Irish Hills Natural Reserve

LOS OSOS loams have developed on 13.5 acres of the IHNR in the eastern corner of the property. They occur above the sandstone and shale in the mélange (Franciscan Formation). Los Osos clayloams appear dark grayish brown and fi ne textured at the surface. Underneath they are primarily brown to yellowish brown heavy clay loam. They have relatively slow permeability, are well drained, and have medium runoff. The effective rooting depth is 20 to 40 inches. The pH is slightly to medium acid to neutral. Vegetation is mostly annual grasses and forbs with some perennial grasses, coastal sagebrush (Artemisia californica), and coast live oak (Quercus agrifolia).

DIABLO complex soils are found in association with Los Osos soils on 32 acres on sloping land to the east of the IHNR. They are formed from weathered sandstone, shale, and conglomerate. The surface layers include brown gravelly loam underneath undecomposed leaves. Beneath is a light yellowish brown gravelly loam over bedrock. Maymen sandy loams have relatively slow permeability, are well drained, and have medium runoff. The effective rooting depth is approximately 15 inches, with a few large woody roots that grow through the rocky substrate to 60 inches in depth. Maymen soils are medium to strongly acidic. Vegetation is usually open stands of chaparral consisting of chamise (Adenostoma fasciculatum), scrub oak (Quercus berberidifolia), and, in protected sites, scattered coast live oak (Quercus agrifolia).

CIBO clays are found on 7.2 acres adjacent to Prefumo Creek in the northern region of the IHNR. They develop primarily from shale and occur above Toro and Mélange. The Cibo clays are dark brown cobbly clays over brown to dark brown heavy clay loam or clay. They develop through the weathering of basic igneous rocks. They have slow permeability, are well drained, and have medium to very rapid runoff. The effective rooting depth ranges from 20 to 40 inches. Cibo clays can be slightly acid to mildly alkaline. Cover is usually annual grasses and forbs.

GAVIOTA soils are found on 20.5 acres in the northern/central region of the IHNR. They are a brown to dark grayish brown fi ne sandy loam, developed from light yellowish brown sandstone. They have moderately rapid permeability, are well drained, and have medium to rapid runoff. Their effective rooting depth is from six to 20 inches. They are medium acid to neutral. Uncultivated areas have a cover of annual grasses and forbs. Steeper areas usually have a cover of brush.

OBISPO-ROCK OUTCROP is the most common substrate type within the IHNR, and is found on 600.5 acres.

These often support soils which are very dark gray at the surface. Beneath the top layer is black, yellowish brown, or olive colored serpentinite. This soil type has very slow permeability. Obispo rock-outcrops are very well drained and have rapid to very rapid runoff. Their effective rooting depth is between eight and 20 inches. Their pH ranges from moderately alkaline to neutral. The sparse vegetative cover on Obispo-rock outcrops and associated soils consists of scattered shrubs such as leather oak (Quercus durata), toyon (Heteromeles arbutifolia), and sagebrush (Artemisia fasciculatum), as well as grasses and forbs.

Henneke soils and clays associated with Obispo-rock outcrops often have a half-inch covering of fresh or partly decomposed leather oak leaf litter mixed with dark reddish brown very gravelly loam. Beneath this surface layer is brown, very cobbly or gravelly clay loam or clay over serpentinite. The permeability of these soils is moderately slow. They are somewhat excessively drained. They have an effective rooting depth of approximately ten to 20 inches. Their pH ranges from mildly to moderately alkaline.

LODO is a grayish brown to very dark grayish brown shaly clay loam over dark grayish brown hard shale. It has moderate permeability, is somewhat excessively drained, and has medium to rapid runoff. Lodo soils are found on 28.5 acres within the IHNR. The effective rooting depth is from four to 20 inches. It is slightly acid. Native vegetation is primarily chaparral, with some buckwheat (Eriogonum fasciculatum) and scattered oaks (Quercus spp.). Naturalized cover includes annual grasses and forbs.

SALINAS soils are typically deep and well drained, formed in a luvium or weathered from sandstone and shale. Salinas soils are found on alluvial plains, fans, and terraces and have slopes of 0 to 9 percent. Within the IHNR Salinas soils are found on 7.3 acres adjacent to Prefumo Creek to the north of the property. They are found at elevations of 50 to 2,000 feet. The climate is dry subhumid mesothermal with cool to warm rainless summers with some fog and cool moist winters. Mean annual precipitation is 12 to 20 inches. They are well drained soils, with slow to medium runoff and moderately slow permeability.

CONCEPCION soils are deep and moderately well drained, formed from weakly consolidated stratifi ed alluvium or wind-deposited sandy material. Concepcion soils found on terraces adjacent to, or within several miles of the Pacifi c Ocean and are found on just 5.2 acres adjacent to Prefumo Creek within the IHNR. Slopes are 0 to 50 percent. The mean annual precipitation is about 17 inches and the mean annual air temperature is about 60 degrees Fahrenheit. Concepcion soils are on nearly level to steep terraces adjacent at elevations of is 40 to 200 feet. The climate is subhumid mesothermal with cool, rainless, but foggy summers, and cool moist winters.

Obispo-Rock Outcrop *is the most common substrate type within IHNR,*

Appendix 2.

Public Comment for the Irish Hills Natural Reserve

2003 Public Comment

The Conservation Plan aims to accommodate the desires and wishes of the general public for the IHNR, as well as addressing the goals of the City's Open Space Element. The specific recommendations detailed below are the result of input from members of the public during a workshop, and suggestions from the City Planning Commission, and the Parks and Recreation Commission.

The IHNR should be expanded when possible, with the eventual goal of linking City-owned open space with the State-owned Montana de Oro state park. Linkages (trails) at the perimeter of the property should be preserved in anticipation of this expansion. Update: These goals have continued to be considerations of The City and will continue to be worked towards.

All documentation relating to the management of the IHNR should be subject to public review and should be readily available via the City's website, except when the information is privileged or sensitive.

The status of the resources represented on the IHNR should be monitored using the principals of 'Limits of Acceptable Change' described in "Conservation Guidelines for Open Space Lands of the City of San Luis Obispo." Where possible, volunteer groups should be used to help with the monitoring program. Long-term trends in the population dynamics of sensitive species should be monitored.

Warnings of the level of fire risk should be posted at trailheads during the summer months.

Mountain biking within the IHNR should be permitted, and the local mountain bike community encouraged to be actively involved in the maintenance of the trail system.

The extent of the trail system on the IHNR should not be reduced from its current size; a ridge loop trail should eventually be established. *[Update: With this conservation Plan Update several miles of new trails will be added to the Irish Hills Natural Reserve.]*

The paved road originating at Sterling Drive and extending up to the old mine site should be maintained and made available to provide wheelchair access. *[Update: This has been deemed unnecessary because access to the top of Irish Hills is easily accomplished in a vehicle, even shortly after rain events. Furthermore the environmental impacts of*

expanding and paving the 200-yard section of steep hillside would cause unnecessary damage.]

Signage on the IHNR should be small, unobtrusive and of a consistent style. The use of fencing and flagging should be kept to a minimum, and a 'natural' look maintained wherever possible.

The use of the IHNR for equestrian and mountain biking activities should be monitored closely, and such activities prohibited if an unacceptable level of damage to the resource is being caused. Update: *[Update: Because no current equestrian groups have expressed interest in the Irish Hills area nor have equestrian users been observed by The Rangers or other user groups, within Irish Hills no further restrictions have been made.]*

In the interest of safety, measures should be explored to minimize potential conflicts between mountain bike users and hikers (e.g. elimination of blind corners; pruning of vegetation; segregation of trail uses, etc.). *[Update: Additional signage has been put at all trailheads to Irish Hills, educating users on trail etiquette and "bike "Bell Boxes" have also been installed with bells, donated by local organizations, which can be attached to bicycles in order to notify hikers of their proximity.]*

Educational and interpretive signage should be provided to increase the public awareness of the value of the resources on the property (e.g. serpentine soils and rare plants). *[Update: Signage has been added to the Madonna trailhead and is proposed for the Prefumo Canyon trailhead as well.]*

Mountain bike access should be prohibited/discouraged during, and immediately following, periods of heavy rain when trails are susceptible to erosion.

Entrances to disused mine shafts should be marked and barred in the interest of public safety. However, shafts should not be completely sealed as they may provide habitat for wildlife such as bats. Other areas, which may be a hazard to public safety, should be identified and posted.

Grasslands should be preserved. Livestock grazing should only be permitted in areas able to withstand such pressure without damage to the resource. Grazing activities will be subject to the conditions of a City– approved grazing plan. *[Update: It has been deemed unfeasible to allow for livestock grazing within the grasslands in the IHNR due to several reasons. The negative environmental impacts of grazing within the IHNR were too high. The costs associated with the installation and maintenance of fencing, and gates needed to keep cattle within the designated grazing area outweighed the benefits of doing so. Approximately 1 mile of fence was needed to enclose the designated grazing area, at an estimated to cost roughly $20,000 in 2005.]*

Facilities such as trash cans and toilets should not be provided as this will add to the maintenance costs of the open space.

Inventory of natural resources on the IHNR should continue. Additional information on grasses, amphibian, and invertebrate populations is required.

2011 Public Comment

The Conservation Plan aims to accommodate the desires and wishes of the general public for the IHNR, as well as addressing the goals of the City's Open Space Element. The specific recommendations detailed below are the result of input from members of the public during a workshop, and suggestions from the City Planning Commission, and the Parks and Recreation Commission.

Active removal of Coyote Brush should be followed to mitigate for the brushes removal which used to occur when grazing was practiced in the area to ensure that the Mariposa Lily remains prevalent in the area.

Whenever possible and economically feasible the City will not use existing fire roads or old PG&E roads as trails as they tend to erode quickly and require more maintenance than single track trails.

The City will pursue the acquisition of mechanized machinery in order to build more sustainable trails in a timelier manner.

When possible the City should abandon and decommission old road trails due to their poor trail potential and environmental impact.

Access points to trails should be expanded to relieve pressure on existing trailheads.

Fire management practices should continued, especially near residences.

If mine faces pose a threat to hikers they should be fenced off or sealed.

Resource health issues should have first priority over other uses, particularly when it comes to rerouting or installing new trails.

Give special attention to continued improvements to Froom Creek, Prefumo Creek and other unnamed waterways and springs, especially in regard to health of aquatic and riparian resources.

Continue to utilize concept of "levels of acceptable change" in monitoring resource and trail condition.

Prepare a grazing plan, or prohibit grazing.

Protect visual resources.

APPENDIX 3.

Updated Biological Inventory

The following species have been identified as potentially occurring on, or directly adjacent to, the Irish Hills Ecological Area open space. The references in the last column are the City report that cites the relevant information. Entries in bold indicate species have been positively identified by City staff, or a staff appointed biologist, as occurring on the Irish Hills Ecological Area open space.

Trees

Scientific Name	Common Name	Comments	Status	Source
Ailanthus altissimus	**Tree of heaven, Simaroubaceae**	**Introduced**		**3, 4**
Cupressus macrocarpa	**Monterey cypress, Cupressaceae**	**Introduced to SLO**		**1, 4**
Eucalyptus globulus	**Blue gum, Myrtaceae**	**Introduced**		**1, 4**
Heteromeles arbutifolia	**Toyon, Rosaceae**	**Native**		**1, 4**
Phoenix dactylifera	**Date palm, Arecaceae**	**Introduced**		**3, 4**
***Pinus* spp.**	**Unidentified pine**			**4**
Platanus racemosa	**Sycamore, Platanaceae**	**Native**		**1, 4**
Pyrus communis	**Pear, Rosaceae**	**Persisting from cultivation**		**1, 4**
Quercus agrifolia	**Coast live oak, Fagaceae**	**Native**		**1, 4**
Salix lasiolepis	**Arroyo willow, Salicaceae,**	**Native**		**1, 4**
Salix coulteri	**Coulter willow, Salicaceae**	**Native**		**1, 4**
Umbellularia californica	**California bay-laurel, Lauraceae**	**Native**		**1, 4**

Shrubs

Scientific Name	Common Name	Comments	Status	Source
Adenostoma fasciculatum	**Chamise, Rosaceae**	**Native**		**1, 4**
Arctostaphylos obispoensis	**Obispo Manzanita, Ericaceae**	**Native**		**1, 4**
Artemisia californica	**California sagebrush, Asteraceae**	**Native**		**1, 4**
Baccharis pilularis	**Coyote bush, Asteraceae**	**Native**		**1, 4**
Baccharis salicifolia	Mule fat, Asteraceae	Native		1, 4
Ceanothus cuneatus	**Buckbrush, Rhamnaceae**	**Native**		**1, 4**
Ceanothus spinosus	**Greenbark ceanothus, Rhamnaceae**	**Native**		**1, 4**
Cercocarpus betuloides	Mountain mahogany, Rosaceae	Native		3, 4
Clematis ligusticifolia	Virgin's bower, Ranunculaceae	Native		1, 4
Cotoneaster pannosa	Cotoneaster, Rosaceae	Escaped from cultivation		1
Dendromecon rigida	**Bush poppy, Papaveraceae,**	**Native**		**1, 4**
Eriogonum elongatum	Tall buckwheat, Polygonaceae	Native		3
Eriogonum parvifoluim	Coast buckwheat, Polygonaceae	Native		
Eriophyllum confertiflorum	**Golden-yarrow, Asteraceae**	**Native**		**1, 4**
Galium porrigens	**Climbing bedstraw, Rubiaceae**	**Native**		**1, 4**
Genista monspessulana	**French broom, Fabaceae**	**Introduced**		**1, 4**
Hazardia squarrosa	Saw-toothed goldenbush, Asteraceae,	Native		1, 4
Heteromeles arbutifolia	**Toyon, Rosaceae**	**Native**		**1, 4**
Holodiscus discolor	Ocean spray, Rosaceae	Native		1, 4
Lonicera hispidula	**Honeysuckle, Caprifoliaceae,**	**Native**		**1, 4**
Lotus scoparius	**Deerweed, Fabaceae**	**Native**		**1, 4**
Mahonia pinnata	**Barberry, Berberidaceae**	**Native**		**4**
Marrubium vulgare	Horehound, Lamiaceae	Introduced		3, 4
Mimulus aurantiacus	**Bush monkeyflower, Scrophulariaceae**	**Native**		**1, 4**
Myoporum laetum	Myoporum, Myoporaceae	Escaped from cultivation		1, 4
Osmaronia cerasiformis	**Osoberry, Rosaceae**	**Native**		**4**

Pickeringia montana	**Chaparral pea, Fabaceae**	**Native**		**1, 4**
Prunus ilicifolia	Holly-leaved cherry, Rosaceae	Native		3, 4
Quercus berberidifolia	Scrub oak, Fagaceae	Native		3
Quercus durata	**Leather oak, Fagaceae**	**Native**		**1, 4**
Rhamnus californica	**Coffee-berry, Rhamnaceae**	**Native**		**1, 4**
Rhamnus crocea	**Redberry, Rhamnaceae**	**Native**		**1, 4**
Ribes malvaceum	**Chaparral currant, Grossulariaceae**	**Native**		**1, 4**
Ribes speciosum	**Fuchsia-flowered gooseberry, Grossulariariaceae**	**Native**		**1, 4**
Rosa californica	**Rose, Rosaceae**	**Native**		**1, 4**
Rubus procerus	Himalaya blackberry, Rosaceae	Introduced		1, 4
Rubus ursinus	**California blackberry, Rosaceae**	**Native**		**1, 4**
Salix lasiolepis	**Arroyo willow, Salicaceae**	**Native**		**1, 4**
Salvia mellifera	**Black sage, Lamiaceae,**	**Native**		**1, 4**
Sambucus mexicana	**Elderberry, Caprifoliaceae**	**Native**		**1, 4**
Symphoricarpus albus	Snowberry, Caprifoliaceae	Native		1
Symphoricarpos mollis	Snowberry, Caprifoliaceae	Native		1
Toxicodendron diversilobum,	**Poison-oak, Anacardiaceae**	**Native**		**1, 4**
Yucca whipplei	**Yucca, Liliaceae**	**Native**		**1, 4**

Herbs

Scientific Name	***Common Name***	***Comments***	***Status***	***Source***
Achillea millefolium	**Yarrow, Asteraceae**	**Native**		**1, 4**
Acourtia microcephala	Sacapellote, Asteraceae	Native		3
Acroptilon repens	Russian knapweed, Asteraceae	Introduced		3
Adiantum jordanii	**Maidenhair fern, Pteridaceae**	**Native**		**1, 4**
Agoseris grandiflora	**Mountain dandelion, Asteraceae**	**Native**		**1, 4**
Agrostis pallens	**Bent grass, Poaceae**	**Native**		**1, 4**
Agrostis viridis	Water bent grass, Poaceae	Introduced		1
Aira caryophyllea	**Hairgrass, Poaceae**	**Introduced**		**1, 4**
Allium lacunosum	**Onion, Liliaceae**	**Native**		**1, 4**
Amaranthus albus	Amaranth, Amaranthaceae	Introduced		1
Anagallis arvensis	**Scarlet pimpernel, Primulaceae**	**Introduced**		**1, 3, 4**
Anaphalis margaritacea	**Pearly everlasting, Asteraceae**	**Native**		**1, 4**
Anthemis cotula,	Mayweed Asteraceae	Introduced		1, 3
Aquilegia formosa	**Crimson columbine**	**Native**		**4**
Arctostaphylos morroensis	Morro manzanita	Native	List 1B	2, 4
Artemisia douglasiana	**Mugwort, Asteraceae,**	**Native**		**1, 3, 4**
Asclepias fascicularis	Milkweed, Asclepiadaceae,	Native		1
Asparagus officinalis	Garden asparagus, Liliaceae	Introduced		3
Aster chilensis	Aster, Asteraceae	Native		1, 3, 4
Aster radulinus	**Aster, Asteraceae**	**Native**		**1, 3, 4**
Astragalus curtipes	Locoweed, Fabaceac	Native		3
Avena barbata	**Slender wild oats, Poaceae**	**Introduced**		**1, 3, 4**
Avena fatua	**Common wild oats, Poaceae**	**Introduced**		**1, 3, 4**
Avena sativa	Cultivated oats, Poaceae	Introduced		3
Baccharis douglasii	Marsh baccharis, Asteraceae	Native		3, 4
Bloomeria crocea	**Golden stars, Liliaceae,**	**Native**		**1, 3, 4**
Brachypodium distachyon	**False brome grass, Poacea,**	**Introduced**		**1, 3, 4**
Brassica nigra	Black mustard, Brassicaceae	Introduced		1, 3, 4
Briza minor	Little quaking grass, Poaceae	Introduced		1, 4
Bromus carinatus	Brome grass, Poaceae	Native		3, 4
Bromus catharticus	Rescue grass, Poaceae	Introduced		3
Bromus diandrus	**Ripgut brome, Poaceae**	**Introduced**		**1, 3, 4**

Bromus hordeaceus	**Soft chess brome grass, Poaceae**	**Introduced**		**1, 3, 4**
Bromus madritensis ssp. madritensis,	Spanish brome, Poaceae,	Introduced		1
Bromus madritensis ssp. Rubens	Red brome, Poaceae	Introduced		1
Bromus sp	Perennial brome, Poaceae	Native		1
Calochortus albus	**Fairy lantern, Liliaceae**	**Native**		**1, 3, 4**
Calochortus argillosus	Adobe mariposa lily, Liliaceae	Native		1, 3
Calochortus clavatus var. clavatus	**Club-haired mariposa lily, Liliaceae**	**Native**		**1, 3, 4**
Calochortus obispoensis	**San Luis mariposa lily, Liliaceae**	**Native**		**1, 4**
Calystegia macrostegia	**Wild morning glory, Convolvulaceae**	**Native**		**1, 3, 4**
Calystegia subacaulis var. episcopalism	**San Luis Obispo County morning glory, Convolvulaceae,**	**Native**		**1, 3, 4**
Capsella bursa-pastoris	Shepherd's purse, Brassicaceae	Introduced		1, 4
Cardamine oligosperma	Bittergrass, Brassicaceae	Native		3
Carduus pycnocephalus	**Italian thistle, Asteraceae**	**Introduced**		**1, 3, 4**
Carex obispoensis	**San Luis Obispo sedge, Cyperaceae**	**Native**	**List 1B**	**1, 2, 3, 4**
Carex senta	Sedge, Cyperaceae	Native		1, 4
Carex subfusca	Sedge, Cyperaceae	Native		1
Castilleja affinis ssp. Affinis	**Indian paintbrush, Scrophulariaceae**	**Native**		**1, 3, 4**
Centaurea calcitrapa	Purple star thistle, Asteraceae	Introduced		3, 4
Centaurea melitensis	Tocolote, Asteraceae	Introduced		1, 3, 4
Centaurea solstitialis	**Yellow star-thistle, Asteraceae**	**Introduced**		**1, 3, 4**
Cerastium glomeratum	**Mouse-ear chickweed, Caryophyllaceae**	**Introduced**		**1, 4**
Chamomilla suaveolens	Pineapple weed, Asteraceae	Introduced		1, 3, 4
Chlorogalum pomeridianum ssp. Pomeridianum	**Soap plant, Liliaceae**	**Native**		**1, 4**
Chondrilla juncea	Skeleton weed, Asteraceae	Introduced		3
Chorizanthe breweri	**Brewer's spineflower, Polygonaceae**	**Native**	**List 1B**	**1, 2, 3, 4**
Chorizanthe palmeri	Palmer's spineflower, Polygonaceae	Native		3
Cichrium intybus	**Chicory, Asteraceae**	**Introduced**		**3, 4**
Cirsium brevistylum	**Indian thistle, Asteraceae**	**Native**		**1, 4**
Cirsium fontinale var. obispoense	**Chorro creek bog thistle**	**Native**	**List 1B**	**2, 4**
Cirsium vulgare	Bull thistle, Asteraceae	Introduced		1, 3, 4
Clarkia purpures ssp. quadrivulnera	Wine cups, Onagraceae	Native		3, 4
Conium maculatum	Poison hemlock, Apiaceae	Introduced		1, 4
Convolvulus arvensis	Bindweed, Convolvulaceae	Introduced		1, 3, 4
Conyza bonariensis	Conyza	Introduced		3
Conyza canadensis	Horseweed, Asteraceae	Introduced		1, 4
Cordylanthus rigidus	Bird's beak, Scrophulariaceae	Native		1, 3
Crassula cannata	Pygmy weed, Crassulaceae	Native		1
Cryptantha clevelandii	**Cryptantha, Boraginaceae**	**Native**		**1, 3, 4**
Cynodon dactylon	Bermuda grass, Poaceae	Introduced		1, 3, 4
Cyperus eragrostis	Umbrella sedge, Cyperaceae	Native		1, 3, 4
Cyperus involucratus	**Umbrella sedge, Cyperaceae**	**Introduced**		**1, 4**
Dactylis glomerata	Orchard grass, Poaceae	Introduced		1, 4
Danthonia californica	**Oatgrass, Poaceae**	**Native**		**1, 3, 4**
Datura stramonium	Jimson weed, Solanaceae	Introduced		1
Daucus carota	Carrot, Apiaceae	Introduced		3

Daucus pusillus	Wild carrot, Apiaceae	Native		1, 3, 4
Delphinium parryi	Larkspur, Ranunculaceae	Native		3, 4
Deschampsia elongata	Hair grass, Poaceae	Native		1
Dimorphotheca sinuate	African daisy, Asteraceae	Escaped from cultivation		1
Dipsacus sativus	Teasel, Dipsacaceae	Introduced		1, 4
Dryopteris arguta	**Wood fern, Dryopteridaceae**	**Native**		**1, 3, 4**
Dudleya abramsii	San Luis Obispo dudleya, Crassulaceae	Native		3
Dudleya bettinae	San Luis serpentine dudleya, Crassulaceae	Native	List 1B	2
Dudleya blochmaniae	Blochman's dudleys, Crassulaceae	Native		3
Dudleya lanceolata	Dudleya, Crassulaceae	Native		1, 4
Eleocharis macrostachya	**Spike-rush, Cyperaceae**	**Native**		**1, 4**
Elymus elymoides	**Squirreltail grass, Poaceae**	**Native**		**1, 3, 4**
Elymus glaucus	**Blue wild rye, Poaceae**	**Native**		**1, 3, 4**
Epilobium brachycarpum	Annual willow-herb, Onagraceae	Native		3
Epilobium canum	California-fuchsia, Onagraceae	Native		1, 3
Equisetum telmateia	Giant horsetail, Equisetaceae	Native		1, 4
Eremocarpus setigerus,	Turkey mullein, Euphorbiaceae	Native		1, 4
Erigeron foliusus var. foliosus	Fleabane daisy, Asteraceae	Native		1, 3
Erodium botrys	Storkbill filaree, Geraniabeae	Introduced		3, 4
Erodium cicutarium	Redstem filaree, Geraniaceae	Introduced		1, 3, 4
Erodiun moschatum	Green-stem filaree, Geraniaceae	Introduced		3, 4
Eschscholzia californica	**California poppy, Papaveraceae**	**Native**		**1, 3, 4**
Euphorbia peplus	Petty spurge, Euphorbiaceae	Introduced		1, 4
Euphorbia spathulata	Spurge, Euphorbiaceae	Native		1, 3
Filago californica	Herba impia, Asteraceae	Native		1, 3
Filago gallica	Herba impia, Asteraceae	Introduced		1
Foeniculum vulgare	Fennel, Apiaceae	Introduced		1, 3, 4
Fritillaria biflora	**Chocolate bells, Liliaceae**	**Native**		**1, 3, 4**
Fritillaria viridea	San Benito fritillary	Native	List 1B	2
Fragaria vesca	Strawberry, Rosaceae	Native		1, 4
Galium andrewsonii	Prickly bedstraw, Rubiaceae	Native		1, 3
Galium californicum	California bedstraw, Rubiaceae	Native		1, 3, 4
Galium porrigens	Climbing bedstraw, Rubiaceae	Native		3
Gastridium ventricosum	Nit grass, Poaceae	Introduced		1, 3
Geranium dissectum	Annual geranium, Geraniaceae	Introduced		1, 3
Gilia achilleifolia	Gilia, Polemoniaceae	Native		3
Gnaphalium bicolor	Everlasting, Asteraceae	Native		1
Gnaphalium californicum	**Everlasting, Asteraceae**	**Native**		**1, 3, 4**
Gnaphalium canescens	**Everlasting, Asteraceae**	**Native**		**1, 4**
Gnaphalium luteoalbum	Cudweed, Asteraceae	Introduced		1, 3
Gnaphalium purpureum	**Everlasting, Asteraceae**	**Native**		**1, 4**
Gnaphalium stramineum	**Everlasting, Asteraceae**	**Introduced**		**1, 4**
Grindelia hirsutula	Gum plant, Asteraceae	Native		3
Hainardia cylindrical				1
Hazardia squarrosa	Saw-toothed goldenbush, Asteraceae	Native		3, 4
Helenium puberulum	**Sneezeweed, Asteraceae**	**Native**		**1, 3, 4**
Helianthus annuus	Sunflower, Asteraceae	Native		3
Heliotropium curassavicum	Heliotrope, Boraginaceae	Native		3
Hemizonia congesta ssp. luzuilfolia	**Hayfield tarweed, Asteraceae**	**Native**		**1, 3, 4**
Hemizonia parryi	Congdon's tarplant, Asteraceae	Native		3

Hesperevax sparsiflora	Hesperevax, Asteraceae	Native		3
Hesperolinon micranthum	**Miniature flax, Linaceae**	**Native**		**1, 4**
Heterotheca grandiflora	Telegraph weed, Asteraceae	Native		1
Hirschfeldia incana	Perennial mustard, Brassicaceae	Introduced		1, 3
Hoita orbicularis	Hoita, Fabaceae,	Native		1
Hordeum brachyantherum	Native barley, Poaceae	Native		1
Hordeum marinum	**Mediterranean barley, Poaceae**	**Introduced**		**1, 3, 4**
Hordeum murinum	**Foxtail barley, Poaceae**	**Introduced**		**1, 3, 4**
Hordeum vulgare	Cultivated barley, Poaceae	Introduced		3
Hypochaeris glabra	**Smooth cat's ear, Asteraceae**	**Introduced**		**1, 3, 4**
Hypochaeris radicata	Rough cat's ear, Asteraceae	Introduced		3
Juncus bufonius	Toad rush, Juncaceae	Native		1
Juncus patens	**Spreading rush, Juncaceae**	**Native**		**1, 3, 4**
Juncus phaeocephalus	Brown-headed rush, Juncaceae	Native		1
Juncus xiphioides	Rush, Juncaceae	Native		3, 4
Koeleria macrantha	June grass, Poaceae	Native		3
Lactuca saligna	**Slender lettuce, Asteraceae**	**Introduced**		**1, 3, 4**
Lactuca serriola	**Prickly lettuce, Asteraceae**	**Introduced**		**1, 3, 4**
Lagophylla ramosissima	Lagophylla, Asteraceae	Native		1, 3
Lamarckia aurea	Goldentop grass, Poaceae	Introduced		3, 4
Lasthenia californica	Gold fields, Asteraceae	Native		3
Lathyrus odoratus	Sweet pea, Fabaceae	Escaped from cultivation		1
Lathyrus vestitus var. vestitus	Sweet pea, Fabaceae	Native	List 1B	1, 2, 3
Layia jonesii	Jones layia	Native	List 1B	2
Lepidium nitidum	Peppergrass, Brassicaceae	Native		3
Lepidium oblongum	Peppercress, Brassicaceae	Native		1, 3
Lessingia filaginifolia var. filaginifolia	California-aster, Asteraceae	Native		1, 3
Leymus condensatus	**Giant wild-rye, Poaceae**	**Native**		**1, 3, 4**
Leymus triticoides	Beardless wild-rye, Poaceae	Native		1, 4
Lilium pardalinum var. pardalinum	**Leopard lily**	**Native**		**4**
Lobularia maritime	Sweet alyssum, Brassicaceae	Introduced		1
Lolium multiflorum	**Ryegrass, Poaceae**	**Introduced**		**1, 3, 4**
Lomatium caruifolium	Biscuit root, Apiaceae	Native		3
Lomatium parvifolium	**Small-leaved lomatium, Apiaceae**	**Native**		**3, 4**
Lomatium utriculatum	**Biscuit root, Apiaceae**	**Native**		**1, 3, 4**
Lotus corniculatus,	Bird's foot trefoil, Fabaceae	Introduced		1, 3
Lotus humistratus	Deervetch, Fabaceae	Native		1
Lotus junceus	Deerweed, Fabaceae	Native		3, 4
Lotus purshianus	Spanish-clover, Fabaceae	Native		1
Lotus sp	Deervetch, Fabaceae	Native		1
Lupinus latifolius	Perennial lupine, Fabaceae	Native		1
Lupinus ludovicianus	San Luis Obispo County lupine, Fabaceae	Native	List 1B	2
Lupinus microcarpus	Chick lupine, Fabaceae	Native		1
Lupinus succulentus	**Succulent lupine, Fabaceae**	**Native**		**1, 3, 4**
Lythrum hyssopifolia	Loosestrife, Lythraceae	Introduced		1
Madia exigua	**Miniature tarweed, Asteraceae,**	**Native**		**1, 4**
Madia gracilis	**Slender tarweed, Asteraceae**	**Native**		**1, 3, 4**
Madia sativa	**Coast tarweed, Asteraceae**	**Native**		**1, 4**
Malva parviflora	Mallow, Malvaceae	Introduced		1, 3, 4
Marah fabaceus	Wild cucumber vine, Cucurbitaceae	Native		1, 3, 4

Medicago polymorpha	**Bur-clover, Fabaceae**	**Introduced**		**1, 3, 4**
Melica californica	**Melic grass, Poaceae**	**Native**		**1, 4**
Melica imperfecta	**Melic grass, Poaceae**	**Native**		**1, 3, 4**
Melilotus indica	Yellow sweet clover, Fabaceae	Introduced		1
Mentha piperita	Peppermint, Lamiaceae	Introduced		3
Mimulus cardinalis	Scarlet monkeyflower, Scrophulariaceae	Native		1
Mimulus guttatus	**Common monkeyflower, Scrophulariaceae**	**Native**		**1, 3, 4**
Monardella villosa ssp. Obispoensis,	Monardella, Lamiaceae	Native		1, 3, 4
Muhlenbergia rigens	Deer grass, Poaceae	Native		1
Nassella lepida	**Slender needlegrass, Poaceae**	**Native**		**1, 3, 4**
Nassella pulchra	Purple needlegrass, Poaceae	Native		1, 3, 4
Navarretia squarrosa	**Skunkweed, Polemoniaceae,**	**Native**		**1, 4**
Oxalis pescaprae	Bermuda-buttercup, Oxalidaceae	Introduced		1, 4
Paeonia californica	**California peony, Paeoniaceae**	**Native**		**1, 3, 4**
Pellaea andromedifolia	**Coffee fern, Pteridaceae**	**Native**		**1, 3, 4**
Pennisetum villosum	Fountain grass, Poaceae	Introduced		1
Pentagramma triangularis	**Goldback fern, Pteridaceae**	**Native**		**1, 3, 4**
Phacelia imbricata	Phacelia, Hydrophyllaceae	Native		3
Phalaris aquatica	Harding grass, Poaceae	Introduced		1, 3
Phalaris minor	Canary grass, Poaceae	Introduced		3
Phalaris paradoxa	Canary grass, Poaceae	Introduced		1, 3
Phyla nodiflora	Phyla, Verbenaceae	Introduced		1
Picris echioides	Bristly ox-tongue, Asteraceae	Introduced		1, 3
Piptatherum miliaceum	Smilo, Poaceae	Introduced		1, 3
Plantago erecta	**Plantain, Plantaginaceae**	**Native**		**1, 3, 4**
Plantago lanceolata	**English plantain, Plantaginaceae**	**Introduced**		**1, 3, 4**
Plantago major	Common plantain, Plantaginaceae	Introduced		1, 4
Plectritis ciliosa	Plectritis, Valerianaceae	Native		1
Poa annua	Annual bluegrass, Poaceae	Introduced		1, 3
Polygala californica	Milkwort, Polygalaceae	Native		1, 4
Polygonum arenastrum	Knotweed, Polygonaceae,	Introduced		1
Polypodium californicum	Polypody fern, Polypodiaceae	Native		1, 3, 4
Polypogon interruptus	Ditch beard grass, Poaceae	Introduced		1, 3
Polypogon monspeliensis	**Rabbitfoot grass, Poaceae**	**Introduced**		**1, 3, 4**
Pteridium aquilinum	**Bracken fern, Dennstaedtiaceae,**	**Native**		**1, 3, 4**
Ranunculus californicus	Buttercup, Ranunculaceae	Native		1, 3, 4
Raphanus sativus	Wild radish, Brassicaceae	Introduced		1, 3, 4
Rorippa nasturtium-aquaticum	Watercress, Brassicaceae	Introduced		1
Rumex acetosella	Sour dock, Polygonaceae	Introduced		1, 4
Rumex conglomerates	Knotted dock, Polygonaceae	Introduced		1
Rumex crispus	Curly dock, Polygonaceae	Introduced		1, 3, 4
Rumex pulcher	Fiddle dock, Polygonaceae	Native		1, 3
Rumex salicifolius	Willow-leaved dock, Polygonaceae	Native		1, 3
Salvia spathacea	**Hummingbird sage, Lamiaceae**	**Native**		**1, 3, 4**
Sanicula crassicaulis	Sanicle, Apiaceae	Native		1
Sanicula hoffmanii	Hoffman's sanicle, Apiaceae	Native		1, 3
Sanicula laciniata	Sanicle, Apiaceae	Native		3
Sanicula maritima	Adobe sanicle, Apiaceae	Native	List 1B	2
Satureja douglasii	**Yerba buena, Lamiaceae**	**Native**		**1, 3, 4**
Scandix pecten-veneris	Darning needle, Apiaceae	Introduced		1
Scrophularia californica	**Figwort, Scrophulariaceae**	**Native**		**1, 3, 4**

Senecio vulgaris	Common groundsel, Asteraceae	Introduced		1
Sidalcea hickmanii sp. anomala	Cuesta Pass checkerbloom, Malvaceae	Native	List 1B	2
Sidalcea malviflora	Checker mallow, Malvaceae	Native		1, 4
Silene gallica	Windmill pink, Caryophyllaceae	Introduced		1, 3, 4
Silene laciniata	Indian pink, Caryophyllaceae	Native		3
Silybum marianum	Milk-thistle, Asteraceae	Introduced		1, 3, 4
Sisymbrium officinale	Hedge mustard, Brassicaceae	Introduced		1, 3
Sisyrinchium bellum	**Blue-eyed-grass, Iridaceae**	**Native**		**1, 3, 4**
Solanum douglasii	Black nightshade, Solanaceae	Native		1, 3
Solanum nodiflorum	Black nightshade, Solanaceae	Native		3
Solidago californica	**Goldenrod, Asteraceae**	**Native**		**1, 3, 4**
Sonchus asper	**Prickly sow-thistle, Asteraceae**	**Introduced**		**1, 3, 4**
Sonchus oleraceus	**Common sow-thistle, Asteraceae**	**Introduced**		**1, 3, 4**
Spergularia bocconii	Sand spurry, Caryophyllaceae	Introduced		1
Stachys bullata	**Hedge-nettle, Lamiaceae**	**Native**		**1, 3, 4**
Stachys pycnantha	Hedge-nettle, Lamiaceae	Native		3
Stellaria media	Chickweed, Caryophyllaceae	Introduced		1, 3
Stebbinsoseris heterocarpa	**Stebbinsoseris, Asteraceae**	**Native**		**1, 4**
Stephanomeria cichoriacea	Silver rock-lettuce, Asteraceae	Native		3
Stephanomeria exigua ssp. carotifera	Slender rock-lettuce, Asteraceae	Native		1
Taraxacum officinale	Dandelion, Asteraceae	Introduced		1, 3
Thermopsis macrophylla	False-lupine, Fabaceae	Native		3
Torilis arvensis	Hedge-parsley, Apiaceae	Introduced		1, 3
Torilis nodosus	Knotted hedge-parsley, Apiaceae	Introduced		1, 3, 4
Tragopogon porrifolius	Salsify, Asteraceae	Introduced		1, 3
Trifolium fragiferum	Strawberry clover, Fabaceae	Introduced		3
Trifolium hirtum	Rose clover, Fabaceae	Introduced		1
***Trifolium* sp**	**Annual clover, Fabaceae**	**Native**		**1, 4**
Tropaeolum majus	Garden nasturtium, Tropaeolaceae	Introduced		3
Uropappus lindleyi	Silver puffs, Asteraceae	Native		1
Verbena lasiostachys	**Vervain, Verbenaceae,**	**Native**		**1, 3, 4**
Vicia sativa	Vetch, Fabaceae	Introduced		1, 3, 4
Vicia villosa	Vetch, Fabaceae	Introduced		1, 3
Viola pedunculata	Johnny jump-up, Violaceae	Native		1, 3, 4
Vulpia microstachys	**Annual fescue, Poaceae**	**Native**		**1, 4**
Vulpia myuros	Rattail fescue, Poaceae	Introduced		1, 3
Xanthium spinosum	Clotbur, Asteraceae	Native		1, 3
Xanthium strumarium	Cocklebur, Asteraceae	Introduced		1

Birds

Scientific Name	*Common Name*	*Comments*	*Status*	*Source*
Accipiter cooperi	Coopers hawk	Native		2, 3
Accipiter striatus	Sharp-shinned hawk			3
Agelaius phoeniceus	Red-winged blackbird			3
Anas platyrhynchos	Mallard duck			3
Aphelocoma californica	**Western scrub-jay**			**3, 4**
Aquila chrysaetos	Golden eagle	Native		3, 4
Bubo virginianus	**Great horned owl**			**3, 4**
Butriodes striatus	Green heron			3
Buteo lineatus	**Red-shouldered hawk**	**Native**		**3, 4**

Buteo jamaicensis	**Red-tailed hawk**	**Native**		**3, 4**
Callipepla californica	**California quail**	**Native**		**3, 4**
Calypte anna	**Anna's hummingbird**			**3, 4**
Carduelis psaltria	**Lesser goldfinch**			**3, 4**
Carduelis tristis	**American goldfinch**			**3, 4**
Carpodacus mexicanus	**House finch**			**3, 4**
Carpodacus purpureus	Purple finch			3
Cathartes aura	**Turkey vulture**	**Native**		**3, 4**
Catherpes mexicanus	**Canyon wren**			**4**
Ceryle alcyon	Belted kingfisher			3, 4
Chamaea fasciata	Wrentit			3
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	Native		2
Colaptes auratus	Northern flicker			3
Contopus sordidulus	**Western wood-pewee**			**4**
Corvus brachyrhynchos	**American crow**			**3, 4**
Cyanocitto stelleri	**Steller's jay**			**3, 4**
Dendroica coronata	Yellow-rumped warbler			3
Dendroica nigrescens	Black-throated gray warbler			3
Dendroica townsendii	Townsend's warbler			3
Elanus leucurus	**White-tailed kite**			**4**
Empidonax difficilis	**Pacific-slope flycatcher**			**3, 4**
Euphagus cyanocephalus	**Brewer's blackbird**			**3, 4**
Falco sparverius	**American kestrel**	**Native**		**3, 4**
Geococcyx californianus	**Greater roadrunner**			**4**
Geothlypis trichas	Common yellowthroat			3
Hirundo pyrrhonta	**Cliff swallow**			**3, 4**
Icterus bullocki	Bullock's oriole			3
Junco hyemalis	**Dark-eyed junco**			**3, 4**
Lanius ludovicianus	Loggerhead shrike			3
Melanerpes formicivorus	Acorn woodpecker			3
Melospiza lincolnii	**Lincoln's sparrow**			**3, 4**
Melospiza melodia	Song sparrow			3
Mimus polyglottis	**Northern mockingbird**			**3, 4**
Molothrus ater	Brown-headed cowbird			3
Myiarchus cinerascens	Ash-throated flycatcher			3
Parus inornatus	**Plain titmouse**			**3, 4**
Parus rufescens	**Chestnut-backed chickadee**			**3, 4**
Passer domesticus	House sparrow			3
Passerculus sandwichensis	**Savanna sparrow**			**3, 4**
Passerella iliaca	Fox sparrow			3
Phalaenoptilus nuttalli	Common poorwill			3
Pheucticus melanocephalus	Black-headed grosbeak			3
Picoides nuttallii	**Nuttall's woodpecker**			**3, 4**
Picoides pubescens	**Downey woodpecker**			**3, 4**
Pipilo crissalis	**California towhee**			**3, 4**
Pipilo erythrophthalmus	**Spotted towhee**			**3, 4**
Polioptila caerulea	**Blue-gray gnatcatcher**			**3, 4**
Psaltriparus minimus	**Bushtit**			**3, 4**
Regulus calendula	**Ruby-crowned kinglet**			**3, 4**
Sayornis nigricans	**Black phoebe**			**3, 4**
Selasphorus sasin	**Allen's hummingbird**			**4***
Silia mexicana	Western bluebird			3
Sturnella neglecta	Western meadowlark			3

Tachycineta bicolor	Tree swallow			3
Tachycineta thalassina	Violet-green swallow			3
Thryomanes bewickii	**Bewick's wren**			**3, 4**
Toxostoma redivivum	**California thrasher**			**4***
Troglodytes aedon	House wren			3
Tyto alba	**Common barn-owl**	**Native**		**3, 4**
Vermivora celata	Orange-crowned warbler			3
Vireo huttoni	**Hutton's vireo**			**3, 4**
Wilsonia pusilla	Wilson's warbler			3
Zenaida macroura	**Mourning dove**	**Native**		**3, 4**
Zonotrichia atricapilla	Golden-crowned sparrow			3
Zonotrichia leucophrys	White-crowned sparrow			3

Mammals

Scientific Name	Common Name	Comments	Status	Source
Canis latrans	**Coyote**			**3, 4**
Didelphis virginiana	**Virginia opossum**			**3, 4**
Dipodomys heemani morroensis	Morro Bay kangaroo rat	Native		2
Perognathus californicus	California pocket mouse			3
Peromyscus boylei	**Brush mouse**			**3, 4**
Peromyscus californicus	**California mouse**			**3, 4**
Peromyscus maniculatus	**Deer mouse**			**3, 4**
Procyon lotor	**Raccoon**			**3, 4**
Rheithrodontomys megalotis	Western harvest mouse			3
Scapanus latimanus	Broad-footed mole			3
Sorex ornatus	Ornate shrew			2
Lasiurus borealis	Red bat			3
Lasiurus cinereus	Hoary bat			3
Lynx rufus	**Bobcat**			**3, 4**
Mephitis mephitis	**Striped skunk**			**3, 4**
Microtus californicus	California vole			3
Mustella frenata	Long-tailed weasel			3
Myotis volans	Long-legged myotis			3
Neotoma fuscipes	**Dusky-footed woodrat**			**3, 4**
Odocoileus herionus	**Mule deer**			**3, 4**
Sciurus griseus	Western gray squirrel			3, 4
Spermophilus beecheyi	**California ground squirrel**			**3, 4**
Sylvilagus bachmani	**Brush rabbit**			**3, 4**
Tadarida brasiliensis	Brazilian free-tailed bat			3
Thomomys bottae	**Botta's pocket gopher**			**3, 4**
Urocyon cinereoargenteus	**Gray fox**			**3, 4**

Amphibians

Scientific Name	Common Name	Comments	Status	Source
Aniedes lugubris	Arboreal salamander			3
Batrachoseps nigriventris	Black-bellied slender salamander			3
Bufo boreas	Western toad			3
Ensatina eschscholtzii	Ensatina			3
Hyla regilla	**Pacific treefrog**			**3, 4**
Taricha torosa	California newt			3

Reptiles

Scientific Name	Common Name	Comments	Status	Source
Anniella pulchra	California legless lizard			3
Charina bottae	Rubber boa			3
Clemmys marmorata	**Western pond turtle**			**3, 4**
Coluber constrictor	Racer			3
Crotalus viridis	**Western rattlesnake**	**Native**		**3, 4**
Diadophis punctataus	**Ringneck snake**			**3, 4**
Elgaria multicarinatus	**Southern alligator lizard**			**3, 4**
Eumeces skiltonianus	Western skink			3
Lampropeltis getulus	**Common kingsnake**			**3, 4**
Masticophis lateralis	California whipsnake			3
Phrynosoma coronatum	Coast horned lizard			3
Pituophis melanoleucus	**Gopher snake**			**3, 4**
Sceloporus occidentalis	**Western fence lizard**			**3, 4**
Thamnophis couchii	Western aquatic garter snake			3
Thamnophis elegans	Western terrestrial garter snake			3
Thamnophis sirtalis	Common garter snake			3
Uta stansburiana	Side-blotched lizard			3

Fish

Scientific Name	Common Name	Comments	Status	Source
Onchorhynchus mykiss	***Rainbow/Steelhead trout***	**Native**		**4**
Rhinichthys osculus	***Speckled dace***	**Native**		**4**

Invertebrates

Scientific Name	Common Name	Comments	Status	Source
Dananus plexippus	**Monarch butterfly**			**4**
Polyphylla nubile	Atascadero polyphylian scarab beetle	Native		2
Helminthoglypta walkeriana	**Morro shoulderband snail**	**Native**		**2,4**
***Hemipepsis* spp.**	**Tarantula wasp**			**4**
Speyeria callippe	**Callippee fritillary butterfly**			**4**

References

1 – Prefumo Creek Homes Development – Final EIR (1996)
2 – Irish Hill Golf Course and Homesites Development – Preliminary Draft EIR (1990).
3 – DeVaul Ranch Planned Development – Final EIR (1998)
4 – Field observation by City Staff or biological consultant.