Appendix C

Biological Reports

Appendix C

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Results of Protocol Coastal California Gnatcatcher and Least Bell's Vireo Surveys C-1
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GLENN LUKOS ASSOCIATES
Regulatory Services

July 26, 2010

Sandra Marquez
U.S. Fish and Wildlife Service
Carlsbad Field Office
6010 Hidden Valley Road
Carlsbad, California 92011

Lyann Comrack
Nongame Wildlife Program
California Department of Fish and Game
1812 Ninth Street
Sacramento, California 95811

SUBJECT: Results of Protocol Coastal California Gnatcatcher and Least Bell's Vireo Surveys for an Approximately 270-Acre Property Owned by the City of Whittier and Managed by the Puente Hills Landfill Native Habitat Preservation Authority, City of Whittier, Los Angeles County, California.

Dear Ms. Marquez:

This letter report documents the results of protocol presence/absence surveys conducted by Glenn Lukos Associates, Inc. (GLA) for the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*) and the federally listed endangered least Bell's vireo (*Vireo bellii pusillus*). Focused surveys were conducted for a proposed oil extraction project within lands owned by the City of Whittier and managed by the Puente Hills Landfill Native Habitat Preservation Authority (Habitat Authority).

Surveys were conducted from April 23 through June 14, 2010 for the coastal Californica gnatcatcher, and from April 23 through July 7, 2010 for the least Bell's vireo. Focused surveys were conducted in all areas of potentially suitable habitat in accordance with U.S. Fish and Wildlife Service (USFWS) guidelines.

The least Bell's vireo was not detected within the survey area. The coastal California gnatcatcher was detected within the survey area, the results of which are discussed below.

SURVEY AREA

Focused surveys were conducted for a 270-acre survey area within lands owned by the City of Whittier and managed by the Habitat Authority [Exhibit 1 – Regional Map]. The survey area is located within Sections 22, 23, and 26, Township 2 South, Range 11 West [Exhibit 2 – Vicinity Map]. The Universal Transverse Mercator (UTM) coordinates approximately corresponding to

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the survey area are 407254 mE and 3759192 mN (Zone 11). The survey area is bordered by open space to the north, west, and east; residential development to the south and southwest, and Colima Road to the southeast. The topography of the survey area is generally characterized as high ridges bisected by two steep canyons, including La Cañada Verde and Arroyo Pescadero. A significant portion of the survey area has been disturbed in the past, in part by prior natural resource extraction activities. Portions of these areas have regenerated with native vegetation. Numerous dirt access roads and trails occur within the survey area, including actively maintained roads/trails and former roads that have become overgrown with vegetation. A ranger residence occurs within the southwest portion of the survey area. Portions of the survey area are accessed by the public for multiple purpose recreation; including the Arroyo Pescadero Trail and Deer Loop Trail, both of which are accessed from Colima Road to the southeast. Two native restoration sites occur within the southern portion of the survey area, one located between La Cañada Verde and Arroyo Pescadero, and the other at the Arroyo Pescadero trailhead.

Approximately 133.77 acres of the survey area support native vegetation communities, including coastal sage scrub (62.34 acres), chaparral (61.15 acres), and various riparian communities (10.28 acres). The majority of native upland scrub vegetation occurs in the northern portion of the survey area, on either side of La Cañada Verde Canyon, although a significant amount of native communities occur in the southeast portion of the study area. Coastal sage scrub areas are dominated by coastal sagebrush (*Artemisia californica*) and California buckwheat (*Eriogonum fasiculatum*), but also include other representative sage scrub species such as black sage (*Salvia mellifera*), white sage (*Salvia apiana*), and California brittlebush (*Encelia californica*). Chaparral areas are dominated by evergreen shrubs such as laurel sumac (*Malosma laurina*), lemonadeberry (*Rhus integrifolia*), coyote brush (*Baccharis pilularis*), and toyon (*Heteromeles arbutifolia*). Various riparian habitats occur within La Cañada Verde and Arroyo Pescadero, with the higher quality riparian vegetation occurring at the extreme northern end of the study area within La Cañada Verde. Dominant species at this location include arroyo willow (*Salix lasiolepis*), black willow (*Salix gooddingii*), and mule fat (*Baccharis salicifolia*). The remainder of La Cañada Verde contains a significant amount of non-native vegetation, including poison hemlock (*Conium maculatum*), but also contains occasional patches of Mexican elderberry (*Sambucus mexicanus*), and mule fat. Much of the overstory of both canyons consists of eucalyptus woodland. The portion of Arroyo Pescadero within the survey area consists mainly of eucalyptus woodland and a small patch of willows. The bottom of Arroyo Pescadero contains limited riparian vegetation, consisting of patches of elderberry and mule fat.

A smaller amount of the coastal sage scrub vegetation within the overall survey area (approximately 12.16 acres) is considered suitable gnatcatcher habitat to the extent that the habitat has a reasonable potential to support breeding pairs, including an area where a breeding pair was identified in the northern portion of the survey area. This includes patches of habitat in

the northern portion of the survey, and other patches in the southern portion of the site. Similarly, a limited amount of riparian habitat has the potential to support the least Bell's vireo (approximately 1.94 acres), consisting of a stand of southern willow scrub located within La Cañada Verde in the northern portion of the survey area [Exhibit 3 – Survey Area Map].

METHODOLOGY

Protocol surveys for the coastal California gnatcatcher were performed in all suitable areas of coastal sage scrub, and to some extent areas of chaparral and mixed chaparral/sage scrub. Surveys were conducted in accordance with the 1997 USFWS guidelines, which stipulate that during the breeding season, six surveys shall be conducted in all areas of suitable habitat with at least seven days between site visits. The USFWS survey guidelines also stipulate that no more than 80 acres of suitable habitat shall be surveyed per biologist per day. The overall survey area contains approximately 60 acres of coastal sage scrub and 60 acres of chaparral, with the assumption that the survey area contains more than 80 acres but less than 160 acres of suitable habitat for the gnatcatcher. Therefore, the survey area was divided into two survey polygons requiring the equivalent of two "survey-days" per week (no more than 80 acres per day per biologist).

Protocol surveys for Polygon A were conducted on April 23, May 3, 13, and 24, and June 3 and 14, 2010. Surveys for Polygon B were conducted on April 26, May 3, 10, 17, and 26, and June 2, 2010. Surveys were be conducted by Jeff Ahrens (TE 052159-3), Kevin Livergood (TE-172638-0), and David Moskovitz (TE-084606-1). The Habitat Authority's ecologist (Shannon Lucas) accompanied GLA biologists during the gnatcatcher surveys on April 23, and 26, and May 3, 10, 17, and 26. All surveys were conducted during the morning hours and were completed before 12:00 P.M. No surveys were conducted during extreme weather conditions (i.e., winds exceeding 15 miles per hour, rain, or temperatures in excess of 35ºC). All areas of suitable habitat were surveyed on foot by walking slowly and methodically. Taped vocalizations and "pishing" sounds were utilized to elicit a response from gnatcatchers that might be present. Table 1 provides a summary of gnatcatcher survey dates.

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California Department of Fish and Game

Table 1. Summary of Coastal California Gnatcatcher Survey Dates.

Date	Polygon	Start Time	End Time	Permitted Surveyor	Temp ºF (start/end)	Wind speed (mph)	Cloud Cover
4/23/2010	A	0715	1200	KL	50 / 67	0-2	clear
4/26/2010	B	0650	1200	JA	61 / 75	0-2	overcast
5/3/2010	A & B	0720	1130	JA/KL	57 / 77	0-2	clear
5/10/2010	B	0620	1100	JA	60 / 75	0-3	partly cloudy
5/13/2010	A	0625	1100	JA	62 / 74	0-2	partly cloudy
5/17/2010	B	0700	0945	KL	60 / 64	0-3	overcast
5/24/2010	A	0550	0920	JA	55 / 73	0-2	overcast
5/26/2010	B	0630	0930	KL	60 / 74	0-2	partly cloudy
6/2/2010	B	0630	0830	KL	60 / 62	0-1	overcast
6/3/2010	A	0630	1100	DM	62 / 66	0	overcast
6/14/2010	A	0610	1000	JA	59 / 81	0-1	Clear

KL – Kevin Livergood, JA – Jeff Ahrens, DM – David Moskovitz

Protocol surveys for the least Bell's vireo were conducted in areas of potentially suitable habitat, in accordance with the 1999 USFWS guidelines, which stipulate that a minimum of eight visits be conducted within areas of suitable habitat, with at least ten days between site visits. Biologists are to survey up to 50 hectares (approximately 120 acres) and no more than 3 linear kilometers (approximately 1.8 miles) per day, depending on site conditions (e.g., density and width of vegetation).

Protocol surveys were conducted April 23, May 3, 13 and 24, June 3, 14, and 24, and July 6, 2010. Surveys were conducted by David Moskovitz, Jeff Ahrens, Alisa Flint, and Kevin Livergood. All surveys were conducted between dawn and 11:00 a.m., in accordance with USFWS guidelines. All suitable areas were covered on foot by walking slowly and methodically through and adjacent to the riparian habitat. Birds were identified by call and sight, aided by the use of binoculars. No taped vocalizations were used to elicit response from vireos or any other species potentially present. No surveys were conducted during extreme weather conditions (i.e., winds exceeding 15 miles per hour, rain, or temperatures in excess of 35ºC). Table 2 provides a summary of vireo survey dates.

Table 2. Summary of Least Bell's Vireo Survey Dates.

Date	Start Time	End Time	Surveying Biologist	Temp ºF (start/end)	Wind speed (mph)	Cloud Cover
4/23/2010	0710	1045	DM	50 / 65	0-2	clear
5/3/2010	0700	1045	DM	57 / 66	0	clear
5/13/2010	0625	1100	JA	62 / 74	0-2	partly cloudy
5/24/2010	0550	0920	JA	55 / 73	0-2	overcast
6/3/2010	0630	1100	AF	62 / 66	0	overcast
6/14/2010	0610	1000	AF	59 / 81	0-1	clear
6/24/2010	0645	1000	AF	63 / 66	0-2	overcast
7/6/2010	0840	1030	KL	64 / 66	0	overcast

KL – Kevin Livergood, JA – Jeff Ahrens, DM – David Moskovitz, AF – Alisa Flint

RESULTS

Coastal California Gnatcatcher

The coastal California gnatcatcher was observed in two locations within the survey area during protocol surveys, including one family group adjacent to La Cañada Verde in the northern portion of the survey area, and a single gnatcatcher adjacent to access road near the Worsham Landfill.

A single California gnatcatcher (sex unknown) vocalized once in response to tape playback on May 3, 2010. The response consisted of a single low-pitched mew and was barely audible. The gnatcatcher was utilizing coastal sage scrub vegetation on slopes to the west side of La Cañada Verde. The location was also in very close proximity to a blue-gray gnatcatcher (*Polioptila caerulea*) pair that was located in the adjacent riparian habitat. On May 24, 2010, a male California gnatcatcher responded to tape playback in the same location where the single gnatcatcher was detected on May 3, 2010 (N. 38° 58'43.563 latitude, W. 118° 0'20.808 longitude). After observing the gnatcatcher foraging and vocalizing for approximately two to three minutes, the male then flew across the dirt access road into the riparian habitat where a female California gnatcatcher and two juveniles were also observed and briefly heard. The blue-gray gnatcatcher pair was also detected in very close proximity to the California gnatcatcher family group and briefly interacted with the group. On June 14, 2010, one California gnatcatcher was briefly observed in the same general location as the previous two detections. The bird was actively foraging and could only be identified by the underside of the retrice (tail) feathers. This bird was foraging in very close proximity to a blue-gray gnatcatcher family group and was presumed to be one member of the previously detected family group.

The habitat in which the California gnatcatcher family group was located consisted of a mixture of coastal sage scrub and chaparral plant species including California sagebrush, purple sage (*Salvia leucophylla*), white sage, Mexican elderberry, and laurel sumac. The riparian habitat in which the family group was observed in was comprised primarily of arroyo willow and mule fat, with some saltcedar (*Tamarix ramosissima*). The nest location of the pair could not be confirmed, though it was most likely located in the northern portion of the survey area. This pair was not detected during previous gnatcatcher surveys in 2005, 2008, or 2009.

The second gnatcatcher location consisted of a single male gnatcatcher that was observed on June 14, 2010 within scrub vegetation along the access road to the Worsham Landfill (N. 38° 59'2.068 latitude, 118° 0'48.445 longitude). The bird was detected in a location where LSA Associates observed a single gnatcatcher in 2005, though it is unclear whether it was the same bird. The habitat in which the California gnatcatcher was located consisted of thin strip of coastal sage scrub that included California sagebrush, purple sage, white sage, Mexican elderberry, and laurel sumac. Exhibit 3 depicts the locations of observed gnatcatchers.

Least Bell's Vireo

The least Bell's vireo was not detected within the survey area during protocol surveys. Two other special-status riparian birds were detected during focused surveys, including the yellow-breasted chat (*Icteria virens*) and the yellow warbler (*Dendroica petechia brewsteri*). The yellow-breasted chat and one yellow warbler were detected in the northern portion of the survey area within La Cañada Verde. A second yellow warbler was detected north of the Arroyo Pescadero parking lot.

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California Department of Fish and Game

If you have any questions regarding the methodology or findings of this report, please contact David Moskovitz at (949) 837-0404, ext 42.

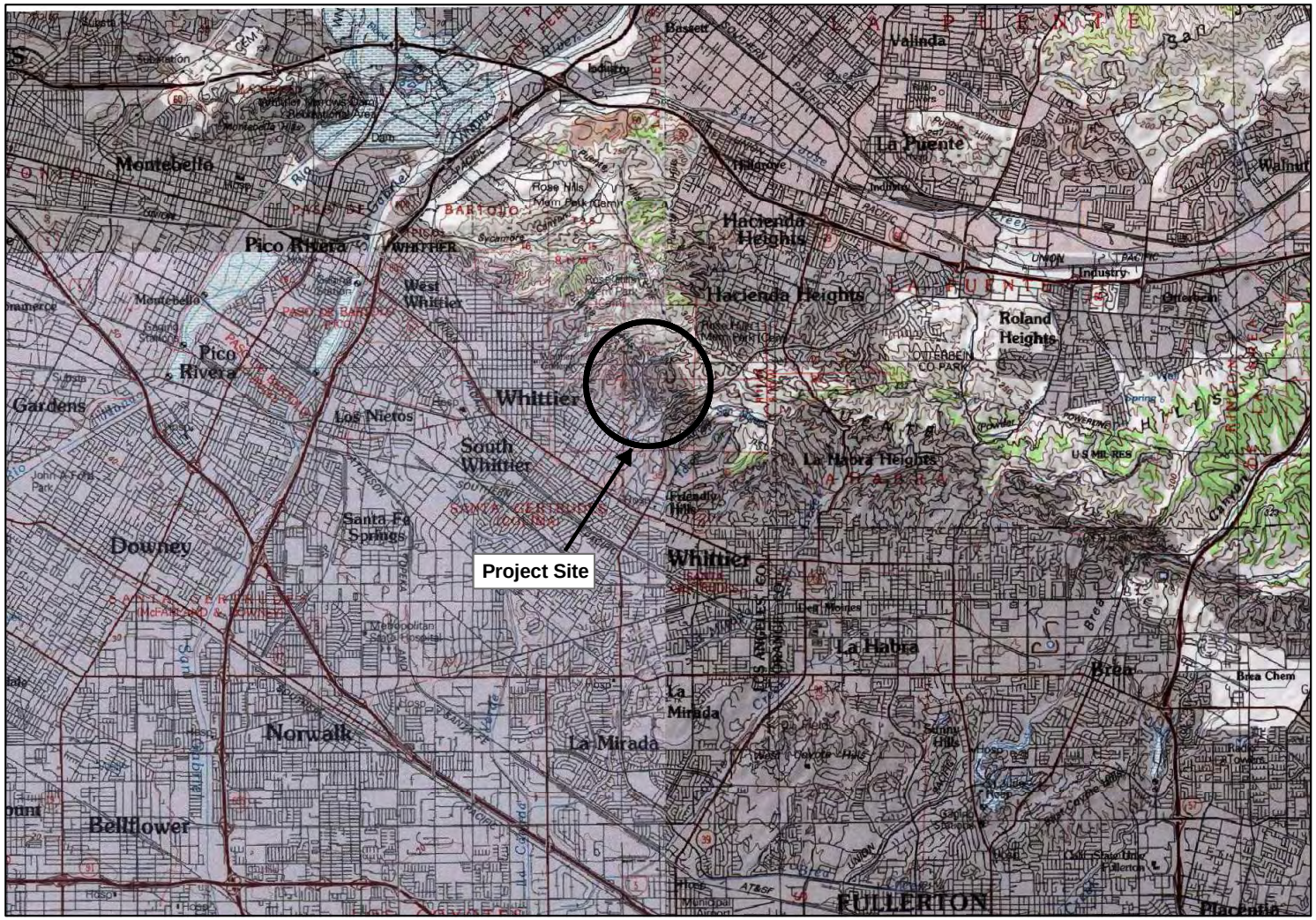
I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

GLENN LUKOS ASSOCIATES, INC.

	TE-084606-1	July 26, 2010
David Moskovitz Biologist	Permit #	Date
	TE 052159-3	July 26, 2010
Jeff Ahrens Biologist	Permit #	Date
	TE-172638-0	July 26, 2010
Kevin Livergood Biologist	Permit #	Date

s:0953-02a.cagn_lbv.rpt.c.doc

Adapted from USGS Santa Ana and Los Angeles Quadrangles



NORTH

0 5,000 10,000 20,000

Feet

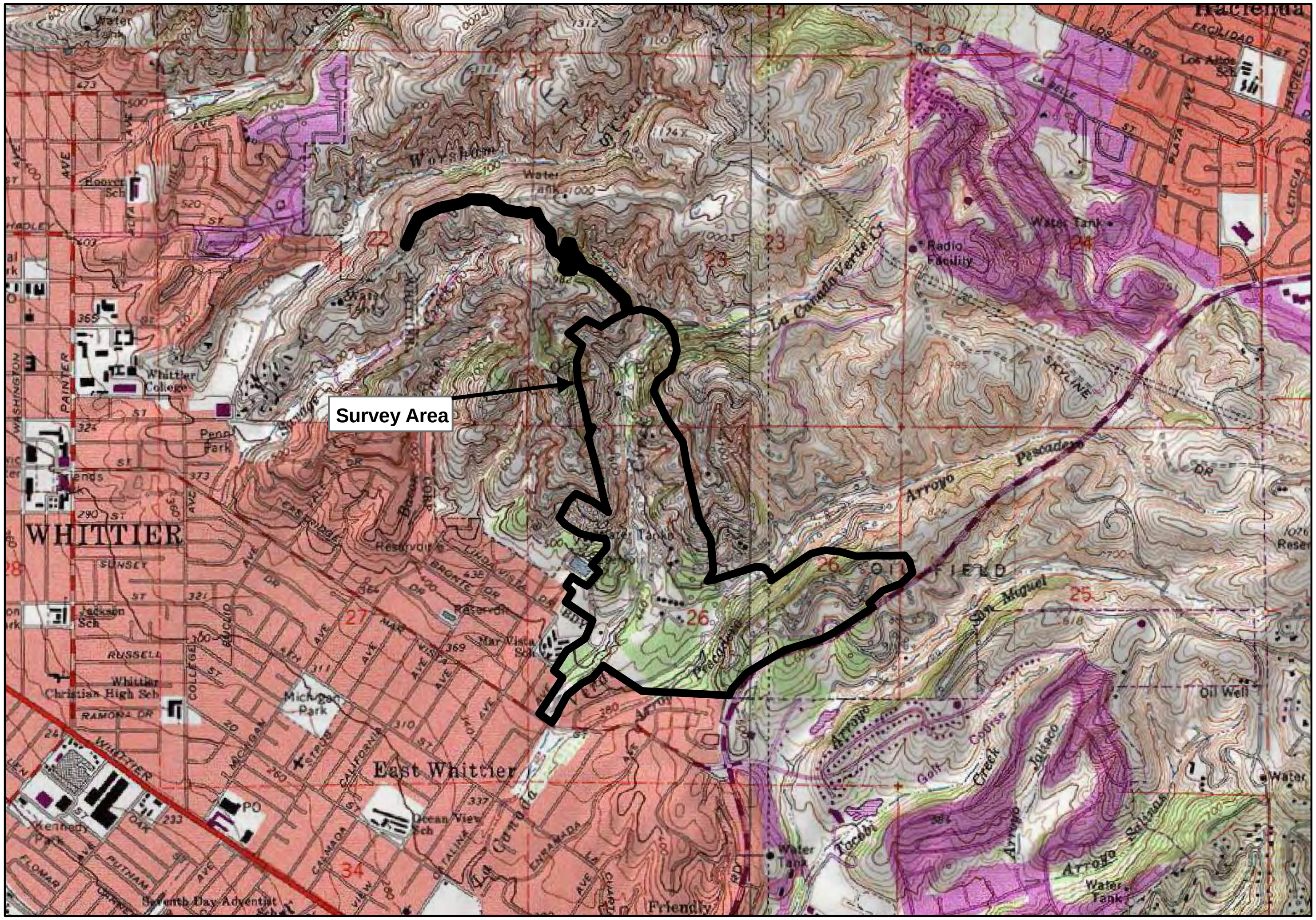
CITY OF WHITTIER
OIL EXPLORATION PROJECT

Regional Map

GLENN LUKOS ASSOCIATES

EXHIBIT 1

Adapted from USGS Whittier, CA quadrangle



NORTH

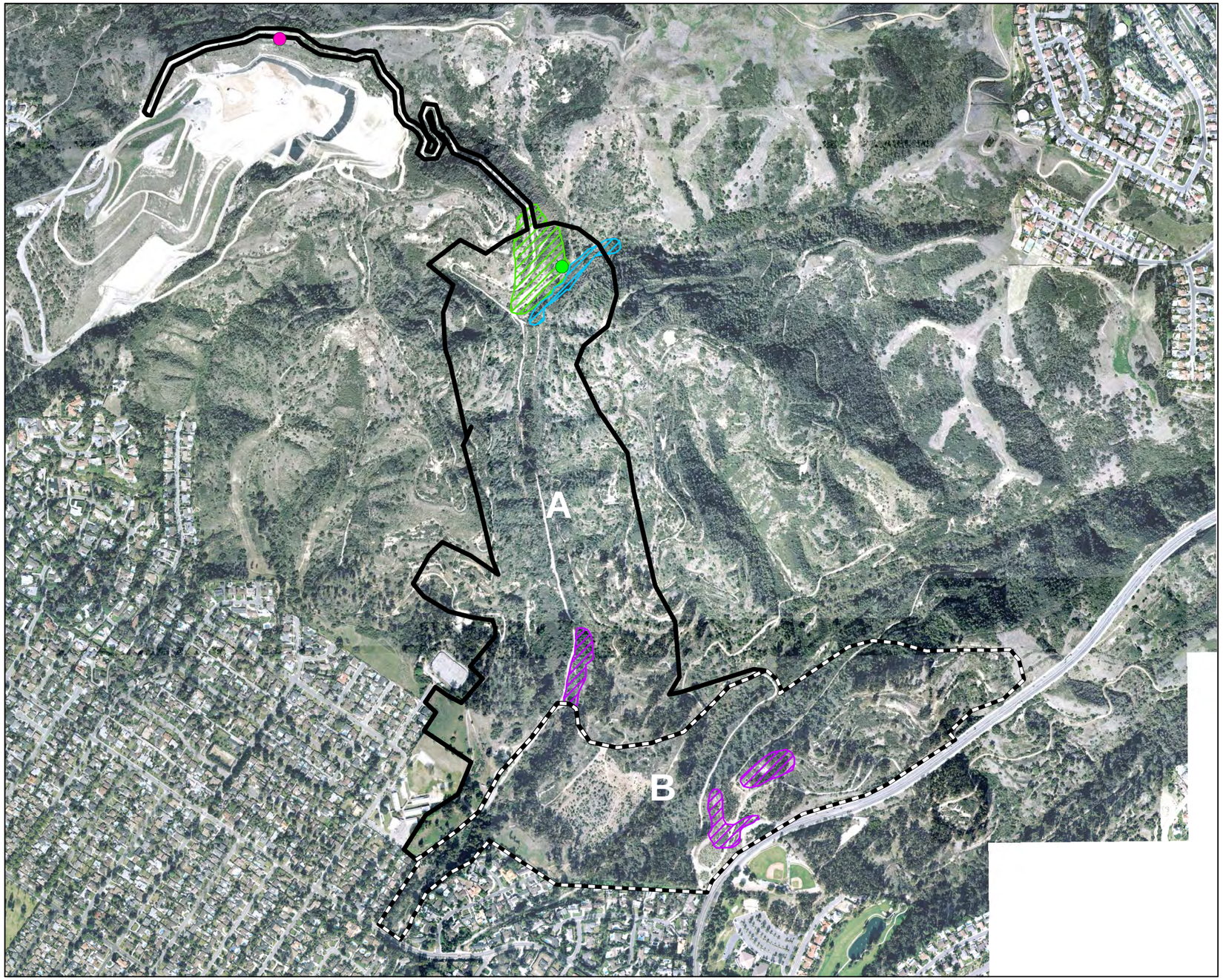
0 1,000 2,000 4,000 Feet

CITY OF WHITTIER OIL EXPLORATION PROJECT

Vicinity Map

GLENN LUKOS ASSOCIATES

EXHIBIT 2



Legend

- CAGN Polygon A
- CAGN Polygon B
- LBV Suitable Habitat
- CAGN Most Suitable Habitat
- CAGN Occupied Habitat

CAGN Locations

- Pair plus 2 juveniles
- Single Adult

N

0 400 800 1,600

Feet

CITY OF WHITTIER
OIL EXPLORATION PROJECT

Survey Area Map

GLENN LUKOS ASSOCIATES

Exhibit 3

X:\0363-THE REST\0953-02OIL\953-2.GIS\953-2CAGN.mxd
July 12, 2010

FAUNAL COMPENDIUM

The faunal compendium lists species that were observed or detected by sign (e.g, tracks, scat, and burrows) within the Study Area. Non-native species are denoted by a '*'. Sensitive species detected on site according to their status (e.g, breeding, wintering, rookery, etc.) as per the CDFG Special Animals List (July 2009) are denoted by '+'. Taxonomy and common names are taken from Pelham 2008 for butterflies, AOU (2009) for birds; CDFG (2008) for reptiles and amphibians; and CDFG (2008) for mammals.

LEPIDOPTERA

HESPERIIDAE
Erynnis funeralis
Hylephila phyleus
Atalopedes campestris
Poanes melane

PAPILIONIDAE
Papilio zelicaon
Papilio eurymedon

PIERIDAE
Pontia protodice
Pieris rapae
Anthocharis sara
Colias philodice
Colias eurytheme

LYCAENIDAE
Leptotes marina
Cupido amyntula
Hemiargus ceraunus
Plebejus acmon

NYMPHALIDAE
Precis coenia
Nymphalis antiopa
Vanessa atalanta
Vanessa cardui
Vanessa anabella
Vanessa virginiensis
Liminitis lorquini

BUTTERFLIES

Skippers
funereal duskywing
fiery skipper
sachem
umber skipper

Swallowtails
anise swallowtail
pale swallowtail

Whites and Sulphurs
checkered white
cabbage white
Pacific orangetip
clouded sulphur
orange sulphur

Gossamer-Wing Butterflies
marine blue
western tailed-blue
Ceraunus blue
acmon blue

Brush-Footed Butterflies
common buckeye
mourning cloak
red admiral
painted lady
west coast lady
American lady
Lorquin's admiral

REPTILIA	**REPTILES**
PHRYNOSOMATIDAE	**Phrynosomatid Lizards**
Uta stansburiana	common side-blotched lizard
Sceloporus occidentalis	western fence lizard
COLUBRIDAE	**Colubrid Snakes**
Pituophis catenifer	gopher snake
VIPERIDAE	**Vipers**
Crotalus oreganos or viridis	western rattlesnake
AVES	**BIRDS**
ODONTOPHORIDAE	**New World Quails**
Callipepla californica	California quail
CATHARTIDAE	**New World Vultures**
Cathartes aura	turkey vulture
ACCIPITRIDAE	**Hawks And Old World Vultures**
Circus cyaneus	northern harrier
Accipiter cooperii	Cooper's hawk
Buteo lineatus	red-shouldered hawk
Buteo swainsoni	Swainson's hawk
Buteo jamaicensis	red-tailed hawk
FALCONIDAE	**Caracaras And Falcons**
Falco sparverius	American kestrel
CHARADRIIDAE	**Plovers And Relatives**
Charadrius vociferus	killdeer
LARIDAE	**Skuas, Gulls, Terns And Skimmers**
Larus delawarensis	ring-billed gull
Larus occidentalis	western gull
Larus californicus	California gull
COLUMBIDAE	**Pigeons And doves**
* *Columba livia*	rock pigeon
Patagioenas fasciata	band-tailed pigeon
* *Streptopelia decaocto*	Eurasian collared-dove
Zenaida macroura	mourning dove

CUCULIDAE	**Cuckoos, Roadrunners, And Anis**
Geococcyx californianus	greater roadrunner
TYTONIDAE	**Barn Owls**
Tyto alba	barn owl
STRIGIDAE	**Typical Owls**
Bubo virginianus	great horned owl
CAPRIMULGIDAE	**GOATSUCKERS**
Phalaenoptilus nuttallii	common poorwill
APODIDAE	**Swifts**
Aeronautes saxatilis	white-throated swift
TROCHILIDAE	**Hummingbirds**
Archilochus alexandri	black-chinned hummingbird
Calypte anna	Anna's hummingbird
Selasphorus sasin	Allen's hummingbird
PICIDAE	**Woodpeckers And Allies**
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
Picoides pubescens	downy woodpecker
Colaptes auratus	northern flicker
TYRANNIDAE	**Tyrant Flycatchers**
Contopus cooperi	olive-sided flycatcher
Contopus sordidulus	western wood-pewee
Empidonax difficilis	Pacific-slope flycatcher
Sayornis nigricans	black phoebe
Sayornis saya	Say's phoebe
Myiarchus cinerascens	ash-throated flycatcher
Tyrannus vociferans	Cassin's kingbird
Tyrannus verticalis	western kingbird
VIREONIDAE	**Vireos**
Vireo huttoni	Hutton's vireo
Vireo gilvus	warbling vireo
CORVIDAE	**Crows And Jays**
Aphelocoma californica	western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven

HIRUNDINIDAE	**Swallows**
Stelgidopteryx serripennis	northern rough-winged swallow
Petrochelidon pyrrhonota	cliff swallow
AEGITHALIDAE	**Long-Tailed Tits And Bushtits**
Psaltriparus minimus	bushtit
TROGLODYTIDAE	**Wrens**
Thryomanes bewickii	Bewick's wren
Troglodytes aedon	house wren
REGULIDAE	**Kinglets**
Regulus calendula	ruby-crowned kinglet
SYLVIIDAE	**Old World Warblers And Gnatcatchers**
Polioptila caerulea	blue-gray gnatcatcher
+ *Polioptila californica californica*	coastal California gnatcatcher
TURDIDAE	**Thrushes**
Sialia mexicana	western bluebird
Catharus ustulatus	Swainson's thrush
Turdus migratorius	American robin
TIMALIIDAE	**Babblers**
Chamaea fasciata	wrentit
MIMIDAE	**Mockingbirds And Thrashers**
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
STURNIDAE	**Starlings And Allies**
* *Sturnus vulgaris*	European starling
BOMBYCILLIDAE	**Waxwings**
Bombycilla cedrorum	cedar waxwing
PTILOGONATIDAE	**Silky-flycatchers**
Phainopepla nitens	phainopepla
PARULIDAE	**Wood Warblers And Relatives**
Vermivora celata	orange-crowned warbler
Vermivora ruficapilla	Nashville warbler
+ *Dendroica petechia*	yellow warbler
Dendroica coronata	yellow-rumped warbler
Dendroica nigrescens	black-throated gray warbler
Geothlypis trichas	common yellowthroat

Wilsonia pusilla	Wilson's warbler
+ *Icteria virens*	yellow-breasted chat
EMBERIZIDAE	**Emberizids**
Pipilo maculatus	spotted towhee
Pipilo crissalis	California towhee
+ *Aimophila ruficeps*	rufous-crowned sparrow
Chondestes grammacus	lark sparrow
Passerculus sandwichensis	savannah sparrow
Melospiza melodia	song sparrow
Zonotrichia leucophrys	white-crowned sparrow
CARDINALIDAE	**Cardinals, Grosbeaks And Allies**
Piranga ludoviciana	western tanager
Pheucticus melanocephalus	black-headed grosbeak
Passerina caerulea	blue grosbeak
Passerina amoena	lazuli bunting
ICTERIDAE	**Blackbirds**
Sturnella neglecta	western meadowlark
Euphagus cyanocephalus	Brewer's blackbird
Molothrus ater	brown-headed cowbird
Icterus cucullatus	hooded oriole
Icterus bullockii	Bullock's oriole
FRINGILLIDAE	**Fringilline And Cardueline Finches and Allies**
Carpodacus mexicanus	house finch
Spinus psaltria	lesser goldfinch
Spinus tristis	American goldfinch
PASSERIDAE	**Old World Sparrows**
* *Passer domesticus*	house sparrow

MAMMALIA

MAMMALS

DIDELPHIDAE	**Opossums**
* *Didelphis virginiana*	Virginia opossum
LEPORIDAE	**Rabbits And Hares**
Sylvilagus audubonii	desert (Audubon's) cottontail
GEOMYIDAE	**Pocket Gophers**
Thomomys bottae	Botta's pocket gopher

MURIDAE	**Mice, Rats And Voles**
Neotoma fuscipes	dusky-footed woodrat
SCIURIDAE	**Squirrels, Chipmunks, And Marmots**
Sciurus griseus	western gray squirrel
Spermophilus beecheyi	California ground squirrel
CANIDAE	**Foxes, Wolves And Allies**
* *Canis familiaris*	feral dog
Canis latrans	coyote
PROCYONIDAE	**Raccoons And Allies**
Procyon lotor	raccoon
MEPHITIDAE	**Skunks**
Mephitis mephitis	striped skunk
FELIDAE	**Cats**
* *Felis catus*	feral cat
Lynx rufus	bobcat
CERVIDAE	**Deer, Elk And Allies**
Odocoileus hemionus	mule deer

Mail to:
California Natural Diversity Database
Department of Fish and Game
1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

Date of Field Work (mm/dd/yyyy): 5/24/2010

For Office Use Only
Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Polioptilia Californica Californica

Common Name: Coastal California gnatcatcher

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 4 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Jeff Ahrens
Address: 29 orchard, Lake Forest, CA 92630
E-mail Address: jahrens@wetlandpermitting.com
Phone: (949) 837-0404 ext 40.

Plant Information
Phenology: ____% vegetative ____% flowering ____% fruiting

Animal Information
2 # adults, 2 # juveniles, ____ # larvae, ____ # egg masses, ____ # unknown
☐ wintering ☒ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description **(please attach map AND/OR fill out your choice of coordinates, below)**

County: Los Angeles Landowner / Mgr.: City of Whittier
Quad Name: Whittier Elevation: _____
T____ R____ Sec ____, ____ ¼ of ____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of ____¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Lat 33.5843563, Long -118.020.808

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Coastal Sage Scrub/chaparral / riparian

Pair w/ 2 juveniles using willow riparian habitat immediately adjacent to Coastal Sage Scrub/chaparral.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor
Immediate AND surrounding land use: Habitat Preserve
Visible disturbances: None
Threats: Possible oil extraction activities
Comments: Family group detected one time during Protocol Surveys, one individual detected in same area on one occasion.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

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1807 13th Street, Suite 202
Sacramento, CA 95811
Fax: (916) 324-0475 email: CNDDB@dfg.ca.gov

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EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 6/14/2010

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Polioptilia Californica Californica

Common Name: Coastal California gnatcatcher

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☒ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Jeff Ahrens
Address: 29 orchard, Lake Forest CA 92630
E-mail Address: jahrens@wetlandpermitting.com
Phone: (949) 837-0404 ext 40

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description **(please attach map AND/OR fill out your choice of coordinates, below)**

County: Los Angeles Landowner / Mgr.: City of Whittier
Quad Name: Whittier Elevation: _____
T____ R____ Sec ____, ____ ¼ of ____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of ____¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Lat 33°59 2.068, - Long - 118°048.445

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Bird detected in mixture of Coastal Sage Scrub & Chaparral

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor
Immediate AND surrounding land use: Habitat Preserve
Visible disturbances: Land fill
Threats: possible oil extraction activities
Comments: Individual detected only one time during Protocol Surveys.

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

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Date of Field Work (mm/dd/yyyy): 4/23/2010

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Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

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California Native Species Field Survey Form

Send Form

Scientific Name: Icteria virens

Common Name: Yellow-breasted Chat

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 2 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☐ no ☒ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: David Moskovitz
Address: 29 orchard, Lake Forest, CA 92630
E-mail Address: dmoskovitz@wetlandpermitting.com
Phone: (949) 837-0404 ext 42

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown
2				

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: City of Whittier
Quad Name: Whittier Elevation: _____
T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of _____¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ ***OR*** Geographic (Latitude & Longitude) ☐
Coordinates: Lat 33°58.734, Long -118°00.336

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Willow riparian / Eucalptus

Pair detected multiple times in willow riparian & adjacent Eucalyptus patch.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use: Habitat Preserve
Visible disturbances: None
Threats: Possible oil extraction activities
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

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Date of Field Work (mm/dd/yyyy): 5/13/10

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EO Index No. _____ Map Index No. _____

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California Native Species Field Survey Form

Send Form

Scientific Name: Dendroica Petechia brewsteri

Common Name: Yellow warbler

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Jeff Ahrens
Address: 29 orchard, Lake Forest, CA 92630
E-mail Address: jahrens@wetlandpermitting.com
Phone: (949) 837-0464 ext 40

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description **(please attach map AND/OR fill out your choice of coordinates, below)**

County: Los Angeles Landowner / Mgr.: City of Whittier
Quad Name: Whittier Elevation: _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Lat 33°58.497, Long -118.00.411

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Euc windrow

Individual singing.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor
Immediate AND surrounding land use: Habitat Preserve
Visible disturbances: None
Threats: Potential oil extraction activities
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

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Date of Field Work (mm/dd/yyyy): 4/26/10

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Dendroica Petechia brewsteri

Common Name: Yellow warbler

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Jeff Ahrens
Address: 29 orchard, Lake Forest, CA 92630
E-mail Address: jahrens@wetlandpermitting.com
Phone: (949) 837-0404 ext 40

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1 # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: City of Whittier
Quad Name: Whittier Elevation: _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Lat 33°58.021, Long -118 00.073

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Eucalyptus patch.
Individual singing from near top of crown.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor
Immediate AND surrounding land use: Habitat Preserve
Visible disturbances: None
Threats: Possible oil extraction activities
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

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Date of Field Work (mm/dd/yyyy): 5/24/2010

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: Aimophila ruficeps canescens

Common Name: Southern California rufous-crowned sparrow

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Jeff Ahrens
Address: 29 orchard, Lake Forest, CA 92630
E-mail Address: jahrens@wetlandpermitting.com
Phone: (949) 837-0404 ext 40

Plant Information

Phenology: ____% vegetative ____% flowering ____% fruiting

Animal Information

1 # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: City of Whittier
Quad Name: Whittier Elevation: _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Lat 33.58687, long -118.00443

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Coastal Sage Scrub / chaparral

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use: Habitat preserve
Visible disturbances: None
Threats: Possible oil extraction activities
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

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EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 5/26/2016

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California Native Species Field Survey Form

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Scientific Name: Aimophila ruficeps canescens

Common Name: Southern California rufous-crowned sparrow

Species Found? ☒ Yes ☐ No _____ If not, why?

Total No. Individuals 1 Subsequent Visit? ☐ yes ☐ no

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ no ☐ unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: Kevin Livergood
Address: 29 Orchard, Lake Forest, CA 92630
E-mail Address: klivergood@wetlandpermitting.com
Phone: (949) 837-0404 ext 36

Plant Information

Phenology: ____% vegetative ____% flowering ____% fruiting

Animal Information

1 # adults ____ # juveniles ____ # larvae ____ # egg masses ____ # unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: Los Angeles Landowner / Mgr.: City of Whittier
Quad Name: Whittier Elevation: _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ Source of Coordinates (GPS, topo. map & type): _____
T____ R____ Sec ____, ____ ¼ of ____ ¼, Meridian: H☐ M☐ S☐ GPS Make & Model _____
DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☐ Horizontal Accuracy _____ meters/feet
Coordinate System: UTM Zone 10 ☐ UTM Zone 11 ☐ *OR* Geographic (Latitude & Longitude) ☐
Coordinates: Lat 33.967869, Long -117.998397

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*
Coastal Sage Scrub & chaparral

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☒ Good ☐ Fair ☐ Poor
Immediate AND surrounding land use: Habitat Preserve
Visible disturbances: None
Threats: Possible oil extraction activities
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☐ no ☐

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1500 IOWA AVENUE, SUITE 200
RIVERSIDE, CALIFORNIA 92507

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July 19, 2010

Ms. Andrea Gullo
Puente Hills Landfill Native Habitat Preservation Authority
7702 Washington Avenue, Suite C
Whittier, California 90602

Subject: Focused Survey Results for Sensitive Plant Species, City of Whittier Oil Exploration (LSA Project No. PUE0901)

Dear Ms. Gullo:

This letter report documents the results of focused plant surveys conducted by LSA Associates, Inc. (LSA) in 2008, 2009, and 2010 for the proposed oil exploration activities within lands managed by the Puente Hills Landfill Native Habitat Preservation Authority (Habitat Authority), owned by and located in the City of Whittier, Los Angeles County, California (Figure 1; all figures are attached).

Sensitive plant species were determined to be absent from the survey areas. There were no incidental observations of western spadefoot (*Spea hammondii*) or cactus wren (*Campylorhynchus brunneicapillus*) during the surveys.

BACKGROUND

Areas surveyed in 2008 totaled approximately 113 acres under investigation for potential oil exploration activities. The area surveyed in 2009 totaled approximately 209 acres and overlapped with much of the land surveyed in 2008 (Figure 2). Two areas, totaling approximately 40 acres, were surveyed in 2010. These two areas are distinct from those surveyed in 2008 and 2009. The survey areas are located within Sections 22, 23, 25, and 26 of Township 2 South, Range 11 West, as shown on the United States Geological Survey (USGS) 7.5-minute *Whittier* and *La Habra, California* quadrangles (Figure 1).

The survey areas are characterized by portions of Arroyo Pescadero and La Cañada Verde drainages, adjacent hillsides, and access roads. Elevations range from approximately 300 to 1,000 feet above sea level. Vegetation types within the survey areas primarily include coastal sage scrub, riparian scrub, nonnative grassland, ruderal vegetation, eucalyptus woodland, ornamental vegetation, and previously disturbed communities. Soil types mapped in the survey areas (Appendix B of LSA 2007) include the Hanford Association (0 to 5% slopes), Perkins-Rincon Association (0 to 15% slopes), and Altamont-Diablo Association (30 to 60% slopes, eroded).

Prior to conducting focused surveys, LSA biologists reviewed appropriate literature to determine whether sensitive plant species have been detected on or near the survey areas in the past. The literature review included the results of previous surveys of the project site (LSA 2006 and 2009) and a published checklist of plants of the Whittier Hills (Ljubenkov and Ross 2002), as well as the California Natural Diversity Database (CNDDB; California Department of Fish and Game 2008) and the California Native Plant Society's (CNPS) Online Inventory (California Native Plant Society 2008). The CNDDB query included the *La Habra* and *Whittier, California* quadrangles, and the CNPS query included a 9-quad search of the surrounding quadrangles. LSA also reviewed the Resource Management Plan (LSA 2007) prepared for the Habitat Authority in 2007, including the Sensitive Species Table in Appendix I, to further refine which sensitive plant species might be present in the survey areas.

Based on the literature review, no sensitive plants were found to have historic locations within the survey areas. However, nearby records for Plummer's mariposa lily (*Calochortus plummerae*) and Robinson's peppergrass (*Lepidium virginicum* var. *robinsonii*), both on CNPS List 1B, and Catalina mariposa lily (*Calochortus catalinae*), a CNPS List 4 species, combined with the presence of potentially suitable habitat, suggested that there was potential for these species to occur within the survey areas. Also, Southern California black walnut (*Juglans californica*), a CNPS List 4 species, was observed on the site during the 2009 survey. While the timing and methods of surveys focused on these four target species, all vascular plant species observed in the survey areas were identified to the degree necessary to determine sensitivity status.

METHODS

LSA biologists surveyed the respective survey areas for each year according to the following schedule:

LSA Biologists	Date	Time
Jim Harrison, Dan Rosie	April 10, 2008	7:00 a.m. to 4:30 p.m.
Dan Rosie, Jodi Ross	April 18, 2008	6:00 a.m. to 12:30 p.m.
Jim Harrison, Matthew Willis	June 4, 2008	6:30 a.m. to 3:30 p.m.
Jim Harrison, Dan Rosie	June 5, 2008	8:00 a.m. to 12:00 p.m.
Dan Rosie, Robert Steers	April 2, 2009	10:15 a.m. to 6:00 p.m.
Dan Rosie, Robert Steers	April 3, 2009	10:00 a.m. to 12:15 p.m.
Sarah Barrera, Robert Steers	June 5, 2009	11:00 a.m. to 3:30 p.m.
Sarah Barrera, Robert Steers	June 9, 2009	9:00 a.m. to 12:00 p.m.
Stan Spencer, Jodi Ross	April 27, 2010	10:30 a.m. to 2:00 p.m.
Stan Spencer, Jodi Ross	April 28, 2010	11:30 a.m. to 1:20 p.m.
Stan Spencer, Jodi Ross	June 10, 2010	10:00 a.m. to 1:00 p.m.

Botanical surveys were conducted in accordance with the current CNPS Botanical Survey Guidelines (California Native Plant Society 2001). In each year, the first site visit was conducted in April to observe plants that mature in early spring, and a later visit was conducted in June to observe plants that mature during late spring.

The surveys were conducted by walking transects throughout the survey areas. Transect widths varied from 10 to about 100 feet and depended on visibility and habitat quality. Although the surveys were conducted during the expected flowering seasons of the target species in order to facilitate detection of the plants, transects were walked slowly enough that the target species could have been detected even in a preflowering or postflowering state. Steep slopes inaccessible by foot were surveyed using binoculars.

Precipitation in the City of Whittier was 9.7 inches from September of 2007 to May 2008 and 8.4 inches from September of 2008 to May 2009 (National Climate Data Center 2009). Average precipitation for the City of Whittier is 14.05 inches from September through May, based on 59 years of data (Western Regional Climate Center 2009). Therefore, precipitation was below average in both of these survey years. However, the majority of rainfall occurred between November and February in both years (data not shown), which led to widespread germination of native annual plants and bolting of perennial geophytes such as blue dicks (*Dichelostemma capitatum*) and blue-eyed grass (*Sisyrinchium bellum*). Furthermore, in 2009 Habitat Authority ecologist Shannon Lucas confirmed that Plummer's mariposa lily was blooming at a nearby site during one of the survey visits (pers. com. June 4, 2009). Thus, it was concluded that these were adequate years and sampling dates to detect target plant species. Precipitation in the general site vicinity from September 2009 to May 2010 was above average (University of California 2010).

Attached Table A contains a cumulative list of plant species identified during the 2008, 2009, and 2010 surveys.

RESULTS AND DISCUSSION

No sensitive plant species were detected during the surveys. A stand of about 30 individuals of various ages of Southern California black walnut was found in the drainage that is parallel to and east of Catalina Avenue (Figure 2). This stand is a component of the riparian vegetation that occurs in the drainage, and is disturbed, with eucalyptus trees (*Eucalyptus* sp.) predominating. Southern California black walnut is on the CNPS 4 List. CNPS List 4 is only a "watch list." Species on this list are not generally considered sensitive and do not appear on CNPS or CNDDB searches by USGS quads. This species has no State or Federal status but it is included in the Resource Management Plan for the preserve.

Historically, the survey areas have been heavily disturbed and much of the survey areas consist of nonnative vegetation. Patches of intact coastal sage scrub and other habitat potentially suitable for sensitive species do occur within the survey areas. However, the herbaceous component of these patches is dominated by nonnative species. Other portions of the survey areas that appeared relatively uninvaded were not found to contain sensitive plants. The combination of historic disturbance and a high abundance of nonnative species likely preclude the existence of sensitive plant species in the survey areas.

CONCLUSIONS

Based on the results of the focused surveys, it is the conclusion of LSA that sensitive plant species do not occur within the areas surveyed.

If you have any questions or require additional information, please feel free to call me at (951) 781-9310.

Sincerely,

LSA ASSOCIATES, INC.

Stanley C. Spencer, Ph.D.
Senior Biologist

Attachments: References Cited
Table A: Plant Species Observed
Figure 1: Project Location
Figure 2: 2008, 2009, and 2010 Survey Areas and Results

REFERENCES

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TABLE A

VASCULAR PLANT SPECIES OBSERVED

The following vascular plant species were observed in the survey areas by various biologists during the course of on-site surveys in 2008, 2009, and 2010.

Table A: Vascular Plant Species Observed

Scientific Name	Common Name
MAGNOLIOPHYTA: MAGNOLIOPSIDA	**DICOT FLOWERING PLANTS**
Anacardiaceae	**Sumac family**
Malosma laurina	Laurel sumac
Rhus integrifolia	Lemonade berry
Rhus ovata	Sugar bush
Schinus molle (nonnative species)	Peruvian pepper tree
Schinus terebinthifolius (nonnative species)	Brazilian pepper tree
Toxicodendron diversilobum	Poison oak
Apiaceae	**Carrot family**
Conium maculatum (nonnative species)	Poison hemlock
Daucus pusillus	American wild carrot
Foeniculum vulgare (nonnative species)	Fennel
Apocynacecae	**Dogbane family**
Vinca major (nonnative species)	Blue periwinkle
Asclepiadaceae	**Milkweed family**
Asclepias californica	California milkweed
Asteraceae	**Sunflower family**
Ambrosia acanthicarpa	Annual bur-sage
Ambrosia psilostachya	Western ragweed
Artemisia californica	California sagebrush
Artemisia douglasiana	Mugwort
Baccharis emoryi	Emory's baccharis
Baccharis pilularis	Coyote brush
Baccharis salicifolia	Mule fat
Carduus pycnocephalus (nonnative species)	Italian Thistle
Centaurea melitensis (nonnative species)	Tocalote
Cirsium vulgare (nonnative species)	Bull thistle
Corethrogyne filaginifolia	California aster
Cotula australis (nonnative species)	Australian brass-buttons

Table A: Vascular Plant Species Observed

Scientific Name	Common Name
Deinandra fasciculata	Fascicled tarweed
Encelia californica	California encelia
Eriophyllum confertiflorum	Golden yarrow
Gutierrezia californica	California matchweed
Hedypnois cretica (nonnative species)	Crete weed
Helianthus annuus	Common sunflower
Heterotheca grandiflora	Telegraph weed
Isocoma menziesii	Goldenbush
Lactuca serriola (nonnative species)	Prickly lettuce
Logfia filaginoides	California cottonrose
Malacothrix saxatilis	Cliff malacothrix
Picris echioides (nonnative species)	Bristly ox-tongue
Pseudognaphalium biolettii	Two-color rabbit-tobacco
Pseudognaphalium californicum	California rabbit-tobacco
Pseudognaphalium luteoalbum (nonnative species)	Jersey cudweed
Pseudognaphalium microcephalum	San Diego rabbit-tobacco
Pseudognaphalium stramineum	Cottonbatting plant
Senecio vulgaris (nonnative species)	Common groundsel
Silybum marianum (nonnative species)	Milk thistle
Sonchus asper (nonnative species)	Prickly sow thistle
Sonchus oleraceus (nonnative species)	Common sow thistle
Stephanomeria virgata	Tall wreath-plant
Taraxacum officinale (nonnative species)	Common dandelion
Xanthium strumarium	Rough cockleburr
Bignoniaceae	**Bignonia family**
Jacaranda mimosifolia (nonnative species)	Jacaranda
Brassicaceae	**Mustard family**
Brassica nigra (nonnative species)	Black mustard
Hirschfeldia incana (nonnative species)	Shortpod mustard
Raphanus sativus (nonnative species)	Wild radish
Sisymbrium erysimoides (nonnative species)	Mediterranean rocket
Sisymbrium irio (nonnative species)	London rocket
Cactaceae	**Cactus family**
Opuntia littoralis	Coastal prickleypear
Caprifoliaceae	**Honeysuckle family**
Sambucus mexicana	Blue elderberry

Table A: Vascular Plant Species Observed

Scientific Name	Common Name
Caryophyllaceae	**Pink family**
Stellaria media (nonnative species)	Common chickweed
Chenopodiaceae	**Saltbush family**
Atriplex semibaccata (nonnative species)	Australian saltbush
Chenopodium album (nonnative species)	Lamb's quarters
Chenopodium berlandieri	Pitseed goosefoot
Chenopodium murale (nonnative species)	Nettleleaf goosefoot
Salsola tragus (nonnative species)	Russian thistle
Convolvulaceae	**Morning-glory family**
Calystegia macrostegia	Morning-glory
Convolvulus arvensis (nonnative species)	Field bindweed
Crassulaceae	**Stonecrop family**
Crassula connata	Sand pigmy-stonecrop
Cucurbitaceae	**Gourd family**
Cucurbita foetidissima	Calabazilla
Marah macrocarpus	Cucamonga manroot
Euphorbiaceae	**Spurge family**
Chamaesyce albomarginata	Rattlesnake weed
Chamaesyce maculata (nonnative species)	Spotted spurge
Ricinus communis (nonnative species)	Castor bean
Fabaceae	**Pea family**
Acacia cyclops (nonnative species)	Coastal wattle
Acacia longifolia	Sydney golden wattle
Lotus salsuginosus	Coastal lotus
Lotus scoparius	Deerweed
Lupinus microcarpus	Chick lupine
Lupinus succulentus	Arroyo lupine
Medicago polymorpha (nonnative species)	Bur-clover
Melilotus indicus (nonnative species)	Annual yellow sweetclover
Vicia villosa (nonnative species)	Winter vetch
Fagaceae	**Beech family**
Quercus agrifolia	Coast live oak
Geraniaceae	**Geranium family**
Erodium brachycarpum or *botrys* (nonnative species)	Erodium
Erodium cicutarium (nonnative species)	Redstem stork's bill
Erodium moschatum (nonnative species)	Musky stork's bill

Table A: Vascular Plant Species Observed

Scientific Name	Common Name
Grossulariaceae	**Gooseberry family**
Ribes speciosum	Fuchsiaflower gooseberry
Hydrophyllaceae	**Waterleaf family**
Emmenanthe penduliflora	Whispering bells
Eucrypta chrysanthemifolia	Common eucrypta
Phacelia cicutaria	Caterpillar phacelia
Phacelia distans	Distant phacelia
Phacelia minor	Wild Canterbury bells
Phacelia parryi	Parry's phacelia
Phacelia ramosissima	Branching phacelia
Phacelia tanacetifolia	Tansy phacelia
Pholistoma auritum	Blue fiesta flower
Juglandaceae	**Walnut family**
Juglans californica	Southern California black walnut
Lamiaceae	**Mint family**
Marrubium vulgare (nonnative species)	Horehound
Salvia apiana	White sage
Salvia leucophylla	Purple sage
Salvia leucophylla X *apiana*	White/purple sage hybrid
Salvia mellifera	Black sage
Lauraceae	**Laurel family**
Persea americana (nonnative species)	Avocado
Malvaceae	**Mallow family**
Malacothamnus fasciculatus	Chaparral mallow
Malva parviflora (nonnative species)	Cheeseweed
Malva sylvestris (nonnative species)	High mallow
Myrtaceae	**Myrtle family**
Eucalyptus sp. (nonnative species)	Eucalyptus
Nyctaginaceae	**Four-o'clock family**
Mirabilis laevis	Wishbone bush
Oleaceae	**Olive family**
Fraxinus velutina	Velvet ash
Ligustrum lucidum (nonnative species)	Glossy privet
Onagraceae	**Evening primrose family**
Camissonia californica	Mustard-like evening primrose
Clarkia bottae	Botta's clarkia

Table A: Vascular Plant Species Observed

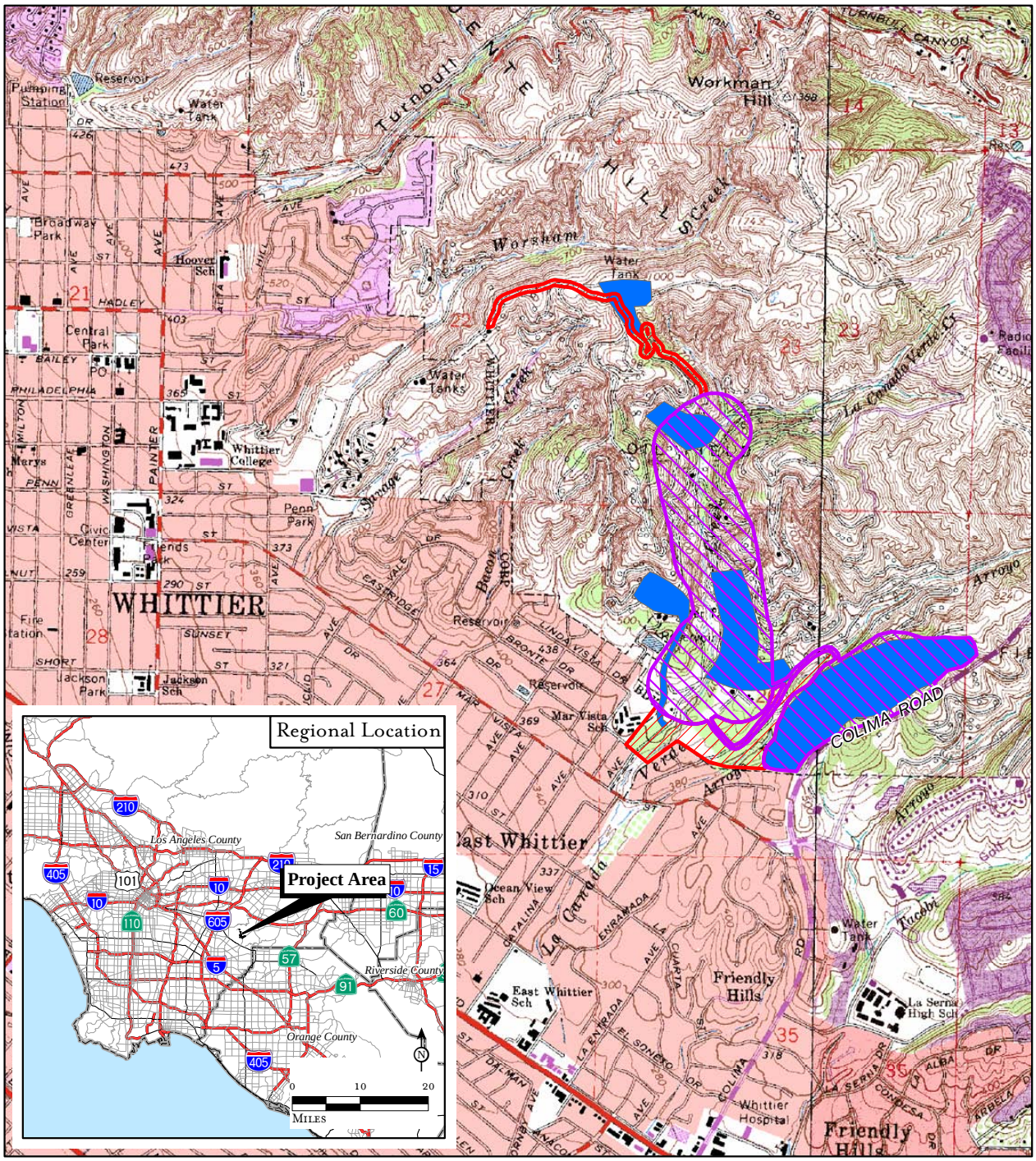
Scientific Name	Common Name
Oxalidaceae	**Oxalis family**
Oxalis pes-caprae (nonnative species)	Bermuda buttercup
Platanaceae	**Sycamore family**
Platanus racemosa	Western sycamore
Polygonaceae	**Buckwheat family**
Eriogonum fasciculatum	California buckwheat
Polygonum aviculare (nonnative species)	Common knotweed
Rumex crispus (nonnative species)	Curly dock
Portulacaeae	**Purslane family**
Claytonia perfoliata	Miner's lettuce
Primulaceace	**Primrose family**
Anagallis arvensis (nonnative species)	Scarlet pimpernel
Punicaceae	**Pomegranate Family**
Punica granatum (nonnative species)	Pomegranate
Rosaceae	**Rose family**
Eriobotrya japonica	Loquat
Heteromeles arbutifolia	Toyon
Prunus ilicifolia	Hollyleaf cherry
Rubiaceae	**Madder family**
Galium angustifolium ssp. *angustifolium*	Narrow-leaved bedstraw
Galium aparine	Goose grass
Salicaceae	**Willow family**
Salix exigua	Narrowleaf willow
Salix gooddingii	Goodding's willow
Salix laevigata	Red willow
Salix lasiolepis	Arroyo willow
Scrophulariaceae	**Figwort family**
Keckiella cordifolia	Red bush penstemon
Mimulus aurantiacus	Red bush monkey-flower
Scrophularia californica	Coast figwort
Verbascum virgatum (nonnative species)	Wand Mullein
Solanaceae	**Nightshade family**
Nicotiana glauca (nonnative species)	Tree tobacco
Solanum americanum	American black nightshade
Solanum douglasii	Greenspot nightshade
Tamaricaceae	**Tamarisk family**
Tamarix ramosissima (nonnative species)	Mediterranean tamarisk

Table A: Vascular Plant Species Observed

Scientific Name	Common Name
Tropaeolaceae	**Nasturtium family**
Tropaeolum majus (nonnative species)	Garden nasturtium
Ulmaceae	**Elm family**
Ulmus parvifolia (nonnative species)	Chinese elm
Ulmus pumila (nonnative species)	Siberian elm
Urticaceae	**Nettle Family**
Parietaria hespera	Rillita pellitory
Urtica dioica	Stinging nettle
Urtica urens (nonnative species)	Dwarf nettle
Verbenaceae	**Vervain family**
Verbena lasiostachys	Western verbena
Zygophyllaceace	**Caltrop family**
Tribulus terrestris (nonnative species)	Puncture vine
MAGNOLIOPHYTA: LILIOPSIDA	**MONOCOT FLOWERING PLANTS**
Arecaceae	**Palm family**
Washingtonia filifera	California fan palm
Iridaceae	**Iris family**
Sisyrinchium bellum	Blue-eyed grass
Liliaceae	**Lily family**
Dichelostemma capitatum	Blue dicks
Yucca gloriosa (nonnative species)	Spanish dagger
Poaceae	**Grass family**
Avena barbata (nonnative species)	Slender wild oat
Avena fatua (nonnative species)	Wild oat
Bromus diandrus (nonnative species)	Ripgut brome
Bromus hordeaceus (nonnative species)	Soft chess
Bromus madritensis ssp. *rubens* (nonnative species)	Red brome
Cortaderia jubata (nonnative species)	Andean pampas grass, jubatagrass
Cynodon dactylon (nonnative species)	Bermuda grass
Hordeum murinum (nonnative species)	Foxtail barley
Lamarckia aurea (nonnative species)	Goldentop
Leymus condensatus	Giant wildrye
Leymus triticoides	Beardless wildrye
Lolium multiflorum (nonnative species)	Italian ryegrass
Nassella lepida	Foothill needlegrass
Nassella pulchra	Purple needlegrass
Pennisetum setaceum (nonnative species)	African fountain grass

Table A: Vascular Plant Species Observed

Scientific Name	Common Name
Piptatherum miliaceum (nonnative species)	Smilo grass
Schismus barbatus (nonnative species)	Common Mediterranean grass
Vulpia myuros (nonnative species)	Rat-tail fescue



LSA

FIGURE 1

2010 Survey Area (approx. 40 acres)

2009 Survey Area (approx. 209 acres)

2008 Survey Area (approx. 111 acres)

0 1,000 2,000

Feet

Puente Hills Landfill Native Habitat Preservation Authority

City of Whittier Oil Exploration

Regional and Project Location

SOURCE: USGS 7.5' Quad; Whittier (81), CA; La Habra (81), CA; Thomas Bros., 2009

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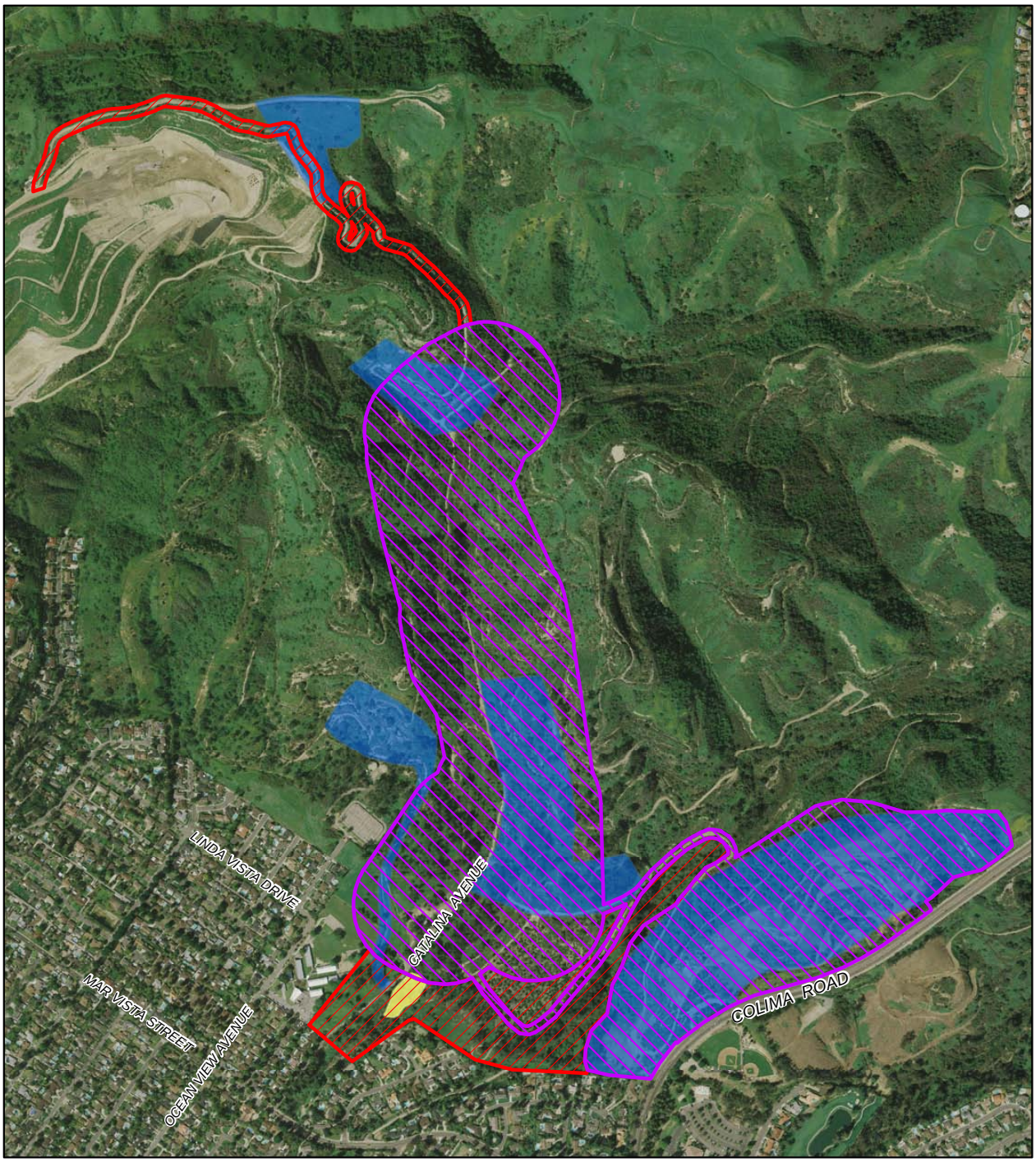

LSA

FIGURE 2

2010 Survey Area (approx. 40 acres)

2009 Survey Area (approx. 209 acres)

2008 Survey Area (approx. 111 acres)

Southern California Black Walnut *(Juglans californica)*

N

0 500 1,000

FEET

Puente Hills Landfill Native Habitat Preservation Authority
City of Whittier Oil Exploration

2008, 2009, and 2010
Survey Areas and Results

SOURCE: AirPhotoUSA, 2008. Thomas Bros., 2009

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HABITAT RESTORATION GUIDELINES AND PRIORITIES

The purpose of this Habitat Restoration Plan (Plan) is to provide guidance on restoring degraded and disturbed habitats throughout the Habitat Authority property. While the Plan provides a great deal of technical information on existing conditions in the Preserve and on restoration methods, it is programmatic in nature and accomplishes the following:

- Identifies the range of conditions that exist in the potential restoration areas, specifically soil characteristics and weed composition;
- Provides restoration criteria and a priority evaluation on restoring the degraded and disturbed habitats;
- Provides information on the most effective restoration methods currently known and their associated costs;
- Provides basic data and recommendations prescribing restoration methods for each type of potential restoration area;
- Provides guidelines for preparing more detailed, site-specific plans that will maximize the success and minimize the cost of individual restoration efforts; and
- Provides guidance for approving future mitigation projects in the Preserve.

Specific plans for individual restoration sites should be developed on a case-by-case basis, with consideration of the information and guidelines provided in this Plan as well as new information that is developed through adaptive management.

This Plan is organized by the analyses of existing conditions (e.g., soil and weeds), restoration criteria and priority, restoration application, restoration techniques, performance standards and monitoring, and planting and seeding palettes.

This Plan considers all of the baseline resource and cultural resource data to make sure that the tenets of Ecosystem Management are incorporated. The Plan utilizes restoration criteria on which to base the restoration priorities as well as a master list of techniques and the situations for which they are appropriate. The restoration areas are evaluated for site conditions, and recommendations of the specific restoration techniques are prescribed for each type of restoration area.

Approach

This Plan was prepared with three primary concepts in mind: Ecosystem Management, Adaptive Management, and Ecological Successional Model.

Ecosystem Management. Ecosystem Management integrates scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term.

The following are Ecosystem Management goals:

- Maintain viable populations of all native species in situ;
- Represent, within protected areas, all native ecosystem types across their natural range of variation;
- Maintain evolutionary and ecological processes (e.g., disturbance regimes, hydrological processes, nutrient cycles);
- Manage over a period of time long enough to maintain the evolutionary potential of species and ecosystems; and
- Accommodate human use and occupancy within these constraints.

Adaptive Management. Adaptive Management incorporates regular monitoring to evaluate the implemented Plan. Adaptive Management allows for continual adjustments to improve upon the current Plan. It is expected that this Plan will be used as a guide and that as more restoration is implemented in the Preserve, improvements will be made from each restoration success and failure.

Ecological Successional Model. The Ecological Successional Model mimics the successional process that occurs in nature following a disturbance. In nature, fast-growing plant species quickly recolonize the disturbed areas. These fast-growing species are well suited for competing against the heavily invasive alien species such as mustard, annual grasses, and thistle. In addition, these early seral species help prepare the soil by colonizing mycorrhizae and fixing nitrogen for the slower-developing perennials. By the time the vegetation reaches the climax plant community, most of the early successional species have dropped out of the plant community. However, these early successional species are lying dormant in the soil as seed, ready to germinate following the next disturbance. Plant communities are continuously in a state of change, constantly progressing towards a climax state, and are always being disturbed by natural and human forces. By basing the restoration primarily on seeded species, the specific site conditions will determine the actual climax plant community. These conditions and their effects on the ultimate community cannot always be known with certainty. In contrast, a climax restoration model attempts to mimic the climax plant community. This type of restoration leaves out the early successional species, primarily relying on container plants to provide the instant climax plant community. This model also assumes that the restoration "designer" knows what the climax community should be including its species composition.

Soil

An understanding of soil and vegetation associations is key to determining appropriate habitat restoration. To start, LSA determined whether any of the soil associations were more likely to support exotic weeds. Table A-O shows the distribution of weedy areas across soil associations in relation to native vegetation. Table A-P shows that generally, exotic weeds are likely to be found in all soil associations from clay soils on gentle slopes to sandy loam soils on steep slopes.

Table A-O: Soil Associations Acreage in Relation to Native Vegetation and Weed Distribution

Soil Association	Soil Association Total Acres	Acres of Native Vegetation (%)	Acres of Weeds (%)
San Andreas-San Benito 30–70 percent slope	1,266	862 (68%)	404 (32%)
Hanford	618	360 (58%)	258 (42%)
Mocho-Sorrento	16	12 (75%)	4 (25%)
Perkins-Ricon	374	224 (60%)	150 (40%)
Altamont-Diablo 9–30 percent slope	341	238 (70%)	103 (30%)
Altamont-Diablo 30–50 percent slope	1,175	804 (68%)	371 (32%)

Table A-P: General Relationships of Exotic Species

Weed Community	Soil Characteristics		Aspect
	Texture	Calcareous (Lime Detected)	
Brassica nigra/Centaurea melitensis	Sandy Loam	No Lime	East to South to West
*Brassica nigra/*Nonnative grass	Clay Loam to Loam	Preference	All
Brassica nigra/Silybum marianum	Clay Loam	No Lime	East to South to West
*Erodium cicutarium/*Nonnative grass	Clay Loam	Preference	All
Eucalyptus glauca	Clay to Clay Loam	No Lime	All
Foeniculum vulgare	Clay to Clay Loam	No Lime	All
Hirschfeldia incana/Centaurea melitensis	Clay	Preference	West to Southeast
Nicotiana glauca/Brassica nigra	Clay Loam	Preference	South to Southwest
Nonnative grass/*Brassica nigra*	Clay Loam, Clay to Loam	Preference	All

Weed Community	Soil Characteristics		Aspect
	Texture	Calcareous (Lime Detected)	
Nonnative grass/*Centaurea melitensis*	Clay Loam	Preference	Southeast to Southwest
Nonnative grass/*Erodium cicutarium*	Clay	No Lime	All
Nonnative grass/*Eucalyptus glauca*	Clay	No Lime	All
Nonnative grass/*Hirschfeldia incana*	Clay Loam to Clay	No Lime	All
Nonnative grass/*Phalaris aquatica*	Clay	No Lime	North to Southeast
Nonnative grass/*Pichris echioides*	Clay	No Lime	Northwest to East
Nonnative grass/*Raphanus sativus*	Clay	No Lime	All
Phalaris aquatica/Nonnative grass	Clay	No Preference	Northwest to Northeast
Raphanus sativus/Brassica nigra	Clay to Clay Loam	No Lime	All
Ricicus communis/Silybum marianum	Loam	Preference	Southeast to West
Schinus terebenthifolius/Brassica nigra	Clay Loam	Preference	South to Southeast

The analyses from the Exotic Plant Species section (Appendix G) show the general relationships between soil, aspect, and weed species. These conclusions are based on limited soil tests.

Table A-Q shows the general relationship of some of the dominant native communities based on the limited soil testing conducted for this study. These general relationships can be used as a basis for developing the most appropriate native habitat for restoration in the Preserve. However, it should be stressed that the results are based on sample test locations over the entire Preserve. A more comprehensive sampling regime at specific locations for several key soil characteristics, such as lime, texture, and soil shrink-swell characteristics would provide more insight to guide appropriate habitat restoration.

Table A-Q: Specific Relationships of Native Communities Based upon Limited Soil Tests

Plant Community	Soil Characteristics		Aspect
	Texture	Calcareous (Lime Detected)	
Black Sage Scrub	Loam to Clay Loam	No Preference	East to West
Chaparral	Loam to Clay Loam	No Preference	North to Northwest
Coyote Brush Scrub	Clay	No Preference	Northwest to Southeast
Elderberry Woodland	Clay Loam	No Lime	North to West
Nassella Grassland	Clay to Clay Loam	No Lime	No Preference
Oak Woodland	Clay Loam to Loam	No Lime	North
Purple Sage Scrub	Clay Loam	Preference	Southeast to Southwest
Sagebrush Scrub	Sandy Loam to Clay	Low Preference	No Preference
Sagebrush/Buckwheat Scrub	Sandy Loam to Clay	No Lime	Southeast to Southwest
Walnut Woodland	Clay	Preference	Northeast to West

Based upon the results of LSA's analysis, which indicates that particular habitats prefer certain soil types, further soil investigation should be required during the development of a specific plan for each identified weed polygon. At a minimum, the soil should be mapped within each polygon to determine the overall type of soil: clay, clay loam, or loams. If the study is conducted during summer or early fall, then soil cracks should be noted to establish the shrink-swell capacity of the soils. Additionally, pooled soil samples from similar soil textures across the site should be collected, and tests for lime and available phosphorous should be performed. After these soil analyses establish texture and limited chemistry, then geomorphic position, slope, and aspect will contribute to determining an appropriate habitat for restoration based upon descriptions and analyses in the preceding sections.

Restoration Criteria and Priority Ranking

Restoration criteria and priority ranking were developed with input from the Habitat Authority when all the data were collected and analyzed and results were discussed. The criteria and priorities will be analyzed for and applied to the previously identified weed polygons. It is important to note that weeds are scattered throughout the Preserve and not only limited to the areas mapped by BonTerra; however, the largest and highest concentration of weeds are found in these areas and will be the most useful for restoration planning purposes.

Habitat restoration/priorities were originally derived based on a concept of individual "management areas" (Whittier, Hacienda Heights, and La Habra Heights) throughout the Preserve (Figure A-7). However current management efforts are based on a Preserve-wide assessment. Therefore, the originazation of the priorities by management unit provided herein is primarily for general information and does not prescribe actual management priorities.

Another factor affecting restoration priorities is the annual restoration budget. It will be important to maximize the restoration effort and cost-effectiveness to provide the most ecologically meaningful restoration.

Priority Calculating Method. Restoration priorities were developed using a number of factors including average slope category; polygon size; proximity to trails/roads; proximity to existing restoration efforts; whether it is positioned on a ridge top above natives; the presence of targeted highly invasive species and whether the targeted invasive species are the top two dominant species; and wildlife connectivity. Each category was given a priority value based upon criteria developed with input from the Habitat Authority. Although each priority value is somewhat subjective, weighting is based on the relative degree of difficulty for restoration and habitat value in an effort to maximize the amount of habitat restored within the Habitat Authority's budget. It is important to note that this analysis does not include fire or rare-plant data because they were not available at the time of this analysis. The rankings from each of the categories were added together, resulting in a priority ranking for the overall Preserve. The management areas were further divided into restoration planning units by watershed. Each of restoration planning units is referenced with the names called out on the USGS map. All unnamed restoration units are designated with a letter referencing the management area within the same watershed and a number. For example, H3 refers to the third canyon in the

Prepared By: L S A

FIGURE A-7

Hacienda Heights Management Area

La Habra Heights Management Area

Whittier Management Area

0 1,500 3,000
FEET

Puente Hills Landfill
Native Habitat Preservation Authority

Resource Management Plan

Habitat Restoration Plan
Management Areas

SOURCE: Aerial-EagleAerial (2003)

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Hacienda Heights restoration unit. The restoration units were then ranked throughout the Preserve. Because the Preserve manages the land according to city/community ownership, the ranking of restoration units over the whole Preserve are further ranked by management area (Whittier, Hacienda Heights, and La Habra Heights). The restoration priority factors are described below.

Slope. In general, it is easier and less expensive to restore land with gentle slopes than land with steep slopes. The steeper areas are more difficult to access with equipment and personnel; tend to be more erosive; and, in extreme cases, can present a hazardous working condition. The percent slope was calculated for the weed polygons within the Preserve. The slope was broken into four categories: 0–20 percent, 20–40 percent, 40–60 percent, and 60–85 percent). Each weed polygon was designated the slope category with the most area for that polygon. Since some of the potential restoration areas are on very steep terrain, such as in Turnbull Canyon, these areas were given a low priority and ranked 2. The more gentle areas were ranked 40. The slope categories and priority values are shown in Table A-R below.

Table A-R: Percent Slope Categories and Priority Values

Percent Slope (%)	Priority Value
0–20	40
20–40	36
40–60	20
60–85	2

Size. The size of the weed polygons is generally related to a cost efficiency factor. The larger the area, the more cost-effective it will be to restore it. The largest weed polygons were designated a priority value of 10, and the smallest weed polygons were designated a priority value of 1. The weed polygon size categories and priority values are shown in Table A-S below.

Table A-S: Weed Polygon Size Categories and Priority Values

Weed Polygon Size	Priority Value
25–50 acres	10
10–25 acres	8
5–10 acres	6
1–5 acres	2
< 1 acre	1

Proximity to Roads and Trails. Site access by equipment and personnel is important when evaluating a restoration site. Site access was determined by proximity to existing roads or trails. The roads and trails were buffered at 10 feet, 50 feet, 100 feet, 500 feet, 1,000 feet, and 5,000 feet. The weed polygons were classified by the closest proximity category to the road or trail. Table A-T shows the priority-valued designated for each proximity classification.

Table A-T: Proximity to Roads and Trails

Proximity to Roads and Trails (feet)	Priority Value
< 10	10
10–50	9
50–100	8
101–500	5
501–1,000	3
1,000–5,000	2
> 5,000	1

Proximity to Existing Restoration. There are a number of restoration efforts that are planned or are currently underway in the Preserve. In order to help protect the integrity of these young restoration sites from composition from surrounding weeds, higher priority was given to those weed polygons in close proximity to existing or planned restoration sites. Also, the areas near existing restoration sites usually have well-traveled access and are nearby existing staging areas. Table A-U shows the priority values for proximity of existing restoration.

Table A-U: Proximity to Existing Restoration Efforts

Proximity to Existing Restoration (feet)	Priority Value
< 500	10
501–1,000	8
1,001–2,000	6
> 2,000	3

Exotics' Position on Ridge Tops. In areas where exotics are positioned at the highest elevations, natural conversion to native plant communities is the most difficult. These areas do not have a continuous source of native seeds as they would if positioned downhill of native plant communities. In addition, these exotics will continue to spread seed downhill into native plant communities. The weed polygons that are positioned on ridge tops are designated a priority value of 10, and the other weed polygons are designated a priority value of 4. Table A-V shows the priority value for the ridge top position.

Table A-V: Exotics Positioned on Ridge Tops

Exotics Positioned on Ridge Tops	Priority Value
Yes	10
No	4

Highly Invasive Species. There are some exotic species that are more invasive than others. The most highly invasive exotic weeds are identified and rated by California Invasive Plant Council (CalIPC). In addition, the Preserve has provided input on weeds that seem to be spreading in the Preserve. The most invasive of weeds should be a top priority to slow and stop their spread. If one or more of these species was present, the highest priority value was designated for that weed polygon. In addition, the amount of area these highly invasive weeds occupy is an important factor in their rate of spread and eradication. To account for this, weed polygons where the dominant and second most dominant weeds were invasive with a rating greater than 5 had a multiplier applied as follows. For weed polygons where the dominant weed was a species greater than 5, a 1.5 multiplier was applied. For weed polygons where the second dominant weed was a species greater than 5, a 1.2 multiplier was applied. The three numbers, including highly invasive weed species, most dominant invasive weed with a value greater than 5 (with multiplier), and second dominant highly invasive weed with a value greater than 5 (with multiplier), were added to the total. Table A-W shows a list of the most highly invasive weeds and their designated priority value.

Table A-W: Highly Invasive Species and Priority Value

Highly Invasive Exotic Species Present		CAL-IPC	Value
Scientific Name	**Common Name**		
Schinus molle	Peruvian pepper	Limited	3
Nonnative Grasses	NNG	Moderate	3
Brassica nigra	black mustard	Moderate	4
Bromus diandrus	ripgut brome	Moderate	4
Robinia pseudoacacia	black locust	Limited	5
Nicotiana glauca	tree tobacco	Moderate	6
Carduus pycnocephalus	Italian thistle	Moderate	10
Cirsium arvense	Canada thistle	Moderate	10
Cirsium vulgare	bull thistle	Moderate	10
Cortaderia selloan	pampas grass	High	10
Foeniculum vulgare	Fennel	High	10
Myoporum laetum	Myoporum	Moderate	10
Pennisetum setaceum	fountain grass	Moderate	10
Phalaris aquatica	harding grass	Moderate	10
Ricinus communis	castor bean	Limited	10
Schinus terebinthifolius	Brazilian pepper	Limited	10
Silybum marianum	milk thistle	Limited	10
Conium maculatum	poison hemlock	Moderate	10
Eucalyptus sp.	Eucalyptus	Limited to Moderate	10
Acacia sp.	Acacia	Limited	8
Washingtonia robusta	Mexican fan palm	Moderate	6

Highly Invasive Exotic Species Present		CAL-IPC	Value
Scientific Name	**Common Name**		
Dominance 1	> 5 Invasive Value	Multiply by 1.5	
Dominance 2	> 5 Invasive Value	Multiply by 1.2	

Wildlife Connectivity. The Preserve provides connectivity for wildlife from canyons leading from Chino Hills at the eastern Puente Hills west to the San Gabriel River and beyond. Each watershed was given a rating depending upon whether it had a high, medium, or low importance for wildlife connectivity. Table A-X shows the priority values associated with the different levels of importance.

Table A-X: Wildlife Connectivity and Priority Values

Importance of Connectivity	Priority Value
High Importance	10
Medium Importance	5
Low Importance	2

When all categories were designated, the priority values for each category were added together, resulting in a cumulative total to help create a basis for the restoration priorities. The resulting priority scores were then divided into five priority categories ranging from high to low. Table A-Y shows the priority categories and associated priority score totals. Figure A-8 shows the results of the weighted analysis for the overall priorities for restoration across the entire Preserve.

Table A-Y: Restoration Priority Ranking Categories and Priority Score Ranges

Restoration Priority Ranking	Priority Score Ranges
High Priority	70–94
Medium-High Priority	60–69
Medium Priority	50–59
Medium-Low Priority	40–49
Low Priority	0–39

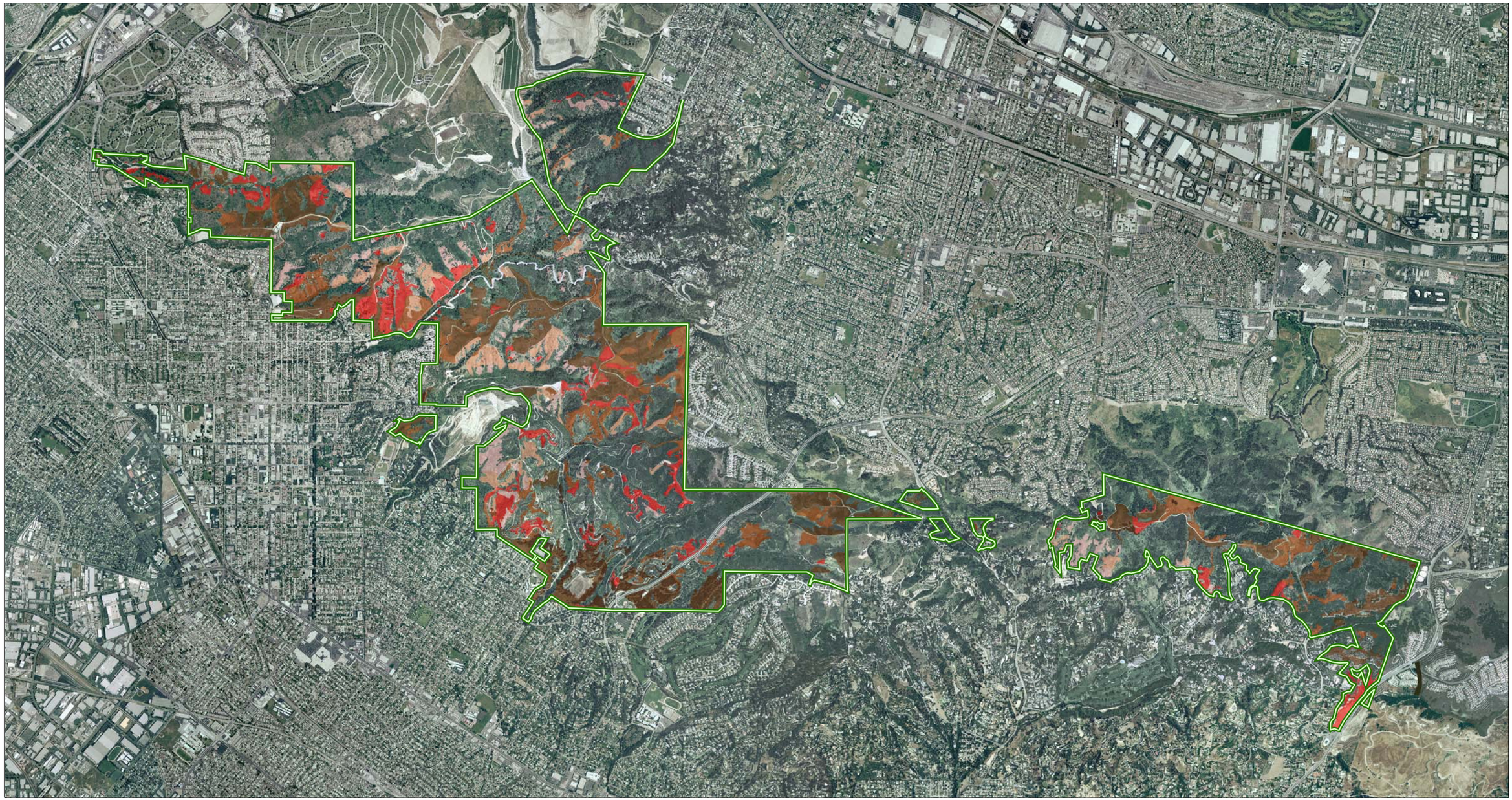

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FIGURE A-8

Restoration Priorities

Preserve Boundary

Low Restoration Priority

Medium-Low Restoration Priority

Medium Restoration Priority

Medium-High Restoration Priority

High Restoration Priority

N

0 1,500 3,000
FEET

Puente Hills Landfill
Native Habitat Preservation Authority

Resource Management Plan

Overall Restoration Priorities

SOURCE: Aerial-EagleAerial (2003)

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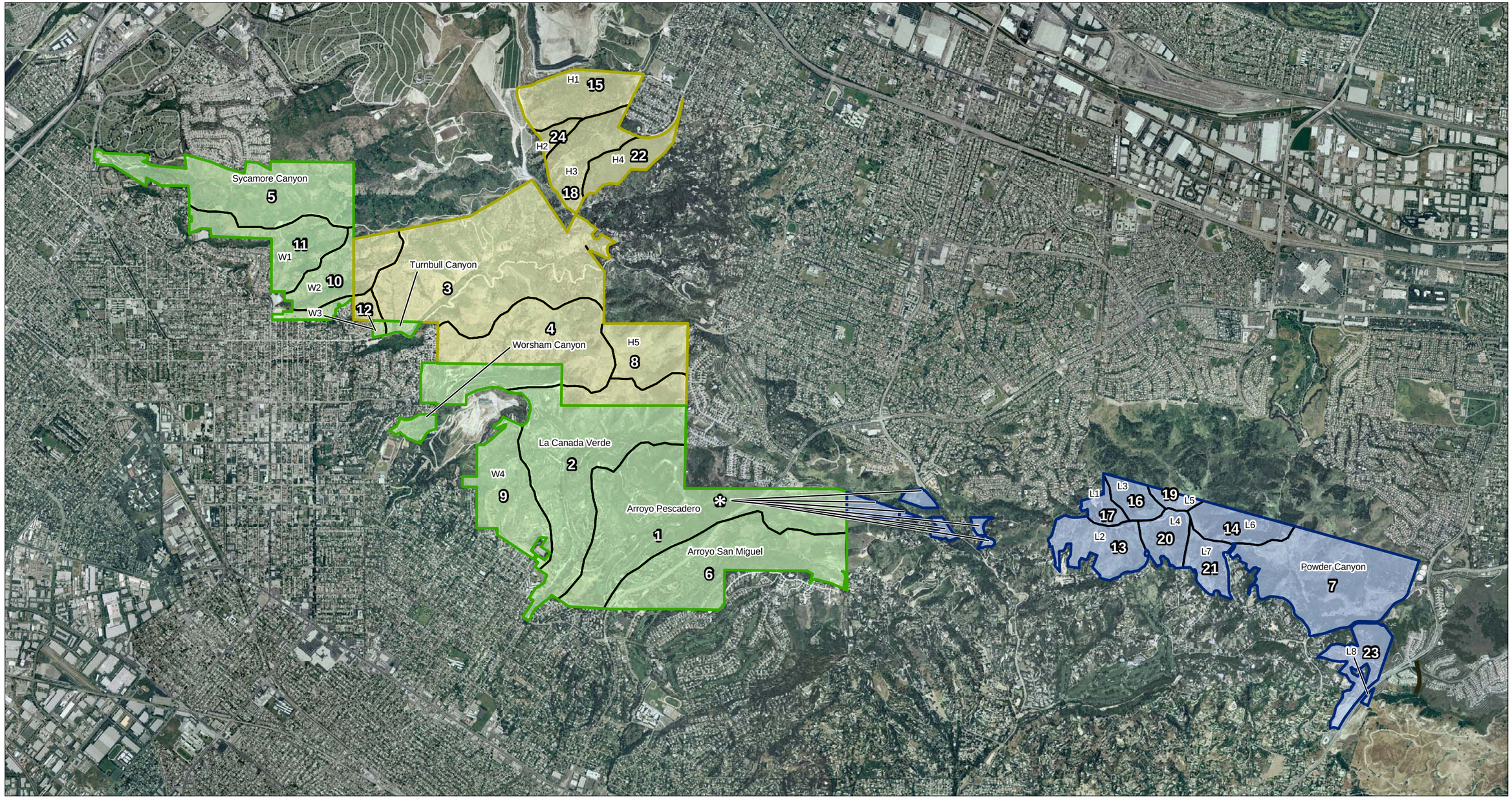
The weed polygons with priority ratings were then divided by restoration units. The restoration unit boundaries are based on watersheds. The restoration units were then ranked by calculating the percent of area occupied by weeds and multiplied by the categories in Table A-Z. The ranking calculation resulted in an ecological-based ranking, as shown in Figure A-9. However, some of the higher-ranked restoration units were not very feasible due to specific site conditions that were not reflected in the priority ranking system. The rankings of the restoration units were manually adjusted to account for this and could not be factored in by a calculation, as shown on Figure A-10. Specific electronic geographic information that contains all of these data will be provided separately to the Habitat Authority.

Table A-Z: Restoration Unit Priority Ranking Multipliers by Percent of Weed Area

Percent of Restoration Unit Occupied by Weeds	Priority Ranking Multiplier
0–20	1
20–40	1.1
40–60	1.3
60–80	1.4
80–100	1.5

MANAGEMENT AREAS AND RESTORATION UNITS

As previously described, the Preserve has been divided into management areas based on ownership and adjacent communities. These management areas are discussed in the following section and restoration priorities have been calculated within each management area. Each of the management areas was analyzed and prioritized for restoration units by roughly-grouped watersheds to determine priority status for restoration. Named canyons and numbered watersheds are described in the following sections for each management area in order of the highest-priority restoration unit to the lowest priority. For each restoration unit, LSA developed a table identifying each weed polygon, the acreage, restoration priority rating, and proposed habitat to restore for polygons with a high to medium restoration priority. Where the weed polygon is one of the 93 soil sample areas, then LSA is confident of the determination of the habitat to be restored. Determination of the appropriate habitat included not only soils but also an analysis of remnant native species in the polygon, dominant weeds and cover, slope, aspect, and adjacent native habitats (specific electronic geographic information that contains all of these data will be provided separately to the Habitat Authority). If a weed polygon does not contain a specific associated soil sample, then the proposed habitat is followed by an asterisk (*) indicating that it was determined based on general soil associations, rather than specific soil characteristics. For those specific invasive weed polygons extrapolated from BonTerra vegetation map, no habitat types were recommended. These polygons can be identified by the polygons in the 800 series. Additionally, analyses of remnant native species in the polygon, percent cover of dominant weeds, slope, aspect, and adjacent native habitats were used to suggest the appropriate habitat for restoration. It is LSA's recommendation that prior to restoration, soils be sampled in these polygons to confirm the appropriate habitat, as described previously. Because some weed polygons crossed watershed and management unit boundaries, some weed polygon numbers repeat within and across restoration units.



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Restoration Units-Labeled with Ecological Priority Ranking (e.g., 14) and Name (e.g. W4)

Hacienda Heights Management Area

La Habra Heights Management Area

Whittier Management Area

These parcels do not drain into the Arroyo Pescadero. However, for the purposes of the Habitat Restoration Plan, restoration data for these parcels is grouped with the Arroyo Pescadero Restoration Unit.

N

0 1,500 3,000
FEET

FIGURE A-9

Puente Hills Landfill
Native Habitat Preservation Authority

Resource Management Plan

Ecological Restoration
Unit Priorities

SOURCE: Aerial-EagleAerial (2003)

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