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Appendix 2A
AOC Look-Up Table Values

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APPENDIX 2A

AOC LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - AOC LUT	Units	Source
Aroclors	Aroclor 1016 ^a	17	µg/kg	LUT
Aroclors	Aroclor 1221 ^a	33	µg/kg	LUT
Aroclors	Aroclor 1232 ^a	17	µg/kg	LUT
Aroclors	Aroclor 1242 ^a	17	µg/kg	LUT
Aroclors	Aroclor 1248 ^a	17	µg/kg	LUT
Aroclors	Aroclor 1254 ^a	17	µg/kg	LUT
Aroclors	Aroclor 1260 ^a	17	µg/kg	LUT
Aroclors	Aroclor 1262 ^a	33	µg/kg	LUT
Aroclors	Aroclor 1268 ^a	33	µg/kg	LUT
Aroclors	Aroclor 5432 ^a	50	µg/kg	LUT
Aroclors	Aroclor 5442 ^a	50	µg/kg	LUT
Aroclors	Aroclor 5460 ^a	50	µg/kg	LUT
Dioxins and Furans	DIOXINTEQM ^{b,c}	0.912	pg/g	LUT
Energetics	1,3,5-Trinitrobenzene	400	µg/kg	RL
Energetics	1,3-Dinitrobenzene	400	µg/kg	RL
Energetics	2,4,6-Trinitrotoluene	400	µg/kg	RL
Energetics	2,4-diamino-6-nitrotoluene	1,000	µg/kg	RL
Energetics	2,4-Dinitrotoluene	170	µg/kg	RL
Energetics	2,6-diamino-4-nitrotoluene	1,000	µg/kg	RL
Energetics	2,6-Dinitrotoluene	170	µg/kg	RL
Energetics	2-Amino-4,6-dinitrotoluene	400	µg/kg	RL
Energetics	2-Nitrotoluene	400	µg/kg	RL
Energetics	3-Nitrotoluene	400	µg/kg	RL
Energetics	4-Amino-2,6-dinitrotoluene	400	µg/kg	RL
Energetics	4-Nitrotoluene	400	µg/kg	RL
Energetics	HMX	400	µg/kg	RL
Energetics	Nitrobenzene	170	µg/kg	RL
Energetics	Nitroglycerin	2,000	µg/kg	RL
Energetics	Perchlorate	1.63	µg/kg	LUT
Energetics	PETN	2,000	µg/kg	RL
Energetics	RDX	300	µg/kg	LUT
Energetics	Tetryl	400	µg/kg	RL
General Chemistry	Actinolite	1	percent	RL
General Chemistry	Amosite	1	percent	RL
General Chemistry	Anthophyllite	1	percent	RL
General Chemistry	Chrysotile	1	percent	RL
General Chemistry	Crocidolite	1	percent	RL
General Chemistry	Cyanide	0.6	mg/kg	LUT
General Chemistry	Fluoride	10.2	mg/kg	LUT
General Chemistry	Nitrogen, Nitrate (as N)	22.3	mg/kg	LUT
General Chemistry	Tremolite	1	percent	RL
Herbicides	2,4,5-T	1.2	µg/kg	LUT
Herbicides	2,4,5-TP	0.63	µg/kg	LUT
Herbicides	2,4-D	5.8	µg/kg	LUT
Herbicides	2,4-DB	2.4	µg/kg	LUT
Herbicides	2,4-DP (Dichloroprop)	2.4	µg/kg	LUT
Herbicides	Dalapon	12.5	µg/kg	LUT

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NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - AOC LUT	Units	Source
Herbicides	Dicamba	1.3	µg/kg	LUT
Herbicides	Dinoseb	3.3	µg/kg	LUT
Herbicides	MCPA	761	µg/kg	LUT
Herbicides	MCPP (Mecoprop)	377	µg/kg	LUT
Herbicides	Pentachlorophenol	170	µg/kg	LUT
Metals	Aluminum	58,600	mg/kg	LUT
Metals	Antimony	0.86	mg/kg	LUT
Metals	Arsenic	46	mg/kg	LUT
Metals	Barium	371	mg/kg	LUT
Metals	Beryllium	2.2	mg/kg	LUT
Metals	Boron	34	mg/kg	LUT
Metals	Cadmium	0.7	mg/kg	LUT
Metals	Chromium	94	mg/kg	LUT
Metals	Chromium VI	2	mg/kg	LUT
Metals	Cobalt	44	mg/kg	LUT
Metals	Copper	119	mg/kg	LUT
Metals	Lead	49	mg/kg	LUT
Metals	Lithium	91	mg/kg	LUT
Metals	Manganese	1,120	mg/kg	LUT
Metals	Mercury	0.13	mg/kg	LUT
Metals	Methyl Mercury	0.05	µg/kg	LUT
Metals	Molybdenum	3.2	mg/kg	LUT
Metals	Nickel	132	mg/kg	LUT
Metals	Potassium	14,400	mg/kg	LUT
Metals	Selenium	1	mg/kg	LUT
Metals	Silver	0.2	mg/kg	LUT
Metals	Sodium	1,780	mg/kg	LUT
Metals	Strontium	163	mg/kg	LUT
Metals	Thallium	1.2	mg/kg	LUT
Metals	Vanadium	175	mg/kg	LUT
Metals	Zinc	215	mg/kg	LUT
Metals	Zirconium	19	mg/kg	LUT
Pesticides	Aldrin	0.24	µg/kg	LUT
Pesticides	Alpha-BHC	0.24	µg/kg	LUT
Pesticides	Beta-BHC	0.23	µg/kg	LUT
Pesticides	Chlordane	7	µg/kg	LUT
Pesticides	Delta-BHC	0.22	µg/kg	LUT
Pesticides	Dieldrin	0.48	µg/kg	LUT
Pesticides	Endosulfan I	0.24	µg/kg	LUT
Pesticides	Endosulfan II	0.48	µg/kg	LUT
Pesticides	Endosulfan Sulfate	0.48	µg/kg	LUT
Pesticides	Endrin	0.48	µg/kg	LUT
Pesticides	Endrin Aldehyde	0.7	µg/kg	LUT
Pesticides	Endrin Ketone	0.7	µg/kg	LUT
Pesticides	Gamma-BHC (Lindane)	0.24	µg/kg	LUT
Pesticides	Heptachlor	0.24	µg/kg	LUT
Pesticides	Heptachlor Epoxide	0.24	µg/kg	LUT

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NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - AOC LUT	Units	Source
Pesticides	Methoxychlor	2.4	µg/kg	LUT
Pesticides	Mirex	0.5	µg/kg	LUT
Pesticides	p,p-DDD	0.48	µg/kg	LUT
Pesticides	p,p-DDE	8.6	µg/kg	LUT
Pesticides	p,p-DDT	13	µg/kg	LUT
Pesticides	Toxaphene	8.8	µg/kg	LUT
Phthalates	Bis(2-ethylhexyl)phthalate	61	µg/kg	LUT
Phthalates	Butyl benzyl phthalate	100	µg/kg	LUT
Phthalates	Diethyl phthalate	27	µg/kg	LUT
Phthalates	Dimethyl phthalate	27	µg/kg	LUT
Phthalates	Di-n-butyl phthalate	27	µg/kg	LUT
Phthalates	Di-n-octyl phthalate	27	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	1-Methylnaphthalene	2.5	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	2-Methylnaphthalene	2.5	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Acenaphthene	2.5	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Acenaphthylene	2.5	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Anthracene	2.5	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Benzo(ghi)perylene	2.5	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Fluoranthene	5.2	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Fluorene	3.8	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Naphthalene	3.6	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	PAHTEQM ^d	4.47	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Phenanthrene	3.9	µg/kg	LUT
Polycyclic Aromatic Hydrocarbon	Pyrene	5.6	µg/kg	LUT
Semivolatile Organic Compound	1,2-Diphenylhydrazine/Azobenzene	170	µg/kg	RL
Semivolatile Organic Compound	2,4,5-Trichlorophenol	170	µg/kg	RL
Semivolatile Organic Compound	2,4,6-Trichlorophenol	170	µg/kg	RL
Semivolatile Organic Compound	2,4-Dichlorophenol	170	µg/kg	RL
Semivolatile Organic Compound	2,4-Dimethylphenol	170	µg/kg	RL
Semivolatile Organic Compound	2,4-Dinitrophenol	330	µg/kg	RL
Semivolatile Organic Compound	2-Chloronaphthalene	170	µg/kg	RL
Semivolatile Organic Compound	2-Chlorophenol	170	µg/kg	RL
Semivolatile Organic Compound	2-Methylphenol	170	µg/kg	RL
Semivolatile Organic Compound	2-Nitroaniline	170	µg/kg	RL
Semivolatile Organic Compound	2-Nitrophenol	170	µg/kg	RL
Semivolatile Organic Compound	3,3'-Dichlorobenzidine	420	µg/kg	RL
Semivolatile Organic Compound	3,5-Dimethylphenol	170	µg/kg	RL
Semivolatile Organic Compound	3-Nitroaniline	170	µg/kg	RL
Semivolatile Organic Compound	4,6-Dinitro-2-methylphenol	210	µg/kg	RL
Semivolatile Organic Compound	4-Bromophenyl phenyl ether	170	µg/kg	RL
Semivolatile Organic Compound	4-Chloro-3-methylphenol	170	µg/kg	RL
Semivolatile Organic Compound	4-Chloroaniline	170	µg/kg	RL
Semivolatile Organic Compound	4-Chlorophenyl phenyl ether	170	µg/kg	RL
Semivolatile Organic Compound	4-Methylphenol	170	µg/kg	RL
Semivolatile Organic Compound	4-Nitroaniline	420	µg/kg	RL
Semivolatile Organic Compound	4-Nitrophenol	420	µg/kg	RL
Semivolatile Organic Compound	Aniline	210	µg/kg	RL

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Data Grouping	Parameter Name	Screening Level - AOC LUT	Units	Source
Semivolatile Organic Compound	Benzidine	830	µg/kg	RL
Semivolatile Organic Compound	Benzoic acid	660	µg/kg	LUT
Semivolatile Organic Compound	Benzyl alcohol	170	µg/kg	RL
Semivolatile Organic Compound	bis(2-Chloroethoxy)methane	170	µg/kg	RL
Semivolatile Organic Compound	Bis(2-chloroethyl)ether	170	µg/kg	RL
Semivolatile Organic Compound	Bis(2-chloroisopropyl)ether	170	µg/kg	RL
Semivolatile Organic Compound	Carbazole	170	µg/kg	RL
Semivolatile Organic Compound	Dibenzofuran	170	µg/kg	RL
Semivolatile Organic Compound	Dichloroprop	2.4	µg/kg	RL
Semivolatile Organic Compound	Diisopropyl ether	10	µg/kg	RL
Semivolatile Organic Compound	Hexachlorobenzene	170	µg/kg	RL
Semivolatile Organic Compound	Hexachlorocyclopentadiene	420	µg/kg	RL
Semivolatile Organic Compound	Hexachloroethane	170	µg/kg	RL
Semivolatile Organic Compound	Hydrazine	5	µg/kg	RL
Semivolatile Organic Compound	Isophorone	170	µg/kg	RL
Semivolatile Organic Compound	Monomethyl Hydrazine	25	µg/kg	RL
Semivolatile Organic Compound	m-Terphenyl	170	µg/kg	RL
Semivolatile Organic Compound	n-Nitrosodimethylamine	10	µg/kg	LUT
Semivolatile Organic Compound	n-Nitroso-di-n-propylamine	170	µg/kg	RL
Semivolatile Organic Compound	n-Nitrosodiphenylamine	170	µg/kg	RL
Semivolatile Organic Compound	Phenol	170	µg/kg	LUT
Semivolatile Organic Compound	tert-Amyl methyl ether	5	µg/kg	RL
Semivolatile Organic Compound	tert-Butyl alcohol	50	µg/kg	RL
Semivolatile Organic Compound	tert-Butyl ethyl ether	5	µg/kg	RL
Semivolatile Organic Compound	Unsymmetrical Dimethyl Hydrazine	25	µg/kg	RL
Total Petroleum Hydrocarbon	EFH (C10-C25)	5,000	µg/kg	RL
Total Petroleum Hydrocarbon	EFH (C10-C28)	5,000	µg/kg	RL
Total Petroleum Hydrocarbon	EFH (C12-C14)	5,000	µg/kg	RL
Total Petroleum Hydrocarbon	EFH (C12-C18)	5,000	µg/kg	RL
Total Petroleum Hydrocarbon	EFH (C13-C22)	5,000	µg/kg	RL
Total Petroleum Hydrocarbon	EFH (C15-C20)	5,000	µg/kg	LUT
Total Petroleum Hydrocarbon	EFH (C21-C30)	5,000	µg/kg	RL
Total Petroleum Hydrocarbon	GRO (C4-C12)	1,000	µg/kg	RL
Total Petroleum Hydrocarbon	GRO (C6-C10)	1,000	µg/kg	RL
Total Petroleum Hydrocarbon	GRO (C6-C12)	1,000	µg/kg	RL
Total Petroleum Hydrocarbon	GRO (C6-C14)	1,000	µg/kg	RL
Total Petroleum Hydrocarbon	GRO (C7-C12)	1,000	µg/kg	RL
Total Petroleum Hydrocarbon	GRO (C8-C11)	1,000	µg/kg	RL
Total Petroleum Hydrocarbon	ORO (C23-C32)	10,000	µg/kg	RL
Total Petroleum Hydrocarbon	ORO (C31-C40)	10,000	µg/kg	RL
Total Petroleum Hydrocarbon	o-Terphenyl	7	mg/kg	LUT
Total Petroleum Hydrocarbon	TOTAL EFH (C8-C30)	10,000	µg/kg	RL
Total Petroleum Hydrocarbon	TOTAL EFH (C8-C40)	10,000	µg/kg	RL
Volatile Organic Compound	1,1,1,2-Tetrachloroethane	5	µg/kg	RL
Volatile Organic Compound	1,1,1-Trichloroethane	5	µg/kg	RL
Volatile Organic Compound	1,1,2,2-Tetrachloroethane	5	µg/kg	RL
Volatile Organic Compound	1,1,2-Trichloro-1,2,2-trifluoroethane	5	µg/kg	RL

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AOC LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - AOC LUT	Units	Source
Volatiles Organic Compound	1,1,2-Trichloroethane	5	µg/kg	RL
Volatiles Organic Compound	1,1-Dichloroethane	5	µg/kg	RL
Volatiles Organic Compound	1,1-Dichloroethene	5	µg/kg	LUT
Volatiles Organic Compound	1,1-Dichloropropene	5	µg/kg	RL
Volatiles Organic Compound	1,2,3-Trichlorobenzene	5	µg/kg	RL
Volatiles Organic Compound	1,2,3-Trichloropropane	5	µg/kg	RL
Volatiles Organic Compound	1,2,4-Trichlorobenzene	5	µg/kg	RL
Volatiles Organic Compound	1,2,4-Trimethylbenzene	5	µg/kg	RL
Volatiles Organic Compound	1,2-Dibromo-3-chloropropane	10	µg/kg	RL
Volatiles Organic Compound	1,2-Dibromoethane (EDB)	5	µg/kg	RL
Volatiles Organic Compound	1,2-Dichlorobenzene	5	µg/kg	RL
Volatiles Organic Compound	1,2-Dichloroethane	5	µg/kg	RL
Volatiles Organic Compound	1,2-Dichloropropane	5	µg/kg	RL
Volatiles Organic Compound	1,3,5-Trimethylbenzene	5	µg/kg	RL
Volatiles Organic Compound	1,3-Dichlorobenzene	5	µg/kg	RL
Volatiles Organic Compound	1,3-Dichloropropane	5	µg/kg	RL
Volatiles Organic Compound	1,4-Dichlorobenzene	5	µg/kg	RL
Volatiles Organic Compound	1,4-Dioxane (P-Dioxane)	10	µg/kg	LUT
Volatiles Organic Compound	2,2-Dichloropropane	5	µg/kg	RL
Volatiles Organic Compound	2-Butanone (Methyl ethyl ketone)	20	µg/kg	RL
Volatiles Organic Compound	2-Chloro-1,1,1-trifluoroethane	10	µg/kg	RL
Volatiles Organic Compound	2-Chloroethyl vinyl ether	10	µg/kg	RL
Volatiles Organic Compound	2-Chlorotoluene	5	µg/kg	RL
Volatiles Organic Compound	2-Hexanone	10	µg/kg	LUT
Volatiles Organic Compound	4-Chlorotoluene	10	µg/kg	RL
Volatiles Organic Compound	4-Methyl-2-pentanone (MIBK)	10	µg/kg	RL
Volatiles Organic Compound	Acetone	20	µg/kg	LUT
Volatiles Organic Compound	Benzene	5	µg/kg	LUT
Volatiles Organic Compound	Bromobenzene	5	µg/kg	RL
Volatiles Organic Compound	Bromochloromethane	5	µg/kg	RL
Volatiles Organic Compound	Bromodichloromethane	5	µg/kg	RL
Volatiles Organic Compound	Bromoform	5	µg/kg	RL
Volatiles Organic Compound	Bromomethane	5	µg/kg	RL
Volatiles Organic Compound	Carbon tetrachloride	5	µg/kg	RL
Volatiles Organic Compound	Chlorobenzene	5	µg/kg	RL
Volatiles Organic Compound	Chloroethane	5	µg/kg	RL
Volatiles Organic Compound	Chloromethane	5	µg/kg	RL
Volatiles Organic Compound	Chlorotrifluoroethylene	10	µg/kg	RL
Volatiles Organic Compound	cis-1,2-Dichloroethene	5	µg/kg	LUT
Volatiles Organic Compound	cis-1,3-Dichloropropene	5	µg/kg	RL
Volatiles Organic Compound	Dibromochloromethane	5	µg/kg	RL
Volatiles Organic Compound	Dibromomethane	5	µg/kg	RL
Volatiles Organic Compound	Dichlorodifluoromethane	5	µg/kg	RL
Volatiles Organic Compound	Ethanol	0.7	mg/kg	LUT
Volatiles Organic Compound	Ethylbenzene	5	µg/kg	LUT
Volatiles Organic Compound	Formaldehyde	1,870	µg/kg	LUT
Volatiles Organic Compound	Hexachlorobutadiene	5	µg/kg	LUT

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NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - AOC LUT	Units	Source
Volatile Organic Compound	Isopropanol	1,000	µg/kg	RL
Volatile Organic Compound	Isopropylbenzene	5	µg/kg	RL
Volatile Organic Compound	m,p-Xylenes	5	µg/kg	RL
Volatile Organic Compound	Methanol	0.7	mg/kg	LUT
Volatile Organic Compound	Methylene chloride	10	µg/kg	LUT
Volatile Organic Compound	Methyl-tert-butyl Ether (MTBE)	5	µg/kg	RL
Volatile Organic Compound	n-butylbenzene	5	µg/kg	RL
Volatile Organic Compound	n-Propylbenzene	5	µg/kg	RL
Volatile Organic Compound	o-Xylene	5	µg/kg	RL
Volatile Organic Compound	p-Isopropyltoluene	5	µg/kg	RL
Volatile Organic Compound	sec-Butylbenzene	5	µg/kg	RL
Volatile Organic Compound	Styrene	5	µg/kg	RL
Volatile Organic Compound	tert-Butylbenzene	5	µg/kg	RL
Volatile Organic Compound	Tetrachloroethene	5	µg/kg	LUT
Volatile Organic Compound	Toluene	5	µg/kg	LUT
Volatile Organic Compound	trans-1,2-Dichloroethene	5	µg/kg	RL
Volatile Organic Compound	trans-1,3-Dichloropropene	5	µg/kg	RL
Volatile Organic Compound	Trichloroethene	5	µg/kg	LUT
Volatile Organic Compound	Trichlorofluoromethane	5	µg/kg	RL
Volatile Organic Compound	Trichloromethane (Chloroform)	5	µg/kg	RL
Volatile Organic Compound	Vinyl chloride	5	µg/kg	LUT

Notes:

^a Individual PCB coplanars and congeners are not listed in the table as they are accounted for under the Aroclor parameters.

^b DIOXINTEQM is listed in the LUT as 2,3,7,8-TCDD TEQ.

^c Individual dioxins and furans congeners included in the TEQ calculation (DIOXINTEQM) are not listed in the table; results were compared against the calculated TEQ, which takes the individual congeners into account.

^d PAHTEQM is listed in the LUT as benzo(a)pyrene TEQ. Benzo(a)pyrene equivalence was developed based on the sum of carcinogenic PAHs.

To evaluate benzo(a)pyrene equivalence, carcinogenic PAHs need to meet background study MRLs.

µg/kg = microgram(s) per kilogram

AOC = Administrative Order on Consent

BHC = hexachlorocyclohexane

DDD = dichlorodiphenyldichloroethane

DDE = dichlorodiphenyldichloroethylene

DDT = dichlorodiphenyltrichloroethane

DIOXINTEQM = dioxins and furans toxic equivalency

EFH = extractable fuel hydrocarbon

GRO = gasoline range organic

LUT = Look-up Table

mg/kg = milligram(s) per kilogram

MRL = method reporting limit

ORO = oil range organic

PAHTEQM = PAHs toxic equivalency

PETN = pentaerythritol tetranitrate

pg/g = picogram(s) per gram

RDX = cyclotrimethylenetrinitramine

RL = reporting limit

TEQ = toxic equivalence quotient

Appendix 2B
Revised Look-Up Table Values

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APPENDIX 2B

Revised LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - Revised LUT Soil ^e	Units
Aroclors	Aroclor 1016 ^a	17	µg/kg
Aroclors	Aroclor 1221 ^a	33	µg/kg
Aroclors	Aroclor 1232 ^a	17	µg/kg
Aroclors	Aroclor 1242 ^a	17	µg/kg
Aroclors	Aroclor 1248 ^a	17	µg/kg
Aroclors	Aroclor 1254 ^a	17	µg/kg
Aroclors	Aroclor 1260 ^a	17	µg/kg
Aroclors	Aroclor 1262 ^a	33	µg/kg
Aroclors	Aroclor 5432 ^a	50	µg/kg
Aroclors	Aroclor 5442 ^a	50	µg/kg
Aroclors	Aroclor 5460 ^a	50	µg/kg
Aroclors	PCB-1268 (Aroclor 1268)	33	µg/kg
Aroclors	PCBTEQM	6.5131	pg/g
Dioxins and Furans	DIOXTEQM ^{b,c}	4.6	pg/g
Energetics	1,3,5-Trinitrobenzene	400	µg/kg
Energetics	1,3-Dinitrobenzene	400	µg/kg
Energetics	2,4,6-Trinitrotoluene	400	µg/kg
Energetics	2,4-diamino-6-nitrotoluene	1000	µg/kg
Energetics	2,4-Dinitrotoluene	170	µg/kg
Energetics	2,6-diamino-4-nitrotoluene	1000	µg/kg
Energetics	2,6-Dinitrotoluene	170	µg/kg
Energetics	2-Amino-4,6-dinitrotoluene	400	µg/kg
Energetics	2-Nitrotoluene	400	µg/kg
Energetics	3-Nitrotoluene	400	µg/kg
Energetics	4-Amino-2,6-dinitrotoluene	400	µg/kg
Energetics	4-Nitrotoluene	400	µg/kg
Energetics	HMX	400	µg/kg
Energetics	Nitrobenzene	170	µg/kg
Energetics	Nitroglycerin	2000	µg/kg
Energetics	Perchlorate	1.63	µg/kg
Energetics	PETN	2000	µg/kg
Energetics	RDX	300	µg/kg
Energetics	Tetryl	400	µg/kg
General Chemistry	Actinolite ^f	1	PERCENT
General Chemistry	Amosite	1	PERCENT
General Chemistry	Anthophyllite	1	PERCENT
General Chemistry	Chrysotile	1	PERCENT
General Chemistry	Crocidolite	1	PERCENT
General Chemistry	Cyanides, Total	0.6	mg/kg
General Chemistry	Fluoride	10.2	mg/kg
General Chemistry	Nitrogen, Nitrate (as N)	22.3	mg/kg
General Chemistry	Tremolite	1	PERCENT
Herbicides	2,4,5-T (Trichlorophenoxyacetic Acid)	1.2	µg/kg
Herbicides	2,4-D (Dichlorophenoxyacetic acid)	5.8	µg/kg
Herbicides	2,4-Dichlorophenoxybutyric acid	2.4	µg/kg
Herbicides	Dalapon	12.5	µg/kg
Herbicides	Dicamba	1.3	µg/kg
Herbicides	Dichloroprop	2.4	µg/kg
Herbicides	Dinoseb	3.3	µg/kg
Herbicides	MCPA	761	µg/kg

APPENDIX 2B

Revised LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - Revised LUT Soil ^e	Units
Herbicides	MCP	377	µg/kg
Herbicides	Silvex (2,4,5-TP)	0.63	µg/kg
Metals	Aluminum	58600	mg/kg
Metals	Antimony	30	mg/kg
Metals	Arsenic	46	mg/kg
Metals	Barium	371	mg/kg
Metals	Beryllium	2.2	mg/kg
Metals	Boron	34	mg/kg
Metals	Cadmium	1.7	mg/kg
Metals	Chromium	94	mg/kg
Metals	Chromium VI	2	mg/kg
Metals	Cobalt	44	mg/kg
Metals	Copper	119	mg/kg
Metals	Lead	49	mg/kg
Metals	Lithium	91	mg/kg
Metals	Manganese	1120	mg/kg
Metals	Mercury	0.13	mg/kg
Metals	Molybdenum	3.2	mg/kg
Metals	Nickel	132	mg/kg
Metals	Potassium	14400	mg/kg
Metals	Selenium	1	mg/kg
Metals	Silver	380	mg/kg
Metals	Sodium	1780	mg/kg
Metals	Strontium	163	mg/kg
Metals	Thallium	1.2	mg/kg
Metals	Vanadium	175	mg/kg
Metals	Zinc	215	mg/kg
Metals	Zirconium	19	mg/kg
Pesticides	4,4'-DDD	0.48	µg/kg
Pesticides	4,4'-DDE	8.6	µg/kg
Pesticides	4,4'-DDT	13	µg/kg
Pesticides	Aldrin	0.24	µg/kg
Pesticides	Alpha-BHC	0.24	µg/kg
Pesticides	Beta-BHC	0.23	µg/kg
Pesticides	Chlordane	7	µg/kg
Pesticides	Chlordane (Technical)	7	µg/kg
Pesticides	Delta-BHC	0.22	µg/kg
Pesticides	Dieldrin	0.48	µg/kg
Pesticides	Endosulfan I	0.24	µg/kg
Pesticides	Endosulfan II	0.48	µg/kg
Pesticides	Endosulfan Sulfate	0.48	µg/kg
Pesticides	Endrin	0.48	µg/kg
Pesticides	Endrin Aldehyde	0.7	µg/kg
Pesticides	Endrin ketone	0.7	µg/kg
Pesticides	gamma-BHC	0.24	µg/kg
Pesticides	Heptachlor	0.24	µg/kg
Pesticides	Heptachlor Epoxide	0.24	µg/kg
Pesticides	Methoxychlor	2.4	µg/kg
Pesticides	Mirex	0.5	µg/kg
Pesticides	Toxaphene	8.8	µg/kg
Phthalates	Bis(2-ethylhexyl)phthalate	61	µg/kg
Phthalates	Butyl benzyl phthalate	100	µg/kg
Phthalates	Diethyl phthalate	27	µg/kg

APPENDIX 2B

Revised LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - Revised LUT Soil ^e	Units
Phthalates	Dimethyl phthalate	27	µg/kg
Phthalates	Di-n-butyl phthalate	27	µg/kg
Phthalates	Di-n-octyl phthalate	27	µg/kg
Polycyclic Aromatic Hydrocarbon	1-Methylnaphthalene	2.5	µg/kg
Polycyclic Aromatic Hydrocarbon	2-Methylnaphthalene	2.5	µg/kg
Polycyclic Aromatic Hydrocarbon	Acenaphthene	2.5	µg/kg
Polycyclic Aromatic Hydrocarbon	Acenaphthylene	2.5	µg/kg
Polycyclic Aromatic Hydrocarbon	Anthracene	2.5	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(a)anthracene	1.67	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(a)pyrene	1.67	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(b)fluoranthene	1.67	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(ghi)perylene	2.5	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(k)fluoranthene	1.67	µg/kg
Polycyclic Aromatic Hydrocarbon	Chrysene	1.67	µg/kg
Polycyclic Aromatic Hydrocarbon	Dibenzo(a,h)anthracene	1.67	µg/kg
Polycyclic Aromatic Hydrocarbon	Fluoranthene	5.2	µg/kg
Polycyclic Aromatic Hydrocarbon	Fluorene	3.8	µg/kg
Polycyclic Aromatic Hydrocarbon	Indeno(1,2,3-cd)pyrene	1.67	µg/kg
Polycyclic Aromatic Hydrocarbon	Naphthalene	3.6	µg/kg
Polycyclic Aromatic Hydrocarbon	PAHTEQM ^d	110	µg/kg
Polycyclic Aromatic Hydrocarbon	Phenanthrene	3.9	µg/kg
Polycyclic Aromatic Hydrocarbon	Pyrene	5.6	µg/kg
Semivolatile Organic Compound	1,2-Diphenylhydrazine/Azobenzene	170	µg/kg
Semivolatile Organic Compound	2,4,5-Trichlorophenol	170	µg/kg
Semivolatile Organic Compound	2,4,6-Trichlorophenol	170	µg/kg
Semivolatile Organic Compound	2,4-Dichlorophenol	170	µg/kg
Semivolatile Organic Compound	2,4-Dimethylphenol	170	µg/kg
Semivolatile Organic Compound	2,4-Dinitrophenol	330	µg/kg
Semivolatile Organic Compound	2-Chloronaphthalene	170	µg/kg
Semivolatile Organic Compound	2-Chlorophenol	170	µg/kg
Semivolatile Organic Compound	2-Methylphenol	170	µg/kg
Semivolatile Organic Compound	2-Nitroaniline	170	µg/kg
Semivolatile Organic Compound	2-Nitrophenol	170	µg/kg
Semivolatile Organic Compound	3,3'-Dichlorobenzidine	420	µg/kg
Semivolatile Organic Compound	3,5-Dimethyl phenol	170	µg/kg
Semivolatile Organic Compound	3-Nitroaniline	170	µg/kg
Semivolatile Organic Compound	4,6-Dinitro-2-methylphenol	210	µg/kg
Semivolatile Organic Compound	4-Bromophenyl phenyl ether	170	µg/kg
Semivolatile Organic Compound	4-Chloro-3-methylphenol	170	µg/kg
Semivolatile Organic Compound	4-Chloroaniline	170	µg/kg
Semivolatile Organic Compound	4-Chlorophenyl phenyl ether	170	µg/kg
Semivolatile Organic Compound	4-Methylphenol	170	µg/kg
Semivolatile Organic Compound	4-Nitroaniline	420	µg/kg
Semivolatile Organic Compound	4-Nitrophenol	420	µg/kg
Semivolatile Organic Compound	Aniline	210	µg/kg
Semivolatile Organic Compound	Benzidine	830	µg/kg
Semivolatile Organic Compound	Benzoic acid	660	µg/kg
Semivolatile Organic Compound	Benzyl alcohol	170	µg/kg
Semivolatile Organic Compound	bis(2-Chloroethoxy)methane	170	µg/kg
Semivolatile Organic Compound	Bis(2-chloroethyl)ether	170	µg/kg
Semivolatile Organic Compound	Bis(2-chloroisopropyl)ether	170	µg/kg
Semivolatile Organic Compound	Carbazole	170	µg/kg
Semivolatile Organic Compound	Dibenzofuran	170	µg/kg

APPENDIX 2B

Revised LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - Revised LUT Soil ^e	Units
Semivolatile Organic Compound	Diisopropyl ether	10	µg/kg
Semivolatile Organic Compound	Hexachlorobenzene	170	µg/kg
Semivolatile Organic Compound	Hexachlorocyclopentadiene	420	µg/kg
Semivolatile Organic Compound	Hexachloroethane	170	µg/kg
Semivolatile Organic Compound	Hydrazine	5	µg/kg
Semivolatile Organic Compound	Isophorone	170	µg/kg
Semivolatile Organic Compound	Monomethyl Hydrazine	25	µg/kg
Semivolatile Organic Compound	m-Terphenyl	170	µg/kg
Semivolatile Organic Compound	n-Nitrosodimethylamine	10	µg/kg
Semivolatile Organic Compound	n-Nitroso-di-n-propylamine	170	µg/kg
Semivolatile Organic Compound	n-Nitrosodiphenylamine	170	µg/kg
Semivolatile Organic Compound	Pentachlorophenol	170	µg/kg
Semivolatile Organic Compound	Phenol	170	µg/kg
Semivolatile Organic Compound	tert-Amyl methyl ether	5	µg/kg
Semivolatile Organic Compound	tert-Butyl alcohol	50	µg/kg
Semivolatile Organic Compound	tert-Butyl ethyl ether	5	µg/kg
Semivolatile Organic Compound	Unsymmetrical Dimethyl Hydrazine	25	µg/kg
Total Petroleum Hydrocarbons	Diesel Range Organics (C12-C14)	1000000	µg/kg
Total Petroleum Hydrocarbons	Diesel Range Organics (C15-C20)	1000000	µg/kg
Total Petroleum Hydrocarbons	Diesel Range Organics (C21-C30)	1000000	µg/kg
Total Petroleum Hydrocarbons	Diesel Range Organics (C8-C11)	1000000	µg/kg
Total Petroleum Hydrocarbons	Diesel Range Organics (C8-C30)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C10-C25)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C10-C28)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C11-C14)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C11-C15)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C12-C14)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C12-C18)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C13-C22)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C14-C20)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C15-C20)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C20-C30)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C21-C30)	1000000	µg/kg
Total Petroleum Hydrocarbons	EFH (C24-C28)	Not applicable	Not applicable
Total Petroleum Hydrocarbons	GRO (C4-C12)	1000000	µg/kg
Total Petroleum Hydrocarbons	GRO (C6-C10)	1000000	µg/kg
Total Petroleum Hydrocarbons	GRO (C6-C12)	1000000	µg/kg
Total Petroleum Hydrocarbons	GRO (C6-C14)	1000000	µg/kg
Total Petroleum Hydrocarbons	GRO (C7-C12)	1000000	µg/kg
Total Petroleum Hydrocarbons	GRO (C8-C11)	1000000	µg/kg
Total Petroleum Hydrocarbons	ORO (C23-C32)	1000000	µg/kg
Total Petroleum Hydrocarbons	ORO (C24-C36)	1000000	µg/kg
Total Petroleum Hydrocarbons	ORO (C31-C40)	1000000	µg/kg
Total Petroleum Hydrocarbons	TOTAL EFH(C8-C30)	1000000	µg/kg
Total Petroleum Hydrocarbons	TOTAL EFH(C8-C40)	1000000	µg/kg
Volatile Organic Compound	1,1,1,2-Tetrachloroethane	5	µg/kg
Volatile Organic Compound	1,1,1-Trichloroethane	5	µg/kg
Volatile Organic Compound	1,1,2,2-Tetrachloroethane	5	µg/kg
Volatile Organic Compound	1,1,2-Trichloro-1,2,2-trifluoroethane	5	µg/kg
Volatile Organic Compound	1,1,2-Trichloroethane	5	µg/kg
Volatile Organic Compound	1,1-Dichloroethane	5	µg/kg
Volatile Organic Compound	1,1-Dichloroethene	5	µg/kg
Volatile Organic Compound	1,1-Dichloropropene	5	µg/kg

APPENDIX 2B

Revised LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - Revised LUT Soil ^e	Units
Volatile Organic Compound	1,2,3-Trichlorobenzene	5	µg/kg
Volatile Organic Compound	1,2,3-Trichloropropane	5	µg/kg
Volatile Organic Compound	1,2,4-Trichlorobenzene	5	µg/kg
Volatile Organic Compound	1,2,4-Trimethylbenzene	5	µg/kg
Volatile Organic Compound	1,2-Dibromo-3-chloropropane	10	µg/kg
Volatile Organic Compound	1,2-Dibromoethane (EDB)	5	µg/kg
Volatile Organic Compound	1,2-Dichlorobenzene	5	µg/kg
Volatile Organic Compound	1,2-Dichloroethane	5	µg/kg
Volatile Organic Compound	1,2-Dichloropropane	5	µg/kg
Volatile Organic Compound	1,3,5-Trimethylbenzene	5	µg/kg
Volatile Organic Compound	1,3-Dichlorobenzene	5	µg/kg
Volatile Organic Compound	1,3-Dichloropropane	5	µg/kg
Volatile Organic Compound	1,4-Dichlorobenzene	5	µg/kg
Volatile Organic Compound	1,4-Dioxane (P-Dioxane)	10	µg/kg
Volatile Organic Compound	2,2-Dichloropropane	5	µg/kg
Volatile Organic Compound	2-Butanone (MEK)	20	µg/kg
Volatile Organic Compound	2-Chloro-1,1,1-trifluoroethane	10	µg/kg
Volatile Organic Compound	2-Chloroethyl vinyl ether	10	µg/kg
Volatile Organic Compound	2-Chlorotoluene	5	µg/kg
Volatile Organic Compound	2-Hexanone	10	µg/kg
Volatile Organic Compound	4-Chlorotoluene	10	µg/kg
Volatile Organic Compound	4-Methyl-2-pentanone (MIBK)	10	µg/kg
Volatile Organic Compound	Acetone	61000000	µg/kg
Volatile Organic Compound	Benzene	5	µg/kg
Volatile Organic Compound	Bromobenzene	5	µg/kg
Volatile Organic Compound	Bromochloromethane	5	µg/kg
Volatile Organic Compound	Bromodichloromethane	5	µg/kg
Volatile Organic Compound	Bromoform	5	µg/kg
Volatile Organic Compound	Bromomethane	5	µg/kg
Volatile Organic Compound	Carbon tetrachloride	5	µg/kg
Volatile Organic Compound	Chlorobenzene	5	µg/kg
Volatile Organic Compound	Chloroethane	5	µg/kg
Volatile Organic Compound	Chloromethane	5	µg/kg
Volatile Organic Compound	Chlorotrifluoroethylene	10	µg/kg
Volatile Organic Compound	cis-1,2-Dichloroethene	5	µg/kg
Volatile Organic Compound	cis-1,3-Dichloropropene	5	µg/kg
Volatile Organic Compound	Dibromochloromethane	5	µg/kg
Volatile Organic Compound	Dibromomethane	5	µg/kg
Volatile Organic Compound	Dichlorodifluoromethane	5	µg/kg
Volatile Organic Compound	Ethanol	700	µg/kg
Volatile Organic Compound	Ethylbenzene	5	µg/kg
Volatile Organic Compound	Formaldehyde	1870	µg/kg
Volatile Organic Compound	Hexachlorobutadiene	5	µg/kg
Volatile Organic Compound	Isopropanol	1000	µg/kg
Volatile Organic Compound	Isopropylbenzene	5	µg/kg
Volatile Organic Compound	m,p-Xylenes	5	µg/kg
Volatile Organic Compound	Methanol	700	µg/kg
Volatile Organic Compound	Methylene chloride	10	µg/kg
Volatile Organic Compound	Methyl-tert-butyl Ether (MTBE)	5	µg/kg
Volatile Organic Compound	n-butylbenzene	5	µg/kg
Volatile Organic Compound	n-Propylbenzene	5	µg/kg
Volatile Organic Compound	o-Xylene	5	µg/kg
Volatile Organic Compound	p-Isopropyltoluene	5	µg/kg

APPENDIX 2B

Revised LUT Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - Revised LUT Soil ^e	Units
Volatile Organic Compound	sec-Butylbenzene	5	µg/kg
Volatile Organic Compound	Styrene	5	µg/kg
Volatile Organic Compound	tert-Butylbenzene	5	µg/kg
Volatile Organic Compound	Tetrachloroethene	5	µg/kg
Volatile Organic Compound	Toluene	5	µg/kg
Volatile Organic Compound	trans-1,2-Dichloroethene	5	µg/kg
Volatile Organic Compound	trans-1,3-Dichloropropene	5	µg/kg
Volatile Organic Compound	Trichloroethene	5	µg/kg
Volatile Organic Compound	Trichlorofluoromethane	5	µg/kg
Volatile Organic Compound	Trichloromethane (Chloroform)	5	µg/kg
Volatile Organic Compound	Vinyl chloride	5	µg/kg

Notes:

^a Individual PCB coplanars and congeners are not listed in the table as they are accounted for under the Aroclor parameters.

^b DIOXINTEQM is listed in the LUT as 2,3,7,8-TCDD TEQ.

^c Individual dioxins and furans congeners included in the TEQ calculation (DIOXINTEQM) are not listed in the table; results were compared against the calculated TEQ, which takes the individual congeners into account.

^d PAHTEQM is listed in the LUT as benzo(a)pyrene TEQ. Benzo(a)pyrene equivalence was developed based on the sum of carcinogenic PAHs. To evaluate benzo(a)pyrene equivalence, carcinogenic PAHs need to meet background study MRLs.

^e Alternative cleanups may implement soil, sediment, and soil gas remedial goals that vary; for the purpose of this document, screening values shown are reduced to soil media.

^f Actinolite, a general chemistry parameter, reports different screening values for soil and sediment; this table defers to the soil screening value to maintain comparison to the AOC LUT values.

µg/kg = microgram(s) per kilogram

µg/m³ = microgram(s) per cubic meter

BHC = hexachlorocyclohexane

DDD = dichlorodiphenyldichloroethane

DDE = dichlorodiphenyldichloroethylene

DDT = dichlorodiphenyltrichloroethane

DIOXINTEQM = dioxins and furans toxic equivalency

GRO = gasoline range organic

LUT = Look-up Table

mg/kg = milligram(s) per kilogram

MRL = method reporting limit

PAHTEQM = PAHs toxic equivalency

PCB = polychlorinated biphenyl

PETN = pentaerythritol tetranitrate

pg/g = picogram(s) per gram

RDX = cyclotrimethylenetrinitramine

Appendix 2C
Suburban Residential Based Cleanup Values

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APPENDIX 2C

Suburban Residential Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f		Screening Level - ERA Soil ^f	
		Units	Units	Units	Units
Aroclors	Aroclor 1016 ^a	3,800	µg/kg	1,200	µg/kg
Aroclors	Aroclor 1242 ^a	220	µg/kg	430	µg/kg
Aroclors	Aroclor 1248 ^a	220	µg/kg	64	µg/kg
Aroclors	Aroclor 1254 ^a	220	µg/kg	390	µg/kg
Aroclors	Aroclor 1260 ^a	230	µg/kg	250	µg/kg
Aroclors	Aroclor 5460 ^a	220	µg/kg	410	µg/kg
Dioxins and Furans	DIOXINTEQM ^{b,c}	4.7	pg/g	5	pg/g
General Chemistry	Cyanide	23	mg/kg	1.8	mg/kg
General Chemistry	Fluoride	3,000	mg/kg	Not applicable	Not applicable
General Chemistry	Nitrogen, Nitrate (as N)	Not applicable	Not applicable	5,200	mg/kg
General Chemistry	O-Phosphate (as P)	Not applicable	Not applicable	0.35	mg/kg
Herbicides	Pentachlorophenol	960	µg/kg	10,000	µg/kg
Metals	Aluminum	75,000	mg/kg	58,600 ^e	mg/kg
Metals	Antimony	26	mg/kg	24	mg/kg
Metals	Arsenic	46 ^e	mg/kg	74	mg/kg
Metals	Barium	11,000	mg/kg	1,410	mg/kg
Metals	Beryllium	3	mg/kg	42	mg/kg
Metals	Boron	15,000	mg/kg	100	mg/kg
Metals	Cadmium	5.2	mg/kg	0.7 ^e	mg/kg
Metals	Calcium	Not applicable	Not applicable	23	mg/kg
Metals	Chromium	36,000	mg/kg	330	mg/kg
Metals	Chromium VI	2 ^e	mg/kg	30	mg/kg
Metals	Cobalt	44 ^e	mg/kg	850	mg/kg
Metals	Copper	3,000	mg/kg	420	mg/kg
Metals	Lead	80	mg/kg	49 ^e	mg/kg
Metals	Lithium	150	mg/kg	170	mg/kg
Metals	Manganese	1,120 ^e	mg/kg	10,500	mg/kg
Metals	Mercury	8.8	mg/kg	0.29	mg/kg
Metals	Molybdenum	380	mg/kg	3.9	mg/kg
Metals	Nickel	490	mg/kg	132 ^e	mg/kg
Metals	Potassium	Not applicable	Not applicable	Not applicable	Not applicable
Metals	Selenium	380	mg/kg	7.2	mg/kg
Metals	Silver	230	mg/kg	220	mg/kg
Metals	Sodium	Not applicable	Not applicable	Not applicable	Not applicable
Metals	Strontium	46,000	mg/kg	1010	mg/kg
Metals	Thallium	1.2 ^e	mg/kg	12	mg/kg
Metals	Titanium	Not applicable	Not applicable	73	mg/kg
Metals	Vanadium	180	mg/kg	175 ^e	mg/kg
Metals	Zinc	23,000	mg/kg	215 ^e	mg/kg
Metals	Zirconium	19 ^c	mg/kg	Not applicable	Not applicable
Pesticides	Aldrin	34	µg/kg	570	µg/kg
Pesticides	Alpha- BHC	95	µg/kg	2,900	µg/kg
Pesticides	Beta- BHC	330	µg/kg	2,900	µg/kg
Pesticides	Chlordane	440	µg/kg	5,600	µg/kg
Pesticides	Delta- BHC	Not applicable	µg/kg	Not applicable	µg/kg
Pesticides	Dieldrin	37	µg/kg	400	µg/kg
Pesticides	Endosulfan I	410,000	µg/kg	4,200	µg/kg
Pesticides	Endosulfan Sulfate	410,000	µg/kg	4,400	µg/kg
Pesticides	Endrin	20,000	µg/kg	79	µg/kg
Pesticides	Endrin Aldehyde	20,000	µg/kg	92	µg/kg
Pesticides	Endrin Ketone	20,000	µg/kg	86	µg/kg
Pesticides	Gamma- BHC (Lindane)	540	µg/kg	5,600	µg/kg

APPENDIX 2C

Suburban Residential Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f		Screening Level - ERA Soil ^f	
			Units		Units
Pesticides	Heptachlor	120	µg/kg	3,600	µg/kg
Pesticides	Heptachlor Epoxide	61	µg/kg	6.5	µg/kg
Pesticides	Methoxychlor	340,000	µg/kg	50,000	µg/kg
Pesticides	p,p- DDD	2,500	µg/kg	850	µg/kg
Pesticides	p,p- DDE	1,700	µg/kg	280	µg/kg
Pesticides	p,p- DDT	1,800	µg/kg	580	µg/kg
Phthalates	Bis(2- ethylhexyl)phthalate	38,000	µg/kg	65,000	µg/kg
Phthalates	Butyl benzyl phthalate	280,000	µg/kg	260,000	µg/kg
Phthalates	Di- n- butyl phthalate	6,100,000	µg/kg	1,100	µg/kg
Phthalates	Di- n- octyl phthalate	610,000	µg/kg	130,000	µg/kg
Phthalates	Diethyl phthalate	49,000,000	µg/kg	23,000	µg/kg
Phthalates	Dimethyl phthalate	49,000,000	µg/kg	45,000	µg/kg
Polycyclic Aromatic Hydrocarbon	1- Methylnaphthalene	16,000	µg/kg	260,000	µg/kg
Polycyclic Aromatic Hydrocarbon	2- Methylnaphthalene	220,000	µg/kg	260,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Acenaphthene	3,300,000	µg/kg	12,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Acenaphthylene	3,300,000	µg/kg	3,300	µg/kg
Polycyclic Aromatic Hydrocarbon	Anthracene	16,000,000	µg/kg	25,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(a)anthracene	1,000	µg/kg	180,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(a)pyrene	110	µg/kg	240,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(b)fluoranthene	1,100	µg/kg	120,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(e)pyrene	1,600,000	µg/kg	120,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(ghi)perylene	1,600,000	µg/kg	110,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(k)fluoranthene	11,000	µg/kg	120,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Chrysene	110,000	µg/kg	130,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Dibenzo(ah)anthracene	110	µg/kg	140,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Fluoranthene	2,200,000	µg/kg	930,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Fluorene	2,200,000	µg/kg	5,400	µg/kg
Polycyclic Aromatic Hydrocarbon	Indeno(1,2,3- cd)pyrene	1,100	µg/kg	120,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Naphthalene	1,900	µg/kg	130,000	µg/kg
Polycyclic Aromatic Hydrocarbon	PAHTEQM ^d	110	µg/kg	Not applicable	Not applicable
Polycyclic Aromatic Hydrocarbon	Perylene	1,600,000	µg/kg	220,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Phenanthrene	16,000,000	µg/kg	28,000	µg/kg
Polycyclic Aromatic Hydrocarbon	Pyrene	1,600,000	µg/kg	140,000	µg/kg
Semivolatile Organic Compound	2- Chloronaphthalene	4,900,000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	2- Methylphenol	3,000,000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	2,4- Dimethylphenol	1,200,000	µg/kg	330,000	µg/kg
Semivolatile Organic Compound	2,5- Dimethylfuran	9,300	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	2,6- bis(1,1- dimethylethyl)- 4- methylphenol	150,000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	3,5- Dimethylphenol	61,000	µg/kg	26,000	µg/kg
Semivolatile Organic Compound	3+4- Methylphenol	6,100,000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	4- Methylphenol	6,100,000	µg/kg	43,000	µg/kg
Semivolatile Organic Compound	Benzoic acid	240,000,000	µg/kg	45,000	µg/kg
Semivolatile Organic Compound	Benzyl alcohol	6,100,000	µg/kg	45,000	µg/kg
Semivolatile Organic Compound	Carbazole	6,100,000	µg/kg	15,000	µg/kg
Semivolatile Organic Compound	Cresyl diphenylphosphate	1,200,000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	Dibenzofuran	72,000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	n- Nitrosodimethylamine	58,000	µg/kg	79,000	µg/kg
Semivolatile Organic Compound	n- Nitrosodiphenylamine	58,000	µg/kg	28,000	µg/kg
Semivolatile Organic Compound	Phenol	18,000,000	µg/kg	51,000	µg/kg
Semivolatile Organic Compound	tert- Butyl alcohol	130,000,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,1- Dichloroethane	3,600	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,1- Dichloroethene	83,000	µg/kg	18,000	µg/kg

APPENDIX 2C

Suburban Residential Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f		Screening Level - ERA Soil ^f	
		Units		Units	
Volatile Organic Compound	1,1,1- Trichloroethane	1,700,000	µg/kg	6,240,000	µg/kg
Volatile Organic Compound	1,1,2- Trichloro- 1,2,2- trifluoroethane	6,700,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,1,2- Trichloroethane	1,100	µg/kg	100,000	µg/kg
Volatile Organic Compound	1,1,2,2- Tetrachloroethane	600	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,2- Dibromo- 3- chloropropane	22	µg/kg	1,400	µg/kg
Volatile Organic Compound	1,2- Dibromoethane (EDB)	36	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,2- Dichloro- 1,1,2- trifluoroethane	6,700,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,2- Dichlorobenzene	1,800,000	µg/kg	130,000	µg/kg
Volatile Organic Compound	1,2- Dichloroethane	460	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,2- Dichloroethenes	18,000	µg/kg	250,000	µg/kg
Volatile Organic Compound	1,2- Dichloropropane	1,000	µg/kg	160,000	µg/kg
Volatile Organic Compound	1,2- Dichlorotetrafluoroethane	6,700,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,2,3- Trichlorobenzene	40,000	µg/kg	37,000	µg/kg
Volatile Organic Compound	1,2,4- Trichlorobenzene	24,000	µg/kg	37,000	µg/kg
Volatile Organic Compound	1,2,4- Trimethylbenzene	300,000	µg/kg	4,000	µg/kg
Volatile Organic Compound	1,3- Dichlorobenzene	2,600	µg/kg	110,000	µg/kg
Volatile Organic Compound	1,3,5- Trimethylbenzene	270,000	µg/kg	4,100	µg/kg
Volatile Organic Compound	1,4- Dichlorobenzene	2,600	µg/kg	28,000	µg/kg
Volatile Organic Compound	1,4- Dioxane (P- Dioxane)	4,700	µg/kg	4,600	µg/kg
Volatile Organic Compound	2- Butanone (Methyl ethyl ketone)	27,000,000	µg/kg	21,100,000	µg/kg
Volatile Organic Compound	2- Chloro- 1,1,1- trifluoroethane	1,200,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	2- Chloroethyl vinyl ether	20	µg/kg	910,000	µg/kg
Volatile Organic Compound	2- Chlorotoluene	470,000	µg/kg	63,000	µg/kg
Volatile Organic Compound	2- Hexanone	200,000	µg/kg	170,000	µg/kg
Volatile Organic Compound	4- Ethyltoluene	560,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	4- Methyl- 2- pentanone (MIBK)	33,000,000	µg/kg	45,000	µg/kg
Volatile Organic Compound	Acetone	61,000,000	µg/kg	230,000	µg/kg
Volatile Organic Compound	Benzene	330	µg/kg	730,000	µg/kg
Volatile Organic Compound	Benzyl Chloride	1,100	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Bromobenzene	290,000	µg/kg	43,000	µg/kg
Volatile Organic Compound	Bromodichloromethane	280	µg/kg	51,000	µg/kg
Volatile Organic Compound	Bromoform	18,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Bromomethane	6,800	µg/kg	16,000	µg/kg
Volatile Organic Compound	Carbon Disulfide	770,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Carbon tetrachloride	98	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Chlorobenzene	280,000	µg/kg	43,000	µg/kg
Volatile Organic Compound	Chloroethane	14,000,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Chloromethane	110,000	µg/kg	16,000	µg/kg
Volatile Organic Compound	Chlorotrifluoroethylene	6,700,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	cis- 1,2- Dichloroethene	18,000	µg/kg	220,000	µg/kg
Volatile Organic Compound	cis- 1,3- Dichloropropene	570	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Dibromochloromethane	940	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Dichlorodifluoromethane	87,000	µg/kg	410,000	µg/kg
Volatile Organic Compound	Ethylbenzene	5,800	µg/kg	240,000	µg/kg
Volatile Organic Compound	Formaldehyde	11,000	µg/kg	380,000	µg/kg
Volatile Organic Compound	Hexachlorobutadiene	1,200	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Isopropanol	5,600,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Isopropylbenzene	1,900,000	µg/kg	13,000	µg/kg
Volatile Organic Compound	m,p- Xylenes	550,000	µg/kg	4,200	µg/kg
Volatile Organic Compound	Methyl- tert- butyl Ether (MTBE)	47,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Methylene chloride	11,000	µg/kg	230,000	µg/kg
Volatile Organic Compound	n- butylbenzene	1,200,000	µg/kg	180,000	µg/kg

APPENDIX 2C

Suburban Residential Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f		Screening Level - ERA Soil ^f	
		Units	Units	Units	Units
Volatile Organic Compound	n- Octane	22,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	n- Propylbenzene	3,800,000	µg/kg	220,000	µg/kg
Volatile Organic Compound	o- Xylene	650,000	µg/kg	4,300	µg/kg
Volatile Organic Compound	p- Isopropyltoluene	1,900,000	µg/kg	37,000	µg/kg
Volatile Organic Compound	sec- Butylbenzene	2,200,000	µg/kg	9,800	µg/kg
Volatile Organic Compound	Styrene	5,600,000	µg/kg	420,000	µg/kg
Volatile Organic Compound	tert- Butylbenzene	2,200,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Tetrachloroethene	590	µg/kg	11,000	µg/kg
Volatile Organic Compound	Toluene	1,100,000	µg/kg	590,000	µg/kg
Volatile Organic Compound	Total 1,2- Dichloroethene	18,000	µg/kg	250,000	µg/kg
Volatile Organic Compound	trans- 1,2- Dichloroethene	130,000	µg/kg	240,000	µg/kg
Volatile Organic Compound	trans- 1,3- Dichloropropene	570	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Trichloroethene	940	µg/kg	18,000	µg/kg
Volatile Organic Compound	Trichlorofluoromethane	1,200,000	µg/kg	850,000	µg/kg
Volatile Organic Compound	Trichloromethane (Chloroform)	320	µg/kg	190,000	µg/kg
Volatile Organic Compound	Vinyl Acetate	910,000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	Vinyl chloride	8.2	µg/kg	7,800	µg/kg
Volatile Organic Compound	Xylenes, Total	550,000	µg/kg	4,200	µg/kg

Notes:

^a Individual PCB coplanars and congeners are not listed in the table as they are accounted for under the Aroclor parameters.

^b DIOXINTEQM is listed in the LUT as 2,3,7,8-TCDD TEQ.

^c Individual dioxins and furans congeners included in the TEQ calculation (DIOXINTEQM) are not listed in the table; results were compared against the calculated TEQ, which takes the individual congeners into account.

^d PAHTEQM is calculated as benzo(a)pyrene TEQ. Benzo(a)pyrene equivalence was developed based on the sum of carcinogenic PAHs.

To evaluate benzo(a)pyrene equivalence, carcinogenic PAHs need to meet respective background study MRLs.

^e Screening value shown reflects the accepted site background concentration and/or Look-up Table (LUT) screening value, which was greater than the risk-based screening value.

^f Alternative cleanups may implement soil, sediment, and soil gas remedial goals that vary; for the purpose of this document, screening values shown are reduced to soil media.

µg/kg = microgram(s) per kilogram

µg/m³ = microgram(s) per cubic meter

BHC = hexachlorocyclohexane

DDD = dichlorodiphenyldichloroethane

DDE = dichlorodiphenyldichloroethylene

DDT = dichlorodiphenyltrichloroethane

DIOXINTEQM = dioxins and furans toxic equivalency

ERA = ecological risk assessment

HHRA = human health risk assessment

mg/kg = milligram(s) per kilogram

MRL = method reporting limit

PAHTEQM = PAHs toxic equivalency

PCB = polychlorinated biphenyl

pg/g = picogram(s) per gram

TEQ = toxic equivalency quotient

Appendix 2D
Recreational Based Cleanup Values

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APPENDIX 2D

Recreational Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f	Units	Screening Level - ERA Soil ^f	Units
Aroclors	Aroclor 1016 ^a	3800	µg/kg	1200	µg/kg
Aroclors	Aroclor 1242 ^a	220	µg/kg	430	µg/kg
Aroclors	Aroclor 1248 ^a	220	µg/kg	64	µg/kg
Aroclors	Aroclor 1254 ^a	220	µg/kg	390	µg/kg
Aroclors	Aroclor 1260 ^a	230	µg/kg	250	µg/kg
Aroclors	Aroclor 5460 ^a	220	µg/kg	410	µg/kg
Aroclors	Co-Planar PCB TEQ (2005)	Not applicable	Not applicable	5	pg/g
Aroclors	PCBTEQM	4.7	pg/g	5	pg/g
Aroclors	PCBTEQM	4.7	pg/g	5	pg/g
Dioxins and Furans	2,3,7,8-TCDD TEQ	4.7	pg/g	5	pg/g
Dioxins and Furans	DIOXTEQM ^{b,c}	4.7	pg/g	5	pg/g
General Chemistry	Cyanides, Total	23	mg/kg	1.8	mg/kg
General Chemistry	Fluoride	3000	mg/kg	Not applicable	Not applicable
General Chemistry	Nitrogen, Nitrate (as N)	Not applicable	Not applicable	5200	mg/kg
General Chemistry	O-Phosphate as P	Not applicable	Not applicable	0.35	mg/kg
Metals	Aluminum	75000	mg/kg	440	mg/kg
Metals	Antimony	26	mg/kg	24	mg/kg
Metals	Arsenic	0.11	mg/kg	74	mg/kg
Metals	Barium	11000	mg/kg	1410	mg/kg
Metals	Beryllium	3	mg/kg	42	mg/kg
Metals	Boron	15000	mg/kg	100	mg/kg
Metals	Cadmium	5.2	mg/kg	0.56	mg/kg
Metals	Calcium	Not applicable	Not applicable	23	mg/kg
Metals	Chromium	36000	mg/kg	330	mg/kg
Metals	Chromium VI	0.3	mg/kg	30	mg/kg
Metals	Cobalt	23	mg/kg	850	mg/kg
Metals	Copper	3000	mg/kg	420	mg/kg
Metals	Lead	80	mg/kg	36	mg/kg
Metals	Lithium	150	mg/kg	170	mg/kg
Metals	Manganese	1100	mg/kg	10500	mg/kg
Metals	Mercury	8.8	mg/kg	0.29	mg/kg
Metals	Molybdenum	380	mg/kg	3.9	mg/kg
Metals	Nickel	490	mg/kg	84	mg/kg
Metals	Phosphorus	Not applicable	Not applicable	0.16	mg/kg
Metals	Selenium	380	mg/kg	7.2	mg/kg
Metals	Silver	230	mg/kg	220	mg/kg
Metals	Strontium	46000	mg/kg	1010	mg/kg
Metals	Thallium	0.76	mg/kg	12	mg/kg
Metals	Titanium	Not applicable	Not applicable	73	mg/kg
Metals	Vanadium	180	mg/kg	160	mg/kg
Metals	Zinc	23000	mg/kg	93	mg/kg
Metals	Zirconium	6.1	mg/kg	Not applicable	Not applicable
ORG	Dibutyltin	18000	µg/kg	Not applicable	Not applicable
Pesticides	4,4'-DDD	2500	µg/kg	850	µg/kg
Pesticides	4,4'-DDE	1700	µg/kg	280	µg/kg
Pesticides	4,4'-DDT	1800	µg/kg	580	µg/kg
Pesticides	Aldrin	34	µg/kg	570	µg/kg
Pesticides	Alpha-BHC	95	µg/kg	2900	µg/kg
Pesticides	Beta-BHC	330	µg/kg	2900	µg/kg
Pesticides	Chlordane	440	µg/kg	5600	µg/kg
Pesticides	Dieldrin	37	µg/kg	400	µg/kg
Pesticides	Endosulfan I	410000	µg/kg	4200	µg/kg
Pesticides	Endosulfan Sulfate	410000	µg/kg	4400	µg/kg

APPENDIX 2D

Recreational Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f	Units	Screening Level - ERA Soil ^f	Units
Pesticides	Endrin	20000	µg/kg	79	µg/kg
Pesticides	Endrin Aldehyde	20000	µg/kg	92	µg/kg
Pesticides	Endrin ketone	20000	µg/kg	86	µg/kg
Pesticides	gamma-BHC	540	µg/kg	5600	µg/kg
Pesticides	Heptachlor	120	µg/kg	3600	µg/kg
Pesticides	Heptachlor Epoxide	61	µg/kg	6.5	µg/kg
Pesticides	Methoxychlor	340000	µg/kg	50000	µg/kg
Phthalates	Bis(2-ethylhexyl)phthalate	38000	µg/kg	65000	µg/kg
Phthalates	Butyl benzyl phthalate	280000	µg/kg	260000	µg/kg
Phthalates	Diethyl phthalate	49000000	µg/kg	23000	µg/kg
Phthalates	Dimethyl phthalate	49000000	µg/kg	45000	µg/kg
Phthalates	Di-n-butyl phthalate	6100000	µg/kg	1100	µg/kg
Phthalates	Di-n-octyl phthalate	610000	µg/kg	130000	µg/kg
Polycyclic Aromatic Hydrocarbon	1-Methylnaphthalene	16000	µg/kg	260000	µg/kg
Polycyclic Aromatic Hydrocarbon	2-Methylnaphthalene	220000	µg/kg	260000	µg/kg
Polycyclic Aromatic Hydrocarbon	Acenaphthene	3300000	µg/kg	12000	µg/kg
Polycyclic Aromatic Hydrocarbon	Acenaphthylene	3300000	µg/kg	3300	µg/kg
Polycyclic Aromatic Hydrocarbon	Anthracene	16000000	µg/kg	25000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(a)anthracene	1000	µg/kg	180000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(a)pyrene	16000	µg/kg	240000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(b)fluoranthene	1100	µg/kg	120000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(ghi)perylene	1600000	µg/kg	110000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo(k)fluoranthene	11000	µg/kg	120000	µg/kg
Polycyclic Aromatic Hydrocarbon	Benzo[e]pyrene	1600000	µg/kg	120000	µg/kg
Polycyclic Aromatic Hydrocarbon	Chrysene	110000	µg/kg	130000	µg/kg
Polycyclic Aromatic Hydrocarbon	Dibenzo(a,h)anthracene	110	µg/kg	140000	µg/kg
Polycyclic Aromatic Hydrocarbon	Fluoranthene	2200000	µg/kg	930000	µg/kg
Polycyclic Aromatic Hydrocarbon	Fluorene	2200000	µg/kg	5400	µg/kg
Polycyclic Aromatic Hydrocarbon	Indeno(1,2,3-cd)pyrene	1100	µg/kg	120000	µg/kg
Polycyclic Aromatic Hydrocarbon	Naphthalene	1900	µg/kg	130000	µg/kg
Polycyclic Aromatic Hydrocarbon	PAHTEQM ^d	110	µg/kg	Not applicable	Not applicable
Polycyclic Aromatic Hydrocarbon	Perylene	1600000	µg/kg	220000	µg/kg
Polycyclic Aromatic Hydrocarbon	Phenanthrene	16000000	µg/kg	28000	µg/kg
Polycyclic Aromatic Hydrocarbon	Pyrene	1600000	µg/kg	140000	µg/kg
Semivolatile Organic Compound	2,4-Dimethylphenol	1200000	µg/kg	330000	µg/kg
Semivolatile Organic Compound	2,5-Dimethylfuran	9300	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	2,6-bis(1,1-Dimethylethyl)-4-methylphenol	150000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	2-Chloronaphthalene	4900000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	2-Methylphenol	3000000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	3,5-Dimethyl phenol	61000	µg/kg	26000	µg/kg
Semivolatile Organic Compound	3+4-Methylphenol	6100000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	4-Methylphenol	6100000	µg/kg	43000	µg/kg
Semivolatile Organic Compound	Benzoic acid	240000000	µg/kg	45000	µg/kg
Semivolatile Organic Compound	Benzyl alcohol	6100000	µg/kg	45000	µg/kg
Semivolatile Organic Compound	Carbazole	6100000	µg/kg	15000	µg/kg
Semivolatile Organic Compound	Cresyl diphenylphosphate	1200000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	Dibenzofuran	72000	µg/kg	Not applicable	Not applicable
Semivolatile Organic Compound	n-Nitrosodimethylamine	2.3	µg/kg	79000	µg/kg
Semivolatile Organic Compound	n-Nitrosodiphenylamine	58000	µg/kg	28000	µg/kg
Semivolatile Organic Compound	Pentachlorophenol	960	µg/kg	10000	µg/kg
Semivolatile Organic Compound	Phenol	18000000	µg/kg	51000	µg/kg
Semivolatile Organic Compound	tert-Butyl alcohol	130000000	µg/kg	Not applicable	Not applicable
Volatile Organic Compound	1,1,1-Trichloroethane	1700000	µg/kg	6240000	µg/kg

APPENDIX 2D

Recreational Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f	Units	Screening Level - ERA Soil ^f	Units
Volatiles Organic Compound	1,1,2,2-Tetrachloroethane	600	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	1,1,2-Trichloro-1,2,2-trifluoroethane	6700000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	1,1,2-Trichloroethane	1100	µg/kg	100000	µg/kg
Volatiles Organic Compound	1,1-Dichloroethane	3600	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	1,1-Dichloroethene	83000	µg/kg	18000	µg/kg
Volatiles Organic Compound	1,2,3-Trichlorobenzene	40000	µg/kg	37000	µg/kg
Volatiles Organic Compound	1,2,4-Trichlorobenzene	24000	µg/kg	37000	µg/kg
Volatiles Organic Compound	1,2,4-Trimethylbenzene	300000	µg/kg	4000	µg/kg
Volatiles Organic Compound	1,2-Dibromo-3-chloropropane	22	µg/kg	1400	µg/kg
Volatiles Organic Compound	1,2-Dibromoethane (EDB)	36	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	1,2-Dichloro-1,1,2-trifluoroethane	6700000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	1,2-Dichlorobenzene	1800000	µg/kg	130000	µg/kg
Volatiles Organic Compound	1,2-Dichloroethane	460	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	1,2-Dichloroethenes	18000	µg/kg	250000	µg/kg
Volatiles Organic Compound	1,2-Dichloropropane	1000	µg/kg	160000	µg/kg
Volatiles Organic Compound	1,2-Dichlorotetrafluoroethane	6700000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	1,3,5-Trimethylbenzene	270000	µg/kg	4100	µg/kg
Volatiles Organic Compound	1,3-Dichlorobenzene	2600	µg/kg	110000	µg/kg
Volatiles Organic Compound	1,4-Dichlorobenzene	2600	µg/kg	28000	µg/kg
Volatiles Organic Compound	1,4-Dioxane (P-Dioxane)	4700	µg/kg	4600	µg/kg
Volatiles Organic Compound	2-Butanone (MEK)	27000000	µg/kg	21100000	µg/kg
Volatiles Organic Compound	2-Chloro-1,1,1-trifluoroethane	1200000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	2-Chloroethyl vinyl ether	20	µg/kg	910000	µg/kg
Volatiles Organic Compound	2-Chlorotoluene	470000	µg/kg	63000	µg/kg
Volatiles Organic Compound	2-Hexanone	200000	µg/kg	170000	µg/kg
Volatiles Organic Compound	4-Ethyltoluene	Not applicable	Not applicable	Not applicable	Not applicable
Volatiles Organic Compound	4-Methyl-2-pentanone (MIBK)	33000000	µg/kg	45000	µg/kg
Volatiles Organic Compound	Acetone	61000000	µg/kg	230000	µg/kg
Volatiles Organic Compound	Benzene	330	µg/kg	730000	µg/kg
Volatiles Organic Compound	Benzyl Chloride	Not applicable	Not applicable	Not applicable	Not applicable
Volatiles Organic Compound	Bromobenzene	290000	µg/kg	43000	µg/kg
Volatiles Organic Compound	Bromodichloromethane	280	µg/kg	51000	µg/kg
Volatiles Organic Compound	Bromoform	18000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Bromomethane	6800	µg/kg	16000	µg/kg
Volatiles Organic Compound	Carbon Disulfide	770000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Carbon tetrachloride	98	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Chlorobenzene	280000	µg/kg	43000	µg/kg
Volatiles Organic Compound	Chloroethane	14000000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Chloromethane	110000	µg/kg	16000	µg/kg
Volatiles Organic Compound	Chlorotrifluoroethylene	6700000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	cis-1,2-Dichloroethene	18000	µg/kg	220000	µg/kg
Volatiles Organic Compound	cis-1,3-Dichloropropene	570	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Dibromochloromethane	940	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Dichlorodifluoromethane	87000	µg/kg	410000	µg/kg
Volatiles Organic Compound	Ethylbenzene	5800	µg/kg	240000	µg/kg
Volatiles Organic Compound	Formaldehyde	11000	µg/kg	380000	µg/kg
Volatiles Organic Compound	Hexachlorobutadiene	1200	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Isopropanol	5600000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Isopropylbenzene	1900000	µg/kg	13000	µg/kg
Volatiles Organic Compound	m,p-Xylenes	550000	µg/kg	4200	µg/kg
Volatiles Organic Compound	Methylene chloride	11000	µg/kg	230000	µg/kg
Volatiles Organic Compound	Methyl-tert-butyl Ether (MTBE)	47000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	n-butylbenzene	1200000	µg/kg	180000	µg/kg

APPENDIX 2D

Recreational Based Cleanup Values

NASA Supplemental EIS for Soil Cleanup Activities, SSFL, Ventura, California

Data Grouping	Parameter Name	Screening Level - HHRA Soil ^f	Units	Screening Level - ERA Soil ^f	Units
Volatiles Organic Compound	n-Octane	Not applicable	Not applicable	Not applicable	Not applicable
Volatiles Organic Compound	n-Propylbenzene	3800000	µg/kg	220000	µg/kg
Volatiles Organic Compound	o-Xylene	650000	µg/kg	4300	µg/kg
Volatiles Organic Compound	p-Isopropyltoluene	1900000	µg/kg	37000	µg/kg
Volatiles Organic Compound	sec-Butylbenzene	2200000	µg/kg	9800	µg/kg
Volatiles Organic Compound	Styrene	5600000	µg/kg	420000	µg/kg
Volatiles Organic Compound	tert-Butylbenzene	2200000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Tetrachloroethene	590	µg/kg	11000	µg/kg
Volatiles Organic Compound	Toluene	1100000	µg/kg	590000	µg/kg
Volatiles Organic Compound	Total 1,2-Dichloroethene	18000	µg/kg	250000	µg/kg
Volatiles Organic Compound	trans-1,2-Dichloroethene	130000	µg/kg	240000	µg/kg
Volatiles Organic Compound	trans-1,3-Dichloropropene	570	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Trichloroethene	940	µg/kg	18000	µg/kg
Volatiles Organic Compound	Trichlorofluoromethane	1200000	µg/kg	850000	µg/kg
Volatiles Organic Compound	Trichloromethane (Chloroform)	320	µg/kg	190000	µg/kg
Volatiles Organic Compound	Vinyl Acetate	910000	µg/kg	Not applicable	Not applicable
Volatiles Organic Compound	Vinyl chloride	8.2	µg/kg	7800	µg/kg
Volatiles Organic Compound	Xylenes, Total	550000	µg/kg	4200	µg/kg

Notes:

- a Individual PCB coplanars and congeners are not listed in the table as they are accounted for under the Aroclor parameters.
- b DIOXINTEQM is listed in the LUT as 2,3,7,8-TCDD TEQ.
- c Individual dioxins and furans congeners included in the TEQ calculation (DIOXINTEQM) are not listed in the table; results were compared against the calculated TEQ, which takes the individual congeners into account.
- d PAHTEQM is calculated as benzo(a)pyrene TEQ. Benzo(a)pyrene equivalence was developed based on the sum of carcinogenic PAHs. To evaluate benzo(a)pyrene equivalence, carcinogenic PAHs need to meet respective background study MRLs.
- e Screening value shown reflects the accepted site background concentration and/or Look-up Table (LUT) screening value, which was greater than the risk-based screening value.
- f Alternative cleanups may implement soil, sediment, and soil gas remedial goals that vary; for the purpose of this document, screening values shown are reduced to soil media.

µg/kg = microgram(s) per kilogram

µg/m³ = microgram(s) per cubic meter

BHC = hexachlorocyclohexane

DDD = dichlorodiphenyldichloroethane

DDE = dichlorodiphenyldichloroethylene

DDT = dichlorodiphenyltrichloroethane

DIOXINTEQM = dioxins and furans toxic equivalency

ERA = ecological risk assessment

HHRA = human health risk assessment

mg/kg = milligram(s) per kilogram

MRL = method reporting limit

PAHTEQM = PAHs toxic equivalency

PCB = polychlorinated biphenyl

pg/g = picogram(s) per gram

TEQ = toxic equivalence quotient

Appendix 2E
Environmental Justice Screening Report

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Save a

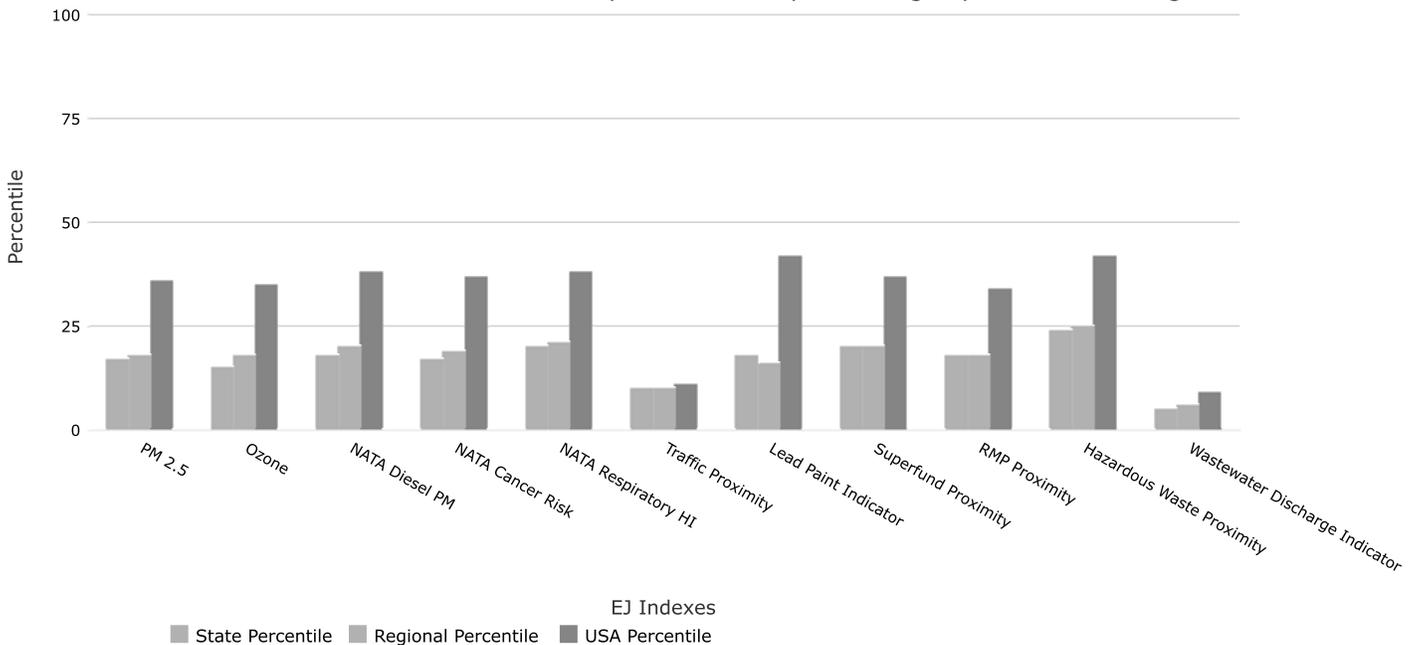


EJSCREEN Report (Version 2017)
mile Ring Centered at 34.247703,-118.69968
CALIFORNIA, EPA Region 9
Approximate Population: 139,947
Input Area (sq. miles): 78.53



	Percentile in State	Percentile in EPA Regio	Percentile in USA
	17	18	36
	15	18	35
	18	20	38
	17	19	37
	20	21	38
EJ Index for Traffic Proximity and Volume	10	10	11
EJ Index for Lead Paint Indicator	18	16	42
EJ Index for Superfund Proximity	20	20	37
EJ Index for RMP Proximity	18	18	34
EJ Index for Hazardous Waste Proximity	24	25	42
EJ Index for Wastewater Discharge Indicator	5	6	9

EJ Index for the Selected Area Compared to All People's Blockgroups in the State/Region/US



This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.



June 26, 2018

- Buffer Area
- + Digitized Point

1:72,224
 0 0.5 1 2 mi
 0 1 2 4 km
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0

Selected Variables	Value	State Average	Percentile in State	EPA Region Average	Percentile in EPA Region	USA Average	Percentile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	9.66	10.6	26	9.9	41	9.14	60
Ozone (ppb)	44.7	40.8	75	41.8	64	38.4	91
NATA* Diesel PM ($\mu\text{g}/\text{m}^3$)	0.502	0.973	25	0.978	<50th	0.938	<50th
NATA* Air Toxics Cancer Risk (risk per MM)	38	44	30	43	<50th	40	<50th
NATA* Respiratory Hazard Index	1.3	2.1	18	2	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	710	1200	63	1100	66	590	83
Lead Paint Indicator (% pre-1960s housing)	0.093	0.29	36	0.24	44	0.29	35
Superfund Proximity (site count/km distance)	0.044	0.17	26	0.15	31	0.13	38
RMP Proximity (facility count/km distance)	0.28	1.1	33	0.98	39	0.73	48
Hazardous Waste Proximity (facility count/km distance)	0.022	0.13	15	0.12	18	0.093	24
Wastewater Discharge Indicator (toxicity-weighted concentration/m distance)	0.025	16	79	13	79	30	85
Demographic Indicators							
Demographic Index	29%	49%	22	47%	24	36%	47
Minority Population	39%	61%	25	59%	29	38%	59
Low Income Population	19%	36%	27	36%	27	34%	27
Linguistically Isolated Population	4%	10%	33	9%	39	5%	66
Population with Less Than High School Education	9%	18%	37	17%	39	13%	45
Population under Age 5	5%	7%	40	7%	40	6%	43
Population over Age 64	13%	12%	64	13%	63	14%	54

*The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not

Appendix 3.1A
2014 Programmatic Agreement

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**PROGRAMMATIC AGREEMENT
AMONG
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
THE CALIFORNIA STATE HISTORIC PRESERVATION OFFICER,
AND
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT
SANTA SUSANA FIELD LABORATORY
VENTURA COUNTY, CALIFORNIA**

WHEREAS, This Programmatic Agreement (“PA”) is made among the National Aeronautics and Space Administration (“NASA”), the California State Historic Preservation Officer (“SHPO”), and the Advisory Council on Historic Preservation (“ACHP”) (referred collectively herein as the “Signatories” or individually as a “Signatory”), pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (“NHPA”), 16 United States Code (“U.S.C.”) § 470f and its implementing regulations, 36 Code of Federal Regulations (“CFR”) Part 800.

WHEREAS, NASA notified the SHPO, the ACHP, and the public that it would follow 36 CFR 800.8 and used the process and documentation required for the preparation of an Environmental Impact Statement (“EIS”) to comply with Section 106 in lieu of the procedures set forth in 36 CFR 800.3 through 800.6, and the National Environmental Policy Act (“NEPA”); and

WHEREAS, in accordance with the Administrative Order on Consent (“AOC”) (See Attachment 1) signed by NASA and the Department of Toxic Substances Control for the State of California on December 6, 2010, and the Consent Order for Corrective Action (“Consent Order”) signed by NASA in August 2007 (See Attachment 1), NASA plans to (a) remediate the environment at the NASA-administered portion of the Santa Susana Field Laboratory (“NASA SSFL” or “NASA Property”) which includes ongoing environmental testing, soil, and groundwater cleanup, and (b) to demolish the majority of extant structures (hereinafter defined as “Undertaking”) necessary to support remediation of the NASA property; and

WHEREAS, NASA is the agency responsible for the Undertaking, including demolition, cleanup actions, and mitigation measures and compliance with Section 106 of the NHPA and the implementing regulations with respect to the Undertaking; and

WHEREAS, the United States General Services Administration (“GSA”), is responsible for the disposition of the NASA SSFL and compliance with Section 106 of the NHPA for a conveyance outside of federal ownership; and

WHEREAS, GSA will conduct its own Section 106 process for the separate disposition undertaking; and

WHEREAS, the NASA SSFL is 451 acres located in Ventura County, California, within the Simi Hills, south of Simi Valley, west of West Hills, and north of Bell Canyon. NASA SSFL is part of a larger complex also known as the Santa Susana Field Laboratory the remainder of which is owned by The Boeing Company (“Boeing” and “Boeing SSFL” or “Boeing Property”), which owns a portion of Area I, and all of Areas III and IV, as well as buffer areas to the north and south of NASA’s Property. NASA SSFL comprises all of Area II and a portion of Area I (See Attachments 2

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

and 3). The Department of Energy (“DOE”) leases land in Area IV from Boeing. NASA SSFL includes multiple buildings and facilities that supported the testing of rocket engines from the 1950s until 2006, including laboratory buildings, offices, test stands, control houses, support facilities, and associated roads and utilities; and

WHEREAS, in consultation, NASA defined the Undertaking's Area of Potential Effects (“APE”) as the entirety of the NASA Property (Area I and Area II), which constitutes 451 acres, plus 39 acres within the Boeing Property that may require soil cleanup as a part of the Undertaking (Attachment 3, Area of Potential Effects); and

WHEREAS, in consultation with SHPO, on May 15, 2008, NASA determined that the NASA SSFL contains three (3) National Register of Historic Places (“NRHP” or “National Register”)-eligible historic districts: Alfa, Bravo, and Coca Test Area Historic Districts. Each historic district includes two test stands and a control house, all of which are also individually NRHP-eligible under Criteria A and C and Criteria Consideration G. These historic properties (“NASA Historic Properties”) are from the Cold War (Military) and Space Exploration period of significance, circa mid-1950s to 1991 (Attachment 4); and

WHEREAS, there are three (3) recorded archeological sites within the APE, which was surveyed by NASA and other entities to include “Burro Flats Site” (CA-VEN-1072), a “Rock Shelter” (CA-VEN-1800), and a “Sparse Lithic Scatter” (CA-VEN-1803). The Burro Flats Site (CA-VEN-1072) was listed in the NRHP and the California Register of Historic Resources in 1976. It has since been updated to include 16 separate loci. The Burro Flats Site (CA-VEN-1072) and Sparse Lithic Scatter (CA-VEN-1803) have the potential to be adversely affected by the Undertaking.

WHEREAS, NASA conducted a preliminary Traditional Cultural Property (“TCP”) investigation and, in consultation with the Santa Ynez Band of Chumash Indians (“SYBCI”), a federally-recognized Indian tribe, determined that a TCP exists within the APE that likely meets National Register Criterion A in addition to Criterion D for TCPs and has determined that these qualifying characteristics will be adversely affected by NASA’s Undertaking; and

WHEREAS, the locations of the archeological sites noted above and the TCP are sensitive information and must remain confidential; and

WHEREAS, the SYBCI has designated the NASA Property part of a larger Indian Sacred Site under Executive Order 13007 and has been invited by NASA to sign this PA as an invited signatory (“Invited Signatory”); and

WHEREAS, the DTSC, having a major role as the regulator responsible for many requirements associated with the AOC and this PA has been invited to sign this PA as an invited signatory (“Invited Signatory”) and declined to sign; and

WHEREAS, NASA published an Integrated Cultural Resources Management Plan (“ICRMP”) for the NASA Property (See Attachment 1); and

WHEREAS, in consultation with the SHPO, the SYBCI, and the Consulting Parties (hereinafter defined), NASA determined that the Undertaking will have an adverse effect on Historic Properties; and

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

WHEREAS, in accordance with 36 CFR 800.6(a)(1), NASA has notified the ACHP of its adverse effect determination providing the specified documentation, and the ACHP has chosen to participate in the consultation pursuant to 36 CFR 800.6(a)(1)(iii); and

WHEREAS, NASA also contacted by letter and telephone multiple non-federally recognized tribes within California (See Attachment 5 for a list of Tribes NASA notified), that were identified by the California Native American Heritage Commission ("State-Listed Tribes"), and invited them to participate in consultation on the Undertaking, and some members of these tribes elected to participate as "Consulting Parties", while others State-Listed Tribes did not respond; and

WHEREAS, NASA has consulted with over thirty (30) Section 106 Consulting Parties in accordance with Section 106 of the NHPA, and its implementing regulations (36 CFR 800.6(b)(2)) to resolve the adverse effects of the Undertaking on historic properties (See Attachment 6 for a list of Consulting Parties); and

WHEREAS, NASA also provided for public involvement in accordance with 36 CFR 800.8(a)(1) by coordinating Section 106 review with public review and consultation via an EIS for the Undertaking under provisions of NEPA, 42 U.S.C. §4321 et. seq.; and

WHEREAS, together with the Signatories and the Invited Signatories, NASA consulted with the Consulting Parties, to resolve the adverse effects of the Undertaking on historic properties; and

NOW, THEREFORE, the Signatories agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the Undertaking on historic properties.

STIPULATIONS

NASA shall ensure that the following measures are carried out by or under the direct supervision of a person or persons who meet(s) or exceed(s) the pertinent qualifications in the Secretary of the Interior's Professional Qualification Standards (http://www.nps.gov/history/local-law/arch_stnds_9.htm) in those areas in which the qualifications are applicable for the specific work performed.

I. TEST STANDS AND ASSOCIATED SUPPORT FACILITIES

A. Demolition Actions

1. Immediate Demolition. Upon completion of the EIS, NASA will demolish all non-historic properties, including all non-contributing historic structures within the NASA SSFL historic districts, and NASA will demolish the entirety of the Coca Test Stand Historic District (See Attachments 3 and 4)
2. Items for Display. Prior to demolition of any test stands, NASA will consult with NASA's artifacts officer and the Signatories and Invited Signatories in accordance with the Consultation and Review Stipulation (Stipulation V) to identify several

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special or representative pieces of the test stands for display in local museums or through the NASA artifacts module at <http://gsaccess.gov/nasawel.htm>.

3. Monitoring. NASA's archeologist in consultation with SYBCI will identify locations where demolition activities may require monitoring by Native American and archeological monitors. NASA will use Native American and archeological monitors, as appropriate, to oversee ground disturbing work in areas of archeological concern. Their goal will be to minimize impacts to cultural materials, artifacts and intact site deposits and to assure proper protection of any encountered during the Undertaking.

B. Retention of Historic Test Stands and Facilities

1. Retention. NASA will retain and preserve one of the remaining test stands and control house and possibly other contributing elements within the related historic district (Alfa or Bravo).
2. Consultation. NASA will consult with SYBCI, the State of California Department of Toxic Substances Control ("DTSC"), and SHPO to choose which test stand and control house and contributing elements will remain based on the following criteria:
 - a. Meeting the 2010 AOC conditions; and
 - b. Abatement, operations, and maintenance costs; and
 - c. NASA, SYBCI, or SHPO provides input that identifies concerns related to impacts to the TCP or any newly identified cultural deposits,
3. Hazardous Materials Identification. Within one (1) year of the execution of this PA, NASA will conduct a cost estimate for the abatement (including full abatement and/or encapsulation) for the Alfa and Bravo historic districts.
4. Retained Property Identification. NASA will identify one test stand and associated control house at a minimum and other contributing historic properties if feasible to preserve/retain based on information developed for Stipulation I.B.2. NASA will notify the Consulting Parties which facilities will be retained. The other historic district will be demolished upon completion of the selection process.
5. Proviso: If NASA's efforts fail to retain a test stand and control house identified in Stipulation I.B.4 due to constraints posed by execution of the AOC or reasons outside of NASA's control, such as (but not limited to) fiscal or legislative, NASA will retain several representative pieces of demolished test stands for display in local museums or through the NASA artifacts module at <http://gsaccess.gov/nasawel.htm>.
6. Fencing. Upon completion of soil cleanup and demolition activities, based on consultation with the SHPO, NASA will provide and maintain a fenced enclosure around any test stand(s) not demolished until the property is transferred.

C. Mitigation Measures for Demolition

1. Structural Documentation. Within six (6) months of the execution of this PA, NASA will engage the National Park Service ("NPS") to complete Historic American Engineering Record ("HAER") Level I documentation of all test stands in Alfa,

Bravo, and Coca Test Area Historic Districts and will complete HAER Level II documentation for control houses within each district, and HAER Level III for all remaining contributing structures to the Alfa, Bravo, and Coca Test Area Historic Districts and submit the documentation to the Library of Congress ("LOC") for archiving.

2. Photography and Narrative. NASA will post on the NASA website within two (2) years of the signing of this PA a collection of historic photos and the historic narrative from existing surveys of NASA SSFL, and will provide the same in an appropriate format that will be available on written request to NASA for five (5) years for interpretive displays at museums, schools, other organizations, or a potential interpretive center. Photos and narrative related to HAER documentation will be included in archival material submitted to the LOC.
3. National Register Determination of Eligibility. NASA will update the National Register Determination of Eligibility for the retained test stand and control house and any other facilities retained in accordance with Stipulations I.B.1 through I.B.4 upon completion of all demolition activities within twelve (12) months of finalization of the decision to retain the structures.
4. Video Documentation. Within twenty-four (24) months of the execution of the PA, NASA will produce a video documenting the history of the construction and use of NASA's SSFL test stands; the video will be posted on NASA's website for three (3) years minimum and available on CD by request for up to three (3) years after posting on the website. The video will include a virtual model or "fly-through" of the test stands.
5. Oral Histories. Within twenty-four (24) months of the execution of the PA, NASA will conduct twelve (12) oral history interviews of personnel who formerly worked at NASA SSFL and will include the transcripts on NASA's oral history website http://www.jsc.nasa.gov/history/nasa_history.htm with links to other NASA websites, including SSFL.

II. TREATMENT OF TRADITIONAL CULTURAL PROPERTY

- A. Native American Advisory Board. Within six (6) months of execution of this PA, NASA will establish a Native American Advisory Board ("NAAB") comprising volunteer representatives from federally recognized Indian tribes and State-Listed Tribes with an interest in the protection of Native American sites on NASA SSFL to advise NASA on matters relating to historic properties of interest to Native Americans on NASA SSFL. The NAAB will provide expertise on and input to the development of the ethnographic history described below in Stipulation II.B and in the identification of any ongoing issues related to the management and protection of Native American sites, including the TCP. The NAAB will remain in effect for the duration of this PA, unless the NAAB and NASA agree that the advisory board is no longer needed.
- B. Ethnographic History. Within thirty-six (36) months of execution of this PA, NASA will conduct an ethnographic history (adding to and synthesizing the analyses from the TCP Survey and previous related ethnographic studies). The ethnographic history will include

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in-depth research of archeological investigations in the area, interviews, and other research methods based on consultation with the NAAB and local experts to provide a greater understanding of the historic use and associations of the Burro Flats area and SSFL. A public version of the ethnographic history will be published on NASA's website for a minimum of five (5) years, with digital copies available upon request. Copies of the ethnographic history will be provided to all Signatories.

- C. TCP Nomination. In consultation with SHPO, Boeing, DOE, NAAB, SBYCI, and NPS, NASA will produce and submit a NRHP nomination of the TCP to the California State Historic Resources Commission and the NRHP for the TCP within eighteen (18) months of the completion of the ethnographic history.
- D. Access. In accordance with Executive Order 13007, Indian Sacred Sites, NASA will continue to provide access to ceremonial sites for Native Americans. Written requests for access will be processed by NASA until the land is transferred to the next owner. NASA will endeavor to provide such access to Native Americans for ceremonies unless there is safety or health risks associated with the demolition and cleanup activities or concerns regarding the protection or preservation of the site due to weather conditions, fire hazard, or other hazards.
- E. Reseeding. NASA will backfill a portion of the removed soil and reseed areas affected by cleanup and demolition activities using a native seed mix similar to the seed mix being used on the adjacent Boeing property to encourage plant regrowth in the TCP.

III. BURRO FLATS SITE (CA-VEN-1072)

- A. Boundary Determination and National Register Nomination. Prior to any cleanup excavation activities on the NASA Property, NASA will consult with SHPO to identify a testing plan to conduct further archeological investigations within NASA's boundary to confirm the extent of the boundary ("Burro Flats Site Boundary") on NASA land and, within twelve (12) months of publishing the final report, in consultation with the SYBCI and Boeing (or its consultants), develop an updated National Register nomination form to be submitted to the SHPO and NRHP.
- B. Monitoring. NASA will use archeological and Native American monitors to oversee field sampling, vegetation clearing, and ground disturbing activities within Burro Flats Site and the buffer area defined by NASA in 2008 for management purposes, as well as within any other known archeological sites, and will coordinate, where feasible, any sampling within Burro Flats Site Boundary with the boundary determination work.
- C. Environmentally Sensitive Areas Action Plan. NASA will develop an Environmentally Sensitive Areas Action Plan ("ESAAP") that will be submitted for review in accordance Stipulation V to SHPO and SYBCI for use by NASA and its contractors for sensitive cultural areas such as archeological sites to provide active protection during the undertaking to prevent inadvertent damage. The ESAAP will be developed by qualified archeologists and will delineate areas to be protected, document protective measures required, identify responsible parties and their appropriate tasks, and outline an anticipated schedule and process. The ESAAP will be developed in coordination with the Implementation Plan required by the AOC to ensure coordination of the cleanup

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activities. The ESAAP will provide provisions for conducting the Undertaking within an archeological site, which will be protective of those areas of the site that are not planned to be affected by the Undertaking.

- D. AOC Exception Consideration. Prior to commencing the soil cleanup activities in and around Burro Flats, NASA will submit to DTSC the revised Burro Flats Site Boundary that lies within NASA's APE and request that any cleanup required to meet DTSC standards identified in the AOC within the Burro Flats Site Boundary be considered part of the "Native American Artifacts" exceptions clause identified in the Agreement In Principle of the AOC and be exempted from the cleanup requirement.
- E. Exemption Override. If DTSC determines that there is an unacceptable health risk that requires environmental cleanup within the Burro Flats Site Boundary, even in view of an exception otherwise available, NASA and DTSC will identify which areas will require cleanup to meet the prescribed health risk identified by DTSC. NASA will determine the most effective cleanup methodology to achieve the goals while being as sensitive as possible to the site, and promptly inform the SYBCI and SHPO of their determination in writing.
- F. Data Recovery Consideration. If the cleanup requires excavation within the Burro Flats Site Boundary, NASA will promptly notify the NAAB, SHPO, and SYBCI that it intends to develop a Research Design for a Phase III data recovery plan in accordance with the Consultation and Review Stipulation (Stipulation V).
 - 1. NASA will consult with the NAAB, SHPO, and SYBCI to develop a Research Design for a Phase III data recovery plan, which will include a provision for Native American monitors. The submission package will be submitted by NASA to SYBCI and SHPO in accordance with the Consultation and Review Stipulation (Stipulation V). NASA will proceed with the Phase III data recovery plan prior to proceeding with cleanup within the archeological site boundaries.
 - 2. If the SHPO and/or SYBCI requests, in writing within 30 days of notification, that NASA refrain from conducting data recovery, as described in III.F, within or around the Burro Flats Site Boundary, NASA will work with SYBCI and SHPO to identify an alternative mitigation. Alternative mitigation will be agreed to in a request for concurrence letter sent from NASA and concurred by SYBCI and SHPO prior to commencement of cleanup activities within the Burro Flats Site Boundary.
- G. Documentation and Curation. NASA shall ensure that all records resulting from excavation of any National Register-eligible archeological site(s) are curated by an institution meeting the standards set forth in 36 CFR 79, and that all artifacts and other material resulting from the same excavation are maintained in accordance with 36 CFR 79 and curated with previous federal collections associated with SSFL within the State of California.
- H. Protection. NASA will update its Standard Operating Procedures ("SOP") for Archeological Resource Protection Act Compliance Review and Preventing Vandalism to Archeological Sites within NASA's ICRMP to include protection during demolition and

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cleanup activities, and the update will be submitted by NASA to SYBCI and SHPO in accordance with the Consultation and Review Stipulation (Stipulation V).

IV TREATMENT OF OTHER ARCHEOLOGICAL PROPERTIES

In order for NASA to conduct environmental remediation and demolition activities, NASA will ensure the following stipulations are implemented:

- A. **Field Sampling.** NASA will provide archeological and Native American monitors for field sampling conducted to identify soil contaminants within NASA SSFL.
- B. **Further Archeological Investigation.** Within six (6) months of the completion of the final environmental field sampling or testing, NASA will commence Extended Phase I archeological investigations in those footprints of cleanup areas where NASA plans to excavate soil to achieve cleanup goals. Where necessary, to allow archeological investigation beneath building footprints, some archeological investigations may be delayed. These investigations will include Native American monitors. All archeological investigations will be completed prior to conducting ground disturbing activities (other than minor disturbance in and around structures being demolished.)
- C. **Archeological Site Discovery and Evaluation.** Any newly identified archeological sites within the Extended Phase I investigations will be evaluated by NASA in accordance with 36 CFR 63 and bulletins, guidance, and documents produced by the NPS, in consultation with NAAB, SHPO, and SYBCI, to determine if they are historic properties. NASA will submit the report for review in accordance with the Consultation and Review Stipulation (Stipulation V).
- D. **In the event the final cleanup footprint includes a portion of the Sparse Lithic Scatter (CA-VEN-1803) or an archeological site is found meeting the National Register eligibility criteria within the final footprint of other cleanup areas, or NASA determines the site eligible for the NRHP for the purposes of this Undertaking, NASA will consult with DTSC and request that the site be considered part of the "Native American Artifacts" exceptions clauses identified in the AIP of the AOC and be exempted from the cleanup requirement.**
 1. **If the DTSC decides that the AOC Exception Consideration does not apply and NASA is required to conduct cleanup that will adversely affect the archeological site, NASA will proceed in the same manner as Stipulations III.D through III.G.**
- E. **ICRMP Updates.** NASA will update its ICRMP to include the National Register-eligible site(s), should they exist, and to include in the ICRMP protection measures during demolition and cleanup per Stipulation III.H. The updated ICRMP will be submitted by NASA to SYBCI and SHPO in accordance with the Consultation and Review Stipulation (Stipulation V).
- F. **Protection Measures.** If active protection measures are needed such as fencing to protect a newly found site during demolition and/or cleanup activities, and NASA's Qualified Personnel determine that certain protection measures can be installed without adverse effects to the National Register-eligible archeological site(s), then NASA will proceed with installation using Native American and archeological monitors. Such protection

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activities will be summarized by NASA in writing, and submitted to SHPO, SYBCI, and the NAAB, for their information, prior to installation.

1. If NASA determines the protection measure is likely to cause an adverse effect, NASA will consult with SHPO, SYBCI, and the NAAB to identify ways to avoid, minimize, or mitigate the effects prior to installation.
- G. Training Module. NASA will develop a training module within six (6) months of the signing of this PA for all demolition and cleanup personnel, including new personnel coming on site to perform cleanup activities throughout the life of the project, who will be working at NASA SSFL for the protection of cultural resources that includes the procedures identified in NASA's ICRMP for inadvertent discoveries and human remains.

V. CONSULTATION AND REVIEW

- A. NASA will consult with SHPO, DTSC, SYBCI, and the NAAB as required by the stipulations within this PA.
1. NASA will submit reports and requests to SHPO and SYBCI for review. Respondents will have thirty (30) calendar days to review submissions, after which NASA will respond, in writing, to written comments within thirty (30) calendar days and provide a (15) day final review opportunity for written comments.
 2. In the event of disagreement by SHPO, SYBCI, or NAAB with NASA or each other regarding the stipulations contained within the PA, the matter will be addressed in accordance with the Dispute Resolution Stipulation (Stipulation IX).
 3. In the event of disagreement between NASA and DTSC regarding issues related to this PA, the matter will be referred to the dispute process outline in the 2010 AOC or 2007 Consent Order, as appropriate and NASA will inform SHPO, SYBCI, or NAAB of the outcome as reasonably practical.

VI. DURATION

This PA will expire in six (6) years from the date of its execution or when stipulations are complete. Prior to such time, NASA may consult with the other Signatories and Invited Signatories to reconsider the terms of the PA and amend it in accordance with the Amendments Stipulation (Stipulation XI).

VII. UNANTICIPATED DISCOVERIES

- A. In the event management, demolition, or cleanup activities uncover any unanticipated discoveries, NASA will proceed in accordance with the procedures outlined in Attachment 7. All work within 30 meters of the location will be suspended and the procedures outlined in Attachments 7 and 8 will be followed.
- B. In the event of the discovery of human remains and/or cultural items (funerary objects, sacred objects, objects of cultural patrimony) which are subject to the Native American Graves Protection and Repatriation Act ("NAGPRA") (25 U.S.C. § 3001-3013, 18 U.S.C. § 1170) and the Archeological Resources Protection Act ("ARPA") (16 U.S.C. § 470aa-470mm); NASA will implement Attachment 8 regarding the Treatment of Human

Remains and Funerary/Sacred Objects until such time as a Plan of Action is developed in accordance with NAGPRA. The plan shall include provisions for in-place preservation, excavation, and analysis, in accordance with a data recovery plan (identified in Stipulation III.G-H), and disposition of the remains, as appropriate. In development of the Plan NASA will, in good faith, consult with the relevant parties such as the NAAB and SYBCI in accordance with applicable law. The Plan of Action will supersede Attachment 8 upon completion. If the remains are determined to be non-native, NASA shall follow the procedures outlined in the applicable California unmarked burial law.

VIII. ANNUAL REPORTING

Each year, following the execution of this PA until it expires or is terminated, upon completion of the cleanup, NASA shall provide all parties to this PA a summary report detailing work carried out pursuant to its terms. Such report shall include any proposed scheduling changes, any problems encountered, and any disputes and objections received in NASA's efforts to carry out the terms of this PA.

IX. DISPUTE RESOLUTION

Should any Signatory or Invited Signatory to this PA object at any time to any actions proposed or the manner in which the terms of this PA are implemented, NASA shall consult with such party to resolve the objection. If NASA determines that such objection cannot be resolved, NASA will:

- A. Forward all documentation relevant to the dispute, including NASA's proposed resolution, to the ACHP. The ACHP shall provide NASA with its comments on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, NASA shall prepare a written response that takes into account any comments regarding the dispute from the ACHP, Signatories and Invited Signatories, and provide them with a copy of this written response. NASA will then proceed according to its final decision.
- B. If the ACHP does not provide comments regarding the dispute within the thirty (30)-day period, NASA may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, NASA shall prepare a written response that takes into account any timely comments regarding the dispute from the Signatories and Invited Signatories, to the PA, and provide them and the ACHP with a copy of such written response.
- C. NASA's responsibilities to carry out all other actions subject to the terms of this PA that are not the subject of the dispute remain unchanged.

X. ANTI-DEFICIENCY

NASA's obligations under this PA are subject to the availability of appropriated funds, and the stipulations of this PA are subject to the provisions of the Anti-Deficiency Act. NASA will make reasonable and good faith efforts to secure the necessary funds to implement this PA in its entirety. If compliance with the Anti-Deficiency Act alters or impairs NASA's ability to implement the stipulations of this PA, NASA will consult in accordance with the Amendments Stipulation (Stipulation XI) or Termination Stipulation (Stipulation XII) of this PA.

XI. AMENDMENTS

This PA may be amended when such an amendment is agreed to in writing by all Signatories of the PA. The amendment will be effective on the date a copy signed by all of the Signatories and Invited Signatories is filed with the ACHP.

XII. TERMINATION

- A. If any Signatory or an Invited Signatory that signed this PA determines that the terms of the PA will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation XI, above. If within thirty (30) days (or another time period agreed to by all Signatories and Invited Signatories that signs the PA) an amendment cannot be reached, any Signatory and/or an Invited Signatory that signed this PA may terminate the PA upon written notification to the other Signatories and Invited Signatories.
- B. In the event of termination of this PA, NASA shall comply with the provisions of 36 CFR Part 800 for all portions of the Undertaking that have not already begun. For any new undertakings or changes in the Undertaking, NASA must either (a) execute a PA pursuant to 36 CFR 800.6, or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR 800.7. NASA shall notify the Signatories and Invited Signatories that signed the PA, to the course of action it will pursue.

XII. CONFIDENTIALITY

All parties to this PA acknowledge that information about historic properties, prospective historic properties, or properties considered historic for purposes of this PA are or may be subject to the provisions of Section 304 of NHPA and Section 6254.10 of the California Government Code (Public Records Act), relating to the disclosure of sensitive information, and having so acknowledged, will ensure that all actions and documentation prescribed by this PA are, where necessary, consistent with the requirements of Section 304 of the NHPA and Section 6254.10 of the California Government Code.

EXECUTION of this PA by NASA, ACHP, and SHPO and implementation of its terms evidence that NASA has taken into account the effects of this Undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORIES:

NASA:

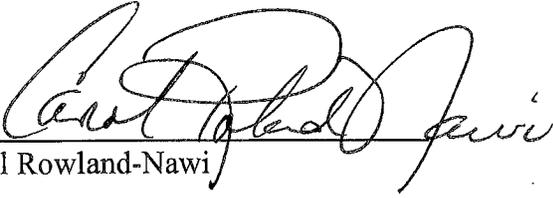


Patrick E. Scheuermann
Director

Date: 4/2/14

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

California State Historic Preservation Officer:



Carol Rowland-Nawi

Date: 4-10-14

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

Advisory Council on Historic Preservation:



John Fowler
Director



Date: 9/17/14

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

INVITED SIGNATORY:

Santa Ynez Band of Chumash Indians



Vincent Armenta, Chairman

Date:

4/23/14

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 1

Resources

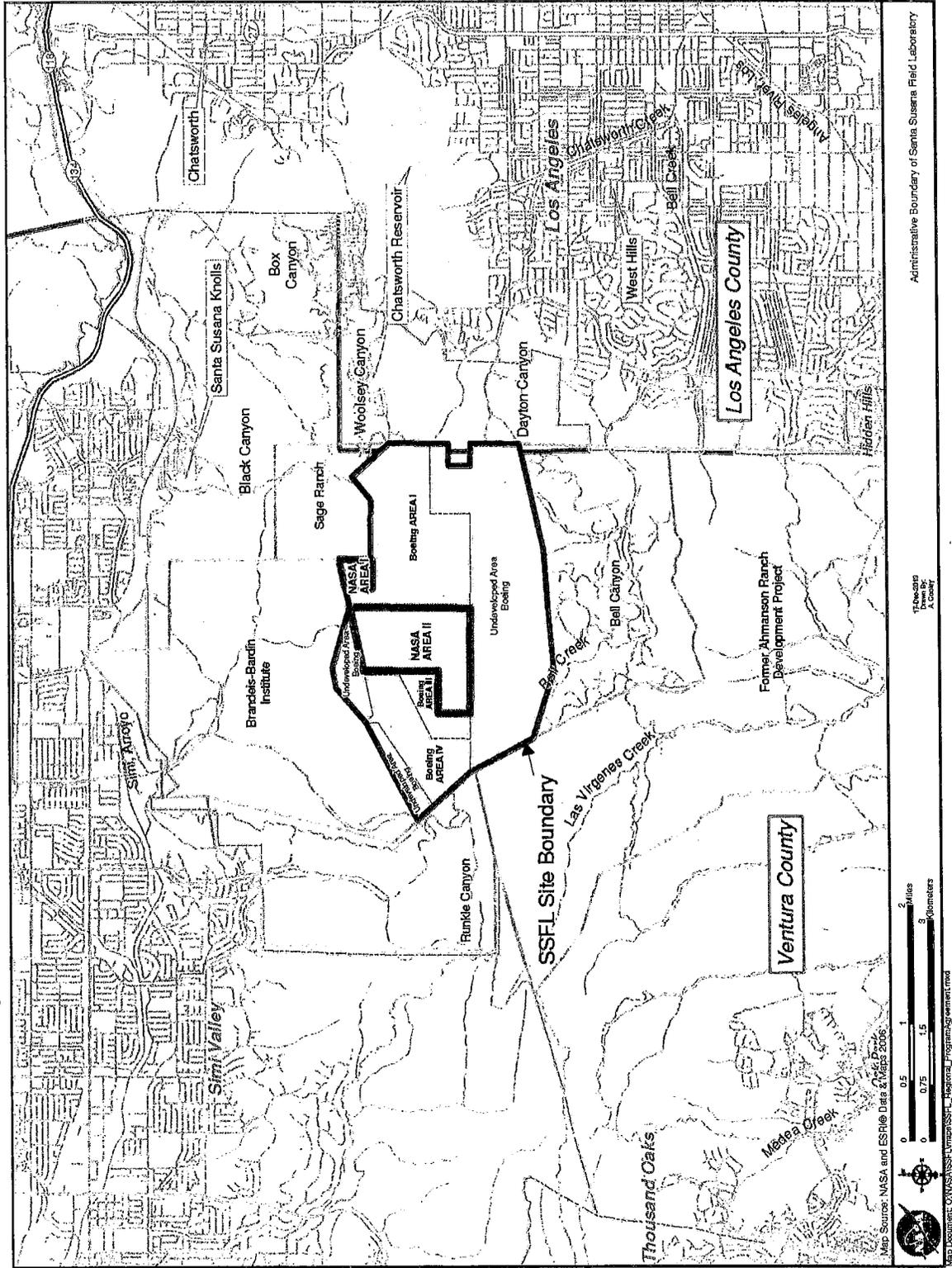
Administrative Order on Consent, ("AOC") signed by NASA and the Department of Toxic Substances Control for the State of California on December 6, 2010. Copy is available at http://ssfl.msfc.nasa.gov/documents/governance/NASA_DTSC_Final_AOC_Dec_2010.pdf or upon request at SSFL Program Director, NASA MSFC AS01, Building 4494, Huntsville, AL 35812.

Consent Order for Corrective Action ("Consent Order") signed by NASA in August 2007. Copy is available at http://www.dtsc.ca.gov/SiteCleanup/Projects/upload/SSFL_COCA.pdf or upon request at SSFL Program Director, NASA MSFC AS01, Building 4494, Huntsville, AL 35812.

Integrated Cultural Resources Management Plan for Santa Susana Field Laboratory, Ventura County, California, January 2009-2013. Copy is available at http://ssfl.msfc.nasa.gov/documents/factsheets/ICRMP_SSFL_2009-2013.pdf or upon request at SSFL Program Director, NASA MSFC AS01, Building 4494, Huntsville, AL 35812.

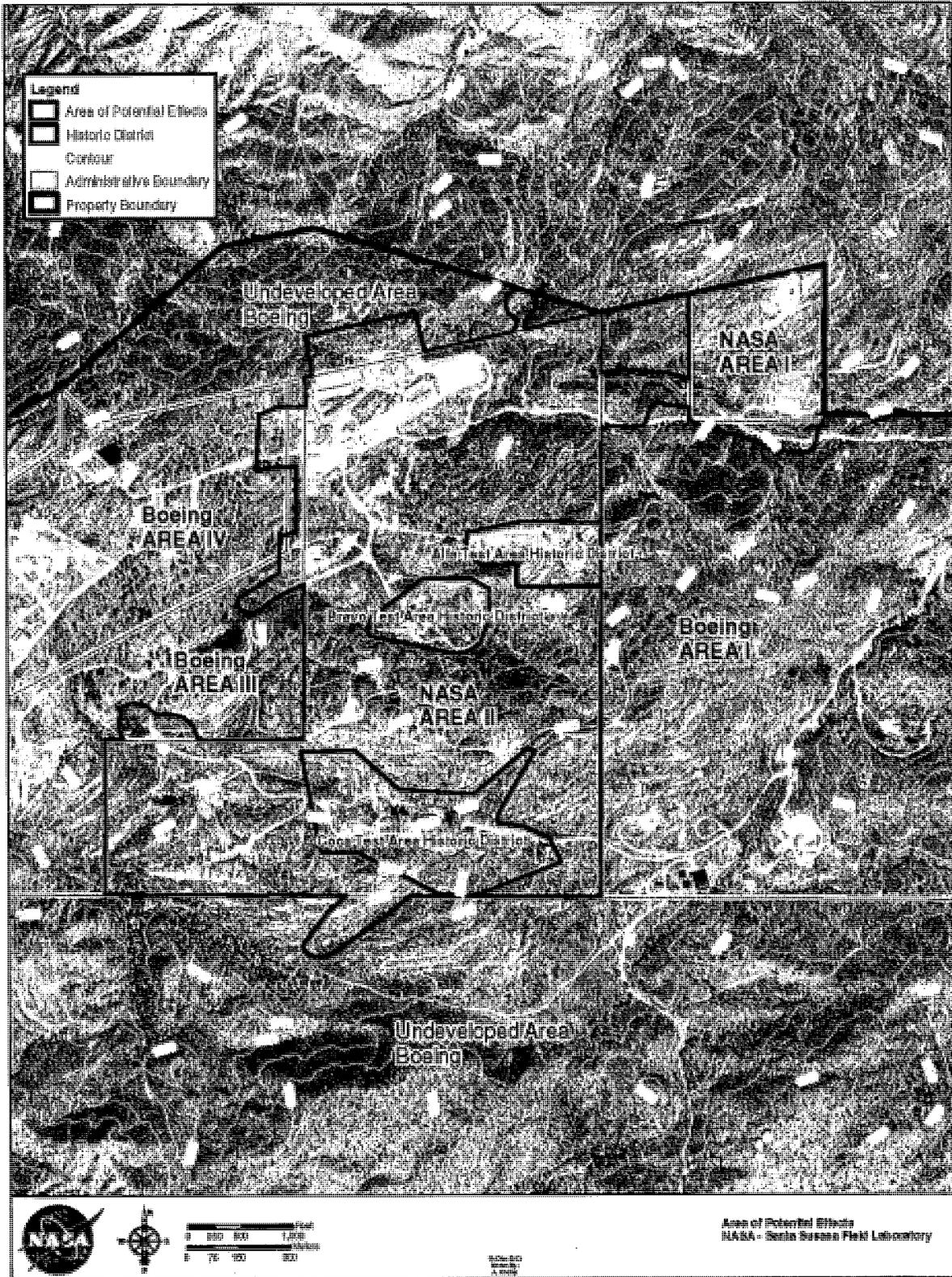
PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 2
Administrative Boundary of Santa Susana Field Laboratory



PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 3
Area of Potential Effects Map



PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 4

**Historic Structures and Districts in the NASA-administered Areas at Santa Susana Field
Laboratory**

Structure No.	Structure Name	NRHP Status	
		Individually Eligible	Contributes to a Historic District
Alfa Test Area Historic District			
2208	Alfa Control House	X	X
2209	Alfa Terminal House		X
2727	Alfa I Test Stand	X	X
2727A	Alfa I Electrical Control Station		X
2729	Alfa III Test Stand	X	X
2729A	Alfa III Electrical Control Station		X
2739	Standtalker Shack		X
2X	Alfa Observation Structure (Pill Box)		X
2Y	Alfa Observation Structure (Pill Box)		X
	Alfa Landscape/Spillway		X
Bravo Test Area Historic District			
2213	Bravo Control House	X	X
2214	Bravo Terminal House		X
2730	Bravo I Test Stand	X	X
2730A	Bravo I Electrical Control Station		X
2731	Bravo II Test Stand	X	X
2731A	Bravo II Electrical Control Station		X
2Z	Bravo Observation Structure (Pill Box)		X
	Bravo Landscape/Spillway		X
Coca Test Area Historic District			
2218	Coca Control Center	X	X
2222	Coca Pre-Test Building		X

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 4

**Historic Structures and Districts in the NASA-administered Areas at Santa Susana Field
Laboratory**

Structure No.	Structure Name	NRHP Status	
		Individually Eligible	Contributes to a Historic District
2235	Coca Electrical Control Station (LOX)		X
2236	Coca Electrical Control Station (LH2)		X
2237	Coca GH2 Compressor Building		X
2239	Coca GH2 Compressor Building		X
2241	Coca Pump House		X
2520	Coca High Pressure GH2 and GN2 Vault		X
2614	Coca IV Observation Structure (Pill Box)		X
2733	Coca I Test Stand	X	X
2787	Coca IV Test Stand	X	X
2A	Coca North Observation Structure (Pill Box)		X
2B	Coca Observation Structure (Pill Box)		X
V99	Coca GH2 Vessel		X
V100	Coca LH2 Vessel #1		X
V108	Coca LOX Vessel #1		X
	Coca Cable Tunnel		X
	Coca Landscape/Spillway		X

Notes:

GH2 = gaseous hydrogen

GN2 = gaseous nitrogen

LH2 = liquid hydrogen

LOX = liquid oxygen

NRHP = National Register of Historic Places

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 5

List of Non-federally Recognized Tribes Contacted by NASA

Name	Affiliation
Charles Cooke	Chumash, Fernandefio, Tataviam, Kitanemuk
Beverly Salazar Folkes	Chumash, Tataviam, Fernandefio
James Ramos, Chairperson	Serrano
Ronnie Salas, Cultural Preservation Department	Fernandefio, Tataviam
Julie Lynn Tumamait	Barbareno/Venturefio Band of Mission Indians, Chumash
Patrick Tumamait	Chumash
Chief Mark Steven Vigil, San Luis Obispo County Chumash Council	Chumash
Owl Clan, Qun-tan Shup	Chumash
John Valenzuela, Chairperson San Fernando Band of Mission Indians	Fernandefio, Tataviam, Serrano, Vanyume, Kitanemuk
Randy Guzman - Folkes	Chumash, Fernandefio, Tataviam, Shoshone Paiute, Yaqui
Vennise Miller, Chairperson Coastal Band of the Chumash Nation	Chumash
Carol A. Pulido	Chumash
Melissa M. Parra-Hernandez	Chumash
Frank Arredondo	Chumash
Freddie Romero, Santa Ynez Band of Chumash Indians	Chumash

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 6
List of Consulting Parties

Consulting Party	Affiliation
Mark Beason	California Office of Historic Preservation
Carla Bollinger	Santa Susana Mountain Park Association
Bill Bowling	Aerospace Contamination Museum of Education
Gary Brown	National Park Service
Harry Butowsky	private contractor
Michael Collins	Self; EnviroReporter.com
Nicole Doner	Ventura County Cultural Heritage Board
Wayne Fishback	Self, neighboring property owners
Beverly Folkes	Self
Elizabeth Harris	Self; Research Psychologist on Government-Funded Public Health Contracts
Luhui Isha	Self
Nancy Kidd	Simi Valley Historical Society
Christian Kiillkkaa	Self
Al Knight	Self
Dan Larson	Compass Rose Archaeological
John Luker	Santa Susana Mountain Park Association
Tom McCulloch	Advisory Council on Historic Preservation
Mark Osokow	San Fernando Valley Audubon Society
Carol Rowland-Nawi	California State Historic Preservation Officer
Gwen Romani	Compass Rose Archaeological
John Tommy Rosas	Tongva Ancestral Territorial Tribal Nation
Bruce Rowe	Self
Chris Rowe	Self
Alan Salazar	Self
Margie Steigerwald	National Park Service
Clark Stevens	Resource Conservation District of the Santa Monica Mountains
Susan Stratton	California Office of Historic Preservation
Brian Sujata	SSFL Community Advisory Group
George Toren	Compass Rose Archaeological
Barbara Tejada	Self, Ventura County Archeological Society
Mati Waiya	Self

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND
SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

ATTACHMENT 6

List of Consulting Parties

Consulting Party	Affiliation
Christina Walsh	Cleanuprocketdyne.org
Abraham Weitzberg	Self
Mary Wiesbrock	Save Open Space
Ronald Ziman	Self
Tribes	
Vincent Armenta	Santa Ynez Band of Chumash Indians, Tribal Chairman
Sam Cohen	Santa Ynez Band of Chumash Indians
Freddie Romero	Santa Ynez Band of Chumash Indians, Elders Council
SSFL Participating Agencies	
James Biederman	General Services Administration
Jane Lehman	General Services Administration
Maureen Sheehan	General Services Administration
Other Agencies	
Paul Carpenter	Department of Toxic Substances Control
Richard Hume	Department of Toxic Substances Control
Ray Leclerc	Department of Toxic Substances Control
Mark Malinowski	Department of Toxic Substances Control

Note: Listing as a Consulting Party does not necessarily indicate agreement with the stipulations codified in this document.

ATTACHMENT 7

Inadvertent Discovery Plan

AMMENDED Excerpt from the Integrated Cultural Resources Management Plan for Santa Susana Field Laboratory, Ventura County, California

SOP 3: Responding to Inadvertent Discovery of Archeological Deposits

Regardless of whether an archeological inventory has been completed and regardless of whether a planned undertaking has been assessed for its effect on known historic properties, every undertaking that disturbs the ground surface has the potential to discover buried and previously unknown archeological deposits. This SOP outlines the policies and procedures to be followed in such cases.

Applicable Laws/Regulations/Procedural Requirements:

National Historic Preservation Act
National Environmental Policy Act
Archeological and Historic Preservation Act
Archeological Resource Protection Act
Native American Graves Protection and Repatriation Act
NASA Procedural Requirements 8580.1

Policy

Archeological deposits that are newly discovered during any undertaking shall be evaluated for their NRHP eligibility. Until NASA has determined an archeological site is ineligible, all known sites will be treated as potentially eligible and will be avoided insofar as possible. In the event that an archeological deposit is inadvertently discovered, work must cease within a 30 meter radius, the Cultural Resources Manager ("CRM") and the SHPO must be notified within two working days (e.g., letter or email notification), and a professional archeologist (meeting the Secretary of Interior's Professional Qualifications), must be consulted.

If the professional archeologist recommends that the archeological deposit is potentially eligible, the CRM will consult with the CA SHPO and federally recognized Native American tribes on the need for further testing and/or data recovery for those sites eligible under only Criterion D. If the undertakings may affect properties having historic value to any federally recognized Indian tribes with which NASA consults, the CRM will consult with the tribes and give them an opportunity to participate as interested persons during the consultation process. In the event that human remains are inadvertently discovered, work must cease in the area of the discovery and the CRM must be notified. If remains are determined to be Native American, federally recognized American Indian tribes will be notified.

Procedure.

- I. Workers will notify the CRM immediately upon the discovery of possible archeological deposits. (Standard language will be placed in contracts requiring contractors to notify the CRM immediately upon discovery of possible archeological deposits.)

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

When notified of the possible discovery of unexpected buried archeological material, the CRM will arrange to have a professional archeologist evaluate the site. Work will cease and the site will be protected pending the results of the evaluation.

- A. If fossils, natural stones, concretions, or other such items that are sometimes mistaken for archeological materials are recovered, then the CRM may allow the excavation to proceed without further action.
- B. If disturbances to the deposit have been slight and that portion of the Undertaking can be relocated to avoid the buried site, the CRM shall have the site recorded and forms submitted to the appropriate California Historical Resources Information System (CHRIS) in a routine manner, having avoided adverse impact through relocation of the proposed undertaking.
- C. If the location of that portion of the Undertaking cannot be changed, the CRM shall contact the CA SHPO by telephone or email within forty-eight (48) hours, report the discovery and initiate emergency consultation.
 1. If the deposits are evaluated as ineligible for inclusion on the NRHP by a professional archeologist in consultation with the CA SHPO, then NASA will prepare a memorandum for record, to be included in the site record. NASA may allow the excavations to proceed and shall advise the excavation foreperson(s) of the possibility and nature of additional discoveries that would require immediate notification of the CRM.
 2. If, in the opinion of the professional archeologist, the existing information is deemed insufficient to make a determination of eligibility, then an emergency-testing plan will be developed by NASA in coordination with the CA SHPO and SYBCI. Further excavation in the vicinity of the site will be suspended until an agreed testing procedure has been carried out and sufficient data has been gathered to allow a determination of eligibility.
 - a) If the CA SHPO and SSFL CRM agree after testing that the site is ineligible for inclusion to the NRHP, then work on the that portion of the Undertaking may resume.
 - b) If the site appears to be eligible for inclusion on the NRHP, or if NASA and the CA SHPO cannot agree on the question of eligibility, then NASA shall implement the following alternative actions, depending on the urgency of the action being delayed by the discovery of cultural material.
 - 1) NASA may relocate that portion of the Undertaking to avoid adverse effect.

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

- 2) NASA may request that the site be exempted from cleanup activities if applicable to DTSC as a Native American Artifact in accordance with the AIP.
- 3) NASA may seek the opinion of the Keeper of the NRHP
- 4) -NASA may proceed with a Research Design and data recovery plan in accordance with Stipulation III.F-G
- 5) NASA may request comments from the ACHP and may develop and implement actions that take into account the effects of the undertaking and the comments of the CA SHPO, federally recognized tribes, and the ACHP. Interim comments must be provided to NASA within 48 hours and formal comments within 30 days.

- II. If examination by a professional osteologist indicates the materials are of human origin, an archeologist must make a field evaluation of the primary context of the deposit and its probable age and significance, record the findings in writing, and document the materials.
- A. If at any time human remains, funerary objects, or Native American sacred objects are discovered, the CRM will ensure that the provisions of NAGPRA, ARPA and/or AIRFA are implemented.
 - B. The CRM will begin consultation with federally-recognized tribes.

ATTACHMENT 8

Human Remains and Funerary/Sacred Objects Discovery Plan

AMMENDED Excerpt from the Integrated Cultural Resources Management Plan for Santa Susana Field Laboratory, Ventura County, California

SOP #4 Treatment of Human Remains and Funerary/Sacred Objects

The NAGPRA requires the inventory of human remains and funerary and sacred objects recovered from Federal lands that may be subject to claim by Native American tribal groups. The NAGPRA also requires active consultation with such groups to determine the disposition of such remains and objects. No Native American human remains or sacred/funerary objects are currently known to exist on the SSFL; however, previously undocumented excavations may have encountered human remains and/or sacred/funerary objects and future undertakings may inadvertently encounter these materials. This SOP outlines the policies and procedures to be followed to ensure future compliance with the NAGPRA.

Applicable Laws/Regulations

- Native American Graves Protection and Repatriation Act.
- American Indian Religious Freedom Act Policy.

No Native American human remains, funerary objects, or sacred objects from the SSFL will be knowingly kept in Government possession without preparation of an inventory and initiating consultation.

Consultation regarding the disposition of Native American human remains, funerary objects, or sacred objects shall be initiated as soon as feasible.

Procedure

The Cultural Resources Manager (“CRM”) will ensure that NASA complies with NAGPRA requirements and the implementing regulations (43 CFR Part 10).

- I. The CRM will review all records and collections to determine whether any human remains, funerary objects, or sacred objects originating from the SSFL are known to exist.
 - A. If no such objects are found, no consultation is required.
 - B. If any such objects are found to be uninventoried, the CRM will prepare an inventory of all such objects and will initiate consultation procedures with the Archeological Assistance Division National Park Service (Post Office Box 37127, Washington, D.C. 20013; telephone 202-343-4101; facsimile 202-523-1547) and federally recognized tribes to determine appropriate disposition.
- II. If human remains or artifacts that are not currently in Government possession but that are suspected to be from the SSFL are returned to the Government, the CRM will arrange to have a qualified professional examine and evaluate them.

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

- A. If the remains are not of human origin, then no further action by the CRM is necessary.
 - B. If the remains are not of Native American origin, then they will be treated as stipulated as an emergency discovery of archeological deposits (see SOP #3).
 - C. If the remains are of Native American origin, then the CRM will prepare an inventory of the remains and initiate consultation procedures with the Archeological Assistance Division, NPS.
- III. If human remains are discovered during the course of any undertaking, the following procedures will apply:
- A. Work will immediately cease in the vicinity of the human remains.
 - B. The site supervisor will immediately notify SSFL/MSFC Law Enforcement/Center Protective Services and the CRM.
 - 1. SSFL Law Enforcement/Center Protective Services officers will notify the County Coroner within 48 hours, the State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98.
 - a) If the Coroner determines the human remains to be Native American, the Coroner is responsible for contacting the NAHC within 24 hours after the determination is made. The NAHC, pursuant to Section 5097.98, immediately will notify those persons it believes to be most likely descended from the deceased Native American so they can inspect the burial site and make recommendations for treatment or disposal. After the Coroner has established whether the remains are archeological or historical, NASA will follow the California state requirements. If the remains are prehistoric, NASA will initiate the proper procedures under the Archeological Resources Protection Act of 1979 and/or the NAGPRA to decide the disposition of the materials. If the remains are found to be Native American, the steps outlined in NAGPRA, 43 CFR 10.6 (Inadvertent Discoveries) must be followed.
 - b) If the remains are not of Native American origin, then the site will be treated as the discovery of emergency archeology deposits. However, it should be noted that not all human remains, cemeteries, etc., are NRHP properties.
 - c) If the remains are of Native American origin, then further work in the vicinity will be suspended for 30 days to allow for consultation, as required by the NAGPRA. If any photographs are taken of the undertaking, only general photographs of the site area are to be taken. Prior to removal of any remains, the CRM will prepare an

PROGRAMMATIC AGREEMENT AMONG NASA, CA SHPO, ACHP REGARDING DEMOLITION AND SOIL AND GROUNDWATER CLEANUP AT SSFL, VENTURA COUNTY, CA

inventory of the remains and will immediately initiate emergency consultation procedures with the Archeological Assistance Division, NPS, and tribes.

- C. If consultation allows the remains to be removed, then the CRM will cause the remains to be treated and disposed in accordance with the consultation.
- D. Notwithstanding the results of consultation, the CRM will ensure that Section 106 procedures are adhered to with regards to evaluating sites.

Appendix 3.2A
2011 Supplemental Biological Surveys of NASA
Administered Property at SSFL

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2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

**National Aeronautics and Space Administration
Huntsville, Alabama**

December 2011

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Acronyms and Abbreviations

Boeing	The Boeing Company
Cal-IPC	California Invasive Pest Plant Council
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CNDDDB	California Natural Diversity Data Base
CNPS	California Native Plant Societies
EIS	Environmental Impact Statement
ENTS	Laboratory Engineered Natural Treatment Systems
ESA	Endangered Species Act
°F	Degree Fahrenheit
ft	Feet
GIS	Geographic information system
GPS	global positioning system
LOX	Liquid oxygen
NAD	North American Datum
NASA	National Aeronautics and Space Administration
NRCS	Natural Resources Conservation Service
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SAIC	Science Applications International Corporation
SSFL	Santa Susana Field Laboratory
SSURGO	Soil Survey Geographic Database
USFWS	U.S. Fish and Wildlife Service
WRCC	Western Regional Climate Center

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Introduction

This report presents the findings of special-status plant species and wildlife surveys conducted in 2011 on the National Aeronautics and Space Administration (NASA)-administered property at Santa Susana Field Laboratory (SSFL) in southern California. SSFL was established shortly after World War II and has been used primarily as a site to develop and test nuclear reactors, rockets, and missiles. The 2,850-acre site is divided into four production and two buffer areas (Areas I, II, III, and IV, and the northern and southern buffer zones). A portion of SSFL is federally owned property that is administered by NASA. The remaining property at SSFL is owned by The Boeing Company (Boeing). The NASA-administered property at SSFL consists of 41.7 acres within Area I and all 409.5 acres of Area II. The Boeing Company owns the remainder of Area I, all of Areas III and IV, and the northern and southern buffer areas at the site.

1.1 Purpose

This report presents the results of protocol-level botanical surveys and opportunistic wildlife surveys of the NASA-administered property at SSFL. These biological surveys were conducted to support NASA's preparation of a Ecological Stewardship Plan for the property it administers at SSFL. The findings also will be used as the basis for the biological resources section of the Environmental Impact Statement (EIS) being prepared to assess the potential impacts of NASA's proposal to demolish structures and to remediate soil and groundwater on the NASA-administered property at SSFL. This report has been prepared as a supplement to the *Fall 2010 Habitat and Listed Species Surveys of NASA-Administered Property at Santa Susana Field Laboratory* (NASA, 2011).

1.2 Background

In April 2008 and May 2009, ecological surveys were conducted on portions of the NASA-administered property at SSFL as part of Resource Conservation and Recovery Act (RCRA) Facility Investigations (RFIs) (NASA, 2008; 2009a; 2009b). The fall 2010 habitat and listed species surveys (NASA, 2011) together with the 2011 botanical and wildlife surveys are intended to expand on the past ecological surveys through a survey of the entire NASA-administered property at SSFL, including some limited areas outside the RFI areas that had not been surveyed previously.

Several other ecological studies conducted at SSFL between 2005 and 2009 were reviewed for potential insight into the biological resources on the NASA-administered property:

- MWH Americas, Inc., and AMEC Earth & Environmental, Inc. (2005)
- MWH Americas, Inc., and ERM (2007)
- Ogden Environmental and Energy Services Co., Inc. (1998)
- Padre Associates, Inc. (2008)
- Science Applications International Corporation (SAIC) (2009)

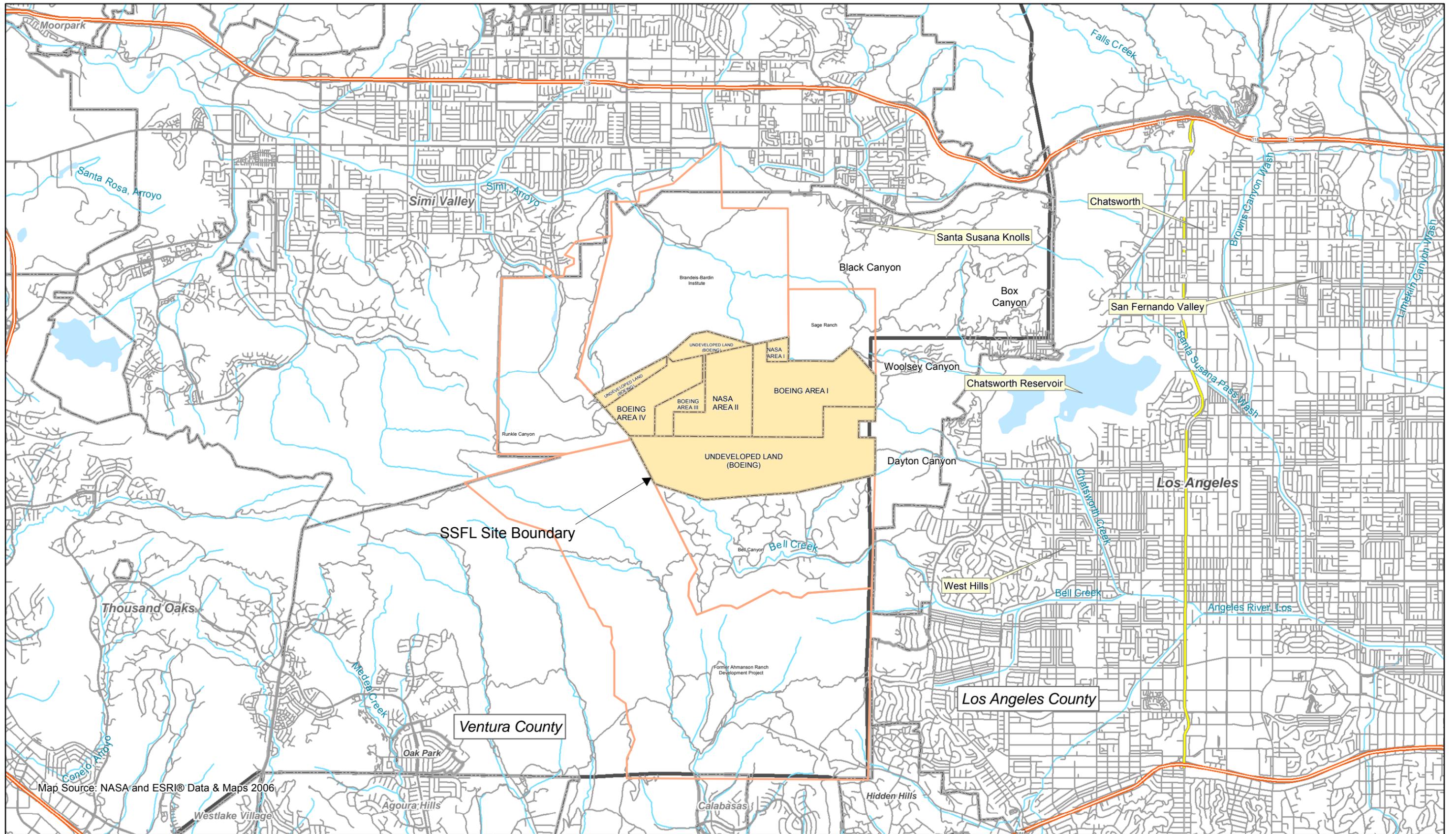
1.3 Location and Environmental Setting

Section 1.3 is summarized from a more detailed environmental setting description contained in the *Fall 2010 Habitat and Listed Species Surveys of NASA-Administered Property at Santa Susana Field Laboratory* (NASA, 2011). Additional information regarding physiography, geology, and habitat types also is included in that report.

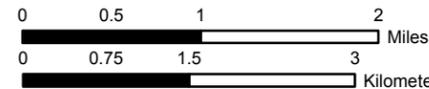
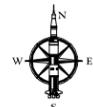
1.3.1 General

SSFL is approximately 29 miles northwest of downtown Los Angeles in the southeastern corner of Ventura County, California. SSFL is located mostly within an unincorporated part of Ventura County; its easternmost portion extends slightly into an unincorporated part of Los Angeles County (Figure 1-1). It encompasses 2,850 acres within a remote, mountainous area near the crest of the Simi Hills at the western border of the San Fernando Valley.

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Map Source: NASA and ESRI® Data & Maps 2006



18-Oct-2011
 Drawn By:
 A. Cooley

Figure 1-1
 Regional Map
 NASA Supplemental Biological Survey – 2011
 Santa Susana Field Laboratory
 Ventura County, California

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Area I LOX Plant and Area II are in the central and north-central parts of SSFL, respectively (Figure 1-2). The 451.2 acres of the NASA-administered property at SSFL represents approximately 16 percent of the total site area.

SSFL's landscape is characterized by sandstone outcropping hills. Numerous industrial facilities, constructed drainage systems, and roadways have been developed within this hilly landscape. The site is within the central portion of the Southern California Coast ecological subregion in the Simi Valley–Santa Susana Mountains (261Be) ecological subsection. This subsection includes steep mountains; moderately steep to steep hills; and nearly level to gently sloping floodplains, terraces, and alluvial fans (Miles and Goudey, 1998).

1.3.2 Habitat Types

Habitat surveys of the NASA-administered property conducted during fall 2010 identified eight natural terrestrial habitat types, two aquatic habitat types, and ruderal and developed areas (NASA, 2011). These habitat types are described briefly in the following text. Table 1-1 cross-references the mapped habitat types and the current California vegetation classification system (Sawyer et al., 2009).

Chaparral

Chaparral is the most abundant and widespread natural community at the site. This habitat covers 172.6 acres (approximately 38 percent) of the NASA-administered property. Characteristic species include chamise (*Adenostoma fasciculatum*), hoaryleaf ceanothus (*Ceanothus crassifolius*), black sage (*Salvia mellifera*), laurel sumac (*Malosma laurina*), thicketleaf yerba santa (*Eriodictyon crassifolium*), Mendocino bushmallow (*Malacothamnus fasciculatus*), and chaparral yucca (*Yucca whipplei*). The abundance of these species is variable within this habitat type depending on soils, aspect, past disturbance, and other environmental factors.

Venturan Coastal Sage Scrub

Venturan coastal sage scrub covers 64.4 acres (approximately 15 percent) of the site. Characteristic species include coastal sagebrush (*Artemisia californica*), Eastern Mojave buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), black sage, chaparral yucca, thicketleaf yerba santa, and common deerweed (*Acmispon glaber*).

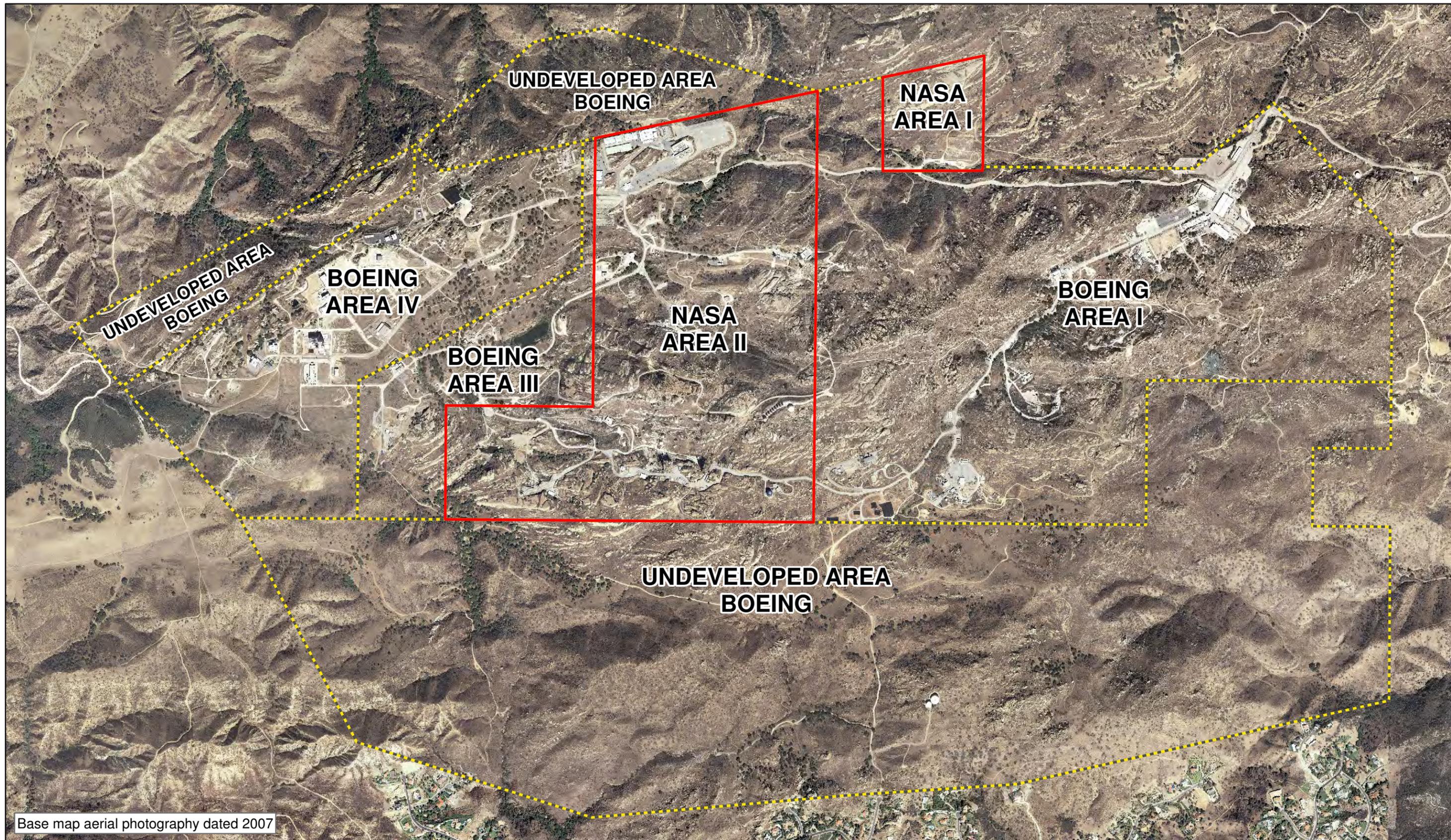
Non-native Grassland

Grassland habitat covers 19.2 acres (approximately 4 percent) of the site and often occurs in a mosaic with other habitat types. Most of the grasslands are characterized by slender oat (*Avena barbata*), intermixed with other introduced annual grasses such as ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), and fescue (*Vulpia* spp). Native grasses including needlegrass (*Nassella* spp.), littleseed muhly (*Muhlenbergia microsperma*), and deergrass (*Muhlenbergia rigens*) are present in a few areas, but generally provide only minimal cover. Common herbaceous species include suncup (*Camissonia* spp.), winecup clarkia (*Clarkia purpurea*), longbeak stork's bill (*Erodium botrys*), and winter vetch (*Vicia villosa*).

Coast Live Oak Woodland

Coast live oak woodland is distributed widely across the site but only makes up 13.2 acres (approximately 3 percent) of the NASA-administered property. This habitat is characterized by mature coast live oak (*Quercus agrifolia*) trees. The understory generally consists of annual grasses such as ripgut brome and slender oat, with occasional native grasses including blue wildrye (*Elymus glaucus*) and California brome (*Bromus carinatus*). The understory shrub layer is poorly developed and, where present, generally consists of scattered Pacific poison oak (*Toxicodendron diversilobum*).

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Base map aerial photography dated 2007



02-Dec-2011
Drawn By:
A. Cooley



Legend

- NASA-Administered Property Boundary
- SSFL Administrative Areas

Figure 1-2
Site Overview
 NASA Supplemental Biological Survey – 2011
 Santa Susana Field Laboratory
 Ventura County, California

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TABLE 1-1
 Mapped Habitat Types and Current California Vegetation Classification System
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Mapped Natural Habitat Types	Current California Vegetation Classification System ¹
Chaparral	<i>Adenostoma fasciculatum</i> – <i>Salvia mellifera</i> Shrubland Alliance <i>Malosma laurina</i> Shrubland Alliance <i>Malacothamnus fasciculatus</i> Shrubland Alliance <i>Eriodictyon crassifolium</i> Provisional Shrubland Alliance
Venturan Coastal Sage Scrub	<i>Artemisia californica</i> – <i>Eriogonum fasciculatum</i> Shrubland Alliance
Non-Native Grassland	<i>Avena</i> (<i>barbata</i> , <i>fatua</i>) Semi-Natural Herbaceous Stands
Coast Live Oak Woodland	<i>Quercus agrifolia</i> Woodland Alliance
Coast Live Oak Riparian Forest	<i>Quercus agrifolia</i> Woodland Alliance
Baccharis Scrub	<i>Baccharis pilularis</i> Shrubland Alliance
Mule-fat Scrub	<i>Baccharis salicifolia</i> Shrubland Alliance
Southern Willow Scrub	<i>Salix lasiolepis</i> Shrubland Alliance

Note:

SSFL = Santa Susana Field Laboratory

¹ Sawyer et al. (2009)

Coast Live Oak Riparian Forest

Coast live oak riparian forest is found along the edges of the seasonal streams on the site. This habitat type covers 9.2 acres (approximately 2 percent) of the NASA-administered property. The composition of this community is generally similar to the coast live oak woodland habitat described previously, although the understory typically is more diverse in these areas and includes species such as Douglas' sagewort (*Artemisia douglasiana*), creeping snowberry (*Symphoricarpos mollis*), and American black elderberry (*Sambucus nigra*).

Baccharis Scrub

Baccharis scrub is limited, covering only 2.6 total acres (less than 1 percent) of the site. This community is characterized by generally pure stands of coyotebrush (*Baccharis pilularis*). In these areas, coyotebrush ranges from dense cover with a sparse herbaceous layer to more open stands with an understory composed of annual grasses and scattered forbs.

Mule-fat Scrub

Mule-fat scrub is limited, covering 2.1 acres (less than 1 percent) of the site. This habitat type is characterized by localized, dense stands of mule-fat (*Baccharis salicifolia*).

Southern Willow Scrub

Southern willow scrub habitat on the NASA-administered property is characterized by arroyo willow (*Salix lasiolepis*) intermixed with occasional red willow (*Salix laevigata*) and narrowleaf willow (*Salix exigua*). This habitat type is uncommon on the site, covering only 1 acre (less than 1 percent). Southern willow scrub occurs in localized patches around scattered ponds and detention basins and along portions of the seasonal drainages within the site.

Aquatic Habitats

Aquatic habitats identified on the NASA-administered property include 0.4 acre of open water and 0.2 acre of freshwater marsh habitat associated with various ponds and detention basins. Freshwater marsh is limited to the outer edges of ponds and detention basins and is characterized by southern cattail (*Typha domingensis*).

Sandstone Rock Outcrops

Approximately 91 acres (20 percent) of the NASA-administered property is composed of sandstone outcrops. In many areas, the outcrops are devoid of vegetation, while in other areas, the rocks are covered with a diverse assemblage of lichens. In some areas, scattered vascular plants are present. Common plants associated with these rock outcrops include bushy spikemoss (*Selaginella bigelovii*), lanceleaf liveforever (*Dudleya lanceolata*), chalk dudleya (*Dudleya pulverulenta*), cliffbrake (*Pellaea* spp.), orange bush monkey flower (*Mimulus aurantiacus*), and Santa Susana tarweed (*Deinandra minthornii*).

Ruderal

Ruderal habitat is common around developed areas and areas that have been subject to human disturbance. Ruderal habitats cover approximately 17 acres (4 percent) of the site. Common species observed in these areas include telegraphweed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), Maltese star-thistle (*Centaurea melitensis*), silver bird's-foot trefoil (*Acmispon argophyllus*), stork's bill (*Erodium* spp.), and common deerweed.

Developed

Developed areas include paved roads, parking areas, buildings, test structures, and other developments. Approximately 58 acres, or 13 percent, of the NASA-administered property have been developed.

1.3.3 Soils

Three Natural Resources Conservation Service (NRCS) soil types occur within the NASA-administered property (NRCS, 2008). These soil types are described in the following text; Figure 1-3 shows their distribution on the property.

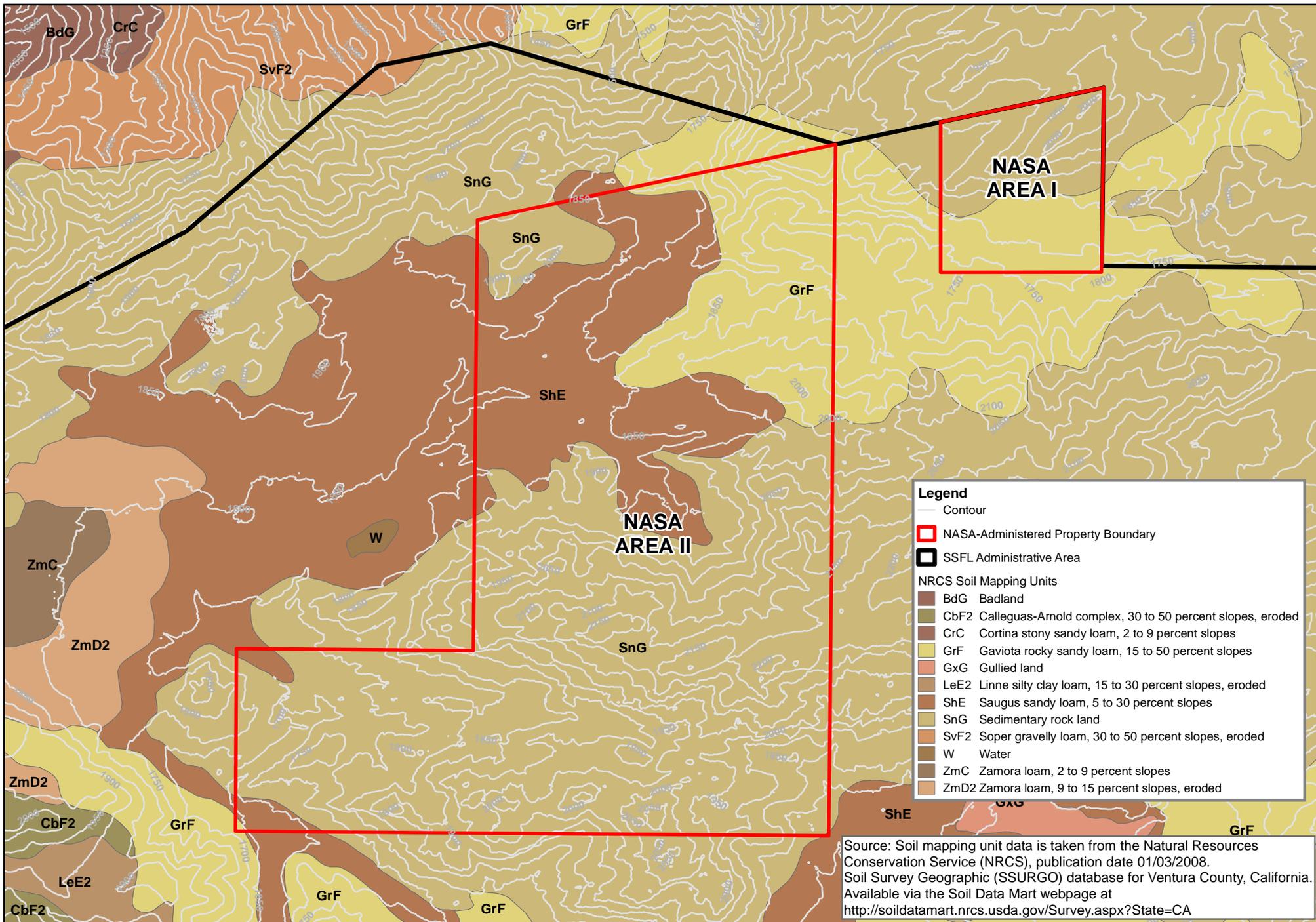
GrF–Gaviota rocky sandy loam, 15- to 50-percent slopes. This soil mapping unit occurs in the southern half of NASA Area I and in the northeastern corner of Area II. These soils are found on hills and mountains and have a very shallow or shallow to lithic (bedrock) contact. They are well to excessively well drained and are formed in material weathered from hard sandstone or meta-sandstone. These soils have very low to very high runoff and moderately rapid permeability.

ShE–Saugus sandy loam, 5- to 30-percent slopes. This soil mapping unit occurs in the northwestern and southwestern portions of Area II. This unit consists of deep, well-drained soils that formed from weakly consolidated sediments. They are found on dissected terraces and foothills. These soils have medium to rapid runoff and moderate permeability.

SnG–Sedimentary rock land. This soil mapping unit occurs in the northern half of NASA Area I and in the northwestern corner and southern half of Area II. This mapping unit consists mostly of exposed sedimentary rock with very thin, discontinuous areas of soil. There is little available information about this mapping unit; however, the potential for erosion is expected to be relatively low, based on the erosivity factors reported online and the relative lack of soil cover. It is expected that runoff is rapid and permeability is very low in these areas.

1.3.4 Climate Summary

Climate data from the Western Regional Climate Center (2011) Canoga Park area, which is approximately 7 miles southeast of SSFL, is considered generally representative of the regional climate for the site. Average temperatures range from a low of 39 degrees Fahrenheit (°F) in December and January to a high of 95°F in July and August. Average annual rainfall is 16.8 inches, most of which falls between November and March.



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 Drawn By:
 A. Cooley

Figure 1-3
NRCS Soil Mapping Units
NASA Supplemental Biological Survey - 2011
Santa Susana Field Laboratory
Ventura County, California

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Methods

2.1 Botanical Surveys

2.1.1 Pre-field Preparation

Preparation for the protocol-level special-status plant surveys included compiling a list of rare, threatened, or endangered plant species that have the potential to occur within the limits of the NASA-administered property at SSFL. For the purpose of this evaluation, a special-status plant is defined as any species that falls under one of the following classifications:

- Federally listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act (ESA)
- A candidate for federal listing under the ESA
- Listed threatened or endangered by the California Department of Fish and Game (CDFG) under the California Endangered Species Act
- Listed as rare under the California Native Plant Protection Act
- Considered rare, threatened, or endangered in California as determined by the California Native Plant Societies (CNPS) Rare Plant Inventory

The list of special-status plant species that potentially could occur on the NASA-administered property at SSFL was developed based on information from the California Natural Diversity Database (CNDDDB) (CDFW, 2011b); CNPS (2011) Rare Plant Inventory; USFWS list of threatened, endangered, and candidate species for Ventura County (USFWS, 2011); and information from herbarium collections from the Jepson Online Interchange for California Floristics (University of California, 2011). The CNDDDB and CNPS database searches included the following U.S. Geological Survey Quadrangles—Simi, Santa Susana, Oat Mountain, Thousand Oaks, Calabasas, Canoga Park, Point Dume, Malibu Beach, and Topanga.

The database searches and literature review identified 46 special-status plant species in the regional vicinity, 34 of which were considered to have the potential to occur on the NASA-administered property (Table 2-1). Appendix A contains a list of special-status plants identified in the data review that are considered unlikely to occur on the site.

Representative photographs of many of the special-status plant species were obtained from the Internet (CalPhotos, 2011) to facilitate field identification. Flowering periods provided by the CNPS Rare Plant Inventory (CNPS, 2011) were used to schedule field work to correspond with the appropriate blooming periods for the special-status plant species.

Ortho-rectified, 150-scale (1 inch = 150 feet [ft]) aerial photographs with overlain survey area boundaries were prepared as the base maps for the field surveys. These aerial photograph base maps were generated from the NASA geographic information system (GIS) database using the North American Datum (NAD) 1927 State Plane, California Zone V base datum coordinate system. Habitat mapping developed during the fall 2010 survey (NASA, 2011) also was overlain onto the base maps.

TABLE 2-1
 Special-Status Plant Species that Potentially Occur on the NASA-administered Property at SSFL
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Asplenium vespertinum</i>	western spleenwort	4.2	Feb-June	Rocky areas in chaparral, cismontane woodland, and coastal scrub. Herbarium collection from Lake Sherwood area, approximately 10 miles southwest of the site.
<i>Astragalus brauntonii</i>	Braunton's milk-vetch	FE 1B.1	Jan-Aug	Chaparral, coastal scrub grassland, and closed-cone coniferous forest. Known to occur on Boeing-administered property at SSFL approximately 0.5 mile west of the site. Numerous reported occurrences in the regional vicinity.
<i>Atriplex parishii</i>	Parish's brittlescale	1B.1	June-Oct	Alkali meadows, vernal pools, chenopod scrub, and playas; usually found on drying alkali playas with fine soils. Limited suitable habitat on the site. The nearest reported occurrence is around Santa Monica, approximately 18 miles southeast of the site.
<i>Baccharis malibuensis</i>	Malibu baccharis	1B.1	Aug	Coastal scrub, chaparral, and oak woodland habitats. Several reported occurrences approximately 8 to 10 miles south of the site.
<i>Calandrinia breweri</i>	Brewer's calandrinia	4.2	Mar-June	Sandy or loamy soils in chaparral and coastal scrub. Several herbarium collections from Ventura County including the Santa Monica Mountains.
<i>California macrophylla</i>	round-leaved filaree	1B.1	Mar-May	Cismontane woodland and grassland; generally associated with clay soils. Three reported occurrences between 5 and 9 miles south of the site.
<i>Calochortus catalinae</i>	Catalina mariposa lily	4.2	Feb-June	Openings in chaparral, coastal scrub, and cismontane woodland and on grassy slopes. Numerous herbarium collections from Ventura County, including the Santa Monica Mountains.
<i>Calochortus clavatus</i> var. <i>gracilis</i>	slender mariposa lily	1B.2	Mar-June	Chaparral and coastal scrub, often in grassy areas within other habitats. Known to occur on SSFL property. Several additional reported occurrences in the regional vicinity of the site.
<i>Calochortus fimbriatus</i>	late-flowered mariposa lily	1B.2	June-Aug	Chaparral and cismontane woodland; often on serpentine. Three reported occurrences approximately 8 miles north of the site, including one associated with open woodland on sandstone parent material.
<i>Calochortus plummerae</i>	Plummer's mariposa lily	1B.2	May-July	Coastal scrub, chaparral, grassland, cismontane woodland, and lower montane coniferous forests. Known to occur on SSFL property. Numerous reported occurrences in the regional vicinity of the site.
<i>Centromadia parryi</i> ssp. <i>australis</i>	southern tarweed	1B.1	May-Nov	Edges of marshes, vernal pools, and vernal mesic grasslands. Limited suitable habitat present on the site. The only reported occurrence in the vicinity is a historical (1930) herbarium collection from Santa Monica (18 miles to the southeast).

TABLE 2-1
 Special-Status Plant Species that Potentially Occur on the NASA-administered Property at SSFL
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	FC/CE 1B.1	Apr-July	Sandy soils in coastal scrub and rocky outcrops. Large population reported approximately 3.6 miles south of the site.
<i>Chorizanthe parryi</i> var. <i>parryi</i>	Parry's spineflower	1B.1	Apr-June	Dry sandy soils in coastal scrub, chaparral, and grassland; often at interface with oak woodland habitat. Only document occurrence in the vicinity is a 1957 herbarium collection approximately 14 miles south of the site. This occurrence is possibly extirpated.
<i>Deinandra minthornii</i>	Santa Susana tarweed	CR 1B.2	July-Nov	On sandstone outcrops in chaparral and coastal scrub. This species is widespread throughout much of the site. Numerous reported occurrences in the regional vicinity.
<i>Delphinium parryi</i> ssp. <i>blochmaniae</i>	dune larkspur	1B.2	Apr-May	Coastal dunes and maritime chaparral in dry sandy soils. Only two reported occurrences in vicinity of the site, both are in the coastal hills to the southwest. Nearest reported occurrence is associated with oak woodland habitat approximately 10.5 miles to the southwest of the site.
<i>Dodecahema leptoceras</i>	Slender-horned spineflower	FE/SE 1B.1	Apr-June	Chaparral and coastal scrub. There are no CNDDDB occurrences or herbarium records for this species in Ventura County. Nearest reported occurrence is a historical collection (1893) from Newhall, approximately 13 miles northeast of the site. There is also an occurrence (possibly extirpated) approximately 17 miles east northeast of the site.
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	Blochman's dudleya	1B.1	Apr-June	Coastal scrub, grassland, and open rocky slopes; often in clay soil over serpentine or in rocky areas with little soil. Known to occur on SSFL (Boeing property). Other reported occurrence in the vicinity of Chatsworth Reservoir approximately 3 miles east of the site.
<i>Dudleya cymosa</i> ssp. <i>agourensis</i>	Agoura Hills dudleya	FT 1B.2	May-June	Rocky areas and volcanic breccias in chaparral and cismontane woodland habitats. Several known occurrences between 6 and 10 miles southwest of the site.
<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	marcescent dudleya	FT/CR 1B.2	Apr-July	Chaparral, sheer rock surfaces, and rocky volcanic cliffs. Four reported occurrences between 8 and 9 miles south of the site.
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>	Santa Monica dudleya	FT 1B.2	Mar-June	Chaparral and coastal scrub; often on north facing slopes in canyons associated with sedimentary conglomerates. Three known occurrences between 10 and 12 miles south of the site.
<i>Dudleya multicaulis</i>	many-stemmed dudleya	1B.2	Apr-July	Chaparral, coastal scrub and grassy slopes; often in heavy clay soils. Known to occur at SSFL (Boeing property). One reported CNDDDB occurrence from a rocky outcrop approximately 3.5 miles east of the site.

TABLE 2-1
 Special-Status Plant Species that Potentially Occur on the NASA-administered Property at SSFL
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Dudleya parva</i>	Conejo dudleya	FT 1B.2	May-June	Coastal scrub, grassland and rocky slopes; generally on clayey or volcanic soils. Two reported occurrences approximately 9 miles west of the site.
<i>Dudleya verityi</i>	Verity's dudleya	FT 1B.2	May-June	Volcanic and rocky outcrops in chaparral, coastal scrub, and cismontane woodland. Three reported occurrences between 15 and 19 miles west of the site.
<i>Eriogonum crocatum</i>	conejo buckwheat	CR 1B.2	Apr-July	Rocky areas in coastal scrub and grasslands. One reported occurrence approximately 10 miles southwest of the site.
<i>Harpagonella palmeri</i>	Palmer's grapplinghook	4.2	Mar-May	Chaparral, coastal scrub, and grassland; often on clay soils. One reported occurrence approximately 13 miles northeast of the site.
<i>Horkelia cuneata</i> ssp. <i>puberula</i>	mesa horkelia	1B.1	Feb-Sept	Sandy or gravelly sites in chaparral, cismontane woodlands, and coastal scrub. Several herbarium collections from Ventura County. All CNDDDB occurrences are more than 30 miles to the west northwest of the site.
<i>Lasthenia glabrata</i> ssp. <i>coulteri</i>	Coulter's goldfields	1B.1	Feb-June	Coastal salt marshes, playas, grasslands, and vernal pools; usually associated with alkaline soils in playas, sinks, and grasslands. Limited suitable habitat on the site. Two reported occurrences in the vicinity of the site. One is a 1933 herbarium collection approximately 13 miles south, near the Malibu lagoon. The other is approximately 4.5 miles east of the site, but the habitat and taxonomy of this occurrence are questionable.
<i>Navarretia fossalis</i>	spreading navarretia	FT 1B.1	Apr-June	Vernal pools, shallow freshwater marshes, playas, and chenopod scrub. Limited habitat present on the site. No reported occurrences in Ventura County. Nearest reported occurrences are between 19 and 20 miles northeast of the site.
<i>Nolina cismontana</i>	chaparral nolina	1B.2	May-July	Chaparral and coastal scrub; primarily on sandstone and shale substrates. Three reported occurrences within 3 to 6 miles west to southwest of the site.
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	FE/CE 1B.1	Mar-Aug	Chaparral and grassland habitats. Numerous reported occurrences of this species in the regional vicinity of the site. Nearest CNDDDB occurrence is approximately 6.5 miles west of the site.
<i>Phacelia hubbyi</i>	Hubby's phacelia	4.2	Apr-June	Gravelly and rocky areas in coastal scrub, chaparral, and grassland habitats. Several herbarium collections from Ventura County, including the Santa Susana Mountains.
<i>Phacelia ramosissima</i> var. <i>austrolitoralis</i> ¹	south coast branching phacelia	3.2	Mar-Aug	Sandy or rocky sites in coastal scrub, chaparral, coastal dunes, and in coastal salt marshes. Herbarium records suggest that this variety is typically found in more coastal areas.

TABLE 2-1
 Special-Status Plant Species that Potentially Occur on the NASA-administered Property at SSFL
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Pseudognaphalium leucocephalum</i>	white rabbit-tobacco	2.2	July-Dec	Sandy gravelly sites in coastal scrub, chaparral, riparian woodlands and cismontane woodland habitats. Known to occur on SSFL property.
<i>Thelypteris puberula</i> var. <i>sonorensis</i>	Sonoran maiden fern	2.2	Jan-Sept	Along streams, seeps, and in mesic meadows. One reported occurrence in a seepage area along a stream approximately 15 miles southwest of the site.

Notes:

CNDDDB = California Natural Diversity Database

SSFL = Santa Susana Field Laboratory

¹ *Phacelia ramosissima* var. *australitoralis*—This variety is no longer recognized and is now considered a synonym for *Phacelia ramosissima*, according to the Jepson Online Interchange for California Floristics (University of California, 2011).

Status Codes:

CE = State listed endangered species

CR = State listed rare species

FC = Candidate for federal listing as a threatened or endangered species

FE = Federally listed endangered species

FT = Federally listed threatened species

1B.1 = California Native Plant Society (CNPS) listed as rare, threatened, or endangered in California and elsewhere; considered seriously threatened in California.

1B.2 = CNPS listed as rare, threatened, or endangered in California and elsewhere; considered fairly threatened in California.

2.2 = CNPS listed as rare, threatened, or endangered in California and elsewhere; but more common elsewhere, considered fairly threatened in California.

3.2 – Plants about which more information is needed; a review list; considered fairly threatened in California.

4.2 – Plants of limited distribution; a watch list; considered fairly threatened in California.

Sources:

CNDDDB RareFind Version 3.1.0 (CDFG, 2011b).

Online CNPS Inventory of Rare and Endangered Plants (8th Edition) (CNPS, 2011)

Threatened and Endangered Plants of Ventura County (USFWS, 2011)

Berkeley Consortium of California Herbaria (University of California, 2011)

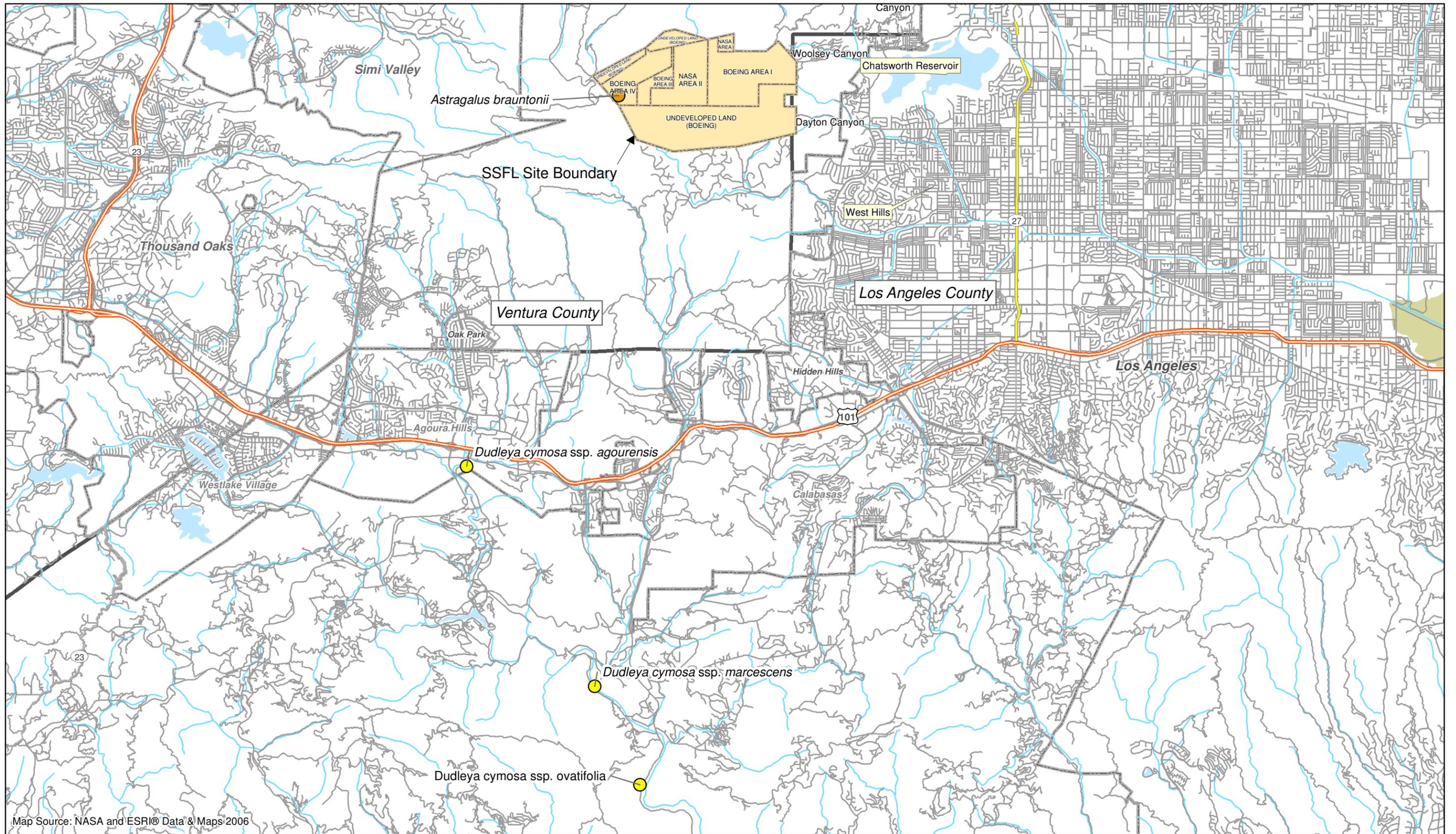
2.1.2 Reference Populations

Reference sites for four special-status plants were visited prior to or during the field surveys. Reference populations provide information about the current phenology, assist with proper identification of target species, and confirm that both the timing and environmental conditions are suitable for conducting the botanical surveys. Given the large number of potentially occurring plants, it was impractical to observe reference populations for all the target species. Imprecise location information, uncertainty of population status, distance from the site, and restricted access to private property also precluded visits to some reference locations.

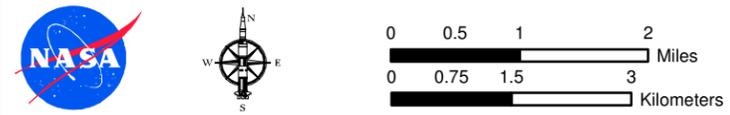
The following reference sites were visited on the dates indicated; Appendix B provides photographs of reference populations.

Braunton's milk-vetch (*Astragalus brauntonii*): A large number of individuals on a previously burned, north-facing hillside were observed on April 18, June 6, and August 15, 2011. This population is within the southern portion of Boeing Area IV (coordinates 34° 13' 34.58788" N; -118° 43' 00.34798" W), as shown in Figure 2-1. Plants were viewed in different development stages (budding, flowering, and fruiting) over the course of the three site visits.

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Map Source: NASA and ESRI® Data & Maps 2006



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Figure 2-1
 Special Status Plant Reference Locations
 NASA Supplemental Biological Survey – 2011
 Santa Susana Field Laboratory
 Ventura County, California

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Agoura Hills Dudleya (*Dudleya cymosa* ssp. *agourensis*): A large number of individuals were viewed on a north-facing rock slope on Cornell Road south of Agoura Hills on June 7, 2011 (coordinates 34° 08' 29.33165" N; -118° 45' 28.64898" W), as shown in Figure 2-1. The sandy-rocky slope was a road cut that exposed a former volcanic mud flow. Plants were viewed in flowering condition.

Marcescent Dudleya (*Dudleya cymosa* ssp. *marcescens*): Approximately 12 individuals were observed on an east-facing rock slope within Malibu Creek State Park approximately 2.9 miles south of State Highway 101 off Coastal Highway N1 (Malibu Canyon Road) on June 7, 2011 (coordinates 34° 05' 29.36678" N; -118° 43' 19.91690" W), as shown in Figure 2-1. The rock slope is adjacent to a dirt roadway and hiking trail and partially covered with moss and lichens. Plants were viewed in flowering condition.

Santa Monica Mountains Dudleya (*Dudleya cymosa* spp. *ovatifolia*): Numerous individuals were observed on a northeast-facing rocky slope along a small creek 5.4 miles south of State Highway 101 off Coastal Highway N1 (Malibu Canyon Road) on June 7, 2011 (coordinates 34° 04' 08.80759" N; -118° 42' 34.32287" W), as shown in Figure 2-1. The rock slope is a volcanic mud flow covered with mosses and lichens. Plants were viewed in flowering condition.

In addition to these rare plant reference locations, a site that had Palmer's Dudleya (*Dudleya palmeri*) was viewed on June 7, 2011, to observe the diversity of characteristics of this genus.

2.1.3 Field Surveys

The 2011 botanical field surveys were completed by Russell Huddleston, Steve Long, Gary Santolo, and Laurel Karren. The surveys were conducted in accordance with the USFWS botanical survey guidelines (1996), CDFG (2009), and CNPS (2001).

Field surveys were scheduled to capture the temporal variations in the occurrence of special-status plants. Surveys were conducted during the following periods: April 18 to 22, June 6 to 10, and August 15 to 20, 2011. Tarja Sagar, a botanist with the National Park Service's Santa Monica Mountains National Recreation Area, provided local expertise on plant identification and assisted with the botanical surveys on June 7, 2011. Surveys of the NASA-administered property involved more than 488 person hours.

The survey area included the entire NASA-administered property at SSFL. The field surveys were conducted via systematic walking. Because of the steep rugged terrain and impenetrable dense vegetation in some areas, transects were not used for all areas of the site. In areas where terrain, slope, or dense vegetation constrained access, observations were made from adjacent, safely accessible locations. The surveys were floristic in nature and the plant species observed were identified to the taxonomic level necessary to assess their conservation status. Appendix C includes the list of observed plant species observed. Samples of plants that could not be identified readily in the field were collected for later identification using taxonomic keys. Taxonomic keys and the following local flora and field guides were used to identify plant species in the field and from collected samples: the *Jepson Manual* (Hickman, 1993); *Flora of the Santa Ana River and Environs* (Clarke, et al., 2006); *Wildflowers of the Santa Monica Mountains* (McAuley, 1996); and *Flowering Plants: The Santa Monica Mountains, Coastal and Chaparral Regions of Southern California* (Dale, 1986). Appendix D contains representative photographs of special-status plants, sensitive habitat, and selected wildlife species observed during the survey. Special-status plant occurrences were recorded in the field using a Trimble Geo-XT global positioning system (GPS) device.

2.1.4 Sensitive Habitat Types

Sensitive habitats on the NASA-administered property at SSFL were evaluated based on the 2010 fall habitat mapping and descriptions (NASA, 2011). The status of the natural habitat types identified on the site was determined based on the current list of natural communities from the Vegetation Classification and Mapping Program (CDFG, 2011a). Habitat types assigned a rank of S1, S2, or S3 were considered high-priority conservation habitats. Habitat types ranked as S4 and S5 were not considered priority conservation types (CDFG, 2011a).

2.1.5 Noxious and Invasive Weeds

The 2011 surveys did not include detailed assessments or mapping of noxious and invasive weeds on the site; however, noxious and invasive weed species and their general locations were recorded as part of the floristic surveys. A noxious weed is a plant that has been defined as a pest plant by law or regulation, and for the purpose of this report, included any species listed by the California Department of Food and Agriculture (CDFA) as a noxious weed (2011). Invasive weeds include species that present an economic or ecological threat, but that are not subject to legal regulations. Invasive species include any plant with a high or moderate threat level, as identified by the California Invasive Pest Plant Council (CAL-IPC) (2011).

2.2 Wildlife Surveys

Opportunistic wildlife surveys were conducted concurrently with the special-status plant surveys. Direct observations, calls, and signs of wildlife (butterflies, amphibians, reptiles, birds, and mammals) were recorded during the field surveys. Searches under logs, rocks, and debris were conducted in limited cases where circumstances permitted. Binoculars were used to search for raptor nests on steep rocky cliffs, test stands, and other constructed structures. No protocol-level surveys were conducted, and wildlife observations were opportunistic rather than systematic, although the timing of the surveys presented the best opportunity for multiple seasonal observations. The locations of significant wildlife observations such as nest sites and special-status species sighted during the surveys were recorded by GPS (where accessible) or on aerial photographs (inaccessible locations). Potential habitat for aquatic species such as vernal pool crustaceans and amphibians also was recorded during the surveys. Features such as potential seasonal wetlands and sandstone basins that have adequate size and structure to potentially hold enough water during the wet season to support aquatic biota were mapped with GPS. Appendix E contains a list of the wildlife species observed.

Results

This section presents the findings of the 2011 surveys. Pertinent findings of the fall 2010 survey also are presented for context.

3.1 Special-Status Plant Species

No federal- or state-listed threatened or endangered plant species were observed on the NASA-administered property during the 2011 surveys. Santa Susana tarweed (*Deinandra minthornii*), which is listed as rare under the California Native Plant Protection Act, is widespread and abundant throughout much of the site. Two other plants included in the CNPS Rare Plant Inventory—slender mariposa lily (*Calochortus clavatus* var. *gracilis*) and Plummer's mariposa lily (*Calochortus plummerae*)—also were observed on the site. Additional information about these occurrences is provided in this section. None of the special-status species of *Dudleya* was observed on the NASA-administered property area during the 2011 surveys.

3.1.1 Santa Susana tarweed (*Deinandra minthornii*)

Santa Susana tarweed is a small leafy shrub in the sunflower family (Asteraceae). This species is listed as rare under the California Native Plant Protection Act as a CNPS 1B.2 (rare, threatened, or endangered in California and elsewhere and considered fairly endangered in California). Shrubs typically range from 1.5 to 3 ft tall and have numerous stiff stems ascending from the base. This plant produces a fragrant resin that makes the stems and leaves sticky. The yellow flower heads occur singly at the ends of the long stems. Blooming generally occurs from July through early November.

During the fall 2010 survey, more than 3,600 Santa Susana tarweeds were identified and mapped on the NASA-administered property (NASA, 2011). The majority of the plants were observed in Area II, where they were widespread throughout the area in association with sandstone outcrops. A total of 324 plants were mapped in Area I; most were found on a sandstone outcrop north of the Liquid Oxygen (LOX) Plant site. The areas containing Santa Susana tarweeds were visited during the 2011 surveys; no changes to the overall distribution were noted.

3.1.2 Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)

Slender mariposa lily is a perennial herb in the lily (Liliaceae) family. Stems are slender and typically between 7 and 12 inches tall with withering basal leaf. The yellow flowers are sparsely hairy with a reddish-brown line above small, shallow nectary. Several plants were observed in small sand pockets associated with dense patches of bushy spikemoss on a sandstone outcrop on the southern side of Skyline Road in Area II (Figure 3-1).

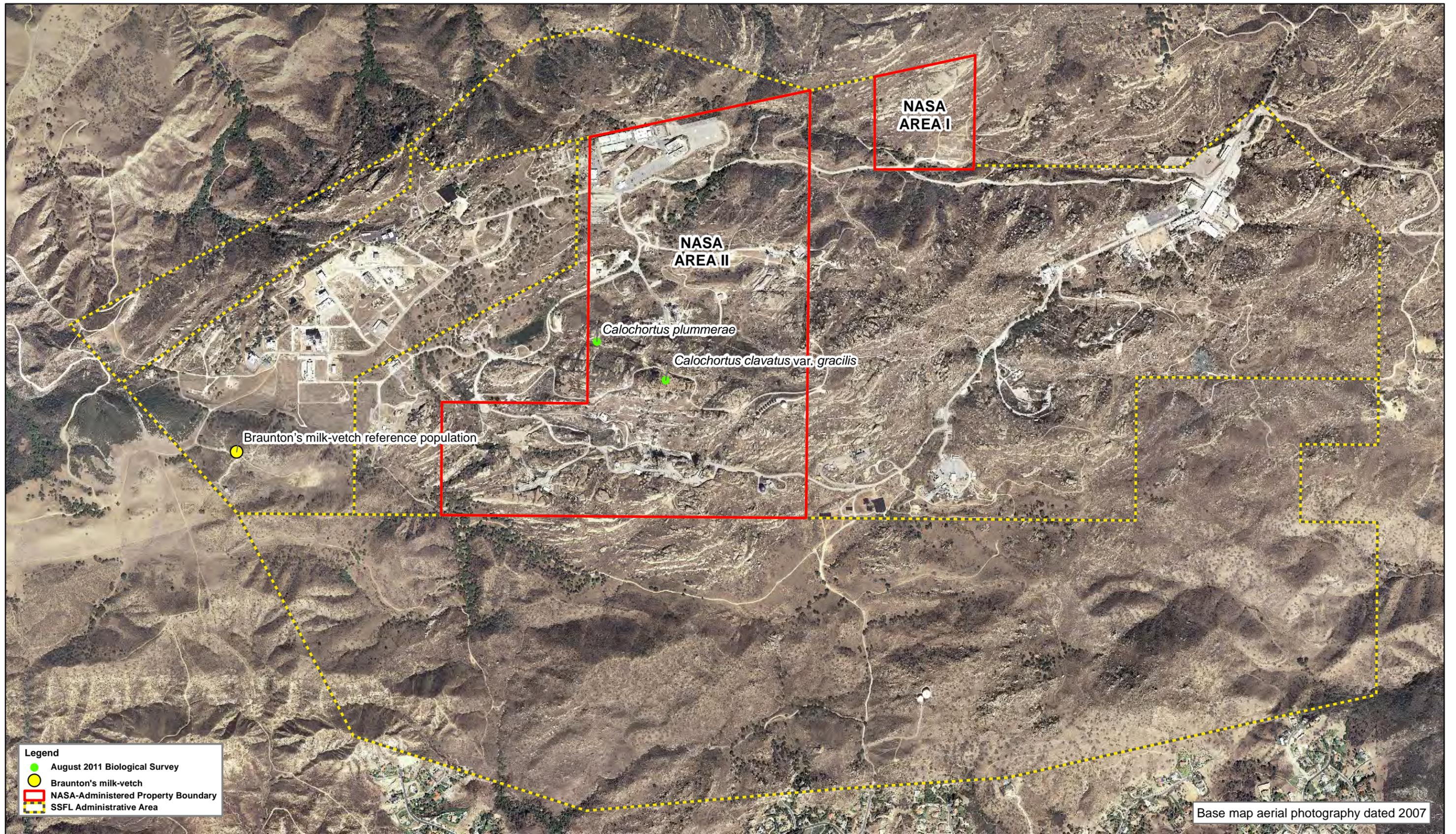
3.1.3 Plummer's mariposa lily (*Calochortus plummerae*)

Plummer's mariposa lily is a perennial herb in the lily (Liliaceae) family. The stem generally ranges from 1 to 2 ft tall and is often branched. Basal leaves are generally 8 to 16 inches long, withering later in the season. Leaves along the stem range from 1.5 to 7 inches long and are inrolled toward the ends. The pink to purple flowers are finely toothed with a central ring of long, yellow to orange hairs above the nectary. Two plants were observed in a sandy opening in the chaparral habitat on the western side of the Bravo test stand in Area II (Figure 3-1).

3.2 Sensitive Habitats

Two high-priority conservation natural habitats, as defined by the CDFG (2011a), were identified and mapped on the NASA-administered property during the fall 2010 survey—southern willow scrub and Venturan coastal sage scrub (NASA, 2011). These habitats have been assigned a state ranking of either S2 (community is considered imperiled

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Figure 3-1
Special-Status Plant Locations
NASA Supplemental Biological Survey – 2011
Santa Susana Field Laboratory
Ventura County, California

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due to a restricted range, steep declines, or other factors that make it vulnerable to extirpation from the state), or S3 (the habitat is considered vulnerable with a moderate risk of extirpation due to a restricted range, recent declines, or other factors). Figure 3-2 shows the distribution of sensitive habitat types identified on the NASA-administered property at SSFL.

3.2.1.1 Southern Willow Scrub (S2)

Southern willow scrub, which is relatively limited on the site (1.04 total acres), is associated with seasonal drainages, as well as with more permanent water sources. Small areas of this habitat type were identified in Area II along the drainages north of the Area II landfill and the Coca test stand site, and around the R-2 Ponds and the Coca detention pond. The largest area of southern willow scrub on the NASA-administered property occurs along the drainage on the southern side of the Alfa test stand site (Figure 3-2).

3.2.1.2 Venturan Coastal Sage Scrub (S3)

Venturan coastal sage scrub is widespread throughout the site, covering a total of 64.44 acres. The largest areas of this habitat occur in the southwestern part of Area II. This habitat generally is intermixed with chaparral and rock outcrops (Figure 3-2).

3.3 Noxious and Invasive Weeds

A total of 14 invasive plant species were identified on the NASA-administered property during the 2011 surveys. Five of the species identified are classified by the state as noxious weeds. Table 3-1 lists the noxious and invasive weeds that were identified and the general locations in which they were observed.

3.4 Special-status Animal Species

Five CDFG Species of Special Concern occurrences have been documented by CNDDDB (CDFS, 2011b) within the general vicinity of SSFL—western spadefoot toad (*Spea hammondi*), arroyo toad (*Anaxyrus californicus*), San Diego desert woodrat (*Neotoma lepida intermedia*), tricolored blackbird (*Agelaius tricolor*), and western mastiff bat (*Eumops perotis californicus*). The arroyo toad also is federally listed as endangered.

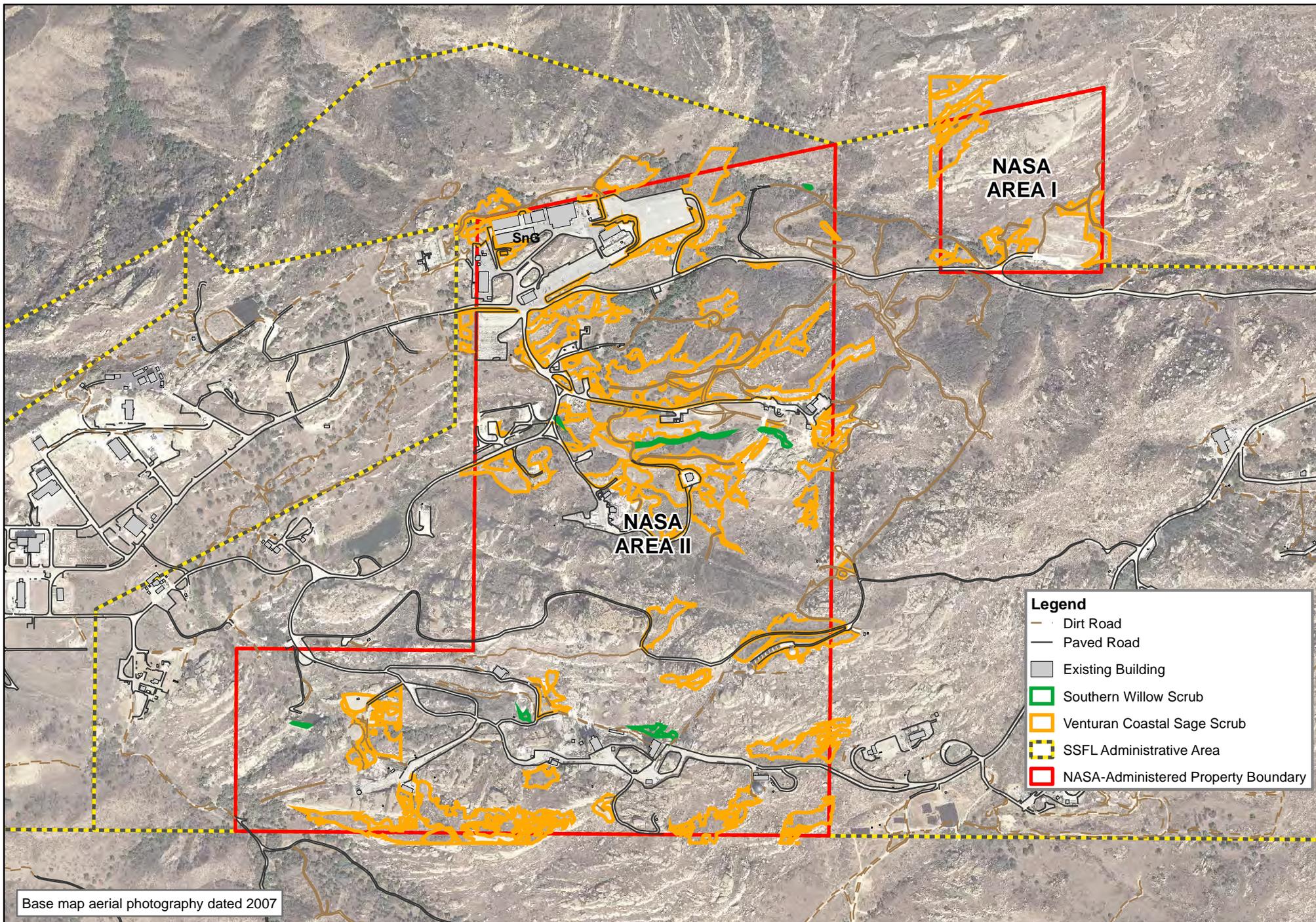
No evidence was found during the 2010 or 2011 surveys indicating the potential occurrence of any of these species, except for the San Diego desert woodrat. Evidence of potential occurrence of woodrat species (woodrat nests and scat) was found during the surveys; however, the species of woodrat on the site was not identified. No species-specific surveys have been conducted.

During the recent EIS public scoping period, USFWS commented that the following federally listed animal species have the potential to occur on the site:

- Quino checkerspot butterfly (*Euphydryas editha ssp. quino*)—Endangered
- Riverside fairy shrimp (*Streptocephalus woottoni*)—Endangered
- Vernal pool fairy shrimp (*Branchinecta lynchi*)—Threatened
- California red-legged frog (*Rana aurora ssp. draytonii*)—Threatened
- Least Bell's vireo (*Vireo bellii ssp. pusillus*)—Endangered
- Coastal California gnatcatcher (*Polioptila californica ssp. californica*)—Threatened

In addition to these species, the federally endangered longhorn fairy shrimp (*Branchinecta longiantenna*) was identified during the 2010 fall survey as having the potential to occur in seasonally inundated pools on rock outcrops on the NASA-administered property (NASA, 2011).

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Base map aerial photography dated 2007



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Legend

- Dirt Road
- Paved Road
- Existing Building
- Southern Willow Scrub
- Venturan Coastal Sage Scrub
- SSFL Administrative Area
- NASA-Administered Property Boundary

Figure 3-2
Sensitive Natural Communities
NASA Supplemental Biological Survey - 2011
Santa Susana Field Laboratory
Ventura County, California

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TABLE 3-1
 Noxious and Invasive Weeds Identified On the NASA-administered Property at SSFL
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name	Common Name	CDFA	CAL-IPC	Areas Observed
<i>Ailanthus altissima</i>	tree of heaven	C	Moderate	Area II–SPA, Delta and Coca
<i>Brassica nigra</i>	black mustard	--	Moderate	Widespread in grassland habitats, chaparral openings, and disturbed areas throughout the site
<i>Bromus diandrus</i>	ripgut brome	--	Moderate	Common in grasslands and in the understory of oak woodland habitat
<i>Bromus madritensis ssp. rubens</i>	red brome	--	High	Widespread in grasslands and on sandstone outcrops
<i>Carduus pycnocephalus</i>	Italian plumeless thistle	C	Moderate	Locally abundant in grasslands and in the understory of oak woodland habitat
<i>Centaurea melitensis</i>	Maltese star-thistle	C	Moderate	Widespread in grasslands, openings in chaparral, and in disturbed areas
<i>Cirsium vulgare</i>	bull thistle	C	Moderate	Area II–WTC, SPA, Coca, and R9 Pond
<i>Cynodon dactylon</i>	Bermudagrass	--	Moderate	Area II–Coca
<i>Foeniculum vulgare</i>	sweet fennel	--	High	Area II–R9 Pond
<i>Gazania linearis</i>	treasureflower	--	Moderate	Observed in one location south of Skyline road
<i>Mesembryanthemum crystallinum</i>	Common iceplant	--	Moderate	Alfa and Bravo—around developed areas including test stands and buildings.
<i>Pennisetum setaceum</i>	crimson fountaingrass	--	Moderate	Common and widespread, often around developed areas.
<i>Salsola tragus</i>	prickly Russian thistle	C	Limited	Area II–Alfa
<i>Vulpia myuros ssp. myuros</i>	rat-tail fescue	--	Moderate	Common in grassland habitats

Notes:

CDFA = California Department of Food and Agriculture

Cal-IPC = California Invasive Pest Plant Council

SSFL = Santa Susana Field Laboratory

CDFA – List C Noxious weeds

List C includes noxious weeds that are of known economic or environmental detriment and are usually widespread. They are subject to regulations designed to retard spread or to suppress at the discretion of the individual county agricultural commissioner. There is no state enforced action other than providing for pest cleanliness.

CAL_IPC Ratings

High—species that have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate—species that have substantial and apparent, but generally not severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited—species that are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Sources:

California Department of Food and Agriculture, 2011. State List of Noxious Weeds.

California Invasive Pest Plant Council, 2011. Invasive Plant Inventory.

Species-specific surveys were not conducted during the 2010 or 2011 surveys for these federally listed wildlife species; however, the potential occurrence of these species on the site was evaluated during the opportunistic wildlife surveys that were conducted.

One least Bell's vireo was sighted during the August 2011 survey in coyotebrush adjacent to coast live oak woodland habitat west of the Ash Pile in Area II (Figure 3-3). This sighting occurred outside the typical breeding period of this species (April 10 to July 31); therefore, one explanation for the presence of the bird sighted is that it might have been a transient moving through the area. Mule-fat, a favored plant of the least Bell's vireo, exists on the site; however, the coverage of mule-fat scrub habitat is relatively limited (2.1 total acres) and fragmented. No least Bell's vireos were observed or heard during surveys conducted during their breeding period.

The Quino checkerspot butterfly potentially was sighted on the NASA-administered property during the fall 2010 survey. One individual butterfly that might have been this species was sighted southwest of the Bravo test stand site in mosaic habitat consisting of rock outcrop, non-native grassland, and Venturan coastal sage scrub. The butterfly was observed in flight, and a positive identification was not possible; however, its color, markings, and flight pattern were observed to be similar to those of the Quino checkerspot butterfly. Potential suitable habitat for this species was observed onsite during the 2010 and 2011 surveys. Dotseed plantain (*Plantago erecta*), a potential host plant for this species, was found during surveys conducted in 2011. Other potential food (nectar) plants for the butterfly, including Coulter's snapdragon (*Antirrhinum coulterianum*); California goldfields (*Lasthenia gracilis*); *Cryptantha* spp.; and pinebush (*Ericameria pinifolia*) were also observed during the 2011 surveys. A site assessment for Quino checkerspot butterfly completed by Forensic Entomology Services (2010) in Area IV concluded that the potential for occurrence was very low because the butterfly has not been sighted in Ventura County for more than 70 years and overall habitat at SSFL was considered marginal. A habitat survey for this species is planned within the NASA-administered properties for spring 2012.

One ring-tailed cat (*Bassariscus astutus*) was sighted on a rock outcrop near a riparian drainage northwest of the SPA site during the fall 2010 field surveys. The ring-tailed cat is a California "fully protected" species, which means it cannot be taken or possessed at any time.

The findings of the 2010 and 2011 surveys indicate that potential suitable habitat for the Riverside, vernal pool, and longhorn fairy shrimps exist on the NASA-administered property. Potential habitat includes small rock basins in sandstone outcrops and two seasonally ponded wetland areas. Opportunistic surveys for these species will be done in conjunction with planned wetland delineation fieldwork scheduled for January 2012.

No evidence of California red-legged frog occurrence was found during the 2010 or 2011 surveys. There is limited potential suitable habitat for this frog species on the NASA-administered property, primarily around the R-2 Ponds and the detention basin north of the Coca test stand site. A habitat assessment for California red-legged frog conducted by SAIC (2010) at several locations within SSFL (including the R2-A pond and Outfall 18 on the NASA property) determined that the presence of this species is unlikely. The coastal California gnatcatcher was not observed during the 2010 or 2011 surveys. Small, fragmented populations of gnatcatcher occur in Ventura County in habitat near where sage scrub-grassland interfaces; this species is less likely to be found in habitat where sage scrub grades into chaparral, such as was observed on the site. Dense sage scrub is occupied less frequently than more open sites.

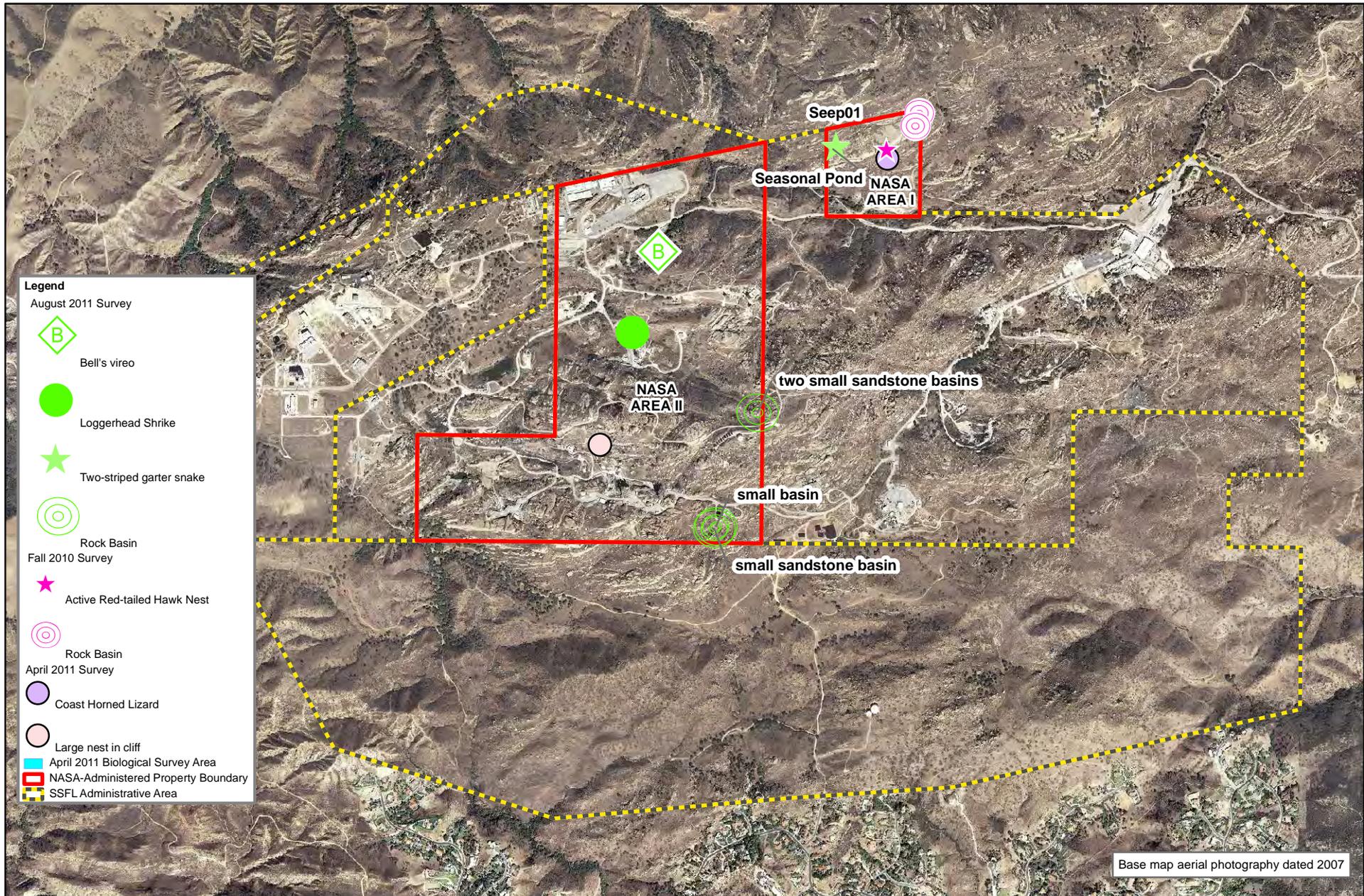


Figure 3-3
Significant Wildlife Observations
NASA Supplemental Biological Survey – 2011
Santa Susana Field Laboratory
Ventura County, California



0 750 1,500 3,000
 Feet

0 250 500 1,000
 Meters

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The following Species of Special Concern were sighted during the 2010 and 2011 surveys—coast horned lizard (*Phrynosoma coronatum* [blainvillii population]), two-striped garter snake (*Thamnophis hammondi*), and loggerhead shrike (*Lanius ludovicianus*) (Figure 3-3):

- A coast horned lizard was sighted during the spring 2011 survey. Approximately 3 inches long, it was sighted on the LOX Plant site beneath a cliff. Two individuals of this species also were observed during the fall 2010 surveys near the Area II landfill and north of the LOX Plant site in Area I.
- A two-striped garter snake was observed under debris in the seasonal pond northwest of the LOX Plant site during the August 2011 survey.
- A loggerhead shrike was sighted foraging on a hill above the viewing stand at the Bravo test stand site during the August 2011 survey. One individual also was observed during the fall 2010 surveys on the eastern side of the SPA site in Area II.

3.5 Wildlife Observations

Observations of wildlife on the NASA-administered property at SSFL were recorded during the 2010 and 2011 surveys. Appendix E lists the animal species identified on the site via sightings, calls, and other evidence of occurrence. A total of 11 butterfly species, 12 herpetile (reptiles and amphibians) species, 60 bird species, and at least 15 mammal species were identified during the surveys. Numerous common invertebrate species also were observed besides butterflies such as dragonflies and milkweed bugs.

A total of three inactive raptor stick nests were sighted during the fall 2010 survey. During the 2011 surveys, two of these nests were observed to be occupied by red-tailed hawks (*Buteo jamaicensis*) and successfully fledged young. A pair of ravens (*Corvus corax*) successfully fledged young from a nest on a test stand at the Alfa test stand site. An adult barn owl (*Tyto alba*) was observed in a test stand at the Coca test stand site; it is likely that owls use these structures for nesting. In addition, several California towhee nests were observed on the ground in the chaparral and coastal sage scrub areas.

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Conclusions and Recommendations

4.1 Conclusions

No federal- or state-listed threatened or endangered plant species were identified within the NASA-administered property at SSFL during the 2011 surveys. Santa Susana tarweed, which is listed as rare under the California Native Plant Protection Act, is widespread and abundant throughout much of the site. Two other plants included in the CNPS Rare Plant Inventory—slender mariposa lily and Plummer’s mariposa lily—also were observed on the site.

Two sensitive habitat types are present on the NASA-administered property. These included 1.04 acres of southern willow scrub habitat and 64.44 acres of Venturan coastal sage scrub habitat.

A total of 14 invasive plant species were identified during the 2011 surveys. Five of the identified species are classified by the state as noxious weeds.

Species-specific surveys for special-status animal species were not conducted during the 2011 surveys; however, opportunistic wildlife observations were recorded during both the 2010 and 2011 field surveys. A total of 10 butterfly species, 13 herpetile (reptiles and amphibians) species, 60 bird species, and at least 15 mammal species were identified during the surveys. The least Bell’s vireo was the only federally listed animal species sighted during the 2011 surveys. One individual was sighted during the August 2011 survey. This sighting occurred outside the typical breeding period of this species (April 10 to July 31); therefore, the bird sighted might have been a transient moving through the area.

One potential Quino checkerspot butterfly was observed during the fall 2010 surveys, but no similar looking individuals were observed during the 2011 field surveys.

One California state fully protected species, the ring-tailed cat, was observed during the fall 2010 surveys. This species was not seen during the 2011 field surveys.

Three Species of Special Concern were sighted during the 2011 surveys—coast horned lizard, two-striped garter snake, and loggerhead shrike. Two coast horned lizards and one loggerhead shrike were observed during the fall 2010 surveys.

4.2 Recommendations

Pre-construction surveys by a qualified wildlife biologist are recommended before any proposed demolition, remediation, or other activities involving potential disturbance to wildlife or natural communities are initiated. This approach is especially important if the activities will occur during the breeding season for birds or wildlife. A breeding season schedule will be developed as part of the EIS and used in evaluating potential impacts to listed and protected species.

Because the rock basins and seasonal wetlands are found in areas that are unlikely to be affected by remediation or other onsite activities, protocol-level surveys for special-status invertebrates in these areas are not considered necessary. However, if it is later determined that the basins could be affected, it will be necessary to coordinate with resource agencies to evaluate what additional data might be needed or how mitigation of the impacts should occur.

A delineation of wetlands and waters of the United States and the State of California will be completed during the winter of 2011. These results will be documented in a separate wetland delineation report that will be submitted as in a separate report that will be submitted to the US Army Corps of Engineers for verification.

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SECTION 5

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Appendix A
Special-Status Plants Identified in the Database
Review Not Expected to Occur on the Site

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APPENDIX A

Special-status Plants Identified in the Database Review Not Expected to Occur on the Site

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Special-status Plants Identified in the Database Review Not Expected to Occur on the Site

NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Arenaria paludicola</i>	marsh sandwort	FE/CE 1B.1	May-Aug	Sandy openings in marshes and swamps. Only known from two extant occurrences; no herbarium records or California Natural Diversity Data Base (NDDDB) occurrences in Ventura County and the occurrence in Los Angeles County has been extirpated.
<i>Astragalus pycnostachyus</i> var. <i>lanosissimus</i>	Ventura marsh milk-vetch	FE/CE 1B.1	June-Oct	Coastal salt marshes, coastal scrub and coastal dunes. No suitable habitat in the study area.
<i>Astragalus tener</i> var. <i>titi</i>	coastal dunes milk-vetch	FE/CE 1B.1	Mar-May	Coastal scrub, coastal prairie and coastal dunes; vernal mesic areas. No suitable habitat in the study area.
<i>Atriplex coulteri</i>	Coulter's saltbush	1B.2	Mar-Oct	Coastal bluff scrub, coastal dunes and coastal grasslands. No suitable habitat in the study area.
<i>Berberis pinnata</i> ssp. <i>insularis</i>	island barberry	FE/CE 1B.2	Feb-May	Endemic to the Channel Islands. Rocky areas in chaparral, coastal scrub, cismontane woodland, and closed cone coniferous forest.
<i>Camissonia lewisii</i>	Lewis' evening-primrose	3	Mar-June	Coastal dunes, coastal scrub, cismontane woodland, and grassland; generally on sandy or clay soils. No herbarium collections from Ventura County; Los Angeles County collections largely occur in coastal plains and basin areas.
<i>Caulanthus californicus</i>	California jewelflower	FE 1B.1	Feb-May	Chenopod scrub, grassland and pinyon-juniper woodland. No CNDDDB records of this species in Ventura or Los Angeles Counties. Several herbarium collections from 1935 from the Cuyama Valley near the northwestern part of the County, more than 50 miles from the study area.
<i>Chloropyron maritimum</i> ssp. <i>maritimum</i>	salt marsh bird's-beak	FE/CE 1B.2	May-Oct	Coastal salt marshes and dunes. No suitable habitat in the study area.
<i>Dithyrea maritima</i>	beach spectaclepod	CT 1B.1	Mar-May	Coastal dunes and coastal scrub and other sandy habitat near the shore. No suitable habitat in the study area.

APPENDIX A

Special-status Plants Identified in the Database Review Not Expected to Occur on the Site

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Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Malacothrix squalida</i>	island malacothrix	FE 1B.1	Apr-July	Endemic to the Channel Islands. Coastal bluff scrub, chaparral and cismontane woodland. Endemic to the Channel Islands.
<i>Orcuttia californica</i>	California Orcutt grass	FE/CE 1B.1	Apr-Aug	Vernal pools and playas; typically in heavy clay soils. No suitable habitat in the study area.
<i>Sidalcea neomexicana</i>	Salt Spring checkerbloom	2.2	Mar-June	Alkali playas, brackish marshes, alkali springs also found in mesic alkaline areas in coastal scrub, chaparral, Mojave desert scrub and lower montane coniferous forests. No suitable habitat in study area.

Status Codes

FE = Federally listed endangered species

CE = State-listed endangered species

CT = State-listed threatened species

1B.1 = California Native Plant Society (CNPS listed as rare, threatened, or endangered in California and elsewhere; considered seriously threatened in California

1B.2 = CNPS listed as rare, threatened, or endangered in California and elsewhere; considered fairly threatened in California

2.2 = CNPS listed as rare, threatened, or endangered in California and elsewhere; but more common elsewhere, considered fairly threatened in California

3 = Plants for which more information is needed; a review list

Sources:

CNDDDB Rarefind Version 3.1.0 (CDFG, 2011).

Online CNPS Inventory of Rare and Endangered Plants (8th Edition) (CNPS, 2011)

List of Threatened and Endangered Plants of Ventura County (USFWS, 2011)

Berkeley Consortium of California Herbaria (University of California, 2011)

Appendix B
Rare Plant Reference Site Photographs

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Rare Plant Reference Site Photographs



A-1. Reference Site: *Astragalus brauntonii*.
Vegetative; no flowers or buds April 17, 2011.



A-2. Reference Site: *Astragalus brauntonii*.
Flowering June 8, 2011.



A-3. Reference Site: *Dudleya cymosa* spp. *agourensis*
Flowers. June 7, 2011.



A-4. Reference Site: *Dudleya cymosa* spp. *agourensis*
Basal leaves. June 7, 2011.



A-5. Reference Site: *Dudleya cymosa* spp. *marcescens* Flowering. June 7, 2011.



A-6. Reference Site: *Dudleya cymosa* spp. *marcescens*
Basal leaves. June 7, 2011.



A-7. Reference Site: *Dudleya cymosa* spp. *ovatifolia*
Flowering. June 7, 2011.



A-8. Reference Site: *Dudleya cymosa* spp. *ovatifolia*
Flowering. June 7, 2011.

Appendix C
List of Plant Species Observed

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APPENDIX C

List of Plant Species Observed

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
BLECHNACEAE			
<i>Woodwardia fimbriata</i>	giant chainfern	N	Herb (P)
DENNSTAEDTIACEAE			
<i>Pteridium aquilinum</i>	Western brackenfern	N	Herb (P)
DRYOPTERIDACEAE			
<i>Dryopteris arguta</i>	coastal woodfern	N	Herb (P)
POLYPODIACEAE			
<i>Polypodium californicum</i>	California polypody	N	Herb (P)
PTERIDACEAE			
<i>Adiantum jordanii</i>	California maidenhair	N	Herb (P)
<i>Aspidotis californica</i>	California lacefern	N	Herb (P)
<i>Pellaea andromedifolia</i>	coffee cliffbrake	N	Herb (P)
<i>Pellaea mucronata</i> var. <i>mucronata</i>	birdfoot cliffbrake	N	Herb (P)
<i>Pentagramma triangularis</i> ssp. <i>triangularis</i>	goldenback fern	N	Herb (P)
SELAGINELLACEAE			
<i>Selaginella bigelovii</i>	bushy spikemoss	N	Herb (P)
PINACEAE			
<i>Pinus muricata</i> ³	Bishop pine	N	Tree
AIZOACEAE			
<i>Mesembryanthemum crystallinum</i> ⁴	common iceplant	I	Herb (A/P)
ADOXACEAE			
<i>Sambucus nigra</i> ssp. <i>caerulea</i> (<i>Sambucus mexicana</i>) ⁵	American black elderberry	N	Shrub/Tree
AMARANTHACEAE			
<i>Amaranthus albus</i>	tumbleweed	I	Herb (A)
<i>Amaranthus blitoides</i>	mat amaranth	I	Herb (A)
ANACARDIACEAE			
<i>Malosma laurina</i>	laurel sumac	N	Shrub
<i>Rhus ovata</i>	sugar sumac	N	Shrub

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
<i>Schinus molle</i>	Peruvian peppertree	I	Tree
<i>Toxicodendron diversilobum</i>	Pacific poison oak	N	Shrub
APIACEAE			
<i>Anthriscus caucalis</i>	bur chervil	I	Herb (A)
<i>Bowlesia incana</i>	hairy bowlesia	N	Herb (A)
<i>Daucus pusillus</i>	American wild carrot	N	Herb (A)
<i>Foeniculum vulgare</i> ⁴	sweet fennel	I	Herb (B/P)
<i>Lomatium lucidum</i>	shiny biscuitroot	N	Herb (P)
<i>Sanicula bipinnata</i> ⁶	poison sanicle	N	Herb (P)
<i>Sanicula crassicaulis</i>	Pacific blacksnakeroot	N	Herb (P)
<i>Torilis arvensis</i>	spreading hedgeparsley	I	Herb (A)
<i>Yabea microcarpa</i>	false carrot	N	Herb (A)
APOCYNACEAE			
<i>Vinca major</i>	bigleaf periwinkle	I	Vine
ARACEAE			
<i>Lemna</i> sp.	duckweed	N	Herb (P)
ASCLEPIADACEAE			
<i>Asclepias eriocarpa</i>	woollypod milkweed	N	Herb (P)
<i>Asclepias fascicularis</i>	Mexican whorled milkweed	N	Herb (P)
ASTERACEAE			
<i>Acourtia microcephala</i>	sacapellote	N	Herb (P/SS)
<i>Agoseris grandiflora</i>	bigflower agoseris	N	Herb (P)
<i>Artemisia californica</i>	coastal sagebrush	N	Shrub
<i>Artemisia douglasiana</i>	Douglas' sagewort	N	Herb (P)
<i>Baccharis pilularis</i>	coyotebrush	N	Shrub
<i>Baccharis salicifolia</i>	mule-fat	N	Shrub
<i>Carduus pycnocephalus</i> ⁴	Italian plumeless thistle	I	Herb (A)
<i>Centaurea melitensis</i> ⁴	Maltese star-thistle	I	Herb (A/B)
<i>Cirsium occidentale</i> var. <i>occidentale</i>	cobwebby thistle	N	Herb (B)
<i>Cirsium vulgare</i> ⁴	bull thistle	I	Herb (B)
<i>Conyza bonariensis</i>	asthmaweed	I	Herb (A/B)

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
<i>Conyza canadensis</i>	Canadian horeseweed	N	Herb (A/B)
<i>Corethrogyne filaginifolia</i>	common sandaster	N	Herb (P/SS)
<i>Deinandra fasciculata</i>	clustered tarweed	N	Herb (A)
<i>Deinandra minthornii</i> ⁷	Santa Susanna tarweed	N	Shrub
<i>Encelia californica</i>	California brittlebush	N	SS/Shrub
<i>Ericameria pinifolia</i>	pinebush	N	Shrub
<i>Erigeron foliosus</i>	leafy fleabane	N	Herb (P)
<i>Eriophyllum confertiflorum</i>	golden-yarrow	N	SS/Shrub
<i>Gazania linearis</i> ⁴	treasureflower	I	Herb (P)
<i>Hazardia squarrosa</i> var. <i>grindelioides</i>	sawtooth goldenbush	N	SS/Shrub
<i>Heterotheca grandiflora</i>	telegraphweed	N	Herb (A/P)
<i>Hypochaeris glabra</i>	smooth cat's ear	I	Herb (A)
<i>Lactuca serriola</i>	prickly lettuce	I	Herb (A/B)
<i>Lactuca virosa</i>	bitter lettuce	I	Herb (A/B)
<i>Lasthenia californica</i>	California goldfields	N	Herb (A/P)
<i>Logfia filaginoides</i> (syn. <i>Filago californica</i>)	California cottonrose	N	Herb (A)
<i>Logfia gallica</i> (syn. <i>Filago gallica</i>)	narrowleaf cottonrose	I	Herb (A)
<i>Madia gracilis</i>	grassy tarweed	N	Herb (A)
<i>Malacothrix saxatilis</i>	cliff desertdandelion	N	SS/Shrub
<i>Micropus californicus</i>	q-tips	N	Herb (A)
<i>Microseris douglasii</i>	Douglas' silverpuffs	N	Herb (A)
<i>Pseudognaphalium biolettii</i> (<i>Gnaphalium bicolor</i>) ⁵	two-color rabbit-tobacco	N	Herb/SS (B)
<i>Pseudognaphalium californicum</i>	ladies' tobacco	N	Herb/SS (B)
<i>Pseudognaphalium canescens</i>	Wright's cudweed	N	Herb (A/P)
<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed	I	Herb (A)
<i>Psilocarphus tenellus</i>	slender woollyheads	N	Herb (A)
<i>Rafinesquia californica</i>	California plumeseed	N	Herb (A)
<i>Senecio vulgaris</i>	old-man-in-the-Spring	I	Herb (A/B)
<i>Silybum marianum</i>	blessed milkthistle	I	Herb (A/B)
<i>Sonchus asper</i>	spiny sowthistle	I	Herb (A)
<i>Sonchus oleraceus</i>	common sowthistle	I	Herb (A)

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
<i>Stephanomeria virgata</i>	rod wirelettuce	N	Herb (A)
<i>Uropappus lindleyi</i>	Lindley's silverpuffs	N	Herb (A)
<i>Venegasia carpesioides</i>	canyon sunflower	N	SS/Shrub
<i>Xanthium strumarium</i>	rough cocklebur	N	Herb (A)
BORAGINACEAE			
<i>Amsinckia intermedia</i>	common fiddleneck	N	Herb (A)
<i>Amsinckia menziesii</i>	Menzies' fiddleneck	N	Herb (A)
<i>Cryptantha</i> sp. (cf <i>C. barbiger</i>)	cryptantha	N	Herb (A)
<i>Cryptantha muricata</i>	Clokey's cryptantha	N	Herb (A)
<i>Cryptantha micromeres</i>	pygmyflower cryptantha	N	Herb (A)
<i>Emmenanthe penduliflora</i>	whisperingbells	N	Herb (A)
<i>Eriodictyon crassifolium</i>	thickleaf yerba santa	N	Shrub
<i>Eucrypta chrysanthemifolia</i>	spotted hideseed	N	Herb (A)
<i>Pectocarya linearis</i>	sagebrush combseed	N	Herb (A)
<i>Phacelia cicutaria</i>	caterpillar phacelia	N	Herb (A)
<i>Phacelia minor</i>	wild Canterbury bells	N	Herb (A)
<i>Phacelia ramosissima</i>	branching phacelia	N	Herb/SS (P)
<i>Phacelia tanacetifolia</i>	lacy phacelia	N	Herb (A)
<i>Plagiobothrys nothofulvus</i>	rusty popcornflower	N	Herb (A)
BRASSICACEAE			
<i>Arabis sparsiflora</i>	sicklepod rockcress	N	Herb/SS (P)
<i>Brassica nigra</i> ⁴	black mustard	I	Herb (A)
<i>Draba cuneifolia</i>	wedgeleaf draba	N	Herb (A)
<i>Lepidium nitidum</i> var. <i>nitidum</i>	shining pepperweed	N	Herb (A)
<i>Sisymbrium orientale</i>	Indian hedgemustard	I	Herb (A)
<i>Thysanocarpus laciniatus</i>	mountain fringepod	N	Herb (A)
CACTACEAE			
<i>Opuntia ficus-indica</i> ³	Barbary fig	I	Shrub
CALLITRICHACEAE			
<i>Callitriche marginata</i>	winged water-starwort	N	Herb (A)

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
CAMPANULACEAE			
<i>Triodanis perfoliata</i>	clasping Venus' looking-glass	N	Herb (A)
CAPRIFOLIACEAE			
<i>Lonicera subspicata</i>	southern honeysuckle	N	Shrub/Vine
<i>Symphoricarpos mollis</i>	creeping snowberry	N	SS/Shrub
CARYOPHYLLACEAE			
<i>Cerastium glomeratum</i>	sticky chickweed	I	Herb (A)
<i>Minuartia douglasii</i>	Douglas' stitchwort	H	Herb (A)
<i>Polycarpon tetraphyllum</i>	fourleaf manyseed	I	Herb (A/P)
<i>Silene antirrhina</i>	sleepy silene	N	Herb (A)
<i>Silene gallica</i>	common catchfly	I	Herb (A/B)
<i>Silene laciniata</i>	cardinal catchfly	N	Herb (P)
<i>Stellaria media</i>	common chickweed	N	Herb (A/P)
CHENOPODIACEAE			
<i>Chenopodium californicum</i>	California goosefoot	N	Herb (P)
<i>Dysphania ambrosioides</i>	Mexican tea	I	Herb (A/P)
<i>Salsola tragus</i> ⁴	prickly Russian thistle	I	Herb (A)
CISTACEAE			
<i>Helianthemum scoparium</i>	Bisbee Peak rushrose	N	SS/Shrub
CONVOLVULACEAE			
<i>Calystegia macrostegia</i> ssp. <i>cyclostegia</i>	island false bindweed	N	Herb/Vine
<i>Convolvulus arvensis</i>	field bindweed	I	Herb/Vine
<i>Cuscuta californica</i>	chaparral dodder	N	Herb/Vine
CRASSULACEAE			
<i>Crassula aquatica</i>	water pygmyweed	N	Herb (A)
<i>Crassula connata</i>	sand pygmyweed	N	Herb (A)
<i>Dudleya lanceolata</i>	lanceleaf liveforever	N	Herb (P)
<i>Dudleya pulverulenta</i>	chalk dudleya	N	Herb (P)
CUCURBITACEAE			
<i>Marah macrocarpus</i>	Cucamonga manroot	N	Herb/Vine

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
ERICACEAE			
<i>Arctostaphylos glauca</i>	bigberry manzanita	N	Shrub
EUPHORBIACEAE			
<i>Chamaesyce maculata</i>	spotted sandmat	I ⁸	Herb (A)
<i>Chamaesyce polycarpa</i>	smallseed sandmat	N	Herb (A/P)
<i>Croton setigerus</i>	dove weed	N	Herb (A)
FABACEAE			
<i>Acmispon americanus</i> (syn. <i>Lotus purshianus</i>)	birds-foot trefoil	N	Herb (A)
<i>Acmispon argophyllus</i> (syn. <i>Lotus argophyllus</i>)	silver bird's-foot trefoil	N	Herb/SS (P)
<i>Acmispon glaber</i> (syn. <i>Lotus scoparius</i>)	common deerweed	N	SS (P)
<i>Acmispon strigosus</i> (syn. <i>Lotus strigosus</i>)	strigose bird's-foot trefoil	N	Herb (A)
<i>Lupinus bicolor</i>	miniature lupine	N	Herb (A)
<i>Lupinus hirsutissimus</i>	stinging annual lupine	N	Herb (A)
<i>Lupinus truncatus</i>	collared annual lupine	N	Herb (A)
<i>Medicago polymorpha</i>	burclover	I	Herb (A/P)
<i>Melilotus indicus</i>	annual yellow sweetclover	I	Herb (A)
<i>Trifolium gracilentum</i>	pinpoint clover	N	Herb (A)
<i>Trifolium willdenovii</i>	tomcat clover	N	Herb (A)
<i>Vicia hassei</i>	Hasse's vetch	N	Herb (A)
<i>Vicia villosa</i>	winter vetch	I	Herb (A/P)
FAGACEAE			
<i>Quercus agrifolia</i>	California live oak	N	Tree/Shrub
<i>Quercus berberidifolia</i>	scrub oak	N	Tree/Shrub
GENTIANACEAE			
<i>Zeltnera venusta</i> (syn. <i>Centaurium venustum</i>)	charming centaury	H	Herb (A)
GERANIACEAE			
<i>Erodium botrys</i>	longbeak stork's bill	I	Herb (A/B)
<i>Erodium cicutarium</i>	redstem stork's bill	I	Herb (A/B)
<i>Geranium</i> sp. ³	cultivated geranium	I	Herb (P)

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
GROSSULARIACEAE			
<i>Ribes malvaceum</i>	chaparral current	N	Shrub
<i>Ribes speciosum</i>	fuchsiaflower gooseberry	N	Shrub
JUGLANDACEAE			
<i>Juglans californica</i>	Southern California walnut	N	Tree/Shrub
LAMIACEAE			
<i>Marrubium vulgare</i>	horehound	I	Herb/SS (P)
<i>Salvia columbariae</i>	chia	N	Herb (A)
<i>Salvia leucophylla</i>	San Luis purple sage	N	SS/Shrub
<i>Salvia mellifera</i>	black sage	N	SS/Shrub
<i>Salvia spathacea</i>	hummingbird sage	N	Herb (P)
<i>Scutellaria tuberosa</i>	Danny's skullcap	N	Herb (P)
<i>Stachys bullata</i>	California hedgenettle	N	Herb (P)
<i>Trichostema lanatum</i>	woolly bluecurls	N	SS/Shrub
<i>Trichostema lanceolatum</i>	vinegarweed	N	Herb (A)
LAURACEAE			
<i>Umbellularia californica</i>	California laurel	N	Tree/Shrub
LYTHRACEAE			
<i>Lythrum hyssopifolia</i>	hyssop loosestrife	I	Herb (A/B)
MALVACEAE			
<i>Malacothamnus fasciculatus</i>	Mendocino bushmallow	N	SS/Shrub
<i>Sidalcea malviflora</i>	dwarf checkerbloom	N	Herb/SS (P)
MONTIACEAE			
<i>Claytonia perfoliata</i>	miner's lettuce	N	Herb (A/P)
MYRSINACEAE			
<i>Anagallis arvensis</i>	scarlet pimpernel	I	Herb (A/B)
NYCTAGINACEAE			
<i>Mirabilis laevis</i> var. <i>crassifolia</i> (syn. <i>Mirabilis californica</i>)	California four o'clock	N	SS (P)
OLEACEAE			
<i>Fraxinus velutina</i> ³	velvet ash	N	Tree

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Scientific Name ¹	Common Name ²	Origin ²	Habit ²
ONAGRACEAE			
<i>Camissonia bistorta</i>	southern suncup	N	Herb (A/P)
<i>Camissonia californica</i>	California suncup	N	Herb (A/P)
<i>Camissonia hirtella</i>	Santa Cruz Island suncup	N	Herb (A)
<i>Camissonia micrantha</i>	miniature suncup	N	Herb (A)
<i>Clarkia purpurea</i>	winecup clarkia	N	Herb (A)
<i>Clarkia unguiculata</i>	elegant clarkia	N	Herb (A)
<i>Epilobium</i> sp.	willowherb	N	Herb (A)
PAEONIACEAE			
<i>Paeonia californica</i>	California peony	N	Herb (P)
PAPAVERACEAE			
<i>Dendromecon rigida</i>	tree poppy	N	Shrub/Tree
<i>Eschscholzia californica</i>	California poppy	N	Herb (A/P)
<i>Platystemon californicus</i>	creamcups	N	Herb (A)
PHRYMACEAE			
<i>Mimulus aurantiacus</i>	orange bush monkeyflower	N	Shrub/SS
<i>Mimulus brevipes</i>	widethroat yellow monkeyflower	N	Herb (A)
<i>Mimulus floribundus</i>	manyflowered monkeyflower	N	Herb (A)
<i>Mimulus guttatus</i>	seep monkeyflower	N	Herb (A/P)
<i>Mimulus pilosus</i>	false monkeyflower	H	Herb (A)
PLANTAGINACEAE			
<i>Antirrhinum coulterianum</i>	Coulter's snapdragon	N	Herb (A)
<i>Antirrhinum kelloggii</i>	Kellogg snapdragon	N	Herb (A)
<i>Antirrhinum multiflorum</i>	Sierra snapdragon	N	Herb/SS (A)
<i>Collinsia parryi</i>	Parry's blue eyed Mary	N	Herb (A)
<i>Keckiella cordifolia</i>	heartleaf Keckiella	N	Shrub/SS
<i>Penstemon centranthifolius</i>	scarlet bugler	N	H/SS (P)
<i>Penstemon spectabilis</i>	showy penstemon	N	H/SS (P)
<i>Plantago erecta</i>	dotseed plantain	N	Herb (A)
<i>Veronica peregrina</i>	neckweed	N	Herb (A)

APPENDIX C
List of Plant Species Observed

NASA SSFL2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name ¹	Common Name ²	Origin ²	Habit ²
PLATANACEAE			
<i>Platanus racemosa</i>	California sycamore	N	Tree
POLEMONIACEAE			
<i>Allophyllum divaricatum</i>	purple false gilyflower	N	Herb (A)
<i>Allophyllum glutinosum</i>	sticky false gilyflower	N	Herb (A)
<i>Eriastrum sapphirinum</i>	sapphire woollystar	N	Herb (A)
<i>Linanthus californicus</i> (syn. <i>Leptodactylon californicum</i>)	California prickly phlox	N	Herb/SS (P)
<i>Linanthus dianthiflorus</i>	fringed linanthus	N	Herb (A)
<i>Navarretia hamata</i>	hooked pincushionplant	N	Herb (A)
POLYGONACEAE			
<i>Chorizanthe staticoides</i>	Turkish rugging	N	Herb (A)
<i>Eriogonum elongatum</i>	longstem buckwheat	N	SS/Herb (P)
<i>Eriogonum fasciculatum</i> var. <i>fasciculatum</i>	Eastern Mojave buckwheat	N	SS/Shrub
<i>Eriogonum wrightii</i> var. <i>membranaceum</i>	bastardsage	N	SS/Shrub
<i>Persicaria</i> cf <i>hydropiperoides</i> (syn. <i>Polygonum hydropiperoides</i>)	swamp smartweed	N	Herb (P)
<i>Pterostegia drymarioides</i>	woodland pterostegia	N	Herb (A)
<i>Rumex crispus</i>	curly dock	I	Herb (P)
<i>Rumex salicifolius</i>	willow dock	N	Herb (P)
PRIMULACEAE			
<i>Dodecatheon clevelandii</i>	padre's shootingstar	N	Herb (P)
RANUNCULACEAE			
<i>Delphinium cardinale</i>	scarlet larkspur	N	Herb (P)
<i>Delphinium parryi</i>	San Bernardino larkspur	N	Herb (P)
RHAMNACEAE			
<i>Ceanothus crassifolius</i>	hoaryleaf ceanothus	N	Shrub
<i>Ceanothus oliganthus</i>	hairy ceanothus	N	Shrub
<i>Ceanothus spinosus</i>	redheart	N	Shrub
<i>Rhamnus ilicifolia</i>	hollyleaf redberry	N	Shrub

APPENDIX C
List of Plant Species Observed

NASA SSFL2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name ¹	Common Name ²	Origin ²	Habit ²
ROSACEAE			
<i>Adenostoma fasciculatum</i>	chamise	N	Shrub
<i>Cercocarpus betuloides</i>	birchleaf mountain mahogany	N	Shrub/Tree
<i>Hertermeles arbutifolia</i>	toyon	N	Shrub
<i>Drymocallis glandulosa</i> (syn. <i>Potentilla glandulosa</i>)	sticky cinquefoil	N	SS/Herb (P)
<i>Prunus dulcis</i> ³	sweet almond	I	Tree
<i>Prunus ilicifolia</i>	hollyleaf cherry	N	Tree/Shrub
<i>Rosa californica</i>	California wildrose	N	Shrub
<i>Rubus ursinus</i>	California blackberry	N	SS (P)
RUBIACEAE			
<i>Galium angustifolium</i>	narrowleaf bedstraw	N	Herb/SS (P)
<i>Galium aparine</i>	stickywilly	N	Herb (A)
<i>Galium cliftonsmithii</i>	Santa Barbara bedstraw	N	Shrub
<i>Galium nuttallii</i>	climbing bedstraw	N	SS/Shrub
<i>Galium parisiense</i>	wall bedstraw	I	Herb (A)
SALICACEAE			
<i>Populus fremontii</i>	Fremont cottonwood	N	Tree
<i>Salix exigua</i>	narrowleaf willow	N	Shrub/Tree
<i>Salix laevigata</i>	red willow	N	Tree
<i>Salix lasiolepis</i>	arroyo willow	N	Tree/Shrub
SAXIFRAGACEAE			
<i>Lithophragma affine</i>	San Francisco woodland-star	N	Herb (P)
SCROPHULARIACEAE			
<i>Scrophularia californica</i>	California figwort	N	Herb (P)
SIMAROUBACEAE			
<i>Ailanthus altissima</i> ⁴	tree of heaven	I	Tree
SOLANACEAE			
<i>Datura wrightii</i>	sacred thorn-apple	N	Herb (A/P)
<i>Nicotiana glauca</i>	tree tobacco	I	Shrub/Tree
<i>Solanum douglasii</i>	greenspot nightshade	N	Herb (P)
<i>Solanum xanti</i>	chaparral nightshade	N	Herb (P)

APPENDIX C
List of Plant Species Observed

NASA SSFL2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name ¹	Common Name ²	Origin ²	Habit ²
URTICACEAE			
<i>Hesperocnide tenella</i>	western stingingnettle	N	Herb (A)
<i>Parietaria hespera</i>	rillita pellitory	N	Herb (A/P)
<i>Urtica urens</i>	dwarf nettle	I	Herb (A)
VERBENACEAE			
<i>Verbena lasiostachys</i>	western vervain	N	Herb (P)
AGAVACEAE			
<i>Chlorogalum pomeridianum</i>	wavyleaf soap plant	N	Herb (P)
<i>Yucca gloriosa</i> ³	moundlily yucca	I	Tree/Shrub
<i>Yucca whipplei</i>	chaparral yucca	N	SS/Shrub
ARECACEAE			
<i>Phoenix sp.</i> ³	date palm	I	Tree
<i>Washingtonia robusta</i>	Washington fan palm	I	Tree
CYPERACEAE			
<i>Cyperus eragrostis</i>	tall flatsedge	N	Graminoid (P)
<i>Eleocharis macrostachya</i>	pale spikerush	N	Graminoid (P)
IRIDACEAE			
<i>Sisyrinchium bellum</i>	western blue-eyed grass	N	Herb (P)
JUNCACEAE			
<i>Juncus balticus</i>	mountain rush	N	Graminoid (P)
<i>Juncus bufonius</i>	toad rush	N	Graminoid (A)
<i>Juncus phaeocephalus</i>	brownhead rush	N	Graminoid (P)
<i>Juncus xiphioides</i>	irisleaf rush	N	Graminoid (P)
LILIACEAE			
<i>Calochortus plummerae</i> ⁷	Plummer's mariposa lily	N	Herb (P)
<i>Calochortus clavatus var. gracilis</i> ⁷	slender mariposa lily	N	Herb (P)
MELANTHIACEAE			
<i>Toxicoscordion fremontii</i> (syn. <i>Zigadenus fremontii</i>)	Fremont's deathcamas	N	Herb (P)
POACEAE			
<i>Agrostis pallens</i>	seashore bentgrass	N	Graminoid (P)
<i>Avena barbata</i>	slender oat	I	Graminoid (A)

APPENDIX C
List of Plant Species Observed

NASA SSFL2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name ¹	Common Name ²	Origin ²	Habit ²
<i>Avena fatua</i>	wild oat	I	Graminoid (A)
<i>Bromus carinatus</i>	California brome	N	Graminoid (A/P)
<i>Bromus diandrus</i> ⁴	ripgut brome	I	Graminoid (A)
<i>Bromus hordeaceus</i>	soft brome	I	Graminoid (A)
<i>Bromus madritensis</i> ssp. <i>rubens</i> ⁴	red brome	I	Graminoid (A)
<i>Bromus sterilis</i>	poverty brome	I	Graminoid (A)
<i>Chloris virgata</i>	feather fingergrass	I ⁸	Graminoid (A)
<i>Cynodon dactylon</i>	Bermudagrass	I	Graminoid (P)
<i>Elymus glaucus</i>	blue wildrye	N	Graminoid (P)
<i>Gastridium ventricosum</i>	nit grass	I	Graminoid (A)
<i>Hordeum murinum</i> ssp. <i>leporinum</i>	hare barley	I	Graminoid (A)
<i>Lamarckia aurea</i>	goldentop grass	I	Graminoid (A)
<i>Leymus condensatus</i>	giant ryegrass	N	Graminoid (P)
<i>Melica imperfecta</i>	smallflower melicgrass	N	Graminoid (P)
<i>Muhlenbergia microsperma</i>	littleseed muhly	N	Graminoid (A)
<i>Muhlenbergia rigens</i>	deergrass	N	Graminoid (P)
<i>Nassella lepida</i>	foothill needlegrass	N	Graminoid (P)
<i>Nassella pulchra</i>	purple needlegrass	N	Graminoid (P)
<i>Pennisetum setaceum</i> ⁴	crimson fountaingrass	I	Graminoid (P)
<i>Piptatherum miliaceum</i>	smilgrass	I	Graminoid (P)
<i>Poa annua</i>	annual bluegrass	I	Graminoid (A)
<i>Poa pratensis</i>	Kentucky bluegrass	I	Graminoid (P)
<i>Poa secunda</i>	Sandberg bluegrass	N	Graminoid (P)
<i>Polypogon monspeliensis</i>	annual rabbitsfoot grass	I	Graminoid (A)
<i>Schismus arabicus</i>	Arabian schismus	I	Graminoid (A)
<i>Vulpia bromoides</i>	brome fescue	I	Graminoid (A)
<i>Vulpia microstachys</i>	small fescue	N	Graminoid (A)
<i>Vulpia myuros</i> ssp. <i>myuros</i> ⁴	rat-tail fescue	I	Graminoid (A)

APPENDIX C
List of Plant Species Observed

NASA SSFL2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Scientific Name ¹	Common Name ²	Origin ²	Habit ²
THEMIDACEAE			
<i>Dichelostemma capitatum</i>	bluedicks	N	Herb (P)
TYPHACEAE			
<i>Typha domingensis</i>	southern cattail	N	Herb (P)

Notes:

N = Native

I = Introduced (non-native species that have become naturalized)

(A) = Annual

(B) = Biennial

(P) = Perennial

SS = Sub-Shrub

¹Taxonomy follows the currently accepted nomenclature for plant species occurring in California as indicated on the Jepson On-Line Interchange for California Floristics (University of California, 2011).

²Species common name, origin and grow habitat from the U.S. Department of Agriculture's Plants Database (2011).

³ Horticultural or landscape planting

⁴Noxious or invasive weed

⁵Taxonomic or nomenclatural synonym for taxon not occurring in California.

⁶Species was observed just outside of the NASA-administered property by Tarja Sagar.

⁷Special-status plant species

⁸Considered Native in the USDA Plants Databases, but is considered an introduced (naturalized) species in California, per the Jepson On-Line Interchange.

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Appendix D
Representative Photographs of the Site, Special-
status Plants, and Wildlife Species

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APPENDIX D

Representative Photographs of the Site, Special-status Plants, and Wildlife Species



B-1 Santa Susana tarplant (*Deinandra minthornii*)—August 18, 2011



B-2 Santa Susana tarplant (*Deinandra minthornii*)—August 18, 2011



B-3 Plummer's mariposa lily (*Calochortus plummerae*)—
June 27, 2011



B-4 Plummer's mariposa lily (*Calochortus plummerae*)—
June 27, 2011



B-5 View northeast of southern willow scrub in Alfa Area—April 2011



**B-6 Woodrat (*Neotoma* sp.) nest—
April 2011**



**B-7 Coast horned lizard (*Phrynosoma blainvillii*),
Area I—April 2011**



**B-8 Two striped garter snake (*Thamnophis hammondi*),
Area 1—April 2011**



B-9 Stick nest in sandstone cliff—April 2011



B-10 Red-tailed hawk (*Buteo jamaicensis*) nest—
April 2011



B-10 Dead canyon bat (*Parastrellus hesperus*),
Area II Alfa Site—August 2011



B-11 Western side-blotched lizard (*Uta stansburiana elegans*)—
April 2011



B-12 Western rattlesnake (*Crotalus oreganus helleri*), on roadway near the SPA Area—June 2011



B-13 California Striped Racer (*Masticophis lateralis lateralis*)—August 2011



B-14 Square-spotted blue (*Euphilotes battoides*)—June 2011



B-15 Lorquin's admiral (*Limenitis lorquini*)—April 2011

Appendix E
Wildlife Species Observed in 2010 and 2011

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APPENDIX E

Wildlife Species Observed in 2010 and 2011

APPENDIX E

Wildlife Species Observed in 2010 and 2011

NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Common Name	Scientific Name	2010	2011
Butterflies			
Quino Checkerspot ^{1,2}	<i>Euphydryas editha quino</i>	X	
Anise Swallowtail	<i>Papilio zelacaon</i>		X
Western Tiger Swallowtail	<i>Papilio rutulus</i>		X
Checkered White	<i>Pontia protodice</i>		X
Cabbage White	<i>Pieris rapae</i>		X
Orange Sulphur	<i>Colius carythene</i>		X
Square-spotted Blue	<i>Euphilotes battoides</i>		X
American Lady	<i>Vanessa virginiensis</i>		X
Lorquin's Admiral	<i>Limenitis lorquini</i>		X
Funereal Duskywing	<i>Erynnis funeralis</i>		X
Northern White-skipper	<i>Heliopetes ericetorum</i>		X
Herpetiles			
Northern Pacific Treefrog	<i>Pseudacris regilla</i>		X
Western Toad	<i>Anaxyrus [Bufo] boreas</i>	X	
Coast Horned Lizard ³	<i>Phrynosoma blainvillii</i>	X	X
Western Fence Lizard	<i>Sceloporus occidentalis</i>	X	X
California Whiptail	<i>Aspidoscelis tigris munda</i>	X	X
Mountain Garter Snake	<i>Thamnophis elegans elegans</i>	X	
Two-striped Garter Snake ³	<i>Thamnophis hammondi</i>		X
Ring-necked Snake	<i>Diadophis punctatus</i>	X	X
California Striped Racer	<i>Coluber [=Masticophis] lateralis lateralis</i>		X
Gopher Snake	<i>Pituophis catenifer</i>		X
Western Rattlesnake	<i>Crotalus oreganus helleri</i>	X	X
Birds			
Mallard	<i>Anas platyrhynchos</i>	X	X
California Quail	<i>Callipepla californica</i>	X	X

APPENDIX E
Wildlife Species Observed in 2010 and 2011
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Common Name	Scientific Name	2010	2011
Great Blue Heron	<i>Ardea herodias</i>	X	X
Green Heron	<i>Butorides virescens</i>	X	X
Turkey Vulture	<i>Cathartes aura</i>	X	X
Cooper's Hawk	<i>Accipiter cooperii</i>	X	X
Red-shouldered Hawk	<i>Buteo lineatus</i>	X	X
Red-tailed Hawk	<i>Buteo jamaicensis</i>	X	X
Ferruginous Hawk	<i>Buteo regalis</i>		X
American Kestrel	<i>Falco sparverius</i>	X	X
Rock Pigeon	<i>Columba livia</i>	X	X
Band-tailed Pigeon	<i>Patagioenas fasciata</i>	X	X
Mourning Dove	<i>Zenaida macroura</i>	X	X
Greater Roadrunner	<i>Geococcyx californianus</i>		X
Barn Owl	<i>Tyto alba</i>		X
Great Horned Owl	<i>Bubo virginianus</i>		X
White-throated Swift	<i>Aeronautes saxatalis</i>	X	X
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	X	X
Anna's Hummingbird	<i>Calypte anna</i>	X	X
Rufous/Allen's Hummingbird	<i>Selasphorus rufus/sasin</i>	X	X
Belted Kingfisher	<i>Megaceryle alcyon</i>	X	X
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	X	X
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	X	X
Northern Flicker	<i>Colaptes auratus</i>	X	X
Black Phoebe	<i>Sayornis nigricans</i>	X	X
Say's Phoebe	<i>Sayornis saya</i>	X	X
Western Kingbird	<i>Tyrannus verticalis</i>		X
Loggerhead Shrike ³	<i>Lanius ludovicianus</i>	X	X
Least Bell's Vireo ²	<i>Vireo bellii pusillus</i>		X
Cassin's Vireo	<i>Vireo cassinii</i>	X	X
Western Scrub-Jay	<i>Aphelocoma californica</i>	X	X
American Crow	<i>Corvus brachyrhynchos</i>	X	X
Common Raven	<i>Corvus corax</i>	X	X

APPENDIX E
Wildlife Species Observed in 2010 and 2011
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Common Name	Scientific Name	2010	2011
Oak Titmouse	<i>Baeolophus inornatus</i>	X	X
Red-winged Blackbird	<i>Agelaius phoeniceus</i>		X
Bushtit	<i>Psaltriparus minimus</i>	X	X
White-breasted Nuthatch	<i>Sitta carolinensis</i>	X	X
Pygmy Nuthatch	<i>Sitta pygmaea</i>	X	X
Rock Wren	<i>Salpinctes obsoletus</i>	X	X
Canyon Wren	<i>Catherpes mexicanus</i>	X	X
Bewick's Wren	<i>Thryomanes bewickii</i>	X	X
House Wren	<i>Troglodytes aedon</i>	X	X
Wrentit	<i>Chamaea fasciata</i>	X	X
Northern Mockingbird	<i>Mimus polyglottos</i>	X	X
California Thrasher	<i>Toxostoma redivivum</i>	X	X
Orange-crowned Warbler	<i>Vermivora celata</i>	X	X
Yellow-rumped Warbler	<i>Dendroica coronata</i>	X	X
MacGillivray's Warbler	<i>Oporornis tolmiei</i>	X	X
Wilson's Warbler	<i>Wilsonia pusilla</i>	X	X
Spotted Towhee	<i>Pipilo maculatus</i>	X	X
California Towhee	<i>Melospiza crissalis</i>	X	X
Song Sparrow	<i>Melospiza melodia</i>		X
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i>	X	X
Lark Sparrow	<i>Chondestes grammacus</i>	X	X
Fox Sparrow	<i>Passerella iliaca</i>	X	X
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	X	X
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	X	X
Blue Grosbeak	<i>Passerina caerulea</i>		X
House Finch	<i>Carpodacus mexicanus</i>	X	X
American Goldfinch	<i>Spinus tristis</i>	X	X
<i>Mammals</i>			
Canyon Bat	<i>Parastrellus hesperus</i>		X
Botta's Pocket Gopher	<i>Thomomys bottae</i>		X
Desert Cottontail	<i>Sylvilagus audubonii</i>	X	X

APPENDIX E
Wildlife Species Observed in 2010 and 2011
NASA SSFL 2011 Supplemental Biological Surveys of NASA-Administered Property at Santa Susana Field Laboratory

Common Name	Scientific Name	2010	2011
Woodrat	<i>Neotoma sp.</i>		X
California Ground Squirrel	<i>Spermophilus beecheyi</i>	X	X
Ring-tailed cat ⁴	<i>Bassariscus astutus</i>	X	
Raccoon	<i>Procyon lotor</i>	X	X
Coyote	<i>Canis latrans</i>	X	X
Bobcat	<i>Felis rufus</i>	X	X
Mountain Lion	<i>Felis concolor</i>	X	X
California Mule Deer	<i>Odocoileus hemionus californicus</i>	X	X
Wild Pig	<i>Sus scrofa</i>	X	X
Gray fox	<i>Urocyon cinereoargenteus</i>		X
Vole species	<i>Microtus sp.</i>	X	X
Mouse species	Rodentia		X

Notes:

¹ Tentative species identification

² Federally listed endangered species

³ California Species of Concern

⁴ California Fully Protected Species

Appendix 3.2B
Endangered Species Act Section 7 Biological
Assessment

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United States Department of the Interior



FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2013-I-0372

December 13, 2013

Allen Elliott, Santa Susana Program Director
National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

Subject: Demolition and Cleanup of National Aeronautics and Space Administration-
Administered Portions of the Santa Susana Field Laboratory, Ventura County,
California

Dear Mr. Elliott:

We are responding to your request, dated July 11, 2013, and revised on November 6, 2013, for our concurrence with your determination that the demolition and cleanup activities at the National Aeronautics and Space Administration's (NASA) property at the Santa Susana Field Laboratory (SSFL) in Ventura County, California, may affect, but is not likely to adversely affect the federally endangered least Bell's vireo (*Vireo bellii pusillus*), Bruanton's milk-vetch (*Astragalus brauntonii*) and Riverside fairy shrimp (*Streptocephalus woottoni*), and the federally threatened California red-legged frog (*Rana draytonii*) and vernal pool fairy shrimp (*Branchinecta lynchi*). Your request and our response are made pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act).

You have also determined that the proposed project will have no effect on the federally endangered Quino checkerspot butterfly (*Euphydryas editha quino*) and Lyon's pentachaeta (*Pentachaeta lyonii*), and the federally threatened coastal California gnatcatcher (*Polioptila californica californica*), spreading navarretia (*Navarretia fossalis*), California Orcutt grass (*Orcuttia californica*), Conejo dudleya (*Dudleya abramsii* ssp. *parva*), Santa Monica Mountains dudleya (*Dudleya cymosa* ssp. *ovatifolia*), Marcescent dudleya (*Dudleya cymosa* ssp. *marcescens*), and the candidate San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*). As NASA and the U.S. Fish and Wildlife Service (Service) are not required to consult on species for which NASA has determined that the project will have no effect, this letter will not address these species further.

The purpose of the proposed action is to remediate the environment to a level that meets NASA's environmental cleanup responsibilities and to undertake the demolition actions necessary to support both remediation and property disposition of the NASA-administered portion of the SSFL. On December 6, 2010, NASA and the Department of Toxic Substance Control executed an Administrative Order of Consent (AOC) that stipulates specific remedial requirements, including the characterization and cleanup of soil contamination on the NASA-administered

areas of SSFL to background concentrations. The cleanup of groundwater beneath SSFL and of surface water is not stipulated in the AOC. In December 2009 the Regional Water Quality Control Board issued an order to NASA and Boeing to improve the quality of storm water discharges by removing contaminated sediments associated with two outfalls. Storm water from the NASA-administered property exits SSFL through one of the two outfalls. Demolition and cleanup activities would occur on 451.2 acres, designated as Area I, the Liquid Oxygen Area II, as well as additional outlying areas that would be affected by NASA's proposed activities (Figure 1).

The project description presented in NASA's Biological Assessment (NASA 2013) describes the proposed action as it appears in the Environmental Impact Statement (EIS). A number of potential treatment options are presented in the EIS, although currently it has not been decided which specific treatments would be used. Potential groundwater cleanup technologies that could be implemented include pump and treat, vacuum extraction, iron particle injection, heat-driven extraction, in-situ chemical oxidation, in-situ enhanced bioremediation, monitored natural attenuation and institutional controls. The potential methods for soil cleanup are presented in Table 1.

NASA conducted field surveys including vegetative community mapping, plant surveys, wildlife surveys, and wetland delineation between 2010 and 2012. These field surveys included species-specific surveys for Braunton's milk-vetch throughout the project area, a habitat assessment and surveys for California red-legged frogs, and opportunistic surveys for least Bell's vireos, Riverside fairy shrimp and vernal pool fairy shrimp as described further below.

Braunton's milk-vetch

Braunton's milk-vetch and its critical habitat occurs within Area IV and the undeveloped areas of SSFL, administered by the Department of Energy. Targeted surveys for Braunton's milk-vetch were conducted on NASA-administered properties of SSFL during 2010 and 2011. Reference locations within SSFL were visited prior to the surveys on the NASA properties in order to calibrate the biologist's search image for these plants. No Braunton's milk-vetch were observed within areas that are subject to NASA-administered cleanup activities; however, soil conditions indicate that suitable habitat may exist in the northeastern portion of NASA's Area II and in the southern portion of Area I.

California red-legged frog

California red-legged frogs and their critical habitat occur south of NASA administered portions of SSFL in Las Virgenes Canyon and upper Las Virgenes Creek. A habitat assessment was conducted on NASA-administered portions of the property in 2012 in accordance with the Service's guidance (Service 2005), and opportunistic surveys for the species were conducted in 2010, 2011, and 2012 during reconnaissance activities in suitable habitat. The habitat assessment indicated that suitable habitat for the California red-legged frog exists primarily around the R-2 ponds and the detention basin north of the Coca test stand. No individuals were detected during any survey and assessment activities; however, suitable habitat exists on the site that could support California red-legged frogs at some point during the project duration.

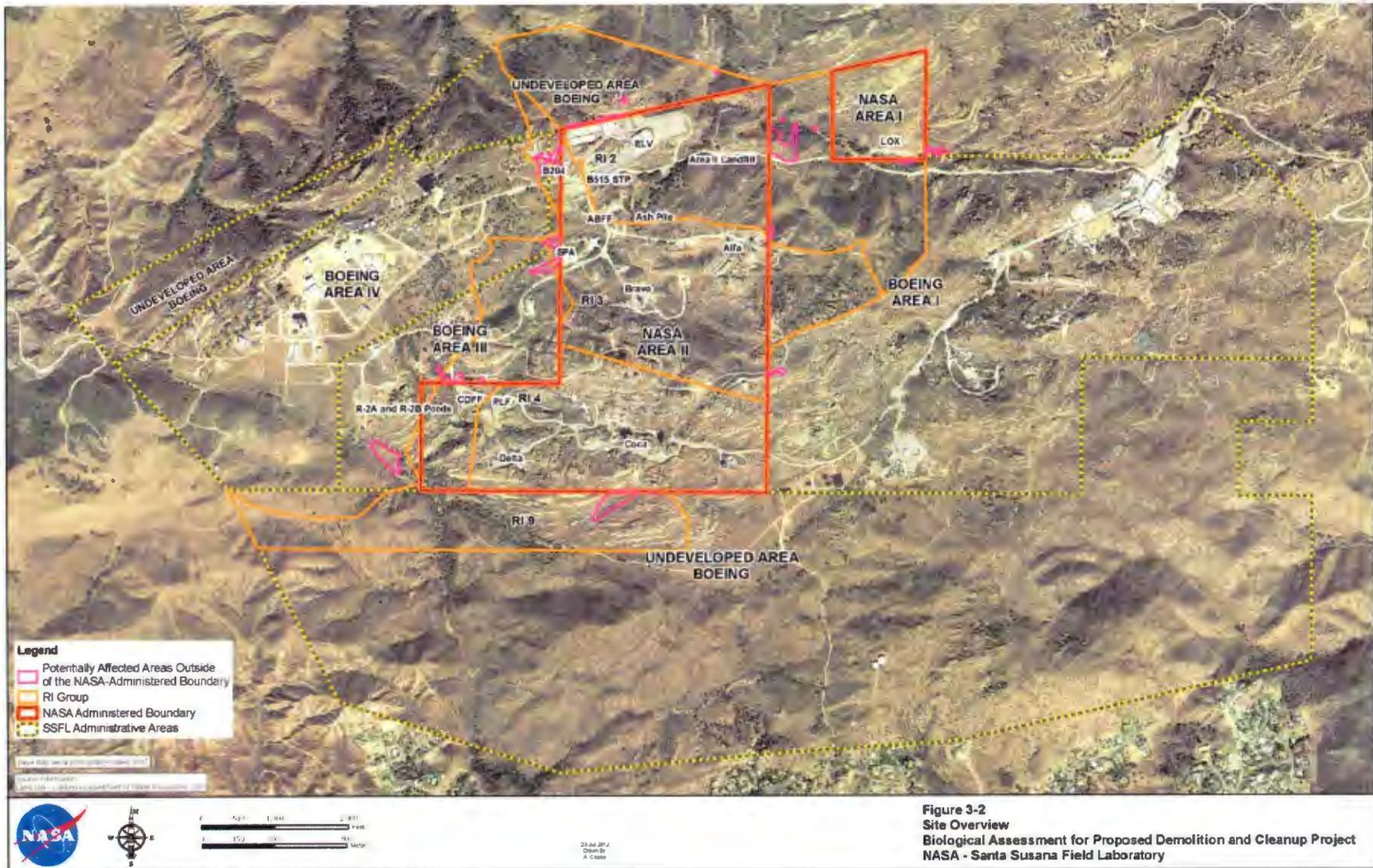


Figure 1. Site overview with NASA-administered lands outlined in Red (NASA 2013).

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Table 1. Soil Remediation Technologies (NASA 2013).

Technology	Constituent Treatment	Excavation	Site Restoration	Onsite Trucks	Stockpiling	Offsite Trucks	Permits Required?	Construction	Energy Needs	Monitoring	Duration
Excavation and Offsite Disposal	All	Yes	Backfilling and reseed with native grasses	Yes	Yes	Yes	No	Staging Area	No	No	Excavation - Several Years Transport - 5 to 10 years
Excavation, Onsite CAMU, and Encapsulation	All	Yes	Backfilling and reseed with native grasses	Yes	Yes	No	Landfill Siting Permit	CAMU	No	Yes	Excavation - Several Years CAMU - 18 months
Soil Vapor Extraction	VOCs	No	No	Yes	No	No	VOC Emission Permit	SVE Wells	Yes	Yes	Months to Years
Ex-situ Treatment Using Land Farming	VOCs	Yes	Replacement of soils and reseed with native grasses	Yes	Yes	No	No	Staging/ Treatment Area	No	Yes	Months to Years
Ex-situ Treatment Using Thermal Desorption	VOCs, SVOCs	Yes	Replacement of soils and reseed with native grasses	Yes	No	No	VOC/ SVOC Emission Permit	Temporary Thermal Desorption Chamber	Yes	Yes	Months to Years
In-situ Physical Treatment Using Soil Mixing	VOCs, SVOCs	No	Grading of disturbed soils	Yes	No	No	Injection Permit	No	No	Yes	Months to Years
In-situ Chemical Oxidation or Reduction	VOCs, SVOCs	No	Grading of disturbed soils	Yes	No	No	Injection Permit	Injection Wells or Boreholes	No	Yes	Months to Years
In-situ Anaerobic or Aerobic Biological Treatment	VOCs, SVOCs	No	Grading of disturbed soils	Yes	No	No	Injection Permit	Injection Wells or Boreholes	No	Yes	Months to Years
Phytoremediation	VOCs, some metals, and PCBs	No	Yes	Yes	No	No	No	Tree/Vegetation Planting	No	Yes	Decades
Monitored Natural Attenuation	VOCs, SVOCs	No	N/A	No	No	No	No	No	No	Yes	Hundreds of Years

Notes:

CAMU = corrective action management unit

N/A = not applicable

PCB = polychlorinated biphenyl

SVOC = semivolatile organic compound

VOC = volatile organic compound

Least Bell's vireo

Least Bell's vireos are known to occur within Ventura County in the Calleguas Creek and Santa Clara River watersheds. The closest reported nesting location occurs approximately 9 miles northwest of the site. Habitat for least Bell's vireo within NASA's portion of SSFL consists of approximately 2.1 acres of fragmented mulefat riparian scrub, of this approximately 1.5 acres may be impacted by the cleanup. Opportunistic surveys for least Bell's vireos were conducted during 2010 and 2011. A single least Bell's vireo was sighted during August 2011, and was determined to possibly be a migrating individual.

Riverside and vernal pool fairy shrimp

Suitable habitat for Riverside and vernal pool fairy shrimp typically consists of vernal pool features, which usually occur in areas of heavy clay. The predominant soil type at SSFL is sand, and prominent rock outcrops covering the landscape are sandstone features. No vernal pools exist in the project area. Surveys conducted in 2010 and 2011 indicated that suitable habitat may exist for the Riverside and vernal pool fairy shrimp within the project area, near small rock basins in sandstone outcrops and two seasonally ponded wetland areas. Opportunistic surveys for the Riverside and vernal pool fairy shrimp were conducted in January 2012; however, due to low winter rainfall, the basins were dry. Although the species were not observed during surveys, Riverside and vernal pool fairy shrimp have the potential to occur within the project area. However, the quality and quantity of suitable habitat appears to be very limited onsite.

NASA proposes to implement the following measures to avoid adverse effects to listed species from the proposed project:

1. NASA will conduct protocol-level surveys in suitable habitats for least Bell's vireo prior to the anticipated construction startup date. If the surveys indicate the presence of least Bell's vireos, then consultation with the Service will be initiated before clearing or any construction activities that may adversely affect least Bell's vireo begin;
2. NASA will conduct protocol-level surveys within suitable habitat for California red-legged frogs before the anticipated construction startup date and during construction. If the surveys indicate the presence of the California red-legged frog before or during construction, then any construction activities that could adversely affect the species will be halted and consultation with the Service will be initiated before construction activities are restarted;
3. NASA will conduct surveys for Braunton's milk-vetch in suitable habitat prior to construction and will avoid any occurrence of the species during construction by erecting fences and demarcating exclusion areas; and
4. NASA will avoid the rock basins where Riverside and vernal pool fairy shrimp may occur during construction. The rock basins will not be affected by excavation for soil remediation. Where rock basins occur near construction areas, exclusion fencing will be set up. Consultation with the Service will occur if the rock basins are to be affected.

We concur with your determination that the proposed project may affect, but is not likely to adversely affect, the least Bell's vireo, California red-legged frog, Braunton's milk-vetch, Riverside fairy shrimp and vernal pool fairy shrimp. Our concurrence is based on the following:

Braunton's milk-vetch

- Braunton's milk-vetch is not known to occur within the portion of SSFL subject to cleanup by NASA; and
- NASA proposes to conduct surveys in suitable habitat prior to construction and will avoid any occurrences of the species.

California red-legged frog

- Suitable habitat for California red-legged frogs within the project area is of limited quantity and the species has not been previously documented within the project area; and
- NASA will conduct surveys in accordance with Service guidance in all suitable habitats prior to construction and will initiate formal consultation if the species is detected.

Least bell's vireo

- The suitable habitat for least Bell's vireo within the project area is of limited quality and quantity, and nesting has not been previously documented within the project area; and
- NASA will conduct surveys in accordance with Service guidance in all suitable habitats prior to construction and will initiate formal consultation if the species is detected.

Riverside and vernal pool fairy shrimp

- The suitable habitat for Riverside and vernal pool fairy shrimp within the project area is of limited quality and quantity, and the species was not observed during opportunistic surveys;
- Rock basins, where the species may occur, will be avoided completely during construction. Where rock basins occur near construction areas, exclusion fencing will be erected. The rock basins will not be affected by excavation for soil remediation during SSFL project activities; and
- Additional dialogue and consultation with the Service will occur if rock basins would be affected.

This concludes informal consultation on the subject project pursuant to section 7(a)(2) of the Act. If the proposed action changes in any manner or if new information reveals that listed species in the project area may be affected by the proposed action, NASA should contact us

Allen Elliott

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immediately and suspend all activities that may affect listed species until the appropriate level of consultation is completed. If you have any questions regarding this letter, please contact Jenny Marek of my staff at (805) 644-1766, extension 325.

Sincerely,



Jeff Phillips

Deputy Assistant Field Supervisor

cc:

John Jones, Department of Energy

Ray Leclerc, California Department of Toxic Substance Control

Mary Meyer, California Department of Fish and Wildlife

REFERENCES

- National Aeronautics and Space Administration. 2013. Biological Assessment for the Demolition and Cleanup Project at Santa Susana Field Laboratory in Ventura County, California. George C. Marshall Space Flight Center, Huntsville, Alabama. Dated November 2013.
- U.S. Fish and Wildlife Service. 2005. Revised guidance on site assessment and field surveys for the California red-legged frog.

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812



November 6, 2013

Reply to Attn of: AS01

Ms. Jenny Marek
U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003

Re: Final Biological Assessment

Dear Ms. Marek:

Thank you for your recent clarifications on the Biological Assessment (BA) for NASA's portion of the Santa Susana Field Laboratory (SSFL). A CD with the revised BA addressing those clarifications is enclosed and submitted as part of our consultation under Section 7 of the Endangered Species Act. We look forward to the U.S. Fish and Wildlife Biological Opinion for this project.

Please contact me at 256-544-0662 or allen.elliott@nasa.gov should you have any questions regarding this matter.

Thank You,

A handwritten signature in blue ink that reads "Allen Elliott".

Allen Elliott
Santa Susana Program Manager

cc: Amy Keith/AS10
Beth Vaughan/CH2M HILL

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812



July 11, 2013

Reply to Attn of:

AS01

Ms. Jenny Marek
U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003

Ms. Marek:

Thank you for your review and comments on the Biological Assessment (BA) for NASA's portion of the Santa Susana Field Laboratory (SSFL). We appreciate your time on the call on February 15 to discuss your review comments. The revised BA addressing those comments is attached and submitted as part of our consultation under Section 7 of the Endangered Species Act. We look forward to the U.S. Fish and Wildlife (FWS) Biological Opinion for this project.

Your comments were addressed in the revised BA as summarized below:

Least Bell's vireo (section 7.1.1)

Comment: Although the amount of suitable habitat for least Bell's vireo that would be affected by demolition and cleanup is small (1.5 acres) and fragmented, the identification of a transient least Bell's vireo at the site combined with the overall expansion of the species in Ventura County, indicates that the species may be found at the site in the future. NASA has proposed generalized measures to minimize the effects of the project on the species, specifically, the establishment of 500 ft. buffers around any active nests.

The BA does not state whether surveys would be conducted to identify any least Bell's vireo nests, and what the nature of those surveys would be. We recommend that for any demolition and cleanup activities that will be conducted during the breeding season (generally April 15 – September 15) in suitable habitat for the species, that NASA perform surveys in accordance with Fish and Wildlife Service guidance (FWS). Please let me know whether this is acceptable or if you propose an alternative survey methodology.

Response: With respect to least Bell's vireo, it was agreed that FWS would accept the surveys to date that indicate that no least Bell's vireo are currently present; however, least Bell's vireo protocol surveys (USFWS 2001) will be conducted in areas with suitable habitat prior to construction where brush clearing activities will occur.

Comment: We also need to clarify what will happen if the species is detected during these surveys. The text referenced above indicates that NASA proposes to establish buffers of at least 500 feet around any active nests. When buffers are proposed we also recommend that a qualified biologist (i.e. one that is familiar with the species) monitor the nest to ensure that the buffer area is being preserved and to also ensure that the buffer is sufficient to avoid adverse effects to the nest. The problem is that if a bird is flushed or if a nest is abandoned, then that is considered to be an "adverse effect" and potentially "take" of the species. We generally do not concur that

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actions that require a 500 foot buffer around active least Bell's vireo nest are "not likely to adversely affect" the species.

There are a few options that you have for addressing this issue:

1. NASA may include a provision to work outside of the breeding season for Least Bell's vireos (i.e., no work in suitable habitat between April 15 -- September 15), and we would concur with your "not likely to adversely affect" determination for the species.
2. NASA may propose to conduct surveys in accordance with FWS guidance prior to working in suitable habitat during the breeding season, and may proceed with work only if the species is not detected. If the species is detected, you would need to post-pone work until nesting is complete. Under this scenario, we would concur with your "not likely to adversely affect" determination.
3. If you would like to preserve the ability to work within the breeding season, we recommend that NASA change its effects determination for least Bell's vireo to "likely to adversely affect" and we can issue a biological opinion and incidental take statement that would allow you to conduct activities with the above-described buffers and biological monitoring in place.

Response: NASA will follow Option 2 above, where the effect determination will remain as "not likely to adversely affect". However, if subsequent survey data indicate the presence of nesting least Bell's vireo, then an Incidental Take Permit (ITP) for this species will be sought if construction is to occur during the nesting season.

California red-legged frog (Section 7.1.2)

Comment: The BA states, "Although no signs of the red-legged frog were observed during the surveys, the habitat could support red-legged frog, and therefore, its presence is assumed." NASA proposes to avoid affecting California red-legged frog habitat where possible, and to have a qualified biologist monitor work in these areas when avoidance is not possible.

Please clarify what would happen if the biologist detected a California red-legged frog onsite. There are a couple of options:

1. NASA may propose to stop any activities that could injure or kill the California red-legged frog until it has left the area on its own, and we would be able to concur with your "not likely to adversely affect" determination.
2. NASA may propose to relocate California red-legged frogs to an alternative suitable habitat, which would require NASA to change the effects determination to "likely to adversely affect" and FWS to issue a biological opinion and incidental take statement.

Response: With respect to California red-legged frogs, it was agreed that FWS would accept the surveys to date that indicate that no California red-legged frogs are currently present on NASA-administered property at SSFL and that a "not likely to adversely affect" determination is appropriate at this time. However, to assure that the unlikely event of California red-legged frog migration into the proposed work areas has not occurred, pre-construction surveys (USFWS 2005) and construction monitoring will be done. If California red-legged frog is discovered in proposed work zones, then construction activities would be immediately halted and consultation initiated with the FWS to determine an appropriate response, which could include seeking an ITP for California red-legged frog.

Vernal pool branchiopods (vernal pool fairy shrimp and riverside fairy shrimp) (Section 7.1.3)

Comment: The BA states that federally listed vernal pool branchiopods are inferred to be present and could exist in rock outcrops at SSFL. NASA proposes to avoid rock basis that contain pools

suitable for vernal pool branchiopod species, but states, "in the unlikely event that rock basins are affected during SSFL project activities, primarily, excavation during soil remediation, it is likely they would be destroyed. In this event, NASA will provide compensation to the USFWS for this loss and/or mitigation."

We cannot concur with a "not likely to adversely affect" determination for vernal pool branchiopod species if there is a potential for occupied habitat (and the individuals that live there) to be destroyed. There are a couple of options for addressing this issue:

1. NASA may propose to conduct surveys according to FWS guidance for vernal pool branchiopods prior to working in areas where occupied habitat could be affected, and if vernal pool branchiopods are detected, NASA must take measures to ensure that you will not destroy or adversely affect the species, and we will concur with the "not likely to adversely affect" determination.
2. NASA may change your effects determination to "likely to adversely affect" and FWS will issue a biological opinion that considers the potential destruction of occupied vernal pool branchiopod habitat.

Response: NASA has revised the language in the BA to state that no work will occur in the rock outcrop areas where the rock basins, representing potential vernal pool crustacean habitat, are located. NASA also has added text to the BA discussing dust control during construction as a mitigation measure to minimize sediment contamination in the rock basins. Based on these changes, the final determination of impact will be changed to state that there will be "no effect" to these species.

Please contact me at 256-544-0662 if you have any questions about this.



Allen Elliott
Santa Susana Program Director

Enclosure

Cc: Amy Keith/AS10
Beth Vaughan/CH2M HILL

Final

**Biological Assessment
for the Demolition and Cleanup
Project at Santa Susana Field
Laboratory in Ventura County,
California**

Prepared for
National Aeronautics and Space Administration
Huntsville, Alabama

November 2013

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Acronyms and Abbreviations

AIP	Agreement in Principle
AOC	Administrative Order on Consent
BA	Biological Assessment
bgs	below ground surface
Boeing	The Boeing Company
°C	degrees Celsius
CalEPA	California Environmental Protection Agency
CAMU	corrective action management unit
CCR	<i>California Code of Regulations</i>
CDFG	California Department of Fish and Game
CECR	Construction and Environmental Compliance and Restoration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFOU	Chatsworth Formation Operable Unit
CFR	<i>Code of Federal Regulations</i>
CHSC	California Health and Safety Code
cm	centimeter
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CoF	Construction of Facilities
CRLF	California red-legged frog
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
DTSC	Department of Toxic Substances Control
ECP	Erosion Control Plan
EIS	Environmental Impact Statement
ELV	Expendable Launch Vehicle
ESA	Endangered Species Act
°F	degrees Fahrenheit
FML	flexible membrane liner
FSP	Field Sampling Plan
ft	feet
GAC	granular activated carbon
GETS	groundwater extraction and treatment system
GIS	geographic information system
GPS	global positioning system
GSA	General Services Administration
ha	hectare
in litt.	in litteris (in correspondence)
km	kilometer
LOX	liquid oxygen
m	meter
MBTA	Migratory Bird Treaty Act
mL	milliliter
MNA	monitored natural attenuation
NAA	North American Aviation
NASA	National Aeronautics and Space Administration

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resource Conservation District
NRPH	National Register of Historic Properties
O&M	operation and maintenance
PCB	polychlorinated biphenyl
PLF	Propellant Loading Facility
RCRA	Resource Conservation and Recovery Act
RFS	Riverside fairy shrimp
RI	Remedial Investigation
RL	reporting limit
ROI	radius of influence
SAIC	Science Applications International Corporation
SCAQMD	South Coast Air Quality Management District
SMOU	Surficial Media Operable Unit
SPA	Storable Propellant Area
SRAM	Standardized Risk Assessment Methodology
SSFL	Santa Susana Field Laboratory
SVE	soil vapor extraction
SVOC	semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TAIC	Technology Associates International Corporation
TCE	trichloroethene
U.S.C.	United States Code
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VCAPCD	Ventura County Air Pollution Control District
VPFS	vernal pool fairy shrimp
VOC	volatile organic compound
yd ³	cubic yard
ZVI	zero valent iron

SECTION 1

Purpose and Summary of Effects

The purpose of this Section 7 Consultation package is to review the National Aeronautics and Space Administration's (NASA's) proposal for demolition and environmental cleanup activities at the Santa Susana Field Laboratory (SSFL) Project in sufficient detail to evaluate the potential effects of the Proposed Action on threatened, endangered, proposed, or sensitive species and designated or proposed critical habitats discussed in this report. In addition, the following information is provided to comply with statutory requirements using the best scientific and commercial information available when assessing the risks posed to listed and/or proposed species and designated and/or proposed critical habitats by proposed federal actions. This Section 7 initiation package is prepared in accordance with legal requirements set forth under regulations implementing Section 7 of the Endangered Species Act (ESA) (50 *Code of Federal Regulations* [CFR] 402; 16 United States Code [U.S.C.] 1536 (c)).

In preparation of the SSFL Project and before official consultation with the U.S. Fish and Wildlife Service (USFWS), NASA conducted rare plant studies, opportunistic wildlife surveys, and a wetland delineation over a 2-year period. Before the field surveys, NASA obtained an inventory of federally listed and proposed-for-listing plant and animal species potentially occurring within the Action Area (the NASA-administered property within SSFL and outlying areas that would be affected by NASA's proposed environmental cleanup activities) from the USFWS Species List Database (USFWS, 2012a) for the U.S. Geological Survey (USGS) 7.5-minute quadrangle Calabasas. In addition, the California Natural Diversity Database (CNDDDB) (2010; 2011; 2012) and the California Native Plant Society (CNPS) were consulted for known occurrences of listed species in the Action Area and vicinity. Protocol-level rare plant surveys and opportunistic wildlife surveys were conducted in the fall of 2010 and spring and summer of 2011 surveys (NASA, 2011a; 2011b). A Wetland and Waters of the United States Delineation (Wetland Delineation) was conducted in January 2012 (NASA, 2012). During this survey, a habitat assessment for the California red-legged frog (CRLF) was conducted and surveys for vernal pool fairy shrimp (VPFS) and Riverside fairy shrimp (RFS) were conducted. A Quino Checkerspot Butterfly survey was conducted in March 2012. The results of the surveys are incorporated into this Biological Assessment (BA).

1.1 Summary of Effects

1.1.1 Findings for Federally Listed and Proposed Threatened and Endangered Species

In response to NASA's December 27, 2011, request for a species list for federally listed species and critical habitats that might occur at or near portions of SSFL, the USFWS generated a list (January 6, 2012) comprising eight plants, two birds, one amphibian, and three invertebrates. Using this list as a baseline to meet requirements under Section 7 of the ESA, the assessment concluded that suitable habitat found within the Action Area was inferred to be occupied by federally endangered Least Bell's vireo (*Vireo belli pusillus*), federally threatened CRLF (*Rana draytonii*), federally threatened VPFS (*Branchinecta lynchi*), and federally endangered Riverside fairy shrimp (*Streptocephalus woottoni*). Given the conservation measures described in this document and/or the locations of potential occurrence of these species to the SSFL Project footprint, the Project might affect, but is not likely to adversely affect, these species. The federally endangered Braunton's milk-vetch (*Astragalus brauntonii*) was not observed in the Action Area during the protocol-level surveys; however, because soil conditions indicate that habitat could be supported in the Action Area, it is included in this analysis. The SSFL Project might affect, but is not likely to affect, the Braunton's milk-vetch.

Federally endangered Lyon's petachaeta (*Pentachaeta lyonii*), federally threatened Spreading Navarretia (*Navarretia fossalis*), federally threatened California orcutt grass (*Orcuttia californica*), federal candidate species San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), federally threatened Conejo dudleya (*Dudleya abramsii* ssp. *parva*), federally threatened Santa Monica Mountains dudleya (*Dudleya cymosa* ssp.

Ovatifolia), and federally threatened Marcescent dudleya (*Dudleya cymossa* ssp. *Marcescens*) potentially could occur in the general vicinity of the project. However, these species were not identified during the protocol-level rare plant surveys conducted in the spring, summer, and late summer/fall 2011. Therefore, the SSFL Project is not likely to adversely affect these species and they are not discussed further in this document.

Although the federally endangered Quino checkerspot butterfly (*Euphydryas editha quino*) potentially was observed in 2010, the results of species-specific surveys conducted in July 2011 and March 2012 indicated that the existing habitat conditions for the Quino checkerspot butterfly within the study sites at NASA-administered Areas I (LOX Plant Area) and II are of such poor quality that the species is not likely to be present. Appendix A provides the complete habitat assessment for the Quino checkerspot butterfly. Therefore, this species is not discussed further in this document.

Although the federally threatened Coastal California gnatcatcher (*Polioptila californica californica*) potentially could occur in the general vicinity of the project, no suitable habitat exists in the Action Area. Ventura County is at the northwestern extent of the California gnatcatcher's range and contains relatively low numbers in comparison to other counties in the region. At least one observation of California gnatcatcher has been recorded within the Santa Monica Mountains, but most known occurrences in Ventura County are clustered around the Moorpark area. California gnatcatchers tend to be more abundant near coastal sage scrub-grassland interface than where coastal sage scrub grades into chaparral. Areas of dense scrub are occupied less frequently than more open sites. The coastal sage-scrub habitat at SSFL was mostly adjacent to chaparral, sandstone bluffs, and ruderal areas near existing buildings rather than grassland, and therefore, is not considered prime habitat. No gnatcatchers were seen or heard during any of the surveys conducted and the CNDDDB inquiry did not identify any sightings in the vicinity of SSFL. Therefore, this species is not discussed further in this document. Table 1-1 lists the species discussed previously.

TABLE 1-1
Listing Status of Federal Species
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Species	Listing Status	Determination
Quino checkerspot butterfly	Endangered	No effect
California red-legged frog	Threatened	Not likely to adversely affect
Vernal pool fairy shrimp	Threatened	Not likely to adversely affect
Riverside fairy shrimp	Endangered	Not likely to adversely affect
Least Bell's vireo	Endangered	Not likely to adversely affect
Braunton's milk-vetch	Endangered	Not likely to adversely affect
Coastal California gnatcatcher	Threatened	No effect
Lyon's petachaeta	Endangered	No effect
Spreading Navarretia	Threatened	No effect
California orcutt grass	Threatened	No effect
San Fernando Valley spineflower	Candidate	No effect
Conejo dudleya	Threatened	No effect
Santa Monica Mountains dudleya	Threatened	No effect
Marcescent dudleya	Threatened	No effect

1.1.2 California Department of Fish and Game Species

The California state rare Santa Susana tarplant (*Deinandra minthornii*), also known as tarweed, occurred in more than 3,600 documented locations within the Action Area at SSFL during the fall 2010 survey. Although this plant is not a federally listed species, it potentially could become listed within the duration of the project, and therefore will be analyzed in this document. Given the conservation measures described in this document and/or locations of potential occurrence of these species to the project footprint, the SSFL Project might affect, but is not likely to adversely affect, this species.

1.1.3 Critical Habitat

No critical habitat occurs within the Action Area.

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Consultation to Date

2.1 U.S. Fish and Wildlife Service with Input from California Department of Fish and Game

2.1.1 Informal Consultation

NASA sent letters to the USFWS, California Department of Fish and Game (CDFG), and U.S. Army Corps of Engineers (USACE) on August 12, 2011, providing a brief introduction of the project and a summary of biological issues at the site.

A coordination meeting among NASA, USFWS, and CDFG was held on December 1, 2011, to introduce the SSFL Environmental Impact Statement (EIS) and to develop a dialogue and plan for successfully completing Section 7 activities associated with NASA's EIS for SSFL. Participants included Amy Keith and Jeremiah Kolb of NASA, Leslie Tice and Gary Santolo of CH2M HILL, Jenny Marek of USFWS, and Mary Meyers of CDFG. Past biological surveys, including habitat and wildlife surveys and protocol-level rare plant surveys, were discussed. The initial schedule for the BA and timeline for Section 7 Consultation with the USFWS also were discussed. This subsection provides details of those discussions.

On December 21, 2011, NASA sent the USFWS a letter requesting a species list pertaining to the NASA-administered property at SSFL. The USFWS responded with the list and informal consultation was initiated.

A conference call was conducted on February 15, 2013, with Jenny Marek of USFWS; Allen Elliot of NASA; and Gary Santolo, Steve Long, Laurel Karren, and Beth Vaughn of CH2M HILL. The results of that conference call are included in the following discussions.

2.1.1.1 Species Discussion

Items discussed at the meeting pertinent to the BA were species specific. Gary Santolo discussed the methodology, schedule, and findings of past biological surveys on the NASA-administered property, including habitat and wildlife surveys and protocol-level rare plant surveys. Issues discussed were the remaining surveys to be completed, including a wetlands delineation that would include CRLF surveys and opportunistic dip net sampling for two species of sensitive fairy shrimp and other invertebrate species. The wetlands delineation was scheduled for the first week of January 2012.

A Quino checkerspot butterfly habitat survey was scheduled to be conducted by Dr. Dick Arnold for spring 2012. Jenny Marek noted that although it is unlikely that the Quino checkerspot is present, she would like the habitat survey to be completed so that it can be documented adequately.

Mary Meyers suggested that although Braunton's milk vetch was not found on the NASA-administered property, the lack of habitat would be better justified based on whether the soil type found where the offsite milk vetch was located differs from soils onsite. CH2M HILL will look at the Natural Resources Conservation District (NRCS) data and update its findings.

Gary confirmed that no habitat for the threatened Coastal California gnatcatcher was identified. Gary also confirmed that no nests were found for the least Bell's vireo. Jenny added that USFWS is still concerned that habitat might be possible in this area. The level of impact would depend on the level of riparian impacts.

Mary noted—and Jenny agreed—that although the tarplant is prevalent on the NASA-administered property, it is a species of concern and could be listed during the life of the project; therefore, it should be protected.

Jenny and Mary both agreed that development of a restoration plan as a form of mitigation is a good idea. NASA might consider coordinating with The Boeing Company (Boeing) and the U.S. Department of Energy (DOE) to

consider what species should be included, what impacts are anticipated, what others are finding, and what mutual restoration actions could best benefit the species and ecosystem.

2.1.1.2 Other Discussions

Timeline for the Biological Assessment

Leslie Tice provided the initial schedule for the BA development. Jenny added that she had not yet received a request for a species list, which would be needed to initiate consultation. Jeremiah agreed to submit this information. Jenny added that the BA should not be submitted until all information was available (specifically the findings of the Quino checkerspot butterfly habitat survey). Furthermore, Jenny said that because the BA will only discuss the Proposed Action, if there is a chance that the Proposed Action could change or aspects of the project might change, she suggested not submitting until this is final. In other words, it might be worth waiting for submittal until after the Draft EIS goes through public review. Leslie asked if the BA is submitted for the Proposed Action and the ultimate action is a lower level of impact, would the BA stand. Jenny confirmed that the BA would stand; however, NASA would have to uphold the higher level of mitigation agreed to in the BA. Leslie and Amy said they would discuss these options with the team and refine the schedule.

Jenny offered to share the USFWS Ventura Field Office template for the BA.

Permit Requirements

NASA has prepared this BA to assess the potential for take of a protected species. Although preliminary survey results indicate that no federally protected species occur on the site, it is recognized that subsequent surveys might change the conclusion with respect to their presence. In such a case, NASA might need to obtain an Incidental Take Permit(s) from the USFWS if it is determined that take of a protected species might occur.

A field verification was made by Antal Szijj, USACE, on December 20, 2012. On the basis of the approved jurisdictional determination for the wetlands delineation (USACE, 2013), NASA will require a Section 404 permit for impacts to wetlands or waters of the United States (U.S.). This permit would include sediment removals from the R2 ponds or work within Bell Creek, the Northern Drainage, or within intermittent drainages, as mapped. The jurisdictional determination concluded, however, that the mapped feature, SW-2, in NASA Area 1 was an "intrastate isolated water with no apparent interstate or foreign commerce connection. As such, this water is not currently regulated by the Corps of Engineers" (USACE, 2013).

Additional Coordination and Consultation

The group confirmed that NASA will coordinate directly with the USFWS for this project. CDFG will be part of the public review process and through Department of Toxic Substances Control (DTSC) coordination, as appropriate. On February 15, 2013, a conference call was conducted with Jenny Marek, USFWS Ventura Field Office; Allen Elliot, NASA; and CH2M HILL staff.

During the February 15 conference call, it was agreed that impacts to vernal pool crustaceans would be avoided entirely because there will be no remediation work on the rock outcrops, on which the potential habitat (rock basins) was found. With respect to Least Bell's Vireo (LBVI; *Vireo bellii pusillus*), USFWS agreed to accept that the surveys to date indicate that no LBVI currently are present; however, LBVI protocol surveys (USFWS, 2001) will be conducted before construction in potential habitats where brush clearing activities will occur. The designation will remain as "Not Likely to Adversely Affect," and only in the case where subsequent survey data indicate the presence of nesting LBVI will an Incidental Take Permit (ITP) be sought. Similarly, the conclusion for California red-legged frog (CRLF; *Rana draytonii*) was that the frogs currently are not present on the NASA-administered property of SSFL. However, to check that in the unlikely event of CRLF migration into proposed work areas has not occurred, pre-construction surveys (USFWS, 2005) and construction monitoring will be done. If CRLF are discovered in proposed work zones, then construction activities would be halted immediately and consultation initiated with the USFWS to develop an appropriate response. Such a response could include seeking an ITP for the CRLF.

2.1.2 Formal Consultation

This consultation package requests formal Section 7 consultation between NASA and the USFWS. Appendix B provides copies of the letters between NASA and the USFWS.

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Description of the Proposed Action

The project description in this section is taken from the draft EIS for the SSFL Project. The project description presented in this BA describes the EIS Proposed Action and specifically focuses on impacts from soil and groundwater cleanup activities, demolition, and impacts from areas that will be used as stockpile or laydown areas during construction. Using the EIS project description for the Proposed Project in the BA analysis allows for the largest project footprint (and most conservative impact areas) that could occur in the Action Area. A number of potential treatment options are presented in the Proposed Project, although currently it has not been decided which specific treatment will be used.

3.1 Project Location and Study Area

SSFL is approximately 46.7 kilometers (km) (29 miles) northwest of downtown Los Angeles, California, in the southeastern corner of Ventura County and occupies approximately 1,153 hectares (ha) (2,850 acres) of hilly terrain with approximately 335 meters (m) (1,100 feet [ft]) of topographic relief near the crest of the Simi Hills. The study area analyzed in this BA is the NASA-administered property in Areas I (LOX Plant Area) and II at SSFL and any adjacent areas directly affected by the Proposed Project. Figure 3-1 shows SSFL's geographic location and property boundaries, including NASA-administered property analyzed in the BA and the additional outlying areas that would be affected by NASA's proposed project activities.

3.2 Action Area

The Action Area includes areas to be directly or indirectly affected by the proposed SSFL Project. The Action Area consists of the 182.5 ha (451.2 acres) of NASA-administered property at SSFL, designated as Area I (the Liquid Oxygen [LOX] Plant Area) and Area II, as well as additional outlying areas that would be affected by NASA's proposed environmental cleanup activities described in this BA (Figure 3-2). The outlying areas make up approximately 3.7 ha (9.1 acres) of potential soil remediation impacts and 0.8 ha (1.9 acres) of laydown area impacts, for a total of 107.1 ha (462.2 acres) that define the Action Area. Within the directly affected project areas, there are short-term and long-term effects. Although both demolition and remediation efforts would be multi-year activities, short-term effects are those incurred during demolition, soil remediation activities that have construction (habitat-disturbing activities), and construction of the groundwater monitoring components, while long-term effects include the long-term operation and maintenance (O&M) groundwater program within the Action Area. A significant portion of the Action Area consists of rock outcrops that would not be affected by the proposed activities.

3.3 Background

3.3.1 Historical Site Use

Since 1948, research, development, and testing of liquid-fueled rocket engines and associated components (such as pumps and valves) were the primary site activities at SSFL (Science Applications International Corporation [SAIC], 1994). The vast majority of rocket engine testing and ancillary support operations occurred from the 1950s through the early 1970s; Rocketdyne (the predecessor to Boeing) conducted these operations in Areas I (LOX Plant Area) and III in support of various government space programs and in Area II on behalf of the U.S. Air Force (USAF) and then of NASA. NASA gradually discontinued test activities beginning in the 1980s and conducted the final tests in 2006. Boeing has maintained the NASA portion of SSFL since 1996.

In Area II, rocket engine testing occurred at the four test stand areas (Alfa, Bravo, Coca, and Delta) constructed between 1954 and 1957. Additional buildings for support activities and infrastructure also exist within these areas. NASA has recommended the test stands, along with other nearby structures and features, as eligible for listing based on the historical importance of the testing achievements completed at the site and the engineering and design of the structures.

Engine testing at SSFL primarily used petroleum-based compounds as the “fuel” and LOX as the “oxidizer.” Trichloroethene (TCE) was the primary solvent used for cleaning rocket engine components and for other cleaning purposes.

3.3.2 Property Administered by NASA

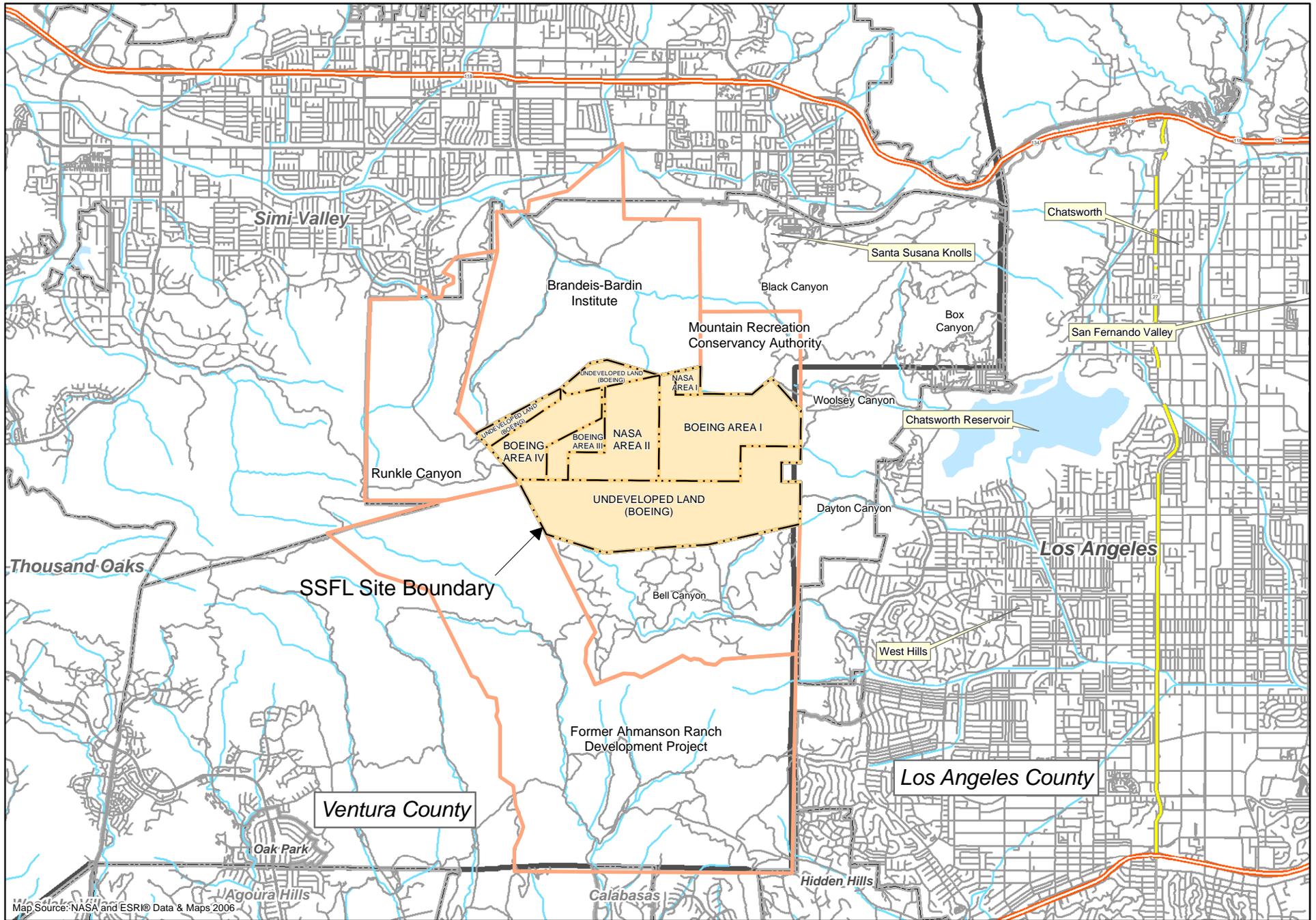
SSFL is at approximately 640 m (2,100 ft) of elevation and is 46.6 km (29 miles) northwest of downtown Los Angeles, California, in the southeastern corner of Ventura County. SSFL is owned in part by Boeing and in part by the U.S. Government. The land management is designated by Administrative Areas. NASA administers part of Area I (LOX Plant Area) and all of Area II (182.5 ha [451.2 acres]). Boeing owns the remainder of the SSFL property (Figure 3-2).

Before SSFL’s development, the land was used for ranching. In 1948, North American Aviation (NAA), a predecessor company to Boeing, began using (by lease) what is now known as the northeastern portion, or administrative Area I (LOX Plant Area), of SSFL. Most of SSFL was acquired with the NAA’s purchase of the Silvernale property in 1954 and the development of the western portion of SSFL began soon thereafter. Rocketdyne was established as a separate division by NAA in 1955. In December 1958, the property was deeded from Rocketdyne to the USAF and operated as USAF Plant 57. In the 1970s, the General Services Administration (GSA) transferred custody and accountability from the USAF to NASA; NASA currently administers both Area I (LOX Plant Area) and Area II. From 1968 to 1976, Boeing acquired undeveloped land parcels to the south of SSFL with the intent of creating an unused zone between testing operations and areas outside the SSFL boundaries. In 1998, Boeing acquired additional undeveloped properties to the north of SSFL.

3.3.3 Site Characterization

NASA has conducted environmental sampling to characterize site conditions on its portion of SSFL for more than 20 years, and continues to conduct such sampling. The results of these studies indicate that primarily metals, dioxins, polychlorinated biphenyls (PCBs), volatile organics including TCE, and semivolatile organics are present in the soils and upper groundwater, known as the Surficial Media Operable Unit (SMOU). Volatile organics, metals, and semivolatile organics also are present in the deeper groundwater, known as the Chatsworth Formation Operable Unit (CFOU).

NASA has documented contamination on the NASA-administered property through five remedial investigation (RI) reports for the SMOU—which was divided into four study areas—and for the CFOU (NASA, 2008, 2009a, 2009b; MWH, 2007a, 2009). The RI reports include descriptions of the site characterization, along with human health and ecological risk assessments performed for the various sites on the NASA-administered property. Likewise, the RI reports describe the characterization of the groundwater conditions, which is being used to explore effective groundwater remedial technologies to meet cleanup goals to levels reasonable to support property transfer. NASA developed the Standardized Risk Assessment Methodology (SRAM) (MWH, 2005), which, based on these characterizations, outlines various remedial approaches to implementing risk-based remedial protocols. Additional sampling to refine the extent of contamination based on current background values is detailed in site-specific field sampling plans (FSPs). Groundwater treatability studies (as defined in the *Groundwater Interim Measures Work Plan* [MWH, 2007b]), which was submitted to the DTSC, are being evaluated and implemented.



Map Source: NASA and ESRI® Data & Maps 2006



21-Mar-2012
Drawn By:
A. Cooley

Figure 3-1
Site Location Map
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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3.3.4 Property Administration and Commitments

NASA's Construction and Environmental Compliance and Restoration (CECR) Program includes demolition of facilities as part of NASA's Construction of Facilities (CoF) Program, managed by the Capital Facility Investment Program (NASA, 2011c). The CoF Program strives to reduce operating costs, maintenance burdens, and utility costs to make more of NASA's funding available for missions. The CECR Program accomplishes this goal by eliminating inactive and obsolete facilities that no longer support NASA's mission.

With the property and structures inactive at SSFL, NASA decided that neither the property nor the structures are required to support its mission and on September 14, 2009, NASA reported the property to the GSA as excess. GSA conditionally accepted NASA's report of excess pending NASA's certification that remedial action necessary to protect human health and the environment with respect to hazardous substances on the property has been completed, or that the Governor concurs with the suitability of the property for transfer in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 120(h)(3)(C).

In August 2007, NASA, Boeing, DOE, and DTSC signed a Consent Order that addressed the cleanup of soils and groundwater at SSFL (California Environmental Protection Agency [CalEPA] DTSC, 2007). The Consent Order identified activities for the cleanup of soil, groundwater, and surface water at SSFL. In 2010, NASA and DTSC executed an Agreement in Principle (AIP) for the soil cleanup. Subsequently, on December 6, 2010, NASA and DTSC executed an Administrative Order on Consent (AOC) that stipulates specific remedial requirements, including the characterization and cleanup of soil contamination on the NASA-administered areas of SSFL to background concentrations (CalEPA DTSC, 2010). The AOC also requires that NASA complete a federal environmental review pursuant to the National Environmental Policy Act (NEPA) of the impacts of implementing the soil and groundwater remedial activities. The cleanup of groundwater beneath SSFL and of surface water is not stipulated in the 2010 AOC. On the basis of the results of the RIs (NASA, 2008, 2009a, 2009b; MWH, 2007a, 2009), NASA is considering various remedial approaches that meet the NEPA requirement for the Proposed Action.

In addition to the DTSC orders, in December 2009, the Regional Water Quality Control Board issued an order to NASA and Boeing to improve the quality of stormwater discharges by removing contaminated sediments associated with two outfalls. Stormwater from the NASA-administered property exits SSFL through one of these outfalls in this order.

3.4 Purpose and Need for Action

The purpose of the Proposed Action is to remediate the environment to a level that meets NASA's environmental cleanup responsibilities and to undertake the demolition actions necessary to support both remediation and property disposition of the NASA-administered portion of SSFL.

Contamination is known to exist at NASA's SSFL property because of previous mission activities, and NASA has declared the property excess to its mission needs. Therefore, the Proposed Actions are needed to protect human health and the environment, to reduce ongoing maintenance costs, and to prepare the property for disposition.

Meeting this project purpose and these project needs would allow NASA to safely, efficiently, and responsibly support property disposition consistent with the NASA CECR Program.

3.5 Description of the Proposed Action

The Proposed Actions evaluated in this BA are to demolish existing structures and to remediate soil and groundwater contamination on the NASA-administered property of SSFL. These specific project components are described in Sections 3.5.1 through 3.5.3.

The methods that will be implemented for demolition of existing structures and for soil and groundwater cleanup have been evaluated in accordance with relevant regulations. Because the methods for implementing the Proposed Action are still under review by NASA and state regulatory agencies, this Proposed Action identifies the broad range of remedial technologies for soil and groundwater.

3.5.1 Proposed Demolition Activities

Structures not included in the demolition component of the Proposed Action (and therefore not evaluated in this BA) include the following:

- Utility equipment still needed to provide electrical service, such as poles, lines, and substations
- Stormwater management infrastructure such as groundwater extraction and treatment system (GETS) pipeline infrastructure
- Remedial infrastructure such as retention basins, wells, or pump and treat systems
- Roadways needed to gain access to other areas within SSFL that might remain in place
- Security fencing

3.5.1.1 Structures Evaluated for Demolition

All structures on the NASA-administered property at SSFL are proposed for demolition. Therefore, this BA facilitates the broadest assessment of potential impacts.

Dismantled components would be contained, as appropriate, and transported for offsite recycling or disposal, as appropriate. The types of structures that could be demolished or dismantled include test stands, which are the historical structures used since the 1950s for rocket engine testing located in the Alfa, Bravo, Coca, and Delta Test Areas of SSFL, and inactive ancillary structures that could include the following:

- Aboveground and subsurface structures
- Building foundations
- Utility poles that are no longer needed for electrical distribution or communications
- Piping
- Administrative and operations buildings
- Water tanks
- Aboveground and belowground storage tanks
- Observation lookouts, roadways, and drainageways

Table 3-1 lists the NASA structures considered for demolition and notes the location of each structure. This list was developed including structures that currently are not used and are not needed by NASA; therefore, they are considered excess. Corresponding to the areas identified in Table 3-1, Figure 3-3 shows the locations of the structures that could be demolished as part of the Proposed Action and highlights those structures that have specific historical value or eligibility, as designated by the National Register of Historic Properties (NRHP).

3.5.1.2 Pre-demolition Activities

Before initiating demolition, NASA would characterize nonhazardous and hazardous wastes in the proposed Action Area in accordance with the framework established by applicable federal, state, and local regulations. These activities will be coordinated with DTSC and the Ventura County Environmental Health Division, Certified Unified Program Agency (CUPA), which is the local entity responsible for oversight of the hazardous waste generator program.

NASA prepared and submitted to DTSC the *Standard Operating Procedures: Building Demolition Debris Characterization and Management for Santa Susana Field Laboratory* (NASA, 2011c). This standard operating procedure provides building surveys and procedures for sampling and characterizing NASA's remaining buildings to evaluate whether they are contaminated and to assess appropriate handling methods for managing and disposing of demolition debris.

TABLE 3-1
SSFL Structures Considered for Demolition
NASA SSFL BA for the Proposed Demolition and Environmental Cleanup

Property No.	Area Numbers	Building Description	Considerations
Alfa Area			
208	2208	ALFA RECORDING CENTER BUILDING (IO200039)	Individually NRHP Eligible
208	2208	ALFA RECORDING CENTER BUILDING (IO200039)	
208A	2208A	ALFA CC ENGINEERING TRAILER	Contributes to NRHP-eligible district
209	2209	ALFA TERMINAL HOUSE BUILDING (IO200040)	
209A	2209A	ALFA 2 ECS SHACK	
212	2212	ALFA PRETEST SHOP BUILDING (IO200043)	
212B	2212B	ALFA OLD GUARD SHACK	
507	2507	FUEL FARM (PROPELLANT STORAGE) (IO200096)	
727	2727	ALFA 1 TEST STAND (IO200063)	Individually NRHP Eligible; Contributes to NRHP-eligible district; Potential for Bird Nests; Bat Roosts
727A	2727A	ALFA I ECS SHACK	Contributes to NRHP-eligible district
729	2729	ALFA III TEST STAND (IO200067)	Individually NRHP Eligible; Contributes to NRHP-eligible district; Potential for Bird Nests; Bat Roosts
729A	2729A	ALFA 3 ECS SHACK	Contributes to NRHP-eligible district
739	2739	ALFA STAND TALKER SHACK	Contributes to NRHP-eligible district
2R	2R	ALFA BRAVO GHE COMPRESSOR SHELTER 1	
2S	2S	ALFA BRAVO GHE COMPRESSOR SHELTER 2	
2T	2T	GN2 CASCADE STORAGE BUILDING	
2X	2X	ALFA 1 PILLBOX	Contributes to NRHP-eligible district
2Y	2Y	ALFA 3 PILLBOX	Contributes to NRHP-eligible district
		ALFA LANDSCAPE/SPILLWAY	Contributes to NRHP-eligible district
ASH Pile and STP Area			
515	2515	SEWAGE TREATMENT PLANT (IO200095)	
776	2776	SEWAGE DISPOSAL PLANT (IO200175)	
Bravo Area			
213	2213	BRAVO RECORDING CENTER BUILDING (IO200045)	Individually NRHP Eligible; Contributes to NRHP-eligible district
214	2214	BRAVO TERMINAL HOUSE BUILDING (IO200047)	Contributes to NRHP-eligible district
2214A	2214A	BRAVO-3 ELECTRICAL CONTROL STATION SHACK	
730	2730	BRAVO I TEST STAND (IO200069)	Individually NRHP Eligible; Contributes to NRHP-eligible district; Potential for Bird Nests; Bat Roosts

TABLE 3-1
SSFL Structures Considered for Demolition
NASA SSFL BA for the Proposed Demolition and Environmental Cleanup

Property No.	Area Numbers	Building Description	Considerations
730A	2730A	BRAVO 1 ECS SHACK	Contributes to NRHP-eligible district
731	2731	BRAVO II TEST STAND (IO200071)	Individually NRHP Eligible; Contributes to NRHP-eligible district; Potential for Bird Nests; Bat Roosts
731A	2731A	BRAVO 2 ECS SHACK	Contributes to NRHP-eligible district
732	2732	BRAVO STORAGE	
2Z	2Z	BRAVO PILLBOX	Contributes to NRHP-eligible district
		BRAVO LANDSCAPE/SPILLWAY	Contributes to NRHP-eligible district
Coca Area			
218	2218	COCA RECORDING CENTER (IO200416)	Individually NRHP Eligible
219	2219	COCA TERMINAL HOUSE BUILDING (IO200050)	
2219D	2219D	COCA T-HOUSE, "D"	
222	2222	COCA PRETEST SHOP BUILDING (IO200051)	Contributes to NRHP-eligible district
235	2235	COCA ELECTRICAL CONTROL STATION (IO200458)	Contributes to NRHP-eligible district
236	2236	COCA ELECTRICAL CONTROL STATION (IO200459)	Contributes to NRHP-eligible district
237	2237	ELECTRICAL CONTROL STATIONS (IO200460)	Contributes to NRHP-eligible district
239	2239	COCA HYDROGEN COMPRESSOR BLDG (IO200346)	Contributes to NRHP-eligible district
240	2240	HYDRAULLIC PUMP HOUSE CONTROL BUILDING (COCA) (IO200478)	
241	2241	PUMP HOUSE (COCA) (IO200477)	Contributes to NRHP-eligible district
451	2451	STORAGE CAGE (COCA) NEAR 234 (JO107900)	
520	2520	UNDERGROUND VAULT (COCA TEST STAND FLAME BUCKET) (IO200476)	Contributes to NRHP-eligible district
614	2614	PILLBOX OFF SKYLINE DRIVE (COCA) (IO504003)	Contributes to NRHP-eligible district
733	2733	COCA 1 TEST STAND (IO504749)	Individually NRHP Eligible; Contributes to NRHP-eligible district; Potential for Bird Nests; Bat Roosts
734	2734	FLAME BUCKET FROM COCA II TEST STAND (IO200077)	Potential for Bird Nests; Bat Roosts
787	2787	COCA IV TEST STAND (IO504750)	Individually NRHP Eligible; Contributes to NRHP-eligible district; Potential for Bird Nests; Bat Roosts
919	2919	LN2 SHELTER (COCA) (IO200486)	
933	2933	GN2 STORAGE SYSTEM (COCA) (IO504731)	
933	2933	GN2 STORAGE SYSTEM (COCA) (IO504731)	Contributes to NRHP-eligible district
933	2933	GN2 STORAGE SYSTEM (COCA) (IO504731)	Contributes to NRHP-eligible district

TABLE 3-1
SSFL Structures Considered for Demolition
NASA SSFL BA for the Proposed Demolition and Environmental Cleanup

Property No.	Area Numbers	Building Description	Considerations
933	2933	GN2 STORAGE SYSTEM (COCA) (IO504731)	
933	2933	GN2 STORAGE SYSTEM (COCA) (IO504731)	
V99	V99	COCA GH2 VESSEL PERSONAL PROPERTY	Contributes to NRHP-eligible district
V100	V100	COCA LH2 VESSEL #1 PERSONAL PROPERTY	Contributes to NRHP-eligible district
V108	V108	COCA LOX VESSEL #1 PERSONAL PROPERTY	Contributes to NRHP-eligible district
		COCA CABLE TUNNEL	Contributes to NRHP-eligible district
		COCA LANDSCAPE/SPILLWAY	Contributes to NRHP-eligible district
Delta Area			
223	2223	DELTA PRETEST BUILDING (IO200053)	
225	2225	DELTA TERMINAL HOUSE BUILDING (IO200057)	
601	2601	DELTA OBSERVATION BUNKER (IO200319)	
2H	2H	DELTA PILLBOX #1	
2J	2J	DELTA - PILLBOX #2	
2K	2K	DELTA T-HOUSE	
	9904	DELTA LANDSCAPE/SPILLWAY	
ELV and Maintenance Area			
201	2201	ENGINEERING BUILDING (IO200025)	
202	2202	MAINTENANCE STOCK BUILDING (IO200027)	
203	2203	SERVICE BUILDING (IO200029)	
204	2204	MAINTENANCE BUILDING (IO200031)	
205	2205	MAINTENANCE PAINT BUILDING (IO200033)	
206	2206	CALIBRATION & TEST BUILDING (IO200035)	
207	2207	SECURITY CONTROL CENTER BUILDING (IO200037)	
211	2211	ENGINEERING OFFICES (IO200042)	
231	2231	ROTARY TEST BUILDING (IO200471)	
232	2232	LIQUID NITROGEN SHELTER (IO200169)	
233	2233	MAINTENANCE PAINT STORAGE	
760	2760	MAINTENANCE SUPPLY SHED	
796	2796	MAINTENANCE PAINT SHOP	

TABLE 3-1
SSFL Structures Considered for Demolition
NASA SSFL BA for the Proposed Demolition and Environmental Cleanup

Property No.	Area Numbers	Building Description	Considerations
<i>Skyline Area</i>			
818	2818	SKYLINE WATER TANK (IO200180)	
819	2819	SKYLINE WATER TANK (IO200181)	
820	2820	SKYLINE WATER TANK (IO200116)	
821	2821	SKYLINE WATER TANK (IO200117)	
822	2822	SKYLINE WATER TANK (IO200118)	
823	2823	SKYLINE WATER TANK (IO200119)	
824	2824	SKYLINE WATER TANK (IO200120)	
825	2825	SKYLINE WATER TANK (IO200121)	
826	2826	SKYLINE WATER TANK (IO200122)	
827	2827	SKYLINE WATER TANK (IO200123)	
828	2828	SKYLINE WATER TANK (IO200443)	
829	2829	SKYLINE WATER TANK (IO200378)	
777	2777	SPA OXIDIZER STORAGE SHELTER (IO200465)	
925	2925	SPA FUEL STATION (IO200467)	
927	2927	SPA STORAGE SHELTER (IO200464)	
928	2928	STORAGE SHELTER SPA	

Notes:

CC = (Alfa – CC Engineering Trailer) control center

ECS = Electric Control Station

ELV = Expendable Launch Vehicle

GHe = gaseous helium

GN2 = gaseous nitrogen

LEOS = Laser and Electro-Optical System

NRHP = National Register of Historic Places

RNTF = Rocket Nozzle Test Facility

SPA = Storable Propellant Area

STP = Sewage Treatment Plant

Property Number, Area Number, and Building Description are taken from the updated real property listing provided in e-mails by Debra Hendon/NASA Real Property Accountable Officer on August 15 and August 30, 2012.

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NASA would inspect the area around each building for flaking paint, soil staining, or other conditions that could affect the potential remediation or demolition of the building. Structural components would be contained and asbestos-containing material and lead from non-metal components would be removed prior to demolition or deconstruction. Recyclable material, including metal components, would be separated from materials requiring hazardous or nonhazardous landfill disposal.

Active utility infrastructure connected to structures targeted for demolition or in areas anticipated for ground disturbance would be identified and rerouted before site work occurred. These include both aboveground and underground conduits and piping. Rerouting prior to site work would maintain uninterrupted service to electricity, natural gas, communications, potable water supply, and sewer service.

3.5.1.3 Demolition of Structures

Demolition would include removal of the structure up to 1.5 m (5 ft) below grade. Demolition of structures in Area II is estimated to take up to 1 year to complete. An estimated crew of up to 30 personnel would access the site each day, with additional supervisors overseeing demolition work. Heavy equipment would include up to five excavators, a crawler crane, two all-terrain cranes, two people-lifts, two wheel loaders, two 40-ton off-highway trucks, a bulldozer, a vacuum truck, a motor grader, and up to four skid steer loaders. Smaller equipment would include compressors, pumps, lighting plants, and dust control equipment. These pieces of equipment would remain onsite for the duration of the demolition activities and be staged near ongoing demolition activities.

Tractor trailers, dump trucks, and flatbed trucks would be used over the course of the demolition activities to haul scrap metal, usable salvaged equipment, recyclable asphalts, and contaminated concrete to authorized facilities. Clean concrete could remain onsite to be used for grading materials.

3.5.1.4 Stockpile/Laydown Areas

During construction activities, stockpile/laydown and staging areas will be designated for construction equipment and materials, vehicles, and temporary stockpiling of demolition materials. These designated areas will be located primarily in areas that are currently parking lots or other relatively flat paved areas adjacent to buildings or structures that are proposed for demolition. These areas currently are linked through the existing road system and scattered throughout the NASA-administered property at SSFL. Other proposed stockpile/laydown areas would occur in non-paved areas that have a minimal footprint on vegetation (such as non-native grasslands) (Figure 3-4). Material and equipment staging would occur in the immediate vicinity of ongoing demolition. Consistent with current SSFL procedures, trucks would be dispatched to and from SSFL at set intervals to avoid traffic problems along Woolsey Canyon Road. Between 7 a.m. and 7 p.m., trucks traveling on City of Los Angeles' streets would be staggered at a minimum of 5-minute intervals. This staggered traffic flow would allow up to 144 one-way trips per day or 72 round trips (including both incoming and outgoing).

3.5.1.5 Waste Disposal and Recycling

NASA would characterize materials proposed for demolition and removal in one of two ways. The first approach, in situ characterization, would be to characterize materials in place before demolition to assist in efforts to segregate nonhazardous from hazardous wastes or from incompatible wastes during demolition. In the second approach, contained materials would be characterized before being loaded onto trucks or trailers for transport to an offsite approved construction waste facility. Material content, including the presence of mixed waste, which typically includes low-level radioactively contaminated industrial or research waste and Resource Conservation and Recovery Act (RCRA)-listed or characteristic hazardous waste, would be managed in compliance with applicable regulatory requirements. Waste contents would be confirmed before transfer offsite and wastes would be managed in compliance with applicable regulatory requirements.

The handling and management of waste generated during this process would follow a hierarchical approach of source reduction, recycling, treatment, and disposal, to the extent possible. Nonhazardous metals, concrete, and asphalt that are candidates for recycling would be separated from other materials and transported to a licensed recycling facility. Offsite disposal would be used only for residual wastes that could not be reused, recycled, or treated. Scrap metal that could be recycled would be separated and transported to an approved recycling facility

to reduce the amount of waste being disposed in landfills. Likewise, soils that were tested as acceptable for use as backfill would remain onsite.

Depending on the types, sizes, volumes, hazardous contents, or ultimate destinations of materials, containment would be in drums, cubic yard boxes, roll-off bins, lined trucks or trailers, or tanks to prevent the release of materials or hazardous contents. Bins containing hazardous wastes would be kept securely closed, except when wastes were being transferred into or out of them, and would be transported for offsite disposal within the prescribed 90-day accumulation period (NASA, 2011c).

Nonhazardous metals, concrete, and asphalt that might be candidates for recycling would be separated from other materials and transported to a licensed recycling facility. Potentially usable electronic and electrical devices and components (such as wiring) would be segregated for reconditioning.

Up to an estimated 94,536 tons of test stands, buildings, and structures could be demolished and hauled to the following facilities for export, resale, disposal, or reuse:

- Materials for export would be transported to the Port of Los Angeles in San Pedro, California.
- Materials for resale would be transported to an equipment dealer in Los Angeles County, California.
- Hazardous concrete would be transported to Kettleman Hills Landfill in Kettleman City, California.
- Asphalt for reuse would be transported to a recycling firm in Simi Valley, California.

Table 3-2 summarizes the number of haul trips by type of waste.

TABLE 3-2
Proposed Demolition Hauling
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Material Type	Material Quantity	Total Haul Trips Required
Scrap Metal for Export	8,250 tons	330
Equipment for Resale	8,134 tons	20
Hazardous Concrete	43,152 tons	1,726
Asphalt for Reuse	35,000 tons	1,400

3.5.1.6 Demolition Schedule

NASA would not begin demolition until completion of the federal and state environmental review processes and the National Historic Preservation Act (NHPA) consultation process. For the purpose of this analysis, demolition is anticipated to occur between 2014 and the end of 2016. Demolition and transport activities would occur during daylight hours, only within the SSFL operation hours of 7 a.m. to 7 p.m. These activities probably would occur in parallel with remedial activities occurring at SSFL.

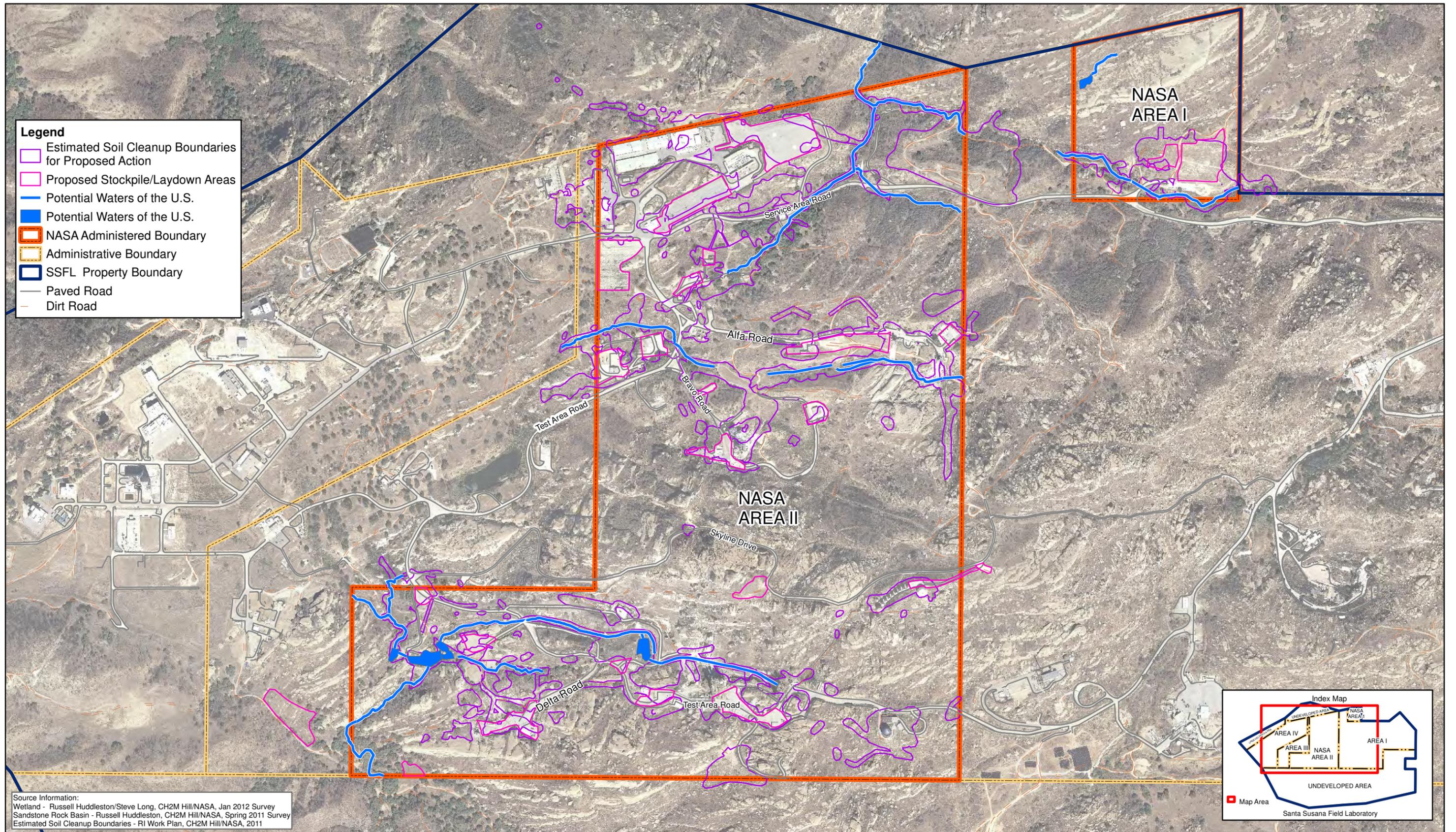
3.5.2 Proposed Soil Remedial Activities

This subsection describes the level of soil cleanup proposed under this action and discusses the potential remedial technologies that might be used to reach these cleanup goals.

3.5.2.1 Cleanup of Soil to Background Levels

For the purpose of this BA, soils are defined in the 2010 AOC (CalEPA DTSC, 2010) as saturated and unsaturated soil, sediment, and weathered bedrock, debris, structures, and other anthropogenic materials. Surface water, groundwater, air, and biota are not included as "soils."

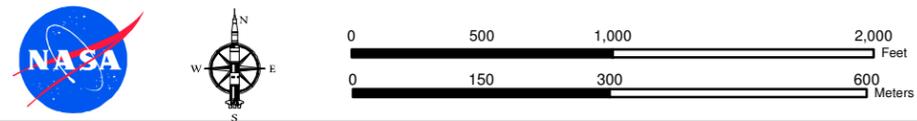
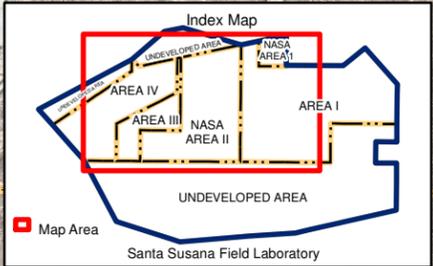
Under the Proposed Action, NASA would remediate the soils on the NASA-administered property of SSFL to background values. Cleaning up the soils to background means the removal of soils contaminated at levels above



Legend

- Estimated Soil Cleanup Boundaries for Proposed Action
- Proposed Stockpile/Laydown Areas
- Potential Waters of the U.S.
- Potential Waters of the U.S.
- NASA Administered Boundary
- Administrative Boundary
- SSFL Property Boundary
- Paved Road
- Dirt Road

Source Information:
 Wetland - Russell Huddleston/Steve Long, CH2M Hill/NASA, Jan 2012 Survey
 Sandstone Rock Basin - Russell Huddleston, CH2M Hill/NASA, Spring 2011 Survey
 Estimated Soil Cleanup Boundaries - RI Work Plan, CH2M Hill/NASA, 2011



22 Apr 2013
 Drawn By:
 A. Cooley

Figure 3-4
Cleanup Activities and Stockpile/Laydown Areas
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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the local background levels. For example, the soil would be cleaned to naturally occurring levels of metals, radionuclides, and dioxins from wildfires. For analytes that do not naturally occur in soil, the soils would be cleaned to laboratory method reporting limits (RLs)¹.

DTSC would provide NASA with a look-up table to be used for screening in the background scenario. Cleanup of soils would not include the cleanup of volatile organic compounds (VOCs) found in the groundwater or in the soil or bedrock as a result of groundwater contamination. Cleanup of soils also would not include the cleanup of VOCs emanating from contaminated groundwater that migrate into and through the saturated and unsaturated soil and bedrock beneath SSFL.

3.5.2.2 Soil Cleanup Technologies

Figure 3-4 shows the general footprints of the proposed remediation areas under the Proposed Action. The soil depth that would require cleanup generally would be less than 1.5 m (5 ft), but could reach 6 m (20 ft) in some areas. Viable cleanup technologies were identified based on their effectiveness to clean up the specific contaminants within the Action Area under the environmental conditions present at SSFL. These technologies are identified in the RIs (NASA, 2008, 2009a, 2009b; MWH, 2007, 2009). The soil cleanup methods evaluated in this BA, therefore, represent a broad array of possible cleanup approaches for the Proposed Action. Each of these technologies is described in this subsection, including the contaminant analyses group each addresses, the approach and application of technology implementation, and the general timeline. Table 3-3 generally compares the soil cleanup technologies. NASA might apply one or a combination of these technologies.

The 2010 AOC (CalEPA DTSC, 2010) requirements specify excavation, but allow for treatment of soils onsite (referred to as *in situ* treatment) or for removing, treating, and replacing the remediated soils (referred to as *ex situ* treatment) as long as the cleanup goals are achieved.

NASA might find that active utility infrastructure (such as gas or electricity) are connected to structures targeted for demolition or are located in areas expected to undergo ground disturbance. Such infrastructure, including both aboveground and underground conduits and piping, would be identified and rerouted before site work, as necessary, to maintain uninterrupted service to electricity, natural gas, communications, potable water supply, and sewer service. Utility services that could be retained without rerouting might simply be turned off for the duration of site work in coordination with the utility provider and service recipients.

Where cleanup areas are separated from existing roadways, NASA would develop temporary access roads and also would designate staging areas and locations for stockpiles. These locations would be identified in a Remedial Action Plan prior to remediation activities.

The soil would be stockpiled in multiple designated areas at SSFL (Figure 3-4) and loaded onto dump trucks. Each stockpile would be limited to an area of 0.05 ha (0.14 acre) with a height limit of 2.4 m (8 ft), per Ventura County Air Pollution Control District (VCAPCD) Rule 74.29 and South Coast Air Quality Management District (SCAQMD) Rule 1157.

Soil would be transported in bulk using dump trucks or similar vehicles, each with a capacity of 24 tons of material. Hazardous materials would be placed in labeled U.S. Department of Transportation (DOT)-approved, 20-cubic yard (yd³) transport bins or other DOT-approved containers. The following landfills were identified for possible offsite disposal of excavated soil:

- Kettleman Hills Landfill in Kettleman City, California
- Clean Harbors Buttonwillow Landfill in Buttonwillow, California
- U.S. Ecology Landfill in Beatty, Nevada
- Antelope Valley Landfill in Lancaster, California
- Energy Solutions Landfill in Clive, Utah

¹ The laboratory method RL is the lowest concentration at which an analyte confidently can be detected in a sample and its concentration could be reported with a reasonable degree of accuracy and precision.

TABLE 3-3
Soil Remediation Technology Comparison Table
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Technology	Constituent Treatment	Excavation	Site Restoration	Onsite Trucks	Stockpiling	Offsite Trucks	Permits Required?	Construction	Energy Needs	Monitoring	Duration
Excavation and Offsite Disposal	All	Yes	Backfilling and reseed with native grasses	Yes	Yes	Yes	No	Staging Area	No	No	Excavation - Several Years Transport – 5 to 10 years
Excavation, Onsite CAMU, and Encapsulation	All	Yes	Backfilling and reseed with native grasses	Yes	Yes	No	Landfill Siting Permit	CAMU	No	Yes	Excavation - Several Years CAMU – 18 months
Soil Vapor Extraction	VOCs	No	No	Yes	No	No	VOC Emission Permit	SVE Wells	Yes	Yes	Months to Years
Ex-situ Treatment Using Land Farming	VOCs	Yes	Replacement of soils and reseed with native grasses	Yes	Yes	No	No	Staging/ Treatment Area	No	Yes	Months to Years
Ex-situ Treatment Using Thermal Desorption	VOCs, SVOCs	Yes	Replacement of soils and reseed with native grasses	Yes	No	No	VOC/ SVOC Emission Permit	Temporary Thermal Desorption Chamber	Yes	Yes	Months to Years
In-situ Physical Treatment Using Soil Mixing	VOCs, SVOCs	No	Grading of disturbed soils	Yes	No	No	Injection Permit	No	No	Yes	Months to Years
In-situ Chemical Oxidation or Reduction	VOCs, SVOCs	No	Grading of disturbed soils	Yes	No	No	Injection Permit	Injection Wells or Boreholes	No	Yes	Months to Years
In-situ Anaerobic or Aerobic Biological Treatment	VOCs, SVOCs	No	Grading of disturbed soils	Yes	No	No	Injection Permit	Injection Wells or Boreholes	No	Yes	Months to Years

TABLE 3-3

Soil Remediation Technology Comparison Table*NASA SSFL Biological Assessment for the Demolition and Cleanup Project*

Technology	Constituent Treatment	Excavation	Site Restoration	Onsite Trucks	Stockpiling	Offsite Trucks	Permits Required?	Construction	Energy Needs	Monitoring	Duration
Phytoremediation	VOCs, some metals, and PCBs	No	Yes	Yes	No	No	No	Tree/Vegetation Planting	No	Yes	Decades
Monitored Natural Attenuation	VOCs, SVOCs	No	N/A	No	No	No	No	No	No	Yes	Hundreds of Years

Notes:

CAMU = corrective action management unit

N/A = not applicable

PCB = polychlorinated biphenyl

SVOC = semivolatile organic compound

VOC = volatile organic compound

Soil transport would occur concurrently with soil excavation activities and would be completed by the end of 2017 in accordance with the 2010 AOC. Table 3-4 summarizes the volumes of soils and numbers of trucks required for transport to meet this timeframe under the Proposed Action. Table 3-4 also provides the estimated volumes of backfill soils needed to restore excavated areas. The backfill material could be from an onsite or offsite source. The following potential offsite sources were identified in the project vicinity in southern California:

- P.W. Gillibrand Company in Simi Valley, California
- Rindge Dam in Malibu Canyon, California
- Santa Paula Materials, Inc., in Santa Paula, California
- Grimes Rock, Inc., in Fillmore, California
- Tapo Rock and Sand Products in Simi Valley, California

TABLE 3-4

Estimated Soil Volumes and Truck Requirements under the Proposed Action Excavation and Offsite Disposal Cleanup Technology

NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Removal Parameters	Amounts
Removal Volume	502,000 yd ³
Trucks Required for Soil Removal	26,441
Truck Frequency for Soil Removal Hauling ^a	53 trucks/day
Backfill Volume— 1/3 of total volume	167,000 yd ³
Trucks Required for Backfill Hauling	8,814
Truck Frequency for Backfill Hauling ^a	18 trucks per day
Hauling Duration	23 months
Daily Material Handled ^a	1,698 tons/day

Notes:

yd³ = cubic yards

^a Assumes completion of cleanup and soil hauling by the end of 2017.

Excavation and Offsite Disposal

This method would include the excavation, transport, and disposal of surface and subsurface contaminated soil. Construction equipment, including but not limited to backhoes, bulldozers, front-end loaders, and dump trucks, would be used to reduce the levels of contamination to background or laboratory RLs. In areas of SSFL where oak trees or other protected species, habitat, or sensitive resources occur, NASA would work with the appropriate regulatory agency to develop an acceptable soil removal process or to develop mitigation, as necessary, to offset impacts to sensitive resources or habitat. This technology could be used to remove soil contaminated with multiple types of contamination. Excavation might be used to address contaminants not treatable by other technologies. Excavation also might be used as a back-up approach to other technologies that were used first in an attempt to avoid other environmental impacts, if the other technology did not meet the cleanup goals effectively. As such, this BA will consider excavation in the various analyses.

The soil would be excavated to bedrock in some areas because the top of bedrock is shallow. Rock outcrops would be retained, as possible. The estimated volume of soil requiring excavation under the Proposed Action is approximately 502,000 yd³. Confirmatory sampling would verify that the contaminated soils necessary to meet the cleanup goals were removed. After excavation was complete, no other monitoring would be required.

Excavation activities could take several years to complete. The soil would be staged in multiple designated areas at SSFL and loaded onto dump trucks. Excavated soils would be sampled prior to transport to confirm appropriate handling and disposal. The soil would be disposed at an approved offsite facility. Transport of the soils might occur concurrently with excavation activities and is estimated to take up to an additional 2 years following excavation.

This timeframe assumes that the current SSFL truck limitations would be enforced. That is, trucks would be dispatched to and from SSFL at set intervals to avoid traffic problems along Woolsey Canyon Road. Between 7 a.m. and 7 p.m., trucks traveling on City of Los Angeles' streets would be staggered at a minimum of 5-minute intervals. This staggered traffic flow would allow up to 144 one-way trips per day, or 72 round trips (including both incoming and outgoing).

The soil would be transported in bulk using dump trucks or similar vehicles, each with a capacity of 15 to 18 tons of material. Hazardous materials would be placed in labeled DOT-approved, 20-yd³ transport bins or other DOT-approved containers and transported to an approved landfill.

Soil Vapor Extraction

Soil vapor extraction (SVE) is used to remediate VOCs that typically are found in cleaning solvents and light petroleum fuels such as gasoline. NASA would install a series of vapor recovery wells using mechanical drilling techniques and would apply a vacuum to the wells using a blower and associated piping and manifolds. The vapors in the pore spaces of the soil would then be removed into the air. If required, the air stream from the vapor wells would be transported via pipelines to be treated with granular activated carbon (GAC) (or another treatment system such as a flare) to absorb the organic vapors before the air stream was released to the atmosphere. To increase the pore space in the soil (including weathered bedrock) and to increase the radius of influence (ROI), the matrix could be fractured pneumatically before installation of the SVE wells. Pneumatically fracturing the soil matrix widens the pore space, creates fractures, and enlarges existing fractures to increase the effective porosity of the matrix, which results in an increased air flow and allows more vapors to be recovered. NASA would have to monitor the contamination removed in the air stream as part of the O&M efforts. In addition, a power source would be required to operate the system. The VCAPCD will specify the monitoring and reporting requirements. Using this technology, it could take months to years to meet the cleanup standards.

Ex Situ Treatment Using Land Farming

This method of onsite treatment could be used to biologically degrade organic contamination such as the constituents found in petroleum products (semivolatile organic compounds [SVOCs] and VOCs). Land farming would entail excavating and hauling soil to a designated onsite area using ordinary construction equipment such as front end loaders, backhoes, and dump trucks. Consistent with the excavation approaches previously discussed, the estimated volume of soil requiring excavation under the Proposed Action is approximately 500,000 yd³. The treatment areas typically would be flat and have asphalt or concrete as a base, which could be lined with polyethylene plastic sheeting. Soil could then be placed in the treatment area and nutrients and moisture added to stimulate biodegradation of the organic constituents, using water trucks and tractors with disc attachments to blend in the additives. Once the levels of contamination met criteria, the soil could be hauled back to the site and placed in the excavation area as backfill. Soil monitoring would be required to assess the rate and amount of contamination reduction using this technology. This technology could take months to a few years to meet the remediation goals. Monitoring would continue for the duration of the ex situ treatment period until cleanup goals were met. The frequency of monitoring would be established based on the rate of contamination reduction in the soils (in other words, more frequent at the beginning and less frequent as soils were cleaned). Once the goals had been met, soils would be returned to the excavation area and monitoring would be complete.

Ex Situ Treatment Using Thermal Desorption

This method could be used to treat organic contaminants using onsite heat source. The soils would be heated in a chamber known as a rotary dryer (or similar technology) to target temperatures of about 1,400 degrees Fahrenheit (°F) using natural gas to volatilize organic contaminants. A carrier gas or vacuum system transports the volatilized organics to a gas treatment system. An area for thermally treating soil would be established at the site. Soils contaminated with organic constituents, primarily petroleum products (VOCs and SVOCs), would be excavated and treated. Consistent with the excavation approaches described previously, the estimated volume of soil requiring excavation under the Proposed Action is approximately 502,000 yd³. Typical equipment includes a rotary dryer, natural gas tanks, soil excavation and transportation trucks, blower, heat exchanger, and gas treatment system (usually a GAC). Monitoring would continue for the duration of the ex situ treatment period until the cleanup goals had been met. The frequency of monitoring would be established based on the rate of

contamination reduction in the soils. Once the goals had been met, monitoring would be discontinued and soils would be left in a stockpile to cool. The soils could then be returned to the excavation area, probably within about a month. The treated soil would be placed in the excavation areas and used as backfill. The entire cycle of this technology could take months to a few years to meet the remediation goals.

In Situ Physical Treatment Using Soil Mixing

This technology would entail using large-diameter augers or Lang-tool mixers to physically disturb the soil using a series of borehole locations. Hot air, steam, hydrogen peroxide, zero valent iron (ZVI) (see description in the Iron Particle Injection subsection), or other fluids would be mixed into the soil to treat the contamination in place. Typical equipment includes large drilling rigs, tanks, piping, valves, and tanks. If a heat source is required, equipment would be needed to heat either air or water. This technology primarily is used to treat organic compounds (VOCs and SVOCs). The soil would require monitoring to assess the amount of contamination reduction achieved. Monitoring would continue until the cleanup goals had been met or a decision was made to implement an alternative remedial approach. The frequency of monitoring would be established based on the rate of contamination reduction in the soils. Once the goals had been met, monitoring would be discontinued. This technology could take months to years to reduce the contamination levels enough to meet the cleanup standards.

In Situ Chemical Oxidation or Reduction

This technology could be used to treat organic contamination such as VOCs and SVOCs in the soil. A network of injection wells or boreholes would be drilled using mechanical drilling techniques and fluids such as oxidants (such as hydrogen peroxide and permanganate or ozone) or reducing agents (ZVI slurry [see description in the Iron Particle Injection subsection]) would be pumped into the subsurface to treat the contamination. The soil could be pneumatically fractured, as described for SVE, to enhance the process before the injection of fluids. In addition, nitrogen could be used as a carrier gas to more effectively distribute reducing agents into the subsurface. Typical equipment for this process includes drilling rigs, tanks to hold the fluids, pumps, hoses, valves, and a nitrogen source (for ZVI). Soil monitoring would be required to assess the rate and amount of contaminant reduction. Monitoring would occur throughout the treatment process until cleanup goals had been met or a decision was made to implement an alternative remedial approach. The frequency of monitoring would be established based on the rate of contamination reduction in the soils. Once the goals had been met, monitoring would be discontinued. Using this technology, it could take months to years to reduce the contamination levels enough to meet the cleanup standards, and multiple injections might be required.

In Situ Anaerobic or Aerobic Biological Treatment

This method would treat organic contamination in the soil using microorganisms. NASA would drill a network of injection wells or boreholes using mechanical methods and would inject fluids into the subsurface to stimulate microbial growth. The fluids could be augmented with microorganisms to increase their populations and accelerate the treatment process. For aerobic bioremediation, fluids containing inducer and electron acceptors (oxygen) to enhance aerobic biodegradation would be injected into the subsurface. In the presence of sufficient oxygen and other nutrients, such as nitrogen and phosphorus, microorganisms would convert many organic contaminants to carbon dioxide and water. For anaerobic bioremediation, electron donors would be injected into the subsurface to stimulate the reduction of chlorinated organic compounds. In the absence of oxygen, the organic contaminants ultimately would metabolize to methane, carbon dioxide, and hydrogen gas. Common electron donors are sugars such as lactate and corn syrup and vegetable oils. Typical equipment used includes a drilling rig, tanks to hold the fluids, and pumps. Monitoring would occur throughout the treatment process until the cleanup goals had been met or a decision was made to implement an alternative remedial approach. The frequency of monitoring would be established based on the rate of contamination reduction in the soils. Once the goals had been met, monitoring would be discontinued. Using this technology, it could take months to years to reduce the contamination levels enough to meet the cleanup standards, and multiple injections might be required.

Phytoremediation

This method is for use in wetland areas or where the depth to groundwater is about 0.9 to 1.5 m (3 to 5 ft) below the surface. Phytoremediation has been known to treat VOCs, some metals, and PCBs. Trees such as cottonwoods or poplars can uptake moisture that contains contaminants and metabolize the contaminants. NASA would coordinate with the appropriate regulatory agency to develop an acceptable approach to phytoremediation, including types of plants to use, site preparation requirements, and monitoring protocol. An irrigation system using treated groundwater and fertilizers might be required to enhance plant growth. This technology would be considered for use at SSFL; however, because of the dry climate and groundwater depths, it is unlikely that the risk-based cleanup goals could be met. Monitoring would occur throughout the treatment process until the cleanup goals had been met or a decision was made to implement an alternative remedial approach. Using this technology, it could take decades to reduce the contamination levels enough to meet the cleanup standards.

Monitored Natural Attenuation

Monitored natural attenuation (MNA) typically is applied in coordination with another remedial technology, such as when an alternative remedial technology has been applied to remove VOCs and is no longer effective in further reducing VOC levels. MNA might be applied to remove residual contamination over time. The data collected during the natural attenuation study can be used to evaluate if contamination levels would reach the cleanup goal within an established timeframe or if treatment, additional treatments, or other remedial technologies would need to be implemented.

Using MNA, it could take hundreds of years to meet the prescribed cleanup goals independently. However, if MNA were applied following alternative remedial approaches, the timeframe would depend on the remaining levels of contamination to be attenuated. Monitoring would continue until the cleanup goals had been met or a decision was made to implement an alternative remedial approach. The frequency of monitoring would be established based on the rate of contamination reduction in the soils. Once the goals had been met, monitoring would be discontinued.

Institutional Controls

NASA could use such controls to restrict access to contaminated areas of SSFL. Access could be restricted primarily through fencing, with signage and security being present at the site. By erecting fences with visible hanging signage warning trespassers to keep out of the area and restricting access to SSFL through security measures, potential exposure to humans would be limited or eliminated. The fencing and signage would require inspections at a frequency that would allow NASA to make repairs as needed.

3.5.3 Proposed Groundwater Remedial Activities

This subsection describes the proposed cleanup of groundwater and summarizes the potential remedial technologies that might be used to reach these cleanup goals.

3.5.3.1 Cleanup of Groundwater

For the purpose of this report, groundwater is defined specifically by the 2007 Order (CalEPA DTSC, 2007) as the water level within the alluvium or weathered bedrock layers and the Chatsworth formation aquifer, and both saturated and unsaturated unweathered (competent) bedrock. As defined in the 2010 AOC (CalEPA DTSC, 2010), groundwater also can include soils contaminated by soil vapor (VOCs) from groundwater. Under the Proposed Action, groundwater would be cleaned up consistent with the risk-based protocol level using the guidelines in the SRAM (MWH, 2005), as described in the 2007 Order (CalEPA DTSC, 2007).

“Risk-based protocols” are used to help NASA and other decision makers assess the possible ways in which people and animals (receptors) could be exposed to groundwater contaminants. For a risk to be present, receptors present at SSFL must have the potential for exposure to the contaminated groundwater. After the potential for exposure to receptors has been confirmed, the extent of exposure can be evaluated using different criteria, including the duration of exposure, the type of contamination to which a sensitive receptor would be exposed, the frequency of exposure, and the relative toxicity of the contaminant.

NASA has conducted numerous studies and surveys to characterize the existing groundwater contamination at SSFL. Many of these studies document viable technologies that could be effective in meeting these risk-based protocols.

3.5.3.2 Groundwater Cleanup Technologies

Viable remediation technologies were identified based on their effectiveness to clean up the specific contaminants at the site. Site conditions, including weather, soil conditions, or terrain, were considered in evaluating the viability of the technologies. These technologies are identified in the RIs (NASA, 2008, 2009a, 2009b; MWH, 2007a, 2009) and the *Groundwater Interim Measures Work Plan* (MWH, 2007b). Each technology is described in this subsection, including the contaminant classification each addresses, the approach and application of the technology implementation, and the timeline of each. One or a combination of these technologies might be applied. In addition to or in conjunction with the technologies described in the following subsections, in locations where new pumps would be installed, impacts to habitats would occur from well installation and from O&M. Although specific locations or numbers of new wells to be installed have not been identified (studies are in progress), they will occur in areas that have been identified as having groundwater contaminants. Generally these areas are located in alluvial valleys that coincide with test pads and stands and impoundments from which releases have occurred. In addition to demolition activities in these areas, impacts from well installation include construction of well pads, approximately 15.2 by 15.2 m (50 ft by 50 ft), that will store frac tanks, water tanks, and casings during construction; the permanent impact from installed well pads would be approximately 0.9 by 0.9 m (3 ft by 3 ft). Figure 3-5 shows the Action Area general location and the groundwater contaminants. Table 3-3 provides a comparison of the groundwater cleanup technologies.

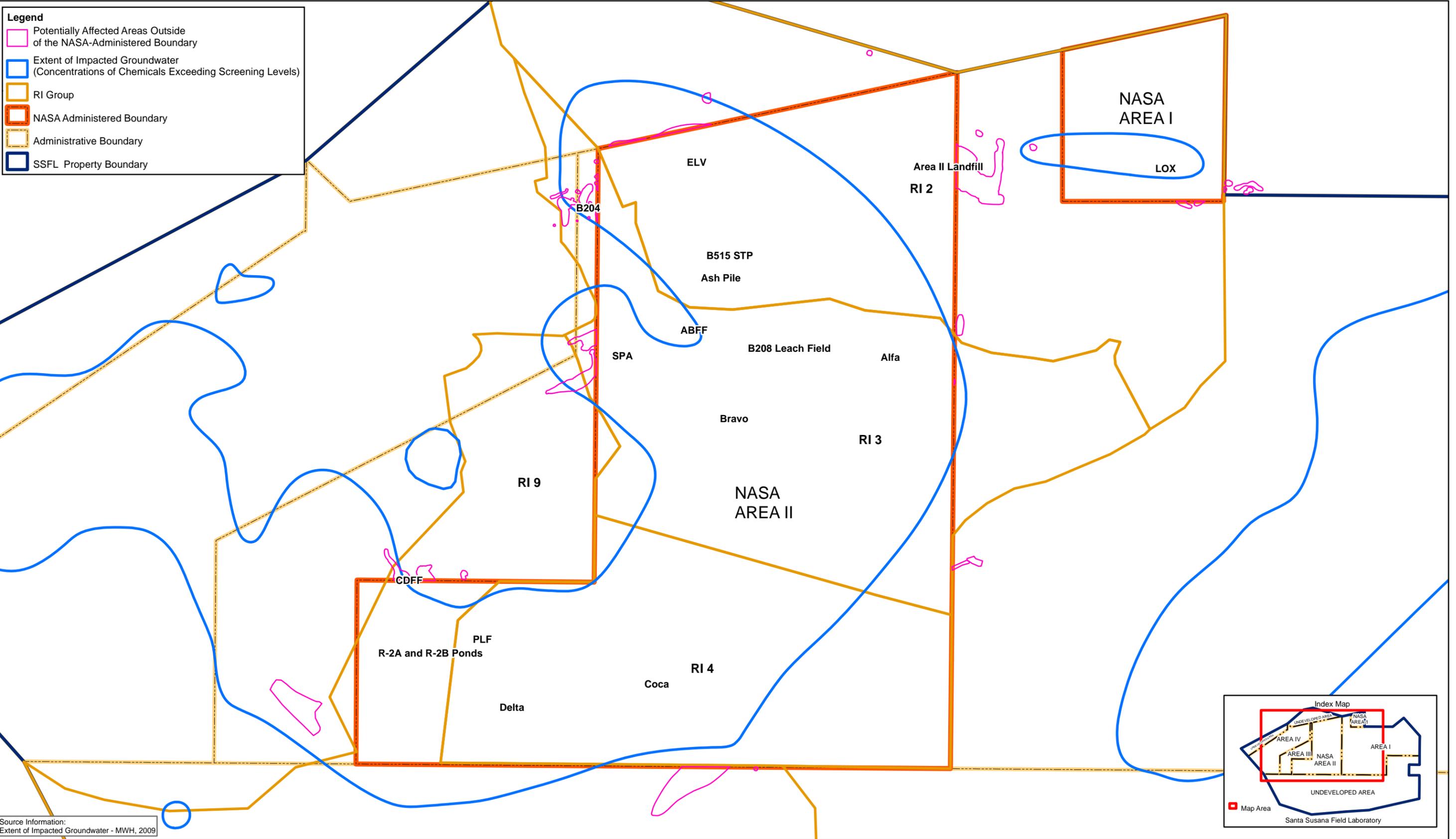
Pump and Treat

This technology currently is being used at SSFL to recover contaminated groundwater with SSFL's groundwater extraction and treatment system (GETS). Pump and treat technology is used to capture contaminated groundwater and to treat the contaminants using an ex situ treatment technology such as an ion exchange column (for metals), GAC, or oxidation. A GAC system contains carbon that has been manufactured such that the grains have a large surface area with many "active sites" that can absorb organic constituents. However, pump and treat systems primarily are used to create a hydraulically induced capture zone for groundwater to prevent it from migrating further. On occasion, this groundwater capture zone can dry up seeps and springs that are a source of water to the plants and wildlife. In addition, a power source would be required to operate the system.

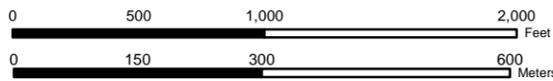
NASA could use alternative sources of energy such as solar arrays to provide some of the power requirement. Some pump and treat infrastructure is in place as part of the existing GETS system; however, the installation of additional wells at depths ranging from approximately 15.2 to 274.3 m (50 to 900 ft) below ground surface (bgs) and 3,962.4 m (13,000 ft) of aboveground pipeline would be added to the existing system for this remedial technology to cover the full area noted in Figure 3-4. With this technology, it could take many years before the groundwater would meet the cleanup standards. Monitoring would occur throughout the treatment process.

Vacuum Extraction

This approach could be used to recover VOCs and includes installing a network of extraction wells using mechanical drilling methods in the target zone for treatment. Depths of new wells installed could range from approximately 15.2 to 274.3 m (50 to 900 ft) bgs. The groundwater would be extracted from the well along with the vapors (SVE) in the saturated matrix using blowers, pipelines, and manifolds. The groundwater would be treated onsite and injected into the subsurface or released to surface drainage. The vapors that would be recovered could be treated by a GAC system (or other treatment system), which would require piping and manifolds, before release to the atmosphere. The contamination removed in the air and groundwater streams would require monitoring as part of the O&M efforts. In addition, a power source would be required to operate the system. NASA could use alternative sources of energy such as solar arrays to provide some of the power requirement. Using this technology, it could take months to years to meet the cleanup standards. Monitoring would occur throughout the treatment process.



Source Information:
Extent of Impacted Groundwater - MWH, 2009



23-Jul-2012
Drawn By:
A. Cooley

Figure 3-5
Areas of Impacted Groundwater
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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Iron Particle Injection

This technology is used to treat chlorinated VOCs and also could be used to lower the oxidation state of metals to make them less soluble in water and render them less mobile. Similar to chemical oxidation, NASA would install a network of injection wells or boreholes using mechanical methods and ZVI slurry (water and iron powder). Depths of new wells installed could range from approximately 15.2 to 274.3 m (50 to 900 ft) bgs. The slurry is mixed in tanks onsite and delivered to the subsurface either by pumping or by combining it with nitrogen as a carrier gas to disperse the ZVI slurry as fine particles in the subsurface. The byproducts of treating chlorinated VOCs include methane, carbon dioxide, and hydrogen gas. This process could be enhanced by pneumatically fracturing the subsurface before injection of the ZVI slurry. Typical equipment for this process includes drilling rigs, tanks to hold the fluids, pumps, hoses, valves, and a nitrogen source. Groundwater monitoring would be required to assess the rate and amount of contaminant reduction that occurred. Using this technology, it could take months to years to reduce the contamination to levels that would meet the cleanup standards and multiple injections might be required. Monitoring would occur throughout the treatment process.

Heat-driven Extraction

This treatment is used to recover VOCs and entails heating the subsurface to near or at the boiling point of water using a series of wells or boreholes installed using mechanical drilling methods. Depths of new wells installed could range from approximately 15.2 to 274.3 m (50 to 900 ft) bgs. The groundwater and surrounding matrix would be heated using steam, electrical resistance heating, or heating elements (or other source of heat). The entire matrix would be heated and the groundwater, along with the VOCs in the surrounding matrix, could be recovered using an SVE system, as described previously under Vacuum Extraction in Section 3.5.2.2. The recovered vapors would be cooled and treated onsite as a liquid, vapor, or both, before being released. Typical equipment used includes piping, manifolds, heat source (steam, electric resistance heating, or heating elements), SVE system, heat exchangers, GAC system (or other vapor treatment system), and tanks. Monitoring would occur throughout the treatment process until the cleanup goals had been met or a decision was made to implement an alternative remedial approach. The frequency of monitoring would be established based on the rate of contamination reduction in the groundwater. Once the goals had been met, monitoring would be discontinued. This technology could take months to years to reduce the contamination levels enough to meet the cleanup standards.

In Situ Chemical Oxidation

Chemical oxidation is used to treat VOCs. This treatment method requires a series of injection wells or boreholes installed using mechanical drilling methods into the area targeted for treatment. Depths of new wells installed could range from approximately 15.2 to 274.3 m (50 to 900 ft) bgs. Oxidants would be delivered to the subsurface either by gravity feed or pumping via the injection wells. The oxidants react with the VOCs in the groundwater and surrounding matrix to create carbon dioxide and water as byproducts. This process could be enhanced by pneumatically fracturing the subsurface before the oxidants are introduced into the subsurface, as previously described. Typical equipment for this process includes drilling rigs, tanks to hold the fluids, pumps, hoses, and valves. The groundwater would require monitoring to assess the rate and amount of contaminant reduction that occurred. Monitoring would occur throughout the treatment process. With this technology, it could take months to years to reduce the contamination to levels that would meet the cleanup standards, and multiple injections might be required.

In Situ Enhanced Bioremediation

This technology is used to treat organic contamination in the groundwater using microorganisms. NASA would install a network of injection wells and inject fluids into the subsurface to stimulate microbial growth. Depths of new wells installed could range from approximately 15.2 to 274.3 m (50 to 900 ft) bgs. The fluids could be augmented with microorganisms to increase their populations and accelerate the treatment process. For aerobic bioremediation, fluids containing inducer and electron acceptors (oxygen) to enhance aerobic biodegradation would be injected into the subsurface. In the presence of sufficient oxygen and other nutrients, such as nitrogen and phosphorus, microorganisms would convert many organic contaminants to carbon dioxide and water. For anaerobic bioremediation, NASA would inject electron donors into the subsurface to stimulate the reduction of chlorinated organic compounds. In the absence of oxygen, the organic contaminants ultimately would metabolize

to methane, carbon dioxide, and hydrogen gas. Typical equipment for this process includes drilling rigs, tanks to hold the fluids, pumps, hoses, and valves. Groundwater monitoring would be required to assess the rate and amount of contaminant reduction that occurred, with monitoring continuing throughout the treatment process. Using this technology, it could take months to years to reduce the contamination to levels that would meet the cleanup standards, and multiple injections might be required.

Monitored Natural Attenuation

NASA could use MNA to evaluate the reduction in contamination over a period of time once a treatment technology had been implemented or the naturally occurring attenuation processes had proven effective in reducing contamination in the subsurface. The data collected during the MNA study could be used to evaluate if contamination levels would reach the cleanup goal within an established timeframe or if other remedial technologies need to be implemented. MNA could be implemented as an independent approach or in coordination with any other remedial technology. As an independent technology, MNA could take hundreds of years to meet the cleanup goals. Monitoring would continue until the cleanup goals were met or a decision was made to implement an alternative remedial approach.

Institutional Controls

NASA would use institutional controls to restrict access to contaminated water bodies by including specific restrictive provisions in dig permits, utility clearances, or other development permits in designated areas where contaminated groundwater is known to exist. With these restrictions, NASA could limit or eliminate potential exposure.

3.5.4 Schedule of Soil and Groundwater Remedial Activities

The AOC (CalEPA DTSC, 2010) mandates that soil remediation on the NASA administered property be completed by the end of 2017. Soils characterization should be complete by 2013, followed by reporting and developing remedial action implementation plans and designs. Implementation of the soil remedial actions should occur in 2016 and 2017. As discussed in Section 3.5.1.6, proposed demolition probably would occur between 2014 and 2016, concurrently with the proposed soil and groundwater cleanup activities.

NASA is continuing to collect data based on the initial results of the groundwater RI reports (NASA, 2008, 2009a, 2009b; MWH, 2007a, 2009). The groundwater investigations are scheduled for planning and implementation through 2017. Groundwater response actions should occur in 2017 and 2018, with long-term groundwater O&M following.

Environmental Setting

4.1 Environmental Baseline

This section provides an overview of the regional setting, vegetation and land cover types, and general wildlife use associated with the habitats, as well as an evaluation of the waters of the United States, including wetlands on the NASA-administered property at SSFL.

SSFL is in the Simi Hills in an unincorporated portion of Ventura County, although its easternmost portion extends slightly into an unincorporated portion of Los Angeles County. The site is within the central portion of the Southern California Coast ecological subregion in the Simi Valley-Santa Susana Mountains (261Be) ecological subsection. This subsection includes steep mountains, moderately steep to steep hills, and nearly level to gently sloping floodplains, terraces, and alluvial fans (Miles and Goudey, 1998).

The Simi Hills are part of an expanse of open space that provides several linkages for wildlife movement among the Santa Monica Mountains to the south, the San Gabriel Mountains to the east, and the Los Padres National Forest to the north. SSFL is within a larger landscape linkage area and wildlife movement corridor identified by the Ventura Planning Division (Ventura County Planning Division, 2005) and within the proposed Santa Susana-Simi Hills Significant Ecological Area, as designated by the Los Angeles County Department of Regional Planning Division (Los Angeles County Regional Planning Division, 2012).

Several open space preserves and parklands are in the immediate vicinity of the NASA-administered property including the Sage Ranch preserve, which is along the eastern border of the NASA-administered Area I (LOX Plant Area). Other significant protected areas in the vicinity of the site include the Upper Las Virgenes open space preserve, Chatsworth nature preserve, Corrigan Park, among others. In addition portions of the Santa Monica Mountains National Recreation Area including Cheeseboro Canyon, Polo Comado Canyon, and Long Ranch-Jordan Ranch are to the southwest of SSFL.

No habitat conservation plans or natural community conservation plans have been developed for the region and there currently is no designated critical habitat in the NASA-administered areas of SSFL (USFWS, 2011a).

4.1.1 Vegetation and Land Cover Types

The vegetation surveys identified eight natural terrestrial habitat types, two aquatic habitat types, sandstone rock outcrops, and ruderal and developed areas (NASA, 2011a; 2011b). These habitat and land cover types are described in the following text. Table 4-1 provides the acreages of each type as well as a cross-walk between the mapped vegetation types and the current California vegetation classification system (Sawyer et al., 2009). Figure 4-1 shows the distribution of the vegetation and land cover types.

4.1.1.1 Chaparral

Chaparral is the most abundant and widespread natural community at the site. This habitat covers 69.8 ha (172.6 acres) (approximately 38 percent) of the NASA-administered property. Characteristic species include chamise (*Adenostoma fasciculatum*), hoaryleaf ceanothus (*Ceanothus crassifolius*), black sage (*Salvia mellifera*), laurel sumac (*Malosma laurina*), thicketleaf yerba santa (*Eriodictyon crassifolia*), Mendocino bushmallow (*Malacothamnus fasciculatus*), and chaparral yucca (*Yucca whipplei*). The abundance of these species is variable within this habitat type depending on soils, aspect, past disturbance, and other environmental factors.

4.1.1.2 Venturan Coastal Sage Scrub

Venturan coastal sage scrub covers about 26 ha (64.4 acres) (approximately 15 percent) of the site. Characteristic species include coastal sagebrush (*Artemisia californica*), Eastern Mojave buckwheat (*Eriogonum fasciculatum* var. *fasciculatum*), black sage, chaparral yucca, thicketleaf yerba santa, and common deerweed (*Acmispon glaber*).

TABLE 4-1

Mapped Vegetation and Land Cover Types and Current California Vegetation Classification System
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Vegetation/Land Cover Types	Hectares (Acres)	Current California Vegetation Classification System*
Chaparral	69.8 (172.6)	<i>Adenostoma fasciculatum</i> – <i>Salvia mellifera</i> Shrubland Alliance <i>Malosma laurina</i> Shrubland Alliance <i>Malacothamnus fasciculatus</i> Shrubland Alliance <i>Eriodictyon crassifolium</i> Provisional Shrubland Alliance
Venturan Coastal Sage Scrub	26 (64.4)	<i>Artemisia californica</i> – <i>Eriogonum fasciculatum</i> Shrubland Alliance
Non-native Grassland	7.5 (18.6)	<i>Avena (barbata, fatua)</i> Semi-natural Herbaceous Stands
Coast Live Oak Woodland	5.3 (13.2)	<i>Quercus agrifolia</i> Woodland Alliance
Coast Live Oak Riparian Forest	3.7 (9.2)	<i>Quercus agrifolia</i> Woodland Alliance
Baccharis Scrub	1.0 (2.6)	<i>Baccharis pilularis</i> Shrubland Alliance
Mule-fat Scrub	0.8 (2.1)	<i>Baccharis salicifolia</i> Shrubland Alliance
Southern Willow Scrub	(0.4) 1.0	<i>Salix lasiolepis</i> Shrubland Alliance
Aquatic Habitats	0.16 (0.4)	None
Sandstone Rock Outcrops	34.3 (85.0)	None
Ruderal	6.8 (17)	None
Developed	23.4 (58)	None

Note:

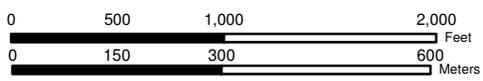
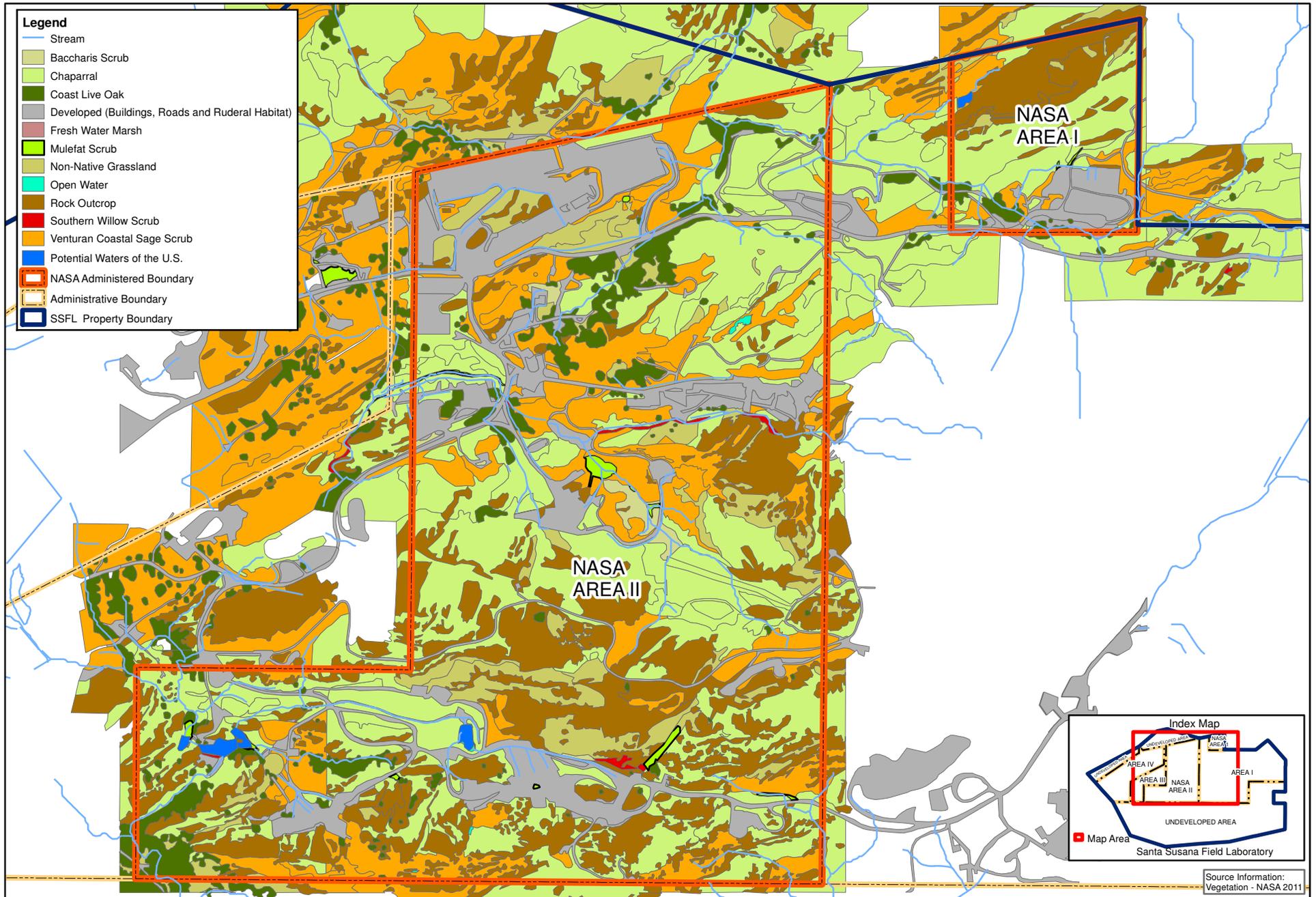
*Sawyer et al. (2009)

4.1.1.3 Non-native Grassland

Grassland habitat covers 7.5 ha (18.6 acres) (approximately 4 percent) of the site and often occurs in a mosaic with other habitat types. Most of the grasslands are characterized by slender oat (*Avena barbata*), intermixed with other introduced annual grasses such as ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), and fescue (*Vulpia* spp). Native grasses including needlegrass (*Nassella* spp.), littleseed muhly (*Muhlenbergia microsperma*), and deergrass (*Muhlenbergia rigens*) are present in a few areas, but generally provide only minimal cover. Common herbaceous species include suncup (*Camissonia* spp.), winecup clarkia (*Clarkia purpurea*), longbeak stork's bill (*Erodium botrys*), and winter vetch (*Vicia villosa*).

4.1.1.4 Coast Live Oak Woodland

Coast live oak woodland is distributed widely across the site but only makes up 5.3 ha (13.2 acres) (approximately 3 percent) of the NASA-administered property. This habitat is characterized by mature coast live oak (*Quercus agrifolia*) trees. The understory generally consists of annual grasses such as ripgut brome and slender oat, with occasional native grasses including blue wildrye (*Elymus glaucus*) and California brome (*Bromus carinatus*). The understory shrub layer is poorly developed and, where present, generally consists of scattered Pacific poison oak (*Toxicodendron diversilobum*).



22-Apr-2013
Drawn By:
A. Cooley

Figure 4-1
Habitat Cover Types
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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4.1.1.5 Coast Live Oak Riparian Forest

Coast live oak riparian forest is found along the edges of the seasonal streams on the site. This habitat type covers 3.7 ha (9.2 acres) (approximately 2 percent) of the NASA-administered property. The composition of this community generally is similar to the coast live oak woodland habitat described previously, although the understory typically is more diverse in these areas and includes species such as Douglas' sagewort (*Artemisia douglasiana*), creeping snowberry (*Symphoricarpos mollis*), and American black elderberry (*Sambucus nigra*).

4.1.1.6 Baccharis Scrub

Baccharis scrub is limited, covering only 1.0 ha (2.6 total acres) (less than 1 percent) of the site. This community is characterized by generally pure stands of coyotebrush (*Baccharis pilularis*). In these areas, coyotebrush ranges from dense cover with a sparse herbaceous layer to more open stands with an understory composed of annual grasses and scattered forbs.

4.1.1.7 Mule-fat Scrub

Mule-fat scrub is limited, covering 0.8 ha (2.1 acres) (less than 1 percent) of the site. This habitat type is characterized by localized, dense stands of mule-fat (*Baccharis salicifolia*).

4.1.1.8 Southern Willow Scrub

Southern willow scrub habitat on the NASA-administered property is characterized by arroyo willow (*Salix lasiolepis*) intermixed with occasional red willow (*Salix laevigata*) and narrowleaf willow (*Salix exigua*). This habitat type is uncommon on the site, covering only 0.4 ha (1 acre) (less than 1 percent). Southern willow scrub occurs in localized patches around scattered ponds and detention basins and along portions of the seasonal drainages within the site.

4.1.1.9 Aquatic Habitats

Aquatic habitats identified on the NASA-administered property include 0.15 ha (0.4 acre) of open water and 0.08 ha (0.2 acre) of freshwater marsh habitat associated with various ponds and detention basins. Freshwater marsh is limited to the outer edges of ponds and detention basins and is characterized by southern cattail (*Typha domingensis*). Several intermittent stream channels also occur throughout the site.

4.1.1.10 Sandstone Rock Outcrops

Approximately 34.3 ha (85 acres) (19 percent) of the NASA-administered property is composed of sandstone outcrops. In many areas the outcrops are devoid of vegetation, while in other areas, the rocks are covered with a diverse assemblage of lichens. In some areas, scattered vascular plants are present. Common plants associated with these rock outcrops include bushy spikemoss (*Selaginella bigelovii*), lanceleaf liveforever (*Dudleya lanceolata*), chalk dudleya (*Dudleya pulverulenta*), cliffbrake (*Pellaea* spp.), orange bush monkey flower (*Mimulus aurantiacus*), and Santa Susana tarplant.

4.1.1.11 Ruderal

Ruderal habitat is common around developed areas and areas that have been subject to human disturbance. Ruderal habitats cover approximately 6.8 ha (17 acres) (4 percent) of the site. Common species observed in these areas include telegraphweed (*Heterotheca grandiflora*), black mustard (*Brassica nigra*), Maltese star-thistle (*Centaurea melitensis*), silver bird's-foot trefoil (*Acemison argophyllus*), stork's bill (*Erodium* spp.), and common deerweed.

4.1.1.12 Developed

Developed areas include paved roads, parking areas, buildings, test structures, and other developments. Approximately 23.4 ha (58 acres), or 13 percent, of the NASA-administered property have been developed.

4.1.2 General Wildlife and Wildlife Habitats

4.1.2.1 Wildlife Observations

Observations of wildlife and associated habitat were recorded by wildlife biologists during fall 2010 and spring and summer 2011 surveys (NASA, 2011a; 2011b). The animal species were identified within the Action Area via sightings, calls, and other evidence of occurrence. During the surveys, 11 butterfly species, 12 herpetile (reptiles and amphibians) species, 60 bird species, and at least 15 mammal species were identified (NASA, 2011a; 2011b). Signs of large mammals including California mule deer (*Odocoileus hemionus californicus*), wild pig (*Sus scrofa*), coyote (*Canis latrans*), mountain lion (*Felis concolor*), and bobcat (*Felis rufus*) were found throughout the Action Area.

4.1.2.2 Grassland and Ruderal Habitats

Grasslands and some ruderal habitats within the Action Area support a variety of small mammals and provide important foraging and nesting habitat for raptors and other birds. Birds that forage in grasslands include the red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and loggerhead shrike (*Lanius ludovicianus*). Ruderal vegetation occurring within and along the margins of disturbed areas often is used by birds such as the American goldfinch (*Carduelis tristis*) and house finch (*Carpodacus mexicanus*). Mammal species that occur in grasslands and ruderal habitats include the desert cottontail (*Sylvilagus audubonii*), California ground squirrel (*Spermophilus beecheyi*), and Botta's pocket gopher (*Thomomys bottae*). Rodent burrows in these habitats provide essential upland refuge sites for certain amphibians and reptiles, including the western toad (*Anaxyrus boreas*) and western fence lizard (*Sceloporus occidentalis*).

4.1.2.3 Wooded Areas

Wooded areas within the study area provide foraging, nesting, and shelter habitat for many bird and mammal species. Birds that occur in wooded areas include the Cooper's hawk (*Accipiter cooperii*), oak titmouse (*Baeolophus inornatus*), nuthatches (*Sitta carolinensis* and *S. pygmaea*) and acorn (*Melanerpes formicivorus*) and Nuttall's (*Picoides nuttallii*) woodpeckers and a variety of warbler (*Vermivora celata*, *Dendroica coronate*, *Oporonis tolmiei*, and *Wilsonia pusilla*) and vireo (*Vireo cassinii*) species. Mammals, including various rodent species (*Peromyscus* spp., *Perognathus* spp., and *Mus musculus*), gray fox (*Urocyon cinereoargenteus*), mule deer, and bobcat use the woodlands within the study area for foraging and denning.

4.1.2.4 Rock Outcrops

Rock outcrops within the study area serve as breeding habitat for a variety of birds and mammals and provide cover for small mammals, reptiles, and amphibians. During the 2011 surveys, two nests occupied by red-tailed hawks were observed in the rock outcrops. Both of the nests successfully fledged young. Rock outcrops also provide cover and nesting habitat for small mammals including the desert cottontail and California ground squirrel; and for reptiles including the California whiptail (*Aspidoscelis tigris munda*), western side-blotched lizard (*Uta stansburiana elegans*), western fence lizard, and western rattlesnake (*Crotalus oreganus heller*). Reptiles and small mammals attracted to rock outcrops provide prey opportunities for larger mammals including the coyote (*Canis latrans*), bobcat, and gray fox, as well as for various raptors.

4.1.2.5 Marshes, Ponds, Riparian Habitat, and other Water Features

Freshwater marshes and ponds, and to a certain extent, seasonal wetlands within the study area are highly productive wildlife habitats for amphibians, aquatic reptiles, waterfowl, wading birds, and certain songbirds. Many wildlife species depend on the ponds and associated marshes for their entire life cycles; others use them as temporary refuges or migratory stopover areas. The ponds and associated marshes within the study area provide foraging, nesting, and resting habitat for mallards (*Anas platyrhynchos*) and herons, including the green heron (*Butorides virescens*) and the great blue heron (*Ardea herodias*). These habitats serve as foraging and breeding habitat for various frogs, salamanders, and aquatic reptiles, and also provide prey opportunities for hawks, owls, coyotes, raccoons (*Procyon lotor*), and foxes.

Intermittent streams and associated riparian habitat, such as coast live oak riparian forest, provide valuable habitat for a variety of wildlife species. Wading birds such as the great blue heron (*Ardea herodias*), waterfowl such as the mallard, and other birds including the red-winged blackbird (*Agelaius phoeniceus*) use the intermittent streams when they are inundated during the wet season. The associated riparian habitats provide foraging habitat and cover for raptors, owls, and a variety of mammal species.

4.1.3 Waters of the United States (Including Wetlands)

A wetland delineation field survey was completed between January 3 and January 6, 2012. The purpose of the survey was to identify the limits of wetlands and other waters in the Action Area. NASA has written a Wetland Delineation Report. After a field verification by the USACE on December 20, 2012, USACE issued an Approved Jurisdictional Determination on February 12, 2013 (USACE, 2013), which concluded that jurisdictional wetlands and waters of the U.S. do occur in the NASA-administered properties at SSFL. The Approved Jurisdictional Determination concluded that the wetlands and waters of the U.S. were correct as shown in the Wetland Delineation Report, with the exception that feature SW-2 in NASA Area 1 was considered as an isolated wetland, not subject to federal jurisdiction under Section 404 of the Clean Water Act. Because it is likely that direct impacts will occur to some of these areas (such as the R2 Ponds and some of the drainages) as a result of proposed remediation, a Section 404 permit for those activities will be sought from the USACE.

4.1.3.1 Classification

Classification of wetlands and other waters identified during the survey follow the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). This classification methodology was developed by the USFWS as part of the National Wetland Inventory program. The hierarchical classification includes systems, subsystems, and classes to generally categorize the various aquatic habitats. Modifiers are used to denote specific water regimes and/or highly altered areas (excavated or impounded wetlands).

4.1.3.2 Survey Methodology

The survey methodology followed the *Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008).

Wetland determination data points were established at 10 locations, including 5 wetland data points and 5 upland data points (Figures 4-2 through 4-7). Wetland determination data sheets are included in Appendix E of the Wetland Delineation Report.

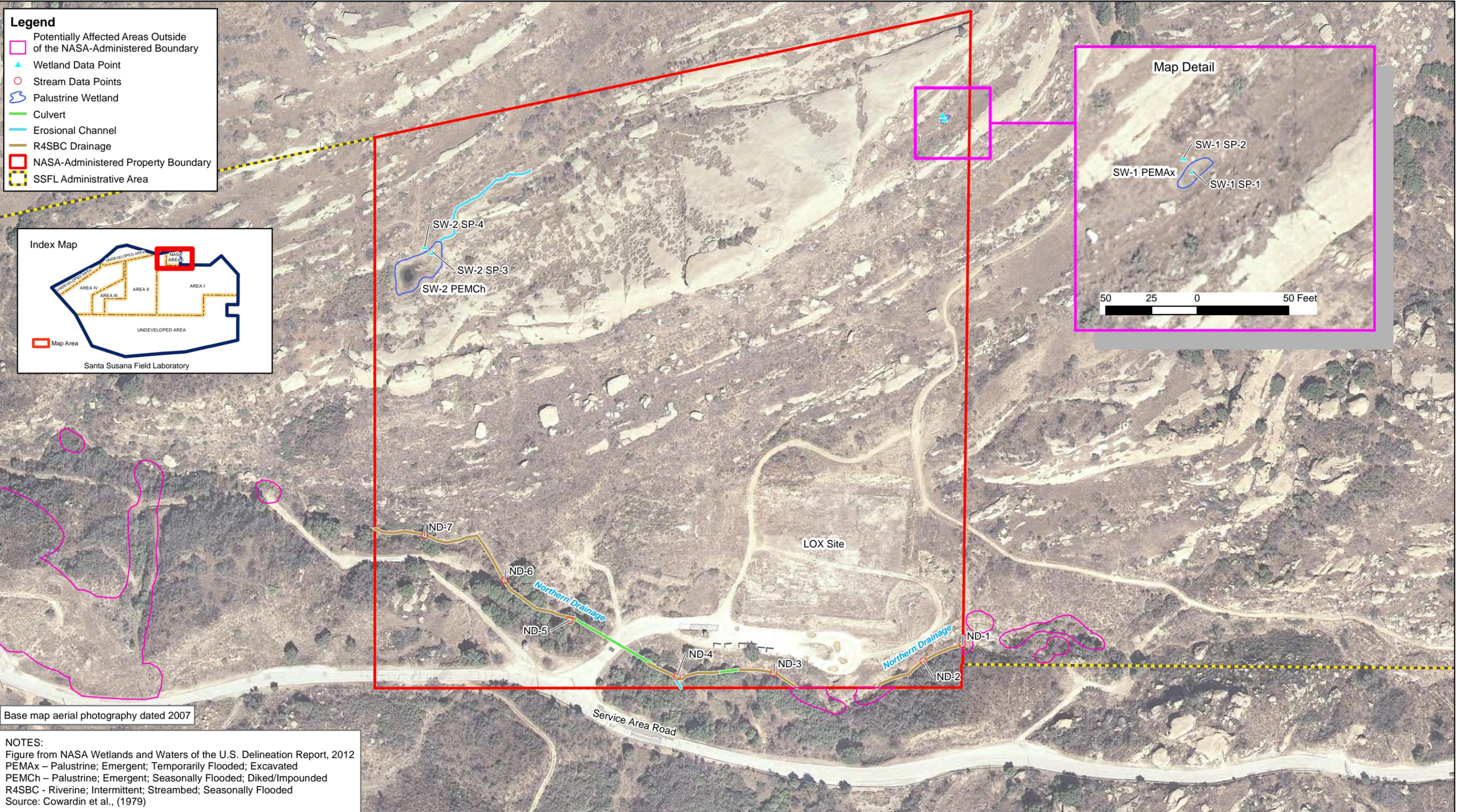
Vegetation

At each sample point, plant species were identified and the percent cover was estimated visually and recorded. Herbaceous vegetation was sampled in an approximately 5-ft radius around the sample point. Taxonomic designations follow *The Jepson Manual: Vascular Plants of California* (Baldwin et al., 2012). The *National List of Plant Species that Occur in Wetlands* (Reed, 1988) was used to evaluate the wetland indicator status of each plant species identified. Dominant species included the most abundant species whose cumulative cover accounted for at least 50 percent of the total cover and any single species that accounted for at least 20 percent of the total vegetative cover. A list of plant species observed at the sample points and of other common species observed throughout the wetland study area during the field survey is provided in Appendix F of the Wetland Delineation Report.

Soils

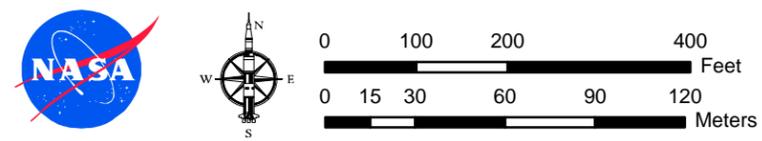
Descriptions of soils were made by examining test pits, ranging from 12.7 centimeters (cm) (5 inches) to 60.9 cm (24 inches) deep, that had been excavated using a tile spade. In some areas, the depth of excavation was limited by shallow sandstone contact. At each data point, soil morphological features such as texture, color, and

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Base map aerial photography dated 2007

NOTES:
 Figure from NASA Wetlands and Waters of the U.S. Delineation Report, 2012
 PEMax – Palustrine; Emergent; Temporarily Flooded; Excavated
 PEMCh – Palustrine; Emergent; Seasonally Flooded; Diked/Impounded
 R4SBC - Riverine; Intermittent; Streambed; Seasonally Flooded
 Source: Cowardin et al., (1979)



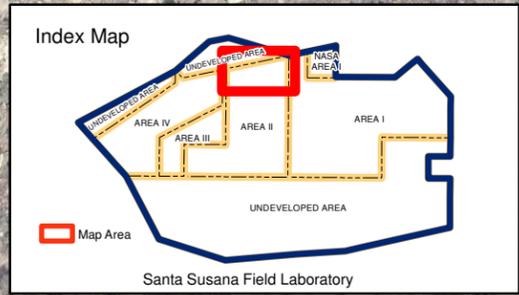
Wetland Delineation:
 CH2M HILL Staff Russell Huddleston and CH2M HILL Staff Steve Long, January 2012

Drawn By:
 A. Cooley
 23-Jul-2012

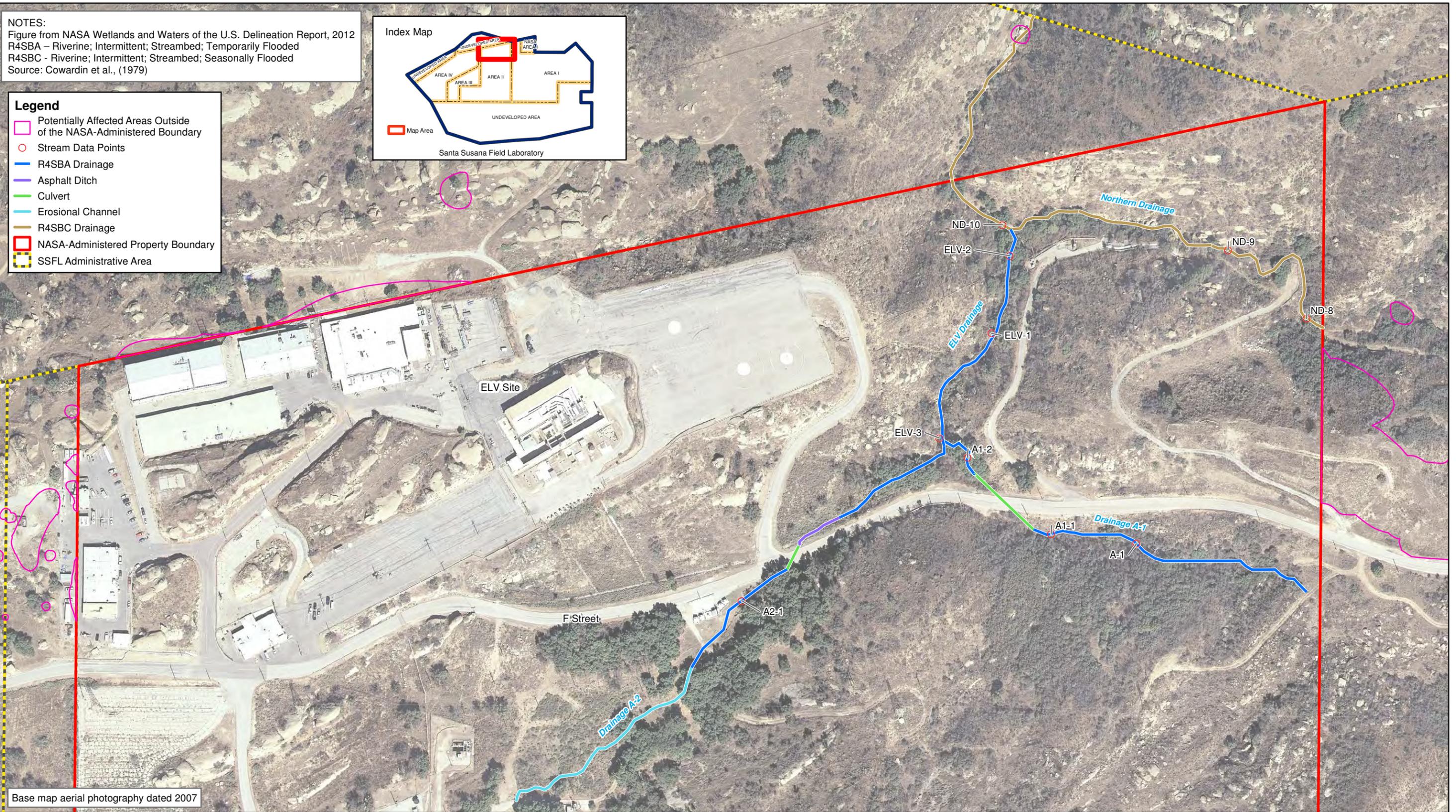
Figure 4-2
Area I
NASA Wetlands and Waters of the U.S. Delineation
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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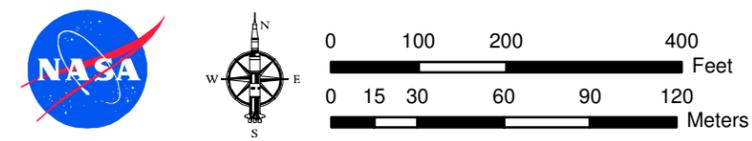
NOTES:
 Figure from NASA Wetlands and Waters of the U.S. Delineation Report, 2012
 R4SBA - Riverine; Intermittent; Streambed; Temporarily Flooded
 R4SBC - Riverine; Intermittent; Streambed; Seasonally Flooded
 Source: Cowardin et al., (1979)



- Legend**
- Potentially Affected Areas Outside of the NASA-Administered Boundary
 - Stream Data Points
 - R4SBA Drainage
 - Asphalt Ditch
 - Culvert
 - Erosional Channel
 - R4SBC Drainage
 - NASA-Administered Property Boundary
 - SSFL Administrative Area



Base map aerial photography dated 2007



Wetland Delineation:
 CH2M HILL Staff Russell Huddleston and CH2M HILL Staff Steve Long, January 2012
 Drawn By:
 A. Cooley
 22-Apr-2013

Figure 4-3
Area II - North
 NASA Wetlands and Waters of the U.S. Delineation
 Biological Assessment for Proposed Demolition and Cleanup Project
 NASA - Santa Susana Field Laboratory

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Wetland Delineation:
CH2M HILL Staff Russell Huddleston and CH2M HILL Staff Steve Long, January 2012

Drawn By:
A. Cooley
23-Jul-2012

Figure 4-4
Area II - Central North
NASA Wetlands and Waters of the U.S. Delineation
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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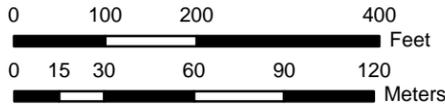
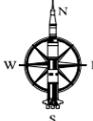
Legend

- Potentially Affected Areas Outside of the NASA-Administered Boundary
- Stream Data Points
- ~ Palustrine Wetland
- Concrete Lined Ditch
- NASA-Administered Property Boundary
- SSFL Administrative Area

Index Map

Santa Susana Field Laboratory

Base map aerial photography dated 2007



Wetland Delineation:
 CH2M HILL Staff Russell Huddleston and CH2M HILL Staff Steve Long, January 2012

Drawn By:
 A. Cooley
 23-Jul-2012

Figure 4-5
Area II - Central South
NASA Wetlands and Waters of the U.S. Delineation
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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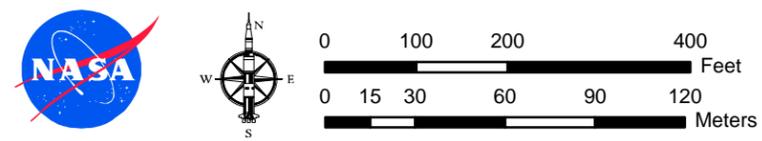


- Legend**
- Potentially Affected Areas Outside of the NASA-Administered Boundary
 - Stream Data Points
 - ▲ Wetland Data Point
 - Palustrine Wetland
 - Concrete Lined Ditch
 - Culvert
 - Shotcrete Swale
 - Swale
 - NASA-Administered Property Boundary
 - SSFL Administrative Area



NOTES:
 Figure from NASA Wetlands and Waters of the U.S. Delineation Report, 2012
 PUBHx – Palustrine; Unconsolidated Bottom; Permanently Flooded; Excavated
 Source: Cowardin et al., (1979)

Base map aerial photography dated 2007



Wetland Delineation:
 CH2M HILL Staff Russell Huddleston and CH2M HILL Staff Steve Long, January 2012

Drawn By:
 A. Cooley
 23-Jul-2012

Figure 4-6
Area II - Southeast
NASA Wetlands and Waters of the U.S. Delineation
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

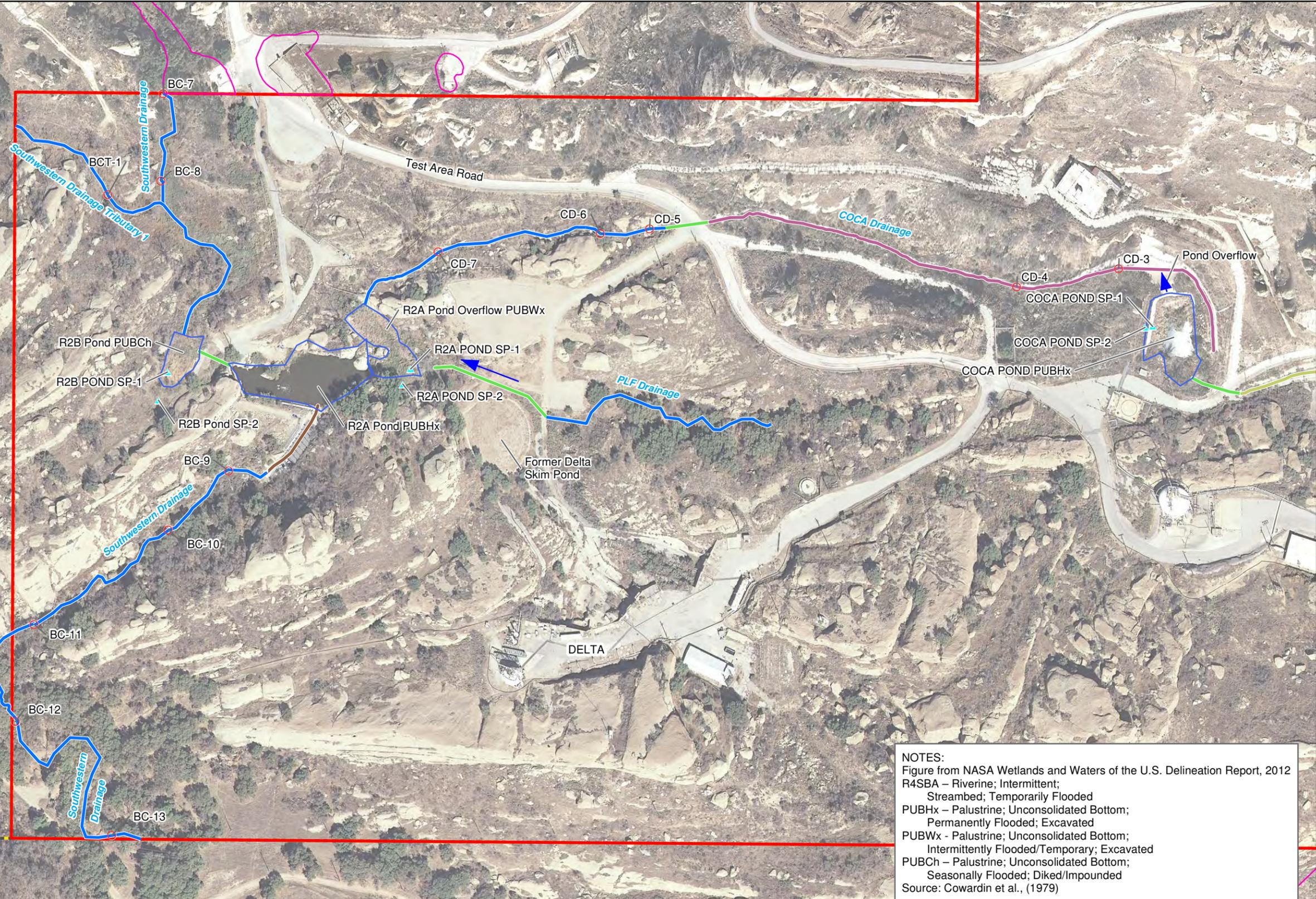
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Legend

- Potentially Affected Areas Outside of the NASA-Administered Boundary
- ▲ Wetland Data Point
- Stream Data Points
- ~ Palustrine Wetland
- R4SBA Drainage
- Concrete Lined Ditch
- Constructed Outfall
- Culvert
- Shotcrete Swale
- NASA-Administered Property Boundary
- SSFL Administrative Area

Index Map

Santa Susana Field Laboratory



NOTES:
 Figure from NASA Wetlands and Waters of the U.S. Delineation Report, 2012
 R4SBA – Riverine; Intermittent;
 Streambed; Temporarily Flooded
 PUBHx – Palustrine; Unconsolidated Bottom;
 Permanently Flooded; Excavated
 PUBWx - Palustrine; Unconsolidated Bottom;
 Intermittently Flooded/Temporary; Excavated
 PUBCh – Palustrine; Unconsolidated Bottom;
 Seasonally Flooded; Diked/Impounded
 Source: Cowardin et al., (1979)

Base map aerial photography dated 2007

0 100 200 400 Feet
 0 15 30 60 90 120 Meters

Wetland Delineation:
 CH2M HILL Staff Russell Huddleston and CH2M HILL Staff Steve Long, January 2012
 Drawn By:
 A. Cooley
 22-Apr-2013

Figure 4-7
Area II - Southwest
NASA Wetlands and Waters of the U.S. Delineation
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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redoximorphic features (if present) were noted. Soil texture was estimated in the field by feel (Thien, 1979), and moist soil colors were determined using Munsell color charts. In areas where no hydric soil indicators were observed, hydric conditions were assumed to be present where the following conditions existed:

- Dominant vegetation was composed entirely of obligate and facultative wetland plant species.
- There was evidence of seasonal wetland hydrology.
- There was a noticeable difference between the wetland and adjacent upland habitat.

Hydrology

The presence of wetland hydrology was evaluated based on current as well as previous field observations of saturation and/or inundation, water staining, sediment deposits, and drift deposits. Seasonal rainfall, site drainage, landscape position, and general site topography also were taken into consideration during the process of making wetland hydrology determinations.

Wetland and Water Boundary Mapping

A Trimble Geo-XT global positioning system (GPS) device was used to map the limits of the wetland boundaries. Wetland boundaries were established in the field based on observations of hydrophytic vegetation, evidence of wetland hydrology, and onsite microtopography. Soil characteristics generally were not useful in differentiating wetland boundaries.

4.1.3.3 Survey Conditions

No significant recent disturbance was observed; however, the rainfall between November 1 and December 31, 2011, was approximately 30 percent below average; therefore, the wetlands and drainages might have been drier than normally would be expected for the time of year. In most areas, the ordinary high-water mark was expressed clearly as water marks and/or drift lines. Additionally, the drainages generally had clearly expressed and well-defined channels. For these reasons, the dry seasonal conditions did not preclude an effective delineation of the wetland boundaries and ordinary high-water marks.

4.1.3.4 Results

From the observations made during the wetland delineation field surveys, a total of 0.5 ha (1.3 acres) of Palustrine wetlands and 0.7 ha (1.9 acres) of Riverine wetlands were identified within the Action Area. An additional 0.2 ha (0.5 acre) of other features (such as swales, asphalt drainage ditches, and over flow culverts) also were identified in this area. The wetland locations within the study area are shown in Figures 4-2 through 4-7. Table 4-2 summarizes the wetland features and acreage of each feature.

TABLE 4-2
Summary of Wetland Features
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Feature ID	Area
Palustrine Wetlands	
Hectares (Acres)	
SW-1 (PEMAx)	0.001 (0.003)
SW-2 (PEMCh) ¹	0.061 (0.152)
R2A Pond (PUBHx)	0.206 (0.511)
R2A Pond Overflow (PUBWx)	0.091 (0.226)
R2B Pond (PEMCh)	0.052 (0.129)
Coca Pond (PUBHx)	0.132 (0.327)
Total Palustrine Wetlands	
0.545 (1.348)	
Riverine Wetlands	
Hectares (Acres) [Linear Feet]	
Northern Drainage (R4SBC)	
0.197 (0.488) [3,193 LF]	
Northern Drainage Natural Channel	0.18 (0.465) [2,176 LF]
Northern Drainage Culverts	0.009 (0.023) [1,017 LF]
ELV Drainage (R4SBA)	
0.055 (0.138) [862 LF]	

TABLE 4-2
Summary of Wetland Features
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Feature ID	Area
Southwestern Drainage (R4SBA)	0.23 (0.586) [8,826 LF]
Southwestern Drainage Nature Drainage	0.159 (0.394) [8,049 LF]
Southwestern Drainage Concrete Ditch	0.04 (0.100) [542 LF]
Southwestern Drainage Culvert	0.001 (0.004) [65 LF]
Southwestern Drainage Constructed Outfall	0.035 (0.088) [170 LF]
Southwestern Drainage Tributary (R4SBA)	0.013 (0.034) [371 LF]
Coca Drainage (R4SBA)	0.194 (0.479) [1,899 LF]
Coca Drainage Natural Channel	0.082 (0.203) [655 LF]
Coca Drainage Concrete Ditch	0.107 (0.265) [1,155 LF]
Coca Drainage Culverts	0.004 (0.011) [89 LF]
PLF Drainage (R4SBA)	0.016 (0.040) [758 LF]
PLF Drainage Natural Channel	0.011 (0.029) [511 LF]
PLF Drainage Culverts	0.004 (0.011) [247 LF]
Drainage A-1 (R4SBA)	0.024 (0.060) [911 LF]
Drainage A-1 Natural Channel	0.020 (0.050) [724 LF]
Drainage A-1—Culvert	0.004 (0.010) [187 LF]
Drainage A-2 (R4SBA)	0.019 (0.046) [935 LF]
Drainage A-2 Natural Channel	0.012 (0.030) [324 LF]
Drainage A-2 Erosional Feature	0.005 (0.013) [547 LF]
Drainage A-2 Culvert	0.001 (0.003) [64 LF]
Total Riverine Wetlands	0.757 (1.871) [17,755 LF]
Other Features	Hectares (Acres) [Linear Feet]
Southwestern Drainage Swale (Alfa)	0.063 (0.157) [6,860 LF]
Southwestern Drainage Swale Culverts	0.005 (0.013) [218 LF]
Southwestern Drainage Swale Overflow Culvert	0.009 (0.024) [344 LF]
Coca—Shotcrete Swale	0.096 (0.236) [1,027 LF]
Coca—Shotcrete Swale Culverts	0.003 (0.009) [68 LF]
ELV Asphalt Drainage Ditch	0.010 (0.027) [1,155 LF]
ELV Asphalt Drainage Culvert	0.001 (0.004) [89 LF]
Total Other Features	0.190 (0.470) [9,761 LF]

Notes:

LF = linear foot

PLF = Propellant Loading Facility

¹ Palustrine feature, SW-2 was considered to be an isolated, non-jurisdictional wetland feature (USACE, 2013).

4.1.3.5 Delineation of Nonwetland Waters of the United States

Nonwetland waters of the U.S. include such features as rivers, streams, lakes, and ponds. In the absence of adjacent wetlands, the USACE's jurisdiction extends to the limits of the ordinary high-water mark, which is defined as "the line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR 328.3 [e]).

Linear features such as creeks and drainages were delineated by surveyors walking the channel bed, to the extent possible, and noting the characteristics of the feature such as substrate, in channel and adjacent vegetation, evidence of flow, and hydrologic modifications such as culverts or weirs. To the extent possible, the channel bed was mapped in the field with a Trimble Geo-XT. The ordinary high water was determined and measured at representative cross sections (Figures 4-2 through 4-7) based on observed water staining, drift and debris deposits, sediment deposits, scouring, and other indicators of ordinary high-water flows. Stream data sheets are provided in Appendix F of the Wetland Delineation report, and representative site photographs are provided in Appendix G of the Wetland Delineation Report.

Nonlinear features including ponds and impoundments were delineated based on the extent of the ordinary high-water mark as determined by indicators such as water staining and sediment deposits. Emergent wetland vegetation was present in some areas but occurred below the limits of the ordinary high water and therefore was not considered to be adjacent. The limits of the ordinary high water were then mapped using a Trimble Geo-XT.

4.1.3.6 Nonwetland Features

A number features were investigated during the survey that were not considered to be waters of the U.S. Such features included constructed stormwater swales associated with developed areas, culverts at road crossings that were not associated with defined drainage channels, and discontinuous erosional channels and weakly expressed upland swale on the hill slopes. Additionally, former skim ponds that have been capped and a former (now dry) basin that had been used to burn off excess fuels were not considered to be waters of the U.S.

4.1.3.7 Preliminary Jurisdictional Determination

The USACE ultimately is responsible for determining the limits of waters of the U.S. subject to regulation under the federal CWA. The results and conclusions presented in the Wetland Delineation Report are intended to assist the USACE with its determination of jurisdictional waters of the U.S. The results and conclusions presented in the report are preliminary, pending verification and subsequent approval by the USACE.

The small excavated wetland in the northeastern part of Area I (LOX Plant Area) and the larger impounded wetland and associated erosional channel in the northwestern part of Area I appear, on the basis of the site investigation, to be isolated. There does not appear to be any significant nexus between these constructed basins and any waters of the U.S. Therefore these wetlands might not be considered jurisdictional waters of the U.S. subject to regulation under Section 404 of the federal Clean Water Act (CWA).

The asphalt drainage ditch along F Street, south of the Expendable Launch Vehicle (ELV) site (Figure 4-3), might be considered jurisdictional because there is a direct surface water connection between this stormwater channel and the ELV drainage.

The jurisdictional status of the section of Southwest Drainage through the Alfa site (Figure 4-4) is uncertain. This area lacks defined bed and bank, and there was no evidence of an ordinary high-water flow throughout this section. However, this area appears to be a natural drainage, has been mapped as a blue line on the USGS Calabazas topographic quadrangle, and is also included as an intermittent stream in the National Hydrography Database. Although it appears that the natural hydrology has been altered significantly in this area, it could still be considered a water of the U.S. because it is considered part of the Southwestern Drainage and remnants of the natural drainage are still present. In contrast, the easternmost section of the Coca drainage, which is characterized by a shotcrete swale, has been altered so dramatically from its original condition that it is unlikely this section would be considered a water of the U.S. The cement-lined drainage that originates at the Coca Pond and extends west, eventually becoming a natural drainage, is likely to be considered jurisdictional.

Other drainage features identified on the NASA-administered property include extant natural drainages, some of which have been realigned and lined with concrete but appear to be natural tributary drainages that would be jurisdictional and therefore subject to regulation under Section 404 of the CWA. The R2A, R2B, and Coca ponds appear to have been created along the natural drainage channels and might be considered either impoundments of Waters of the U.S. or adjacent to Waters of the U.S.

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SECTION 5

Special Status Species Study Methods

NASA conducted field surveys including natural vegetative community mapping, protocol-level rare plant surveys, and opportunistic wildlife surveys in 2010 and 2011; a wetland delineation in January 2012; and a Quino Checkerspot Habitat Survey in March 2012. During the wetland delineation, a habitat assessment was completed for the CRLF (Appendix C) and the previously identified rock basins were surveyed for the presence of VPFS and RFS. Dip-netting results for VPFS and RFS from a 2009 DOE Report provided to NASA by the USFWS also were reviewed. Pre-field preparation, survey methods, and results for the 2010 and 2011 surveys are described in this section, and a description with the results of the wetland delineation is located in Section 4. Figure 5-1 shows the locations of sensitive species, habitats, and other significant features.

5.1 2010 Surveys

5.1.1 Survey Objectives

Survey objectives included conducting a species-specific survey for Branton's milk-vetch throughout the Action Area as well as general (opportunistic) surveys for other listed species that could be identified during the same time that the milk-vetch survey was being conducted. The general surveys were focused on the plant and animal species that had been documented to occur within or in the vicinity of SSFL during previous surveys and based on other data sources. In addition, field surveys included recording locations for California State Species of Concern and Santa Susana tarplant, and assessing and mapping natural vegetative communities. Additional information (GPS or aerial photograph locations) also was collected in the field for the following features:

- Non-chalky (without a white powdery bloom) species of dudleya (*Dudleya* spp.)
- California black walnut (*Juglans californica*)
- Rock basins of adequate size to contain water for an extended period in the spring

5.1.1.1 Pre-field Preparation

Available data were gathered in preparation for the reconnaissance-level field surveys. These data included an assessment of published reports on ecological and habitat classifications including Miles and Goudey (1998), the *Manual of California Vegetation* (Sawyer et al., 2009), and Holland (1986). This information was used to develop an understanding of the primary vegetation and habitat types that would be expected in the project area.

Prior to going into the field, existing data were reviewed that included previous ecological surveys and a search of plants identified by the CNDDDB. Previous ecological surveys at SSFL (NASA, 2011a; SAIC, 2009; MWH, 2007c) were reviewed to develop tentative plant lists and to assess the level of detail provided. Plants identified by the CNDDDB were also added to the plant list. The tentative plant list was used to obtain representative photographs from the internet (<http://calphotos.berkeley.edu/flora>) and to summarize important characteristics to facilitate field identifications during the field surveys. The CNDDDB information was rendered into a map covering the project area so that the known occurrences of listed species could be viewed in context to the individual SSFL sites.

The CNPS online Inventory of Rare and Endangered Plants (<http://www.cnps.org/cnps/rareplants/inventory>) was reviewed to identify the flowering periods of the special-status plants that could be present at SSFL.

The NASA survey areas (Action Area) were overlain onto ortho-rectified aerial photographs at a 2.54 cm = 45.72 m (1 inch = 150 ft) scale to serve as base maps for the field surveys. The SSFL aerial photographic base maps were generated from the NASA geographic information system (GIS) database using the NAD_1927_StatePlane_California_V_FIPS_0405 base datum coordinate system. The aerial photographic base maps also were overlain with the previously existing vegetation mapping that had been completed for the entire SSFL by Technology Associates International Corporation (TAIC, 2002).

5.1.1.2 Conducting Field Surveys

Survey team members systematically walked the NASA properties to conduct the field surveys. The steep terrain and areas of dense vegetation precluded the possibility of completing transects in the study area; however, the walking surveys were used to view the accessible areas. The aerial photographic base maps were used in the field to directly delineate the terrestrial and aquatic (wetland) habitats for each site. The delineated habitats subsequently were digitized into the NASA GIS database and re-mapped onto the ortho-rectified aerial photograph base maps.

The field surveys also were used to record characteristic vegetation and general wildlife use patterns within the Action Area. Field surveys were conducted during September and October 2010, when many of plants, especially flowering plants and grasses, were senescing and migratory breeding birds were not present. The time spent at each site was limited and wildlife observations were opportunistic rather than systematic.

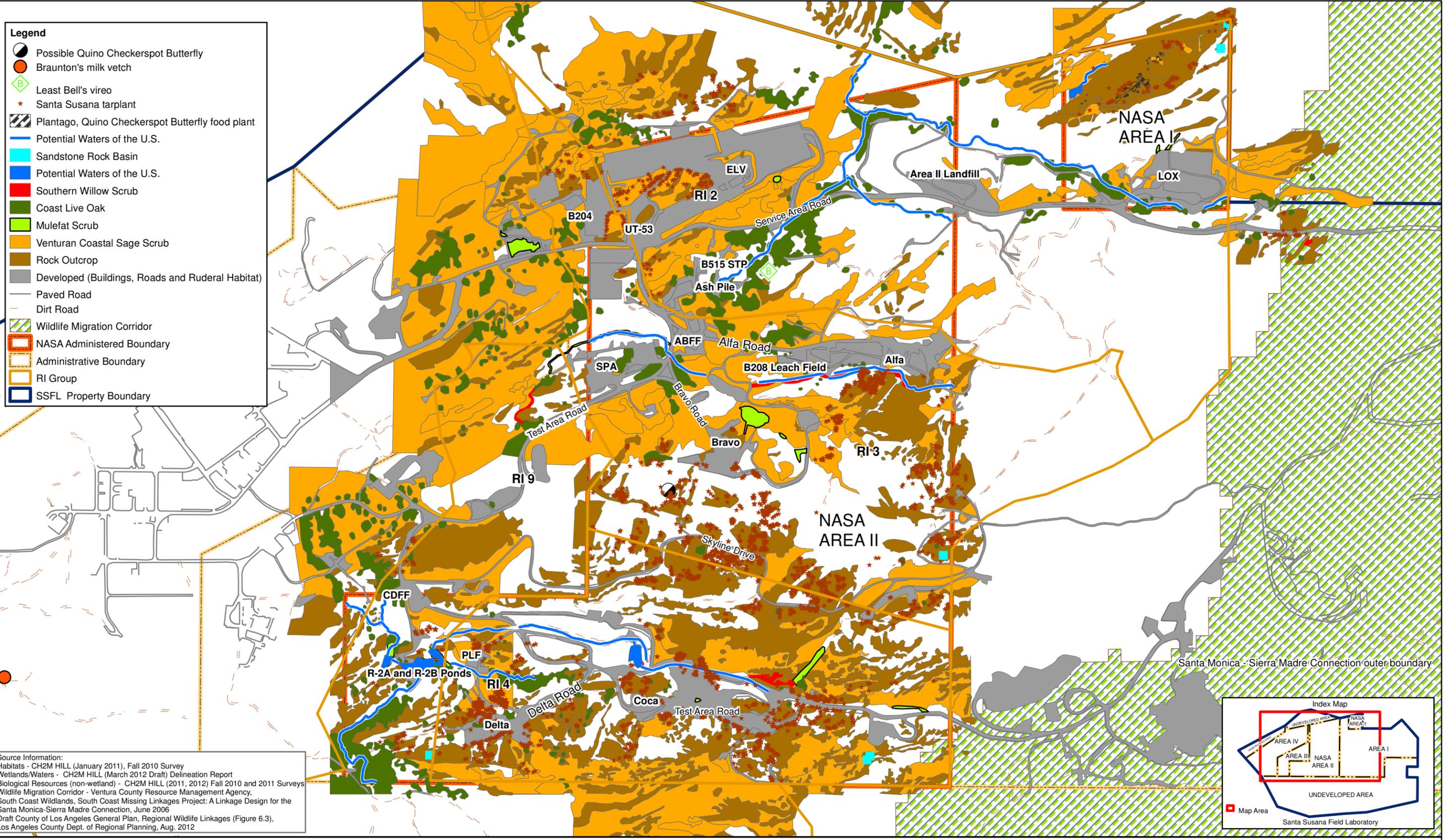
Direct observation, calls, or signs of wildlife in the project area were recorded during the terrestrial and aquatic habitat characterization field surveys. This sampling was incidental to the habitat characterization efforts. No active survey techniques, such as using kicknets to identify benthic invertebrates or searching under logs, rocks, and debris for herpetiles, were used due to time constraints. Observations, including species, number present, observations, and remarks and comments, were recorded directly in field notes. Digital photographs were taken and locations of direct observations and signs were recorded directly in field notes. Observations of any special-status species or sensitive habitat areas observed during the field surveys were recorded onto the base maps.

An area of SSFL known to contain Braunton's milk-vetch is in the southern portion of the Boeing Area IV. Because these plants were viewed at this location during the 2008 field surveys, the same location was revisited to observe the current physical appearance of these plants. This reference observation was intended to calibrate the search image for these plants in other areas on the NASA properties. Similarly, previous mapping of the Santa Susana tarplant (SAIC, 2009) was used to confirm the existing appearance and search image for these plants.

During the field survey, locations for Santa Susana tarplants were recorded by taking a GPS point for each tarplant whenever they could be accessed on foot. In cases where plants were small and tightly clustered, a single GPS point could represent from one to five plants. Tarplants that could not be safely reached on foot were identified and counted using binoculars. Their locations were pin-pricked on the base maps and these coordinates later were determined using Google Earth. The general distribution of tarplants is shown on the maps; however, the signal interference of buildings and rocks walls, along with limiting satellite geometry, can degrade the accuracy of GPS. Therefore, the locations of individual plants should be considered as approximate.

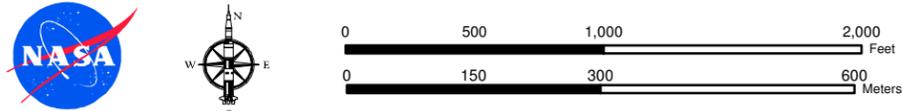
Because the dudleya plants were small and outside of their flowering period (senescent), recorded GPS locations represented characteristic habitats where they were readily observable rather than a complete inventory. Readily identifiable plants were recorded on the Natural Community Datasheets. Voucher samples of unknown plants were collected in plastic zip bags for later identification using local taxonomic keys when there was adequate material to permit identification. The voucher plants were integrated with the field-identified plants on the natural community forms; however, it should be noted that many annual plants had senesced to a point that definitive identification was not possible. Species of Interest Datasheets also were completed when opportunistic observations indicated the need.

Digital photographs were taken of the different habitats at each site to provide a visual representation and to allow for assessment of future changes or improvements in habitat quality for each site. The location of each digital photograph was mapped onto the aerial photograph base map.



- Legend**
- Possible Quino Checkerspot Butterfly
 - Braunton's milk vetch
 - ◇ Least Bell's vireo
 - ★ Santa Susana tarplant
 - ▨ Plantago, Quino Checkerspot Butterfly food plant
 - Potential Waters of the U.S.
 - Sandstone Rock Basin
 - Potential Waters of the U.S.
 - Southern Willow Scrub
 - Coast Live Oak
 - Mulefat Scrub
 - Venturan Coastal Sage Scrub
 - Rock Outcrop
 - Developed (Buildings, Roads and Ruderal Habitat)
 - Paved Road
 - Dirt Road
 - ▨ Wildlife Migration Corridor
 - ▭ NASA Administered Boundary
 - ▭ Administrative Boundary
 - ▭ RI Group
 - ▭ SSFL Property Boundary

Source Information:
 Habitats - CH2M HILL (January 2011), Fall 2010 Survey
 Wetlands/Waters - CH2M HILL (March 2012 Draft) Delineation Report
 Biological Resources (non-wetland) - CH2M HILL (2011, 2012) Fall 2010 and 2011 Surveys
 Wildlife Migration Corridor - Ventura County Resource Management Agency,
 South Coast Wildlands, South Coast Missing Linkages Project: A Linkage Design for the
 Santa Monica-Sierra Madre Connection, June 2006
 Draft County of Los Angeles General Plan, Regional Wildlife Linkages (Figure 6.3),
 Los Angeles County Dept. of Regional Planning, Aug. 2012



22-Apr-2013
 Drawn By:
 A. Cooley

Figure 5-1
Sensitive Resources
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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Habitat Field Measurements

As part of the field survey within each delineated terrestrial habitat type at a selected location, a qualitative assessment was conducted. The following primary measurements were collected for terrestrial habitats:

- Dominant plant species
- Visual and auditory observations of wildlife species, as well as other indicators of wildlife use (such as burrows, tracks, scat, and rubs)
- Digital photographs of habitat types
- Estimated size and depth of aquatic features

Procedures for Photograph Documentation

Documentation of the following information was recorded for each digital photograph: date, name of the site, general description of the subject, and location of the site photograph.

Photographs of species of interest or representative natural communities were taken at the locations where the corresponding datasheets were completed. In addition, other photographs were taken of relevant site features and representative habitats.

5.1.1.3 Results

Habitat mapping was completed in the Action Area. The habitat maps produced from this effort were used as base maps for the 2011 protocol-level plant surveys and opportunistic wildlife surveys.

On the basis of the visit to the reference location (Boeing Area IV) during the fall survey in late September 2010, the Braunton's milk vetch was observed to be in a state of senescence. Leaves of the observed plants had almost entirely fallen from the stems. Remnant sparse leaves were dried and curled. Dried gray stems of this plant were observed to be standing up to 0.6 to 0.91 m (2 or 3 ft) in height; however, many dried stems were broken and short (about 0.30 m [1 ft] tall). This plant was not observed outside of the reference area in any of the areas accessed during the fall survey of the Action Area.

On the basis of the visit to the reference location (ELV) during the fall survey in late September 2010, the Santa Susana tarplant was observed to be in bloom. Santa Susana tarplant was observed at 3,657 locations on the NASA properties. These plants were found wherever sandstone outcrop habitats were dominant (Figure 5-1).

Unidentified *Dudleya* sp. individuals of the type that potentially could be special-status species (that is, the non-chalky species) were observed at 30 locations in Area II. As previously explained, these occurrences do not represent a thorough inventory, but rather an indication of habitats where the plants would occur.

Although no systematic surveys (trapping) were conducted for wildlife, observations were made throughout the survey and recorded (Table 5-1). Because of the time of year when the surveys were conducted, many species that commonly would have been found in the various habitats during the spring and summer were absent. NASA agreed that follow up protocol-level plant and wildlife species surveys would need to be conducted in 2011; these additional surveys are described in the following subsection.

5.2 2011 Surveys

5.2.1 Survey Objectives

The field methodology used for the 2011 surveys was adapted from the methodology used in the fall 2010 surveys. The 2011 surveys were adapted to address temporal variations in the occurrence of special-status plants and animal species by conducting several surveys during different times of the year (spring, late spring and early summer, and late summer).

5.2.1.1 Pre-field Preparation

Preparation for the protocol-level special-status plant surveys and opportunistic wildlife surveys included compiling a list of rare, threatened, or endangered plant species that potentially occur within the limits of the Action Area. The Action Area that occurs in the USGS 7.5-minute Calabasas quadrangle and the nine surrounding quadrangles were queried for plant and wildlife species occurrences in 2010, 2011, and 2012. The other quadrangles queried were the Canoga Park, Thousand Oaks, Simi, Santa Susana, Oat Mountain, Point Dume, Malibu Beach, and Topanga quadrangles. The CNDDDB (2010; 2011; 2012) also was queried. In addition, further information was collected for special-status plant species from the CNPS (2011) Rare Plant Inventory; the USFWS list of threatened, endangered, and candidate species for Ventura County (2011); and herbarium collections from the Jepson On-Line Interchange for California Floristics (University of California, 2011a).

Listed and special-status species are of relatively limited distribution and might require specialized habitat conditions. Listed and special-status species are defined as follows:

- Listed as endangered, threatened, or a candidate for listing under the federal ESA
- Protected under other regulations (such as the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act of 1940)
- Species of federal, state, or local special-status that might be listed during the “lifespan” of the project

Special-status Plants

The CNDDDB searches and literature review identified plant species that have the potential to occur within the Action Area. Of the 46 federal, state, and CNPS-listed special-status plants in the regional vicinity, 34 were considered to have the potential to occur on within the Action Area. Of those, 8 federally listed or candidate species and 1 California rare listed species that has the potential to be federally listed during the span of the project were identified, and are analyzed in this BA. The potential for the federally listed species to occur was evaluated relative to the quality and quantity of suitable habitat present in the Action Area, the proximity of the area to a known or potential breeding location, known barriers to dispersal or reproduction, information available in literature or previously published reports, contacts with local experts familiar with the Action Area and the species being addressed, and NASA rare-plant and reconnaissance-level wildlife survey data. Table 5-1 lists the species, along with blooming periods and habitat characteristics.

Special-Status Wildlife

The database search identified a total of 20 special-status wildlife species that were considered to have the potential to occur in the Action Area. During the EIS public scoping period, the USFWS commented that Quino checkerspot butterfly and VPFS also should be considered as potentially occurring on the site. Of the 22 species identified, 6 federally listed species were identified and are analyzed in this BA. Table 5-2 lists the 6 special-status wildlife species that potentially occur within the Action Area.

TABLE 5-1
Federal Special-Status Plant Species that Potentially Occur on the NASA-administered Property at SSFL
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Astragalus brauntonii</i>	Braunton's milk-vetch	FE	Jan-Aug	Chaparral, coastal scrub grassland, and closed-cone coniferous forest. Known to occur on Boeing-owned property at SSFL approximately 0.8 km (0.5 mile) west of the site. Boeing is planting this species for mitigation purposes. Numerous reported occurrences in the regional vicinity.
<i>Orcuttia californica</i>	California Orcutt grass	FE	Apr-Aug	Vernal pools and playas; typically in heavy clay soils. No suitable habitat in the study area.
<i>Chorizanthe parryi</i> var. <i>fernandina</i>	San Fernando Valley spineflower	FC	Apr-July	Sandy soils in coastal scrub and rocky outcrops. Large population reported approximately 5.8 km (3.6 miles) south of the site.
<i>Deinandra minthornii</i>	Santa Susana tarplant	CR	July-Nov	On sandstone outcrops in chaparral and coastal scrub. This species is widespread throughout much of the site. Numerous reported occurrences in the regional vicinity.
<i>Dudleya cymosa</i> ssp. <i>agourensis</i>	Agoura Hills dudleya	FT	May-June	Rocky areas and volcanic breccias in chaparral and cismontane woodland habitats. Several known occurrences between 9.7 km (6 miles) and 16 km (10 miles) southwest of the site.
<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i>	Santa Monica dudleya	FT	Mar-June	Chaparral and coastal scrub; often on north facing slopes in canyons associated with sedimentary conglomerates. Three known occurrences between 16 km (10 miles) and 19.3 km (12 miles) south of the site.
<i>Dudleya parva</i>	Conejo dudleya	FT	May-June	Coastal scrub, grassland, and rocky slopes; generally on clayey or volcanic soils. Two reported occurrences approximately 14.5 km (9 miles) west of the site.
<i>Dudleya verityi</i>	Verity's dudleya	FT	May-June	Volcanic and rocky outcrops in chaparral, coastal scrub, and cismontane woodland. Three reported occurrences between 24.1 km (15 miles) and 30.6 km (19 miles) west of the site.
<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	marcescent dudleya	FT	Apr-July	Chaparral, sheer rock surfaces, and rocky volcanic cliffs. Four reported occurrences between 12.9 km (8 miles) and 14.5 km (9 miles) south of the study area.
<i>Navarretia fossalis</i>	spreading navarretia	FT	Apr-June	Vernal pools, shallow freshwater marshes, playas, and chenopod scrub. Limited habitat present on the site. No reported occurrences in Ventura County. Nearest reported occurrences are between 30.6 km (19 miles) and 32.2 km (20 miles) northeast of the site.

TABLE 5-1

Federal Special-Status Plant Species that Potentially Occur on the NASA-administered Property at SSFL*NASA SSFL Biological Assessment for the Demolition and Cleanup Project*

Scientific Name	Common Name	Status	Blooming Period	Habitat and Notes
<i>Pentachaeta lyonii</i>	Lyon's pentachaeta	FE	Mar-Aug	Chaparral and grassland habitats. Numerous reported occurrences of this species in the regional vicinity of the site. Nearest CNDDDB occurrence is approximately 6.5 miles west of the site.

Status Codes:

CE = State-listed endangered species

CNDDDB = California Natural Diversity Data Base

FC = Candidate for federal listing as a threatened or endangered species

FE = Federally listed endangered species

FT = Federally listed threatened species

Sources:

California Natural Diversity Database (CNDDDB) Rarefind Version 3.1.0 (CNDDDB, 2011).

California Native Plant Societies Online CNPS Inventory of Rare and Endangered Plants (8th Edition) (CNPS, 2011)

U.S. Fish and Wildlife Service List of Threatened and Endangered Plants of Ventura County (USFWS, 2011b)

University of California, Berkeley Consortium of California Herbaria (University of California, 2011b)

TABLE 5-2

Special-Status Wildlife Species that Potentially Occur on the NASA-administered Property at SSFL*NASA SSFL Biological Assessment for the Demolition and Cleanup Project*

Scientific Name	Common Name	Status	Habitat and Notes
<i>Poliioptila californica californica</i>	coastal California gnatcatcher	FT	Preferred nesting habitat is open coastal sage scrub with abundant California sagebrush, especially in areas where sage scrub intergrades with grassland habitat. Feeds on a variety of insects. Nearest reported nesting location is 6.4 km (4 miles) south of the site.
<i>Vireo bellii pusillus</i>	least Bell's vireo	FE	Nests usually are built in riparian areas with dense shrub cover and a structurally diverse canopy. Feeds on a variety of insects. One presumably non-breeding individual was observed on site during the August 2011 survey. Only one reported nest location in the regional vicinity in dense willow riparian habitat approximately 14.5 km (9 miles) northwest of the site.
<i>Rana draytonii</i>	California red-legged frog	FT	Found in perennial and ephemeral aquatic habitats including lakes, ponds, streams, and marshes associated with habitats such as grassland, woodland, and coastal scrub. Feeds mostly on insects, but also eats small fish, frogs, and salamander larvae. Reported from East Las Virgenes Creek and Las Virgenes between 4.8 and 5.6 km (3 and 3.5 miles) south of the site.
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	FE	Occurs in coastal sage scrub habitat. Larval food plants include <i>Plantago erecta</i> and <i>Castilleja exserta</i> . Possible sighting of one individual onsite. No reported occurrences in the regional vicinity. Species-specific surveys conducted in July 2011 and March 2012 stated that the existing habitat conditions for the Quino checkerspot butterfly within study sites at Areas I (LOX Plant Area) and II of the SSFL Project are of such poor quality that this species is not expected to occur at this time.
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	FT	Vernal pools, swales, and other seasonal wetlands usually in grasslands; also found in small sandstone depressions that seasonally fill with water. There are no reported occurrences of this species in the regional vicinity of the site.
<i>Streptocephalus woottoni</i>	Riverside fairy shrimp	FE	Typically found in large seasonal pools that fill with rainwater in the late fall and winter and remain inundated into the spring months (April-May). Pools generally found in open grasslands or areas interspersed with coastal sage scrub or chaparral. Only reported occurrence in the vicinity is from a large seasonal pool approximately 14.5 km (9 miles) west of the site.

Status Codes:

FE – Federally listed endangered species

FT – Federally listed threatened species

Sources:

California Natural Diversity Database (CNDDDB) Rarefind Version 3.1.0 (CNDDDB, 2011; 2012).

U.S. Fish and Wildlife Service (2011b)

Figure 5-2 shows the results of the CNDDDB query. Please note that although Braunton's milk vetch is shown within the Action Area in Figure 5-3, due to low GPS accuracy reported to the CNDDDB, this occurrence actually occurs outside the Action Area. This was verified by ground truthing the area where the CNDDDB occurrence was recorded. Appendix D provides the USFWS species lists and Appendix E provides the CNDDDB queries list.

5.2.1.2 Conducting Field Surveys

Survey team members conducted the field surveys via systematic walking. Due to rugged terrain and impenetrable vegetation in some areas, transects were not used and not all areas were traversed; however, the foot surveys allowed most of the study area to be viewed. Proposed excavation areas (polygons with sample analytical results above background) were delineated on the field maps and completely walked during the 2011 surveys.

Reference sites for two federal special-status plants were visited prior to or during the field surveys. Reference populations provide information about the current phenology, assist with proper identification of target species, and confirm that both the timing and environmental conditions are suitable for conducting the botanical surveys. Given the large number of potentially occurring plants, it was impractical to observe reference populations for every target species. Imprecise location information, uncertainty of population status, distance from the site, and restricted access to private property also precluded visits to some reference locations.

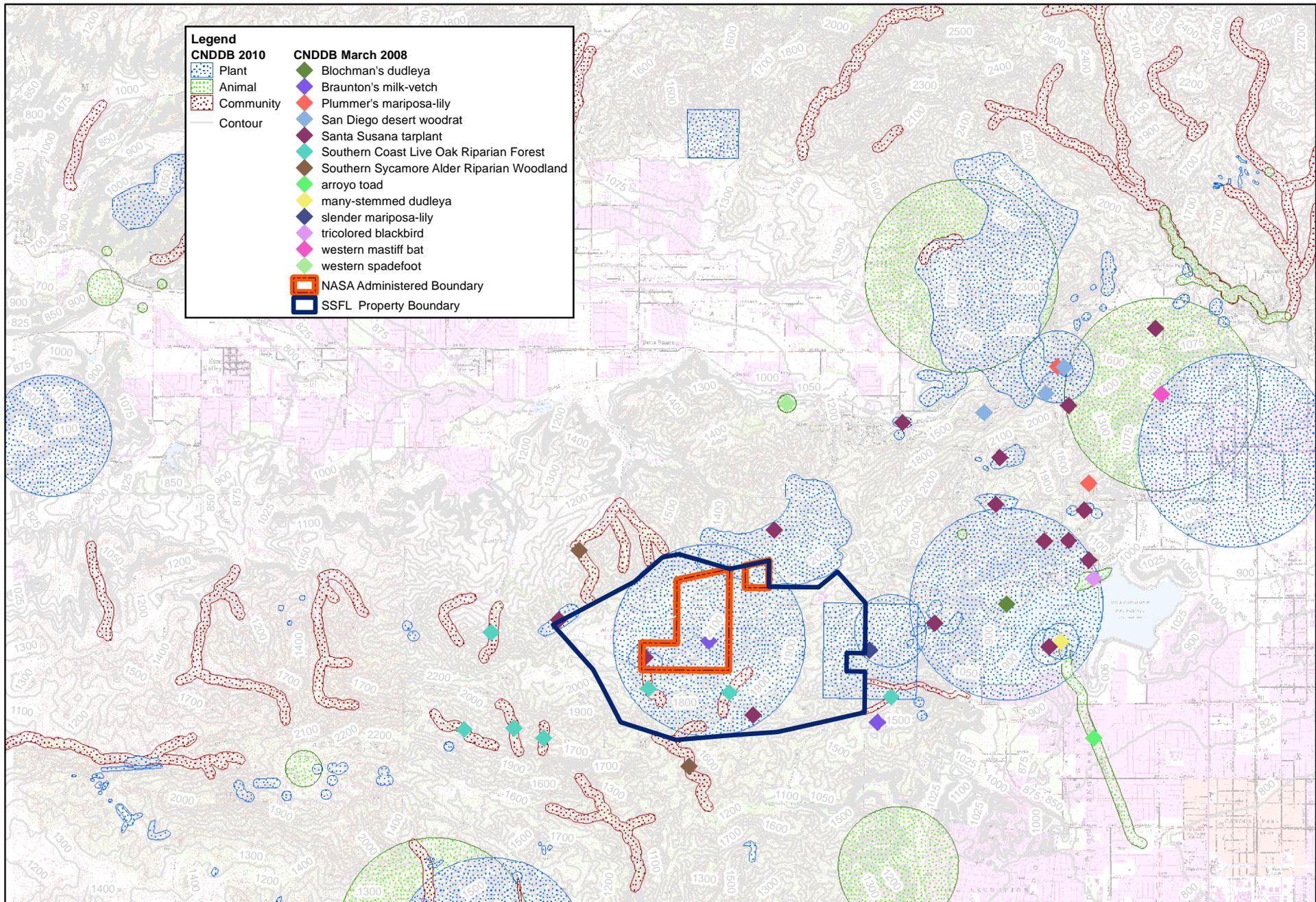
Braunton's milk-vetch (*Astragalus brauntonii*): A large number of individuals on a previously burned, north-facing hillside were observed on April 18, June 6, and August 15, 2011. This population is within the southern portion of Boeing Area IV (coordinates 34° 13' 34.58788" N; -118° 43' 00.34798" W). Plants were viewed in different development stages (budding, flowering and fruiting) over the course of the three site visits.

Agoura Hills Dudleya (*Dudleya cymosa* ssp. *agourensis*): A large number of individuals were viewed on a north-facing rock slope on Cornell Road south of Agoura Hills on June 7, 2011 (coordinates 34° 08' 29.33165" N; -118° 45' 28.64898" W). The sandy-rocky slope was a road cut that exposed a former volcanic mud flow. Plants were viewed in flowering condition.

The rare plant survey was focused on the federally endangered Braunton's milk-vetch and the non-chalky (without a white powdery bloom) species of dudleya (*Dudleya* spp.). Although this plant had not been sighted on NASA-administered property in the past, it is known to spread in response to wildfires and, therefore, was expected to potentially have recruited onto the Action Area following recent fires near SSFL. The reference site for this species was visited at the beginning of each field effort to assess the current plant condition and appearance.

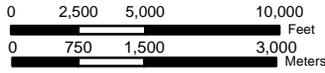
Non-chalky species of dudleya also were surveyed in 2011 because they were not in bloom and so could not be clearly identified during the fall 2010 and early spring 2011 surveys. It was considered possible that the non-chalky dudleya species observed at SSFL could be a listed or special-status species of dudleya, such as the Agoura Hills dudleya (*Dudleya cymosa* ssp. *agourensis*), Conejo dudleya (*Dudleya parva*), or the Marcescent Dudley (*Dudleya cymosa* ssp. *marcescens*), all of which are federally listed as threatened. Because the dudleya were in bloom during the late spring and early summer surveys in June 2011, this opportunity was taken to coordinate the SSFL survey with a field visit with National Park Service (NPS) botanist, Tarja Sagar. This visit occurred on June 7, 2011, with the specific aim of reviewing the onsite dudleya species to assess whether special status species were present.

General (opportunistic) surveys were conducted for other species that could be identified during the same time the milk-vetch survey was being conducted. The general surveys were designed to focus on those plant and animal species that have been documented to occur, or are expected to potentially occur, within or in the vicinity of the Action Area during spring and summer months based on previous surveys and other data sources.



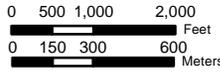
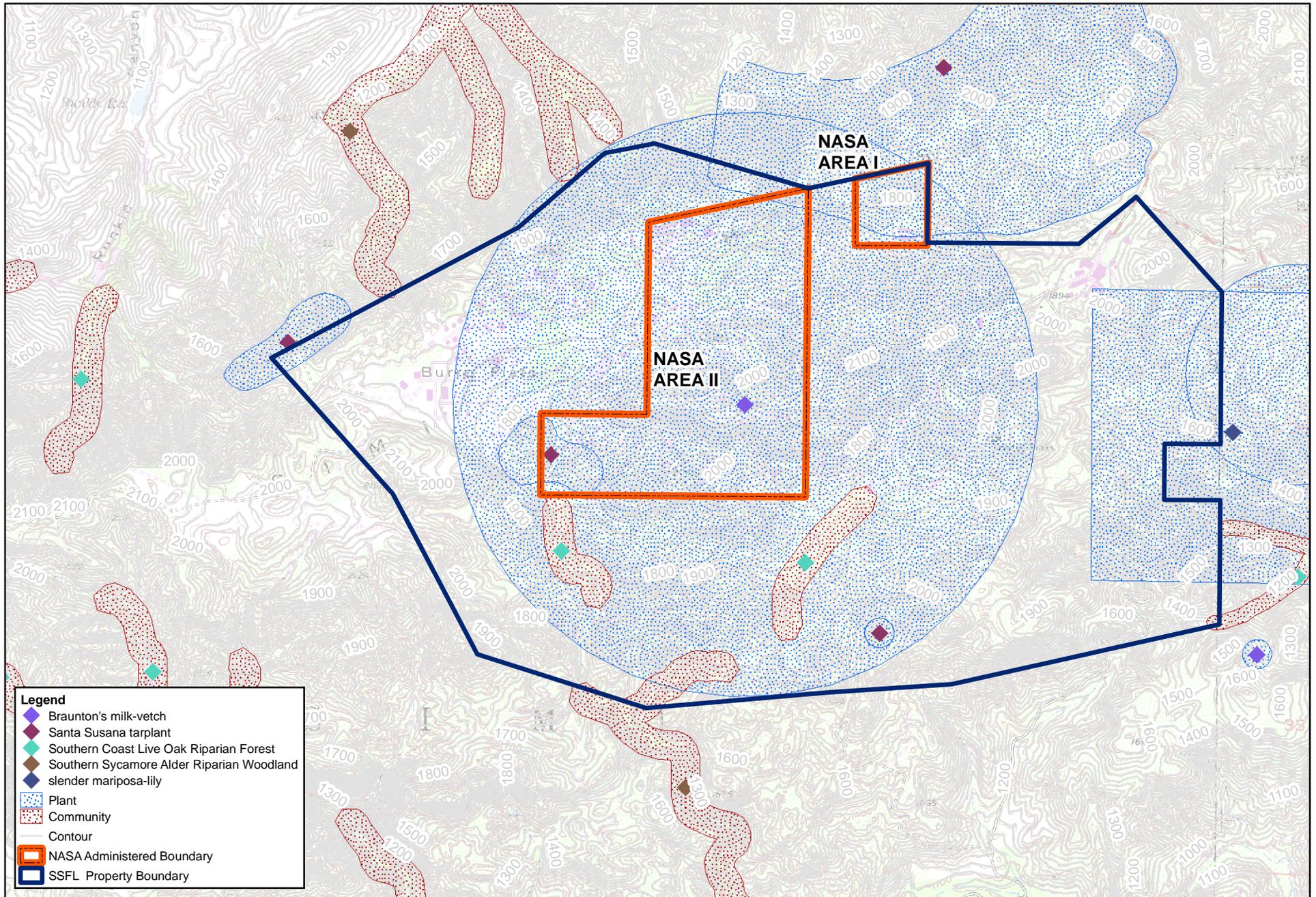
- Legend**
- | | |
|-------------------|---|
| CNDDB 2010 | CNDDB March 2008 |
| Plant | Blochman's dudleya |
| Animal | Braunton's milk-vetch |
| Community | Plummer's mariposa-lily |
| Contour | San Diego desert woodrat |
| | Santa Susana tarplant |
| | Southern Coast Live Oak Riparian Forest |
| | Southern Sycamore Alder Riparian Woodland |
| | arroyo toad |
| | many-stemmed dudleya |
| | slender mariposa-lily |
| | tricolored blackbird |
| | western mastiff bat |
| | western spadefoot |
| | NASA Administered Boundary |
| | SSFL Property Boundary |

Figure 5-2
CNDDB Nine-quad Search
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory



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 A. Cooley

Figure 5-3
 CNDB Species in the Action Area
 Biological Assessment for Proposed Demolition and Cleanup Project
 NASA - Santa Susana Field Laboratory

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Voucher samples of plants that could not be identified in the field were collected in plastic zip bags for later identification using local taxonomic keys. The voucher plants were integrated with the field-identified plants to create the plant inventory for the investigation areas. If a plant was identified that was not on the NPS Plant List of Santa Monica Mountains or was considered to be rare or unknown on that list, a dried voucher sample was saved in a plant press for later confirmation, if warranted. In addition to the plant surveys, the general surveys included binocular surveys for raptor nests and surveys for rock basins and depressions that potentially could support listed fairy shrimp species. The rock basin surveys involved searches for basins that have adequate size and structure to potentially hold enough water during the wet season to potentially support fairy shrimp. GPS points were taken of rock basins and where water was present. The basins were dip-netted or closely inspected to evaluate the presence or absence of fairy shrimp. However, given the range in size and continuity of rock basins within the Action Area, it is possible all potentially suitable rock basins were not identified during the survey.

The existence of raptor nests on test stands and other constructed structures was assessed only by using binoculars to minimize safety risks to survey personnel. Survey personnel did not enter or climb onto any built structure during the surveys.

The time spent at each site within the Action Area was limited; therefore, wildlife observations were opportunistic rather than systematic. Direct observations, calls, and signs of wildlife were recorded during the field surveys. Searches under logs, rocks, and debris for herpetiles were used in limited cases where time and circumstances permitted.

The locations of targeted species sighted during the species-specific and general surveys were recorded by GPS (where accessible) and on aerial photographs.

5.2.1.3 Results

No federal- or state-listed threatened or endangered plant species were observed on the Action Area during the 2011 surveys. Santa Susana tarplant, which is listed as rare under the California Native Plant Protection Act, is widespread and abundant throughout much of the site. No Braunton's milk-vetch was observed at any locations within the Action Area at SSFL. Surveys completed on June 7, 2011, with NPS staff botanist, Tarja Sagar, found that the non-chalky dudleya species viewed in widespread locations on rocky slopes was Lanceleaf dudleya, which is not a listed species. None of the other listed dudleya species were observed in the Action Area.

The least Bell's vireo is the westernmost subspecies of four subspecies of Bell's Vireo. This subspecies is listed as endangered under both the federal and state of California ESAs. This small songbird is gray to greenish above with white to yellow below, with one prominent white wing bar and a faint white eye ring. A single least Bell's vireo was sighted during the August 2011 survey in coyotebrush adjacent to coast live oak woodland habitat west of the Ash Pile in Area II. This sighting occurred outside the typical breeding period of this species (April 10 to July 31); therefore, one explanation for the presence of the bird sighted is that it might have been a transient moving through the area. Mule-fat, a favored plant of the least Bell's vireo, exists on the site; however, the coverage of mule-fat scrub habitat is relatively limited (0.85 ha [2.1 total acres]) and fragmented. No least Bell's vireos were observed or heard during surveys conducted during their breeding period.

The findings of the 2010 and 2011 surveys indicate that potential suitable habitat for the Riverside, vernal pool, and longhorn fairy shrimps exist on the Action Area. Potential habitat includes small rock basins in sandstone outcrops and two seasonally ponded wetland areas. It was not possible to conduct an opportunistic survey for these species when the wetland delineation field work was done in January 2012, because the basins did not contain water at that time.

No evidence of CRLFs was found during the 2010 or 2011 surveys. There is limited potential suitable habitat for this frog species within the Action Area, primarily around the R-2 Ponds and the detention basin north of the Coca test stand site.

Although a potential sighting of the federally endangered Quino checkerspot butterfly was observed in 2010, species-specific surveys conducted in July 2011 and March 2012 stated that the existing habitat conditions for the Quino checkerspot butterfly the Action Area are of such poor quality that the species is not expected to occur at

this time. The complete habitat assessment and report conducted and written by Dr. Richard Arnold for the Quino checkerspot butterfly is located in Appendix A. Tarja Sagar of the NPS helped identify locations where plantago occurs within the Action Area.

Although federally endangered Braunton's milk vetch does not occur within the Action Area, soil conditions indicate that habitat could be supported in the northeastern portion of NASA Area II and in the southern portion of Area I (LOX Plant Area); therefore, it is included in this analysis.

The coastal California gnatcatcher was not observed during the 2010 or 2011 surveys. Small, fragmented populations of gnatcatcher occur in Ventura County in habitat near where sage scrub-grassland interfaces and is less likely to be found in habitat where sage scrub grades into chaparral, such as was observed on the site. Dense sage scrub is occupied less frequently than more open sites.

5.3 Delineation of Wetlands and Waters of the U.S.

A wetland delineation field survey was completed between January 3 and 6, 2012, by CH2M HILL wetland ecologists Russell Huddleston and Steve Long. The purpose of the survey was to identify the limits of wetlands and other waters on the 182.60 ha (451.20 acres) of NASA-administered property at SSFL. The results of the wetland delineation are summarized in the *Wetlands and Waters of the United States, Delineation for the NASA-Administered Portions of the Santa Susana Field Laboratory, Ventura County, California* (NASA, 2012) and are summarized in the following text.

Wetlands classified as part of the Palustrine (P) system are nontidal, freshwater wetlands that might be vegetated with trees, shrubs, herbaceous vegetation or mosses, and lichens. Also included are wetlands lacking such vegetation but with all four of the following characteristics: 1) the total area is less than 8.09 ha (20 acres); 2) there are no active wave-formed or bedrock shoreline features; 3) water depth in the deepest part of basin is less than 1.83 m (6 feet) at low water; and 4) salinity due to ocean-derived salts is less than 0.5 per mil"/per thousand (‰) (Cowardin et al., 1979). Palustrine wetlands identified on the NASA-administered property fall into two classes—Emergent and Unconsolidated Bottom. The Emergent Class includes wetlands that are characterized by more than 30-percent cover of erect, rooted, herbaceous plants adapted to grow under flooded and/or saturated conditions. The Unconsolidated Bottom Class includes wetlands that are characterized by cobble-gravel, sand, or mud substrates and have less than 30-percent vegetative cover. Water regimes of the Palustrine wetlands identified in the survey area include permanently flooded, seasonally flooded, and temporarily flooded.

Wetlands classified as part of the Riverine (R) system include wetlands that are contained within a channel, with the exception of channelized wetlands dominated by trees, shrubs, or persistent emergent vegetation and channels containing ocean-derived salts in excess of 0.5 ‰. Under this system, a channel is defined as "an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of water" (Cowardin et al., 1979). The Riverine wetlands identified on the NASA-administered property are in the Intermittent Subsystem, which includes channels that contain flowing water for only part of the year. When water is not flowing, it might remain in isolated pools or surface water might be absent.

The Riverine wetlands identified on the NASA-administered property are included in the Stream Bed Class, a broad classification that includes a variety of substrates depending on the gradient of the channel, the velocity of the water, and the sediment load of the stream. Common stream bed substrates include bedrock rubble, cobble-gravel, sand, and mud. Although not specifically included in the classification system, for the purpose of this report, sections of natural drainages that have been concrete lined were included in the Stream Bed Class. Water regimes associated with the Riverine Intermittent wetlands identified in the survey area include seasonally flooded and temporarily flooded.

A number of features were investigated during the wetland survey that were not considered to be waters of the U.S. Such features included constructed stormwater swales associated with developed areas, culverts at road crossings that were not associated with defined drainage channels, and discontinuous erosional channels and weakly expressed upland swale on the hill slopes. Additionally, former skim ponds that have been capped and a former (now dry) basin that had been used to burn off excess fuels were not considered to be waters of the U.S.

As listed in Table 5-3, 0.545 ha (1.348 acres) of Palustrine wetlands and 0.760 ha (1.879 acres) of Riverine wetlands were identified within the 182.60 ha (451.20-acre) NASA-administered property at SSFL. An additional 0.178 ha (0.439 acre) of other features (such as swales, asphalt drainage ditches, and overflow culverts) also were identified in this area. The features described in this section are shown in Figures 4-2 through 4-7 of this BA.

TABLE 5-3
Summary of Wetland Features
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Feature ID	Hectares (Acres)
<i>Palustrine Wetlands</i>	
SW-1 (PEMAx)	0.001 (0.003)
SW-1 (PEMCh)	0.062 (0.152)
R2A Pond (PUBHx)	0.207 (0.511)
R2A Pond Overflow (PUBWx)	0.091 (0.226)
R2B Pond (PEMCh)	0.052 (0.129)
Coca Pond (PUBHx)	0.132 (0.327)
<i>Total Palustrine Wetlands</i>	<i>0.546 (1.348)</i>
<i>Riverine Wetlands</i>	
Northern Drainage (R4SBC)	0.488 (3,193 LF)
<i>Northern Drainage Natural Channel</i>	<i>0.465 (2,176 LF)</i>
<i>Northern Drainage Culverts</i>	<i>0.023 (1,017 LF)</i>
ELV Drainage (R4SBA)	0.146 (976 LF)
<i>ELV Natural Channel</i>	<i>0.138 (862 LF)</i>
<i>Asphalt Drainage Ditch</i>	0.008 (114 LF)
Southwestern Drainage (R4SBA)	0.586 (8,826 LF)
<i>Southwestern Drainage Nature Drainage</i>	<i>0.394 (8,049 LF)</i>
<i>Southwestern Drainage Concrete Ditch</i>	<i>0.100 (542 LF)</i>
<i>Southwestern Drainage Culvert</i>	<i>0.004 (65 LF)</i>
<i>Drainage Constructed Outfall</i>	<i>0.088 (170 LF)</i>
Southwestern Drainage Tributary (R4SBA)	0.034 (371 LF)
Coca Drainage (R4SBA)	0.479 (1,899 LF)
<i>Coca Drainage Natural Channel</i>	<i>0.203 (655 LF)</i>
<i>Coca Drainage Concrete Ditch</i>	<i>0.265 (1,155 LF)</i>
<i>Coca Drainage Culverts</i>	<i>0.011 (89 LF)</i>
PLF Drainage (R4SBA)	0.040 (758 LF)
<i>PLF Drainage Natural Channel</i>	<i>0.029 (511 LF)</i>
<i>PLF Drainage Culverts</i>	<i>0.011 (247 LF)</i>

TABLE 5-3
Summary of Wetland Features
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

Feature ID	Hectares (Acres)
Drainage A-1 (R4SBA)	0.060 (911 LF)
<i>Drainage A-1 Natural Channel</i>	<i>0.050 (724 LF)</i>
<i>Drainage A-1—Culvert</i>	<i>0.010 (187 LF)</i>
Drainage A-2 (R4SBA)	0.046 (935 LF)
<i>Drainage A-2 Natural Channel</i>	<i>0.030 (324 LF)</i>
<i>Drainage A-2 Erosional Feature</i>	<i>0.013 (547 LF)</i>
<i>Drainage A-2 Culvert</i>	<i>0.003 (64 LF)</i>
Total Riverine Wetlands	1.879 (17,869)
Other Features	
Southwestern Drainage Swale (Alpha)	0.157 (6,860 LF)
Southwestern Drainage Swale Culverts	0.013 (218 LF)
Southwestern Drainage Swale Overflow Culvert	0.024 (344 LF)
Coca—Shotcrete Swale	0.236 (1,027 LF)
Coca—Shotcrete Swale Culverts	0.009 (68 LF)
Total Other Features	0.439 (8,517 LF)

Notes:

ELV = Expendable Launch Vehicle

LF = linear foot

PLF = Propellant Load Facility

5.4 2013 Surveys

It was recognized that earlier surveys that were limited to the NASA-administered property boundaries did not include offsite locations in which remediation activities could occur. For this reason, a follow-up field visit was conducted from March 6 through March 8, 2013, by CH2M HILL biologists Steve Long and Gary Santolo.

5.4.1 Survey Objectives

The same field methodology used for the fall 2010 surveys was used to develop additional habitat maps and other observations for the areas of proposed remediation activities that occur outside of the NASA-administered property lines. This additional site survey also was used to determine where additional wetlands or waters of the U.S. could occur.

Life History and Study Results for Listed Species

6.1 Impact Analysis

This section describes the life history of the endangered Least Bell's vireo, threatened CRLF, threatened VPFS, endangered RFS, and Santa Susana tarplant, a state species rare and a federal species of concern. Santa Susana tarplant potentially could be federally listed during the span of the project, and therefore, is included in this analysis. Although federally endangered Braunton's milk vetch does not occur within the Action Area, soil conditions indicate that habitat could be supported in the northeastern portion of NASA Area II and in the southern portion of Area I (LOX Plant Area), and thus is included in this analysis. This section also presents the survey results, potential effects of NASA's Proposed Actions, and conservation and mitigation measures proposed for these listed species.

6.1.1 Wildlife Species Accounts and Status in the Action Area

6.1.1.1 Least Bell's Vireo

Information accessed April 5, 2012, from the USFWS website

<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=B067> (USFWS, 2012b)

Life History and Habitat Requirements

Least Bell's vireos are small birds, only about 11.5 to 12.5 centimeters (cm) (4.5 to 5.0 inches) long. They have short rounded wings and short, straight bills, and a faint white eye ring. Feathers are mostly gray above and pale below. This is a common protective marking in birds. Viewed from below, the bird blends into the clouds. From above, it blends into the land cover.

The least Bell's vireo is the westernmost of four subspecies of Bell's vireo, a migratory songbird (passerine). Its current breeding range includes the northern portion of the Baja California peninsula, Mexico, and southern California. Historically, its range also included most of the Central Valley and portions of central coastal California. This unoccupied northern portion of the historical range used to support 60 to 80 percent of the population. Since listing, the vireo's abundance has increased 10-fold and higher densities have been observed within their range; however, their overall range has not expanded appreciably since listing. Moreover, the northern portion of its current U.S. range is still sparsely populated compared to counties to the south. Few specifics are known about its breeding and wintering status in Mexico.

Threats to the Species

Threats to the species include invasive plants watercourse development projects, including flood control and water impoundments (dams); and changed hydrology from urbanization. It is also threatened from parasitism by brown-headed cowbirds (*Molothrus ater*).

Status in the Action Area

A single least Bell's vireo was sighted during the August 2011 survey in coyotebrush adjacent to coast live oak woodland habitat west of the Ash Pile in Area II. This sighting occurred outside the typical breeding period of this species (April 10 to July 31); therefore, one explanation for the presence of the bird sighted is that it might have been a transient moving through the area. Mulefat, a favored plant of the least Bell's vireo, exists on the site; however, the coverage of mulefat scrub habitat is relatively limited (0.85 ha [2.1 total acres]) and fragmented. No least Bell's vireos were observed or heard during surveys conducted during their breeding period.

6.1.1.2 California Red Legged Frog

Website accessed April 5, 2012

<http://www.fws.gov/arcata/es/amphibians/crlf/crlf.html> (USFWS, 2012c)

Life History and Habitat Requirements

The CRLF (*Rana draytonii*) is the largest native frog in the western United States, ranging from 4.4 to 13.3 cm (1.75 to 5.25 inches) from the tip of the snout to the vent (Stebbins, 2003). From above, the CRLF can appear brown, gray, olive, red, or orange, often with a pattern of dark flecks or spots. The back is bordered on either side by an often prominent ridge (dorsolateral fold) running from the eye to the hip. The hind legs are well-developed with large, webbed feet. A cream, white, or orange stripe usually extends along the upper lip from beneath the eye to the rear of the jaw. The undersides of adult CRLFs are white, usually with patches of bright red or orange on the abdomen and hind legs. The groin area sometimes exhibits bold black mottling with a white or yellow background.

CRLFs spend most of their lives in and near sheltered backwaters of ponds, marshes, springs, streams, and reservoirs. Deep pools with dense stands of overhanging willows and intermixed fringes of cattails are considered optimal habitat. Eggs, larvae, transformed juveniles, and adults also have been found in ephemeral creeks and drainages and in ponds that do not have riparian vegetation. Accessibility to sheltering habitat is essential for the survival of CRLFs within a watershed, and can be a factor limiting population numbers and distribution. Some CRLFs have moved long distances over land between water sources during winter rains. Adult CRLFs have been documented to move more than 3.2 km (2 miles) in northern Santa Cruz County “without apparent regard to topography, vegetation type, or riparian corridors” (Bulger et al., 2003). Most of these overland movements occur at night.

CRLFs breed from November through March, with earlier breeding occurring in southern localities. CRLFs are often prolific breeders, typically laying their eggs during or shortly after large rainfall events in late winter and early spring. Embryos hatch 6 to 14 days after fertilization and larvae require 3.5 to 7 months to attain metamorphosis. Larvae probably experience the highest mortality rates of all life stages, with less than 1 percent of eggs laid reaching metamorphosis. Sexual maturity normally is reached at 3 to 4 years of age; CRLFs might live 8 to 10 years. Juveniles have been observed to be active diurnally and nocturnally, whereas adults are mainly nocturnal.

The CRLF requires a variety of habitat elements, with aquatic breeding areas embedded within a matrix of riparian and upland dispersal habitats. Breeding sites of the CRLF are in aquatic habitats including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds and lagoons. Additionally, CRLFs frequently breed in artificial impoundments such as stock ponds. Upland habitats, downed woody vegetation, leaf litter, and small mammal burrows are habitats that provide protection from predators and prevent desiccation (drying) of CRLFs.

The best available information at the time of listing indicates that the historic range of the CRLF extends along the coast from the vicinity of Point Reyes National Seashore in Marin County, and inland from the vicinity of the City of Redding in Shasta County, southward to northwestern Baja California, Mexico (61 FR 25814). The listing rule described an intergrade zone between the CRLF and the closely related (and non-listed) northern red-legged frog (*Rana aurora*; formerly, *Rana aurora aurora*) that extended approximately from the Walker Creek watershed in Marin County north to southern Mendocino County. Recent research into the genetics of red-legged frogs indicates that the intergrade zone between the CRLF and the northern red-legged frog likely occurs within a narrower geographic area than previously known, and that the range of the CRLF extends about 100 km (60 miles) further north. CRLFs are known to occur in the following southern three coastal Hydrographic Units in Mendocino County—Point Arena, Garcia, and Gualala.

Threats to the Species

Factors associated with declining populations of the CRLF include degradation and loss of its habitat through agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, non-native plants, impoundments, water diversions, degraded water quality, use of pesticides, and introduced predators. The reasons for decline and the degrees of threats vary by geographic location. CRLF populations are threatened by more than one factor in most locations.

Status in the Action Area

No evidence of CRLF occurrence was found during the 2010 or 2011 surveys. There is limited to potential suitable habitat for this frog species within the Action Area, primarily around the R-2 Ponds and the detention basin north of the Coca test stand site.

6.1.1.3 Vernal Pool Fairy Shrimp

Website accessed April 5, 2012

<http://www.fws.gov/oregonfwo/Species/Data/VernalPoolFairyShrimp/> (USFWS, 2012d)

Life History and Habitat Requirements

VPFS are translucent, slender crustaceans (relatives of lobsters, crabs, saltwater shrimp, and barnacles). They are generally less than 2.5 cm (1 inch) long and swim on their backs by slowly moving their 11 pairs of swimming legs. They are unusual in that they use these same legs for breathing and feeding. They eat algae and plankton by scraping and straining them from surfaces within the vernal pool. They produce a gluey substance and mix it with their food before eating. Fairy shrimp are defenseless, and therefore occupy temporary ponds, where aquatic vertebrate predators cannot survive.

Branchinecta lynchi typically hatches when the first rains of the year fill vernal pools. They mature in about 41 days under typical winter conditions. Adult fairy shrimp live only for a single season, while there is water in the pools. Toward the end of their brief lifetime, females produce thick-shelled "resting eggs" also known as cysts. During the summer, these cysts become embedded in the dried bottom mud, and during the winter, they are frozen for varying periods. These cysts hatch when the rains come again. In fact, it appears that prior freezing and/or drying seems to be necessary for the eggs to hatch.

At the time of its listing, the VPFS was known to occur only in California, extending from Tulare County in the south to Shasta County in the north. In 1998, these fairy shrimp were discovered in vernal pools in Jackson County, Oregon, in an area north of Medford known as the Agate Desert. Prior to this discovery, the most northerly known location for the species was south of Mount Shasta, California, some 128.7 km (80 miles) south of the Agate Desert.

VPFS occur primarily in vernal pools, seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer. Typically the majority of pools in any vernal pool complex are not inhabited by the species at any one time. Different pools within or between complexes might provide habitat for the fairy shrimp in alternative years, as climatic conditions vary.

Threats to the Species

Like the other species of vernal pool branchiopods, the number of *B. lynchi* populations has declined primarily because of destruction or degradation of vernal pools through development of urban, suburban, and agricultural projects. In addition to direct habitat loss, VPFS populations have declined from of a variety of activities that degrade existing vernal pools by altering pool hydrology (water regime). Vernal pool hydrology can be altered by a variety of activities, including the construction of roads, trails, ditches, or canals that can block the flow of water into, or drain water away from, the vernal pool complex.

Status in the Action Area

No vernal pools exist in the Action Area. Vernal pools typically occur in areas of heavy clay, while predominant soils SSFL are sandy and the prominent rock outcrops covering the landscape are sandstone features. However, the findings of the 2010 and 2011 surveys indicate that potential suitable habitats exist for the Riverside, vernal pool, and longhorn fairy shrimps within the Action Area. Potential habitat includes small rock basins in sandstone outcrops and two seasonally ponded wetland areas. Opportunistic surveys for these species were conducted in January 2012; however, due to low winter rainfall, the basins were dry.

6.1.1.4 Riverside Fairy Shrimp

Life History and Habitat Requirements

Mature males are between 13 and 25 millimeters (mm) (0.5 to 1.0 inch) long. Mature females are between about 13 and 22 mm (0.5 to 0.87 inch) in total length. Fairy shrimp are free-swimming filter feeders, feeding primarily on

bacteria, algae, rotifers, Protozoa, and bits of detritus (Pennak, 1989). No specific studies have been conducted regarding the feeding habits of the RFS. The RFS are “osmoregulators” that maintain constant internal chemical concentrations, but cannot tolerate wide extremes in sodium or bicarbonate concentrations (USFWS, 1998).

A key adaptation of the fairy shrimp is the production of drought-resistant eggs. When the vernal pools dry, the eggs remain on the surface of the pool or embedded within the top few centimeters of soil. There they survive the hot, dry summers and cold, wet winters that follow until the vernal pools and swales fill with rainwater and conditions are right for hatching (Geer and Foulk, 1999/2000). With the hydration of eggs, time to hatching is usually between 2 and 25 days (Hathaway and Simovich, 1996). RFS will not hatch in pools that receive cool waters from early winter rains (Eriksen in litteris [in litt.; in correspondence], 1992), such as those pools on the Santa Rosa Plateau, nor will they hatch in shallow pools. Shrimp eggs tend to hatch or germinate at cool temperatures, with species-specific differences in responses that are related to temperature regime. Lack of hatching at higher temperatures (greater than 25 degrees Celsius [°C]; 77°F) protects the RFS from the infrequent summer storms that might otherwise be sufficient to stimulate development, but inadequate for the organisms to complete their life cycles. Maturation to reproductive age from hatching is more than 2 months for the RFS. The time period is compressed or expanded, depending on ambient water temperatures (Hathaway and Simovich, 1996).

RFS occur in vernal pools from southwestern Riverside County and western San Diego County, California, to northwestern Baja California, Mexico. One population is known from Orange County. The northern range of the RFS is defined by Skunk Hollow and the Santa Rosa Plateau in Riverside County and coastal sites in San Diego and Orange counties. Of the four remaining pools that support the fairy shrimp in Riverside County, only the Skunk Hollow vernal pool is greater than 0.4 ha (1 acre). The Skunk Hollow vernal pool is within a planned development. Other sites supporting the fairy shrimp might lack some of the typical vegetation of vernal pools, but that condition probably reflects impacts from past agricultural activities. Another pool that contains the RFS is partially on private land and partially on the Pechanga Indian Reservation. The portion on private land was cultivated during 1990. The region’s drought conditions over the last 2 to 3 years might have rendered the pool dry enough to be plowed (USFWS, 1993).

The RFS has narrow habitat requirements. This species is only found in deep, cool lowland vernal pools that retain water through the warmer weather of late spring (Eriksen, in litt., 1992; King, in litt., 1992). Minimum habitat size is 750 square meters, with a minimum depth of 30 cm at maximum filling. Total dissolved solids, alkalinity, and chloride were low, with the conditions corroborated by a pH at neutral or just below. This species does not appear until later in the season, so it can be considered a warm water species (Eng et al., 1990).

Vernal pools are unique seasonal wetlands that support a wide variety of wildlife, from waterfowl to amphibians, all of which rely on the protein-rich food sources found in these ecosystems (Geer and Foulk, 1999/2000). The animal also occasionally is found in depressions (road ruts and ditches) that support suitable habitat.

Threats to the Species

The RFS has the most limited range of any endemic California fairy shrimp and currently is threatened by agricultural and urban development, off-road vehicle use, trampling, trash dumping, invasion from weedy non-native plants, drainage or watershed alterations (often due to adjacent urban development), and drought.

Status in the Action Area

No vernal pools exist in the Action Area. Vernal pools typically occur in areas of heavy clay, while predominant soils SSFL are sandy and the prominent rock outcrops covering the landscape are sandstone features. However, the findings of the 2010 and 2011 surveys indicate that potential suitable habitats exist for the Riverside, vernal pool, and longhorn fairy shrimps within the Action Area. Potential habitat includes small rock basins in sandstone outcrops and two seasonally ponded wetland areas. Opportunistic surveys for these species were conducted in 2012; however, due to low winter rainfall, the basins were dry.

6.1.1.5 Santa Susana Tarplant

Website accessed April 5, 2012

http://www.centerforplantconservation.org/collection/cpc_viewprofile.asp?CPCNum=2215

Life History and Habitat Requirements

Santa Susana tarplant is a small leafy shrub in the sunflower family (*Asteraceae*). This species is listed as rare under the California Native Plant Protection Act as a CNPS 1B.2 (rare, threatened, or endangered in California and elsewhere and considered fairly endangered in California). Shrubs typically range from 0.46 to 0.91 m (1.5 to 3 ft) tall and have numerous stiff stems ascending from the base. This plant produces a fragrant resin that makes the stems and leaves sticky. The yellow flower heads occur singly at the ends of the long stems. Blooming generally occurs from July through early November. It grows in crevices of sandstone bluffs and outcrops in the chaparral in the Santa Susana Mountains and Santa Monica Mountains of Los Angeles and Ventura counties. Historically, *Deinandra minthornii* was found in the Santa Susana and Santa Monica mountains of Los Angeles and Ventura counties.

Threats to the Species

Threats include residential development, new roads, and road maintenance.

Status in the Action Area

During the fall 2010 survey, more than 3,600 Santa Susana tarplants were identified and mapped on the NASA-administered property (NASA, 2011b). The majority of the plants were observed in Area II, where they were widespread in association with sandstone outcrops. A total of 324 plants were mapped in Area I (LOX Plant Area); most of these were found on a sandstone outcrop north of the LOX Plant Area.

6.1.1.6 Braunton's Milk Vetch

Website accessed April 5, 2012

http://www.centerforplantconservation.org/collection/cpc_viewprofile.asp?CPCNum=374

Life History/Habitat Requirements

This is an ephemeral perennial member of the pea family that reaches a height of 15 decimeters (dm) with dull lilac flowers blooming from March through July (Munz, 1974). It typically appears following a chaparral fire or other form of mechanical disturbance and persists several years before senescing or becoming crowded out by developing vegetation (Skinner, 1991). Braunton's milkvetch seeds persist in the soil bank for many years and have a seed coat that is typical of many chaparral plants and adapted to germinate after some form of disturbance that breaks seed dormancy (USFWS, 1999).

Braunton's milkvetch generally occurs below 640 m (2,100 ft) in elevation, on south-, west-, and east-facing slopes in open areas within chaparral. It is often found growing in disturbed locations such as burn areas, along fire roads or fuel breaks, and in areas that have been cleared by some means and where competition is low. This plant historically was found in gravelly clay soils overlaying granite sandstone, but now often is found associated with carbonate soils derived from scattered limestone lenses, or on noncarbonates at downwash sites (Skinner, 1991; USFWS, 1999).

Braunton's milkvetch is known to occur only in the hills bordering the Los Angeles basin in southern California, from Ventura, Los Angeles, and Orange counties. Known occurrences of this species are in the Simi Hills of Ventura and Los Angeles counties, the Santa Monica Mountains and San Gabriel Mountains in Los Angeles County, and the Santa Ana Mountains in Orange County.

Threats to the Species

The major threat to this species is immediate loss of native habitat. Most of the habitat is on private lands or in the immediate vicinity of areas of expanding urban development, including construction of housing, golf courses, and infrastructure. In addition, occurrences along fire roads, fuel breaks, and trails are susceptible to trampling from hikers, off-road vehicles, and equestrian use. Other threats include alteration of habitat resulting from a change in

the natural fire cycle, stochastic events, overcollecting, habitat fragmentation, and degradation competition from invasive weeds.

Status in the Action Area

Although Braunton's milkvetch, a federally listed endangered species, has not been observed in the areas Action Area (NASA, 2011a; 2011b), soil conditions indicate that habitat could be supported in the northeastern portion of NASA Area II and in the southern portion of Area I (LOX Plant Area). This species does occur in adjacent Boeing property.

Project-related Effects and Conservation Measures on Plants and Wildlife

7.1 Effects Analysis

Project-related impacts to plants and wildlife would be those caused by activities affecting plants or wildlife habitats within the Action Area in which they have been observed and/or potentially could occur. Impacts would be associated with site demolition and soil remediation, which are considered short-term impacts; and with groundwater remediation, which would be considered as both long-term operational and short-term demolition impacts. Table 7-1 lists the potential habitat impacts due to these activities. Figure 7-1 gives a graphical description of the locations of these impacts within the Action Area. Table 7-2 lists the effects from the SSFL Project on sensitive resources and/or habitats that the sensitive resources would use. The following text provides a discussion of the impacts to the six listed plant and animal species analyzed in this BA.

7.1.1 Least Bell's Vireo

As stated previously, one potentially transient least Bell's vireo was observed during surveys and no nests were found during its breeding season within the Action Area. Mule-fat scrub (a riparian plant) habitat, the bird's primary habitat, occurs only on about 2 percent of the Action Area, is fragmented, and likely does not support a population of least Bell's vireo. Most of the habitat occurs in the Storable Propellant Area (SPA), along the drainage that connects to the Alfa area. This area would be heavily affected during structure demolition; soil remediation, which includes extensive excavation; and groundwater remediation, which involves the installation of groundwater monitoring wells. Approximately 0.6 ha (1.5 acres) of mulefat scrub habitat would be affected during demolition and environmental cleanup activities. Native vegetation would be removed to construct and operate wells and for the staging of tanks, piping, and equipment for groundwater remediation and the following soil remediation technologies—In Situ Chemical Oxidation or Reduction, In Situ Anaerobic or Aerobic Biological Treatment, and SVE. Stockpile areas also would be located adjacent to the drainage in this area. The impact due to vegetation mortality and loss of natural habitat would be moderate and long term.

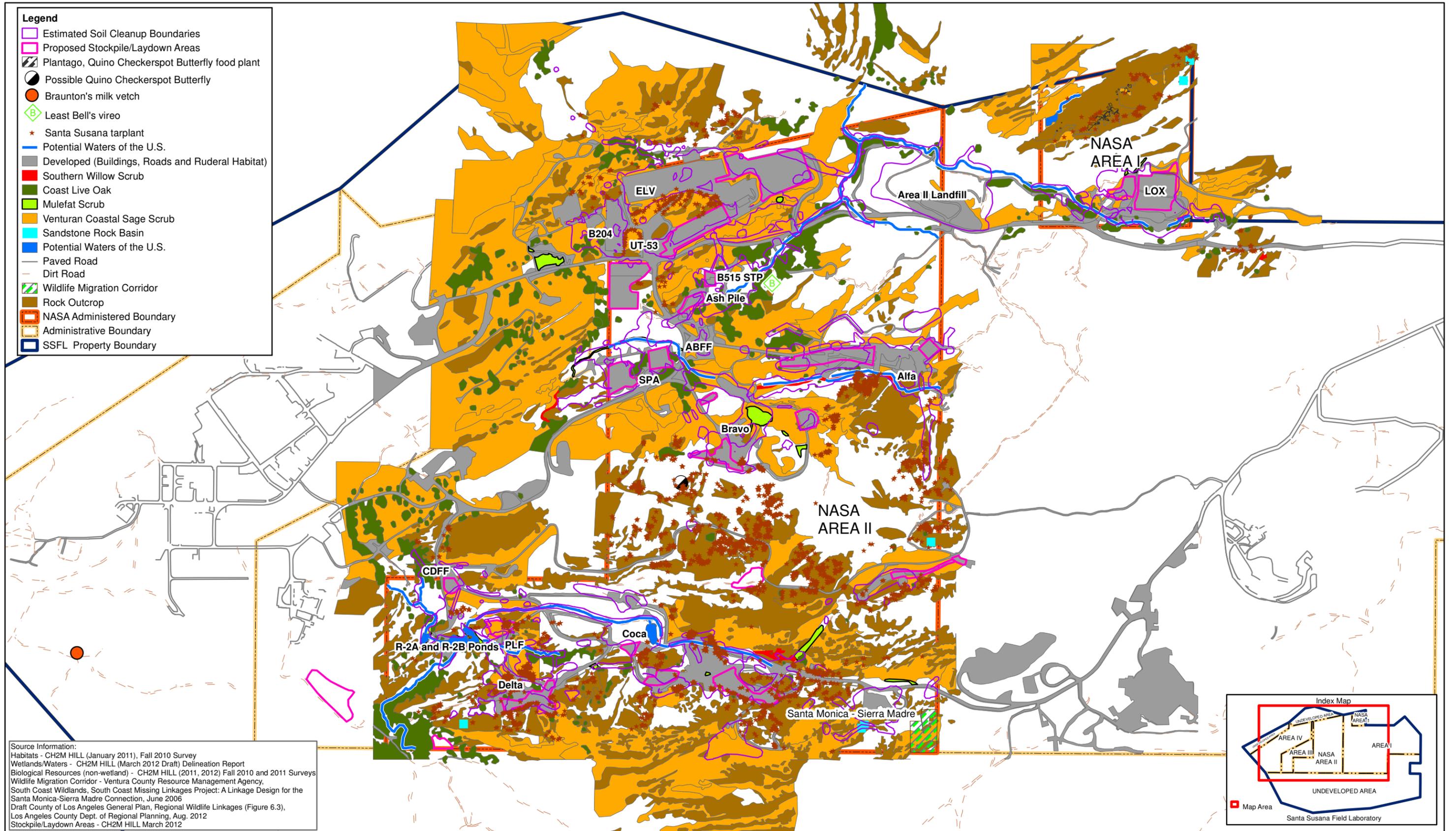
Ground disturbance also increases the potential for non-native invasive plants to overtake habitats previously covered by native species, which is another threat to the Least Bell's vireo. In addition, the noise and human activity associated with the proposed demolition and environmental cleanup activities could affect the species.

Because there would be a low likelihood of encountering the least Bell's vireo during demolition, remediation, and installation of monitoring wells, impacts to the species likely would be short-term and local. Potential long-term benefits also could occur from habitat restoration of the contaminated areas.

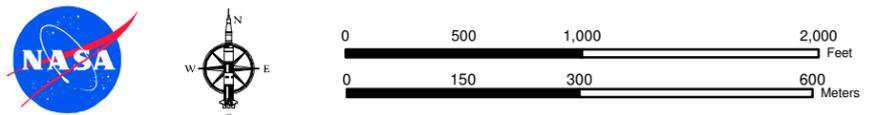
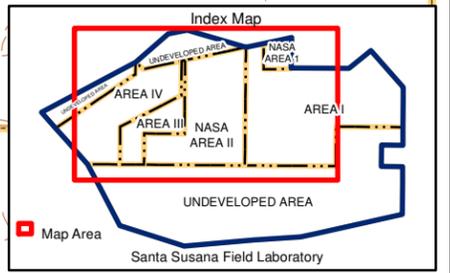
TABLE 7-1
Project-related Impacts to General Habitats in the Action Area
NASA SSFL Biological Assessment for the Demolition and Cleanup Project

RI ¹	RI 2	RI 3	RI 4	RI 9	Outside Areas I and II	Total	Total Impact with No Overlap	Notes
Habitat								
<i>Coast Live Oak (acres)</i>								
Soil Remediation	1.49	0.35	1.11	0.26	RI 2=0.07 (Area I) RI 5=0.01 (Area III) RI 9=0.21 (Area III)	3.51	3.52	
Stockpile-Laydown	<0.01-	0.01	<0.01	-	0.01	-		
<i>Southern Willow Scrub (acres)-</i>								
Soil Remediation	-	0.46	0.32	0.02	-	0.81	0.81	
Stockpile-Laydown	-	-	-	-	-	-		
<i>Venturan Coast Sage Scrub (acres)</i>								
Soil Remediation	4.13	1.58	6.95	0.17	RI 2=0.11 (Area I) RI 3=0.02 (Areas I and II) RI 4 =0.60	12.83	RI 2=0.11 RI 3=0.02 RI 9=0.60	
Stockpile-Laydown	0.28	0.18	0.52	0.01	1.01	RI 2=0.03 (Area I)		
<i>Developed (acres)</i>								
Soil Remediation	13.38	7.33	14.51	0.30	35.51-	RI 2=0.66 (Area I) RI 3=0.30 (Area III) RI 9=0.32	46.44 Outside = 1.45	
Stockpile-Laydown	9.51	8.05	3.52	0.31	21.39			
Notes:								
" - " = no impacts								
¹ RI = Remedial Investigation Group areas, as shown in Figure 3-2								

- Legend**
- Estimated Soil Cleanup Boundaries
 - Proposed Stockpile/Laydown Areas
 - Plantago, Quino Checkerspot Butterfly food plant
 - Possible Quino Checkerspot Butterfly
 - Braunton's milk vetch
 - Least Bell's vireo
 - ★ Santa Susana tarplant
 - Potential Waters of the U.S.
 - Developed (Buildings, Roads and Ruderal Habitat)
 - Southern Willow Scrub
 - Coast Live Oak
 - Mulefat Scrub
 - Venturan Coastal Sage Scrub
 - Sandstone Rock Basin
 - Potential Waters of the U.S.
 - Paved Road
 - Dirt Road
 - Wildlife Migration Corridor
 - Rock Outcrop
 - NASA Administered Boundary
 - Administrative Boundary
 - SSFL Property Boundary



Source Information:
 Habitats - CH2M HILL (January 2011), Fall 2010 Survey
 Wetlands/Waters - CH2M HILL (March 2012 Draft) Delineation Report
 Biological Resources (non-wetland) - CH2M HILL (2011, 2012) Fall 2010 and 2011 Surveys
 Wildlife Migration Corridor - Ventura County Resource Management Agency,
 South Coast Wildlands, South Coast Missing Linkages Project: A Linkage Design for the
 Santa Monica-Sierra Madre Connection, June 2006
 Draft County of Los Angeles General Plan, Regional Wildlife Linkages (Figure 6.3),
 Los Angeles County Dept. of Regional Planning, Aug. 2012
 Stockpile/Laydown Areas - CH2M HILL March 2012



22-Apr-2013
 Drawn By:
 A. Cooley

Figure 7-1
Impacts to Sensitive Resources due to Cleanup Activities
Biological Assessment for Proposed Demolition and Cleanup Project
NASA - Santa Susana Field Laboratory

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TABLE 7-2

Project-related Impacts to Sensitive Resources or Habitats that Support Sensitive Species in the Action Area

NASA SSFL Biological Assessment for the Demolition and Cleanup Project

RI	RI 2	RI 3	RI 4	RI 9	Outside Areas I and II	Total	Total Impact with No Overlap	Notes
Sensitive Resource								
Plantago (acres)								
Soil Remediation	-	-	-	-	-	-	-	Plantago (3.6 acres) occurs only in Area I. No soil cleanup or stockpile/laydown areas are proposed in this area. This general area does have groundwater contamination and might be affected from installation of groundwater wells. Currently, the locations are unknown.
Stockpile-Laydown	-	-	-	-	-	-		
Mulefat Scrub (acres)-								
Soil Remediation	0.08	0.56	0.15	0.28	0.04 (RI 3, Area III)	1.11	1.11	Potential habitat for least Bell's vireo; however, habitat is scattered and poor.
Stockpile-Laydown	-	-	-	-	-	-		No mulefat scrub occurs within the proposed stockpile-laydown areas
Santa Susana Tarplant (acres¹)								
Soil Remediation	0.03	0.15	2.12	<0.01		2.31	2.35	Primarily in rock outcrops, and adjacent to developed areas, esp. cracks in cement and disturbed ruderal landscape
Stockpile-Laydown	<0.01	0.04	0.32	-	0.36			Primarily in rock outcrops, and adjacent to developed areas, esp. cracks in cement and disturbed ruderal landscape
Sandstone Rock Basin (individual)								
Soil Remediation	1	-	-	-		1	N/A	Found on top of rock outcrops, this basin is unlikely to be disturbed because project activities are avoiding rock outcrops as much as possible
Stockpile-Laydown	-	-	-	-		-		-
Wetland Area (acres)								
Soil Remediation	-	-	0.34	0.74	-	1.08	1.08	
Stockpile-Laydown	-	-	-	-		-		
Wetland Linear (acres²)								
Soil Remediation	0.59	0.70	1.37	0.38	-	3.04	3.04	
Stockpile-Laydown	-	-	-	-		-		
Wildlife Corridor								
The wildlife corridor comprises 106,889 acres, with only 1.7 acres occurring in the Action Area in NASA Area II. No proposed project impacts occur within the wildlife corridor. The nearest impact is a soil remediation area approximately 75 ft away from the southwestern corner of the wildlife corridor.								
Notes: RI = remedial investigation " - " = no impacts								
acres ¹ – A 10-ft buffer was used around each cluster identified by GPS to estimate acreage acres ² – A 10-ft buffer was drawn around each linear potential wetland to estimate acreage								

Mitigation Measures

Proposed avoidance and mitigation measures associated with the protection of the least Bell's vireo will include the following:

- Conduct protocol-level (USFWS, 2001) surveys in suitable habitats between April 10 and July 31 prior to the anticipated construction startup date. If the subsequent surveys do not indicate the presence of least Bell's vireo, then standard minimization measures will be followed, as described in the following text. If the subsequent surveys indicate the presence of least Bell's vireo, then consultation with the USFWS will be initiated before clearing or construction activities are begun. This consultation, if needed, could lead to an ITP for least Bell's vireo.
- Establish appropriate mitigation to protect migratory birds, including seasonal restrictions, biological inspections and monitoring, or compensatory mitigation. Standard minimization measures based on the USFWS recommendation (Marek, 2012) will be used and include the following buffer areas during construction:
 - 91.4 m (300 ft) away from any nest that is covered by the Migratory Bird Treaty Act (MBTA) but is not a listed species
 - 152.4 m (500 ft) away from any raptor nest and any threatened or endangered species
- Excavation, soil mixing, and biological treatment sites would be monitored for the presence of noxious and invasive weeds by a qualified biologist. If weeds are identified, the area would be treated using NASA-approved weed control measures (NASA, 2011c). Furthermore, when natural colonization appears unlikely, sites would be revegetated using an SSFL-specific seed mix to allow a better opportunity for vegetation to establish on disturbed areas.
- Once remediation reaches the desired level, the monitoring wells will be removed and these areas will be allowed to revegetate. If natural colonization in the area appears unlikely, the area will be revegetated with native plant species. This mitigation will reduce impacts to minor and short term.

Conclusion

The SSFL Project likely could affect the least Bell's vireo through temporary habitat modification; however, construction-related effects would be short term and would be minimized as described previously. Affected areas would be remediated and potentially would provide improved habitat in the long term. No long-term effects to the species resulting from the proposed project are anticipated; therefore, the project might affect, but would not be expected to adversely affect, the least Bell's vireo.

7.1.2 California Red-Legged Frog

No evidence of CRLF occurrence was found during the 2010 or 2011 surveys (Appendix C). Limited potential suitable habitat exists for this frog species within the Action Area, primarily around the R-2 Ponds and the detention basin north of the Coca test stand site (approximately 0.25 ha [0.63 acres]). Effects to these ponds could occur during demolition and remediation activities. In addition, long-term effects could occur if the ponds were permanently drained or if existing drainages were rerouted. Such activities could change or impair fluvial connectivity. These ponds are likely to be Waters of the U.S. However, NASA cleanup activities could be beneficial if these ponds were remediated and restored for mitigation as red-legged frog habitat. Although it is assumed that short-term remediation activities would affect the ponds, long-term effects are unknown at this time. NASA will continue to work with the USFWS regarding this habitat.

Mitigation Measures

Proposed mitigation measures will include the following:

- Surveys in suitable habitats will be conducted before the anticipated construction startup date and during construction. If the subsequent surveys do not indicate the presence of the California red-legged frog, then avoidance measures will be conducted, as described in the following text. If the subsequent surveys indicate the presence of the California red-legged frog, before or during construction, then any construction activities will be halted immediately and consultation with the USFWS will be initiated before construction activities are restarted. This consultation, if needed, could lead to an ITP for the California red-legged frog.
- Natural drainage channels will be avoided where possible to avoid or minimize impacts to wetlands and sensitive habitats, depending on historical drainage patterns. If direct impacts cannot be avoided in areas that represent potential CRLF habitat, the work in these areas will be monitored by a USFWS-approved biologist.
- In the event the ponds are to retain their existing hydrology during post-remediation activities, NASA will consult with the USFWS about restoring the ponds for wildlife, and specifically for the red-legged frog
- A Stormwater Pollution Prevention Plan (SWPPP) and an Erosion Control Plan (ECP) will be developed and implemented to guide erosion control methodology. A project Dust Control Plan will be developed to prevent soil erosion. With the implementation of these measures, the impacts on natural drainages and changes to hydrology likely will be minimal.
- NASA will obtain a CWA Section 404 Permit for the discharge or dredge of material into jurisdictional Waters of the U.S. from the USACE. The Section 404 Permit would include necessary measures to minimize and mitigate effects to wetlands and other Waters of the U.S. Whenever possible, the least severe remediation technologies will be used in wetlands and streams.

Conclusion

Although no signs of the red-legged frog were observed during the surveys, the habitat could support red-legged frog, and therefore, its presence is assumed. Areas in which CRLF could be supported are the Area I Pond (Figure 4-2), which is an ephemeral feature, and the detention basin north of the Coca test stand site. The proposed project is likely to affect the red-legged frog through temporary habitat modification if groundwater remediation wells are installed in this area, which generally has been identified as having groundwater contamination (Figure 3-5); however, it is likely that SSFL Project-related impacts would be short term and would be minimized through mitigation measures similar to those proposed previously. Affected areas would be remediated and potentially would provide improved wildlife habitat during post-environmental cleanup. Currently, it is unknown whether the existing ponds would be restored or the hydrology would be changed as part of the long-term plan. Long-term effects to the species resulting from the SSFL Project could occur. However, due to the unlikely occurrence of red-legged frog in this habitat, the SSFL Project might affect, but is not likely to adversely affect, the red-legged frog.

7.1.3 Vernal Pool Fairy Shrimp and Riverside Fairy Shrimp

Two species of federally listed fairy shrimp potentially exist within the areas Action Area. Although these species were not observed during surveys, fairy shrimp habitat does occur within the Action Area. These species are inferred to be present and could exist in rock outcrops at SSFL. One potentially affected sandstone rock basins occurs in RI 2, in the Coca areas. This area would be avoided during remediation and demolition activities if possible. Consequently, there would be no expected affects to listed fairy shrimp. If this area and sandstone rock basin could not be avoided and were to be affected as a result of the remediation efforts, established fairy shrimp mitigation measures would be used.

Mitigation Measures

Rock basins would be avoided completely and, where they occur near construction areas, exclusion fencing will be set up to the extent possible. In no case will rock basins be affected for soil remediation by excavation during SSFL Project activities. Additional dialogue with the USFWS will occur if this situation changes.

Conclusion

Rock outcroppings that contain rock basins would not be affected during construction activities due to the difficulty of accessing and excavating or demolishing this extreme habitat. Furthermore, it is not expected that the rock basins would have been affected by contaminated soils or groundwater. The number of rock basins observed makes up only a fraction of the rock outcrop habitat within the Action Area and the potential that remediation activities would affect them is virtually non-existent. At this point in Project planning, no impacts are anticipated; therefore, the SSFL Project will not affect, the VPFS or RFS.

7.1.4 Santa Susana Tarplant/Tarweed

The only federally designated sensitive plant species observed in the Action Area is the Santa Susana tarplant. The Santa Susana tarplant is an aggressive colonizer that is locally abundant and present throughout the proposed remediation area. More than 3,600 plants were recorded during site surveys in 2010 and several hundred additional plants were recorded during surveys conducted in March 2013 in areas that are peripheral to the NASA-administered properties at SSFL. It should be noted that a large number of the Santa Susana tarplant could not be inventoried due to the locations of the plants in inaccessible rock outcroppings. Many of the occurrences are adjacent to developed areas, primarily parking lots that are next to structures. Although demolition and excavation activities and associated stockpiles would occur in the flat areas adjacent to the tarplant (located in rock outcrops) and fewer species would be directly affected because it is likely the rock outcrops would not be disturbed, it is likely a number of plants would be affected by SSFL Project activities for the short term. The impact analysis indicated that approximately 0.97 ha (2.4 acres) of Santa Susana tarplant will be affected. Long-term remediation activities after groundwater wells had been installed would not affect the species. Because of the abundance of the tarplant within the Action Area, long-term effects on the local population of these plants would be expected to be relatively minor and short term.

Mitigation Measures

Mitigation measures for species avoidance such as erecting fences to demarcate exclusion areas will be used to the extent possible during demolition and environmental cleanup activities. Post-environmental cleanup, native vegetation is expected to repopulate in these areas; however, if native vegetation appears unlikely to return, the area will be revegetated using native plant species, including seeds gathered from local Santa Susana tarplants. An SSFL-specific plant seed mix has been developed for the purpose of revegetation. In areas where sensitive resources occur, the soil will be removed with hand tools such as pick axes and shovels, or a vacuum truck. When possible, the more detrimental remediation technologies will not be used in sensitive resource areas. No excavation material will be placed in sensitive habitats or wetlands and disturbed areas will be replanted with like-vegetation following construction. The replanted areas will be monitored.

Conclusion

The proposed SSFL Project would be likely to affect the Santa Susana tarplant through temporary habitat modification; however, SSFL Project-related impacts would be short-term and would be minimized as described previously. Incorporation of the mitigation measures discussed would help promulgate the species after construction. No long-term effects to the species resulting from the proposed SSFL Project would be anticipated; therefore, the project might affect, but is not likely to adversely affect, the Santa Susana tarplant.

7.1.5 Braunton's Milk Vetch

Braunton's milkvetch has not been observed in the Action Area (NASA, 2011a; 2011b); however, soil conditions indicate that habitat for the milk vetch could be supported in the northeastern portion of NASA Area II and in the southern portion of Area I (LOX Plant Area). If it were to become established in the Action Area during demolition and remediation activities, it potentially could be affected in the short term. No long-term operational effects associated with groundwater remediation would affect the plant.

Mitigation Measures

Mitigation for Braunton's milk vetch will be similar to that for the Santa Susana tarplant mitigation. Mitigation measures for species avoidance such as erecting fences to demarcate exclusion areas will be used to the extent possible during construction. Following construction, native vegetation is expected to repopulate in these areas; however, if native vegetation appears unlikely to return, the area will be revegetated using native plant species. An SSFL-specific plant seed mix has been developed for this purpose. In areas where sensitive resources occur, the soil will be removed using hand tools such as pick axes and shovels, or a vacuum truck. When possible, the more detrimental remediation technologies will not be used in sensitive resource areas. No excavation material will be placed in sensitive habitats or wetlands and disturbed areas will be replanted with like-vegetation post cleanup.

Conclusion

Currently, no Braunton's milk vetch has been found in the Action Area. If it were to colonize within the Action Area, the proposed project effects likely would be through temporary habitat modification; however, construction-related effects would be short term and would be minimized as described previously. Incorporation of the mitigation measures discussed would help promulgate the species after construction. No long-term effects to the species resulting from the SSFL Project would be anticipated; therefore, the SSFL Project might affect, but is not expected to adversely affect, the Braunton's milk vetch.

7.2 Cumulative Effects

Cumulative effects as defined under the ESA include the effects of future state, local, or private actions that are reasonably certain to occur in the Action Area. The SSFL Project will consist of onsite demolition of existing buildings and associated structures, and soil and water remediation. Other Proposed Actions occurring onsite, but outside of the SSFL Project, would require separate Section 7 consultation. In addition, federal actions that would occur offsite as a result of soil and groundwater contamination that has occurred onsite and spread to areas offsite would require separate Section 7 consultation. NASA is coordinating with the appropriate federal, state, and local agencies to address these issues; however, they are beyond the scope of this analysis. Descriptions of proposed projects that have the potential to occur within the Action Area or that could affect portions of the Action Area are described as follows:

- Interim Source Removal Action (ISRA):** Under the direction of the RWQCB Cleanup and Abatement Order (CAO), Boeing and NASA initiated the ISRA to remove surface soil contamination and to comply with waste discharge requirements established in the National Pollutant Discharge Elimination System (NPDES) permit No. CA001309. The specific objective of the ISRA RWQCB CAO is to improve surface water quality within the Outfall 008 and 009 watersheds by identifying, evaluating, and remediating areas of contaminated soil to eliminate the COCs (specifically, dioxin, cadmium, copper, lead, and mercury) that exceeded the NPDES permit limits and benchmark limits. As part of this program, NASA began soil removal activities in the northeastern portion of Area II in early November 2009. NASA currently is operating ISRA at four sites—ELV, STP, A2LF, and LOX. Approximately 1,617 yd³ have been excavated, with an estimated 9,562 yd³ to be removed in 2012 and 2013. The excavated material was transported to offsite licensed disposal facilities, and stormwater BMPs were implemented to improve stormwater runoff quality and to minimize NPDES permit exceedances. The soil remediation goal for the ISRA was the DTSC-approved background levels; however, the goal for dioxin was slightly higher than current background levels because the watersheds were burned extensively during the 2005 Topanga Wildfire, resulting in dioxin-containing ash and debris being deposited throughout the area.

- **Groundwater Extraction and Treatment System (GETS):** An interim GETS was designed to extract groundwater from 14 wells across SSFL and to deliver water via a network of new pipelines to a centralized treatment facility located in Boeing Area I. The facility has been partially operational since October 2009, receiving groundwater extracted from a well in the southwestern portion of NASA Area II. Extracted groundwater is treated at the facility prior to offsite disposal. When the GETS is fully operational, groundwater will be delivered via the new pipelines to a large storage tank. The water would then be treated and discharged through a permitted outfall. Because of the high cost of treating water and the low discharge resulting from the GETS, reinjection of treated water is being evaluated at various locations, including existing water supply wells and an area in the center of the facility. The GETS is an ongoing action and overlaps a portion of the NASA-administered property at SSFL.
- **DOE Energy Technology Engineering Center (ETEC) Closure:** The ETEC, which was used for nuclear research and testing, is a 36.4-ha (90-acre) area of SSFL Area IV (leased by the DOE). The research and testing activities occurred from the 1950s through the 1980s and included nuclear energy operations (development, fabrication, disassembly, and examination of nuclear reactors, reactor fuel, and other radioactive materials) and large-scale liquid sodium reactor experiments. Several incidents occurred during the operating history of the sodium reactor experiments that might have resulted in the release of radionuclides to the environment. The actual concentrations currently present depend on the residual persistence of the radionuclides in the environment after more than 30 years of decay and prior remediation efforts (Rucker, 2009). EPA is currently sampling SSFL Area IV and a portion of the northern undeveloped area that were found to be affected by these activities to evaluate contamination levels, and the DOE would prepare an EIS to analyze a range of remediation alternatives to achieve cleanup goals. The remediation project is expected to be operating by 2017. The DOE remediation is a reasonably foreseeable action occurring at SSFL adjacent to the NASA-administered property.

SECTION 8

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SECTION 9

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Appendix A
Quino Checkerspot Butterfly Habitat Assessment

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**HABITAT ASSESSMENT FOR THE
ENDANGERED QUINO CHECKERSPOT BUTTERFLY
AT THE NASA-ADMINISTERED AREAS I AND II OF THE
SANTA SUSANA FIELD LABORATORY**

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INTRODUCTION

CH2M Hill, Inc. is assisting the National Aeronautics and Space Administration (NASA) in the preparation of a Natural Resources Management Plan for NASA-administered portions of the Santa Susana Field Laboratory (SSFL). The 2,850-acre SSFL property is located in the hills between Simi Valley and Woodland Hills in eastern Ventura County, CA.

One of the sensitive resources that might possibly occur at the SSFL is the federally endangered Quino Checkerspot butterfly (*Euphydryas editha quino*, Lepidoptera: Nymphalidae). Entomological Consulting Services, Ltd. was hired to assist CH2M Hill in the evaluation of existing habitat conditions to support the Quino Checkerspot in two NASA-administered portions of the SSFL; 41.7 acres within Area I and all 409.5 acres of Area II. Several small additional sectors of SSFL that total 43 acres and border Areas I and II were also included in this habitat assessment survey for the endangered butterfly. All surveyed portions of the SSFL for this habitat assessment are illustrated in Figure 1, an aerial photograph of the site, while Figure 2 illustrates the boundaries of the surveyed areas on the Calabasas topographic map (US Geological Survey 7.5' series).

The remainder of this report provides pertinent background information on the Quino Checkerspot butterfly and the habitats that occur at the SSFL property. It also describes our survey methods and the findings from our habitat assessment survey.

BACKGROUND INFORMATION

Conservation Status.

The Quino Checkerspot butterfly, *Euphydryas editha quino* (Behr) 1863, was listed as an endangered species in late 1990's by the US Fish & Wildlife Service (1997). The primary threats that led to its recognition as an endangered species were loss and degradation of its habitats, fragmentation of remaining occupied sites, lack of connectivity between remaining occupied sites, and adverse impacts due to fire management practices.

The butterfly is not recognized as endangered by the State of California. The state's Fish and Game Code specifically excludes insects as a type of animal that can be recognized as endangered under the state's endangered species statute.

A recovery plan was prepared by the US Fish & Wildlife Service (2003). Ten units of critical habitat, including seven in Riverside County and three in San Diego County, have been recognized (US Fish & Wildlife Service 2009).

Distribution.

Historically, the Quino Checkerspot occurred primarily in Los Angeles, Orange, San Bernardino, Riverside and San Diego counties of California. It was also found in the northwestern part of Baja California, Mexico. Today, all of the currently known locations that still support the Quino Checkerspot are in Riverside and San Diego counties (US Fish & Wildlife Service 2003, 2009).

Based on a review of literature, museum collection records, and findings of recent surveys (BUGGY Data Base, 2012; California Natural Diversity Data Base, 2012), I could not find any bona fide records for Ventura County. Nonetheless, due to the SSFL's location near the Ventura-Los Angeles County border, and restricted access at this property for many decades, it is certainly plausible that the butterfly might be found there if suitable habitat conditions were present.

Natural History.

The Quino Checkerspot is usually associated with openings in scrub, coastal sage scrub, chaparral, oak woodland, and grassland plant communities, especially openings that are characterized by native bunch grasses and forbs. The primary oviposition and larval food plant is Dwarf (also sometimes referred to as "Erect") Plantain (*Plantago erecta*, Plantaginaceae). Larvae occasionally have also been observed feeding on Purple Owl's Clover (*Castilleja exserta*, Orabanchaceae), Rigid Bird's Beak (*Cordylanthus rigidus*, Orabanchaceae), White Snapdragon (*Antirrhinum coulterianum*, Plantaginaceae), and Southern Chinese Houses (*Collinsia concolor*, Plantaginaceae) (Pratt and Emmel 2010).

The sequence of life history events for the Quino Checkerspot can be described as follows. The butterfly is univoltine, i.e., it has one generation per year. There are four stages in the butterfly's life cycle: egg, larva (i.e., caterpillar), pupa, and adult. Its adult flight season is typically about six to eight weeks in length, usually starting in early February and terminating in April. Actual starting and ending times can vary by several weeks between years, as well as the length of the flight season. Individual adults live approximately one to two weeks, during which time they must mate and reproduce. Adults obtain energy and nutrients from the nectar of various native, annual wild flowers, including: *Lasthenia*, *Cryptantha*, *Gilia*, and *Linanthus*, but will occasionally utilize flowers of other plants to obtain nectar.

Mate location occurs primarily on hilltops, where both sexes congregate after eclosion (i.e., adult emergence from the pupa). Upon mating, females disperse throughout the hilltops and downslope from the hilltops to lay their eggs. The eggs are generally laid in masses near the base of *Plantago erecta* plants.

Larvae hatch in about 10-14 days and feed for approximately another 2-4 weeks until their food plants senesce or are defoliated. Young larvae, which have limited mobility at this stage, frequently fail to find sufficient edible food plants and starve. Typically, 90% or more of these young larvae starve to death. As its annual food plant senesces, the partially grown larvae enter a physiological dormant period, known as diapause, which is spent under rocks or in cracks and crevices in the soil to survive the dry season when there is no food for the larvae. The dry season diapause ends with the onset of the next rainy season and the germination of *Plantago erecta*. Post-diapause larvae resume feeding at that time. Because the larvae are cold-blooded, their activity is limited to warm days in the winter. Thus, they especially favor open-canopy areas where sunlight can hit the ground to help them warm up and remain active. After periodic feeding for several weeks they complete their development by pupating. The pupal stage generally lasts about 2 weeks before emergence of the adult butterfly.

Habitats at Areas I and II of SSFL.

A variety of habitat types occur within 41.7-acre study site of Area I and the 49.5-acre Area II at SSFL. These were identified and mapped by CH2M Hill, Inc. during the fall of 2010 (NASA 2011). The habitat types and their approximate acreages (NASA 2010) include:

- a) *Baccharis* Scrub (2.6 acres);
- b) Chaparral (172.6 acres);
- c) Coast Live Oak Riparian Forest (9.2 acres);
- d) Coast Live Oak Woodland (13.2 acres);
- e) Freshwater Marsh (0.2 acre);
- f) Mulefat Scrub (2.1 acres);
- g) Non-native Grassland (18.6 acres);
- h) Venturan Coastal Sage Scrub (64.4 acres);
- i) Southern Willow Scrub (1.0 acre);
- j) Undifferentiated Wetland (0.6 acre);
- k) Developed, i.e., buildings, paved roads, parking lots, etc. (58.1 acres);
- l) Open water, i.e., stormwater detention basins (0.4 acre);
- m) Rock Outcrops (84.5 acres); and
- n) Ruderal (16.8 acres).

Figure 3 illustrates the locations of these habitat types within our study areas at the SSFL.

HABITAT ASSESSMENT METHODS

CH2M Hill, Inc. provided several background materials that were reviewed before our first site visit. These items included reports, maps, and aerial photographs of the study areas, as well as GIS shapefiles for the boundaries of the study areas. The GIS shapefiles, depicting the boundaries of our study areas I and II were loaded into two mapping-grade GPS units manufactured by Trimble to guide our field surveys.

Dr. Robert B. Jensen and I initially visited the SSFL on 18 July 2011 to familiarize ourselves with the property and study areas. Although we had originally intended to survey for dried specimens of *Plantago erecta*, we did not see any remnant individuals of this or other larval food plants and decided to postpone our habitat assessment until the spring of 2012 when the food plants would be more apparent.

Our return field visits occurred between March 5 and 7, 2012. We selected these survey dates because local colleagues indicated that *Plantago erecta* was blooming at other locations. Upon our arrival, Randy Dean of CH2M Hill, Inc., took us to a known location at the SSFL property (but outside of our habitat assessment survey area) where *Plantago erecta* had previously been observed (Faulkner 2010). We confirmed the presence of the food plant, which was in full flower. We then returned to Areas I and II to conduct our habitat assessment surveys.

Initially we drove all of the existing roads within or adjacent to both study areas to determine where there was unsuitable habitat and where there was potentially suitable habitat that might support the butterfly and its food plants that required more intensive searches for the food plants. Unsuitable habitat was characterized by developed areas (i.e., buildings and other

facilities), hardscape (i.e., paved roads, parking lots, etc.), heavily disturbed soils, ruderal vegetation, closed-canopy (i.e., lacking openings where food plants might grow) woodlands, riparian, close-canopy chaparral or scrub, and aquatic habitats (i.e., ponds, drainages, etc.). These areas of unsuitable habitat were noted on a set of aerial photographs for Areas I, II, and the extra survey areas after some spot-checking for larval and adult food plants at selected locations to confirm their absence.

We then returned to all portions of Areas I and II that were initially identified as potential habitat for the food plants of the Quino Checkerspot. These included rock outcrops with patches of thin soils, grasslands, and areas of open canopy woodland, scrub, or chaparral. We systematically hiked throughout all such accessible portions of Areas I, II, and the extra survey areas. Due to the steepness of some rock outcrops, for safety reasons we surveyed these areas using binoculars and a spotting scope from various nearby vantage points.

Locations of any observed food plants were mapped with the Trimble GPS units. All positional information was differentially corrected and converted to ArcGIS (version 10) shapefiles.

Photographs of representative habitat conditions were taken at various locations throughout Areas I, II, and the extra survey areas. A Ricoh-GPS camera was utilized to associate each photograph with its location (Figure 4). The identification numbers of the 72 photopoint locations illustrated in Figure 4 match each photo's identification number in Appendix A of this report.

SURVEY RESULTS

Plantago erecta was observed growing at small patches of thin soils situated on north-facing rock outcrops within a localized portion of Area I. These locations are illustrated in Figure 5. Despite our intensive surveys throughout other portions of Areas I and II, as well as the extra survey areas, it was not observed anywhere else. None of the other known larval food plants of the Quino Checkerspot were observed during our habitat assessment survey. The only adult nectar plant observed was *Lasthenia* sp. It grew in association with some of the *Plantago erecta* patches.

The total mapped area of *Plantago erecta* measured 15,747 ft.² (0.36 acre). However, the density of plants growing within these locations was extremely low, typically less than 5% of the total vegetative cover within a patch and often less than 1% of the vegetative cover. Thus the overall biomass of *Plantago erecta* was quite small.

Although we were not conducting a presence-absence survey for any life stages of the Quino Checkerspot butterfly, according to the Carlsbad office of the US Fish & Wildlife Service (http://www.fws.gov/carlsbad/TEspecies/Documents/QuinoDocs/QuinoMonRef/Quino_Ref_Info.htm) the timing of our habitat assessment survey coincided with the period when late instar larvae or adults were being observed at other locations known to support the butterfly. However, no life stages of the Quino Checkerspot were seen during our field surveys.

CONCLUSIONS

Existing habitat conditions for the Quino Checkerspot within study sites at Areas I and II, as well as in the extra study areas of the SSFL are of such poor quality that I would not expect the endangered butterfly to occur there at this time. This conclusion is based on the following factors:

- a) The Quino Checkerspot butterfly is not known to be associated with most of the predominant habitat types that characterize the study areas.
- b) Largely inappropriate conditions characterize those habitat types that occur at SSFL and are known to support food plants of the Quino Checkerspot, primarily due to the lack of open canopies, the prevalence of non-native grasses and forbs in the understory, etc.
- c) Like its relative, the threatened Bay Checkerspot (*Euphydryas editha bayensis*), the Quino Checkerspot has a highly colonial population structure. Populations are generally found where its larval and adult food plants grow in relatively high densities in patches scattered over dozens, if not hundreds of acres. In contrast, within our study area at SSFL, *Plantago erecta* is limited to a total of 0.36 acre, which represents only 0.08% of the entire study area.
- d) Where it does grow, *Plantago erecta* occurs at very low abundance, with densities typically less than 5% of the total herbaceous vegetative cover and often less than 1%.
- e) None of the checkerspot's secondary larval food plants were observed within our study sites.
- f) The only nectar plant observed was *Lasthenia* and it was of very limited abundance, even less than *Plantago erecta*.
- g) Lastly, all observed occurrences of *Plantago erecta* and *Lasthenia* were on rock outcrops, which are not considered suitable habitat for the Quino Checkerspot. The previously cited webpage of the Carlsbad office of the US Fish & Wildlife Service states "there has never been any demonstrated correlation between occupied Quino habitat and rock outcrops, nor have rock outcrops been described in any published Service documents as components or indicators of suitable habitat."

For these reasons, I conclude that the existing habitat conditions within our survey areas at SSFL are unsuitable to support the endangered Quino Checkerspot butterfly and it is extremely unlikely to occur there.

REFERENCES CITED

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California Natural Diversity Data Base (CNDDB). 2012. Report of occurrences for the Quino Checkerspot Butterfly. CNDDB, Rarefind version 3.1.0. California Department of Fish and Game. Sacramento, CA.

Faulkner, D. 2010. Site Assessment for Quino Checkerspot Butterfly, Santa Susana Field Laboratory Area IV, Ventura County, California. Letter report dated 15 July 2010 and addressed to Thomas W. Mulroy of SAIC. 3 pp. & map.

NASA. 2011. Fall 2010 Habitat and Listed Species Surveys of NASA-Administered Property at Santa Susana Field Laboratory. Huntsville, AL. Final report.

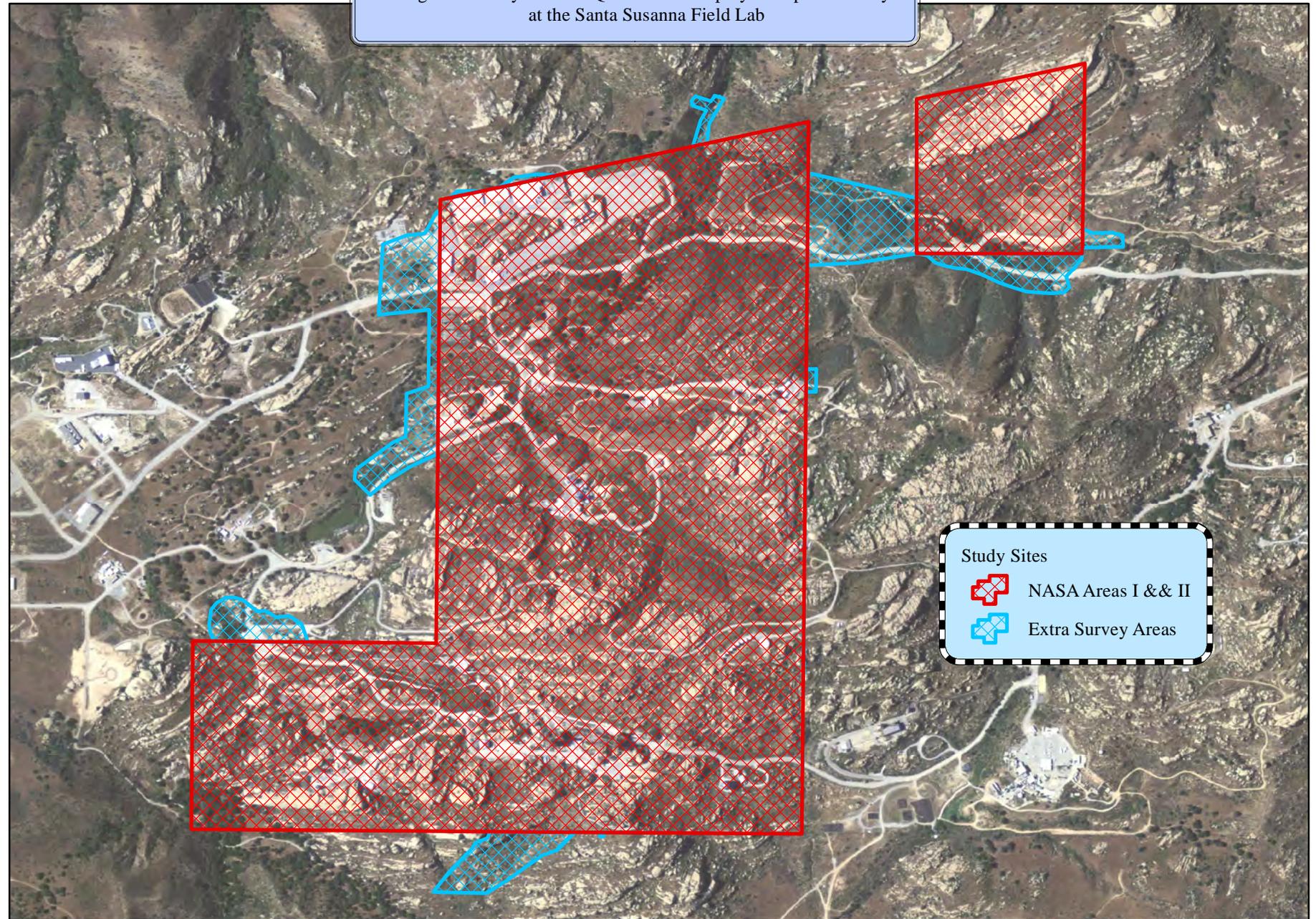
Pratt, G.F. and J.F. Emmel. 2010. Sites chosen by diapausing or quiescent stage Quino Checkerspot butterfly, *Euphydryas editha quino*, larvae. Journal of Insect Conservation 14:107-114.

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U.S. Fish & Wildlife Service. 2003. Recovery plan for the Quino Checkerspot Butterfly. Portland, OR. 191 pp.

U.S. Fish & Wildlife Service. 2009. Revised designation of critical habitat for the Quino Checkerspot butterfly (*Euphydryas editha quino*). Federal Register 74:28776-28862.

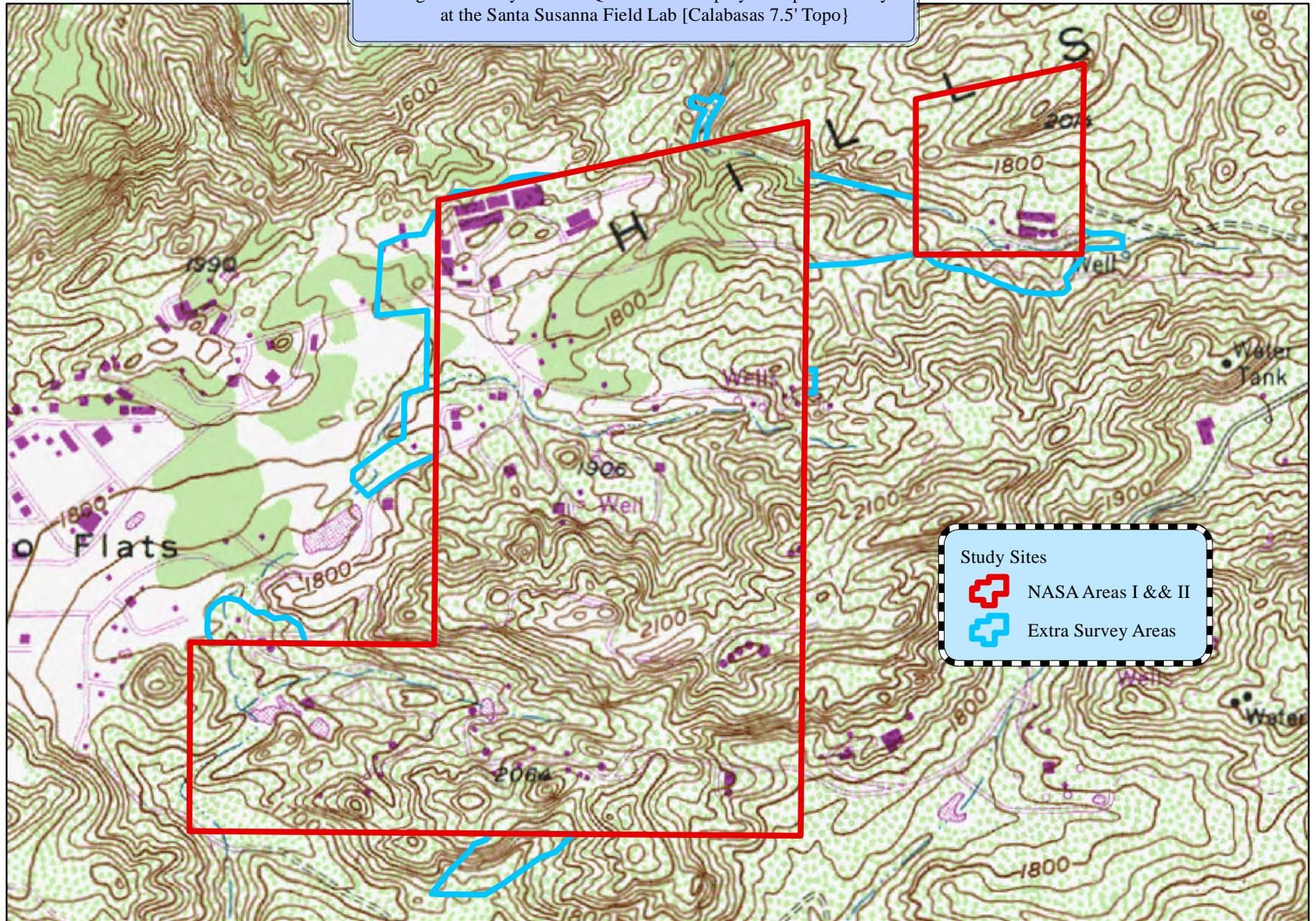
Figure 1. Study sites for Quino Checkerspoty Foodplant Survey at the Santa Susanna Field Lab



0 1,000 2,000 4,000 Feet



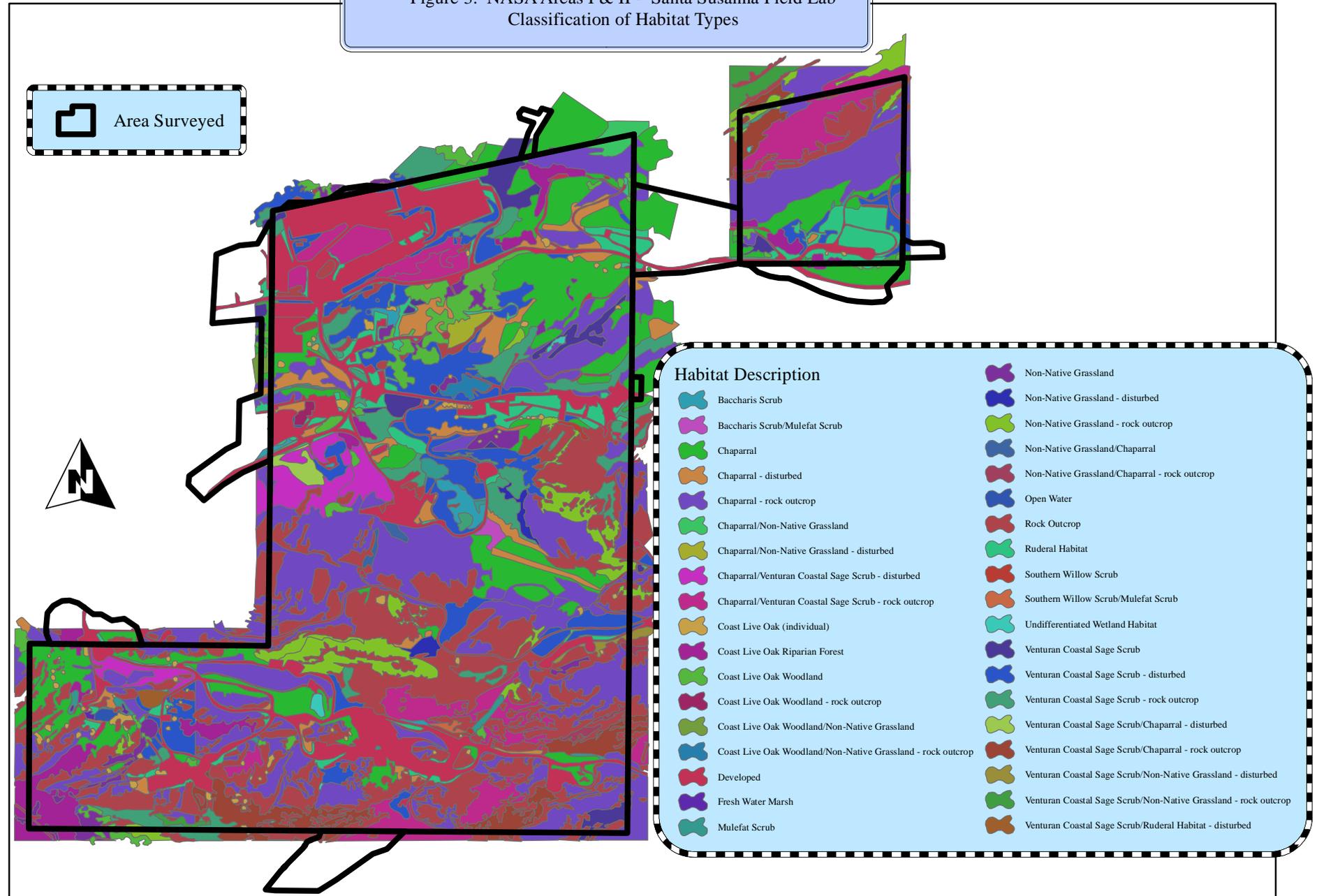
Figure 2. Study sites for Quino Checkerspoty Foodplant Survey at the Santa Susanna Field Lab [Calabasas 7.5' Topo]



0 1,000 2,000 4,000 Feet



Figure 3. NASA Areas I & II - Santa Susanna Field Lab
Classification of Habitat Types



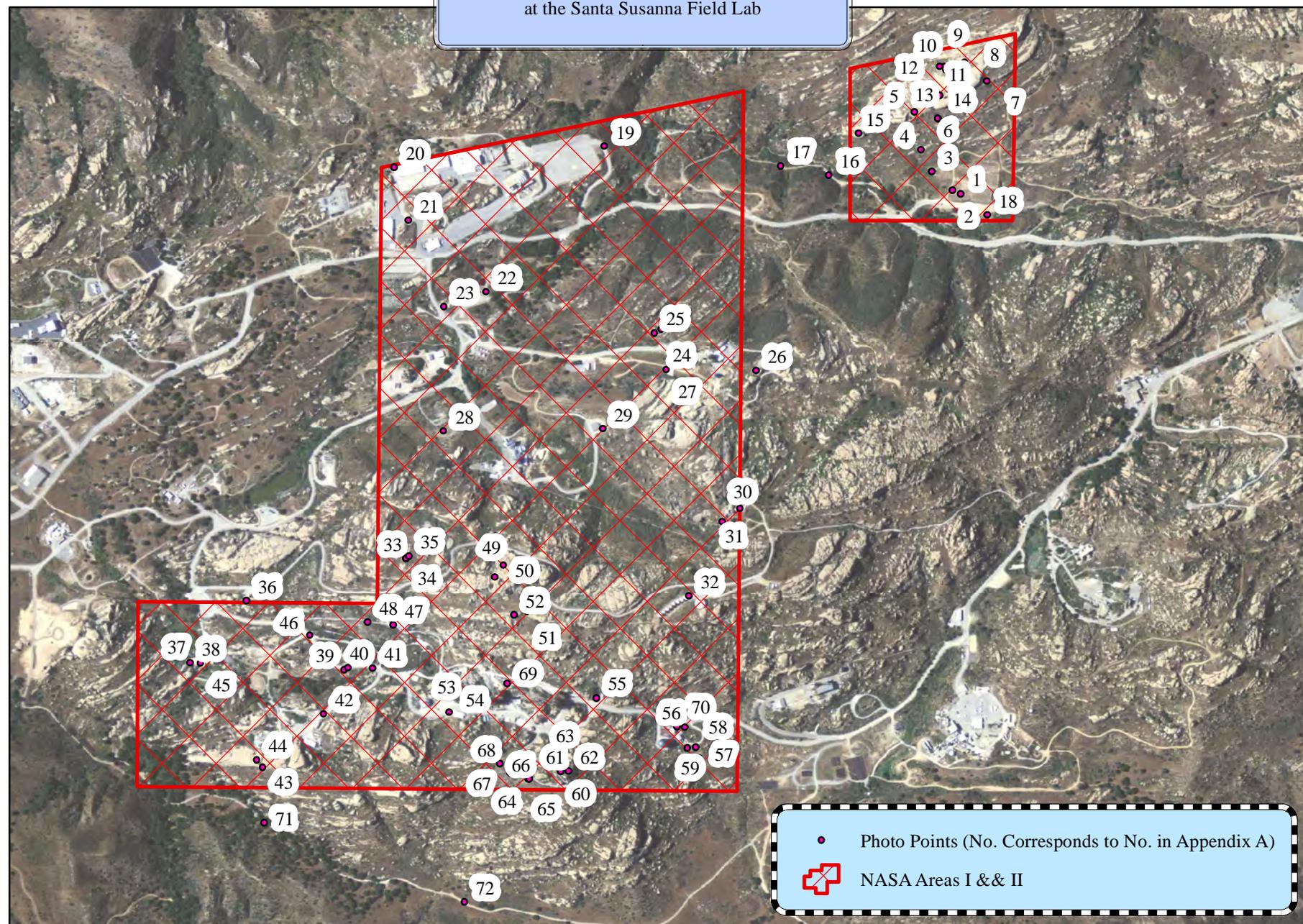
Area Surveyed

Habitat Description

-  Baccharis Scrub
-  Baccharis Scrub/Mulefat Scrub
-  Chaparral
-  Chaparral - disturbed
-  Chaparral - rock outcrop
-  Chaparral/Non-Native Grassland
-  Chaparral/Non-Native Grassland - disturbed
-  Chaparral/Venturan Coastal Sage Scrub - disturbed
-  Chaparral/Venturan Coastal Sage Scrub - rock outcrop
-  Coast Live Oak (individual)
-  Coast Live Oak Riparian Forest
-  Coast Live Oak Woodland
-  Coast Live Oak Woodland - rock outcrop
-  Coast Live Oak Woodland/Non-Native Grassland
-  Coast Live Oak Woodland/Non-Native Grassland - rock outcrop
-  Developed
-  Fresh Water Marsh
-  Mulefat Scrub
-  Non-Native Grassland
-  Non-Native Grassland - disturbed
-  Non-Native Grassland - rock outcrop
-  Non-Native Grassland/Chaparral
-  Non-Native Grassland/Chaparral - rock outcrop
-  Open Water
-  Rock Outcrop
-  Ruderal Habitat
-  Southern Willow Scrub
-  Southern Willow Scrub/Mulefat Scrub
-  Undifferentiated Wetland Habitat
-  Venturan Coastal Sage Scrub
-  Venturan Coastal Sage Scrub - disturbed
-  Venturan Coastal Sage Scrub - rock outcrop
-  Venturan Coastal Sage Scrub/Chaparral - disturbed
-  Venturan Coastal Sage Scrub/Chaparral - rock outcrop
-  Venturan Coastal Sage Scrub/Non-Native Grassland - disturbed
-  Venturan Coastal Sage Scrub/Non-Native Grassland - rock outcrop
-  Venturan Coastal Sage Scrub/Ruderal Habitat - disturbed

0 1,000 2,000 4,000 Feet

Figure 4. Photography Point Locations
at the Santa Susanna Field Lab



0 1,000 2,000 4,000 Feet



March 28, 2012
Entomological Consulting Services, Ltd.

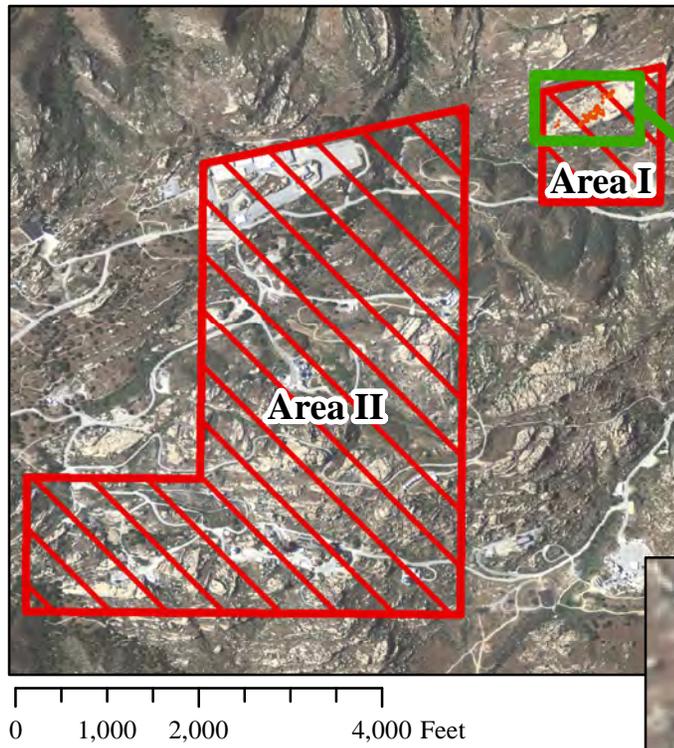
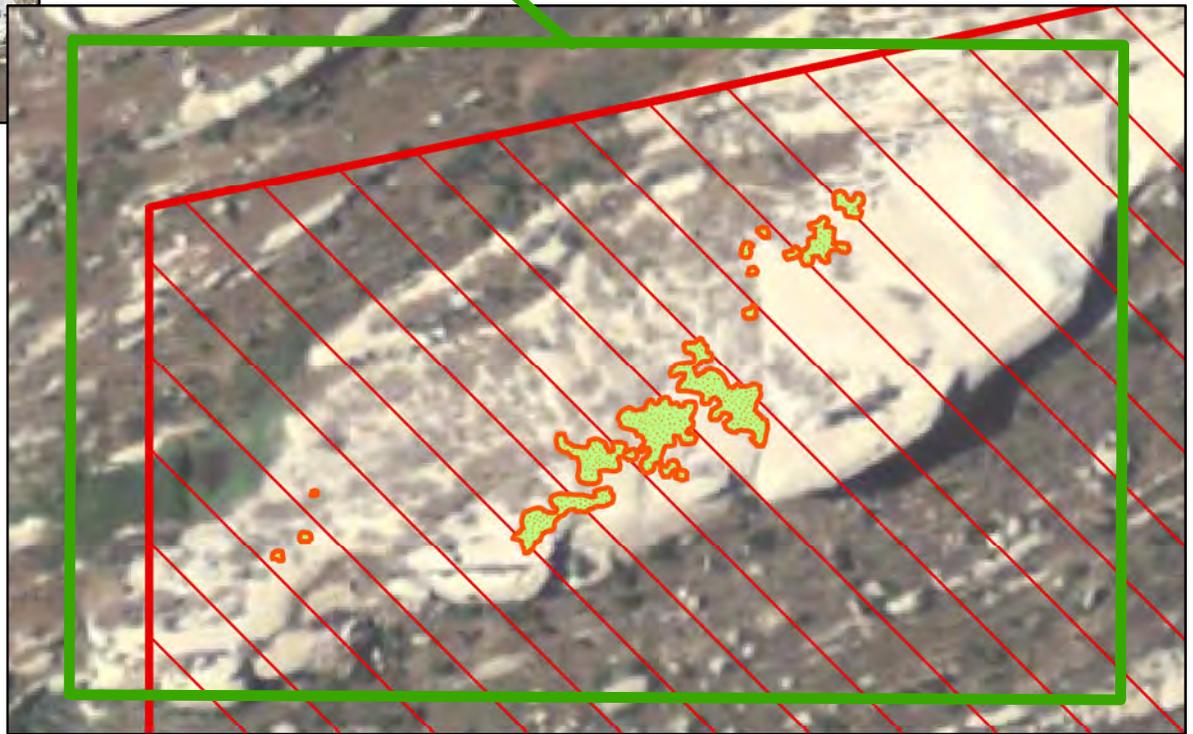


Figure 5. NASA Area I - Santa Susanna Field Lab
location of *Plantago erecta* observations



Appendix A

Photodocumentation of Santa Susanna Field Lab NASA Areas I & II

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Santa Susanna Field Lab



Photo Point 1



Photo Point 2



Photo Point 3



Photo Point 4



Photo Point 5



Photo Point 6



Photo Point 7



Photo Point 8



Photo Point 9

Santa Susanna Field Lab



Photo Point 10



Photo Point 11



Photo Point 12



Photo Point 13



Photo Point 14



Photo Point 15



Photo Point 16



Photo Point 17



Photo Point 18

Santa Susanna Field Lab



Photo Point 19



Photo Point 20



Photo Point 21



Photo Point 22



Photo Point 23



Photo Point 24



Photo Point 25

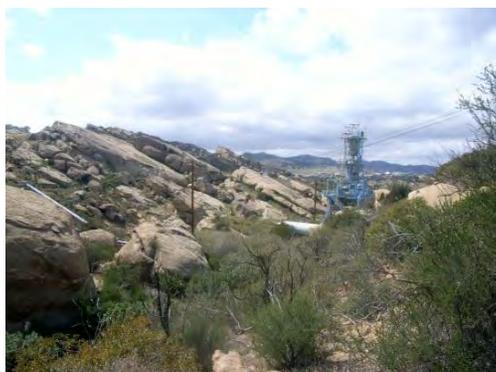


Photo Point 26



Photo Point 27

Santa Susanna Field Lab



Photo Point 28



Photo Point 29



Photo Point 30



Photo Point 31



Photo Point 32



Photo Point 33



Photo Point 34



Photo Point 35



Photo Point 36

Santa Susanna Field Lab



Photo Point 37



Photo Point 38



Photo Point 39



Photo Point 40

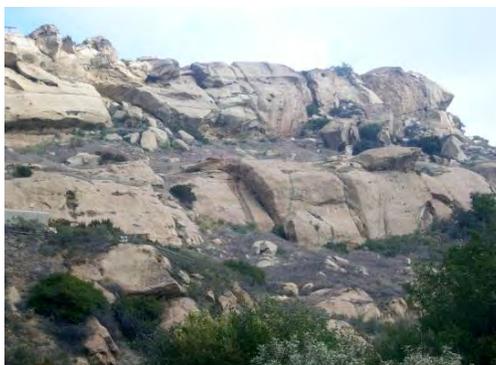


Photo Point 41



Photo Point 42

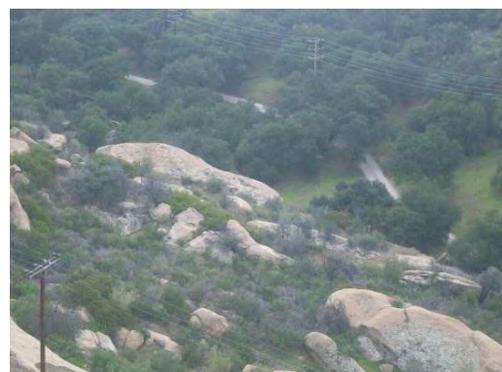


Photo Point 43



Photo Point 44



Photo Point 45

Santa Susanna Field Lab



Photo Point 46



Photo Point 47



Photo Point 48



Photo Point 49

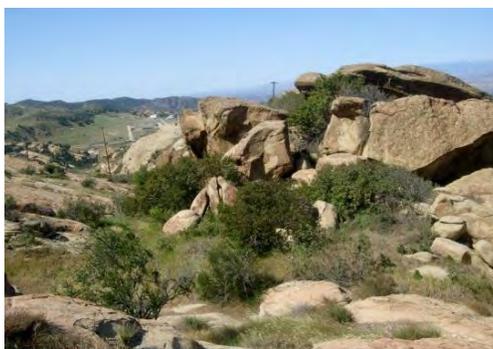


Photo Point 50



Photo Point 51

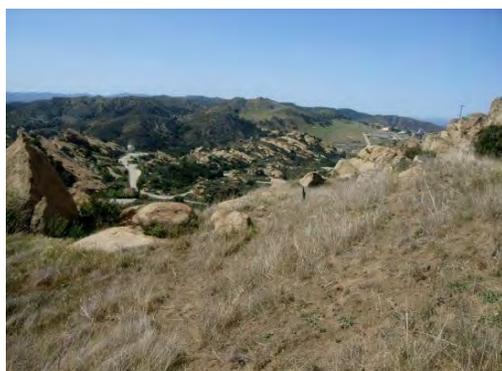


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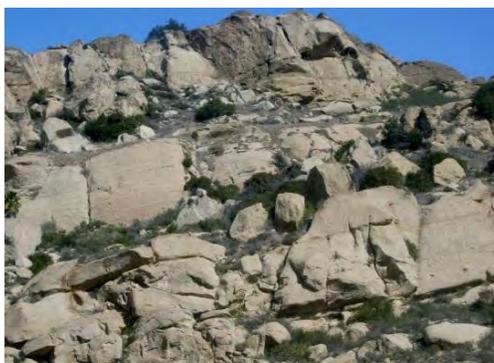


Photo Point 53



Photo Point 54

Santa Susanna Field Lab

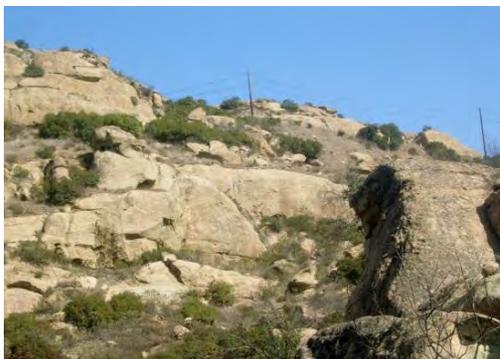


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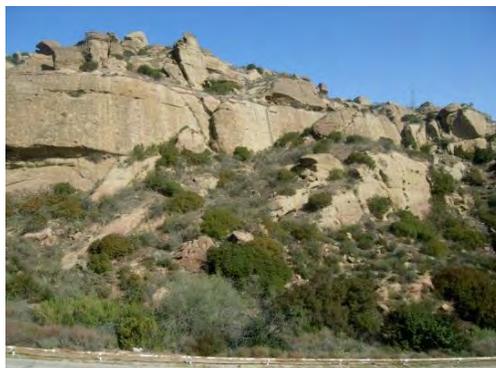


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Photo Point 57



Photo Point 58

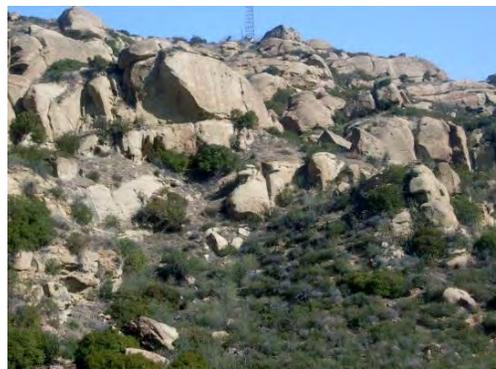


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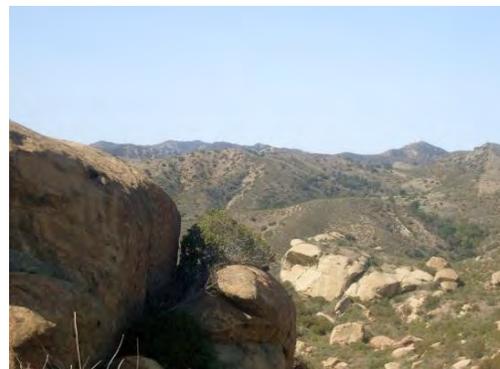


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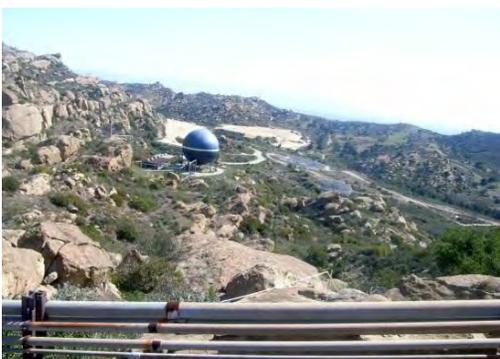


Photo Point 61



Photo Point 62



Photo Point 63

Santa Susanna Field Lab

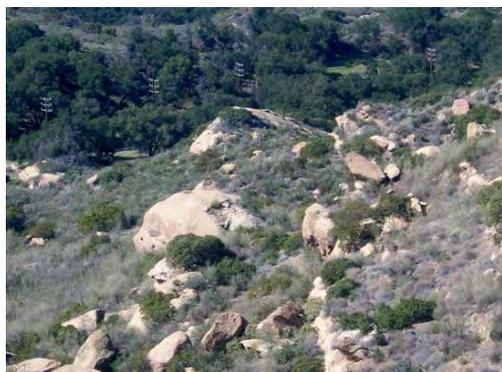


Photo Point 64



Photo Point 65



Photo Point 66



Photo Point 67



Photo Point 68



Photo Point 69

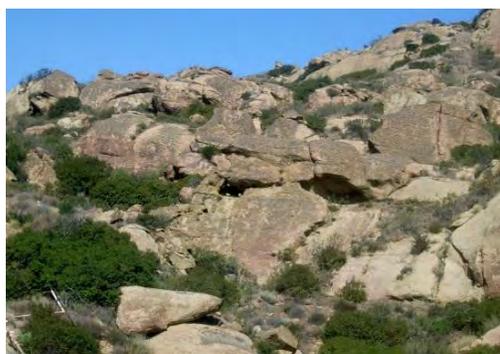


Photo Point 70



Photo Point 71

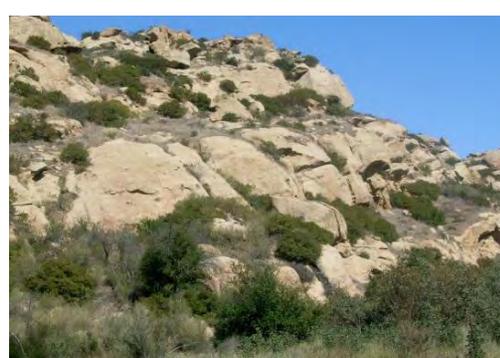


Photo Point 72

Appendix B
USFWS Letter

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812



August 12, 2011

Reply to Attn of:

AS01

U.S. Fish and Wildlife Service
Mr. Rick Farris
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

SUBJECT: Invitation for Informal Consultation on Plant and Wildlife Surveys to Support the Environmental Impact Statement for the Demolition and Cleanup Activities at Santa Susana Field Laboratory, Ventura County, California

Dear Mr. Farris:

The National Aeronautics and Space Administration (NASA) is proposing the remediation of soils and groundwater and the demolition of test stands and ancillary structures on the NASA-administered portion of the Santa Susana Field Laboratory (SSFL). To analyze the potential environmental impacts of these activities, NASA is preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) implementing regulations, the NASA Procedural Requirements (NPR) for Implementing NEPA, and Executive Order (EO) 12114.

NASA is currently conducting rare plant and wildlife surveys at SSFL. Those surveys should be completed by late September 2011, and we would like a chance to meet with personnel from your office in October or November to discuss our findings and the EIS. We would also welcome the opportunity to discuss additional information that you may provide us about the biological systems at SSFL.

SSFL Site Background

The SSFL site is 2,850 acres in Ventura County, California, approximately 7 miles northwest of Canoga Park and 30 miles northwest of downtown Los Angeles. SSFL is composed of four areas known as Areas I, II, III, and IV and two unnumbered areas known as the "undeveloped land." NASA administers 41.7 acres within Area I and all 409.5 acres of Area II. The Boeing Company manages the remaining property within Areas I, III, and IV and the two undeveloped areas. The attachment shows the project area.

Since the mid-1950s, when the two Federally owned areas were owned by the U.S. Air Force, this site has been used for developing and testing rocket engines. Four test stand complexes—Alfa, Bravo, Coca, and Delta—were constructed in Area II between 1954 and

1957. Area II and the Liquid Oxygen (LOX) Plant portion of Area I were acquired by NASA from the U.S. Air Force in the 1970s.

The NASA-administered areas of SSFL also contain biological resources outside of the rocket development areas. SSFL is near the crest of the Simi Hills, which are part of the Santa Monica Mountains running east-west across Southern California. The diverse terrain consists of ridges, canyons, and sandstone rock outcrops. NASA has conducted several surveys to identify biological resources within its portion of SSFL. As a result, NASA has identified special-status plant and animal species occurring on its property.

Previous environmental sampling on the NASA-administered property indicates that metals, dioxins, polychlorinated biphenyls (PCBs), volatile organics, and semivolatile organics are present in the soils and upper groundwater (known as the Surficial Media Operable Unit). Volatile organics, metals, and semivolatile organics also are present in the deeper groundwater (known as the Chatsworth Formation Operable Unit).

Environmental Commitments

Rocket engine testing has been discontinued at these sites and the property has been excessed to the General Services Administration (GSA). GSA conditionally has accepted the Report of Excess pending: (1) NASA's certification that action necessary to protect human health and the environment with respect to hazardous substances on the property has been taken or receipt of the U.S. Environmental Protection Agency's (EPA's) written concurrence that an approved and installed remedial design is operating properly and successfully; OR (2) the Governor's concurrence of the suitability of the property for transfer per Comprehensive Environmental Response, Compensation, and Liability Act Section 120(h)(3)(C).

In 2007, a Consent Order among NASA, Boeing, U.S. Department of Energy, and Department of Toxic Substances Control (DTSC) was signed addressing demolition of certain infrastructure and environmental cleanup of SSFL. NASA entered into an Administrative Order on Consent (AOC) for Remedial Action with DTSC on December 6, 2010, "to further define and make more specific NASA's obligations with respect to the cleanup of soils at the Site." On the basis of the 2010 AOC, NASA is required to complete a Federal environmental review pursuant to NEPA. An EIS is being prepared by NASA to include demolition of site infrastructure, soil cleanup and groundwater remediation within Area II and a portion of Area I (LOX Plant) of SSFL.

As part of the environmental review process, certain studies are being completed to characterize the existing conditions and to provide information for the analysis and consultation. These include surveys for wildlife, critical habitat, rare plants, wetlands, and archaeological resources. The findings of these studies will be incorporated into the EIS.

Environmental Analysis

NASA will submit a Biological Assessment (BA) based on the existing ecological resource surveys and the data collected during the biological resources studies. The BA will be prepared and submitted to the USFWS to support Section 7 Consultation. Best management practices, such as seasonal restrictions on the work, will be reviewed.

CH2M HILL is NASA's contractor for this work and will work with NASA and the resource agencies to establish appropriate avoidance and minimization measures to reduce the impacts of the proposed action on known or potentially known sensitive habitats. In the event suitable habitat for listed species is identified in an inaccessible area of the proposed project area, listed species will be assumed to be present. The BA will address effects of the proposed action on federally listed threatened or endangered species known to occur or to have the potential to occur on the SSFL project area, including but not limited to, the following:

- Braunton's milk vetch (*Astragalus brauntonii*)
- *Dudleya* spp.
- Santa Susana tarplant (*Deinandra minthornii*)
- Quino checkerspot butterfly (*Euphydryas editha* ssp. *quino*)
- Riverside fairy shrimp (*Streptocephalus woottoni*)
- Vernal pool fairy shrimp (*Branchinecta lynchi*)
- California red-legged frog (*Rana aurora* ssp. *draytonii*)
- Least Bell's vireo (*Vireo bellii* ssp. *pusillus*)

In addition, potential Quino checkerspot butterfly habitat occurs on the site. The BA will include a focused survey of the NASA property for host plants that will identify the extent of the butterfly's preferred habitat.

We look forward to working cooperatively with your agency to conduct these evaluations. If you have questions regarding these plans or to set up a meeting, please feel free to contact me at 256- 544-0662 or Amy Keith at 256-544-7434.

Sincerely,

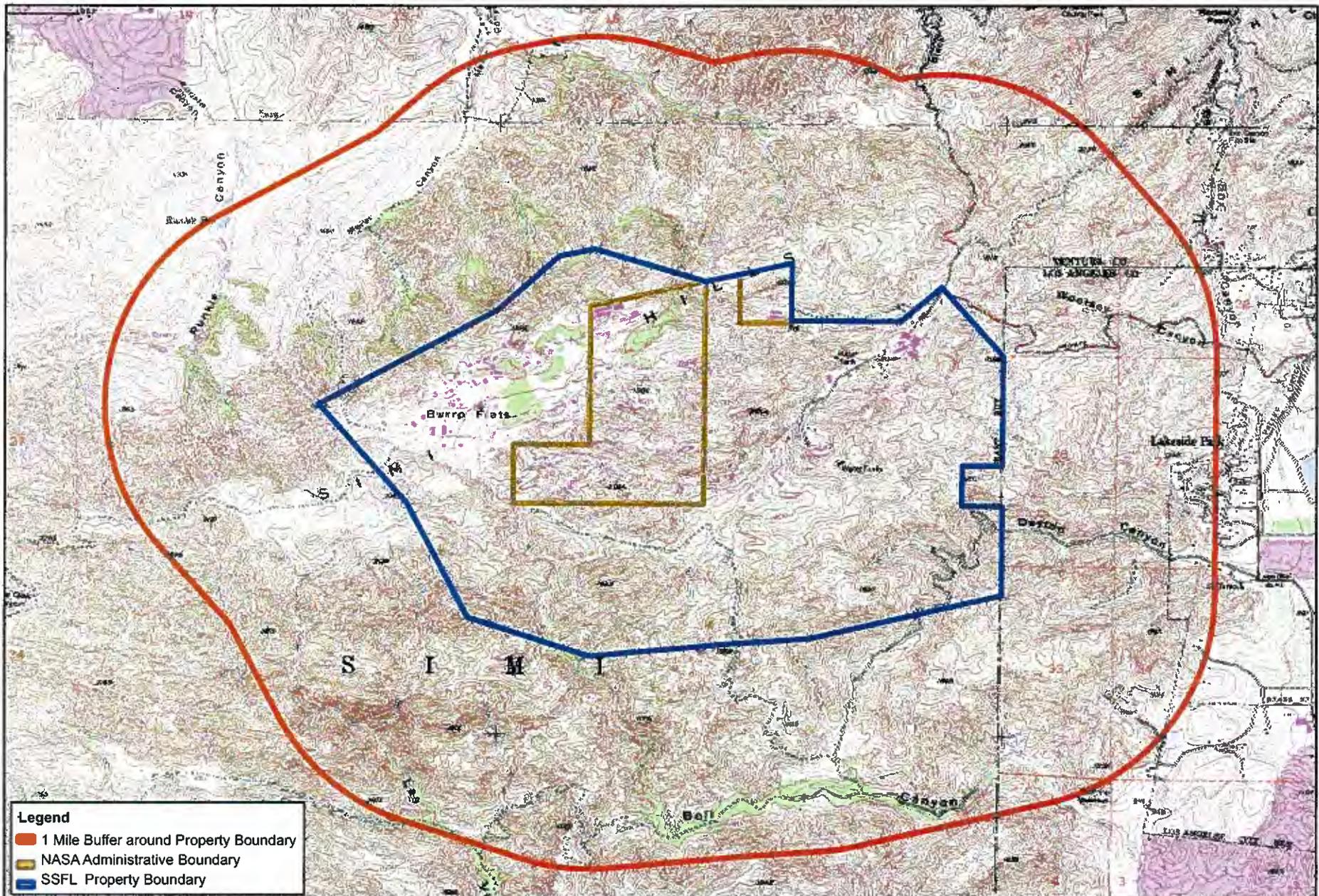


Allen Elliott
SSFL Program Director

Enclosure – Site Map

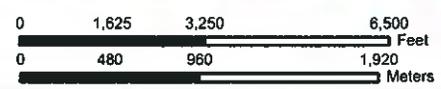
cc:

AS10/Amy Keith
CH2M HILL/Beth Vaughan
CH2M HILL/Leslie Tice



Legend

- 1 Mile Buffer around Property Boundary
- NASA Administrative Boundary
- SSFL Property Boundary



20-JUN-2011
 Drawn By:
 A. Cooley

Township: T2N
Range: R17W

USGS 24K Scale 7.5 minute Quadrangle
EIS
Santa Susana Field Laboratory
Ventura County, California

Appendix C
California Red Legged Frog Habitat Assessment

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Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 01/05/2012
(mm/dd/yyyy)

Site Assessment Biologists: HUDDESTON RUSSELL LONG STEVE
(Last name) (first name) (Last name) (first name)

(Last name) (first name) (Last name) (first name)

Site Location: VENTURA - SSFL R2B POND
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: SSFL - REMEDIATION
Brief description of proposed action:
EXCAVATION AND REMOVAL OF CONTAMINATED SOILS

- 1) Is this site within the current or historic range of the CRF (circle one)? YES NO
- 2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:
Size: 0.13 ACRE Maximum depth: 3 FT
Vegetation: emergent, overhanging, dominant species: SOME ARROYO WILLOW
SPARSE TYPHA - SOME WOODY DEBRIS
Substrate: _____

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: JULY - AUGUST

STREAM:

Bank full width: _____

Depth at bank full: _____

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____

Vegetation: emergent, overhanging, dominant species: _____

Substrate: _____

Bank description: _____

Perennial or Ephemeral (*circle one*). If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

- CRAY FISH

- SNAILS

- OSTRICODS

- PREVIOUSLY OBSERVED FISH

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs

Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 01/04/2012
(mm/dd/yyyy)

Site Assessment Biologists: HUDDESTON, RUSSELL LONG, STEVE
(Last name) (first name) (Last name) (first name)

Site Location: AREA I POND - 34° 14' 20.260 -118° 41' 21.117"
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: SSEL - REMEDIATION PROJECT
Brief description of proposed action:
NO PROPOSED ACTIVITY AT THIS LOCATION -

- 1) Is this site within the current or historic range of the CRF (circle one)? YES NO
- 2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:
Size: 0.15 ACRE Maximum depth: 24 FT
Vegetation: emergent, overhanging, dominant species: NO OVERHANGING
OR EMERGENT VEGETATION IN THIS POND
VEG W/IN POND - PONTOPROON, ELEOCHARIS
Substrate: SAND

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: EPHEMERAL JULY-AUG.

STREAM:

Bank full width: _____

Depth at bank full: _____

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____

Vegetation: emergent, overhanging, dominant species: _____

Substrate: _____

Bank description: _____

Perennial or Ephemeral (*circle one*). If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

- PACIFIC CHOTRUS FROGS
- OSTRACODS
- MIDGE LARVA
- BLACK PHOEBE

- USED AS DRINKING WATER BY HORSES AND WILDLIFE

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs

Maps with important habitat features and species location

**Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet**

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 01/03/2012
(mm/dd/yyyy)

Site Assessment Biologists: HUDDESTON, RUSSELL LONG, STEVE
(Last name) (first name) (Last name) (first name)

Site Location: VENTURA - SSFL - COCA SITE 341° 13' 36.724" -118° 42' 01.592"
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: SSFL - REMEDIATION
 Brief description of proposed action:
EXCAVATION AND REMOVAL OF CONTAMINATED SOIL / SEDIMENT

- 1) Is this site within the current or historic range of the CRF (circle one)? YES NO
- 2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
 If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:
 Size: 0.33 ACRE Maximum depth: 6.75 FT
 Vegetation: emergent, overhanging, dominant species: NARROW LEAF CATTAIL
TYPHA DOMINGENSIS AROUND POND MARGIN - SOME
ARROYO WILLOW - SALIX LASIOLEPIS
 Substrate: SAND, AROUND EDGES IN TYPHA SILT/SAND WITH
ORGANIC MATTER

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

STREAM:

Bank full width: _____

Depth at bank full: _____

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____

Vegetation: emergent, overhanging, dominant species: _____

Substrate: _____

Bank description: _____

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

- SEVERAL BIRDS AROUND POND, SMALL NEST OBSERVED IN CATTAILS
- NUMEROUS DRAGONFLYS THIS AREA LATE SUMMER
- SMALL FISH PRESENT IN POND - MOST LIKELY MOSQUITO FISH
CAMBUSIA AFFINIS
- SOME ALGAE IN POND, NO EGG MASSES OBSERVED AT TIME OF SURVEY

Necessary Attachments:

1. All field notes and other supporting documents
 2. Site photographs
- Maps with important habitat features and species location

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 01/05/2012
(mm/dd/yyyy)

Site Assessment Biologists: HUDDESTON RUSSELL LONG STEVE
(Last name) (first name) (Last name) (first name)

(Last name) (first name) (Last name) (first name)

Site Location: VENTURA - SSFL RZ POND 34°13' 35.741 -118°42' 21.802
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)**

Proposed project name: SSFL - REMEDIATION
Brief description of proposed action:
EXCAVATION AND REMOVAL OF CONTAMINATED SOILS

- 1) Is this site within the current or historic range of the CRF (circle one)? YES NO
- 2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES NO
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION
(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:
Size: 0.5 ACRE Maximum depth: 8 FT
Vegetation: emergent, overhanging, dominant species: SPARSE WILLOWS AND DEAD TYPHA AROUND POND MARGIN
Substrate: SAND

Perennial or Ephemeral (circle one). If ephemeral, date it goes dry: _____

STREAM:

Bank full width: _____

Depth at bank full: _____

Stream gradient: _____

Are there pools (circle one)? YES NO

If yes,

Size of stream pools: _____

Maximum depth of stream pools: _____

Characterize non-pool habitat: run, riffle, glide, other: _____

Vegetation: emergent, overhanging, dominant species: _____

Substrate: _____

Bank description: _____

Perennial or Ephemeral (*circle one*). If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

-POND GENERALLY W/ STEEP ROCKY BANKS - AREA TO THE EAST GENTLY SLOPED INTO APPARENT OVERFLOW AREA W/ LOTS OF DEAD/DOWNED VERY OLD EMERGENT VEGETATION

FISH PRESUMIBLY PRESENT IN THIS POND.

BELTED KINGFISHER OBSERVED HERE

Necessary Attachments:

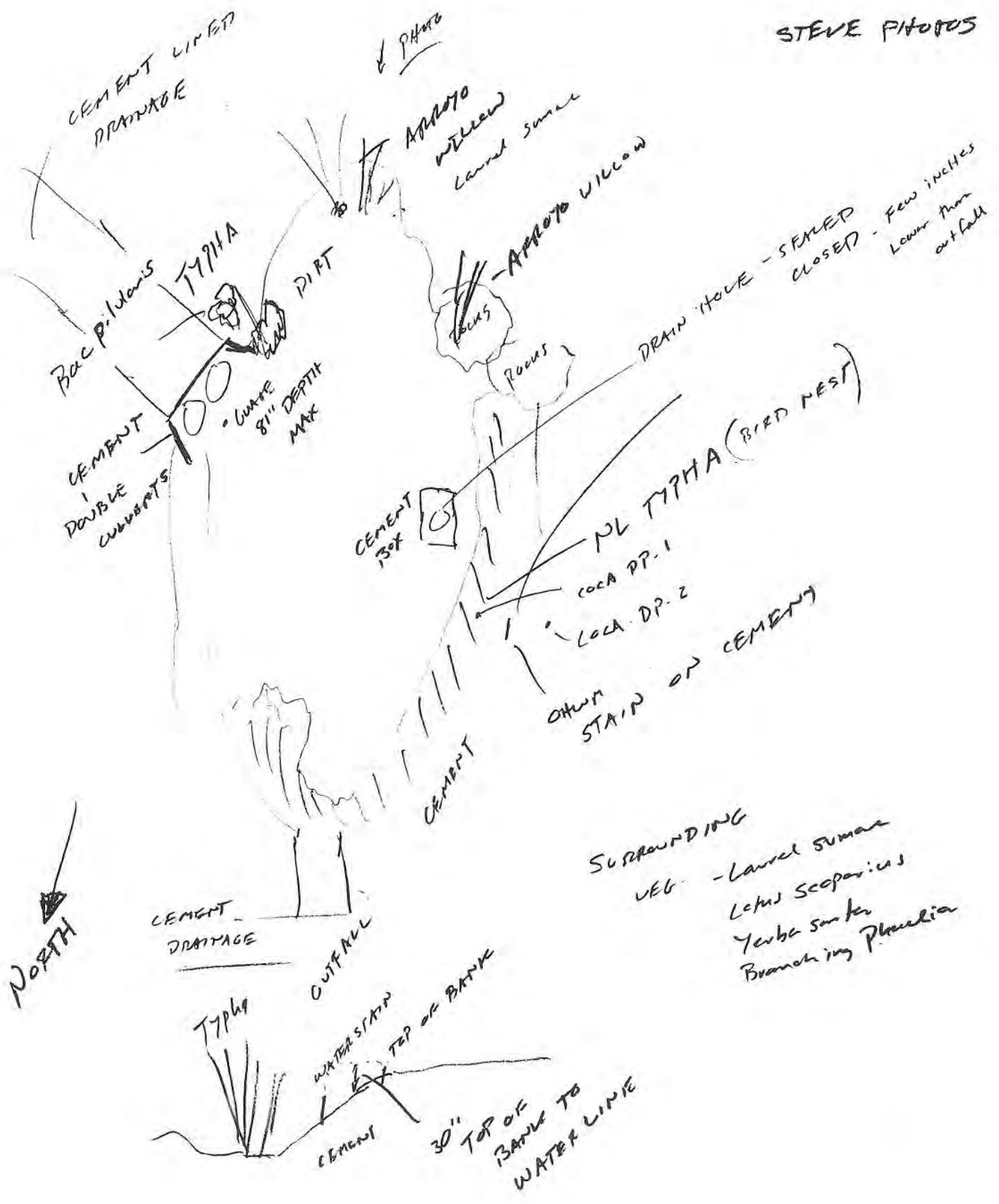
1. All field notes and other supporting documents
2. Site photographs

Maps with important habitat features and species location

COCA POND

1/3/2012

STEVE PHOTOS



AREA I POND

SANDSTONE ROCK OUTCROP

DENSE POISON OAK

EARTHEN BERM

POUNDED
WATER

SCATTERED SHRUBS

CHAMISE

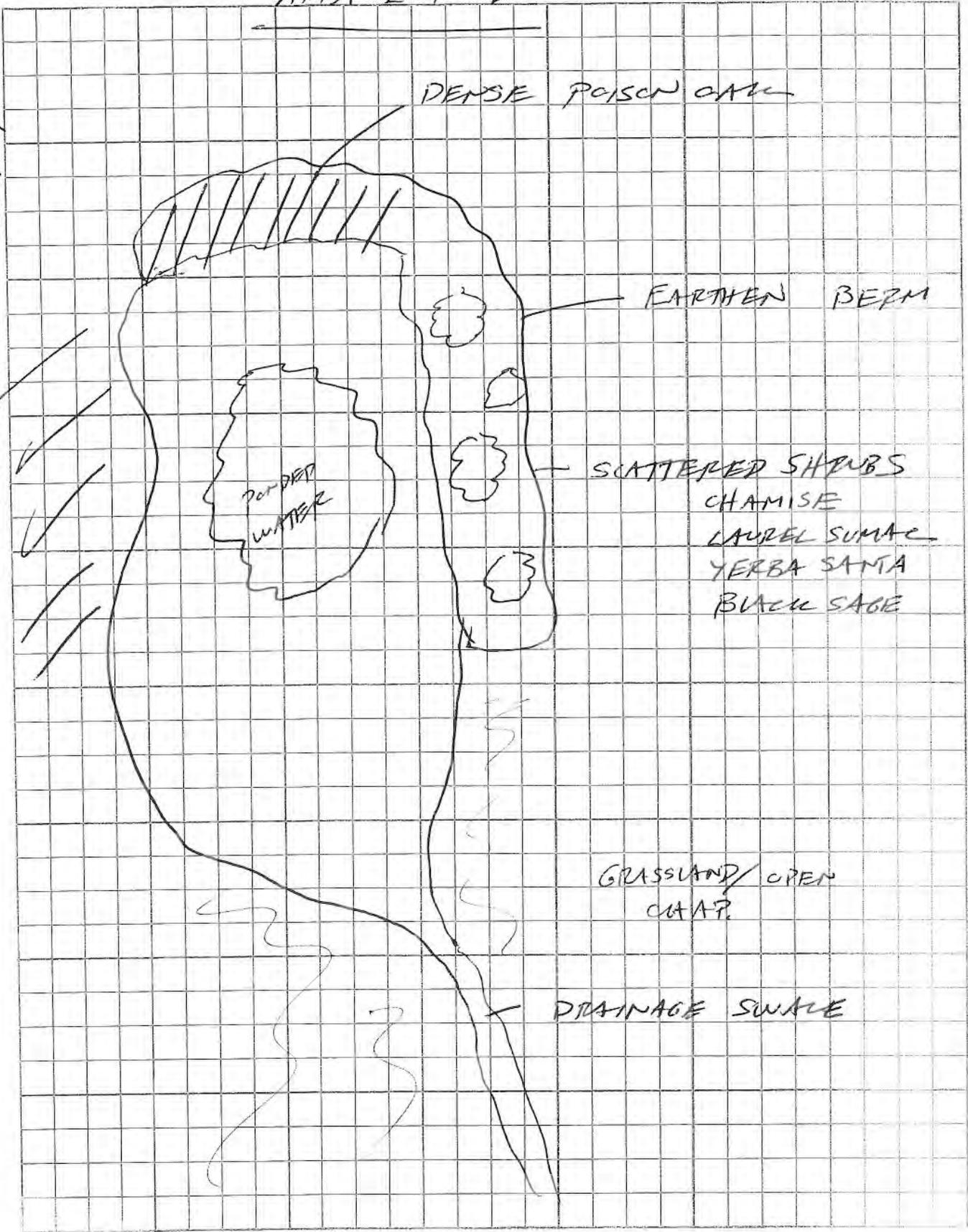
LAUREL SUMAC

YERBA SANTA

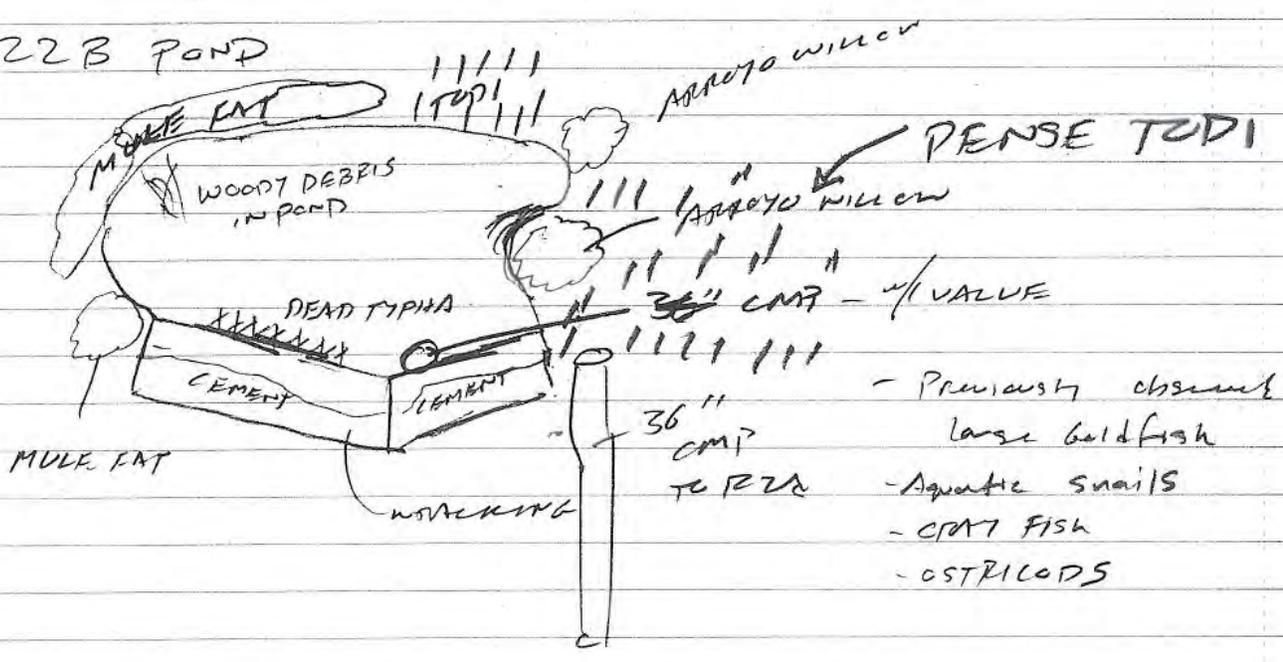
BLACK SAGE

GRASSLAND / OPEN
CLIFF

DRAINAGE SWALE



R2B POND



- Previously observed large Goldfish
- Aquatic snails
- CRAY FISH
- OSTRICODS

REMNANTS OF TYPHA

SCIRPUS Δ - AMERICAN TYPE
 SCIRPUS ACUTUS / CA

- SURROUNDING AREAS
 Edges of Pond Herbaceous
 includes oxalis SP.
 CAPP. PTERIS
 BRASSICA

R2B SP-1

Veg - Remnant Typha / Scirpus stems - all Dead
 OLD - Rotted Rhizomes no live plants.

- SHRUBS ARROYO WILLOW - 20%
- MULE FAT 15% - 20%

SOME BRASSICA NOW COMMON IN - BUT POINT W/IN CIRCUM OF POND

SOILS: BED ROCK / SANDSTONE BOULDER AT 4-5" BGS

MOIST, SOFT, W/M SBK
~~25~~ 2.57 4/2 10YR B/I 1% FINE (ASH?)
 ROOTS 8% F-M
 FINE SANDY LOAM - TRACE COARSE SAND

Appendix D
USFWS Species Lists

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
08EVEN00-2012-SL-0119

January 6, 2012

Allen Elliott, SSFL Project Director
Office of Center Operations
National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

Subject: Species List for the NASA-administered property at the Santa Susana Field Laboratory, Ventura County, California

Dear Mr. Elliott:

We are responding to your request dated December 21, 2011 and received in our office on December 27, 2011 for information on listed species and critical habitat that may occur at or near portions of Santa Susana Field Lab (SSFL) that are administered by the National Aeronautics and Space Administration (NASA). SSFL was developed as a remote site to test rocket engines and conduct nuclear research, and is comprised of four administrative areas and two undeveloped land areas. NASA-administered property at SSFL consists of 41.7 acres within Area I and all 409.5 acres of Area II.

The U.S. Fish and Wildlife Service's (Service) responsibilities include administering the Endangered Species Act of 1973, as amended (Act), including sections 7, 9, and 10. Section 9 of the Act prohibits the taking of any federally listed endangered or threatened species. Section 3(19) of the Act defines take to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Service regulations (50 CFR 17.3) define harm to include significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harassment is defined by the Service as an intentional or negligent action that creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. The Act provides for civil and criminal penalties for the unlawful taking of listed species.

NASA, as the lead Federal agency for the project, has the responsibility to review its proposed activities and determine whether any listed species or critical habitat may be affected. If the subject project may affect a listed species, NASA must consult with the Service, pursuant to section 7(a)(2) of the Act. During the consultation process, NASA may engage in planning

efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

The enclosed list of species fulfills the requirements of the Service under section 7(c) of the Act. Only listed species receive protection under the Act; however, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Game's Natural Diversity Data Base. You can contact the California Department of Fish and Game at (916) 324-3812 for information on other sensitive species that may occur in this area.

If you have any questions regarding this matter, please contact Jenny Marek of our staff at (805) 644-1766, extensions 325.

Sincerely,



Jeff Phillips
Deputy Assistant Field Supervisor

cc:

Mary Meyer, California Department of Fish and Game
Stephie Jennings, Department of Energy

**LISTED SPECIES WHICH MAY OCCUR
NEAR AREA I AND II OF THE SANTA SUSANA FIELD LAB,
VENTURA COUNTY, CALIFORNIA**

Plants

Braunton's milk-vetch	<i>Astragalus brauntonii</i>	E
Lyon's pentachaeta	<i>Pentachaeta lyonii</i>	E
Spreading navarretia	<i>Navarretia fossalis</i>	T
Conejo dudleya	<i>Dudleya abramsii</i> ssp. <i>parva</i> [<i>Dudleya parva</i>]	T
Santa Monica Mountains dudleya	<i>Dudleya cymosa</i> ssp. <i>ovatifolia</i> [inclusive of <i>Dudleya cymosa</i> ssp. <i>agourensis</i>]	T
Marcescent dudleya	<i>Dudleya cymosa</i> ssp. <i>marcescens</i>	T
California Orcutt grass	<i>Orcuttia californica</i>	T
San Fernando Valley spineflower	<i>Chorizanthe parryi</i> var. <i>fernandina</i>	C

Birds

Coastal California gnatcatcher	<i>Polioptila californica californica</i>	T
Least Bell's vireo	<i>Vireo bellii pusillus</i>	E

Amphibians

California red-legged frog	<i>Rana draytonii</i>	T
----------------------------	-----------------------	---

Invertebrates

Quino checkerspot butterfly	<i>Euphydryas editha quino</i>	E
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T
Riverside fairy shrimp	<i>Streptocephalus woottoni</i>	E

Key:

E – Endangered
T – Threatened
C – Candidate

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Appendix E
CNDDDB Lists

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**California Department of Fish and Game Natural Diversity
Database, Full Report for Selected Elements, SSFL 9 Quad
Search Center on Calabasas Quad - Animals Only**

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Accipiter cooperii

Cooper's hawk

Element Code: ABNKC12040

_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5	CDFG Status:
State: None	State: S3	

_____ **Habitat Associations** _____

General: WOODLAND, CHIEFLY OF OPEN, INTERRUPTED OR MARGINAL TYPE.
Micro: NEST SITES MAINLY IN RIPARIAN GROWTHS OF DECIDUOUS TREES, AS IN CANYON BOTTOMS ON RIVER FLOOD-PLAINS; ALSO, LIVE OAKS.

Occurrence No. 117	Map Index: 69737	EO Index: 70544	_____ Dates Last Seen _____
Occ Rank: Fair			Element: 2006-07-05
Origin: Natural/Native occurrence			Site: 2006-07-05
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-08-15

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.08788° / -118.85452°	Township: 01S
UTM: Zone-11 N3773452 E328903	Range: 19W
Mapping Precision: SPECIFIC	Section: 15 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,282 ft

Location: JUST NE OF THE JUNCTION OF ENCINAL CANYON ROAD & CLUBHOUSE DRIVE (MALIBU COUNTRY CLUB ENTRANCE), SANTA MONICA MOUNTAINS.

Location Detail:

Ecological: NEST TREE IS A COAST LIVE OAK; SURROUNDED BY COASTAL SAGE SCRUB, CHAMISE CHAPARRAL, CEANOTHUS CHAPARRAL, SOUTHERN WILLOW SCRUB, MULEFAT SCRUB, WILLOW/SYCAMORE/OAK/COTTONWOOD WOODLAND, CA WALNUT WOODLAND, AND NATIVE/NON-NATIVE GRASSLANDS.

Threat:

General: ADULT FEMALE AND 3 FLEDGLINGS OBSERVED IN THE NEST TREE ON 5 JUL 2006.

Owner/Manager: PVT

Agelaius tricolor

tricolored blackbird

Element Code: ABPBXB0020

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G2G3	CDFG Status: SC
State: None	State: S2	

_____ **Habitat Associations** _____

General: HIGHLY COLONIAL SPECIES, MOST NUMEROUS IN CENTRAL VALLEY & VICINITY. LARGELY ENDEMIC TO CALIFORNIA.

Micro: REQUIRES OPEN WATER, PROTECTED NESTING SUBSTRATE, & FORAGING AREA WITH INSECT PREY WITHIN A FEW KM OF THE COLONY.

Occurrence No. 398	Map Index: 55392	EO Index: 55392	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1999-04-28
Origin: Natural/Native occurrence			Site: 1999-04-28
Presence: Presumed Extant			
Trend: Stable			Record Last Updated: 2004-05-07

Quad Summary: Canoga Park (3411825/112A), Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.23832° / -118.62686°	Township: 02N
UTM: Zone-11 N3789778 E350175	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 23 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 895 ft

Location: CHATSWORTH RESERVOIR, SOUTH OF VALLEY CIRCLE BLVD & ABOUT 1.5 MILES WEST OF HWY 27 (TOPANGA CYN BLVD). CANOGA PARK

Location Detail:

Ecological: BIRDS NESTING IN CATTAILS AND BULRUSH

Threat:

General: 1993: UNKNOWN NUMBER NESTED. 1994: ABOUT 300 NESTED. 1995: ABOUT 250 NESTED. 1996: ABOUT 400 NESTED. 1999: ABOUT 150-250 NESTED.

Owner/Manager: LADWP?

Aglaothorax longipennis		Element Code: IIORT32020
Santa Monica shieldback katydid		
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1G2	CDFG Status:
State: None	State: S1S2	
Habitat Associations		
General: OCCUR NOCTURNALLY IN CHAPARRAL AND CANYON STREAM BOTTOM VEGETATION, IN THE SANTA MONICA MTNS OF SOUTHERN CALIFORNIA.		
Micro: INHABIT INTRODUCED ICEPLANT AND NATIVE CHAPARRAL PLANTS.		

Occurrence No. 1	Map Index: 00888	EO Index: 22594	— Dates Last Seen —
Occ Rank: Unknown			Element: 1975-06-19
Origin: Natural/Native occurrence			Site: 1975-06-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1989-08-11

Quad Summary: Topanga (3411815/112D)
County Summary: Los Angeles

Lat/Long: 34.03805° / -118.61064°	Township: 01S
UTM: Zone-11 N3767545 E351319	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 36 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 150 ft

Location: BIG ROCK CANYON ENTRANCE, APPROX 2 MI W OF TOPANGA BEACH.
Location Detail:
Ecological: THIS INSECT OCCURS NOCTURNALLY ON CHAPARRAL AND CANYON STREAM BOTTOM VEGETATION; ALSO ON INTRODUCED ICEPLANT (MESEMBRYANTHEMUM SP).
Threat:
General: ALLOTYPE FEMALE FOUND NEAR JUNCTION WITH ROCKPORT ROAD; HOLOTYPE MALE FOUND 75 M ABOVE PACIFIC COAST HWY (BOTH ALLOTYPE AND HOLOTYPE DEPOSITED IN CAS, #12438).
Owner/Manager: PVT

Aimophila ruficeps canescens

southern California rufous-crowned sparrow

Element Code: ABPBX91091

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: None **Global:** G5T2T4 **CDFG Status:**
State: None **State:** S2S3

----- **Habitat Associations** -----
General: RESIDENT IN SOUTHERN CALIFORNIA COASTAL SAGE SCRUB AND SPARSE MIXED CHAPARRAL.
Micro: FREQUENTS RELATIVELY STEEP, OFTEN ROCKY HILLSIDES WITH GRASS & FORB PATCHES.

Occurrence No. 30 **Map Index:** 40125 **EO Index:** 35127 ----- **Dates Last Seen** -----
Occ Rank: Fair **Element:** 1995-11-02
Origin: Natural/Native occurrence **Site:** 1995-11-02
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 1998-11-09

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.22173° / -118.82023° **Township:** 02N
UTM: Zone-11 N3788239 E332333 **Range:** 19W
Mapping Precision: NON-SPECIFIC **Section:** 25 **Qtr:** SE
Symbol Type: POINT **Meridian:** S
Radius: 1/5 mile **Elevation:** 1,400 ft

Location: WOOD RANCH, ABOUT 1 MILE SOUTH OF WOOD RANCH RESERVOIR.

Location Detail:

Ecological: HABITAT CONSISTS OF DENSE COASTAL SAGE SCRUB ON A 20% SLOPE, DOMINANT PLANTS INCLUDE CALIFORNIA SAGEBRUSH, ERIOGONUM SP, AND SALVIA SP, ON A ROCKY SUBSTRATE.

Threat: THREATENED BY DEVELOPMENT.

General: 1 ADULT AND AT LEAST 3 OTHERS OF UNKNOWN AGE OBSERVED ON 2 NOVEMBER 1995.

Owner/Manager: PVT

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Aimophila ruficeps canescens

southern California rufous-crowned sparrow

Element Code: ABPBX91091

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None

Global: G5T2T4

CDFG Status:

State: None

State: S2S3

_____ **Habitat Associations** _____

General: RESIDENT IN SOUTHERN CALIFORNIA COASTAL SAGE SCRUB AND SPARSE MIXED CHAPARRAL.

Micro: FREQUENTS RELATIVELY STEEP, OFTEN ROCKY HILLSIDES WITH GRASS & FORB PATCHES.

Occurrence No. 140

Map Index: 54750

EO Index: 54750

_____ **Dates Last Seen** _____

Occ Rank: Unknown

Element: 2000-07-12

Origin: Natural/Native occurrence

Site: 2000-07-12

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2004-03-19

Quad Summary: Santa Susana (3411836/138C)

County Summary: Los Angeles, Ventura

Lat/Long: 34.28333° / -118.65093°

Township: 02N

UTM: Zone-11 N3794806 E348040

Range: 17W

Mapping Precision: NON-SPECIFIC

Section: 03 **Qtr:** XX

Symbol Type: POINT

Meridian: S

Radius: 1 mile

Elevation: 1,700 ft

Location: WHITE OAK PARK EAST TO THE COUNTY LINE AND ROCKY PEAK SE TO JUST PAST HWY 118, SIMI VALLEY

Location Detail: LOCATION DESCRIBED AS SIMI VALLEY, WHITE OAK CREEK, ABOUT 1 MILE NORTH OF JUNCTION WITH HWY 118. FEATURE MAPPED USING LATITUDE AND LONGITUDE GIVEN AS 34 DEGREES 17 MINUTES N AND 118 DEGREES 39 MINUTES W.

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB.

Threat:

General: 1 JUVENILE FEMALE COLLECTED ON 12 JUL 2000. SBMNH #7105.

Owner/Manager: UNKNOWN

Anaxyrus californicus		
arroyo toad		Element Code: AAABB01230
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2G3 State: S2S3	CDFG Status: SC
Habitat Associations		
General: SEMI-ARID REGIONS NEAR WASHES OR INTERMITTENT STREAMS, INCLUDING VALLEY-FOOTHILL AND DESERT RIPARIAN, DESERT WASH, ETC.		
Micro: RIVERS WITH SANDY BANKS, WILLOWS, COTTONWOODS, AND SYCAMORES; LOOSE, GRAVELLY AREAS OF STREAMS IN DRIER PARTS OF RANGE.		

Occurrence No. 54	Map Index: 44189	EO Index: 44189	Dates Last Seen
Occ Rank: None			Element: 1970-06-XX
Origin: Natural/Native occurrence			Site: 1970-06-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 2000-11-02

Quad Summary: Canoga Park (3411825/112A), Calabasas (3411826/112B)
County Summary: Los Angeles

Lat/Long: 34.21442° / -118.62651°	Township: 02N
UTM: Zone-11 N3787127 E350166	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 35 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 825 ft

Location: CHATSWORTH CREEK (DRAIN), CANOGA PARK, BELOW CHATSWORTH RESERVOIR, LOS ANGELES.
Location Detail: MAPPED TO CHATSWORTH CREEK SINCE UNABLE FIND A CHATSWORTH DRAIN BELOW CHATSWORTH RESERVOIR.
Ecological:
Threat:
General: 1 SUBADULT OBSERVED, SPECIMEN AT UCSB, INDICATED AS PROBABLY EXTINCT.
Owner/Manager: UNKNOWN

Anniella pulchra pulchra		
silvery legless lizard		Element Code: ARACC01012
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4T3T	CDFG Status: SC
State: None	State: 4Q	
	S3	
Habitat Associations		
General:		
SANDY OR LOOSE LOAMY SOILS UNDER SPARSE VEGETATION.		
Micro: SOIL MOISTURE IS ESSENTIAL. THEY PREFER SOILS WITH A HIGH MOISTURE CONTENT.		

Occurrence No. 75	Map Index: 79209	EO Index: 80185	— Dates Last Seen —
Occ Rank: Good			Element: 2009-09-04
Origin: Natural/Native occurrence			Site: 2009-09-04
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-06-29

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.23862° / -118.69481°	Township: 02N
UTM: Zone-11 N3789914 E343918	Range: 17W
Mapping Precision: SPECIFIC	Section: 19 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,695 ft

Location: "NORTHERN DRAINAGE", ABOUT 1.9 MILES UPSTREAM FROM MEIER CANYON, SIMI HILLS, SOUTH OF SIMI VALLEY.

Location Detail: NORTH BANK OF "NORTHERN DRAINAGE". LOCATION MAPPED TO PROVIDED COORDINATES AND MAP.

Ecological: HABITAT CONSISTS OF DRY, SANDY SOIL WITHIN A MIXED CHAPARRAL AND COAST LIVE OAK RIPARIAN FOREST IN AN EPHEMERAL DRAINAGE. SEDIMENT REMOVAL PROJECT OCCURRING IN THE SURROUNDING AREA.

Threat: DIRECT MORTALITY DURING PROJECT ACTIVITY & TEMPORARY REDUCTION IN HABITAT VALUE (DUFF LAYER/TOPSOIL REMOVAL).

General: 1 JUVENILE OBSERVED ON 4 SEP 2009. INDIVIDUAL RELOCATED TO NEARBY SUITABLE HABITAT.

Owner/Manager: PVT-THE BOEING COMPANY

Anniella pulchra pulchra		
silvery legless lizard		Element Code: ARACC01012
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4T3T	CDFG Status: SC
State: None	State: 4Q	
	S3	
Habitat Associations		
General:		
SANDY OR LOOSE LOAMY SOILS UNDER SPARSE VEGETATION.		
Micro: SOIL MOISTURE IS ESSENTIAL. THEY PREFER SOILS WITH A HIGH MOISTURE CONTENT.		

Occurrence No. 76	Map Index: 79210	EO Index: 80188	— Dates Last Seen —
Occ Rank: Fair			Element: 2009-02-24
Origin: Natural/Native occurrence			Site: 2009-02-24
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-06-29

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.23721° / -118.68314°	Township: 02N
UTM: Zone-11 N3789739 E344990	Range: 17W
Mapping Precision: SPECIFIC	Section: 20 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,790 ft

Location: DRAINAGE TO "NORTHERN DRAINAGE", ABOUT 2.7 MILES UPSTREAM FROM MEIER CANYON, SIMI HILLS, SOUTH OF SIMI VALLEY.

Location Detail: LOCATED AT INLET OF A CORRUGATED METAL PIPE CULVERT, BASE OF SOUTH-FACING SLOPE. LOCATION MAPPED TO PROVIDED COORDINATES AND MAP.

Ecological: HABITAT CONSISTS OF MOIST, SANDY SOIL WITHIN CHAPARRAL AND ANNUAL GRASSLAND ALONG AN EPHEMERAL DRAINAGE. COVERT REPAIR/FORTIFICATION, OUTDOOR RECREATION, SAGE RANCH PARK IN THE SURROUNDING AREA.

Threat: DIRECT MORTALITY DURING PROJECT ACTIVITY & TEMPORARY REDUCTION IN HABITAT VALUE (DUFF LAYER/TOPSOIL REMOVAL).

General: 1 ADULT OBSERVED ON 24 FEB 2009. INDIVIDUAL RELOCATED TO NEARBY SUITABLE HABITAT.

Owner/Manager: SAGE RANCH PARK

Anniella pulchra pulchra

silvery legless lizard

Element Code: ARACC01012

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4T3T	CDFG Status: SC
State: None	State: 4Q	
	S3	

Habitat Associations

General: SANDY OR LOOSE LOAMY SOILS UNDER SPARSE VEGETATION.

Micro: SOIL MOISTURE IS ESSENTIAL. THEY PREFER SOILS WITH A HIGH MOISTURE CONTENT.

Occurrence No. 77	Map Index: 79212	EO Index: 80191	— Dates Last Seen —
Occ Rank: Fair			Element: 2008-09-24
Origin: Natural/Native occurrence			Site: 2008-09-24
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-06-29

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.23643° / -118.67802°	Township: 02N
UTM: Zone-11 N3789645 E345460	Range: 17W
Mapping Precision: SPECIFIC	Section: 20 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,830 ft

Location: "NORTHERN DRAINAGE", ~ 3 MI UPSTREAM FROM MEIER CANYON, SIMI HILLS, SOUTH OF SIMI VALLEY. JUST SOUTH OF SAGE RANCH PARK.

Location Detail: LOCATED BENEATH A COAST LIVE OAK TREE ON THE NORTH BANK. LOCATION MAPPED TO PROVIDED COORDINATES AND MAP.

Ecological: HABITAT CONSISTS OF DRY, SANDY SOIL WITHIN MIXED CHAPARRAL AND WITH SCATTERED COAST LIVE OAK TREES ALONG AN EPHEMERAL DRAINAGE. CLAY PIGEON-IMPACTED SEDIMENT REMOVAL PROJECT OCCURRING IN AREA.

Threat: DIRECT MORTALITY DURING PROJECT ACTIVITY & TEMPORARY REDUCTION IN HABITAT VALUE (DUFF LAYER/TOPSOIL REMOVAL).

General: 1 ADULT OBSERVED ON 24 SEP 2008. INDIVIDUAL RELOCATED TO NEARBY SUITABLE HABITAT.

Owner/Manager: PVT-THE BOEING COMPANY

Anniella pulchra pulchra		
silvery legless lizard		Element Code: ARACC01012
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4T3T	CDFG Status: SC
State: None	State: 4Q	
	S3	
Habitat Associations		
General:		
SANDY OR LOOSE LOAMY SOILS UNDER SPARSE VEGETATION.		
Micro: SOIL MOISTURE IS ESSENTIAL. THEY PREFER SOILS WITH A HIGH MOISTURE CONTENT.		

Occurrence No. 78	Map Index: 79331	EO Index: 80196	— Dates Last Seen —
Occ Rank: Poor			Element: 2009-09-18
Origin: Natural/Native occurrence			Site: 2009-09-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-07-14

Quad Summary: Thousand Oaks (3411827/113A)
County Summary: Los Angeles

Lat/Long: 34.15783° / -118.80267°	Township: 01N
UTM: Zone-11 N3781125 E333825	Range: 18W
Mapping Precision: SPECIFIC	Section: 19 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 10.0 acres	Elevation: 1,100 ft

Location: NORTH OF E THOUSAND OAKS BLVD, FROM 0.2 - 0.4 MILE EAST OF VIA COLINAS (ROAD), THOUSAND OAKS.
Location Detail: LA BAYA PARK PROJECT SITE. WESTLAKE VILLAGE. LOCATION MAPPED TO PROVIDED COORDINATES.
Ecological: MOSTLY COASTAL SAGE SCRUB W/SCATTERED STANDS OF OAK WOODLAND. QUALITY OF SITE FAIR TO EXCELLENT PRIOR TO DEVELOPMENT, BUT POOR AFTER DEVELOPMENT. PARK WILL BE COMPRISED OF BALL FIELDS; PERIMETER WILL BE COASTAL SAGE SCRUB W/PLANTED OAKS.
Threat: THREATENED BY CONSTRUCTION ACTIVITIES AND DEVELOPMENT OF PARK.
General: 1 ADULT FOUND DEAD ON 13 AUG 2009. 1 OF UNKNOWN AGE FOUND DEAD ON 18 SEP 2009. BOTH INDIVIDUALS FOUND DURING CONSTRUCTION MONITORING FOR PROJECT. SURROUNDING LAND COMPRISED OF OPEN SPACE, RESIDENTIAL, AND COMMERCIAL DEVELOPMENT.
Owner/Manager: CITY OF WESTLAKE VILLAGE

Antrozous pallidus
 pallid bat **Element Code:** AMACC10010

Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G5 State: S3	CDFG Status: SC

Habitat Associations

General: DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.

Micro: ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

Occurrence No. 188	Map Index: 66528	EO Index: 66651	— Dates Last Seen —
Occ Rank: Unknown			Element: 1951-04-23
Origin: Natural/Native occurrence			Site: 1951-04-23
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-10-02

Quad Summary: Canoga Park (3411825/112A), Van Nuys (3411824/111B)
County Summary: Los Angeles

Lat/Long: 34.15911° / -118.50105°	Township: 01N
UTM: Zone-11 N3780816 E361633	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: 19 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 770 ft

Location: ENCINO PARK.
Location Detail: EXACT LOCATION UNKNOWN. MAPPED IN VICINITY OF ENCINO.
Ecological:
Threat:
General: 1 UNKNOWN SPECIMEN COLLECTED BY A. SMALL 23 APR 1951, LACM #22798.
Owner/Manager: UNKNOWN

Antrozous pallidus

pallid bat

Element Code: AMACC10010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status: SC
State: None	State: S3	

Habitat Associations

General: DESERTS, GRASSLANDS, SHRUBLANDS, WOODLANDS & FORESTS. MOST COMMON IN OPEN, DRY HABITATS WITH ROCKY AREAS FOR ROOSTING.

Micro: ROOSTS MUST PROTECT BATS FROM HIGH TEMPERATURES. VERY SENSITIVE TO DISTURBANCE OF ROOSTING SITES.

Occurrence No. 366	Map Index: 68847	EO Index: 69444	Dates Last Seen
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-06

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20900° / -118.76863°	Township: 02N
UTM: Zone-11 N3786744 E337062	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 33 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 2,050 ft

Location: CHINA FLAT IN THE SIMI HILLS, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.

Location Detail:

Ecological: HABITAT WHERE ACOUSTIC DETECTIONS WERE MADE IS AN EPHEMERAL POND IN A GRASSLAND AREA SURROUNDED BY OAKS.

Threat:

General: INDIVIDUALS DETECTED ACOUSTICALLY DURING SURVEY BETWEEN APR 2002 AND JUL 2004. THE MAJORITY OF THE DETECTIONS IN THE SMMNRA WERE AT THIS SITE.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Aquila chrysaetos

golden eagle

Element Code: ABNKC22010

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5	CDFG Status:
State: None	State: S3	

_____ **Habitat Associations** _____

General: ROLLING FOOTHILLS, MOUNTAIN AREAS, SAGE-JUNIPER FLATS, & DESERT.
Micro: CLIFF-WALLED CANYONS PROVIDE NESTING HABITAT IN MOST PARTS OF RANGE; ALSO, LARGE TREES IN OPEN AREAS.

Occurrence No. 74	Map Index: 47919	EO Index: 47919	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1987-XX-XX
Origin: Natural/Native occurrence			Site: 1989-XX-XX
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2002-05-16

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.06236° / -118.69968°	Township: 01S
UTM: Zone-11 N3770373 E343144	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 19 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,000 ft

Location: MALIBU CANYON, SANTA MONICA MOUNTAINS.

Location Detail: SITE DESCRIBED AS MALIBU CANYON WITH NO FURTHER INFORMATION GIVEN. SITE NAME: MALIBU CANYON

Ecological:

Threat: DEVELOPMENT HAS DESTROYED GRASSLANDS (USED FOR HUNTING) NEAR NEST SITES; SOME DEVELOPMENT WITHIN 1/2 KM OF NEST SITES.

General: 1981 & 1982: NEST OCCUPIED, ACTIVITY UNKNOWN. 1983 & 1984: 1 YOUNG IN NEST. 1985, 1986 & 1987: NEST ABANDONED. 1988: 1 ADULT OBS AT OLD NEST SITE. 1989: NEST INACTIVE.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Aquila chrysaetos

golden eagle

Element Code: ABNKC22010

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5	CDFG Status:
State: None	State: S3	

_____ **Habitat Associations** _____

General: ROLLING FOOTHILLS, MOUNTAIN AREAS, SAGE-JUNIPER FLATS, & DESERT.
Micro: CLIFF-WALLED CANYONS PROVIDE NESTING HABITAT IN MOST PARTS OF RANGE; ALSO, LARGE TREES IN OPEN AREAS.

Occurrence No. 75	Map Index: 47921	EO Index: 47921	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1989-XX-XX
Origin: Natural/Native occurrence			Site: 1989-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-16

Quad Summary: Thousand Oaks (3411827/113A), Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.18440° / -118.74492°	Township: 01N
UTM: Zone-11 N3783978 E339200	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,600 ft

Location: PALO COMADO CANYON, SANTA MONICA MOUNTAINS.

Location Detail: SITE DESCRIBED AS PALO COMADO CANYON WITH NO FURTHER INFORMATION GIVEN. SITE NAME: CHEESEBORO

Ecological:

Threat: DEVELOPMENT HAS DESTROYED GRASSLANDS (USED FOR HUNTING) NEAR NEST SITES; SOME DEVELOPMENT WITHIN 1/2 KM OF NEST SITES.

General: 1981-1984: ADULTS PRESENT BUT NESTS UNDETECTED. 1985: NEST FAILED. 1986: 1 YOUNG IN NEST. 1987: ADULTS PRESENT BUT NEST UNDETECTED. 1988: NEST OCCUPIED BUT STATUS UNKNOWN. 1989: NEST FAILED.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Aquila chrysaetos		
golden eagle		Element Code: ABNKC22010
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5	CDFG Status:
State: None	State: S3	
_____ Habitat Associations _____		
General: ROLLING FOOTHILLS, MOUNTAIN AREAS, SAGE-JUNIPER FLATS, & DESERT.		
Micro: CLIFF-WALLED CANYONS PROVIDE NESTING HABITAT IN MOST PARTS OF RANGE; ALSO, LARGE TREES IN OPEN AREAS.		

Occurrence No. 76	Map Index: 47922	EO Index: 47922	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1989-XX-XX
Origin: Natural/Native occurrence			Site: 1989-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-16

Quad Summary: Point Dume (3411817/113D), Thousand Oaks (3411827/113A)
 County Summary: Los Angeles

Lat/Long: 34.11755° / -118.81256°	Township: 01S
UTM: Zone-11 N3776673 E332834	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 06 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,300 ft

Location: LOBO CANYON, SANTA MONICA MOUNTAINS
 Location Detail: SITE DESCRIBED AS LOBO CANYON WITH NO FURTHER INFORMATION GIVEN. SITE NAME: LOBO CANYON
 Ecological:
 Threat: DEVELOPMENT HAS DESTROYED GRASSLANDS (USED FOR HUNTING) NEAR NEST SITES; SOME DEVELOPMENT WITHIN 1/2 KM OF NEST SITES.
 General: 1980 & 1981: 1 YOUNG IN NEST. 1982: 2 YOUNG IN NEST. 1983-86: 1 YOUNG IN NEST. 1987: NEST FAILED. 1988: 1 YOUNG IN NEST. 1989: NEST FAILED.
 Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None

Global: G5T3T4

CDFG Status:

State: None

State: S2S3

_____ **Habitat Associations** _____

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 7

Map Index: 26374

EO Index: 3796

_____ **Dates Last Seen** _____

Occ Rank: Good

Element: 1993-04-25

Origin: Natural/Native occurrence

Site: 1993-04-25

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 1995-02-23

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.10662° / -118.60899°

Township: 01S

UTM: Zone-11 N3775146 E351591

Range: 17W

Mapping Precision: SPECIFIC

Section: 01 **Qtr:** SE

Symbol Type: POINT

Meridian: S

Radius: 80 meters

Elevation: 1,400 ft

Location: GREENLEAF CANYON, 1 MILE NORTH OF TOPANGA CANYON BLVD, SANTA MONICA MOUNTAINS.

Location Detail: LOCATED ALONG AN UNPAVED ACCESS ROAD.

Ecological: HABITAT CONSISTS OF CLEARED AREAS OF CHAPARRAL ON A SANDY/ROCKY SUBSTRATE.

Threat: THREATENED BY DEVELOPMENT.

General: 2 INDIVIDUALS OBSERVED ON 25 APRIL 1993.

Owner/Manager: PVT

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5T3T4	CDFG Status:
State: None	State: S2S3	

_____ **Habitat Associations** _____

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 11	Map Index: 33615	EO Index: 30049	_____ Dates Last Seen _____
Occ Rank: Fair			Element: 1996-05-22
Origin: Natural/Native occurrence			Site: 1996-05-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1997-01-06

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.29051° / -118.81185°	Township: 02N
UTM: Zone-11 N3795853 E333240	Range: 18W
Mapping Precision: SPECIFIC	Section: 06 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 750 ft

Location: ALAMOS CANYON ROAD, NORTH OF HWY 118, 1.5 MILES EAST OF MOORPARK COLLEGE, SIMI VALLEY.

Location Detail:

Ecological: HABITAT CONSISTS OF BUCKBRUSH CHAPARRAL TO THE EAST OF ROAD & VENTURAN COASTAL SAGE SCRUB TO THE WEST OF ROAD.

Threat: POSSIBLE THREAT OF LIGHT INDUSTRIAL DEVELOPMENT.

General: ONE ADULT OBSERVED ON 22 MAY 1996.

Owner/Manager: PVT

Aspidoscelis tigris stejnegeri		
coastal whiptail		Element Code: ARACJ02143
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T3T4	CDFG Status:
State: None	State: S2S3	
Habitat Associations		
General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.		
Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.		

Occurrence No. 12	Map Index: 33616	EO Index: 30050	— Dates Last Seen —
Occ Rank: Fair			Element: 1996-05-22
Origin: Natural/Native occurrence			Site: 1996-05-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1997-01-06

Quad Summary: Simi (3411837/139D)
County Summary: Ventura

Lat/Long: 34.28618° / -118.80485°	Township: 02N
UTM: Zone-11 N3795361 E333877	Range: 18W
Mapping Precision: SPECIFIC	Section: 06 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 710 ft

Location: UNNAMED CANYON, BETWEEN ALAMOS CANYON AND BREA CANYON, NORTH SIDE OF HWY 118, NW OF SIMI.

Location Detail: SITE IS LOCATED NEAR THE WESTERN TERMINOUS OF COCHRAN ROAD.

Ecological:

Threat: POSSIBLE THREAT OF LIGHT INDUSTRIAL DEVELOPMENT.

General: 1 ADULT OBSERVED ON 22 MAY 1996.

Owner/Manager: PVT

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None

Global: G5T3T4

CDFG Status:

State: None

State: S2S3

_____ **Habitat Associations** _____

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 19

Map Index: 39624

EO Index: 34626

_____ **Dates Last Seen** _____

Occ Rank: Fair

Element: 1998-06-25

Origin: Natural/Native occurrence

Site: 1998-06-25

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 1998-09-03

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.12096° / -118.78334°

Township: 01N

UTM: Zone-11 N3777004 E335536

Range: 18W

Mapping Precision: NON-SPECIFIC

Section: 32 **Qtr:** SE

Symbol Type: POINT

Meridian: S

Radius: 1/10 mile

Elevation: 800 ft

Location: NE OF THE INTERSECTION OF TRIUNFO ROAD AND KANAN ROAD, 2 MILES NW OF MALIBU LAKE

Location Detail: LIZARDS WERE FOUND 1500 FEET NE OF THE INTERSECTION.

Ecological: HABITAT CONSISTS OF NON-NATIVE GRASSLAND WITH REMNANT COASTAL SCRUB, DOMINATED BY BROMUS SPP AND HIRSCHFELOLIA SP, WITH SCATTERED CALIFORNIA BUCKWHEAT AND CALIFORNIA SAGEBRUSH.

Threat: THREATENED BY PROPOSED DEVELOPMENT.

General: 2 ADULT OBSERVED FORAGING ON 25 JUNE 1998.

Owner/Manager: PVT

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5T3T4	CDFG Status:
State: None	State: S2S3	

_____ **Habitat Associations** _____

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 22	Map Index: 41896	EO Index: 41896	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1999-07-21
Origin: Natural/Native occurrence			Site: 1999-07-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1999-11-17

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.13534° / -118.84450°	Township: 01N
UTM: Zone-11 N3778699 E329924	Range: 19W
Mapping Precision: SPECIFIC	Section: 26 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,200 ft

Location: 1 MILE EAST OF LAKE SHERWOOD, NORTH OF SANTA MONICA MOUNTAINS RECREATION AREA, THOUSAND OAKS.

Location Detail: SITE IS LOCATED AT THE END OF YELLOW WOOD DRIVE, THOUSAND OAKS, JUST NORTH OF THE VENTURA/LOS ANGELES COUNTY LINE.

Ecological: HABITAT CONSISTS OF BUCK BRUSH CHAPARRAL; SURROUNDED BY RESIDENTIAL AND OPEN SPACE. LYONS PENTACHAETA ALSO FOUND AT THIS SITE.

Threat: THREATENED BY DEVELOPMENT.

General: 1 ADULT OBSERVED ON 21 JUL 1999.

Owner/Manager: PVT-CANYON WEST

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None

Global: G5T3T4

CDFG Status:

State: None

State: S2S3

_____ **Habitat Associations** _____

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 23

Map Index: 43058

EO Index: 43058

_____ **Dates Last Seen** _____

Occ Rank: Fair

Element: 2000-05-30

Origin: Natural/Native occurrence

Site: 2000-05-30

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2000-06-07

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.09038° / -118.81028°

Township: 01S

UTM: Zone-11 N3773656 E332991

Range: 18W

Mapping Precision: NON-SPECIFIC

Section: 07 **Qtr:** SW

Symbol Type: POINT

Meridian: S

Radius: 1/10 mile

Elevation: 2,000 ft

Location: SOUTH SIDE OF LATIGO CANYON ROAD, 0.5 MILE EAST OF THE JUNCTION OF LATIGO CANYON ROAD AND KANAN ROAD, SANTA MONICA MTNS.

Location Detail: LIZARDS WERE FOUND IN CLEARED AREAS AT THE EDGE OF DENSE CEANOTHUS MEGACARPUS CHAPARRAL.

Ecological: HABITAT CONSISTS OF DENSE CEANOTHUS CHAPARRAL, ON A LOOSE SUBSTRATE OF ROCKY VOLCANICS.

Threat: THREATENED BY DEVELOPMENT.

General: 2 ADULTS AND 2 JUVENILES OBSERVED ON 30 MAY 2000.

Owner/Manager: PVT

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None

Global: G5T3T4

CDFG Status:

State: None

State: S2S3

_____ **Habitat Associations** _____

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 24

Map Index: 43159

EO Index: 43159

_____ **Dates Last Seen** _____

Occ Rank: Good

Element: 2000-06-21

Origin: Natural/Native occurrence

Site: 2000-06-21

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2000-06-29

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.12680° / -118.85421°

Township: 01N

UTM: Zone-11 N3777768 E329011

Range: 19W

Mapping Precision: SPECIFIC

Section: 34 **Qtr:** NE

Symbol Type: POINT

Meridian: S

Radius: 80 meters

Elevation: 1,100 ft

Location: ADJACENT TO KIRSTEN LEE ROAD, EAST OF DECKER ROAD, JUST SOUTH OF THE VENTURA COUNTY LINE, WESTLAKE VILLAGE.

Location Detail:

Ecological: HABITAT CONSISTS OF CHAPARRAL, NON-NATIVE GRASSLAND, AND OAK WOODLAND; DOMINATED BY CEANOTHUS SP, QUERCUS BERBERIDIFOLIA, QUERCUS AGRIFOLIA, ADENOSTOMA FASCICULATUM, TOXICODENDRON DIVERSILOBUM, AND SALVIA MELLIFERA.

Threat: THREATENED BY IMMEDIATE DEVELOPMENT.

General: 1 ADULT OBSERVED ON A PREVIOUSLY-GRADED SLOPE ON 21 JUN 2000.

Owner/Manager: PVT

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T3T4	CDFG Status:
State: None	State: S2S3	

Habitat Associations

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 86	Map Index: 69736	EO Index: 70543	— Dates Last Seen —
Occ Rank: Fair			Element: 2006-11-21
Origin: Natural/Native occurrence			Site: 2006-11-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-08-15

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.09396° / -118.85253°	Township: 01S
UTM: Zone-11 N3774123 E329100	Range: 19W
Mapping Precision: SPECIFIC	Section: 10 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,522 ft

Location: 0.8 MILE SSE OF THE INTERSECTION OF DECKER ROAD AND MULHOLLAND HIGHWAY, IN THE SANTA MONICA MOUNTAINS.

Location Detail:

Ecological: HABITAT CONSISTS OF SEVERAL VEG COMMUNITIES: COASTAL SAGE SCRUB, CHAMISE CHAPARRAL, CEANOTHUS CHAPARRAL, SOUTHERN WILLOW SCRUB, MULEFAT SCRUB, WILLOW/SYCAMORE/OAK/COTTONWOOD WOODLAND, CA WALNUT WOODLAND, AND NATIVE/NON-NATIVE GRASSLANDS.

Threat:

General: 1 ADULT OBSERVED ON 21 NOV 2006.

Owner/Manager: PVT

Aspidoscelis tigris stejnegeri

coastal whiptail

Element Code: ARACJ02143

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5T3T4	CDFG Status:
State: None	State: S2S3	

_____ **Habitat Associations** _____

General: FOUND IN DESERTS & SEMIARID AREAS WITH SPARSE VEGETATION AND OPEN AREAS. ALSO FOUND IN WOODLAND & RIPARIAN AREAS.

Micro: GROUND MAY BE FIRM SOIL, SANDY, OR ROCKY.

Occurrence No. 103	Map Index: 80122	EO Index: 81106	_____ Dates Last Seen _____
Occ Rank: Good			Element: 2009-08-02
Origin: Natural/Native occurrence			Site: 2009-08-02
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-09-27

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09755° / -118.72914°	Township: 01S
UTM: Zone-11 N3774322 E340490	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 550 ft

Location: VICINITY OF MALIBU CREEK AT CENTURY RANCH. 1 MILE WSW OF LAS VIRGENES RD AT MULHOLLAND HWY. MALIBU CREEK STATE PARK.

Location Detail: ONLY 1 SET OF COORDINATES PROVIDED FOR 3 SITES. MAPPED TO COODINATES PROVIDED WITH 150M RADIUS CIRCLE.

Ecological: HABITAT CONSISTS OF OAK WOODLAND, POSION OAK, WILLOW/MULEFAT SCRUB, AND COASTAL SAGE SCRUB.

Threat:

General: 2 ADULTS & 1 JUVENILE OBSERVED FORAGING BY C. DELLITH ON 2 AUG 09. ADULTS WERE FORAGING ALONG A RIPARIAN/COASTAL SAGE SCURB HIKING TRAIL, AND JUVENILE WAS FORAGING AT ROCKY OUTCROPPING ALONG MALIBU CREEK IN THE OPEN SPACES.

Owner/Manager: DPR-MALIBU CREEK SP

Athene cucularia

burrowing owl

Element Code: ABNSB10010

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G4	CDFG Status: SC
State: None	State: S2	

_____ **Habitat Associations** _____

General: OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.

Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.

Occurrence No. 85	Map Index: 17045	EO Index: 9848	_____ Dates Last Seen _____
Occ Rank: Fair			Element: 1990-03-27
Origin: Natural/Native occurrence			Site: 1990-03-27
Presence: Presumed Extant			
Trend: Stable			Record Last Updated: 1992-01-28

Quad Summary: Santa Susana (3411836/138C), Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.31262° / -118.73681°	Township: 03N
UTM: Zone-11 N3798185 E340190	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 26 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,300 ft

Location: UPPER DRY CANYON, APPROX 2 MI N OF SIMI VALLEY, S OF BIG MOUNTAIN.

Location Detail:

Ecological: ANNUAL GRASSLAND WITH SPARSE COASTAL SAGE SCRUB; DIVERSE TOPOGRAPHY. ABUNDANT GROUND SQUIRREL BURROWS AVAILABLE.

Threat: OVERGRAZED RANGELAND. PROPOSED GOLF COURSE. HELICOPTER FLIGHT SCHOOL TEST AREA.

General: OBSERVED IN LOW SLOPES AT THE BASE OF BIG MOUNTAIN. AREA IS VERY SCENIC; USED AS A MOVIE SET AND AS A BACKDROP.

Owner/Manager: PVT-MARUFUJI AMERICA

Athene cucularia		
burrowing owl		Element Code: ABNSB10010
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4	CDFG Status: SC
State: None	State: S2	
_____ Habitat Associations _____		
General: OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.		
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.		

Occurrence No. 563	Map Index: 51239	EO Index: 51239	— Dates Last Seen —
Occ Rank: Excellent			Element: 2000-12-30
Origin: Natural/Native occurrence			Site: 2000-12-30
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-05-08

Quad Summary: Calabasas (3411826/112B)
 County Summary: Ventura

Lat/Long: 34.17582° / -118.68082°	Township: 01N
UTM: Zone-11 N3782927 E345092	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 17 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 1,350 ft

Location: LASKEY MESA, EAST OF LAS VIRGENES CANYON, SOUTHEASTERN CORNER OF VENTURA COUNTY

Location Detail:

Ecological: HABITAT CONSISTS OF AN OPEN, GRASSY PLATEAU / MESA; SURROUNDED BY RESIDENTIAL DEVELOPMENT TO THE SOUTH.

Threat: THREATENED BY PENDING DEVELOPMENT.

General: 2 ADULTS OBSERVED ON 30 DEC 2000 AT A BURROW SITE; UNKNOWN IF BIRDS WINTER HERE OR IF THEY ARE RESIDENTS

Owner/Manager: PVT-AHMANSON RANCH

Athene cucularia		
burrowing owl		Element Code: ABNSB10010
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4	CDFG Status: SC
State: None	State: S2	
_____ Habitat Associations _____		
General: OPEN, DRY ANNUAL OR PERENIAL GRASSLANDS, DESERTS & SCRUBLANDS CHARACTERIZED BY LOW-GROWING VEGETATION.		
Micro: SUBTERRANEAN NESTER, DEPENDENT UPON BURROWING MAMMALS, MOST NOTABLY, THE CALIFORNIA GROUND SQUIRREL.		

Occurrence No. 796	Map Index: 64646	EO Index: 64725	— Dates Last Seen —
Occ Rank: Good			Element: 2006-03-05
Origin: Natural/Native occurrence			Site: 2006-03-05
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-05-09

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.36153° / -118.79832°	Township: 03N
UTM: Zone-11 N3803708 E334625	Range: 18W
Mapping Precision: SPECIFIC	Section: 07 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 2,410 ft

Location: OAK RIDGE, ~6 MILES NORTH OF SIMI VALLEY

Location Detail:

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB, DOMINATED BY ARTEMISIA CALIFORNICA, SALVIA LEUCOPHYLLA, SALVIA MELLIFERA, ERIOGONUM FASCICULATUM, YUCCA WHIPPLEI, AND ADENOSTOMA FASCICULATUM.

Threat: THREATENED BY PREDATION.

General: 1 ADULT OBSERVED USING A ROAD CULVERT AS A BURROW SITE ON 5 MAR 2006.

Owner/Manager: PVT

Cicindela hirticollis gravida		
sandy beach tiger beetle		Element Code: IICOL02101
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G5T2 State: S1	CDFG Status:
Habitat Associations		
General: INHABITS AREAS ADJACENT TO NON-BRACKISH WATER ALONG THE COAST OF CALIFORNIA FROM SAN FRANCISCO BAY TO NORTHERN MEXICO.		
Micro: CLEAN, DRY, LIGHT-COLORED SAND IN THE UPPER ZONE. SUBTERRANEAN LARVAE PREFER MOIST SAND NOT AFFECTED BY WAVE ACTION.		

Occurrence No. 22	Map Index: 60502	EO Index: 60538	— Dates Last Seen —
Occ Rank: None			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Extirpated			
Trend: Unknown			Record Last Updated: 2005-03-11

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)
County Summary: Los Angeles

Lat/Long: 34.01692° / -118.50476°	Township: 02S
UTM: Zone-11 N3765052 E361059	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 10 ft

Location: SANTA MONICA.
Location Detail: MAPPED ALONG COAST AS THIS IS PREFERRED HABITAT FOR THIS BEETLE.
Ecological:
Threat:
General: NO OTHER LOCATION OR COLLECTION INFORMATION GIVEN.
Owner/Manager: DPR-SANTA MONICA SB

Coelus globosus

globose dune beetle

Element Code: IICOL4A010

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G1	CDFG Status:
State: None	State: S1	

_____ **Habitat Associations** _____

General: INHABITANT OF COASTAL SAND DUNE HABITAT, FROM BODEGA HEAD IN SONOMA COUNTY SOUTH TO ENSENADA, MEXICO.

Micro: INHABITS FOREDUNES AND SAND HUMMOCKS; IT BURROWS BENEATH THE SAND SURFACE AND IS MOST COMMON BENEATH DUNE VEGETATION.

Occurrence No. 9	Map Index: 21882	EO Index: 8359	_____ Dates Last Seen _____
Occ Rank: None			Element: 1992-09-23
Origin: Natural/Native occurrence			Site: 1992-09-23
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 2010-04-06

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.03868° / -118.58646°	Township: 01S
UTM: Zone-11 N3767580 E353553	Range: 16W
Mapping Precision: SPECIFIC	Section: 32 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 5 ft

Location: BETWEEN TUNA CANYON AND TOPANGA CANYON, LAS TUNAS BEACH, JUST WEST OF TOPANGA BEACH (COMMUNITY).

Location Detail: BEETLES FOUND ALONG A REMNANT SAND DUNE, UNDER CAKILE MARITIMA.

Ecological: REMNANT COASTAL DUNE COMMUNITY. 2008 AERIAL PHOTO SHOWS THAT THE SITE HAS BEEN DEVELOPED INTO A ROW OF BEACH HOMES; NO COASTAL DUNES REMAIN.

Threat: BEACH HOME PROPOSED FOR SITE; DEVELOPMENT WILL EXTIRPATE THIS SITE.

General: 8 BEETLES COLLECTED AND DEPOSITED AT (PRESUMABLY) SANTA MONICA COLLEGE.

Owner/Manager: PVT

Coelus globosus		
globose dune beetle		Element Code: IICOL4A010
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1	CDFG Status:
State: None	State: S1	
Habitat Associations		
General: INHABITANT OF COASTAL SAND DUNE HABITAT, FROM BODEGA HEAD IN SONOMA COUNTY SOUTH TO ENSENADA, MEXICO.		
Micro: INHABITS FOREDUNES AND SAND HUMMOCKS; IT BURROWS BENEATH THE SAND SURFACE AND IS MOST COMMON BENEATH DUNE VEGETATION.		

Occurrence No. 18	Map Index: 60502	EO Index: 60668	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-04-06

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)

County Summary: Los Angeles

Lat/Long: 34.01692° / -118.50476°	Township: 02S
UTM: Zone-11 N3765052 E361059	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 10 ft

Location: SANTA MONICA.

Location Detail: MAPPED ALONG BEACH AS SPECIES INHABITS FOREDUNES AND SAND HUMMOCKS.

Ecological:

Threat:

General: 1 SPECIMEN, DATE ILLEGIBLE, IN COLLECTION OF UC DAVIS BOHART MUSEUM OF ENTOMOLOGY.

Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None		Global: G5	
State: None		State: S3	
Habitat Associations		Other Lists	
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.		CDFG Status:	
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 178	Map Index: 00259	EO Index: 2797	Dates Last Seen
Occ Rank: None			Element: 1997-11-30
Origin: Natural/Native occurrence			Site: 1999-01-10
Presence: Possibly Extirpated			
Trend: Decreasing			Record Last Updated: 2002-05-06

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: ROOST TREES ARE CYPRESS AND EUCALYPTUS ALONG THE SOUTH SIDE OF THE CREEK.

Threat: THREATENED BY DEVELOPMENT - CYPRESS WINDROW, WHICH SERVED AS A BUFFER, WAS REMOVED IN 1992, AND CONSTRUCTION STARTED.

General:

Owner/Manager:

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 179	Map Index: 00328	EO Index: 2796	Dates Last Seen
Occ Rank: Fair			Element: 1994-11-XX
Origin: Natural/Native occurrence			Site: 1998-01-09
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-06-22

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: AUTUMNAL SITE. MONARCHS CLUSTER IN UNDERSTORY TREES OF EUCALYPTUS AND OTHER ORNAMENTALS; OVERSTORY CONSISTS OF LARGE, NATIVE SYCAMORES, WHICH DO NOT APPEAR TO BE USED BY THE BUTTERFLIES.

Threat: TREE TRIMMING IS THE MAIN THREAT TO THIS SITE; THE EUCALYPTUS TREES NEAR THE TREATMENT PLANT WERE SEVERELY TRIMMED.

General:

Owner/Manager:

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 180	Map Index: 00408	EO Index: 2795	Dates Last Seen
Occ Rank: Fair			Element: 1992-01-14
Origin: Natural/Native occurrence			Site: 1996-01-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-07

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: ROOST TREES ARE COAST LIVE OAK, SYCAMORE, AND EUCALYPTUS. SITE IS A FORMER RIPARIAN AREA CLEARED FOR DEVELOPMENT; LOTS ARE SEVERAL ACRES IN SIZE, WITH CITRUS GROVES AND LARGE GARDENS AVAILABLE FOR NECTARING AND WATERING.

Threat: MAIN THREAT TO THIS SITE IS CUTTING/TRIMMING ASSOCIATED WITH DEVELOPMENT; THIS ACTIVITY HAS CEASED TEMPORARILY (1995-96)

General:

Owner/Manager:

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Danaus plexippus monarch butterfly			Element Code: IILEPP2010
Status	NDDB Element Ranks	Other Lists	
Federal: None State: None	Global: G5 State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 181	Map Index: 00406	EO Index: 12895	Dates Last Seen
Occ Rank: None			Element: 1981-XX-XX
Origin: Natural/Native occurrence			Site: 1985-10-XX
Presence: Extirpated			
Trend: Unknown			Record Last Updated: 2002-05-02

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.02277° / -118.81370°	Township: 01S
UTM: Zone-11 N3766164 E332543	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 60 ft

Location: BONSALL CANYON, MALIBU.

Location Detail:

Ecological:

Threat: LONG-HORNED WEEVIL DAMAGE EVIDENT

General: SITE SUPPORTED HUNDREDS EACH WINTER, FROM APPROXIMATELY 1971-81. A STORM BLEW THE TOP OFF OF THE ROOST TREE, AND MONARCHS HAVE NOT RETURNED SINCE.

Owner/Manager: PVT

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 182	Map Index: 00458	EO Index: 12191	Dates Last Seen
Occ Rank: None			Element: 1985-10-19
Origin: Natural/Native occurrence			Site: 1999-01-10
Presence: Extirpated			
Trend: Decreasing			Record Last Updated: 2002-05-06

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: ROOST TREES ARE A SMALL GROVE OF EUCALYPTUS NEXT TO A HOME; MAIN GROUP OF TREES REMOVED TO MAKE WAY FOR A CIRCULAR DRIVEWAY.

Threat:

General:

Owner/Manager:

Danaus plexippus

monarch butterfly

Element Code: IILEPP2010

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None
State: None

Global: G5
State: S3

CDFG Status:

_____ **Habitat Associations** _____

General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.

Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.

Occurrence No. 183

Map Index: 00468

EO Index: 2794

_____ **Dates Last Seen** _____

Occ Rank: Fair

Element: 1995-11-XX

Origin: Natural/Native occurrence

Site: 1999-01-10

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2002-05-02

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.03120° / -118.79613°

Township: 01S

UTM: Zone-11 N3767070 E334181

Range: 18W

Mapping Precision: SPECIFIC

Section: XX **Qtr:** XX

Symbol Type: POINT

Meridian: S

Radius: 80 meters

Elevation: 350 ft

Location: POINT DUME/ZUMERIZ, ALONG ZUMERIZ DRIVE, EAST OF KANAN-DUME ROAD, ~0.75 MILE NORTH OF HWY 1, MALIBU.

Location Detail: LARGE NUMBERS REPORTED IN 1985-86, BUT HAS NOT BEEN SEEN IN LARGE NUMBERS SINCE.

Ecological: CLUSTER TREES ARE AN "L" SHAPED WINDROW OF EUCALYPTUS; SURROUNDING NATIVE VEGETATION IN COASTAL SAGE SCRUB, SOME OF WHICH HAS BEEN REPLACED BY EXOTICS. MILKWEED IS COMMON IN THE SURROUNDING FIELDS; CATERPILLARS/CHRYSLISES TAKEN FROM AREA.

Threat: MAIN THREAT IS DEVELOPMENT, CAUSING LOSS OF MILKWEED IN FIELDS, AND EUCALYPTUS BEETLE DAMAGE.

General: LARGE NUMBERS REPORTED IN 1985-86. 10 SEEN IN 1988-89. 1500 SEEN IN JANUARY 1992. 500 SEEN IN 1992-93. 50 SEEN IN 1993-94. 10 SEEN IN 1994-95. 650 SEEN IN NOV 1995; 10 IN JAN 1996. NONE SEEN ON 30 NOV 97. 300-500 SEEN FLYING ON 10 JAN 99.

Owner/Manager: PVT

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 184	Map Index: 00555	EO Index: 12893	Dates Last Seen
Occ Rank: Fair			Element: 1993-11-XX
Origin: Natural/Native occurrence			Site: 1997-11-30
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2002-05-10

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: TEMPORARY SITE. ROOST TREES ARE EUCALYPTUS, SYCAMORE, AND AVOCADO TREES. SURROUNDING LAND USE IS RESIDENTIAL.

Threat: DROUGHT IS THE MAIN THREAT; NO WATER IN THE CREEK DURING THE 1989-90 SEASON.

General:

Owner/Manager:

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 185	Map Index: 00493	EO Index: 22813	Dates Last Seen
Occ Rank: Unknown			Element: 1988-10-01
Origin: Natural/Native occurrence			Site: 1998-10-XX
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2002-05-02

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.02111° / -118.78730°	Township: 01S
UTM: Zone-11 N3765937 E334977	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 25 ft

Location: PARADISE COVE, APPROX 2 MI NE OF PT DUME, MALIBU.

Location Detail:

Ecological: THE "COVE" IS A TRAILER PARK SURROUNDED BY SYCAMORES, PINES, AND COAST LIVE OAKS.

Threat: OCTOBER 1998: CUTTING OF EUCALYPTUS TREES IN THE COVE AREA.

General: THOUSANDS OF MONARCHS CLUSTERED HERE UNTIL SITE WAS ALTERED BY CHAPARRAL FIRE THAT BURNED THROUGH PINE GROVE ON WEST SIDE OF ISLAND IN EARLY 1980'S. ONLY "TENS" OF MONARCHS SEEN OCTOBER 1988. OCT 1998: NO REPORTS OF SITE BEING USED.

Owner/Manager: PVT

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 186	Map Index: 00471	EO Index: 22812	— Dates Last Seen —
Occ Rank: Fair			Element: 1997-11-20
Origin: Natural/Native occurrence			Site: 1999-01-10
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-10

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.02462° / -118.77963°	Township: 02S
UTM: Zone-11 N3766314 E335692	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 05 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 125 ft

Location: ALONG PACIFIC COAST HWY (HWY 1), ~2.1 MILES NE OF POINT DUME, MALIBU.

Location Detail: IN 1985, MONARCHS WERE LOCATED AT 22800 PCH. IN 1992, MONARCHS ROOSTED AT 27910 PCH. 28000 PCH WAS CHECKED IN 1994-95 AND 1997-98. 22800 SITE AN ERROR; SITE IS ACTUALLY JUST EAST OF PARADISE COVE.

Ecological: CLUSTER TREES ARE SEVERAL SPECIES OF EUCALYPTUS; ONE OF MANY SMALL RAVINES (OR GULLIES) CONTAINING EUCALYPTUS THAT DRAIN ACROSS HWY 1 TO THE OCEAN.

Threat: THREATENED BY UNDERSTORY REMOVAL AND TREE TRIMMING. SITE DAMAGED BY THIS ACTIVITY IN 1996; FOLIAGE RETURNING JAN 1999.

General: FLYERS NUMBERING IN 10'S OBS OCT 1985 AT THIS SITE. 500 OBS IN 1991-92. NONE OBS IN TWO SITE VISITS IN 1992-93. NONE OBS IN NOV 94, OR 1995-96. TREES SEVERELY TRIMMED OBS IN JAN 1997. 400 OBS ON 20 NOV 97; 0 BY 30 NOV 97.

Owner/Manager: PVT

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 187	Map Index: 00757	EO Index: 12202	Dates Last Seen
Occ Rank: Fair			Element: 1999-11-15
Origin: Natural/Native occurrence			Site: 1999-11-15
Presence: Presumed Extant			
Trend: Fluctuating			Record Last Updated: 2002-05-02

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: AUTUMNAL SITE. ROOST TREES ARE EUCALYPTUS GROWING ON A STEEP, WEST-FACING SLOPE.

Threat: MAIN THREAT TO THIS SITE IS REMOVAL/TRIMMING OF THE VEGETATION IN THE VICINITY OF THE ROOST TREES.

General:

Owner/Manager:

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status	NDDB Element Ranks	Other Lists	
Federal: None	Global: G5	CDFG Status:	
State: None	State: S3		
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 188	Map Index: 01027	EO Index: 22811	Dates Last Seen
Occ Rank: Unknown			Element: 1985-01-06
Origin: Natural/Native occurrence			Site: 1985-01-06
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-05-21

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.07056° / -118.56369°	Township: 01S
UTM: Zone-11 N3771082 E355709	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 550 ft

Location: SANTA YNEZ CANYON, APPROX 2 MI ESE OF FERNWOOD.

Location Detail: WITHIN SANTA YNEZ CANYON PARK.

Ecological: HABITAT IS A RIPARIAN AREA CONTAINING SYCAMORES, COAST LIVE OAKS, WILLOWS, MULE FAT, ETC.

Threat:

General: APPROXIMATELY 12 MONARCHS OBSERVED FLYING; NO CLUSTERS OBSERVED.

Owner/Manager: LAX COUNTY-PARKS & REC

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 189	Map Index: 01123	EO Index: 29962	Dates Last Seen
Occ Rank: None			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 2002-05-06

Quad Summary: Topanga (3411815/112D)
County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.
Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.
Ecological: CLUSTER TREES ARE EUCALYPTUS.
Threat:
General:
Owner/Manager:

Danaus plexippus		
monarch butterfly		
		Element Code: IILEPP2010
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5	CDFG Status:
State: None	State: S3	
_____ Habitat Associations _____		
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.		
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.		

Occurrence No. 190	Map Index: 01017	EO Index: 22807	— Dates Last Seen —
Occ Rank: Good			Element: 1997-12-29
Origin: Natural/Native occurrence			Site: 1997-12-29
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 1998-06-22

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.04389° / -118.56620°	Township: 01S
UTM: Zone-11 N3768129 E355432	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 125 ft

Location: J. PAUL GETTY MUSEUM, JUST EAST OF PARKER MESA, 1 MILE ENE OF TOPANGA BEACH.

Location Detail: MONARCHS WINTER IN THE PINES ON THE HILLSIDE TO THE EAST OF THE VILLA.

Ecological: SITE IS A GROVE OF INTRODUCED, CANARY ISLAND PINES; FORMERLY, A SEMI-CIRCULAR GROVE OF EUCALYPTUS TREES THAT PARTIALLY RING A GRASSY AREA. MUSEUM GROUNDS CONTAIN MANY EXOTIC, ORNAMENTAL PLANTS.

Threat: THE MAIN THREAT IS TREE TRIMMING; TREE-TRIMMING IN 1985 NEARLY DESTROYED THE SITE.

General: 1000+ OBSERVED IN 1984-85; 10'S OBSERVED ON 10 JAN 1986. SITE NOT USED AGAIN UNTIL 1989-90 (15K OBSERVED). 5000 OBSERVED IN 1990-91. 500 OBSERVED IN 1992-93. ONLY FLYERS OBSERVED IN DEC 1995. 10K OBSERVED ON 29 DEC 97.

Owner/Manager: PVT-J PAUL GETTY MUSEUM

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 191	Map Index: 01203	EO Index: 12892	Dates Last Seen
Occ Rank: None			Element: 1989-10-23
Origin: Natural/Native occurrence			Site: 1998-12-28
Presence: Extirpated			
Trend: Decreasing			Record Last Updated: 2002-05-02

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.03750° / -118.51508°	Township: 01S
UTM: Zone-11 N3767349 E360140	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 200 ft

Location: RUSTIC CANYON REC CENTER, LATIMER ROAD JUNCTION WITH HILL ROAD, PACIFIC PALISADES.

Location Detail: RESIDENT INDICATES MONARCHS HAVE USED THIS SITE FOR 30 YEARS. SHRUBBERY ALONG HILLTREE ROAD WAS REMOVED DURING WINTER OF 1986-87.

Ecological: AUTUMNAL SITE. CLUSTERS WERE LOCATED IN A SMALL EUCALYPTUS GROVE LOCATED BETWEEN THE RECREATION CENTER PARKING LOT AND HILLTREE ROAD; HOMES WITH LARGE GARDENS (A GOOD NECTAR SOURCE) ARE FOUND IN THE SURROUNDING AREA.

Threat: MAIN THREAT IS DAMAGE TO SHRUBBERY/UNDERSTORY, SUCH AS THAT WHICH OCCURRED IN 1987 AND AGAIN IN 1994-95.

General: <1000 OBSERVED IN 1987-88. 10 OBSERVED IN 1988-89. 50 OBSERVED IN 1989-90. 5 FLYERS OBSERVED NOVEMBER 1991. NONE OBSERVED IN WINTER 1992-93 OR FALL 1995. 5 FLYERS OBSERVED IN EARLY FALL 1997. 5 FLYERS SEEN 28 DEC 1998.

Owner/Manager: CITY OF PACIFIC PALISADES

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None		Global: G5	
State: None		State: S3	
Habitat Associations		Other Lists	
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.		CDFG Status:	
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 193	Map Index: 01303	EO Index: 22805	Dates Last Seen
Occ Rank: Unknown			Element: 1991-XX-XX
Origin: Natural/Native occurrence			Site: 1991-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-20

Quad Summary: Beverly Hills (3411814/111C), Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.03527° / -118.49230°	Township: 01S
UTM: Zone-11 N3767071 E362240	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 260 ft

Location: VICINITY OF 18TH STREET AND MONTANA AVENUE, SANTA MONICA.

Location Detail: APPROXIMATELY A ONE SQUARE MILE AREA WAS UTILIZED BY MONARCHS FROM YEAR TO YEAR.

Ecological: ROOST TREES CONSIST OF CANARY ISLAND PINES AND OTHER EXOTICS IN A RESIDENTIAL AREA.

Threat: THE MAIN THREAT IS PERIODIC PRUNING AND TRIMMING BY THE CITY.

General: RESIDENTS RECALL HEAVY YEARS OF MONARCH USE AS WELL AS POOR ONES. SMALL CLUSTER (25 INDIVID.) OBS DEC 1985. 25 FLYERS OBS JAN 1986. 1988-89: NO CLUSTERS IN AREA. ~10 FLYERS OBS OCTOBER 1990. 1990-1991: FLYERS (NO CLUSTERS) REPORTED.

Owner/Manager: PVT

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

* SENSITIVE *

Occurrence No. 219	Map Index: 17191	EO Index: 12041	Dates Last Seen
Occ Rank: None			Element: 1992-01-14
Origin: Natural/Native occurrence			Site: 1999-01-10
Presence: Extirpated			
Trend: Decreasing			Record Last Updated: 2002-05-06

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:
UTM:	Range:
Mapping Precision:	Section:
Symbol Type:	Meridian:
Radius:	Elevation:
	Qtr:

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: ROOST TREES ARE EUCALYPTUS.

Threat: THREATENED (POSSIBLE EXTIRPATED) BY CONTINUED TREE TRIMMING/REMOVAL.

General:

Owner/Manager:

Danaus plexippus

monarch butterfly

Element Code: IILEPP2010

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None

Global: G5

CDFG Status:

State: None

State: S3

_____ **Habitat Associations** _____

General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.

Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.

Occurrence No. 220

Map Index: 17192

EO Index: 12040

— **Dates Last Seen** —

Occ Rank: None

Element: 1995-11-XX

Origin: Natural/Native occurrence

Site: 1999-01-10

Presence: Possibly Extirpated

Record Last Updated: 2002-05-07

Trend: Decreasing

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.03586° / -118.68157°

Township: 01S

UTM: Zone-11 N3767407 E344767

Range: 17W

Mapping Precision: SPECIFIC

Section: XX **Qtr:** XX

Symbol Type: POINT

Meridian: S

Radius: 80 meters

Elevation: 20 ft

Location: MALIBU CREEK (ADAMSON'S BARBECUE), 0.1 MILE FROM HWY 1 AND MALIBU CREEK LAGOON, MALIBU LAGOON STATE BEACH.

Location Detail: MONARCHS LOCATED IN AN ABANDONED BARBECUE AREA, CLUSTERING IN SYCAMORES, PALMS, AND VARIOUS ORNAMENTAL TREES NOW OVERGROWN WITH WEEDY AND NATIVE VEGETATION. BARBECUE REMOVED IN 1999.

Ecological: SITE IS A BIT TOO OPEN; USED IN THE FALL, BUT ABANDONED BY WINTER AS MONARCHS MOVE TO BETTER SITES.

Threat: POSSIBLE THREAT FROM ILLEGAL CAMPFIRE BUILT IN THE AREA; ALSO, USED AS A HORSE TRAIL.

General: ~1000 PRESENT IN 1988-89. ~1000 PRESENT IN 1989-90. 100'S OBS OCT/NOV 1991. BRUSH-CLEARING IN JAN 1991 DAMAGED SITE. 50 OBS IN OCT 1992. FIRE IN NOV 1993 MAY HAVE EXTIRPATED SITE. 1 OBS NOV 1994, 0 IN JAN 1995. 10 NOV 95. 1 FLYER OBS JAN 99

Owner/Manager: DPR-MALIBU CREEK SP

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 295	Map Index: 33184	EO Index: 2799	Dates Last Seen
Occ Rank: Unknown			Element: 1990-10-XX
Origin: Natural/Native occurrence			Site: 1990-10-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-08

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.30850° / -118.51270°	Township: 03N
UTM: Zone-11 N3797398 E360806	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 1,350 ft

Location: BEE CANYON, WEST OF BALBOA BLVD, NORTH OF GRANADA HILLS.

Location Detail: LOCATED IN A CREEK/GREENBELT PORTION OF A RESIDENTIAL AREA.

Ecological: MOST LIKELY AN AUTUMNAL SITE. ROOST TREES ARE LARGE EUCALYPTUS TREES.

Threat:

General: SEVERAL HUNDRED MONARCHS OBSERVED IN OCTOBER 1990; BY NOVEMBER, ONLY ONE MONARCH FOUND.

Owner/Manager: UNKNOWN

Danaus plexippus		Element Code: IILEPP2010	
monarch butterfly			
Status		NDDB Element Ranks	
Federal: None	Global: G5	Other Lists	
State: None	State: S3	CDFG Status:	
Habitat Associations			
General: WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.			
Micro: ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.			

Occurrence No. 315	Map Index: 33363	EO Index: 875	Dates Last Seen
Occ Rank: Good			Element: 1999-11-13
Origin: Natural/Native occurrence			Site: 1999-11-13
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-22

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.01718° / -118.81892°	Township: 02S
UTM: Zone-11 N3765552 E332050	Range: 19W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 50 ft

Location: NW CORNER OF THE INTERSECTION OF BUSH DRIVE AND HWY 1 (PCH), MALIBU.

Location Detail:

Ecological: HABITAT CONSISTS OF A SMALL GROVE OF EUCALYPTUS BEHIND A SET OF CONVENIENCE STORES. SITE IS PROTECTED FROM THE WEST BY A HILL.

Threat: POSSIBLE THREAT FROM THE DISCOVERY OF EUCALYPTUS WEEVIL (FIRST RECORD FOR LOS ANGELES COUNTY!).

General: 1994-95, 10-15 DRIVE-BY VISITS WERE MADE; FLYERS OBS REGULARLY THROUGH WINTER (A GOOD SIGN, CONSIDERING THIS WAS POOR YEAR). 3000+ OBSERVED DURING 1995-96 (10-15 VISITS). 1K+ OBS IN 96-97. 6.5K OBS 97-98. 7K OBS 98-99. 1.5K OBS NOV 99.

Owner/Manager: PVT

Diadophis punctatus modestus

San Bernardino ringneck snake

Element Code: ARADB10015

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T2T3	CDFG Status:
State: None	State: S2?	

Habitat Associations

General: MOST COMMON IN OPEN, RELATIVELY ROCKY AREAS. OFTEN IN SOMEWHAT MOIST MICROHABITATS NEAR INTERMITTENT STREAMS.

Micro: AVOIDS MOVING THROUGH OPEN OR BARREN AREAS BY RESTRICTING MOVEMENTS TO AREAS OF SURFACE LITTER OR HERBACEOUS VEG.

Occurrence No. 2	Map Index: 41360	EO Index: 41360	— Dates Last Seen —
Occ Rank: Fair			Element: 1999-02-14
Origin: Natural/Native occurrence			Site: 1999-02-14
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1999-07-08

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.06381° / -118.69671°	Township: 01S
UTM: Zone-11 N3770529 E343421	Range: 17W
Mapping Precision: SPECIFIC	Section: 19 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 500 ft

Location: MALIBU CANYON ROAD, ~2 MILES NORTH OF MALIBU BEACH AND 1 MILE SOUTH OF CRATER CAMP (OFF PIUMA ROAD).

Location Detail: APPROXIMATELY 20 METERS FROM MALIBU CANYON ROAD, ANIMAL FOUND BENEATH JUNK PILE NEAR ROAD TURNOUT.

Ecological: MIXED CHAPARRAL/ SAGE SCRUB (BURNED IN MALIBU FIRE 1993). DOMINANT VEGETAION IMMEDIATELY SURROUNDING THE LOCATION IS RUDERAL; SURROUNDING SLOPES COMPRISED OF CEANOTHUS SPINOSUS, MALOSMA, ADENOSTOMA FACICULATUM, ERIOGONUM FACICULATUM.

Threat: ROAD

General: 1 SNAKE OBSERVED, 18 INCHES IN LENGTH, 1999.

Owner/Manager: UNKNOWN

Diadophis punctatus modestus

San Bernardino ringneck snake

Element Code: ARADB10015

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T2T3	CDFG Status:
State: None	State: S2?	

Habitat Associations

General: MOST COMMON IN OPEN, RELATIVELY ROCKY AREAS. OFTEN IN SOMEWHAT MOIST MICROHABITATS NEAR INTERMITTENT STREAMS.

Micro: AVOIDS MOVING THROUGH OPEN OR BARREN AREAS BY RESTRICTING MOVEMENTS TO AREAS OF SURFACE LITTER OR HERBACEOUS VEG.

Occurrence No. 8	Map Index: 75864	EO Index: 76885	— Dates Last Seen —
Occ Rank: Fair			Element: 2006-06-14
Origin: Natural/Native occurrence			Site: 2006-06-14
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-07-16

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.10472° / -118.59347°	Township: 01S
UTM: Zone-11 N3774914 E353019	Range: 16W
Mapping Precision: SPECIFIC	Section: 06 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 876 ft

Location: TOPANGA CANYON, 4 MILES SOUTH OF WOODLAND HILLS, SANTA MONICA MOUNTAINS.

Location Detail: APPROXIMATELY 100 METERS (AIR) DIRECTLY WEST THE INTERSECTION OF NORTH TOPANGA CANYON ROAD (HIGHWAY 27) AND HILLSIDE DRIVE.

Ecological: HABITAT CONSISTS OF DISTURBED CHAPARRAL AND OAK WOODLAND. SANDY SOIL, NON-NATIVE GRASSES, BRASSICA SP. GENERALLY NORTH FACING SLOPE. RURAL RESIDENTIAL IN SURROUNDING AREAS.

Threat: DOMESTIC DOG.

General: ONE ADULT FOUND UNDERNEATH OLD PLYWOOD NEXT TO WOODEN SHED.

Owner/Manager: PVT

Emys marmorata		
western pond turtle		Element Code: ARAAD02030
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G3G4 State: S3	CDFG Status: SC
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 846	Map Index: 72504	EO Index: 28229	Dates Last Seen
Occ Rank: None			Element: 1955-02-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 2008-10-09

Quad Summary: Newbury Park (3411828/113B), Thousand Oaks (3411827/113A)
County Summary: Ventura

Lat/Long: 34.13900° / -118.86984°	Township: 01N
UTM: Zone-11 N3779148 E327594	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 28 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 4/5 mile	Elevation: 955 ft

Location: LAKE SHERWOOD, SANTA MONICA MOUNTAINS.
Location Detail:
Ecological:
Threat:
General: MUSEUM COLLECTION. LACM 23492, COLLECTED FEBRUARY 1955. BRATTSTROM (1990) CONSIDERS THIS POP EXTIRPATED.
Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Emys marmorata		Element Code: ARAAD02030	
western pond turtle			
Status		NDDB Element Ranks	
Federal: None		Global: G3G4	
State: None		State: S3	
Habitat Associations		Other Lists	
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE		CDFG Status: SC	
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN			

Occurrence No. 907	Map Index: 00568	EO Index: 28188	Dates Last Seen
Occ Rank: None			Element: 1957-XX-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 1998-09-03

Quad Summary: Malibu Beach (3411816/112C), Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.10764° / -118.75825°	Township: 01S
UTM: Zone-11 N3775486 E337825	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 03 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 3/5 mile	Elevation: 800 ft

Location: VICINITY OF MALIBU LAKE, SANTA MONICA MOUNTAINS.

Location Detail:

Ecological:

Threat:

General: COLLECTED BY A. BRAME, JR., IN 1957, DEPOSITORY UNKNOWN. BRATTSTROM (1990) CONSIDERS THIS POP EXTIRPATED.

Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Emys marmorata		
western pond turtle		Element Code: ARAAD02030
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G3G4 State: S3	CDFG Status: SC
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 908	Map Index: 32743	EO Index: 976	Dates Last Seen
Occ Rank: Unknown			Element: 1987-XX-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-12-27

Quad Summary: Point Dume (3411817/113D)
County Summary: Los Angeles

Lat/Long: 34.06727° / -118.85415°	Township: 01S
UTM: Zone-11 N3771165 E328897	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 22 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 900 ft

Location: TRANCAS CANYON, 10.5 MILES WEST OF MALIBU, 1.4 MILES NORTH OF US 101 ALTERNATE (HIGHWAY 1).
Location Detail:
Ecological:
Threat:
General: LACM SPECIMEN #74387, COLLECTED 1 APRIL 1964. USNM SPECIMEN #0554800; COLLECTION DATE UNKNOWN.
Owner/Manager: UNKNOWN

Emys marmorata		
western pond turtle		Element Code: ARAAD02030
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G3G4 State: S3	CDFG Status: SC
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 909	Map Index: 32744	EO Index: 651	Dates Last Seen
Occ Rank: Unknown			Element: 1955-09-18
Origin: Natural/Native occurrence			Site: 1955-09-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-12-27

Quad Summary: Malibu Beach (3411816/112C), Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.10013° / -118.61757°	Township: 01S
UTM: Zone-11 N3774439 E350789	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 950 ft

Location: OLD TOPANGA CANYON, SANTA MONICA MOUNTAINS.

Location Detail:

Ecological:

Threat:

General: LACM SPECIMEN #23490.

Owner/Manager: UNKNOWN

Emys marmorata		
western pond turtle		Element Code: ARAAD02030
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4	CDFG Status: SC
State: None	State: S3	
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE		
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 969	Map Index: 20258	EO Index: 12047	Dates Last Seen
Occ Rank: Good			Element: 1991-05-15
Origin: Natural/Native occurrence			Site: 1991-05-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-11-13

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.11228° / -118.71231°	Township: 01S
UTM: Zone-11 N3775929 E342071	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 01 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 600 ft

Location: LAS VIRGENES CREEK, MALIBU CREEK STATE PARK, 0.4 MI N OF CONFLUENCE WITH LIBERTY CREEK.

Location Detail:

Ecological: RIPARIAN WOODLAND; DOMINANTS PLANT SPECIES ARE SALIX SP, QUERCUS AGRIFOLIA, AND ARTEMISIA DOUGLASIANA.

Threat: THREATENED BY WATER POLLUTION/SEDIMENTATION FROM DEVELOPMENT UPSTREAM.

General: 5 TURTLES, INCLUDING 2 ADULTS AND 3 JUVENILES, OBSERVED. AILANTHUS ALTISSIMA (TREE OF HEAVEN) REMOVAL IN AREA; DOES NOT APPEAR TO BE IMPACTING TURTLES.

Owner/Manager: DPR-MALIBU CREEK SP

Emys marmorata		
western pond turtle		Element Code: ARAAD02030
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4	CDFG Status: SC
State: None	State: S3	
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE		
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 970	Map Index: 20257	EO Index: 24972	Dates Last Seen
Occ Rank: Good			Element: 1987-05-09
Origin: Natural/Native occurrence			Site: 1987-05-09
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1992-03-16

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09384° / -118.72270°	Township: 01S
UTM: Zone-11 N3773900 E341078	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 500 ft

Location: MALIBU CREEK, ADJACENT TO DIRT ROAD SE OF CENTURY RANCH, 0.1 MI SE OF PIPE THAT CROSSES CREEK, MALIBU CREEK STATE PARK.

Location Detail: TURTLES FOUND IN A LARGE POOL (20' X 100' X 4') IN THE CREEKBED.

Ecological: RIPARIAN COMMUNITY WITH WILLOW, CATTAILS, ETC.

Threat: POTENTIAL THREAT OF COLLECTION BY PARK VISITORS.

General: ADULT OBSERVED SWIMMING IN POOL. FISHING IS POPULAR WITHIN PARK, POSSIBLY INCREASING THREAT OF COLLECTION.

Owner/Manager: DPR-MALIBU CREEK SP

Emys marmorata		
western pond turtle		Element Code: ARAAD02030
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4	CDFG Status: SC
State: None	State: S3	
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE		
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 1075	Map Index: 33433	EO Index: 29297	— Dates Last Seen —
Occ Rank: Good			Element: 1996-06-01
Origin: Natural/Native occurrence			Site: 1996-06-01
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-09-06

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.11283° / -118.63800°	Township: 01S
UTM: Zone-11 N3775877 E348926	Range: 17W
Mapping Precision: SPECIFIC	Section: 02 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 36.1 acres	Elevation: 1,350 ft

Location: UNNAMED TRIBUTARY TO OLD TOPANGA CREEK, WEST OF OLD TOPANGA ROAD, 2 MILES WEST OF TOPANGA.

Location Detail: TURTLES FOUND IN A SERIES OF DEEP POOLS CARVED IN SANDSTONE.

Ecological: HABITAT CONSISTS OF A SERIES OF POOLS ALONG AN INTERMITTENT CREEK; SURROUNDED BY CHAPARRAL/SCRUB.

Threat: THREATENED BY A PROPOSED COMMERCIAL DEVELOPMENT NEAR THE TURTLE'S SITE.

General: 7 ADULTS, 4 (2-3 YR OLD) JUVENILES AND 6 HATCHLINGS OBSERVED ON 1 JUNE 1996.

Owner/Manager: UNKNOWN

Emys marmorata		Element Code: ARAAD02030
western pond turtle		
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4	CDFG Status: SC
State: None	State: S3	
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE		
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 1086	Map Index: 72528	EO Index: 34625	— Dates Last Seen —
Occ Rank: Fair			Element: 1998-06-24
Origin: Natural/Native occurrence			Site: 1998-06-24
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-10-15

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.11973° / -118.78680°	Township: 01N
UTM: Zone-11 N3776874 E335214	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 32 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 780 ft

Location: TRIUNFO CREEK, NW OF THE INTERSECTION OF KANAN ROAD AND RIUNFO ROAD, 2 MILES NW OF MALIBU LAKE.

Location Detail:

Ecological: HABITAT CONSISTS OF A SMALL SECTION OF TRIUNFO CREEK, WITH A SLOW-MOVING CURRENT AND A SERIES OF POOLS OCCURRING BETWEEN ARIZONA CROSSINGS. VEGEATATED BY DENSE TYPHA AND WILLOWS ALONG THE STREAM BANK.

Threat: THREATENED BY PROPOSED DEVELOPMENT.

General: 1 ADULT TURTLE OBSERVED ON 24 JUNE 1998.

Owner/Manager: PVT

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Emys marmorata		
western pond turtle		Element Code: ARAAD02030
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4	CDFG Status: SC
State: None	State: S3	
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE		
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 1152	Map Index: 61265	EO Index: 61301	— Dates Last Seen —
Occ Rank: Unknown			Element: 2000-08-XX
Origin: Natural/Native occurrence			Site: 2000-08-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-05-09

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.24474° / -118.65047°	Township: 02N
UTM: Zone-11 N3790525 E348012	Range: 17W
Mapping Precision: SPECIFIC	Section: 22 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,415 ft

Location: BOX CANYON, BETWEEN CHATSWORTH RESERVOIR AND SIMI HILLS
Location Detail:
Ecological:
Threat:
General: DOUG O'ROURKE REPORTED THAT OBSERVED AND PHOTOGRAPHED SWPT ON HIS PORPERTY DURING AUG 2000.
Owner/Manager: PVT

Emys marmorata		Element Code: ARAAD02030
western pond turtle		
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3G4	CDFG Status: SC
State: None	State: S3	
Habitat Associations		
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE		
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN		

Occurrence No. 1194	Map Index: 71048	EO Index: 71960	— Dates Last Seen —
Occ Rank: Good			Element: 2007-06-XX
Origin: Natural/Native occurrence			Site: 2007-06-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-03-20

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.13858° / -118.75853°	Township: 01N
UTM: Zone-11 N3778918 E337857	Range: 18W
Mapping Precision: SPECIFIC	Section: 27 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 18.0 acres	Elevation: 800 ft

Location: MEDEA CREEK, NEAR AGOURA HILLS, SANTA MONICA MOUNTAINS.

Location Detail: LOCATED BETWEEN 200 TO 1400 FT SE OF THE INTERSECTION OF CORNELL RD AND KANAN RD. TRIANGLE RANCH RESIDENTIAL DEVELOPMENT PROJECT CUP.

Ecological: HABITAT CONSISTS OF A SLOW FLOWING CREEK WITH DEEP POOLS SURROUNDED BY WILLOW RIPARIAN WOODLAND, CHAPARRAL, AND RUDERAL UPLANDS. BUSY ROADWAYS IMMEDIATELY TO THE EAST AND RESIDENTIAL/URBAN IMMEDIATELY DOWN AND UPSTREAM FROM SITE.

Threat: THREATENED BY PROPOSED RESIDENTIAL & ASSOCIATED EDGE EFFECTS, TRASH/DUMPING, URBAN RUNOFF ENCOURAGING EXOTIC FISH.

General: 2 ADULT MALES AND 1 JUVENILE LIVE TRAPPED AND RELEASED BY ECORP CONSULTANTS, INC. DURING MAY AND JUNE 2007 FOR PRESENCE ABSENCE STUDY. JUVENILE FEMALE INDICATES THAT A BREEDING POPULATION IS AT THIS SITE.

Owner/Manager: PVT

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Emys marmorata		Element Code: ARAAD02030	
western pond turtle			
Status	NDDB Element Ranks	Other Lists	
Federal: None	Global: G3G4	CDFG Status: SC	
State: None	State: S3		
Habitat Associations			
General: A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES, USUALLY WITH AQUATIC VEGETATION, BE			
Micro: NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT UP TO 0.5 KM FROM WATER FOR EGG-LAYIN			

Occurrence No. 1218	Map Index: 78677	EO Index: 79643	— Dates Last Seen —
Occ Rank: Poor			Element: 2010-04-22
Origin: Natural/Native occurrence			Site: 2010-04-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-04-27

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.27778° / -118.79833°	Township: 02N
UTM: Zone-11 N3794420 E334460	Range: 18W
Mapping Precision: SPECIFIC	Section: 07 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 710 ft

Location: 0.1 MILES WEST OF THE N MADERA RD BRIDGE (HWY 118) OVER ARROYO SIMI, IN ARROYO SIMI, SIMI VALLEY.

Location Detail: MAPPED TO COORDINATES GIVEN.

Ecological: CONCRETE RIPRAP BANKS & NARROW CHANNEL; OCCASIONAL CHECK DAMS W/ SMALL POOLS & SOME BASKING AREAS. SOME EMERGENT VEGETATION (CATTAILS, ETC); NO LARGE VEGETATION. CHANNEL SURROUNDED BY WALKING TRAIL & DEVELOPMENT. BETTER HABITAT DOWNSTREAM.

Threat: THREATENED BY VEGETATION REMOVAL PROJECTS IN STREAM, & BY PESTICIDE USE TO CONTROL VEGETATION.

General: 1 LARGE ADULT WAS OBSERVED BASKING ON A ROCK IN THE MIDDLE OF THE CHANNEL ON 22 APR 2010. SITE LIKELY USED FOR REARING, FEEDING, & BASKING, BUT NOT APPROPRIATE FOR BREEDING/NESTING. BETTER HABITAT ABOUT 1/4 MI DOWNSTREAM FOR REPRODUCTION.

Owner/Manager: CITY OF SIMI VALLEY

Eucyclogobius newberryi

tidewater goby

Element Code: AFCQN04010

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: Endangered
State: None

Global: G3
State: S2S3

CDFG Status: SC

----- **Habitat Associations** -----

General: BRACKISH WATER HABITATS ALONG THE CALIF COAST FROM AGUA HEDIONDA LAGOON, SAN DIEGO CO. TO THE MOUTH OF THE SMITH RIVER.

Micro: FOUND IN SHALLOW LAGOONS AND LOWER STREAM REACHES, THEY NEED FAIRLY STILL BUT NOT STAGNANT WATER & HIGH OXYGEN LEVELS.

Occurrence No. 78

Map Index: 33744

EO Index: 28502

----- **Dates Last Seen** -----

Occ Rank: Unknown

Origin: Introduced Back into Native Hab./Range

Presence: Presumed Extant

Trend: Unknown

Element: 1995-XX-XX

Site: 1995-XX-XX

Record Last Updated: 1997-11-10

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.04198° / -118.68343°

UTM: Zone-11 N3768089 E344606

Mapping Precision: NON-SPECIFIC

Symbol Type: POLYGON

Area:

Township: 01S

Range: 17W

Section: 32 **Qtr:** XX

Meridian: S

Elevation: 10 ft

Location: MALIBU CREEK AND LAGOON, FROM MOUTH TO 1.5 MILES UPSTREAM, 9 MILES WEST OF SANTA MONICA.

Location Detail: COMMON IN MALIBU LAGOON & A SHORT DISTANCE UP MALIBU CR UNTIL EARLY 1960'S. POPULATION WAS EXTIRPATED, BUT 52 ADULTS FROM MOUTH OF THE VENTURA RIVER WERE REINTRODUCED IN JUNE 1991.

Ecological:

Threat:

General: UCLA (CAS) SPECIMEN #W55-272, COLLECTED 10/12/55. REINTRODUCED 6/91. FISH FOUND IN 4/92 & 4/93 IN THE CREEK, AND 8/92 IN THE LAGOON. LAST COLLECTED IN 1995.

Owner/Manager: DPR-MALIBU CREEK SP, PVT

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Euderma maculatum		
spotted bat		
		Element Code: AMACC07010
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4	CDFG Status: SC
State: None	State: S2S3	
Habitat Associations		
General: OCCUPIES A WIDE VARIETY OF HABITATS FROM ARID DESERTS AND GRASSLANDS THROUGH MIXED CONIFER FORESTS.		
Micro: FEEDS OVER WATER AND ALONG WASHES. FEEDS ALMOST ENTIRELY ON MOTHS. NEEDS ROCK CREVICES IN CLIFFS OR CAVES FOR ROOSTING.		

Occurrence No. 67	Map Index: 00631	EO Index: 66806	— Dates Last Seen —
Occ Rank: Unknown			Element: 2003-08-XX
Origin: Natural/Native occurrence			Site: 2003-08-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-05

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09735° / -118.73155°	Township: 01S
UTM: Zone-11 N3774303 E340268	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 600 ft

Location: MALIBU CREEK STATE PARK, NEAR ROCKY POOL AND CENTURY LAKE (CENTURY RESERVOIR).

Location Detail:

Ecological: AREA HAS ROCKY CLIFFS WHICH WOULD PROVIDE PREFERRED ROOSTING HABITAT.

Threat:

General: INDIVIDUALS RECORDED FROM THIS AREA 4 TIMES IN JUN & AUG 2003. 3 OF THE CALLS WERE RECORDED AT DUSK AND THE OTHER WITHIN 1 HOUR AFTER SUNSET, INDICATING A ROOST IN THE VICINITY.

Owner/Manager: DPR-MALIBU CREEK SP

Eumops perotis californicus		
western mastiff bat		Element Code: AMACD02011
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC		
Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.		

Occurrence No. 58	Map Index: 66302	EO Index: 66387	— Dates Last Seen —
Occ Rank: Unknown			Element: 1954-07-27
Origin: Natural/Native occurrence			Site: 1954-07-27
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-09-26

Quad Summary: Oat Mountain (3411835/138D), Santa Susana (3411836/138C)

County Summary: Los Angeles

Lat/Long: 34.26586° / -118.61483°	Township: 02N
UTM: Zone-11 N3792814 E351332	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation:

Location: ABOUT 0.75 MI NW OF CHATSWORTH.

Location Detail: MAPPED ACCORDING TO LAT/LONG COORDINATES GIVEN IN MANIS, WITH UNCERTAINTY OF 5000M. GENERAL LOCATION "1 MI W OF CHATSWORTH" MAPPED HERE.

Ecological:

Threat:

General: 2 MALE SPECIMENS COLLECTED BY T.A. VAUGHAN ON 27 JUL 1954, KU #76576 & 76577.

Owner/Manager: UNKNOWN

Eumops perotis californicus

western mastiff bat

Element Code: AMACD02011

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	

Habitat Associations

General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC

Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.

Occurrence No. 66	Map Index: 66309	EO Index: 66395	— Dates Last Seen —
Occ Rank: Unknown			Element: 1954-08-05
Origin: Natural/Native occurrence			Site: 1954-08-05
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-09-26

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.34179° / -118.54952°	Township: 03N
UTM: Zone-11 N3801141 E357473	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 15 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation:

Location: 3 MI SOUTH, 1 MI WEST OF NEWHALL.

Location Detail: EXACT LOCATION UNKNOWN. LAT/LONG COORDINATES GIVEN ARE NW OF NEWHALL, SO GENERAL AREA OF "3 MI S, 1 MI W OF NEWHALL" IS MAPPED. THIS PLACES THE LOCATION SOMEWHERE NEAR/BETWEEN RICE AND LEAMING CYNs.

Ecological:

Threat:

General: 1 MALE SPECIMEN COLLECTED BY T.A. VAUGHAN ON 5 AUG 1954, KU #76575.

Owner/Manager: UNKNOWN

Eumops perotis californicus		
western mastiff bat		Element Code: AMACD02011
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC		
Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.		

Occurrence No. 106	Map Index: 66353	EO Index: 66450	— Dates Last Seen —
Occ Rank: Unknown			Element: 1992-XX-XX
Origin: Natural/Native occurrence			Site: 1992-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-09-25

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.36441° / -118.50598°	Township: 03N
UTM: Zone-11 N3803590 E361516	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation:

Location: ELSMERE CANYON.

Location Detail: MAPPED ACCORDING TO LAT/LONG COORDINATES GIVEN, WHICH PUTS THE SITE AT THE MOUTH OF ELSMERE CANYON.

Ecological:

Threat:

General: 1-3 ANIMALS DETECTED IN SPRING OF 1992.

Owner/Manager: UNKNOWN

Eumops perotis californicus		
western mastiff bat		Element Code: AMACD02011
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC		
Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.		

Occurrence No. 107 **Map Index:** 66354 **EO Index:** 66451 **— Dates Last Seen —**

Occ Rank: Unknown **Element:** 1995-05-31

Origin: Natural/Native occurrence **Site:** 1995-05-31

Presence: Presumed Extant

Trend: Unknown **Record Last Updated:** 2006-09-25

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.11583° / -118.75660°	Township: 01S
UTM: Zone-11 N3776392 E337991	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 03 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation:

Location: 2 MI E CORNELL, PARAMOUNT RANCH.

Location Detail: MAPPED ACCORDING TO LOCALITY DESCRIPTION. THE LAT/LONG COORDINATES GIVEN ARE AT APPROX. 1 MI WSW OF PARAMOUNT RANCH.

Ecological:

Threat:

General: 1-3 ANIMALS DETECTED 31 MAY 1995.

Owner/Manager: UNKNOWN

Eumops perotis californicus		
western mastiff bat		Element Code: AMACD02011
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC		
Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.		

Occurrence No. 171	Map Index: 35233	EO Index: 66530	— Dates Last Seen —
Occ Rank: Unknown			Element: 1921-04-21
Origin: Natural/Native occurrence			Site: 1921-04-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-09-26

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)

County Summary: Los Angeles

Lat/Long: 34.01962° / -118.48594°	Township: 02S
UTM: Zone-11 N3765326 E362802	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 100 ft

Location: SANTA MONICA.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED ACCORDING TO LAT/LONG COORDINATES PROVIDED BY PIERSON AND RAINEY. THIS PUTS THE SITE IN THE VICINITY OF OLYMPIC BLVD AND LINCOLN BLVD.

Ecological:

Threat:

General: 3 SPECIMENS COLLECTED 1 JAN, 7 & 21 APR 1921, ALL DEPOSITED AT SDNHM.

Owner/Manager: UNKNOWN

Eumops perotis californicus

western mastiff bat

Element Code: AMACD02011

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	

_____ **Habitat Associations** _____

General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC

Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.

Occurrence No. 182	Map Index: 00631	EO Index: 66807	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-05

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09735° / -118.73155°	Township: 01S
UTM: Zone-11 N3774303 E340268	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 600 ft

Location: MALIBU CREEK STATE PARK, CENTURY LAKE (CONTURY RESERVOIR), ROCKY POOL.

Location Detail:

Ecological: BATS MAY ROOST IN THE CREVICES IN THE CLIFFS NEAR THE LAKE.

Threat:

General: INDIVIDUALS DETECTED ACOUSTICALLY AT DUSK DURING SURVEY BETWEEN APR 2002 AND JUL 2004.

Owner/Manager: DPR-MALIBU CREEK SP

Eumops perotis californicus		
western mastiff bat		Element Code: AMACD02011
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC		
Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.		

Occurrence No. 183	Map Index: 66662	EO Index: 66808	— Dates Last Seen —
Occ Rank: Unknown			Element: 2003-03-XX
Origin: Natural/Native occurrence			Site: 2003-03-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-10-10

Quad Summary: Topanga (3411815/112D)
County Summary: Los Angeles

Lat/Long: 34.09315° / -118.58695°	Township: 01S
UTM: Zone-11 N3773621 E353601	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 08 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 1,200 ft

Location: TOPANGA STATE PARK, TRIPPET RANCH.
Location Detail:
Ecological:
Threat:
General: INDIVIDUALS DETECTED ACOUSTICALLY IN MAR 2003.
Owner/Manager: DPR-TOPANGA SP

Eumops perotis californicus		
western mastiff bat		Element Code: AMACD02011
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC		
Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.		

Occurrence No. 184	Map Index: 66663	EO Index: 66809	— Dates Last Seen —
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-10-10

Quad Summary: Point Dume (3411817/113D)
County Summary: Los Angeles

Lat/Long: 34.11330° / -118.78019°	Township: 01S
UTM: Zone-11 N3776150 E335811	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 04 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 780 ft

Location: PETER STRAUSS RANCH.
Location Detail:
Ecological:
Threat:
General: INDIVIDUALS DETECTED ACOUSTICALLY AT DUSK DURING SURVEY BETWEEN APR 2002 AND JUL 2004.
Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Eumops perotis californicus		
western mastiff bat		Element Code: AMACD02011
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T4	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: MANY OPEN, SEMI-ARID TO ARID HABITATS, INCLUDING CONIFER & DECIDUOUS WOODLANDS, COASTAL SCRUB, GRASSLANDS, CHAPARRAL ETC		
Micro: ROOSTS IN CREVICES IN CLIFF FACES, HIGH BUILDINGS, TREES & TUNNELS.		

Occurrence No. 228	Map Index: 68847	EO Index: 69445	— Dates Last Seen —
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-06

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20900° / -118.76863°	Township: 02N
UTM: Zone-11 N3786744 E337062	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 33 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 2,050 ft

Location: CHINA FLAT IN THE SIMI HILLS, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.

Location Detail:

Ecological: HABITAT WHERE ACOUSTIC DETECTIONS WERE MADE IS AN EPHEMERAL POND IN A GRASSLAND AREA SURROUNDED BY OAKS.

Threat:

General: INDIVIDUALS DETECTED ACOUSTICALLY AN HOUR AFTER DARK FORAGING IN THIS AREA DURING SURVEYS BETWEEN APR 2002 AND JUL 2004.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Gila orcuttii		Element Code: AFCJB13120	
arroyo chub			
Status		NDDB Element Ranks	
Federal: None	Global: G2	Other Lists	
State: None	State: S2	CDFG Status: SC	
Habitat Associations			
General: NATIVE TO STREAMS FROM MALIBU CR TO SAN LUIS REY RIVER BASIN. INTRODUCED INTO STREAMS IN SANTA CLARA, VENTURA, SANTA YNE			
Micro: SLOW WATER STREAM SECTIONS WITH MUD OR SAND BOTTOMS. FEEDS HEAVILY ON AQUATIC VEGETATION & ASSOCIATED INVERTEBRATES.			

Occurrence No. 36	Map Index: 47976	EO Index: 47976	Dates Last Seen
Occ Rank: Good			Element: 2000-04-20
Origin: Transplant Outside of Native Hab./Range			Site: 2000-04-20
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2011-07-29

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.29175° / -118.84497°	Township: 02N
UTM: Zone-11 N3796046 E330194	Range: 19W
Mapping Precision: SPECIFIC	Section: 02 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 164.1 acres	Elevation: 580 ft

Location: ARROYO SIMI, S OF LOS ANGELES AVE, FROM VIRGINIA COLONY TO 2.5 MI UPSTREAM, ABOUT 4 MI WNW OF SIMI.

Location Detail: UCLA 2000 STUDY SITES 134 AND 146. THESE ARE 2 OF THE 16 SITES SAMPLED THROUGHOUT THE CALLEGUAS CREEK WATERSHED. A TOTAL OF 1091 INDIVIDUALS CAUGHT/TRAPPED WITHIN THIS WATERSHED. MAPPED TO PROVIDED MAP.

Ecological: ARROYO CHUBS WERE FOUND TO BE COMMON IN CALLEGUAS WATERSHED, ESPECIALLY IN VICINITY OF WATERCRESS OR OTHER SURFACE VEGETATION.

Threat:

General: UNKNOWN NUMBER CAUGHT BY TRAP OR ELECTROFISHING ON 19-20 APR 2000; NUMBERS CAUGHT NOT GIVEN BY SITE, BUT RANGED FROM 1-292 FISH PER 150-300 M REACH.

Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Gila orcuttii		
arroyo chub		Element Code: AFCJB13120
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G2 State: S2	CDFG Status: SC
Habitat Associations		
General: NATIVE TO STREAMS FROM MALIBU CR TO SAN LUIS REY RIVER BASIN. INTRODUCED INTO STREAMS IN SANTA CLARA, VENTURA, SANTA YNE Micro: SLOW WATER STREAM SECTIONS WITH MUD OR SAND BOTTOMS. FEEDS HEAVILY ON AQUATIC VEGETATION & ASSOCIATED INVERTEBRATES.		

Occurrence No. 40	Map Index: 47978	EO Index: 47978	Dates Last Seen
Occ Rank: Unknown			Element: 1975-XX-XX
Origin: Natural/Native occurrence			Site: 1975-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-22

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.06447° / -118.70678°	Township: 01S
UTM: Zone-11 N3770618 E342493	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 19 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 600 ft

Location: MALIBU CREEK, NORTH OF MALIBU BEACH.

Location Detail:

Ecological: CHUBS FIRST THOUGHT TO HAVE BEEN INTRODUCED HERE BECAUSE ELSEWHERE THEY ARE ALWAYS FOUND WITH STICKLEBACK WHICH ARE ABSENT HERE. HOWEVER, PREHISTORIC REMAINS DISCOVERED IN MIDDENS ALONG UPPER MALIBU CREEK PROVES POPULATION IS NATIVE.

Threat:

General: INDIVIDUALS OBSERVED FROM YEAR 1975 ONWARD.

Owner/Manager: DPR-MALIBU CREEK SP, OTHER

Lampropeltis zonata (pulchra)

California mountain kingsnake (San Diego population)

Element Code: ARADB19063

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S1S2	

_____ **Habitat Associations** _____

General: RESTRICTED TO THE SAN GABRIEL AND SAN JACINTO MTNS OF SOUTHERN CALIFORNIA.
Micro: INHABITS A VARIETY OF HABITATS, INCLUDING VALLEY-FOOTHILL HARDWOOD, CONIFEROUS, CHAPARRAL, RIPARIAN, AND WET MEADOWS.

Occurrence No. 5	Map Index: 72643	EO Index: 27482	_____ Dates Last Seen _____
Occ Rank: Unknown	Origin: Natural/Native occurrence	Presence: Presumed Extant	Element: 198X-XX-XX
Trend: Unknown			Site: 198X-XX-XX
			Record Last Updated: 2010-03-18

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09213° / -118.64615°	Township: 01S
UTM: Zone-11 N3773595 E348137	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 10 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,800 ft

Location: STUNTS RANCH AND COLD CREEK PRESERVE.

Location Detail: EXACT LOCATION UNKNOWN. 1 MILE POLYGON INCLUDES UC STUNT RANCH SANTA MONICA MTNS RESERVE & CONTAINS ABOUT 90% OF MOUNTAINS RESTORATION TRUST'S COLD CREEK PRESERVE; ADDITIONAL LANDS JUST TO THE WEST.

Ecological: ELEV 1000 TO 2100 FEET.

Threat:

General: OBSERVATION INCLUDED IN A CHECKLIST OF THE FAUNA OF THE COLD CREEK WATERSHED, SANTA MONICA MTNS. COLD CREEK PRESERVE RECENTLY TRANSFERRED FROM TNC TO THE MOUNTAINS RESTORATION TRUST.

Owner/Manager: MTNS RESTORATION TRUST, UC

Lasiurus blossevillii		
western red bat		Element Code: AMACC05060
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5	CDFG Status: SC
State: None	State: S3?	
_____ Habitat Associations _____		
General: ROOSTS PRIMARILY IN TREES, 2-40 FT ABOVE GROUND, FROM SEA LEVEL UP THROUGH MIXED CONIFER FORESTS.		
Micro: PREFERS HABITAT EDGES & MOSAICS WITH TREES THAT ARE PROTECTED FROM ABOVE & OPEN BELOW WITH OPEN AREAS FOR FORAGING.		

Occurrence No. 10	Map Index: 66354	EO Index: 68505	— Dates Last Seen —
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-03-06

Quad Summary: Point Dume (3411817/113D)
 County Summary: Los Angeles

Lat/Long: 34.11583° / -118.75660°	Township: 01S
UTM: Zone-11 N3776392 E337991	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 03 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation:

Location: PARAMOUNT RANCH, 2 MILES EAST OF CORNELL.
 Location Detail:
 Ecological:
 Threat:
 General: INDIVIDUAL(S) DETECTED DURING ACCOUSTICAL ANABAT SURVEYS BETWEEN APR 2002 AND JUL 2004. 1-2 CALL MINUTES RECORDED.
 Owner/Manager: UNKNOWN

Lasiurus blossevillii

western red bat

Element Code: AMACC05060

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status: SC
State: None	State: S3?	

Habitat Associations

General: ROOSTS PRIMARILY IN TREES, 2-40 FT ABOVE GROUND, FROM SEA LEVEL UP THROUGH MIXED CONIFER FORESTS.

Micro: PREFERS HABITAT EDGES & MOSAICS WITH TREES THAT ARE PROTECTED FROM ABOVE & OPEN BELOW WITH OPEN AREAS FOR FORAGING.

Occurrence No. 11	Map Index: 66663	EO Index: 68506	— Dates Last Seen —
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-03-06

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.11330° / -118.78019°	Township: 01S
UTM: Zone-11 N3776150 E335811	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 04 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 780 ft

Location: PETER STRAUSS RANCH.

Location Detail:

Ecological:

Threat:

General: INDIVIDUALS DETECTED DURING ACOUSTICAL ANABAT SURVEYS BETWEEN APR 2002 AND JUL 2004. 1-2 CALL MINUTES RECORDED.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Lasiurus blossevillii		
western red bat		Element Code: AMACC05060
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5	CDFG Status: SC
State: None	State: S3?	
_____ Habitat Associations _____		
General: ROOSTS PRIMARILY IN TREES, 2-40 FT ABOVE GROUND, FROM SEA LEVEL UP THROUGH MIXED CONIFER FORESTS.		
Micro: PREFERS HABITAT EDGES & MOSAICS WITH TREES THAT ARE PROTECTED FROM ABOVE & OPEN BELOW WITH OPEN AREAS FOR FORAGING.		

Occurrence No. 12	Map Index: 00798	EO Index: 68507	— Dates Last Seen —
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-03-06

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09466° / -118.65601°	Township: 01S
UTM: Zone-11 N3773889 E347232	Range: 17W
Mapping Precision: SPECIFIC	Section: 10 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,225 ft

Location: ABOUT 4.5 AIR MILES NNE OF MALIBU BEACH, SOUTH & WEST OF COLD CREEK, STUNT RANCH.

Location Detail:

Ecological:

Threat:

General: INDIVIDUALS DETECTED DURING ACOUSTICAL ANABAT SURVEYS BETWEEN APR 2002 AND JUL 2004. 1-2 CALL MINUTES RECORDED.

Owner/Manager: UC-STUNT RANCH RESERVE

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL 9 Quad Search Center on Calabasas Quad - Animals Only

Lasiurus cinereus		
hoary bat		Element Code: AMACC05030
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status:
State: None	State: S4?	
Habitat Associations		
General: PREFERS OPEN HABITATS OR HABITAT MOSAICS, WITH ACCESS TO TREES FOR COVER & OPEN AREAS OR HABITAT EDGES FOR FEEDING.		
Micro: ROOSTS IN DENSE FOLIAGE OF MEDIUM TO LARGE TREES. FEEDS PRIMARILY ON MOTHS. REQUIRES WATER.		

Occurrence No. 5	Map Index: 66663	EO Index: 68502	Dates Last Seen
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-03-06

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.11330° / -118.78019°	Township: 01S
UTM: Zone-11 N3776150 E335811	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 04 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 780 ft

Location: PETER STRAUSS RANCH.

Location Detail:

Ecological:

Threat:

General: INDIVIDUALS DETECTED DURING ACOUSTICAL ANABAT SURVEYS BETWEEN APR 2002 AND JUL 2004.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Macrotus californicus		
California leaf-nosed bat		Element Code: AMACB01010
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4	CDFG Status: SC
State: None	State: S2S3	
Habitat Associations		
General: DESERT RIPARIAN, DESERT WASH, DESERT SCRUB, DESERT SUCCULENT SCRUB, ALKALI SCRUB AND PALM OASIS HABITATS.		
Micro: NEEDS ROCKY, RUGGED TERRAIN WITH MINES OR CAVES FOR ROOSTING.		

Occurrence No. 30	Map Index: 68315	EO Index: 68473	— Dates Last Seen —
Occ Rank: None			Element: 1949-01-XX
Origin: Natural/Native occurrence			Site: 1994-XX-XX
Presence: Possibly Extirpated			
Trend: Decreasing			Record Last Updated: 2007-04-20

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles, Ventura

Lat/Long: 34.19492° / -118.66159°	Township: 01N
UTM: Zone-11 N3785016 E346898	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 04 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 3/5 mile	Elevation:

Location: OWENSMOUTH (NOW CANOGA PARK), E OF CHEESEBORO/PALO COMADO CANYONS, ON LA/VENTURA CO. LINE, JUST OFF VANOWEN ST.

Location Detail: OBSERVATIONS IN A CAVE.

Ecological: CALCAREOUS CONGLOMERATE CAVE.

Threat: HUMAN DISTURBANCE, SURROUNDING URBANIZATION.

General: 30 INDIVIDUALS OBSERVED IN DEC 1920. 3 OBSERVED IN JAN 1949. NONE OBSERVED ON SUBSEQUENT VISITS IN 1953, 1989, 1990 AND SPRING OF 1994.

Owner/Manager: UNKNOWN

Macrotus californicus		
California leaf-nosed bat		Element Code: AMACB01010
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4	CDFG Status: SC
State: None	State: S2S3	
Habitat Associations		
General: DESERT RIPARIAN, DESERT WASH, DESERT SCRUB, DESERT SUCCULENT SCRUB, ALKALI SCRUB AND PALM OASIS HABITATS.		
Micro: NEEDS ROCKY, RUGGED TERRAIN WITH MINES OR CAVES FOR ROOSTING.		

Occurrence No. 45	Map Index: 81309	EO Index: 82293	— Dates Last Seen —
Occ Rank: None			Element: 1950-06-15
Origin: Natural/Native occurrence			Site: 1950-06-15
Presence: Extirpated			
Trend: Unknown			Record Last Updated: 2011-01-10

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.27706° / -118.60850°	Township: 02N
UTM: Zone-11 N3794047 E351934	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,280 ft

Location: IVERSON RANCH, 1.5 MI NNW CHATSWORTH PO.

Location Detail: MVZ RECORD STATES LOCALITY AS "IVERSON RANCH, SANTA SUSANNA PASS, CHATSWORTH." EXACT LOCATION IS UNKNOWN.

Ecological:

Threat:

General: 1 FEMALE SPECIMEN COLLECTED BY R. M. RYAN (MVZ 113637) ON 15 JUN 1950. APPARENTLY THEY NO LONGER OCCUR THERE PER BLM80R0014.

Owner/Manager: PVT

Myotis ciliolabrum

western small-footed myotis

Element Code: AMACC01140

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: None
State: None

Global: G5
State: S2S3

CDFG Status:

----- **Habitat Associations** -----

General: WIDE RANGE OF HABITATS MOSTLY ARID WOODED & BRUSHY UPLANDS NEAR WATER. SEEKS COVER IN CAVES, BUILDINGS, MINES & CREVICES

Micro: PREFERS OPEN STANDS IN FORESTS AND WOODLANDS. REQUIRES DRINKING WATER. FEEDS ON A WIDE VARIETY OF SMALL FLYING INSECTS.

Occurrence No. 19

Map Index: 00631

EO Index: 68524

----- **Dates Last Seen** -----

Occ Rank: Unknown

Origin: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Element: 2004-07-XX

Site: 2004-07-XX

Record Last Updated: 2007-04-05

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09735° / -118.73155°

UTM: Zone-11 N3774303 E340268

Mapping Precision: NON-SPECIFIC

Symbol Type: POINT

Radius: 1/5 mile

Township: 01S

Range: 18W

Section: 11 **Qtr:** XX

Meridian: S

Elevation: 600 ft

Location: MALIBU CREEK STATE PARK, CENTURY LAKE (CONTURY RESERVOIR).

Location Detail:

Ecological:

Threat:

General: THESE BATS WERE DETECTED ACOUSTICALLY IN THE SANTA MONICA MOUNTAINS IN MOST HABITATS AND AT ALL TIMES OF THE YEAR. THE MOST DETECTIONS WERE AT THIS LOCATION DURING ACOUSTIC ANABAT SURVEYS BETWEEN APR 2002 AND JUL 2004.

Owner/Manager: DPR-MALIBU CREEK SP

Myotis ciliolabrum

western small-footed myotis

Element Code: AMACC01140

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: None
State: None

Global: G5
State: S2S3

CDFG Status:

----- **Habitat Associations** -----

General: WIDE RANGE OF HABITATS MOSTLY ARID WOODED & BRUSHY UPLANDS NEAR WATER. SEEKS COVER IN CAVES, BUILDINGS, MINES & CREVICES

Micro: PREFERS OPEN STANDS IN FORESTS AND WOODLANDS. REQUIRES DRINKING WATER. FEEDS ON A WIDE VARIETY OF SMALL FLYING INSECTS.

Occurrence No. 35

Map Index: 68847

EO Index: 69443

----- **Dates Last Seen** -----

Occ Rank: Unknown

Origin: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Element: 2004-07-XX

Site: 2004-07-XX

Record Last Updated: 2007-04-06

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20900° / -118.76863°

UTM: Zone-11 N3786744 E337062

Mapping Precision: NON-SPECIFIC

Symbol Type: POINT

Radius: 1/5 mile

Township: 02N

Range: 18W

Section: 33 **Qtr:** SW

Meridian: S

Elevation: 2,050 ft

Location: CHINA FLAT IN THE SIMI HILLS, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.

Location Detail:

Ecological: MIST NETS SET OVER AN EPHEMERAL POND IN A GRASSLAND AREA SURROUNDED BY OAKS.

Threat:

General: INDIVIDUALS DETECTED ACOUSTICALLY DURING SURVEYS BETWEEN APR 2002 AND JUL 2004. A LACTATING FEMALE WAS MIST-NETTED IN JULY 2003.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Myotis yumanensis		
Yuma myotis		Element Code: AMACC01020
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status:
State: None	State: S4?	
Habitat Associations		
General: OPTIMAL HABITATS ARE OPEN FORESTS AND WOODLANDS WITH SOURCES OF WATER OVER WHICH TO FEED.		
Micro: DISTRIBUTION IS CLOSELY TIED TO BODIES OF WATER. MATERNITY COLONIES IN CAVES, MINES, BUILDINGS OR CREVICES.		

Occurrence No. 65	Map Index: 00631	EO Index: 68671	— Dates Last Seen —
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-05

Quad Summary: Malibu Beach (3411816/112C)
County Summary: Los Angeles

Lat/Long: 34.09735° / -118.73155°	Township: 01S
UTM: Zone-11 N3774303 E340268	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 600 ft

Location: MALIBU CREEK STATE PARK, CENTURY LAKE (CONTURY RESERVOIR), ROCKY POOL.
Location Detail:
Ecological:
Threat:
General: INDIVIDUAL(S) DETECTED ACOUSTICALLY DURING SURVEY BETWEEN APR 2002 AND JUL 2004. THEY WERE THE SECOND MOST FREQUENTLY RECORDED BAT IN THE SANTA MONICA MTNS NRA DURING THIS STUDY WITH A HIGH NUMBER OF CALLS RECORDED HERE.
Owner/Manager: DPR-MALIBU CREEK SP

Myotis yumanensis

Yuma myotis

Element Code: AMACC01020

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status:
State: None	State: S4?	

Habitat Associations

General: OPTIMAL HABITATS ARE OPEN FORESTS AND WOODLANDS WITH SOURCES OF WATER OVER WHICH TO FEED.
Micro: DISTRIBUTION IS CLOSELY TIED TO BODIES OF WATER. MATERNITY COLONIES IN CAVES, MINES, BUILDINGS OR CREVICES.

Occurrence No. 66	Map Index: 66663	EO Index: 68672	— Dates Last Seen —
Occ Rank: Unknown			Element: 2004-07-XX
Origin: Natural/Native occurrence			Site: 2004-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-03-13

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.11330° / -118.78019°	Township: 01S
UTM: Zone-11 N3776150 E335811	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 04 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 780 ft

Location: PETER STRAUSS RANCH.

Location Detail:

Ecological:

Threat:

General: INDIVIDUAL(S) DETECTED ACOUSTICALLY DURING SURVEY BETWEEN APR 2002 AND JUL 2004. THEY WERE THE SECOND MOST FREQUENTLY RECORDED BAT IN THE SANTA MONICA MTNS NRA WITH HIGH NUMBER OF CALLS RECORDED HERE.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Neotoma lepida intermedia		
San Diego desert woodrat		Element Code: AMAFF08041
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5T3?	CDFG Status: SC
State: None	State: S3?	
_____ Habitat Associations _____		
General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.		
Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.		

Occurrence No. 13	Map Index: 33549	EO Index: 29709	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1992-07-18
Origin: Natural/Native occurrence			Site: 1992-07-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-11-05

Quad Summary: Oat Mountain (3411835/138D)
 County Summary: Los Angeles

Lat/Long: 34.33736° / -118.51167°	Township: 03N
UTM: Zone-11 N3800597 E360948	Range: 16W
Mapping Precision: SPECIFIC	Section: 24 Qtr: N
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,700 ft

Location: WELDON CANYON, 0.5 MILE NW OF THE I-5/HWY 14 JUNCTION, IN THE SANTA SUSANA MOUNTAINS.
 Location Detail:
 Ecological: HABITAT CONSISTS OF DENSE COASTAL SAGE SCRUB, DOMINATED BY SALVIA MELLIFERA, ERIOGONUM SP, POISON OAK, AND YUCCA SP, ON A SANDSTONE ROCK SUBSTRATE.
 Threat:
 General: 1 ADULT MALE TRAPPED ON 18 JULY 1992.
 Owner/Manager: UNKNOWN

Neotoma lepida intermedia

San Diego desert woodrat

Element Code: AMAFF08041

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5T3?	CDFG Status: SC
State: None	State: S3?	

_____ **Habitat Associations** _____

General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.
Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.

Occurrence No. 14	Map Index: 33550	EO Index: 29707	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1992-07-17
Origin: Natural/Native occurrence			Site: 1992-07-17
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-11-05

Quad Summary: Santa Susana (3411836/138C)

County Summary: Ventura

Lat/Long: 34.26293° / -118.64666°	Township: 02N
UTM: Zone-11 N3792536 E348396	Range: 17W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,340 ft

Location: OLD SANTA SUSANA PASS ROAD, 0.2 MILE WEST OF THE BOX CANYON ROAD JUNCTION, IN THE SIMI HILLS.

Location Detail:

Ecological: HABITAT CONSISTS OF DENSE CHAPARRAL, DOMINATED BY CHAMISE, BLACK SAGE, ARTEMISIA, LOTUS, LAUREL SUMAC, AND A FEW SCATTERED ARCTOSTAPHYLOS; SANDSTONE BOULDER OUTCROPS.

Threat:

General: 1 ADULT FEMALE AND 1 ADULT MALE CAPTURED ON 17 JULY 1992.

Owner/Manager: PVT-SPRR

Neotoma lepida intermedia		
San Diego desert woodrat		Element Code: AMAFF08041
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5T3?	CDFG Status: SC
State: None	State: S3?	
_____ Habitat Associations _____		
General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.		
Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.		

Occurrence No. 15	Map Index: 33551	EO Index: 29706	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1992-07-17
Origin: Natural/Native occurrence			Site: 1992-07-17
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-11-06

Quad Summary: Santa Susana (3411836/138C)
 County Summary: Ventura

Lat/Long: 34.26584° / -118.63567°	Township: 02N
UTM: Zone-11 N3792842 E349413	Range: 17W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,600 ft

Location: OLD SANTA SUSANA PASS ROAD, 0.1 WEST OF THE JUNCTION OF LILAC ROAD, SIMI HILLS.
 Location Detail:
 Ecological: HABITAT CONSISTS OF DENSE CHAPARRAL, COMPOSED OF SCRUB OAK, WILD CHERRY, FLANNEL BUSH, CHAMISE, LAUREL SUMAC, AND ARCTOSTAPHYLOS SP, WITH SANDSTONE BOULDER OUTCROPS
 Threat:
 General: 2 ADULT MALES AND 1 ADULT FEMALE CAPTURED ON 17 JULY 1992.
 Owner/Manager: UNKNOWN

Neotoma lepida intermedia		
San Diego desert woodrat		
		Element Code: AMAFF08041
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5T3?	CDFG Status: SC
State: None	State: S3?	
_____ Habitat Associations _____		
General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.		
Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.		

Occurrence No. 16	Map Index: 33552	EO Index: 29705	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1992-07-17
Origin: Natural/Native occurrence			Site: 1992-07-17
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-11-14

Quad Summary: Santa Susana (3411836/138C)
 County Summary: Los Angeles

Lat/Long: 34.26976° / -118.63237°	Township: 02N
UTM: Zone-11 N3793272 E349724	Range: 17W
Mapping Precision: SPECIFIC	Section: 11 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,500 ft

Location: NORTH SIDE OF OLD SANTA SUSANA PASS ROAD, JUST EAST OF SANTA SUSANA PASS, SIMI HILLS.
 Location Detail:
 Ecological: HABITAT CONSISTS OF DENSE CHAPARRAL, COMPOSED OF ERIOGONUM SP, ADENOSTOMA SP, ARTEMISIA SP, AND POISON OAK, WITH SANDSTONE BOULDER OUTCROPS PRESENT.
 Threat:
 General: 1 ADULT MALE AND 1 SUB-ADULT MALE CAPTURED ON 17 JULY 1992.
 Owner/Manager: UNKNOWN

Neotoma lepida intermedia

San Diego desert woodrat

Element Code: AMAFF08041

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: None

Global: G5T3?

CDFG Status: SC

State: None

State: S3?

----- **Habitat Associations** -----

General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.

Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.

Occurrence No. 17

Map Index: 33553

EO Index: 29703

----- **Dates Last Seen** -----

Occ Rank: Excellent

Element: 1992-07-16

Origin: Natural/Native occurrence

Site: 1992-07-16

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 1996-11-06

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.29241° / -118.83499°

Township: 02N

UTM: Zone-11 N3796102 E331114

Range: 19W

Mapping Precision: SPECIFIC

Section: 02 **Qtr:** NE

Symbol Type: POINT

Meridian: S

Radius: 80 meters

Elevation: 680 ft

Location: JUST NORTH OF SPRR-ROW, 0.7 MILE WEST OF OAK PARK AND SOUTH OF MOORPARK COLLEGE, SIMI VALLEY.

Location Detail: LOCATED ALONG NORTH AND SOUTH SIDES OF RR-ROW.

Ecological: HABITAT CONSISTS OF DENSE COASTAL SAGE SCRUB, COMPOSED OF OPUNTIA SP, ARTEMISIA SP, ENCELIA SP, SALVIA SP, ERIOGONUM SP, ELDERBERRY, YUCCA, AND GRANT RYE GRASS, ON A MODERATELY-STEEP, ROCKY, SOUTH-FACING SLOPE.

Threat:

General: 2 ADULT MALES, 2 ADULT FEMALES, 2 SUB-ADULT FEMALES, 3 SUB-ADULT MALES, AND 1 MALE JUVENILE CAPTURED ON 16 JULY 1992.

Owner/Manager: PVT-SPRR

Neotoma lepida intermedia

San Diego desert woodrat

Element Code: AMAFF08041

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T3?	CDFG Status: SC
State: None	State: S3?	

Habitat Associations

General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.
Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.

Occurrence No. 18	Map Index: 33554	EO Index: 29704	— Dates Last Seen —
Occ Rank: Good			Element: 1992-07-16
Origin: Natural/Native occurrence			Site: 1992-07-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-11-06

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.28131° / -118.79485°	Township: 02N
UTM: Zone-11 N3794805 E334787	Range: 18W
Mapping Precision: SPECIFIC	Section: 05 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 800 ft

Location: NORTH SIDE OF SPRR-ROW, 0.1 EAST OF MADERA ROAD, SIMI VALLEY.

Location Detail:

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB, DOMINATED BY OPUNTIA SP AND BACCHARIS PILULARIS.

Threat: POSSIBLE THREAT FROM HERBICIDES.

General: 5 ADULT MALES CAPTURED ON 16 JULY 1992.

Owner/Manager: PVT-SPRR

Neotoma lepida intermedia		
San Diego desert woodrat		Element Code: AMAFF08041
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G5T3?	CDFG Status: SC
State: None	State: S3?	
_____ Habitat Associations _____		
General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.		
Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.		

Occurrence No. 20	Map Index: 33556	EO Index: 29708	_____ Dates Last Seen _____
Occ Rank: Fair			Element: 1992-07-18
Origin: Natural/Native occurrence			Site: 1992-07-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-11-07

Quad Summary: Oat Mountain (3411835/138D)
 County Summary: Los Angeles

Lat/Long: 34.34263° / -118.52654°	Township: 03N
UTM: Zone-11 N3801202 E359589	Range: 16W
Mapping Precision: SPECIFIC	Section: 14 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,800 ft

Location: WELDON CANYON, 1.4 MILES WNW OF THE INTERSECTION OF I-5 AND HWY 14, IN THE SANTA SUSANA MOUNTAINS.

Location Detail:

Ecological: HABITAT CONSISTS OF CHAPARRAL/COASTAL SAGE SCRUB, COMPOSED OF CEANOTHUS SP, ADENOSTOMA SP, ARTEMISIA SP, BACCHARIS SP, AND SALVIA MELLIFERA.

Threat:

General: 1 ADULT FEMALE CAPTURED ON 18 JULY 1992.

Owner/Manager: UNKNOWN

Neotoma lepida intermedia		
San Diego desert woodrat		Element Code: AMAFF08041
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5T3?	CDFG Status: SC
State: None	State: S3?	
Habitat Associations		
General: COASTAL SCRUB OF SOUTHERN CALIFORNIA FROM SAN DIEGO COUNTY TO SAN LUIS OBISPO COUNTY.		
Micro: MODERATE TO DENSE CANOPIES PREFERRED. THEY ARE PARTICULARLY ABUNDANT IN ROCK OUTCROPS & ROCKY CLIFFS & SLOPES.		

Occurrence No. 33	Map Index: 33622	EO Index: 30062	— Dates Last Seen —
Occ Rank: Good			Element: 1995-07-18
Origin: Natural/Native occurrence			Site: 1995-07-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1997-02-04

Quad Summary: Malibu Beach (3411816/112C)
County Summary: Los Angeles

Lat/Long: 34.03813° / -118.71083°	Township: 01S
UTM: Zone-11 N3767704 E342070	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 700 ft

Location: WEST EDGE OF PEPPERDINE UNIVERSITY CAMPUS, MALIBU.
Location Detail: TRAPLINES #355, 356, 358, 359.
Ecological: HABITAT CONSISTS MOSTLY OF COASTAL SAGE SCRUB/CHAPARRAL.
Threat: THREATENED BY DEVELOPMENT/EXPANSION OF UNIVERSITY CAMPUS.
General: CAPTURES ON 16-18 JUL 1995: TRAPLINE #355 (2 ADULT MALES, 3 ADULT FEMALES, 1 JUV FEMALE); TRAPLINE #356 (3 ADULT FEMALES, 1 JUV FEMALE); TRAPLINE #357 (3 ADULT MALES, 5 ADULT FEMALES, 1 JUV MALE, 2 JUV FEMALES); TRAPLINE #359 (1 JUV FEMALE)
Owner/Manager: PVT-PEPPERDINE UNIVERSITY

Oncorhynchus mykiss irideus

southern steelhead - southern California DPS

Element Code: AFCHA0209J

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: Endangered State: None	Global: G5T2Q State: S2	CDFG Status: SC

_____ **Habitat Associations** _____

General: FED LISTING REFERS TO POPS FROM SANTA MARIA RIVER SOUTH TO SOUTHERN EXTENT OF RANGE (SAN MATEO CREEK IN SAN DIEGO CO.)

Micro: SOUTHERN STEELHEAD LIKELY HAVE GREATER PHYSIOLOGICAL TOLERANCES TO WARMER WATER & MORE VARIABLE CONDITIONS.

Occurrence No. 5	Map Index: 30040	EO Index: 29797	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1992-01-23
Origin: Natural/Native occurrence			Site: 1992-01-23
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1999-09-29

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.05095° / -118.69115°	Township: 01S
UTM: Zone-11 N3769095 E343911	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 100 ft

Location: MALIBU CREEK AND LAGOON, MALABU, SANTA MONICA MOUNTAINS.

Location Detail: FROM RINDGE DAM DOWNSTREAM TO THE PACIFIC OCEAN. GRAPHICS WERE ADDED UPSTREAM OF RINDGE DAM BECAUSE OF A POSSIBLE FISH PASSAGE FACILITY.

Ecological: THE HIGHEST QUALITY HABITAT WAS LOCATED IN THE NARROW GORGE SECTIONS, MOST OF WHICH ARE ABOVE RINDGE DAM. THESE BARRIERS AND OTHERS MAKE 86% OF SPAWNING AND 65% OF REARING HABITATS INACCESSIBLE TO STEELHEAD.

Threat: DAM, WATER DIVERSION.

General: PRODUCTION WOULD AT LEAST TRIPLE IF PASSAGE FOR UPSTREAM SPAWNING ADULTS OVER RINDGE DAM. TAPIA WATER RECLAMATION FACILITY RELEASES OF TREATED WASTEWATER MAINTAINED PERENNIAL SURFACE FLOWS EVEN DURING THE MAY-OCTOBER DRY SEASON.

Owner/Manager: DPR-MALIBU CREEK SP, PVT

Oncorhynchus mykiss irideus

southern steelhead - southern California DPS

Element Code: AFCHA0209J

Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G5T2Q State: S2	CDFG Status: SC

Habitat Associations

General: FED LISTING REFERS TO POPS FROM SANTA MARIA RIVER SOUTH TO SOUTHERN EXTENT OF RANGE (SAN MATEO CREEK IN SAN DIEGO CO.)

Micro: SOUTHERN STEELHEAD LIKELY HAVE GREATER PHYSIOLOGICAL TOLERANCES TO WARMER WATER & MORE VARIABLE CONDITIONS.

Occurrence No. 7	Map Index: 34074	EO Index: 29844	— Dates Last Seen —
Occ Rank: Unknown			Element: 1990-03-XX
Origin: Natural/Native occurrence			Site: 1990-03-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-12-19

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.06892° / -118.58689°	Township: 01S
UTM: Zone-11 N3770934 E353565	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 500 ft

Location: TOPANGA CREEK, APPROX. 4 MILES WEST NORTHWEST OF SANTA MONICA, TOPANGA STATE PARK AND STATE BEACH, TOPANGA AND FERNWOOD.

Location Detail: TOPANGA CANYON FROM PACIFIC OCEAN UPSTREAM TO TOPANGA AND OLD TOPANGA CANYON TO HONDO CANYON.

Ecological: SOUTHERN SYCAMORE ALDER RIPARIAN WOODLAND, THICKETS OF HERBACEOUS UNDERSTORY IN MANY PLACES. THE STREAM'S HIGH-GRADIENT ASPECT, AND A WIDE BEACH AT THE MOUTH, MAY RESULT IN STEELHEAD PASSAGE PROBLEMS UNDER LOW FLOW CONDITIONS.

Threat:

General: STEELHEAD FROM 10-32 CM OBSERVED IN 1979. ADULTS FOUND IN POOLS UPSTREAM OF LAGOON IN 1990. TOPANGA CREEK HAS RELATIVELY HIGH POTENTIAL FOR STEELHEAD RESTORATION, BASED ON OBSERVED FLOW, SUBSTRATE, STREAM MORPHOLOGY, & RIPARIAN CONDITIONS.

Owner/Manager: DPR, PVT, CITY OF LOS ANGELES

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 74	Map Index: 17722	EO Index: 28111	Dates Last Seen
Occ Rank: Unknown			Element: 1966-XX-XX
Origin: Natural/Native occurrence			Site: 1966-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-11-27

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.00175° / -118.80670°	Township: 02S
UTM: Zone-11 N3763821 E333148	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 07 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 120 ft

Location: POINT DUME.

Location Detail:

Ecological:

Threat:

General: COLLECTION RECORD TAKEN FROM 1980 MCGURTY REPORT TO DFG.

Owner/Manager: DPR-POINT DUME SB

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 120	Map Index: 00828	EO Index: 28086	— Dates Last Seen —
Occ Rank: Unknown			Element: 198X-XX-XX
Origin: Natural/Native occurrence			Site: 198X-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-11-14

Quad Summary: Topanga (3411815/112D), Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.08972° / -118.64259°	Township: 01S
UTM: Zone-11 N3773322 E348461	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 10 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,800 ft

Location: STUNTS RANCH AND COLD CREEK PRESERVE.

Location Detail: OBSERVATION INCLUDED IN A CHECKLIST OF THE FAUNA OF THE COLD CREEK WATERSHED, SANTA MONICA MTNS. ELEV 1000 TO 2100 FT.

Ecological:

Threat:

General: COLD CREEK PRESERVE RECENTLY TRANSFERRED FROM TNC TO THE MOUNTAINS RESTORATION TRUST (MRT).

Owner/Manager: UNKNOWN

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 124	Map Index: 00696	EO Index: 28085	Dates Last Seen
Occ Rank: Unknown			Element: 1962-05-05
Origin: Natural/Native occurrence			Site: 1962-05-05
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-01-23

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.08500° / -118.70731°	Township: 01S
UTM: Zone-11 N3772896 E342481	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 18 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 500 ft

Location: TAPIA PARK, SANTA MONICA MTNS.

Location Detail:

Ecological:

Threat:

General: LACM SPECIMENS #19855, COLLECTED 9 APR 1949, #19871-72 COLLECTED 27 MAR & 16 MAY 1948. #26963 COLLECTED 5 MAY 1962.

Owner/Manager: LAX COUNTY

Phrynosoma blainvillii coast horned lizard			Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists	
Federal: None State: None	Global: G4G5 State: S3S4	CDFG Status: SC	
Habitat Associations			
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.			
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.			

Occurrence No. 126	Map Index: 00835	EO Index: 28082	Dates Last Seen
Occ Rank: Unknown			Element: 1968-04-21
Origin: Natural/Native occurrence			Site: 1968-04-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-01-23

Quad Summary: Canoga Park (3411825/112A), Topanga (3411815/112D), Calabasas (3411826/112B), Malibu Beach (3411816/112C)
County Summary: Los Angeles

Lat/Long: 34.12810° / -118.63806°	Township: 01N
UTM: Zone-11 N3777571 E348948	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 35 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,200 ft

Location: TOPANGA CANYON; WEST RIDGE, 2.5 MI SW WOODLAND HILLS.
Location Detail:
Ecological:
Threat:
General: LACM SPECIMEN #101329. COLLECTED 21 APR 1968 BY S.E. COHEN.
Owner/Manager: UNKNOWN

Phrynosoma blainvillii

coast horned lizard

Element Code: ARACF12100

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	

Habitat Associations

General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.

Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.

Occurrence No. 136	Map Index: 00459	EO Index: 28075	— Dates Last Seen —
Occ Rank: Unknown			Element: 1960-04-11
Origin: Natural/Native occurrence			Site: 1960-04-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-01-23

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.08111° / -118.79871°	Township: 01S
UTM: Zone-11 N3772609 E334040	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 18 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,900 ft

Location: LATIGO CANYON, 7 MI N OF JCT OF COAST HWY 101, SANTA MONICA MOUNTAINS.

Location Detail: MAPPED IN VICINITY OF LATIGO CANYON RD.

Ecological:

Threat:

General: LACM SPECIMENS #101327-8 COLLECTED 11 APR 1960 BY K.D. PEYTON.

Owner/Manager: UNKNOWN

Phrynosoma blainvillii

coast horned lizard

Element Code: ARACF12100

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	

Habitat Associations

General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.

Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.

Occurrence No. 156	Map Index: 00801	EO Index: 28058	— Dates Last Seen —
Occ Rank: Unknown			Element: 1953-02-XX
Origin: Natural/Native occurrence			Site: 1953-02-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1989-08-10

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09500° / -118.65509°	Township: 01S
UTM: Zone-11 N3773926 E347318	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 10 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 1,300 ft

Location: STUNTS RANCH, 4 MI S CALABASAS, SANTA MONICA MTNS.

Location Detail:

Ecological:

Threat:

General: LACM SPECIMEN #19870.

Owner/Manager: PVT

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 202	Map Index: 00807	EO Index: 28021	Dates Last Seen
Occ Rank: Unknown			Element: 1954-04-14
Origin: Natural/Native occurrence			Site: 1954-04-14
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 1989-08-10

Quad Summary: Calabasas (3411826/112B)
County Summary: Los Angeles, Ventura

Lat/Long: 34.17082° / -118.65092°	Township: 01N
UTM: Zone-11 N3782327 E347839	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 15 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,000 ft

Location: 1 MI W WOODLAND HILLS, N OF VENTURA FREEWAY (HWY 101).
Location Detail:
Ecological:
Threat:
General: SSC SPECIMEN #183.
Owner/Manager: UNKNOWN

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 203	Map Index: 00880	EO Index: 28022	Dates Last Seen
Occ Rank: Good			Element: 2000-06-16
Origin: Natural/Native occurrence			Site: 2000-06-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-06-29

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.26703° / -118.58725°	Township: 02N
UTM: Zone-11 N3792904 E353874	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 08 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,450 ft

Location: SOUTH END OF DEVIL CANYON, SANTA SUSANA MOUNTAINS, 5 MILES WEST OF GRANADA HILLS.

Location Detail:

Ecological: CANYON BOTTOM IS VEGETATED BY SOUTHERN MIXED RIPARIAN FOREST.

Threat: THREATENED BY DEVELOPMENT OF ADJACENT AREAS.

General: LACM SPECIMEN #19883, COLLECTED ON 31 MAY 1947. 1 ADULT OBSERVED BASKING, WITH AN ANT COLONY NEARBY, 16 JUN 2000.

Owner/Manager: PVT

Phrynosoma blainvillii

coast horned lizard

Element Code: ARACF12100

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: None
State: None

Global: G4G5
State: S3S4

CDFG Status: SC

----- **Habitat Associations** -----

General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.

Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.

Occurrence No. 407

Map Index: 26373

EO Index: 3795

----- **Dates Last Seen** -----

Occ Rank: Good

Origin: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Element: 1993-04-25

Site: 1993-04-25

Record Last Updated: 1995-02-23

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.10500° / -118.60811°

UTM: Zone-11 N3774965 E351670

Mapping Precision: SPECIFIC

Symbol Type: POLYGON

Area: 11.1 acres

Township: 01S

Range: 17W

Section: 01 **Qtr:** SE

Meridian: S

Elevation: 1,400 ft

Location: GREENLEAF CANYON, 1 MILE NORTH OF TOPANGA CANYON BLVD, SANTA MONICA MOUNTAINS.

Location Detail: LOCATED ALONG AN UNPAVED ACCESS ROAD.

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB ON LOOSE, COARSE, SANDY SOIL; ASSOCIATED PLANTS INCLUDE LOTUS SCOPARIUS SCOPARIUS AND ADENOSTOMA FASCICULATUM.

Threat: THREATENED BY DEVELOPMENT.

General: 2 ADULTS AND 2 JUVENILES WERE OBSERVED ON 25 APRIL 1993.

Owner/Manager: PVT

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 457	Map Index: 46979	EO Index: 46979	— Dates Last Seen —
Occ Rank: Poor			Element: 2001-09-19
Origin: Natural/Native occurrence			Site: 2001-09-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-01-15

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.30549° / -118.60197°	Township: 03N
UTM: Zone-11 N3797190 E352586	Range: 16W
Mapping Precision: SPECIFIC	Section: 31 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,631 ft

Location: JUST WEST OF BROWNS CANYON ROAD, IN THE SANTA SUSANNA MOUNTAINS

Location Detail:

Ecological: HABITAT CONSISTS OF CHAPARRAL.

Threat: THREATENED BY ROAD MAINTENANCE AND GRAZING.

General: 1 JUVENILE OBSERVED FORAGING NEAR ROAD ON 19 SEP 2001.

Owner/Manager: PVT

Phrynosoma blainvillii		Element Code: ARACF12100	
coast horned lizard			
Status		NDDB Element Ranks	
Federal: None		Global: G4G5	
State: None		State: S3S4	
Habitat Associations		Other Lists	
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		CDFG Status: SC	
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.			

Occurrence No. 494	Map Index: 52852	EO Index: 52852	Dates Last Seen
Occ Rank: Good			Element: 2002-05-28
Origin: Natural/Native occurrence			Site: 2002-05-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-10-08

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.33752° / -118.85580°	Township: 03N
UTM: Zone-11 N3801140 E329290	Range: 19W
Mapping Precision: SPECIFIC	Section: 15 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,700 ft

Location: BIG MOUNTAIN AREA, 4 MILES NNE OF MOORPARK

Location Detail:

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB, BISECTED BY FIRE/UTILITY ACCESS ROADS.

Threat:

General: 2 ADULTS OBSERVED ON 28 MAY 2002.

Owner/Manager: UNKNOWN

Phrynosoma blainvillii

coast horned lizard

Element Code: ARACF12100

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: None
State: None

Global: G4G5
State: S3S4

CDFG Status: SC

----- **Habitat Associations** -----

General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.

Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.

Occurrence No. 495

Map Index: 52853

EO Index: 52853

----- **Dates Last Seen** -----

Occ Rank: Good

Origin: Natural/Native occurrence

Presence: Presumed Extant

Trend: Unknown

Element: 2002-05-28

Site: 2002-05-28

Record Last Updated: 2003-10-08

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.34738° / -118.85045°

UTM: Zone-11 N3802225 E329802

Mapping Precision: SPECIFIC

Symbol Type: POLYGON

Area: 15.3 acres

Township: 03N

Range: 19W

Section: 15 **Qtr:** NE

Meridian: S

Elevation: 1,400 ft

Location: BIG MOUNTAIN AREA, 4.5 MILES NNE OF MOORPARK

Location Detail:

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB, BISECTED BY FIRE/UTILITY ACCESS ROADS.

Threat:

General: 2 ADULTS OBSERVED ON 28 MAY 2002.

Owner/Manager: UNKNOWN

Phrynosoma blainvillii coast horned lizard			Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists	
Federal: None State: None	Global: G4G5 State: S3S4	CDFG Status: SC	
Habitat Associations			
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.			
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.			

Occurrence No. 496	Map Index: 52854	EO Index: 52854	Dates Last Seen
Occ Rank: Good			Element: 2002-05-28
Origin: Natural/Native occurrence			Site: 2002-05-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-10-08

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.35005° / -118.83945°	Township: 03N
UTM: Zone-11 N3802503 E330820	Range: 19W
Mapping Precision: SPECIFIC	Section: 14 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,600 ft

Location: BIG MOUNTAIN AREA, 5 MILES NNE OF MOORPARK

Location Detail:

Ecological: HABITAT CONSISTS OF COASTAL SAGE SCRUB, BISECTED BY FIRE/UTILITY ACCESS ROADS.

Threat:

General: 1 ADULT OBSERVED ON 28 MAY 2002.

Owner/Manager: UNKNOWN

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 579	Map Index: 39830	EO Index: 34832	Dates Last Seen
Occ Rank: Good			Element: 1991-11-02
Origin: Natural/Native occurrence			Site: 1991-11-02
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-09-28

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.06362° / -118.77808°	Township: 01S
UTM: Zone-11 N3770636 E335910	Range: 18W
Mapping Precision: SPECIFIC	Section: 21 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,225 ft

Location: LATIGO CANYON ROAD, 4.4 (ROAD) MILES N (2.7 AIR MILES NNW) OF JUNCTION WITH HIGHWAY 1, 4.7 MILES NE OF POINT DUME.

Location Detail: FOUND ON GRADED PAD.

Ecological: CHAPARRAL COMMUNITY; LOOSE, COARSE, SANDY SOIL. IN ASSOCIATION WITH LOTUS SCOPARIUS (DEERBUSH).

Threat: DWELLING TO BE BUILT ON THE PAD.

General: 4 JUVENILES OBSERVED, 1991. NOTED AS BEING INTERGRADES.

Owner/Manager: PVT

Phrynosoma blainvillii		Element Code: ARACF12100
coast horned lizard		
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 670	Map Index: 71371	EO Index: 72270	Dates Last Seen
Occ Rank: Excellent			Element: 2008-04-16
Origin: Natural/Native occurrence			Site: 2008-04-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-05-27

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.29222° / -118.81000°	Township: 03N
UTM: Zone-11 N3796041 E333414	Range: 18W
Mapping Precision: SPECIFIC	Section: 31 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 780 ft

Location: ALAMOS CANYON, 150 METERS NORTH OF STATE ROUTE 118, NORTHWEST OF SIMI VALLEY.

Location Detail: JUST EAST OF ALAMOS CANYON ROAD.

Ecological: HABITAT CONSISTS OF AN UPLAND AREA. THE OVERALL AREA IS COMPRISED OF OPEN AND A RIPARIAN ZONE. NUMEROUS NON-ARGENTINE ANT COLONIES WERE PRESENT IN THE IMMEDIATE AREA.

Threat:

General: 1 ADULT OBSERVED UNDER A SMALL WEEDY BUSH AT 11 AM ON 16 APR 2008. ESTIMATED TEMPERATURE: 75 DEGREES F.

Owner/Manager: PVT-WASTE MANAGEMENT

Phrynosoma blainvillii		
coast horned lizard		Element Code: ARACF12100
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4G5	CDFG Status: SC
State: None	State: S3S4	
Habitat Associations		
General: FREQUENTS A WIDE VARIETY OF HABITATS, MOST COMMON IN LOWLANDS ALONG SANDY WASHES WITH SCATTERED LOW BUSHES.		
Micro: OPEN AREAS FOR SUNNING, BUSHES FOR COVER, PATCHES OF LOOSE SOIL FOR BURIAL, & ABUNDANT SUPPLY OF ANTS & OTHER INSECTS.		

Occurrence No. 762	Map Index: 81914	EO Index: 82888	Dates Last Seen
Occ Rank: Unknown			Element: 1958-08-21
Origin: Natural/Native occurrence			Site: 1958-08-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2011-03-03

Quad Summary: Oat Mountain (3411835/138D), San Fernando (3411834/137C), Mint Canyon (3411844/137B), Newhall (3411845/138A)
County Summary: Los Angeles

Lat/Long: 34.38287° / -118.50526°	Township: 04N
UTM: Zone-11 N3805636 E361613	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 36 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,345 ft

Location: PLACERITA CANYON, JUST E OF NEWHALL (TOWN) & W OF HWY14.
Location Detail: SDNHM #4428 STATED LOCALITY " PLACERITA CANYON, NEAR NEWHALL" & #19361 STATED LOCALITY "PLACERITA CANYON." MAPPED TO COORDINATES PROVIDED BY SDNHM #4428. EXACT LOCATIONS ARE UNKNOWN.
Ecological:
Threat:
General: SDNHM SPECIMEN #4428 (25 APRIL 1931) AND #19361 (21 AUG 1958).
Owner/Manager: CITY OF SANTA CLARITA, UNKNOWN

Polioptila californica californica

coastal California gnatcatcher

Element Code: ABPBJ08081

Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G3T2 State: S2	CDFG Status: SC

Habitat Associations

General: OBLIGATE, PERMANENT RESIDENT OF COASTAL SAGE SCRUB BELOW 2500 FT IN SOUTHERN CALIFORNIA.
Micro: LOW, COASTAL SAGE SCRUB IN ARID WASHES, ON MESAS & SLOPES. NOT ALL AREAS CLASSIFIED AS COASTAL SAGE SCRUB ARE OCCUPIED.

Occurrence No. 482	Map Index: 33296	EO Index: 2092	— Dates Last Seen —
Occ Rank: Good			Element: 1995-07-27
Origin: Natural/Native occurrence			Site: 1995-07-27
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-09-28

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.29056° / -118.87402°	Township: 02N
UTM: Zone-11 N3795963 E327518	Range: 19W
Mapping Precision: SPECIFIC	Section: 04 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 4.0 acres	Elevation: 650 ft

Location: 0.5 MILE NORTH OF MOORPARK AND LITTLE SIMI VALLEY.

Location Detail:

Ecological: HABITAT CONSISTS OF VENTURAN COASTAL SAGE SCRUB & SOUTHERN CACTUS SCRUB, DOMINATED BY CALIFORNIA SAGEBRUSH, WITH COYOTE BUSH, PURPLE SAGE, & COASTAL PRICKLY PEAR PRESENT. SURROUNDING AREA IS DEVELOPED TO THE SOUTH & EAST.

Threat: THREATENED BY DEVELOPMENT AND FREEWAY CONSTRUCTION.

General: ONE JUVENILE/FEMALE OBSERVED ON 14, 18, 20, AND 27 JUNE AND 27 JULY 1995.

Owner/Manager: PVT

Polioptila californica californica

coastal California gnatcatcher

Element Code: ABPBJ08081

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G3T2	CDFG Status: SC
State: None	State: S2	

Habitat Associations

General: OBLIGATE, PERMANENT RESIDENT OF COASTAL SAGE SCRUB BELOW 2500 FT IN SOUTHERN CALIFORNIA.
Micro: LOW, COASTAL SAGE SCRUB IN ARID WASHES, ON MESAS & SLOPES. NOT ALL AREAS CLASSIFIED AS COASTAL SAGE SCRUB ARE OCCUPIED.

Occurrence No. 615	Map Index: 48429	EO Index: 48429	— Dates Last Seen —
Occ Rank: Fair			Element: 2002-07-18
Origin: Natural/Native occurrence			Site: 2002-07-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-08-01

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles, Ventura

Lat/Long: 34.16681° / -118.70276°	Township: 01N
UTM: Zone-11 N3781961 E343053	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 18 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 950 ft

Location: WEST SIDE OF THE NORTH END OF LAS VIRGENES ROAD, WEST OF WOODLAND HILLS

Location Detail: SITE IS LOCATED BETWEEN THE BOUNDARY OF LAND OWNED BY THE SANTA MONICA MOUNTAINS CONSERVANCY AND MONT CALABASAS DEVELOPMENT.

Ecological: HABITAT CONSISTS OF A PATCH OF COASTAL SAGE SCRUB.

Threat: THREATENED BY THE ONGOING MONT CALABASAS DEVELOPMENT.

General: 1 INDIVIDUAL HEARD CALLING ON 18 JUL 2002.

Owner/Manager: PVT

Polioptila californica californica

coastal California gnatcatcher

Element Code: ABPBJ08081

Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G3T2	CDFG Status: SC
State: None	State: S2	

Habitat Associations

General: OBLIGATE, PERMANENT RESIDENT OF COASTAL SAGE SCRUB BELOW 2500 FT IN SOUTHERN CALIFORNIA.
Micro: LOW, COASTAL SAGE SCRUB IN ARID WASHES, ON MESAS & SLOPES. NOT ALL AREAS CLASSIFIED AS COASTAL SAGE SCRUB ARE OCCUPIED.

Occurrence No. 865	Map Index: 71244	EO Index: 72148	— Dates Last Seen —
Occ Rank: Fair			Element: 2008-06-25
Origin: Natural/Native occurrence			Site: 2008-06-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-08-03

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.26918° / -118.85844°	Township: 02N
UTM: Zone-11 N3793566 E328908	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 10 Qtr: W
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 600 ft

Location: LITTLE SIMI VALLEY, NORTHWEST OF STATE HWY 23 AND TIERRA REJADA RD, MOORPARK.

Location Detail: 1998 DETECTION FROM THIS GENERAL VICINITY. 2008 RECORD FROM 0.44 MI NW OF HWY 23 & TIERRA REJADA RD IN REMNANT COASTAL SAGE SCRUB/CACTUS SCRUB AT END OF SHAWNEE ST.

Ecological: HIGHLY FRAGMENTED REMNANT COASTAL SAGE/CACTUS SCRUB MANAGED BY THE MOUNTAINS RECREATION AND CONSERVATION AUTHORITY.

Threat: INCREASING DEVELOPMENT APPARENT FROM AERIAL IMAGES 1994-2009. FUEL MODIFICATION NEAR RESIDENTIAL DEVELOPMENT, CATS.

General: 1 DETECTED ON 13 JAN 1998 BY A. LEVERETT (GLENN LUKOS ASSOCIATES). 2 ADULTS & 3 JUVENILES OBSERVED 25 JUN 2008.

Owner/Manager: MTNS REC & CONS AUTHORITY

Rana draytonii

California red-legged frog

Element Code: AAABH01022

Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G4T2T3 State: S2S3	CDFG Status: SC

Habitat Associations

General: LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Occurrence No. 645	Map Index: 51484	EO Index: 51484	— Dates Last Seen —
Occ Rank: Excellent			Element: 2000-09-01
Origin: Natural/Native occurrence			Site: 2000-09-01
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-06-05

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.17490° / -118.69862°	Township: 01N
UTM: Zone-11 N3782852 E343449	Range: 17W
Mapping Precision: SPECIFIC	Section: 18 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 17.8 acres	Elevation: 900 ft

Location: EAST LAS VIRGENES CREEK, 0.3 MILE UPSTREAM FROM THE CONFLUENCE WITH LAS VIRGENES CREEK, WEST OF SAN FERNANDO VALLEY.

Location Detail: OCCUPIED HABITAT CONSISTS OF A 260-YARD REACH OF PERENNIAL STREAM; 10 POOL TERRACES, 5-60 YARDS APART.

Ecological: HABITAT CONSISTS OF RIPARIAN, DOMINATED BY RED WILLOW, ARROYO WILLOW, VALLEY OAK, COAST LIVE OAK, BLACKBERRY, & STINGING NETTLE. SURROUNDING SLOPES ARE COMPOSED OF VENTURAN COASTAL SAGE SCRUB & NON-NATIVE GRASSLAND.

Threat: THREATENED BY PROPOSED DEVELOPMENT (FORMERLY A CATTLE RANCH); A HABITAT MANAGEMENT PLAN WILL PROTECT THE FROG HABITAT.

General: 21 ADULTS AND 200 METAMORPHS OBSERVED ON DURING SURVEYS CONDUCTED 15 AUG-1 NOV 1999. 21 ADULTS, 10 JUVENILES, AND 30-60 METAMORPHS OBSERVED ON 1 SEP 2000.

Owner/Manager: PVT-AHMANSON RANCH

Rana draytonii

California red-legged frog

Element Code: AAABH01022

Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G4T2T3 State: S2S3	CDFG Status: SC

Habitat Associations

General: LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.

Micro: REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.

Occurrence No. 1115	Map Index: 75405	EO Index: 76404	— Dates Last Seen —
Occ Rank: Good			Element: 2009-05-28
Origin: Natural/Native occurrence			Site: 2009-05-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-06-04

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.17773° / -118.70721°	Township: 01N
UTM: Zone-11 N3783179 E342662	Range: 17W
Mapping Precision: SPECIFIC	Section: 07 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 940 ft

Location: LAS VIRGENES CREEK (VIRGENES CANYON), 2.1 MI NNW OF BRENTS JUNCTION, ANGOURA HILLS.

Location Detail:

Ecological: VEGETATION CONSISTS OF WILLOW/MULEFAT RIPARIAN SCRUB. UPLANDS CONSIST PRIMARILY OF GRASSLANDS.

Threat: FIRE OR FLOOD RELATED EROSION AND SILTATION OF POOLS.

General: 1 ADULT OBSERVED IN A PLUNGE POOL OF THE MAINSTEM OF LAS VIRGENES CREEK.

Owner/Manager: SANTA MONICA MTNS CONS

Riparia riparia		
bank swallow		
		Element Code: ABPAU08010
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status:
State: Threatened	State: S2S3	
Habitat Associations		
General: COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT.		
Micro: REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.		

Occurrence No. 111	Map Index: 00257	EO Index: 25179	— Dates Last Seen —
Occ Rank: Unknown			Element: 1864-06-02
Origin: Natural/Native occurrence			Site: 1864-06-02
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1991-05-07

Quad Summary: Point Dume (3411817/113D), Thousand Oaks (3411827/113A), Newbury Park (3411828/113B)
County Summary: Ventura

Lat/Long: 34.13879° / -118.87033°	Township: 01N
UTM: Zone-11 N3779124 E327549	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 28 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,000 ft

Location: LAKE SHERWOOD, APPROX 3 MI SE OF THOUSAND OAKS.
Location Detail:
Ecological:
Threat:
General: OOLOGICAL COLLECTION; EGGS TAKEN FROM NEST IN DIRT BANK.
Owner/Manager: UNKNOWN

Socalchemmis gertschi

Gertsch's socalchemmis spider

Element Code: ILARAU7010

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G1	CDFG Status:
State: None	State: S1	

_____ **Habitat Associations** _____

General: KNOWN FROM ONLY 2 LOCALITIES IN LOS ANGELES COUNTY: BRENTWOOD (TYPE LOCALITY) AND TOPANGA CANYON.

Micro:

Occurrence No. 2	Map Index: 59495	EO Index: 59531	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1982-11-20
Origin: Natural/Native occurrence			Site: 1982-11-20
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-01-20

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.12844° / -118.63642°	Township: 01N
UTM: Zone-11 N3777606 E349100	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 35 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,260 ft

Location: OLD TOPANGA CANYON RD., 4.7 MILES FROM ROUTE 27

Location Detail:

Ecological:

Threat:

General: ONE MALE COLLECTED.

Owner/Manager: UNKNOWN

Socalchemmis gertschi		
Gertsch's socalchemmis spider		Element Code: ILARAU7010
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1	CDFG Status:
State: None	State: S1	
Habitat Associations		
General: KNOWN FROM ONLY 2 LOCALITIES IN LOS ANGELES COUNTY: BRENTWOOD (TYPE LOCALITY) AND TOPANGA CANYON.		
Micro:		

Occurrence No. 3	Map Index: 34074	EO Index: 59533	— Dates Last Seen —
Occ Rank: Unknown			Element: 1997-05-04
Origin: Natural/Native occurrence			Site: 1997-05-04
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-01-20

Quad Summary: Topanga (3411815/112D)
County Summary: Los Angeles

Lat/Long: 34.06892° / -118.58689°	Township: 01S
UTM: Zone-11 N3770934 E353565	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 500 ft

Location: TOPANGA CANYON
Location Detail:
Ecological:
Threat:
General: EXACT LOCATION UNKNOWN; MAPPED AT LOWER END OF CANYON OFF HWY 1. ONE FEMALE COLLECTED.
Owner/Manager: DPR, PVT, CITY OF LOS ANGELES

Spea hammondii		Element Code: AAABF02020	
western spadefoot			
Status		NDDB Element Ranks	
Federal: None	Global: G3	Other Lists	
State: None	State: S3	CDFG Status: SC	
Habitat Associations			
General: OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.			
Micro: VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.			

Occurrence No. 163	Map Index: 39620	EO Index: 34622	Dates Last Seen
Occ Rank: Fair			Element: 2000-03-10
Origin: Natural/Native occurrence			Site: 2000-03-10
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2001-05-22

Quad Summary: Santa Susana (3411836/138C)

County Summary: Ventura

Lat/Long: 34.26413° / -118.68221°	Township: 02N
UTM: Zone-11 N3792723 E345125	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 17 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 1,080 ft

Location: WEST OF BLACK CANYON, AT SANTA SUSANA KNOLLS

Location Detail: SITE IS LOCATED ALONG THE SIDE OF A DIRT ACCESS ROAD, SOUTH OF THE SPRR TRACKS AND ARROYO SIMI.

Ecological: HABITAT CONSISTS OF A SMALL, DRYING EPHEMERAL POOL; SURROUNDED BY OAK SAVANNAH WITH A DENSE NON-NATIVE GRASS/MUSTARD UNDERSTORY.

Threat: THREATENED BY A PROPOSED DEVELOPMENT.

General: 12 TADPOLES OBSERVED ON 3 JUN 1998. 16 ADULTS OBSERVED ON 10 MAR 2000.

Owner/Manager: PVT

Spea hammondii		
western spadefoot		Element Code: AAABF02020
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S3	
_____ Habitat Associations _____		
General: OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.		
Micro: VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.		

Occurrence No. 179	Map Index: 42740	EO Index: 42740	— Dates Last Seen —
Occ Rank: Excellent			Element: 2000-03-24
Origin: Natural/Native occurrence			Site: 2000-03-24
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-04-12

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.30964° / -118.53177°	Township: 03N
UTM: Zone-11 N3797551 E359053	Range: 16W
Mapping Precision: SPECIFIC	Section: 26 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 16.5 acres	Elevation: 2,490 ft

Location: JUST SW OF MISSION POINT, NORTH OF GRANADA HILLS.

Location Detail: PONDS ARE LOCATED WITHIN A DRAINAGE DEPRESSION NEAR THE TOP OF THE SANTA SUSANNA MOUNTAINS.

Ecological: HABITAT CONSISTS OF A SERIES OF SMALL SEEP PONDS; SURROUNDED BY NATIVE AND NON-NATIVE GRASSLAND, WITH CHAPARRAL NEARBY.

Threat:

General: 3 TOADS WERE HEARD CALLING IN THE PONDS AND UP TO 100 YARDS AWAY FROM PONDS ON 3 AND 12 MAR 2000. AS MANY AS 30 TADPOLES WERE FOUND DEAD/DYING ON 24 MAR 2000; 7 LIVING TADPOLES WERE SALVAGED.

Owner/Manager: UNKNOWN

Spea hammondii		Element Code: AAABF02020	
western spadefoot			
Status		NDDB Element Ranks	
Federal: None	Global: G3	Other Lists	
State: None	State: S3	CDFG Status: SC	
Habitat Associations			
General: OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.			
Micro: VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.			

Occurrence No. 332 **Map Index:** 63622 **EO Index:** 63717 **— Dates Last Seen —**
Occ Rank: Good **Element:** 2000-03-XX
Origin: Natural/Native occurrence **Site:** 2000-03-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2006-01-09

Quad Summary: Simi (3411837/139D)
County Summary: Ventura

Lat/Long: 34.30408° / -118.77622°	Township: 03N
UTM: Zone-11 N3797301 E336546	Range: 18W
Mapping Precision: SPECIFIC	Section: 33 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 3.1 acres	Elevation: 1,055 ft

Location: ~2.25 MILES NE OF THE INTERSECTION OF BREA CANYON ROAD AND HIGHWAY 118, SIMI VALLEY
Location Detail:
Ecological: HABITAT CONSISTS OF A CATTLE POND WITHIN A GRAZED AREA DOMINATED BY ANNUAL GRASSLAND TUCKED AGAINST BASE OF FOOTHILLS DOMINATED BY COASTAL SAGE SCRUB.
Threat: POSSIBLY THREATENED BY CATTLE GRAZING AND STOCKPOND "MAINTENANCE."
General: 100'S OF TADPOLES OBSERVED DURING MAR 2000.
Owner/Manager: PVT-UNOCAL

Spea hammondii		
western spadefoot		Element Code: AAABF02020
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S3	
Habitat Associations		
General: OCCURS PRIMARILY IN GRASSLAND HABITATS, BUT CAN BE FOUND IN VALLEY-FOOTHILL HARDWOOD WOODLANDS.		
Micro: VERNAL POOLS ARE ESSENTIAL FOR BREEDING AND EGG-LAYING.		

Occurrence No. 334	Map Index: 63638	EO Index: 63733	— Dates Last Seen —
Occ Rank: Excellent			Element: 2003-04-22
Origin: Natural/Native occurrence			Site: 2003-04-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-01-10

Quad Summary: Simi (3411837/139D)
County Summary: Ventura

Lat/Long: 34.30090° / -118.82267°	Township: 03N
UTM: Zone-11 N3797024 E332265	Range: 19W
Mapping Precision: SPECIFIC	Section: 36 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 2.3 acres	Elevation: 935 ft

Location: ~1.1 MILES NW OF THE INTERSECTION OF ALAMOS CANYON ROAD AND HIGHWAY 118, SIMI VALLEY
Location Detail: SITE IS LOCATED ON OPEN SPACE; MOORPARK COLLEGE IS LOCATED IMMEDIATELY TO THE SW.
Ecological: HABITAT CONSISTS OF A VERNAL POOL SURROUNDED BY OPEN, NATIVE AND ANNUAL GRASSLAND ON A GENTLY SLOPING, BROAD RIDGE.
Threat: THREATENED BY CATTLE GRAZING AND FUTURE DEVELOPMENT.
General: 100'S OF POST-METAMORPHIC JUVENILES OBSERVED ON 22 APR 2003.
Owner/Manager: PVT-UNOCAL

Streptocephalus woottoni

Riverside fairy shrimp

Element Code: ICBRA07010

Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G1 State: S1	CDFG Status:

Habitat Associations

General: ENDEMIC TO W RIV, ORA & SDG COUNTIES IN AREAS OF TECTONIC SWALES/EARTH SLUMP BASINS IN GRASSLAND & COASTAL SAGE SCRUB.

Micro: INHABIT SEASONALLY ASTATIC POOLS FILLED BY WINTER/SPRING RAINS. HATCH IN WARM WATER LATER IN THE SEASON.

Occurrence No. 9	Map Index: 39360	EO Index: 34362	— Dates Last Seen —
Occ Rank: Excellent			Element: 1998-03-01
Origin: Natural/Native occurrence			Site: 1998-03-01
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-08-10

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.26606° / -118.85556°	Township: 02N
UTM: Zone-11 N3793214 E329168	Range: 19W
Mapping Precision: SPECIFIC	Section: 10 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 4.6 acres	Elevation: 650 ft

Location: JUST NORTH OF THE INTERSECTION OF MOORPARK ROAD AND TIERRA REJADA ROAD, WEST OF SIMI.

Location Detail:

Ecological: HABITAT CONSISTS OF A SAGPOND/VERNAL POOL. OTHER RARE TAXA PRESENT: BRANCHINECTA LINDAHLI AND ORCUTTIA CALIFORNICA.

Threat:

General: 5-10K OBSERVED; 20 COLLECTED AND DEPOSITED AT LACM.

Owner/Manager: PVT

Taxidea taxus

American badger

Element Code: AMAJF04010

Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G5 State: S4	CDFG Status: SC

Habitat Associations

General: MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.
Micro: NEEDS SUFFICIENT FOOD, FRIABLE SOILS & OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.

Occurrence No. 392	Map Index: 70304	EO Index: 71193	— Dates Last Seen —
Occ Rank: Unknown			Element: 2006-07-10
Origin: Natural/Native occurrence			Site: 2006-07-10
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-10-22

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.07390° / -118.81427°	Township: 01S
UTM: Zone-11 N3771835 E332590	Range: 18W
Mapping Precision: SPECIFIC	Section: 19 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,640 ft

Location: SANTA MONICA MTNS NATIONAL RECREATION AREA

Location Detail: AT NORTH END OF TUNNEL IN NORTHBOUND LANE OF KANAN-DUME ROAD, 0.2MI SOUTH OF NEWTON CYN RD.

Ecological: PREDOMINANTLY COASTAL SAGE SCRUB INTERMIXED WITH CHAPARRAL AND COAST LIVE OAK- CALIF. WALNUT WOODLAND IN DRAWS AND N-FACING SLOPES.

Threat: LARGE AMOUNT OF AUTOMOBILE TRAFFIC ON KANAN-DUME RD., DISTURBANCE BY HIKERS, WILDFIRE.

General: RIDGE ABOVE TUNNELS IS UNDISTURBED AND IS PROBABLY AN EFFECTIVE WILDLIFE CORRIDOR. BADGER WAS KILLED IN AUTOMOBILE COLLISION.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Taxidea taxus

American badger

Element Code: AMAJF04010

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G5	CDFG Status: SC
State: None	State: S4	

Habitat Associations

General: MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.
Micro: NEEDS SUFFICIENT FOOD, FRIABLE SOILS & OPEN, UNCULTIVATED GROUND. PREYS ON BURROWING RODENTS. DIGS BURROWS.

Occurrence No. 393	Map Index: 70306	EO Index: 71195	— Dates Last Seen —
Occ Rank: Unknown			Element: 2006-08-04
Origin: Natural/Native occurrence			Site: 2006-08-04
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-11-30

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.05470° / -118.79977°	Township: 01S
UTM: Zone-11 N3769683 E333891	Range: 18W
Mapping Precision: SPECIFIC	Section: 29 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,280 ft

Location: SANTA MONICA MTNS NATIONAL RECREATION AREA

Location Detail: ON SOUTHERN CALIF. EDISON TRANSMISSION-LINE ROAD ABOVE KANAN-DUME RD. AT DUME CYN MTNHWY.

Ecological: COAST LIVE OAK- CALIF. WALNUT WOODLAND ALONG THIS NORTH-FACING SLOPE(QUERCUS AGRIFOLIA, JUNGLANS CALIFORNICA, ETC.), BUT COASTAL SAGE SCRUB/CHAPARRAL ON SURROUNDING SLOPES (ADENOSTOMA FASC., SALVIA MELLIFERA, ETC).

Threat: NEARBY AUTOMOBILE TRAFFIC ON KANAN-DUME RD., DISTURBANCE BY HIKERS, WILDFIRE.

General: SINGLE INDIVIDUAL SEEN CROSSING OVERGROWN ROAD HEADED UPHILL. STRIPED SKUNK SEEN IN NEARLY EXACT SAME AREA HEADED SAME DIRECTION 1-2 MIN. EARLIER. OVERGROWN ROAD, GRADED 1 MONTH LATER.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Thamnophis hammondi

two-striped garter snake

Element Code: ARADB36160

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S2	

Habitat Associations

General: COASTAL CALIFORNIA FROM VICINITY OF SALINAS TO NORTHWEST BAJA CALIFORNIA. FROM SEA TO ABOUT 7,000 FT ELEVATION.

Micro: HIGHLY AQUATIC, FOUND IN OR NEAR PERMANENT FRESH WATER. OFTEN ALONG STREAMS WITH ROCKY BEDS AND RIPARIAN GROWTH.

Occurrence No. 4	Map Index: 23952	EO Index: 13496	— Dates Last Seen —
Occ Rank: Poor			Element: 1993-05-27
Origin: Natural/Native occurrence			Site: 1993-05-27
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1994-04-08

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.28073° / -118.80508°	Township: 02N
UTM: Zone-11 N3794758 E333845	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 06 Qtr: S
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 640 ft

Location: ARROYO SIMI, 0.7 MILE NW OF THE JUNCTION OF LOS ANGELES AVENUE AND MADERA ROAD, SIMI VALLEY.

Location Detail:

Ecological: HABITAT CONSISTS OF RIPARIAN SCRUB HABITAT, LOCATED ON THE TERRACES ELEVATED ABOVE THE FLOW OF THE ARROYO SIMI.

Threat: SINCE THE MAJORITY OF THE WATER IN ARROYO SIMI ORIGINATES FROM SEWAGE, POLLUTION IS MOST LIKELY A THREAT.

General: TWO JUVENILE SNAKES FOUND WITHIN THE ARROYO SIMI.

Owner/Manager: CITY OF SIMI VALLEY

Thamnophis hammondi

two-striped garter snake

Element Code: ARADB36160

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S2	

Habitat Associations

General: COASTAL CALIFORNIA FROM VICINITY OF SALINAS TO NORTHWEST BAJA CALIFORNIA. FROM SEA TO ABOUT 7,000 FT ELEVATION.

Micro: HIGHLY AQUATIC, FOUND IN OR NEAR PERMANENT FRESH WATER. OFTEN ALONG STREAMS WITH ROCKY BEDS AND RIPARIAN GROWTH.

Occurrence No. 49	Map Index: 39622	EO Index: 34624	— Dates Last Seen —
Occ Rank: Poor			Element: 1998-06-24
Origin: Natural/Native occurrence			Site: 1998-06-24
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-09-03

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.11963° / -118.78668°	Township: 01N
UTM: Zone-11 N3776861 E335225	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 32 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 780 ft

Location: TRIUNFO CREEK, NW OF THE INTERSECTION OF KANAN ROAD & RIUNFO ROAD, 2 MILES NW OF MALIBU LAKE.

Location Detail: FOUND WITHIN 100M OF TRIUNFO CREEK.

Ecological: HABITAT CONSISTS OF DISTURBED GRASSLAND/RUDERAL; DISTURBANCES INCLUDE DIRT ACCESS ROADS, RUBBISH DUMP, AND AN OLD, DETERIORATED BARN. VEGETATION INCLUDES MUSTARD, STAR THISTLE, AND BROME GRASSES.

Threat: THREATENED BY PROPOSED DEVELOPMENT.

General: 1 ADULT SNAKE OBSERVED ON 24 JUNE 1998.

Owner/Manager: PVT

Thamnophis hammondi

two-striped garter snake

Element Code: ARADB36160

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S2	

Habitat Associations

General: COASTAL CALIFORNIA FROM VICINITY OF SALINAS TO NORTHWEST BAJA CALIFORNIA. FROM SEA TO ABOUT 7,000 FT ELEVATION.

Micro: HIGHLY AQUATIC, FOUND IN OR NEAR PERMANENT FRESH WATER. OFTEN ALONG STREAMS WITH ROCKY BEDS AND RIPARIAN GROWTH.

Occurrence No. 99	Map Index: 64572	EO Index: 64651	— Dates Last Seen —
Occ Rank: Good			Element: 2006-03-29
Origin: Natural/Native occurrence			Site: 2006-03-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-04-28

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.29921° / -118.59560°	Township: 03N
UTM: Zone-11 N3796485 E353160	Range: 16W
Mapping Precision: SPECIFIC	Section: 31 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,410 ft

Location: BROWN'S CANYON CREEK, APPROXIMATELY 0.3 MILES UPSTREAM FROM MORMON CANYON, 3 MILES NORTH OF CHATSWORTH.

Location Detail: NW 1/4 OF SE 1/4 SECTION 31. MAPPED ACCORDING TO LOCATION SHOWN ON MAP PROVIDED.

Ecological: HABITAT CONSISTS OF A LARGE POOL WITHIN WILLOW RIPARIAN WOODLAND. VISIBLE DISTURBANCE INCLUDES AN ARIZONA CROSSING THAT HAS RECENTLY BEEN BLOCKED TO TRAFFIC, BUT IS STILL USED BY EQUESTRIANS.

Threat: THREATENED BY POSSIBLE FUTURE ADJACENT DEVELOPMENT.

General: 1 ADULT OBSERVED ON 29 MAR 2006.

Owner/Manager: UNKNOWN

Thamnophis hammondi		
two-striped garter snake		Element Code: ARADB36160
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CDFG Status: SC
State: None	State: S2	
Habitat Associations		
General: COASTAL CALIFORNIA FROM VICINITY OF SALINAS TO NORTHWEST BAJA CALIFORNIA. FROM SEA TO ABOUT 7,000 FT ELEVATION.		
Micro: HIGHLY AQUATIC, FOUND IN OR NEAR PERMANENT FRESH WATER. OFTEN ALONG STREAMS WITH ROCKY BEDS AND RIPARIAN GROWTH.		

Occurrence No. 129	Map Index: 80210	EO Index: 81194	Dates Last Seen
Occ Rank: Excellent			Element: 2010-05-28
Origin: Natural/Native occurrence			Site: 2010-05-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-10-25

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.11791° / -118.52290°	Township: 01S
UTM: Zone-11 N3776277 E359551	Range: 16W
Mapping Precision: SPECIFIC	Section: 02 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,275 ft

Location: ALONG FARMERS FIRE RD 0.4 MI SE OF JUNCTION WITH SULLIVAN FIRE RD. 0.8 MI S OF BM 1835, N END OF SULLIVAN CANYON.

Location Detail: NEAR WESTRIDGE-CANYONBACK WILDNESS PARK MOUNTAIN RECREATION AND CONSERVATION AUTHORITY AREA AND L.A. COUNTY SANITATION DISTRICT OPEN SPACE. MAPPED TO COORDINATES PROVIDED.

Ecological: HABITAT IS SYCAMORE RIPARIAN AND ARROYO WILLOW RIPARIAN SCRUB.

Threat: UTILITY MAINTENANCE OPERATIONS & RECREATIONAL USE SUCH AS BIKES, HIKING, & HORSES.

General: 1 ADULT WAS OBSERVED SUNNING ATOP ARTICULATED CONCRETE MATS WITHIN CREEK BED BY J. KIRSCHENSTEIN ON 28 MAY 2010.

Owner/Manager: LAX COUNTY, PVT

Thamnophis hammondi		
two-striped garter snake		Element Code: ARADB36160
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G3 State: S2	CDFG Status: SC
Habitat Associations		
General: COASTAL CALIFORNIA FROM VICINITY OF SALINAS TO NORTHWEST BAJA CALIFORNIA. FROM SEA TO ABOUT 7,000 FT ELEVATION.		
Micro: HIGHLY AQUATIC, FOUND IN OR NEAR PERMANENT FRESH WATER. OFTEN ALONG STREAMS WITH ROCKY BEDS AND RIPARIAN GROWTH.		

* SENSITIVE *

Occurrence No. 146	Map Index: 80644	EO Index: 81636	Dates Last Seen
Occ Rank: Unknown			Element: 2010-11-05
Origin: Natural/Native occurrence			Site: 2010-11-05
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-11-09

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

* SENSITIVE *

Lat/Long:	Township:	
UTM:	Range:	
Mapping Precision:	Section:	Qtr:
Symbol Type:	Meridian:	
Radius:	Elevation:	

Location: *SENSITIVE* Location information suppressed.

Location Detail: Please contact the California Natural Diversity Database, California Department of Fish and Game, for more information: (916) 324-3812.

Ecological: 25FT WIDE ASPHALT ROAD WITH CONCRETE DITCH. ABOUT 20M DOWNSLOPE, DITCH HAS FLOWING WATER FROM PIPE; FLOWS REGULARLY YEAR ROUND WITH WATER FROM RESIDENTIAL AREA UPSLOPE. REGULAR WATER HAS CREATED RIPARIAN HABITAT. OTHERWISE CHAPARRAL, CSS.

Threat: COUNTY FLOOD CONTROL DEBRIS BASIN AND VEHICLES ON ACCESS ROAD.

General:

Owner/Manager:

Trimerotropis occidentiloides		
Santa Monica grasshopper		Element Code: IIORT36300
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G1G2	CDFG Status:
State: None	State: S1S2	
_____ Habitat Associations _____		
General: KNOWN ONLY FROM THE SANTA MONICA MOUNTAINS.		
Micro: FOUND ON BARE HILLSIDES AND ALONG DIRT TRAILS IN CHAPARRAL.		

Occurrence No. 1 Map Index: 60399 EO Index: 60435 _____ Dates Last Seen _____
 Occ Rank: Unknown Element: 1972-06-27
 Origin: Natural/Native occurrence Site: 1972-06-27
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2005-03-08

Quad Summary: Point Dume (3411817/113D)
 County Summary: Los Angeles

Lat/Long: 34.08857° / -118.87342°	Township: 01S
UTM: Zone-11 N3773560 E327161	Range: 19W
Mapping Precision: SPECIFIC	Section: 16 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,850 ft

Location: SANTA MONICA MOUNTAINS.
 Location Detail: CORNER OF CALIFORNIA HWY 23 & MULHOLLAND HWY; THESE DIRECTIONS COULD REFER TO 2 LOCATIONS ABOUT 1.4 AIR MILES APART. MAPPED AT MORE SOUTHERN INTERSECTION ACCORDING TO CURRENT ROAD NAME USAGE.
 Ecological:
 Threat:
 General: TYPE LOCALITY; 19 MALES AND 1 FEMALE, INCLUDING HOLOTYPE AND ALLOTYPE.
 Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Trimerotropis occidentiloides

Santa Monica grasshopper

Element Code: IIORT36300

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G1G2	CDFG Status:
State: None	State: S1S2	

_____ **Habitat Associations** _____

General: KNOWN ONLY FROM THE SANTA MONICA MOUNTAINS.
Micro: FOUND ON BARE HILLSIDES AND ALONG DIRT TRAILS IN CHAPARRAL.

Occurrence No. 4	Map Index: 60470	EO Index: 60506	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1973-08-14
Origin: Natural/Native occurrence			Site: 1973-08-14
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-03-10

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.12978° / -118.77353°	Township: 01N
UTM: Zone-11 N3777967 E336457	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 33 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 1,200 ft

Location: PASS ON KANAN RD, 2.2 KM (1.4 MI) NE OF INTERSECTION KIMBERLEY AND SIERRA CREEK ROAD.

Location Detail:

Ecological:

Threat:

General: 7 MALES COLLECTED.

Owner/Manager: UNKNOWN

Vireo bellii pusillus

least Bell's vireo

Element Code: ABPBW01114

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: Endangered	Global: G5T2	CDFG Status:
State: Endangered	State: S2	

_____ **Habitat Associations** _____

General: SUMMER RESIDENT OF SOUTHERN CALIFORNIA IN LOW RIPARIAN IN VICINITY OF WATER OR IN DRY RIVER BOTTOMS; BELOW 2000 FT.

Micro: NESTS PLACED ALONG MARGINS OF BUSHES OR ON TWIGS PROJECTING INTO PATHWAYS, USUALLY WILLOW, BACCHARIS, MESQUITE.

Occurrence No. 130	Map Index: 00303	EO Index: 24960	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1985-07-XX
Origin: Natural/Native occurrence			Site: 1985-07-XX
Presence: Presumed Extant			
Trend: Increasing			Record Last Updated: 1996-01-02

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.29083° / -118.85121°	Township: 02N
UTM: Zone-11 N3795954 E329618	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 03 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation:

Location: ARROYO SIMI, BTWN COLLEGE VIEW AVE AND MOORPARK RD.

Location Detail:

Ecological: HABITAT IS DENSE RIPARIAN DOMINATED BY WILLOWS.

Threat: SOME AREA IS DESIGNATED AS OPEN SPACE; REMAINDER IS SLATED FOR FREEWAY CONSTRUCTION BY CALTRANS. COWBIRDS ABUNDANT.

General: FIRST OBSERVED IN 1983; 2 VIREOS OBSERVED AND UP TO 4 MORE INDIVIDUALS HEARD RESPONDING TO TAPED CALLS IN 1985. PVT OWNER IS SOUTHERN PACIFIC TRANSPORTATION COMPANY.

Owner/Manager: CALTRANS, VEN COUNTY, PVT

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**California Department of Fish and Game Natural Diversity
Database, Full Report for Selected Elements SSFL - Full
Report- 9 Quad Search Centered on Calabasas Quad**

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Astragalus brauntonii

Braunton's milk-vetch

Element Code: PDFAB0F1G0

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: Endangered

Global: G2

CNPS List: 1B.1

State: None

State: S2.1

----- **Habitat Associations** -----

General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.

Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR

Occurrence No. 2

Map Index: 41759

EO Index: 41759

----- **Dates Last Seen** -----

Occ Rank: None

Element: 1941-07-XX

Origin: Natural/Native occurrence

Site: 1941-07-XX

Presence: Possibly Extirpated

Trend: Unknown

Record Last Updated: 2007-03-27

Quad Summary: Canoga Park (3411825/112A), Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.09032° / -118.60408°

Township: 01S

UTM: Zone-11 N3773332 E352016

Range: 16W

Mapping Precision: NON-SPECIFIC

Section: 07 **Qtr:** XX

Symbol Type: POLYGON

Meridian: S

Area:

Elevation:

Location: TOPANGA CANYON.

Location Detail: EXACT LOCATION WITHIN CANYON NOT KNOWN. SITE MAPPED TO INCLUDE LENGTH OF ENTIRE CANYON. PRESUMABLY NEAR FERNWOOD ACCORDING TO C. SPENGER.

Ecological:

Threat:

General: MAIN SOURCES OF INFORMATION FOR THIS SITE ARE A 1917 COLLECTION BY PEIRSON AND 1941 COLLECTIONS BY BARNEBY AND BRAUNTON. PRESUMABLY EXTIRPATED ACCORDING TO FOTHERINGHAM. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 7	Map Index: 00719	EO Index: 19386	Dates Last Seen
Occ Rank: Unknown			Element: 2006-06-06
Origin: Natural/Native occurrence			Site: 2006-06-06
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-13

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.22861° / -118.69592°	Township: 02N
UTM: Zone-11 N3788805 E343797	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 2,100 ft

Location: SILVERNALE RANCH (NEAR CHATSWORTH, SANTA SUSANA MTS).

Location Detail: EXACT LOCATION OF SILVERNALE RANCH UNKNOWN. MAPPED NEAR BURRO FLATS WHICH IS PRESUMED TO BE THE "OPEN FIELD" REFERRED TO BY KOPPLER. MAPPED SLIGHTLY E OF BURRO FLATS TO COINCIDE WITH GIVEN ELEVATION.

Ecological: IN AN OPEN FIELD.

Threat: ON PROPOSED ACCESS ROAD ALIGNMENT, STAKED TO AVOID DIRECT IMPACTS. ROAD RE-ROUTED AROUND PLANTS. FIRE SUPPRESSION.

General: THE SILVERNALE RANCH WAS PURCHASED BY ROCKET DYNE. NOT SEEN SINCE 1949. POSSIBLY EXTIRPATED ACCORDING TO FOTHERINGHAM (1998). 3 PLANTS SEEN IN 1999, ON PROPOSED ACCESS ROAD ALIGNMENT. A 2006 PHOTO FROM "VICINITY OF CHATSWORTH" ATTRIB HERE.

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 8	Map Index: 01038	EO Index: 12658	— Dates Last Seen —
Occ Rank: Poor			Element: 1975-XX-XX
Origin: Natural/Native occurrence			Site: 1997-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-10-25

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.05028° / -118.56092°	Township: 01S
UTM: Zone-11 N3768830 E355930	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 450 ft

Location: LOS LIONES CANYON, SANTA MONICA MOUNTAINS.

Location Detail: 1942 COLLECTION BY REYNOLDS FROM "SANTA YNEZ CANYON, FIRST CANYON AWAY FROM OCEAN ON SUNSET BLVD" ATTRIBUTED TO THIS SITE.

Ecological: SOURCE DOCUMENT GIVES 1100 FEET ELEVATION.

Threat: ACC. TO TIM THOMAS (PERS. COMM. 1994) BULLDOZED DURING FIRE SUPPRESSION ACTIVITIES. IN 1997 VERY DISTURBED BY EXOTICS.

General: LESS THAN 10 PLANTS IN 1975 IN 2ND YEAR OF BURNED CHAPARRAL. SINCE AREA HAS RECOVERED FROM BURN, SP CROWDED OUT BY NONNATIVES. NO PLANTS SEEN IN 1996 SEARCH BY KEELEY. NO REPRODUCING PLANTS FOUND BY FOTHERINGHAM IN 1997.

Owner/Manager: DPR-TOPANGA SP, PVT

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 11	Map Index: 00528	EO Index: 5261	— Dates Last Seen —
Occ Rank: Fair			Element: 2003-07-29
Origin: Natural/Native occurrence			Site: 2003-07-29
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2003-10-27

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.18317° / -118.77130°	Township: 01N
UTM: Zone-11 N3783883 E336766	Range: 18W
Mapping Precision: SPECIFIC	Section: 09 Qtr: W
Symbol Type: POLYGON	Meridian: S
Area: 31.3 acres	Elevation: 1,200 ft

Location: NORTH OF KANAN ROAD, ALONG BOTH SIDES OF MEDEA CREEK, ABOUT 1.2 AIR MILES SSE OF SIMI PEAK SUMMIT.

Location Detail: SEV COLONIES MAPPED AS 4 POLYGONS; THE SOUTHERN COLONIES ARE WITHIN OAK CANYON COMMUNITY PARK; THE NORTHERN COLONY IS ON THE EAST SIDE OF THE CANYON ABOUT 0.5 MILE NORTH OF KANAN RD. OCCURRENCE IS WITHIN THE E 1/2 OF THE W 1/2 OF SEC 9.

Ecological: CHAPARRAL, COASTAL SAGE SCRUB, AND ALSO IN DISTURBED AREAS. ASSOCIATED WITH SALVIA MELLIFERA, ENCELIA CALIFORNICA, RHUS OVATA, MELILOTUS INDICA, BROMUS, MARRUBIUM, NOLINA PARRYI (THE RARE N. CISMONTANA), AND THE RARE CALOCHORTUS CATALINAE.

Threat: ADDITIONAL PARK DEVELOPMENT, ORV USE, TRAMPLING BY HIKERS. 1/2 OF N-OCCURRENCE BULLDOZED FOR DEVELOPMENT IN 1986.

General: IN 1993 100+ PLANTS IN N-COLONY, 290 IN S-COLONIES. 1-2 PLANTS IN 1996, 7 IN 1998, 4 IN 2003. PART OF N-COLONY PRESERVED IN 200' WILDLIFE CORRIDOR. LONG TERM VIABILITY OF SITE QUESTIONABLE DUE TO EXISTING & FUTURE DISTURBANCES.

Owner/Manager: PVT, RANCHO SIMI RPD

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 14	Map Index: 01045	EO Index: 13904	— Dates Last Seen —
Occ Rank: Good			Element: 2007-04-22
Origin: Natural/Native occurrence			Site: 2007-04-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-13

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.08384° / -118.55878°	Township: 01S
UTM: Zone-11 N3772548 E356184	Range: 16W
Mapping Precision: SPECIFIC	Section: 16 Qtr: E
Symbol Type: POLYGON	Meridian: S
Area: 28.0 acres	Elevation: 1,200 ft

Location: ALONG TRAILER CANYON ROAD, BETWEEN MICHAEL LANE AND TOPANGA STATE PARK, PALISADES HIGHLANDS.

Location Detail: ON BOTH SIDES OF THE ROAD. MAPPED BY CNDDDB AS 3 POLYGONS.

Ecological: IN, ABOUT AND BELOW LIMESTONE QUARRY ASSOCIATED WITH ORYZOPSIS MILICEA AND NICOTIANA GLAUCA ON DISTURBED SITES. PLANTS ALSO OCCUR ALONG FIRE ROADS AND ARE ASSOCIATED WITH YUCCA, SALVIA, MALOSMA, CEANOTHUS MEGACARPUS, AND C. SPINOSUS.

Threat: DEVELOPMENT COULD THREATEN. FIRE ROAD RECENTLY SCRAPPED IN 2003. RECREATION IN AREA.

General: ABOUT 200 PLANTS OBSERVED IN 1987, 11 IN 1988, NONE IN 1996, NONE IN 1997, 28 IN 2001, 19 IN 2003 AND 11 IN 2004. MAIN POPULATION IS MOST LIKELY IN A SEED BANK AT THE TOP OF THE RIDGE, ACCORDING TO LANDIS. 95 TOTAL SEEN IN '04, 89 IN '07

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 15	Map Index: 01075	EO Index: 19381	— Dates Last Seen —
Occ Rank: Good			Element: 2007-07-27
Origin: Natural/Native occurrence			Site: 2007-07-27
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-13

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.07775° / -118.54451°	Township: 01S
UTM: Zone-11 N3771853 E357491	Range: 16W
Mapping Precision: SPECIFIC	Section: 15 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 16.0 acres	Elevation: 1,700 ft

Location: ALONG TEMESCAL RIDGE ROAD, JUST UPHILL FROM AVENIDA ASHLEY, PACIFIC PALISADES.

Location Detail: SITE IS CLEARED ANNUALLY. MECHANICAL DISTURBANCE MAY BE LEADING TO LARGE NUMBER OF PLANTS GERMINATING EACH YEAR. BY 2003, PLANTS LIMITED TO A BAND OF MALOSMA LAURINA AT ONE EDGE OF THE FIREBREAK.

Ecological: ON MARGIN OF FIRE ROAD ON RIDGE TOP WITH CORETHROGYNE, MALOSMA LAURINA, HESPEROYUCCA WHIPPLEI, HAZARDIA SQUARROSA, RHUS OVATA X RHUS INTEGRIFOLIA, RHAMNUS CROCEA, AND GRASSES.

Threat: AREA CLEARED FOR POWERLINES AND FUEL BREAK. NON-NATIVE PLANTS THREATEN. HOUSES BUILT NEARBY. RECREATION IN AREA.

General: 1 PLANT OBSERVED IN 1987. 2000 PLANTS BETWEEN OCCURRENCE #15 AND 17 IN 1996 AND 1997. 333 TO 1333 PLANTS IN 1998, 827 IN 2003, 959 IN 2004, AND 271 IN 2006. IN 2007: 1258 PLANTS SEEN IN N POLY, 337 IN 2 CENTRAL POLYS, AND 526 IN S POLY.

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: None	State: S2.1	
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 17	Map Index: 01127	EO Index: 12657	— Dates Last Seen —
Occ Rank: Unknown			Element: 2006-05-29
Origin: Natural/Native occurrence			Site: 2006-05-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-04

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.06845° / -118.53703°	Township: 01S
UTM: Zone-11 N3770812 E358165	Range: 16W
Mapping Precision: SPECIFIC	Section: 22 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 5.0 acres	Elevation: 1,000 ft

Location: TEMESCAL RIDGE FIRE ROAD, NE OF THE NORTH END OF BIENVENEDA AVE.

Location Detail: ALONG THE TRAIL AND IN AN OPEN FUEL BREAK. 2 COLONIES. EASTERN COLONY IS AT THE POINT WHERE ROAD TURNS UPWARD OUT OF THE CANYON BOTTOM. WESTERN COLONY IS APPROXIMATELY 0.3 AIR MILES WEST OF THIS POINT ON THE RIDGETOP.

Ecological: PRIMARILY IN OPEN AREAS OF DISTURBED CHAPARRAL. ADJACENT SLOPES DOMINATED BY MALOSMA LAURINA, ERIOGONUM FASCICULATUM, LESSINGIA FILAGINIFOLIA, BROMUS RUBENS, B. DIANDRUS, AND BRASSICA GENICULATA.

Threat:

General: FOLLOWING 1978 FIRE PLANTS WERE SEEN IN 1979-81 IN EASTERN COLONY. NO PLANTS SEEN IN 1986. 2000 PLANTS SEEN BETWEEN OCCURRENCES #15 AND 17 IN 1996. 45 PLANTS OBSERVED IN 2006 IN WESTERN COLONY.

Owner/Manager: DPR-TOPANGA SP

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 18	Map Index: 01163	EO Index: 19380	— Dates Last Seen —
Occ Rank: None			Element: 1942-04-XX
Origin: Natural/Native occurrence			Site: 1998-XX-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 2003-06-26

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.05762° / -118.52783°	Township: 01S
UTM: Zone-11 N3769598 E358996	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 26 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 900 ft

Location: NEAR SUNSET BOULEVARD, HALFWAY FROM OCEAN TO TEMESCAL CANYON.

Location Detail: BARNEBY SUPPOSES THAT THIS SITE MUST BE THE POPULATION ON A FIREBREAK THAT GOES INTO THE HILLS NORTH OF SUNSET BLVD SHORTLY BEFORE THE OLD WILL ROGERS RANCH. LOCATION IS BEST GUESS; NEEDS FIELDWORK.

Ecological:

Threat:

General: BASED ON 1942 COLLECTION BY HASTINGS. BARNEBY SAID THAT 45 YEARS AGO PLANT WAS FLOURISHING BUT VERY LOCALIZED POPULATIONS IN THIS AREA. AREA SEARCHED BY J. KEELEY IN 1996, NO PLANTS SEEN. NONE SEEN BY FOTHERINGHAM IN 1998.

Owner/Manager: CITY OF LOS ANGELES

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: None	State: S2.1	
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 19	Map Index: 00591	EO Index: 19378	— Dates Last Seen —
Occ Rank: Unknown			Element: 1997-XX-XX
Origin: Natural/Native occurrence			Site: 1997-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-03-24

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.18861° / -118.74531°	Township: 01N
UTM: Zone-11 N3784445 E339171	Range: 18W
Mapping Precision: SPECIFIC	Section: 11 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 2.9 acres	Elevation: 1,200 ft

Location: JORDAN RANCH, PALO COMADO CANYON, SIMI HILLS.

Location Detail: TWO COLONIES, ONE ON EITHER SIDE OF THE CANYON. MAPPED WITHIN THE NE 1/4 OF THE NE 1/4 OF SECTION 10 AND THE NW 1/4 OF THE NW 1/4 OF SECTION 11.

Ecological: ON LOW SLOPES OF CANYON WALLS IN OPEN BRUSHLAND AND ROAD CUTS. ASSOCIATED WITH ERIODICTYON CRASSIFOLIUM, ADENOSTOMA FASCICULATUM, AND NOLINA CISMONTANA.

Threat: SITE NO LONGER WITHIN PROPOSED GOLF COURSE OR GRAZED BY SHEEP AND HORSES (T. THOMAS, 1994). RECREATION COULD THREATEN.

General: LESS THAN 30 PLANTS AT 2 SUBPOPULATIONS IN 1987 BY WISHNER. 1-2 PLANTS SEEN IN 1996 BY KEELEY, 5 PLANTS SEEN IN 1997 BY FOTHERINGHAM. SITE MANAGED BY SANTA MONICA MOUNTAINS NATIONAL REC AREA. MODIFIED FIRE REGIME COULD THREATEN.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 20	Map Index: 17846	EO Index: 10019	— Dates Last Seen —
Occ Rank: Poor			Element: 2007-07-27
Origin: Natural/Native occurrence			Site: 2007-07-27
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-13

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.18752° / -118.76086°	Township: 01N
UTM: Zone-11 N3784350 E337736	Range: 18W
Mapping Precision: SPECIFIC	Section: 10 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 14.0 acres	Elevation: 1,200 ft

Location: 1.2 TO 1.5 MILES NORTH OF VENTURA/LOS ANGELES COUNTY LINE. OAK PARK PLANNING ZONE.

Location Detail: MAPPED AS 5 POLYS. LG NW POLY HAS SCATTERED SITES THROUGHOUT. SMALLER POLYS ARE SPECIFIC SITES. DEMO GARDEN IS AT CORNER OF DEERHILL & DOUBLETREE RDS. A. BRAUNTONII MAY OCCUR IN FIELD N OF DEMO GARDEN. TRANSPLANT MITIGATION PROJECT FAILED.

Ecological: ON W-FACING, RECENTLY GRADED SLOPE. WITH THE RARE NOLINA CISMONTANA. MOST OF THE NATURAL RIDGES IN THE S AREA WERE KNOCKED DOWN AND THE SOIL SPREAD OVER THE SIDE FOR RESIDENTIAL SITES AND A PLAYING FIELD.

Threat: GRADED, PARK DEVELOPMENT (OAK PARK). BADLY IMPACTED BY BULLDOZING IN '98. EXOTICS, LACK OF FIRE & POOR SITE MAINTENANCE.

General: 20 IN '90, LIKELY MORE IN SEED BANK. 387 TRANSPLANTED IN '95, 1 IN '98. DESTROYED BY DEV IN '96. 1000 IN '98, DELIBERATELY BULLDOZED. 465-815 IN '02. 340-390 IN '03, W/ 50-100 AT DEMO GARDEN. <175 IN '04. 53 IN '07, MOSTLY IN DEMO GARDEN.

Owner/Manager: RANCHO SIMI RPD

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 22	Map Index: 17845	EO Index: 11928	— Dates Last Seen —
Occ Rank: Fair			Element: 2006-05-12
Origin: Natural/Native occurrence			Site: 2006-05-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-13

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20620° / -118.80443°	Township: 02N
UTM: Zone-11 N3786491 E333757	Range: 18W
Mapping Precision: SPECIFIC	Section: 31 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 32.0 acres	Elevation: 1,700 ft

Location: 1.1 TO 1.7 AIR MILES WEST OF THE SUMMIT OF SIMI PEAK, THOUSAND OAKS.

Location Detail: RIDGELINE SE OF LANG RANCH PARKWAY. MAPPED BY CNDDDB AS 9 POLYGONS.

Ecological: ON AND ABOUT DIRT ACCESS ROADS IN ROCKY, SANDY CLAY LOAM. ASSOCIATED WITH ERIOGONUM FASCICULATUM AND ADENOSTOMA FASCICULATUM. OTHER RARE PLANTS IN THE AREA INCLUDE HEMIZONIA MINTHORNII, CALOCHORTUS CATALINAE, AND NOLINA CISMONTANA.

Threat: THREATENED BY EROSION AND TRAMPLING BY HIKERS, TRAIL CONSTRUCTION, INADEQUATE FIRE REGIME, AND NON-NATIVE PLANTS.

General: ~15 IN 1989, 29 IN '92 IN FAR E COLONY, 1 IN EACH OF THE 3 W COLONIES IN '97, 7 IN COLONY JUST E IN 2004. IN '06: 2 IN FAR W COLONY, 13 IN 3RD FROM W COLONY, AND 9 IN 2ND FROM E COLONY. ~4400 TOTAL IN 5/2006. INCLUDES FORMER OCCURRENCE #26.

Owner/Manager: CONEJO OPEN SPACE CONS AGENCY

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 23	Map Index: 17795	EO Index: 10017	— Dates Last Seen —
Occ Rank: Poor			Element: 2000-06-13
Origin: Natural/Native occurrence			Site: 2000-06-13
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-03-30

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.21652° / -118.66555°	Township: 02N
UTM: Zone-11 N3787417 E346573	Range: 17W
Mapping Precision: SPECIFIC	Section: 33 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,400 ft

Location: DAYTON CANYON, 1.3 AIR MILES WEST OF THE INTERSECTION OF MARCH AVE AND JUSTICE.

Location Detail: WITHIN SEA (SPECIAL ENVIRONMENTAL AREA) 14.

Ecological: PLANTS GROWING IN A DIRT ROAD. 1999 PLANTS SEEN AFTER GRADING FOR GEOTECHNICAL EXPLORATION.

Threat: THIS IS OPEN SPACE, BUT DEVELOPMENT BORDERS THE SITE. THREATENED BY NON-NATIVE PLANTS AND ALTERED FIRE REGIME.

General: ONLY 2 SMALL PLANTS SEEN IN 1989. 14 PLANTS SEEN IN 1999, 8 OF WHICH WERE REMOVED DURING DEVELOPMENT. 2000 NOLL COLLECTION FROM WEST HILLS SUBDIVISION 0.5 MILE UP DAYTON CANYON FROM VALLEY CIRCLE BLVD ALSO ATTRIBUTED HERE.

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 25	Map Index: 40530	EO Index: 35537	— Dates Last Seen —
Occ Rank: Fair			Element: 2000-0X-XX
Origin: Natural/Native occurrence			Site: 2000-0X-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-03-23

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.21019° / -118.82047°	Township: 02N
UTM: Zone-11 N3786960 E332288	Range: 19W
Mapping Precision: SPECIFIC	Section: 36 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 6.1 acres	Elevation: 1,250 ft

Location: 3.6-3.75 MI N OF TRIUNFO CORNER, ALONG FIRE RD WHICH TRAVELS RIDGELINE SE OF JCT WESTLAKE BLVD & LANG RANCH PARKWAY.

Location Detail: MAPPED AS THREE POLYGONS: 3 PLANTS MAPPED AS EASTERN POLYGON ALONG FIRE TRAIL. FAR WESTERN COLONY IS AT PROPOSED DAM, CENTRAL COLONY IS AT DEBRIS BASIN SITE.

Ecological: ALONG OLD, ERODED FIRE RD IN CHAPARRAL. E-FACING SLOPE W/RHUS OVATA, HETEROMELES ARBUTIFOLIA, CEANOTHUS CRASSIFOLIUS, ADENOSTOMA FASCICULATUM, ARCTOSTAPHYLOS GLANDULOSA, ERIOPHYLLUM CONFERTIFLORUM, MALACOTHAMNUS FASCICULATUS, ARTEMISIA CAL.

Threat: TRAIL CONSTRUCTION & TRAMPLING BY HIKERS COULD THREATEN. DAM & DEBRIS BASIN CONSTRUCTION. ALSO, IMPROPER FIRE REGIME.

General: 3 PLANTS IN 1997 (SEVERAL DEAD PLANTS-HABITAT EXTENDS EAST FOR 1 MILE). IN 1999 7 PLANTS AT WEST COLONIES, 6 REMOVED AFTER SEED COLLECTION. 6 WIDELY SPACED PLANTS IN 2000 AT EAST COLONY. NO PLANTS AT WESTERN WASHDOWN COLONIES (2003).

Owner/Manager: PVT-COSCA

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 27	Map Index: 49018	EO Index: 49018	— Dates Last Seen —
Occ Rank: Unknown			Element: 2007-05-12
Origin: Natural/Native occurrence			Site: 2007-05-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-18

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.04449° / -118.82209°	Township: 01S
UTM: Zone-11 N3768586 E331811	Range: 19W
Mapping Precision: SPECIFIC	Section: 36 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 13.7 acres	Elevation: 800 ft

Location: ZUMA RIDGE, WEST OF ZUMA CANYON, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.

Location Detail: MOST PLANTS ON THE FIREBREAK, WITH ONE OR TWO STRAY PLANTS ON THE MOTORWAY. MAPPED WITHIN THE NE 1/4 OF SECTION 26.

Ecological: IN BURNED OVER CHAPARRAL.

Threat: HERBIVORY BY GOPHERS, LOTS OF WEEDS PRESENT ON SITE. ALSO THREATENED BY FIRE CONTROL ACTIVITIES.

General: 100 PLANTS IN 1999, UNKNOWN NUMBER SEEN IN 2000. PLANTS FOUND AFTER SITE BURNED AND CLEARED. CNPS VOLUNTEERS HAND CLEARED WEEDS IN 1999. 163 PLANTS SEEN IN 2004. 36 PLANTS SEEN IN 2007.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 28	Map Index: 49021	EO Index: 49021	Dates Last Seen
Occ Rank: Unknown			Element: 2006-07-10
Origin: Natural/Native occurrence			Site: 2006-07-10
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-13

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.23299° / -118.77304°	Township: 02N
UTM: Zone-11 N3789411 E336702	Range: 18W
Mapping Precision: SPECIFIC	Section: 28 Qtr: N
Symbol Type: POLYGON	Meridian: S
Area: 4.4 acres	Elevation: 1,400 ft

Location: BUS CANYON, BRIDLE PATH HOMEOWNERS ASSOCIATION MOUNTAIN PARK, SOUTH OF SIMI VALLEY.

Location Detail: 3 POLYGONS: 3 PLANTS FOUND ALONG EQUESTRIAN TRAIL: #1 AND #2 ARE ALONG THE RIDGE, #3 IS IN "PUNCHBOWL CANYON."

Ecological:

Threat: PLANTS THREATENED BY FIRE ROAD SCRAPING, IMPROPER BURNING REGIME, NON-NATIVE PLANTS, AND RECREATION.

General: IN 1998 2 OR 3 FLOWERING PLANTS SEEN AT LOCATIONS #1 AND #2. IN 1999 3 PLANTS FOUND, ONE AT EACH LOCATION. PLANTS SEEN BY M. CAMPBELL AS REPORTED BY C. SPENGER. IN 1999 PLANTS FROM 1998 WERE OLD, WOODY, AND DEAD. 16 PLANTS SEEN IN 2006.

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: None	State: S2.1	
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 29	Map Index: 49829	EO Index: 49829	Dates Last Seen
Occ Rank: Poor			Element: 1998-XX-XX
Origin: Natural/Native occurrence			Site: 1998-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2003-01-09

Quad Summary: Calabasas (3411826/112B)
County Summary: Los Angeles, Ventura

Lat/Long: 34.17499° / -118.67986°	Township: 01N
UTM: Zone-11 N3782834 E345178	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 17 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 3/5 mile	Elevation:

Location: AHMANSON RANCH, NEAR LASKEY MESA, SOUTHEASTERN CORNER OF VENTURA COUNTY.
Location Detail: EXACT LOCATION UNKNOWN; MAPPED IN GENERAL VICINITY OF LASKEY MESA BY CNDDDB. NEED BETTER LOCATION INFORMATION.

Ecological:
Threat: DEVELOPMENT OF AHMANSON RANCH. IMPROPER BURNING REGIME.
General: 1 PLANT REPORTED IN 1998. PLANT IS NOT IN AN AREA SLATED FOR DEVELOPMENT AND MAY BE PART OF THE POPULATION THAT EXTENDS FROM DAYTON CANYON SOUTH INTO THE BURRO FLATS AREAS.

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 30	Map Index: 49832	EO Index: 49832	— Dates Last Seen —
Occ Rank: Poor			Element: 2007-07-23
Origin: Natural/Native occurrence			Site: 2007-07-23
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-18

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.19341° / -118.78456°	Township: 01N
UTM: Zone-11 N3785040 E335564	Range: 18W
Mapping Precision: SPECIFIC	Section: 05 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 2.6 acres	Elevation: 1,300 ft

Location: EDISON EASEMENT/OPEN SPACE TRAIL NORTH OF PATHFINDER AVENUE BETWEEN FALLING STAR AVENUE AND DUMZINE AVE, SIMI HILLS.

Location Detail: PLANTS ARE GROWING ON AND ADJACENT TO A SOUTHERN CALIFORNIA EDISON ACCESS ROAD WHICH FUNCTIONS AS A TRAIL. MAPPED WITHIN THE SE 1/4 OF THE SE 1/4 OF SECTION 5.

Ecological: PLANT COMMUNITY IN THE AREA IS ARID COASTAL SAGE SCRUB, HOWEVER THE SPECIFIC LOCALITY IS DEGRADED DUE TO ITS USE AS AN OPEN SPACE TRAIL AND EDISON EASEMENT. ASSOCIATES INCLUDE ERIOGONUM FASCICULATUM, LESSINGIA FILAGINIFOLIA, ET AL.

Threat: ROAD MAINTENANCE BY EDISON AND BRUSH CONTROL FOR FIRE CLEARANCE ARE PRINCIPAL THREATS.

General: 35 SEEN IN 2001 BY BURGESS. THE MAJORITY OF PLANTS GROWING ON KNOLL ADJ TO ACCESS ROAD AND THE CITY INTENDS TO FENCE AREA. 68 PLANTS OF ALL AGES SEEN IN 2003. <175 IN 2004, 27 IN 2006 & 15 IN 2007. SITE PROTECTED BY TEMP ORANGE FENCING.

Owner/Manager: CITY OF THOUSAND OAKS

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 31	Map Index: 54499	EO Index: 54499	Dates Last Seen
Occ Rank: Good			Element: 2007-08-14
Origin: Natural/Native occurrence			Site: 2007-08-14
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-18

Quad Summary: Thousand Oaks (3411827/113A), Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.22898° / -118.74909°	Township: 02N
UTM: Zone-11 N3788929 E338900	Range: 18W
Mapping Precision: SPECIFIC	Section: 27 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 11.0 acres	Elevation: 2,080 ft

Location: RIDGE BETWEEN BUS CANYON AND RUNKLE CANYON, ABOUT 2 MILES WEST OF BURRO FLATS, SOUTH SIMI VALLEY.

Location Detail: ON A RIDGELINE ABOVE A FIRE ROAD, EAST OF POWERLINE TOWER. MAPPED AS 2 POLYGONS WITHIN THE SE 1/4 OF THE NE 1/4 OF SECTION 36. OWNED BY BRIDLE PATH HOMEOWNER'S ASSOCIATION.

Ecological: IN CHAPARRAL/NON-NATIVE GRASSLAND/COASTAL SAGE SCRUB ECOTONE, WITH SPARSE VEGETATION ALONG RIDGELINE. WITH BACCHARIS PILULARIS, SALVIA MELLIFERA, ERIOGONUM FASCICULATUM, CENTAUREA MELITENSIS, BROMUS HORDEACEUS, LOTUS SCOPARIUS, ET AL.

Threat: PREVIOUSLY GRADED AS A FIRE BREAK. SPRING CATTLE GRAZING IN AREA. FUEL MODIFICATION ACTIVITIES ARE A FUTURE THREAT.

General: 36 PLANTS SEEN IN 2004 IN S POLY, WITH AN ADDITIONAL 30 SENESCENT PLANTS PRESENT. SITE IS DEDICATED RECREATION OPEN SPACE, MANAGED BY A HOMEOWNER'S ASSOCIATION WITH LIMITED PUBLIC ACCESS. 130 PLANTS SEEN IN N POLY IN 2007.

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 32	Map Index: 54816	EO Index: 54816	— Dates Last Seen —
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-03-24

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.06672° / -118.82318°	Township: 01S
UTM: Zone-11 N3771054 E331753	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 24 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation:

Location: UPPER ZUMA CANYON, SANTA MONICA MOUNTAIN NATIONAL RECREATION AREA.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED ACCORDING TO T-R-S PROVIDED BY FARRIS: T1S R19W SECTION

Ecological: FUEL BREAK.

Threat:

General: RECENT RECORD, ACCORDING TO FARRIS. FOLLOWING A SLASH, PILE, AND BURN PROJECT ALONG A FUEL BREAK, MORE THAN 300 PLANTS GERMINATED AND COVERED THE FUEL BREAK IN AN AREA NOT PREVIOUSLY KNOWN TO SUPPORT THE PLANTS. MAY BE WESTERNMOST POP.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 33	Map Index: 57103	EO Index: 57119	Dates Last Seen
Occ Rank: Good			Element: 2007-07-02
Origin: Natural/Native occurrence			Site: 2007-07-02
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-13

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.19713° / -118.72534°	Township: 01N
UTM: Zone-11 N3785360 E341027	Range: 18W
Mapping Precision: SPECIFIC	Section: 01 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 4.0 acres	Elevation: 1,715 ft

Location: RIDGE BETWEEN UPPER CHEESEBORO AND LAS VIRGENES CANYON, NNE OF AGOURA.
Location Detail: MAPPED ACCORDING COORDINATES PROVIDED BY YOUNG. IN NW1/4 OF SW1/4 SEC 1.
Ecological: CHAPARRAL DOMINATED BY ADENOSTOMA FASCICULATUM. ASSOCIATES INCLUDE: CEANOTHUS SPP. RHUS OVATA, MALOSMA LAURINA, SALVIA MELLIFERA, RHAMNUS ILICIFOLIA, ETC. SUBSTRATE WAS A PEBBLY, THIN SOILED ROCK OUTCROP ALONG AN APPROXIMATELY 10-30% SLOPE.
Threat: INVASIVE EXOTICS, HERBIVORY.
General: 30 PLANTS OBSERVED IN 2000. WEST POLY: 130 SEEN IN 1999, 15 IN 2004, 827 IN 2006, & 76 IN 2007. CENTAL POLY: 501 IN 2006 & 71 IN 2007. EAST POLY: 265 IN 2006 & 1163 IN 2007.
Owner/Manager: PVT-AHMANSON LAND CO

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 36	Map Index: 68760	EO Index: 69245	— Dates Last Seen —
Occ Rank: Fair			Element: 2006-05-05
Origin: Natural/Native occurrence			Site: 2006-05-05
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-04

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.19954° / -118.81465°	Township: 01N
UTM: Zone-11 N3785769 E332802	Range: 18W
Mapping Precision: SPECIFIC	Section: 06 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,300 ft

Location: KANAN ROAD, IMMEDIATELY WEST OF THE INTERSECTION WITH RAYBURN STREET, THOUSAND OAKS.

Location Detail: IMMEDIATELY ADJACENT TO A FENCELINE BORDERING THE MAINTAINED MUNICIPAL PARKWAY ALONG THE NORTH SIDE OF KANAN ROAD.

Ecological: CA SAGEBRUSH / CA BUCKWHEAT SERIES HABITAT.

Threat: SMALL POPULATION (ONLY ONE PLANT OBSERVED) ALONG ROADSIDE AT THE EDGE OF AN URBAN AREA.

General: 1 PLANT OBSERVED IN 2006.

Owner/Manager: UNKNOWN

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: None	State: S2.1	
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 37	Map Index: 76185	EO Index: 77096	— Dates Last Seen —
Occ Rank: Unknown			Element: 2006-06-20
Origin: Natural/Native occurrence			Site: 2006-06-20
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-18

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.21755° / -118.65753°	Township: 02N
UTM: Zone-11 N3787520 E347313	Range: 17W
Mapping Precision: SPECIFIC	Section: 34 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 10.0 acres	Elevation: 1,200 ft

Location: DAYTON CANYON, 0.6 MI W OF VALLEY CIRCLE BLVD & ROSCOE BLVD INTERSECTION.

Location Detail: MAPPED AS 2 COLONIES BASED ON GPS COORDINATES, BUT LANDIS DESCRIBED 3 LOCATIONS. LOCATIONS DESCRIBED AS "DISTURBED FIELD N OF MAIN ACCESS RD" AND "BETWEEN 2 CORE-DRILLING RDS AND ON THE SLOPE ABOVE THE HIGHEST CORE-DRILLING RD."

Ecological: AREA BURNED IN 2005 TOPANGA FIRE. GROWING ON SLOPES AND RIDGES. ASSOCS INCLUDE: CEANOTHUS MEGACARPUS, ENCELIA CALIFORNICA, LOTUS SCOPARIUS, PELLAEA SP., ARTEMISIA CALIFORNICA, ADENOSTOMA FASCICULATUM, MALOSMA LAURINA, ETC.

Threat: DEVELOPMENT BY OWNER.

General: 3 PLANTS SEEN IN 2004. IN 2006, APPROX. 1581 PLANTS OBSERVED IN BOTH COLONIES COMBINED.

Owner/Manager: PVT

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: None	State: S2.1	
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 38	Map Index: 76186	EO Index: 77101	Dates Last Seen
Occ Rank: Unknown			Element: 2007-05-21
Origin: Natural/Native occurrence			Site: 2007-05-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-11

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.19307° / -118.73011°	Township: 01N
UTM: Zone-11 N3784916 E340581	Range: 18W
Mapping Precision: SPECIFIC	Section: 02 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,400 ft

Location: CHEESEBORO CANYON, SANTA MONICA MOUNTAINS RECREATION AREA.
Location Detail: ON SLOPE ABOVE SULPHUR SPRINGS TRAIL. MAPPED BASED ON GPS COORDINATES GIVEN BY LANDIS.
Ecological:
Threat:
General: 10 PLANTS OBSERVED IN 2007.
Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Astragalus brauntonii		
Braunton's milk-vetch		
		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: None	State: S2.1	
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 39	Map Index: 76117	EO Index: 77103	— Dates Last Seen —
Occ Rank: Unknown			Element: 2007-06-25
Origin: Natural/Native occurrence			Site: 2007-06-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-18

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.19467° / -118.74474°	Township: 01N
UTM: Zone-11 N3785117 E339235	Range: 18W
Mapping Precision: SPECIFIC	Section: 02 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 6.0 acres	Elevation: 1,300 ft

Location: PALO COMADO CANYON, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.

Location Detail: MAPPED AS 2 COLONIES BASED ON GPS COORDINATES. N & S-FACING FLANKS OF SIDE CANYON AND ON TOP OF THE S RIDGE RUNNING UP ABOVE THE "ROCK WATERFALL," AND N-FACING SIDE OF A MEANDERING DRY CREEK BED.

Ecological: ON SLOPES & ALONG CREEK BED. ASSOCIATES INCLUDE: CALYSTEGIA MACROSTEGIA, HESPEROYUCCA WHIPPLEI, ADENOSTOMA FASCICULATUM, ERIOGONUM FASCICULATUM, CUSCUTA SP., SALVIA MELLIFERA, ARGEMONE MUNITA, CENTAUREA MELITENSIS, & CALOCHORTUS PLUMMERAE.

Threat:

General: N POLYGON: 627 PLANTS SEEN IN 2006, 324 PLANTS SEEN IN 2007. S POLYGON: ~821 PLANTS SEEN IN 2007.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Astragalus brauntonii		
Braunton's milk-vetch		Element Code: PDFAB0F1G0
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: None	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: RECENT BURNS OR DISTURBED AREAS; IN SALINE, SOMEWHAT ALKALINE SOILS HIGH IN CA, MG, WITH SOME K. SOIL SPECIALIST; REQUIR		

Occurrence No. 40	Map Index: 76187	EO Index: 77106	Dates Last Seen
Occ Rank: Unknown			Element: 2007-06-11
Origin: Natural/Native occurrence			Site: 2007-06-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-19

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20678° / -118.77543°	Township: 02N
UTM: Zone-11 N3786509 E336431	Range: 18W
Mapping Precision: SPECIFIC	Section: 33 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 16.0 acres	Elevation: 2,100 ft

Location: EASTERN FLANK OF SIMI PEAK, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.

Location Detail: ON A LOW ROLLING HILL ADJACENT TO SIMI PEAK TRAIL. MAPPED BASED ON GPS COORDINATES GIVEN BY LANDIS.

Ecological: ASSOCIATES INCLUDE: MALOSMA LAURINA, ERIODICTYON CRASSIFOLIUM, HAZARDIA SQUARROSA, SALVIA MELLIFERA, LOTUS SCOPARIUM, ADENOSTOMA FASCICULATUM, ARTEMISIA CALIFORNICA, BACCHARIS PILULARIS, HESPEROYUCCA WHIPPLEI, CALYSTEGIA MACROSTEGIA.

Threat:

General: 447 PLANTS OBSERVED IN 2007.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Astragalus pycnostachyus var. lanosissimus

Ventura Marsh milk-vetch

Element Code: PDFAB0F7B1

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: Endangered

Global: G2T1

CNPS List: 1B.1

State: Endangered

State: S1

----- **Habitat Associations** -----

General: COASTAL SALT MARSH.

Micro: WITHIN REACH OF HIGH TIDE OR PROTECTED BY BARRIER BEACHES, MORE RARELY NEAR SEEPS ON SANDY BLUFFS. 1-35M.

Occurrence No. 3

Map Index: 01228

EO Index: 19296

----- **Dates Last Seen** -----

Occ Rank: None

Element: 1882-10-XX

Origin: Natural/Native occurrence

Site: 196X-XX-XX

Presence: Extirpated

Trend: Unknown

Record Last Updated: 1989-08-11

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)

County Summary: Los Angeles

Lat/Long: 34.02251° / -118.50842°

Township: 02S

UTM: Zone-11 N3765677 E360731

Range: 16W

Mapping Precision:NON-SPECIFIC

Section: XX **Qtr:**XX

Symbol Type: POINT

Meridian: S

Radius: 1 mile

Elevation: 5 ft

Location: MEADOW NEAR SEASHORE, SANTA MONICA.

Location Detail:

Ecological: MEADOW.

Threat:

General: THREE COLLECTIONS BY PARISH AND PARISH ATTRIBUTED TO THIS SITE AND ONE BY GREATA. BARNEBY (1964) SEARCHED MARSHES IN THIS AREA AND CONSIDERED THIS POPULATION TO BE EXTIRPATED.

Owner/Manager: UNKNOWN

Astragalus tener var. titi		
coastal dunes milk-vetch		
		Element Code: PDFAB0F8R2
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1T1	CNPS List: 1B.1
State: Endangered	State: S1.1	
Habitat Associations		
General: COASTAL BLUFF SCRUB, COASTAL DUNES.		
Micro: MOIST, SANDY DEPRESSIONS OF BLUFFS OR DUNES ALONG AND NEAR THE PACIFIC OCEAN; ONE SITE ON A CLAY TERRACE. 1-50M.		

Occurrence No. 3 **Map Index:** 35233 **EO Index:** 42743 **— Dates Last Seen —**

Occ Rank: None **Element:** XXXX-XX-XX

Origin: Natural/Native occurrence **Site:** XXXX-XX-XX

Presence: Possibly Extirpated

Trend: Unknown **Record Last Updated:** 2000-04-12

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)

County Summary: Los Angeles

Lat/Long: 34.01962° / -118.48594°	Township: 02S
UTM: Zone-11 N3765326 E362802	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 100 ft

Location: SANTA MONICA.

Location Detail: EXACT LOCATION NOT KNOWN. MAPPED IN THE VICINITY OF SANTA MONICA.

Ecological:

Threat:

General: MAIN SOURCE OF INFORMATION FOR THIS SITE IS UNDATED COLLECTION BY HASSE. R. BARNEBY (1964) BELIEVES THIS SITE IS PROBABLY EXTIRPATED.

Owner/Manager: UNKNOWN

California Department of Fish and Game
Natural Diversity Database
Full Report for Selected Elements
SSFL - Full Report- 9 quad search centered on Calabasas Quad

Atriplex coulteri

Coulter's saltbush

Element Code: PDCHE040E0

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: None **Global:** G2 **CNPS List:** 1B.2
State: None **State:** S2.2

----- **Habitat Associations** -----
General: COASTAL BLUFF SCRUB, COASTAL DUNES, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.
Micro: OCEAN BLUFFS, RIDGETOPS, AS WELL AS ALKALINE LOW PLACES. 10-440M.

Occurrence No. 28 **Map Index:** 17722 **EO Index:** 920 ----- **Dates Last Seen** -----
Occ Rank: Unknown **Element:** 19XX-XX-XX
Origin: Natural/Native occurrence **Site:** 19XX-XX-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 1996-02-08

Quad Summary: Point Dume (3411817/113D)
County Summary: Los Angeles

Lat/Long: 34.00175° / -118.80670° **Township:** 02S
UTM: Zone-11 N3763821 E333148 **Range:** 18W
Mapping Precision: NON-SPECIFIC **Section:** 07 **Qtr:** XX
Symbol Type: POINT **Meridian:** S
Radius: 1/5 mile **Elevation:** 120 ft

Location: POINT DUME.
Location Detail:
Ecological: COASTAL BLUFFS.
Threat:
General: COLLECTION BY PETER RAVEN, REPORTED BY REISER.
Owner/Manager: DPR-POINT DUME SB

Atriplex coulteri		
Coulter's saltbush		
		Element Code: PDCHE040E0
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2.2	
Habitat Associations		
General: COASTAL BLUFF SCRUB, COASTAL DUNES, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: OCEAN BLUFFS, RIDGETOPS, AS WELL AS ALKALINE LOW PLACES. 10-440M.		

Occurrence No. 73	Map Index: 00743	EO Index: 74631	Dates Last Seen
Occ Rank: Unknown			Element: 1937-06-29
Origin: Natural/Native occurrence			Site: 1937-06-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-02-19

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.03388° / -118.68508°	Township: 01S
UTM: Zone-11 N3767192 E344439	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 13 ft

Location: MALIBU BEACH.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB CENTERED ON THE CITY OF MALIBU BEACH.

Ecological: SEA BLUFFS.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1937 COLLECTION BY ROOS.

Owner/Manager: UNKNOWN

Atriplex parishii		
Parish's brittlescale		Element Code: PDCHE041D0
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1G2	CNPS List: 1B.1
State: None	State: S1.1	
Habitat Associations		
General: ALKALI MEADOWS, VERNAL POOLS, CHENOPOD SCRUB, PLAYAS.		
Micro: USUALLY ON DRYING ALKALI FLATS WITH FINE SOILS. 4-140M.		

Occurrence No. 8	Map Index: 35233	EO Index: 692	— Dates Last Seen —
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-08-28

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)

County Summary: Los Angeles

Lat/Long: 34.01962° / -118.48594°	Township: 02S
UTM: Zone-11 N3765326 E362802	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 100 ft

Location: SANTA MONICA.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB AS BEST GUESS IN THE VICINITY OF SANTA MONICA.

Ecological:

Threat:

General: MAIN SOURCE OF INFORMATION FOR THIS SITE IS AN UNDATED DAVIDSON COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Baccharis malibuensis		
Malibu baccharis		Element Code: PDAST0W0W0
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1	CNPS List: 1B.1
State: None	State: S1.1	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, CISMONTANE WOODLAND.		
Micro: IN CONEJO VOLCANIC SUBSTRATES, OFTEN ON EXPOSED ROADCUTS. SOMETIMES OCCUPIES OAK WOODLAND HABITAT. 150-260M.		

Occurrence No. 1	Map Index: 20306	EO Index: 9458	Dates Last Seen
Occ Rank: Good			Element: 1991-10-30
Origin: Natural/Native occurrence			Site: 1991-10-30
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1992-02-27

Quad Summary: Malibu Beach (3411816/112C)
County Summary: Los Angeles

Lat/Long: 34.08654° / -118.71368°	Township: 01S
UTM: Zone-11 N3773076 E341897	Range: 18W
Mapping Precision: SPECIFIC	Section: 13 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 9.3 acres	Elevation: 500 ft

Location: SALVATION ARMY CAMP GILMORE/CAMP MTN CRAGS. ON MALIBU CREEK.
Location Detail: NORTH SIDE OF CREEK.
Ecological: PLANTS WIDELY SEPARATED ON STEEP SOUTH-FACING SLOPES, BASALT SUBSTRATE IN CHAMISE CHAPARRAL (2 PLANTS). 1 PLANT FOUND NEXT TO DIRT RD IN OAK-WOODLAND EDGE HABITAT.
Threat: SUMMER CAMP USE, BUT PLANT LOCATIONS ARE FAIRLY REMOTE.
General: ONLY 1 PLANT SEEN IN 1988, 3 PLANTS SEEN IN 1991.
Owner/Manager: PVT-SALVATION ARMY

Baccharis malibuensis		Element Code: PDAST0W0W0
Malibu baccharis		
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1	CNPS List: 1B.1
State: None	State: S1.1	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, CISMONTANE WOODLAND.		
Micro: IN CONEJO VOLCANIC SUBSTRATES, OFTEN ON EXPOSED ROADCUTS. SOMETIMES OCCUPIES OAK WOODLAND HABITAT. 150-260M.		

Occurrence No. 2	Map Index: 20305	EO Index: 9459	— Dates Last Seen —
Occ Rank: Unknown			Element: 1991-10-30
Origin: Natural/Native occurrence			Site: 1991-10-30
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-07-09

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09417° / -118.70622°	Township: 01S
UTM: Zone-11 N3773911 E342599	Range: 17W
Mapping Precision: SPECIFIC	Section: 07 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 5.4 acres	Elevation: 700 ft

Location: SOKA UNIVERSITY; COTTONTAIL RANCH BOUNDARY, OFF LAS VIRGENES CANYON ROAD.

Location Detail: PLANTS JUST W OF ENTRANCE ROAD TO COTTONTAIL RANCH AND NEAR SOKA UNIVERSITY'S SOUTHERNMOST HOUSING FACILITIES.

Ecological: ON A HORSE TRAIL W/CHAMISE AND HOARY-LEAF CEANOTHUS, ON W-FACING SLOPE W/ ERIOGONUM FASCICULATUM AND SALVIA MELLIFERA, SOME IN THE SHADE OF C. CRASSIFOLIUS, SOME IN OAK WOODLAND NEXT TO LAS VIRGENES CYN RD.

Threat: AREAS ADJACENT TO/WITHIN COTTONTAIL RANCH ARE THREATENED BY ORV USE. TRAIL CONSTRUCTION DESTROYED SOME PLANTS.

General: <20 PLANTS WITHIN 3 SUBLOCATIONS SEEN IN 1991; ALL THREE SITES WOULD TOTAL ONE ACRE, PLANTS OCCUPY < 1/10 ACRE. SITE BURNED IN 1993 WITH RECOVERY (THOMAS, 1999). LARGEST PLANTS EVER SEEN BY WISHNER DESTROYED BY TRAIL CONSTRUCTION (1996).

Owner/Manager: PVT

Baccharis malibuensis		
Malibu baccharis		Element Code: PDAST0W0W0
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G1	CNPS List: 1B.1
State: None	State: S1.1	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, CISMONTANE WOODLAND.		
Micro: IN CONEJO VOLCANIC SUBSTRATES, OFTEN ON EXPOSED ROADCUTS. SOMETIMES OCCUPIES OAK WOODLAND HABITAT. 150-260M.		

Occurrence No. 3	Map Index: 20304	EO Index: 9460	Dates Last Seen
Occ Rank: Unknown			Element: 1991-10-30
Origin: Natural/Native occurrence			Site: 1991-10-30
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-07-09

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09623° / -118.69915°	Township: 01S
UTM: Zone-11 N3774129 E343255	Range: 17W
Mapping Precision: SPECIFIC	Section: 07 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 800 ft

Location: SOKA UNIVERSITY; NEAR NATIONAL PARK SERVICE'S "DIAMOND X" RANCH.

Location Detail: NEAR THE FORMER DE CINCES RESIDENCE, SOUTH OF THE DIAMOND X RANCH.

Ecological: ON W-FACING SLOPES AND IN AN EXPOSED ROADCUT IN CONEJO VOLCANIC SUBSTRATES. IN CHAPARRAL W/CEANOTHUS MEGACARPUS AND ADENOSTOMA FASCICULATUM. WITH ERIOGONUM FASCICULATUM AND BACCHARIS IN THE ROADCUT.

Threat:

General: LESS THAN 8 PLANTS SEEN IN 1991. SITE BURNED IN 1993 WITH RECOVERY ACCORDING TO THOMAS (1999).

Owner/Manager: PVT

Baccharis malibuensis		
Malibu baccharis		Element Code: PDAST0W0W0
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G1 State: S1.1	CNPS List: 1B.1
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, CISMONTANE WOODLAND.		
Micro: IN CONEJO VOLCANIC SUBSTRATES, OFTEN ON EXPOSED ROADCUTS. SOMETIMES OCCUPIES OAK WOODLAND HABITAT. 150-260M.		

Occurrence No. 4	Map Index: 20303	EO Index: 9556	— Dates Last Seen —
Occ Rank: Unknown			Element: 1991-11-26
Origin: Natural/Native occurrence			Site: 1991-11-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-07-09

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.10898° / -118.69578°	Township: 01S
UTM: Zone-11 N3775537 E343590	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 06 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 700 ft

Location: BASE OF STOKES CANYON, ABOUT 3 MILES E OF LAKE MALIBU.

Location Detail: ON SOUTH FACING SLOPE. MAPPED WITHN THE NE 1/4 OF THE SE 1/4 OF SECTION 6 BASED ON BEA96A01.

Ecological: IN SAGE SCRUB/CHAPARRAL ECOTONE ON CALABASAS FORMATION.

Threat: SOME HABITAT COMPROMISED BY PROJECT.

General: 23 PLANTS SEEN IN 1991. NO MAP GIVEN, MAPPED AS PER ABOVE DESCRIPTION. SOME HABITAT COMPROMISED BY PROJECT, MOST OF THE POPULATION REMAINS BUT SECONDARY IMPACTS UNKNOWN (THOMAS 1999)

Owner/Manager: UNKNOWN

Baccharis malibuensis		
Malibu baccharis		Element Code: PDAST0W0W0
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G1 State: S1.1	CNPS List: 1B.1
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, CISMONTANE WOODLAND.		
Micro: IN CONEJO VOLCANIC SUBSTRATES, OFTEN ON EXPOSED ROADCUTS. SOMETIMES OCCUPIES OAK WOODLAND HABITAT. 150-260M.		

Occurrence No. 6	Map Index: 20307	EO Index: 9851	— Dates Last Seen —
Occ Rank: Unknown			Element: 1991-09-27
Origin: Natural/Native occurrence			Site: 1991-09-27
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-07-09

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.10966° / -118.77224°	Township: 01S
UTM: Zone-11 N3775733 E336538	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 04 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 850 ft

Location: 1/2 MILE NORTHWEST OF WEST END OF LAKE MALIBU.

Location Detail: ON NORTH-FACING SLOPE OF A KNOLL UNDERGOING DEVELOPMENT.

Ecological: ON NORTH SLOPES OF FLAT-TOPPED HILL, IN AND ABOUT DENSE CHAPARRAL OF ADENOSTOMA FASCICULATUM AND CEANOTHUS MEGACARPUS.

Threat: SITE UNDERGOING DEVELOPMENT, POPULATION LARGELY DESTROYED ACCORDING TO THOMAS (1999).

General: COLLECTED HERE BY HENRICKSON IN 1991. 13 PLANTS AT THIS SITE ACCORDING TO BEAUCHAMP AND HENRICKSON (1996). SITE IS HIGHLY VULNERABLE TO EXTIRPATION, AND LARGELY DESTROYED THROUGH A PROJECT ACCORDING TO THOMAS (1999).

Owner/Manager: UNKNOWN

Baccharis malibuensis		
Malibu baccharis		Element Code: PDAST0W0W0
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G1 State: S1.1	CNPS List: 1B.1
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, CISMONTANE WOODLAND.		
Micro: IN CONEJO VOLCANIC SUBSTRATES, OFTEN ON EXPOSED ROADCUTS. SOMETIMES OCCUPIES OAK WOODLAND HABITAT. 150-260M.		

Occurrence No. 7	Map Index: 48218	EO Index: 48218	— Dates Last Seen —
Occ Rank: Fair			Element: 2000-03-06
Origin: Natural/Native occurrence			Site: 2000-03-06
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-07-09

Quad Summary: Malibu Beach (3411816/112C)
County Summary: Los Angeles

Lat/Long: 34.09542° / -118.68464°	Township: 01S
UTM: Zone-11 N3774017 E344593	Range: 17W
Mapping Precision: SPECIFIC	Section: 08 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 790 ft

Location: WEST OF COLD CANYON ROAD AND SOUTH OF MULHOLLAND HIGHWAY, NORTH OF MONTE NIDO.
Location Detail: ON SOUTH SIDE OF DIRT ROAD HEADING NORTHWEST FROM COLD CANYON ROAD. MAPPED WITHIN THE NE 1/4 OF THE SE 1/4 OF SECTION 8.
Ecological: IN CHAPARRAL COMPOSED OF CHAMISE AND BIRCH-LEAF MOUNTAIN MAHOGANY.
Threat: AREA PERIODICALLY CLEARED BY BRUSH. POTENTIAL FOR FUTURE GRADING, DEVELOPMENT, AND DUMPING.
General: 6 PLANTS OBSERVED IN 2000 IN A VERY SMALL AREA.
Owner/Manager: PVT-TREY TRUST

California macrophylla		
round-leaved filaree		Element Code: PDGER01070
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.1
State: None	State: S2	
_____ Habitat Associations _____		
General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.		
Micro: CLAY SOILS. 15-1200M.		

Occurrence No. 5	Map Index: 45640	EO Index: 45640	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1999-09-22
Origin: Natural/Native occurrence			Site: 1999-09-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-10-27

Quad Summary: Malibu Beach (3411816/112C), Point Dume (3411817/113D), Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.09548° / -118.74047°	Township: 01S
UTM: Zone-11 N3774110 E339442	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation:

Location: MALIBU CREEK STATE PARK.

Location Detail: EXACT LOCATION UNKNOWN; PARK BOUNDARY MAPPED BY CNDDDB.

Ecological: IN DUFF AND IN SHADE OF QUERCUS AGRIFOLIA.

Threat:

General: POPULATION DESCRIBED IN SOURCE AS A "HANDFUL OF INDIVIDUALS." 1918 COLLECTION BY PEIRSON FROM "ALONG ROAD TO BRENTS ON THE MALIBU" ALSO ATTRIBUTED HERE. NEEDS FIELDWORK.

Owner/Manager: DPR-MALIBU CREEK SP

California macrophylla		
round-leaved filaree		Element Code: PDGER01070
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.1
State: None	State: S2	
_____ Habitat Associations _____		
General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.		
Micro: CLAY SOILS. 15-1200M.		

Occurrence No. 6	Map Index: 45685	EO Index: 45685	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1999-09-19
Origin: Natural/Native occurrence			Site: 1999-09-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2001-08-28

Quad Summary: Thousand Oaks (3411827/113A), Simi (3411837/139D)
 County Summary: Ventura

Lat/Long: 34.25851° / -118.81455°	Township: 02N
UTM: Zone-11 N3792309 E332929	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: UN Qtr: XX
Symbol Type: POINT	Meridian: X
Radius: 3/5 mile	Elevation:

Location: VICINITY OF REAGAN LIBRARY.
 Location Detail: LOCATED IN FOOTHILLS BETWEEN TIERRA REJADA VALLEY AND SIMI VALLEY, SOUTH OF TIERRA REJADA ROAD.
 Ecological: ONE POPULATION IN HEAVY CLAY SOIL.
 Threat: THE AREA GETS A GREAT DEAL OF RECREATIONAL PRESSURE.
 General: POPULATION PRESENTLY IN OPEN SPACE. NEEDS FIELDWORK.
 Owner/Manager: RANCHO SIMI RPD

California macrophylla		
round-leaved filaree		Element Code: PDGER01070
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.1
State: None	State: S2	
_____ Habitat Associations _____		
General: CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.		
Micro: CLAY SOILS. 15-1200M.		

Occurrence No. 101	Map Index: 75410	EO Index: 76413	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 2005-04-11
Origin: Natural/Native occurrence			Site: 2005-04-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-06-05

Quad Summary: Calabasas (3411826/112B)
 County Summary: Los Angeles

Lat/Long: 34.14300° / -118.72292°	Township: 01N
UTM: Zone-11 N3779353 E341149	Range: 18W
Mapping Precision: SPECIFIC	Section: 25 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 875 ft

Location: LIBERTY CANYON, 0.6 KM NORTH OF INTERSECTION OF HIGHWAY 101 AND LIBERTY CANYON ROAD, AGOURA HILLS.

Location Detail:

Ecological: CLAY SOIL, BASE OF WEST-FACING SLOPE. ANNUAL GRASSLAND.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 2005 PARIKH & GALE COLLECTION.

Owner/Manager: UNKNOWN

Calochortus clavatus var. gracilis

slender mariposa-lily

Element Code: PMLIL0D096

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G4T2	CNPS List: 1B.2
State: None	State: S2	

_____ **Habitat Associations** _____

General: CHAPARRAL, COASTAL SCRUB.
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M

Occurrence No. 8	Map Index: 26512	EO Index: 1587	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1995-06-06
Origin: Natural/Native occurrence			Site: 1995-06-06
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-04-20

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.33091° / -118.51010°	Township: 03N
UTM: Zone-11 N3799880 E361081	Range: 16W
Mapping Precision: SPECIFIC	Section: 24 Qtr: E
Symbol Type: POLYGON	Meridian: S
Area: 9.8 acres	Elevation: 1,500 ft

Location: 0.3 MILE SW OF THE INTERSTATE-5 / HIGHWAY 14 JUNCTION, ABOUT 5.5 MILES NORTHWEST OF SAN FERNANDO.

Location Detail: 2 COLONIES.

Ecological: OPEN SITE ON VERY STEEP SLOPE NEAR RIDGETOP WITHIN COSTAL SAGE SCRUB. SOIL IS GRAYISH, ASHY IN TEXTURE. PARENT MATERIAL IS SOFT SANDSTONE.

Threat: LANDFILL EXPANSION PLANNED FOR AREA.

General: 5 PLANTS IN OBSERVED IN WEST COLONY AND ~50 IN EAST COLONY IN 1995. POTENTIALLY MORE PLANTS IN THE AREA. STEEP TOPOGRAPHY AND INCONSPICUOUS APPEARANCE OF VEGETATIVE PLANTS PREVENTED DETAILED CENSUS. INCLUDES FORMER OCCURRENCE #9.

Owner/Manager: PVT-BROWNING/FERRIS INDUSTRIES

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G4T2 State: S2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB. Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 14 Map Index: 64537 EO Index: 64616 — Dates Last Seen —
 Occ Rank: Unknown Element: 1959-06-02
 Origin: Natural/Native occurrence Site: 1959-06-02
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2006-04-20

Quad Summary: Malibu Beach (3411816/112C), Calabasas (3411826/112B)
 County Summary: Los Angeles

Lat/Long: 34.11284° / -118.68668°	Township: 01S
UTM: Zone-11 N3775952 E344436	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 05 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 700 ft

Location: NE OF ENTRANCE TO STOKES CANYON, SANTA MONICA MOUNTAINS.
 Location Detail: EXACT LOCATION UNKNOWN. MAPPED BY CNDDB AS BEST GUESS IN GENERAL VICINITY OF STOKES CANYON. ELEVATION GIVEN AS 600-800 FEET.
 Ecological:
 Threat:
 General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1959 COLLECTION BY EVERETT & BALLS. NEEDS FIELDWORK.
 Owner/Manager: UNKNOWN

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4T2	CNPS List: 1B.2
State: None	State: S2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 16	Map Index: 64539	EO Index: 64618	— Dates Last Seen —
Occ Rank: Unknown			Element: 1998-05-08
Origin: Natural/Native occurrence			Site: 1998-05-08
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2006-04-20

Quad Summary: Calabasas (3411826/112B)
 County Summary: Ventura, Los Angeles

Lat/Long: 34.22742° / -118.66702°	Township: 02N
UTM: Zone-11 N3788629 E346457	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 28 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,200 ft

Location: SANTA MONICA MOUNTAINS, SOUTH OF WOOLSEY CANYON RD, 1 MILE DOWN THE EXISTING DIRT ROAD.
 Location Detail: EXACT LOCATION UNKNOWN. CANNOT DETERMINE WHICH DIRT ROAD WAS TRAVELED ON. MAPPED BY CNDDDB ACCORDING TO T-R-S PROVIDED BY LEATHERMAN & DANIELS: T2N, R17W, SEC 28.

Ecological: CHAPARRAL. ASSOCIATED WITH DUDLEYA LANCEOLATA, ADENOSTOMA FASCICULATUM, MIMULUS AURANTIACUS, ERIOGONUM FASCICULATUM, MALOSMA LAURINA, ARTEMISIA CALIFORNICA, AND SALVIA MELLIFERA.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1998 COLLECTION BY LEATHERMAN & DANIELS. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4T2	CNPS List: 1B.2
State: None	State: S2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 23	Map Index: 77614	EO Index: 78519	— Dates Last Seen —
Occ Rank: Fair			Element: 2007-05-12
Origin: Natural/Native occurrence			Site: 2007-05-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-10

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.36473° / -118.51749°	Township: 03N
UTM: Zone-11 N3803641 E360458	Range: 16W
Mapping Precision: SPECIFIC	Section: 12 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 33.0 acres	Elevation: 1,500 ft

Location: ~0.4 AIR MI SW OF NEWHALL CREEK, ~0.6 AIR MI W OF ANTELOPE VALLEY FWY (SR 14), SAN GABRIEL MTNS.

Location Detail: MAPPED BY CNDDDB AS 5 POLYGONS BASED ON COORDINATES FROM NINE 2007 RICE FIELD SURVEY FORMS.

Ecological: OPEN AREA WITHIN COASTAL SAGE SCRUB; GROWING AMONG INVASIVE ANNUAL GRASSES, CHLOROGALUM POMERIDIANUM AND SALVIA MELLIFERA.

Threat:

General: 10 PLANTS SEEN IN 2007.

Owner/Manager: PVT

Calochortus clavatus var. gracilis

slender mariposa-lily

Element Code: PMLIL0D096

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: None **Global:** G4T2 **CNPS List:** 1B.2
State: None **State:** S2

----- **Habitat Associations** -----
General: CHAPARRAL, COASTAL SCRUB.
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M

Occurrence No. 24 **Map Index:** 77615 **EO Index:** 78520 **----- Dates Last Seen -----**
Occ Rank: Fair **Element:** 2007-05-12
Origin: Natural/Native occurrence **Site:** 2007-05-12
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2009-12-10

Quad Summary: Oat Mountain (3411835/138D)
County Summary: Los Angeles

Lat/Long: 34.35548° / -118.51031° **Township:** 03N
UTM: Zone-11 N3802605 E361103 **Range:** 16W
Mapping Precision: SPECIFIC **Section:** 12 **Qtr:** SE
Symbol Type: POINT **Meridian:** S
Radius: 80 meters **Elevation:** 1,600 ft

Location: ~0.1 AIR MI W OF SIERRA HWY-REMSEN ST JUNCTION, SAN GABRIEL MTNS.
Location Detail: MAPPED BY CNDDDB BASED ON COORDINATES FROM A 2007 RICE FIELD SURVEY FORM.
Ecological: OPEN AREA WITHIN COASTAL SAGE SCRUB; GROWING AMONG INVASIVE ANNUAL GRASSES.
Threat:
General: 1 PLANT SEEN IN 2007.
Owner/Manager: PVT

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G4T2 State: S2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB. Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 26	Map Index: 78179	EO Index: 78858	Dates Last Seen
Occ Rank: Unknown			Element: 1960-05-21
Origin: Natural/Native occurrence			Site: 1960-05-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-04-07

Quad Summary: Point Dume (3411817/113D)
County Summary: Los Angeles

Lat/Long: 34.11446° / -118.77769°	Township: 01S
UTM: Zone-11 N3776274 E336044	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 04 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 3/5 mile	Elevation: 800 ft

Location: CORNELL CORNERS, SANTA MONICA MOUNTAINS.
Location Detail: UNABLE TO LOCATE "CORNELL CORNERS." MAPPED BY CNDDDB AS BEST GUESS AT CORNELL IN THE SANTA MONICA MOUNTAINS.
Ecological: IN CHAPARRAL ON OPEN ROCKY SLOPES.
Threat:
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1960 RAVEN COLLECTION. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

Calochortus clavatus var. gracilis

slender mariposa-lily

Element Code: PMLIL0D096

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: None **Global:** G4T2 **CNPS List:** 1B.2
State: None **State:** S2

----- **Habitat Associations** -----
General: CHAPARRAL, COASTAL SCRUB.
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M

Occurrence No. 37 **Map Index:** 77678 **EO Index:** 78577 ----- **Dates Last Seen** -----
Occ Rank: Unknown **Element:** 2005-XX-XX
Origin: Natural/Native occurrence **Site:** 2005-XX-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2009-12-21

Quad Summary: Santa Susana (3411836/138C), Val Verde (3411846/138B)

County Summary: Los Angeles

Lat/Long: 34.37285° / -118.65133° **Township:** 03N
UTM: Zone-11 N3804733 E348164 **Range:** 17W
Mapping Precision: SPECIFIC **Section:** 03 **Qtr:** N
Symbol Type: POLYGON **Meridian:** S
Area: 6.0 acres **Elevation:** 2,000 ft

Location: NEWHALL RANCH; BETWEEN E FORK SALT CANYON AND SALT CANYON, FROM ~1.4 TO ~1.7 MI S OF PICO CANYON RD, SANTA SUSANA MTNS.

Location Detail: MAPPED BY CNDDDB AS 6 POLYGONS BASED ON A 2006 DUDEK FIELD SURVEY MAP.

Ecological: IN SAGEBRUSH, UNDIFFERENTIATED CHAPARRAL, LIVE OAK WOODLAND, VALLEY OAK SAVANNAH AND ANNUAL GRASSLAND HABITATS.

Threat:

General: 31,370 PLANTS SEEN IN SURVEY AREA IN 2003 (INCLUDES OCCURENCES 36, 41-44 AND PARTS OF 37, 39 AND 40). SEEN AGAIN IN 2005 SURVEYS. 371 PLANTS SEEN IN SURVEY AREA IN 2006 (INCLUDES OCCURENCES 34, 35, 38 AND PARTS OF 37, 39 AND 40).

Owner/Manager: PVT-NEWHALL LAND & FARMING

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4T2	CNPS List: 1B.2
State: None	State: S2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 38	Map Index: 77679	EO Index: 78579	— Dates Last Seen —
Occ Rank: Unknown			Element: 2006-XX-XX
Origin: Natural/Native occurrence			Site: 2006-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-21

Quad Summary: Santa Susana (3411836/138C)

County Summary: Los Angeles

Lat/Long: 34.35771° / -118.64334°	Township: 03N
UTM: Zone-11 N3803043 E348871	Range: 17W
Mapping Precision: SPECIFIC	Section: 10 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 1.0 acres	Elevation: 2,500 ft

Location: NEWHALL RANCH; ~0.35 MI NW OF BM 3193, BETWEEN SALT CANYON AND PALO SOLA FIRE TRUCK TRL, SANTA SUSANA MTNS.

Location Detail: MAPPED BY CNDDDB BASED ON A 2006 DUDEK FIELD SURVEY MAP.

Ecological: IN UNDIFFERENTIATED CHAPARRAL.

Threat:

General: 371 PLANTS SEEN IN SURVEY AREA IN 2006 (INCLUDES OCCURENCES 34, 35, 38 AND PARTS OF 37, 39 AND 40).

Owner/Manager: PVT-NEWHALL LAND & FARMING

Calochortus clavatus var. gracilis

slender mariposa-lily

Element Code: PMLIL0D096

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G4T2	CNPS List: 1B.2
State: None	State: S2	

_____ **Habitat Associations** _____

General: CHAPARRAL, COASTAL SCRUB.
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M

Occurrence No. 39	Map Index: 77680	EO Index: 78580	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 2005-XX-XX
Origin: Natural/Native occurrence			Site: 2005-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-21

Quad Summary: Santa Susana (3411836/138C)

County Summary: Los Angeles

Lat/Long: 34.35040° / -118.64776°	Township: 03N
UTM: Zone-11 N3802238 E348452	Range: 17W
Mapping Precision: SPECIFIC	Section: 10 Qtr: S
Symbol Type: POLYGON	Meridian: S
Area: 10.0 acres	Elevation: 2,800 ft

Location: NEWHALL RANCH; N AND S OF PALO SOLA FIRE TRUCK TRAIL, FROM ~1.5 TO ~2.5 MI E OF SALT CREEK FIRE RD, SANTA SUSANA MTNS.

Location Detail: MAPPED BY CNDDDB AS 11 POLYGONS BASED ON A 2006 DUDEK FIELD SURVEY MAP.

Ecological: IN VALLEY OAK SAVANNAH, ANNUAL GRASSLAND, LIVE OAK WOODLAND, MIXED OAK WOODLAND AND UNDIFFERENTIATED CHAPARRAL HABITATS.

Threat:

General: 31,370 PLANTS SEEN IN SURVEY AREA IN 2003 (INCLUDES OCCURENCES 36, 41-44 AND PARTS OF 37, 39 AND 40). SEEN AGAIN IN 2005 SURVEYS. 371 PLANTS SEEN IN SURVEY AREA IN 2006 (INCLUDES OCCURENCES 34, 35, 38 AND PARTS OF 37, 39 AND 40).

Owner/Manager: PVT-NEWHALL LAND & FARMING

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G4T2 State: S2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 40	Map Index: 77681	EO Index: 78581	Dates Last Seen
Occ Rank: Unknown			Element: 2005-XX-XX
Origin: Natural/Native occurrence			Site: 2005-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-21

Quad Summary: Santa Susana (3411836/138C)

County Summary: Los Angeles, Ventura

Lat/Long: 34.35901° / -118.66691°	Township: 03N
UTM: Zone-11 N3803222 E346706	Range: 17W
Mapping Precision: SPECIFIC	Section: 09 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 19.0 acres	Elevation: 2,800 ft

Location: NEWHALL RANCH; N AND S OF PALO SOLA FIRE TRUCK TRAIL, FROM 0 TO ~1.2 MI E OF SALT CREEK FIRE RD, SANTA SUSANA MTNS.

Location Detail: MAPPED BY CNDDDB AS 12 POLYGONS BASED ON A 2006 DUDEK FIELD SURVEY MAP.

Ecological: IN BURNED UNDIFFERENTIATED CHAPARRAL, VALLEY OAK SAVANNAH, ANNUAL GRASSLAND AND LIVE OAK WOODLAND HABITATS.

Threat:

General: 31,370 PLANTS SEEN IN SURVEY AREA IN 2003 (INCLUDES OCCURENCES 36, 41-44 AND PARTS OF 37, 39 AND 40). SEEN AGAIN IN 2005 SURVEYS. 371 PLANTS SEEN IN SURVEY AREA IN 2006 (INCLUDES OCCURENCES 34, 35, 38 AND PARTS OF 37, 39 AND 40).

Owner/Manager: PVT-NEWHALL LAND & FARMING

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G4T2 State: S2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 41	Map Index: 77682	EO Index: 78582	Dates Last Seen
Occ Rank: Unknown			Element: 2005-XX-XX
Origin: Natural/Native occurrence			Site: 2005-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-21

Quad Summary: Santa Susana (3411836/138C)
County Summary: Ventura

Lat/Long: 34.36679° / -118.68453°	Township: 03N
UTM: Zone-11 N3804111 E345100	Range: 17W
Mapping Precision: SPECIFIC	Section: 05 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 3.0 acres	Elevation: 2,400 ft

Location: NEWHALL RANCH; FROM ~0.6 TO ~0.7 AIR MI ESE OF PALO SOLA FIRE TRUCK TRL AND SALT CREEK FIRE RD JCT, SANTA SUSANA MTNS.

Location Detail: MAPPED BY CNDDDB BASED ON A 2006 DUDEK FIELD SURVEY MAP.

Ecological: IN VALLEY OAK SAVANNAH AND LIVE OAK WOODLAND HABITATS.

Threat:

General: 31,370 PLANTS SEEN IN SURVEY AREA IN 2003 (INCLUDES OCCURENCES 36, 41-44 AND PARTS OF 37, 39 AND 40). SEEN AGAIN IN 2005 SURVEYS.

Owner/Manager: PVT-NEWHALL LAND & FARMING

Calochortus clavatus var. gracilis		
slender mariposa-lily		Element Code: PMLIL0D096
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G4T2 State: S2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M		

Occurrence No. 42	Map Index: 77683	EO Index: 78583	Dates Last Seen
Occ Rank: Unknown			Element: 2005-XX-XX
Origin: Natural/Native occurrence			Site: 2005-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-21

Quad Summary: Santa Susana (3411836/138C)

County Summary: Ventura

Lat/Long: 34.36465° / -118.69267°	Township: 03N
UTM: Zone-11 N3803887 E3444348	Range: 17W
Mapping Precision: SPECIFIC	Section: 05 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 17.0 acres	Elevation: 2,800 ft

Location: NEWHALL RANCH; N AND S OF SALT CREEK FIRE RD, FROM ~0.7 TO ~1.6 MI W OF PALO SOLA FIRE TRUCK TRL, SANTA SUSANA MTNS.

Location Detail: MAPPED BY CNDDDB AS 6 POLYGONS BASED ON A 2006 DUDEK FIELD SURVEY MAP. POPULATIONS EXTEND FROM E1/2 SEC 6 THROUGH SW1/5 SEC 5 AND INTO N1/2 SEC 8.

Ecological: IN VALLEY OAK SAVANNAH, BURNED SAGEBRUSH AND ANNUAL GRASSLAND HABITATS.

Threat:

General: 31,370 PLANTS SEEN IN SURVEY AREA IN 2003 (INCLUDES OCCURENCES 36, 41-44 AND PARTS OF 37, 39 AND 40). SEEN AGAIN IN 2005 SURVEYS. 371 PLANTS SEEN IN SURVEY AREA IN 2006 (INCLUDES OCCURENCES 34, 35, 38 AND PARTS OF 37, 39 AND 40).

Owner/Manager: PVT-NEWHALL LAND & FARMING

Calochortus clavatus var. gracilis

slender mariposa-lily

Element Code: PMLIL0D096

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G4T2	CNPS List: 1B.2
State: None	State: S2	

Habitat Associations

General: CHAPARRAL, COASTAL SCRUB.
Micro: SHADED FOOTHILL CANYONS; OFTEN ON GRASSY SLOPES WITHIN OTHER HABITAT. 420-760M

Occurrence No. 55	Map Index: 77715	EO Index: 78613	— Dates Last Seen —
Occ Rank: Unknown			Element: 2005-XX-XX
Origin: Transplant Outside of Native Hab./Range			Site: 2005-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-04-15

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.29685° / -118.60512°	Township: 03N
UTM: Zone-11 N3796237 E352281	Range: 16W
Mapping Precision: SPECIFIC	Section: 31 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 1.0 acres	Elevation: 1,600 ft

Location: BROWN'S CANYON RESOURCE PROPERTY; FROM ~1.1 TO ~1.2 AIR MI WEST OF BROWNS CANYON RD-MORMAN CANYON MTWY JUNCTION.

Location Detail: PLANTING AREA VI (INCLUDES QUADRAT 11). MAPPED BY CNDDDB BASED ON A 2005 HAYDUK FIELD SURVEY MAP.

Ecological: STEEP, NORTHERLY-FACING SLOPES.

Threat: DEER/RODENT PREDATION, SPREAD OF EXOTICS.

General: BULBS TRANSPLANTED IN THE FALL/WINTER OF 2004-2005 ALONG WITH PLUMMER'S MARIPOSA LILY BULBS FROM DEERLAKE RANCH DEVELOPMENT SITE (N-TRENDING SLOPES SOUTH OF DEVIL CANYON) TO MONITORING QUADRATS ~1 MI TO NORTH.

Owner/Manager: MRCA-ANTONOVICH REGIONAL PARK

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 39	Map Index: 27700	EO Index: 28597	— Dates Last Seen —
Occ Rank: None			Element: 1929-06-XX
Origin: Natural/Native occurrence			Site: 1989-XX-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 1995-11-29

Quad Summary: Beverly Hills (3411814/111C), Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.10759° / -118.50209°	Township: 01S
UTM: Zone-11 N3775104 E361454	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,050 ft

Location: MANDEVILLE CANYON, SANTA MONICA MOUNTAINS.

Location Detail: MAPPED IN VICINITY OF ELEVATION PROVIDED ON HERBARIUM LABEL: 350M.

Ecological: BRUSHY RIDGE.

Threat: AREA IS DEVELOPED WITH POCKETS OF HABITAT ALONG UNDEVELOPED SLOPES.

General: MAIN SOURCE OF INFORMATION FOR THIS SITE IS 1929 COLLECTION BY CLOKEY AND TEMPLETON. AREA SEARCHED BETWEEN 1989-1991 BUT NO PLANTS FOUND (MCDONALD AND STOKKINK, 1991).

Owner/Manager: UNKNOWN

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 40	Map Index: 27699	EO Index: 751	— Dates Last Seen —
Occ Rank: Unknown			Element: 1992-XX-XX
Origin: Natural/Native occurrence			Site: 1992-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-11-30

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.11235° / -118.69075°	Township: 01S
UTM: Zone-11 N3775903 E344060	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 05 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 600 ft

Location: STOKES CANYON ABOUT 0.85 MILES NORTH OF MULHOLLAND HIGHWAY, SANTA MONICA MOUNTAINS.

Location Detail: STOKES CANYON ROAD 0.85 MILE FROM MULHOLLAND HIGHWAY, ACROSS DRY WATER CONCOURSE, AND SCATTERED UP A SLOPE IN FROM, AND WEST OF THE ROAD. SITE IS NORTH OF THE DEVELOPED AREA OF THE CANYON.

Ecological: ON DRY ROCKY SLOPES, BURNED AREA. SOUTH OAK WOODLAND/CHAPARRAL.

Threat: SITE APPEARS TO BE TOO STEEP FOR DEVELOPMENT.

General: PLANTS ABUNDANT IN 1959, 40 OBSERVED IN 1992. SITE FIRST REPORTED IN 1959 COLLECTION BY EVERETT AND BALLS.

Owner/Manager: UNKNOWN

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 42	Map Index: 27697	EO Index: 729	— Dates Last Seen —
Occ Rank: Unknown			Element: 1992-XX-XX
Origin: Natural/Native occurrence			Site: 1992-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-02-22

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.10005° / -118.79554°	Township: 01S
UTM: Zone-11 N3774705 E334370	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 08 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,500 ft

Location: MULHOLLAND HIGHWAY ABOUT 1.2 MILES EAST OF KANAN-DUME ROAD, SANTA MONICA MOUNTAINS.

Location Detail:

Ecological: STEEP SLOPE BY THE ROADSIDE.

Threat:

General: 10 PLANTS OBSERVED IN 1992 BY MCDONALD AND STOKKINK.

Owner/Manager: UNKNOWN

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 45	Map Index: 27694	EO Index: 680	— Dates Last Seen —
Occ Rank: Unknown			Element: 1992-XX-XX
Origin: Natural/Native occurrence			Site: 1992-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-11-30

Quad Summary: Van Nuys (3411824/111B), Canoga Park (3411825/112A)

County Summary: Los Angeles

Lat/Long: 34.12989° / -118.49969°	Township: 01N
UTM: Zone-11 N3777573 E361712	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,700 ft

Location: MULHOLLAND DRIVE ABOUT 0.2 MILE EAST OF ENCINO ROAD (ENCINO HILLS DRIVE?), SANTA MONICA MOUNTAINS.

Location Detail: NORTH SIDE OF MULHOLLAND DR ON EDGE OF ROADCUT ABOVE THE ROAD. SOURCE LISTS CROSS STREET AS ENCINO RD. ACCORDING TO AAA MAPS, THE ONLY "ENCINO RD" THAT INTERSECTS MULHOLLAND DR IS ENCINO HILLS DRIVE, ABOUT 2 MILES WEST OF I-405.

Ecological:

Threat:

General: 7 PLANTS OBSERVED IN 1992. ONLY SOURCE OF INFORMATION IS 1992 OBSERVATION REPORTED BY MCDONALD AND STOKKINK (1992).

Owner/Manager: UNKNOWN

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 46	Map Index: 27690	EO Index: 855	— Dates Last Seen —
Occ Rank: Unknown			Element: 1992-XX-XX
Origin: Natural/Native occurrence			Site: 1992-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-22

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.13503° / -118.85062°	Township: 01N
UTM: Zone-11 N3778674 E329358	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 27 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,000 ft

Location: DECKER CANYON ROAD BETWEEN POTRERO ROAD AND CARLISLE ROAD, SANTA MONICA MOUNTAINS.

Location Detail: SITE REPORTED AS "WEST LAKE BLVD-DECKER CANYON ROAD," "DECKER CANYON ROAD/LOS ALISOS CANYON [EXTENDING INTO VENTURA COUNTY]," AND "RIDGE EAST OF WESTLAKE BETWEEN POTRERO & CARLISLE RD."

Ecological: PORTION OF OCCURRENCE IS IN SMALL GRASSY OPENINGS IN CHAPARRAL AT BASE OF EAST-FACING SLOPES. ASSOCIATED WITH PENTACHAETA LYONII AND NASSELLA PULCHRA. SOILS ARE CLAY DERIVED FROM VOLCANICS WITH OCCASIONAL BOULDERS.

Threat: POTENTIAL DEVELOPMENT.

General: ABOUT 200 PLANTS OBSERVED IN 1979 BY G. BURLEIGH, 200 PLANTS REPORTED BY MCDONALD AND STOKKINK IN 1992. NORTHERN PORTION OF COLONY (VEN COUNTY) REPORTED AS ASSOCIATE OF PENTACHAETA LYONII BY T. THOMAS IN 1983. FORMER EO #47 LUMPED HERE.

Owner/Manager: UNKNOWN

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 48	Map Index: 27692	EO Index: 918	Dates Last Seen
Occ Rank: Fair			Element: 1992-06-20
Origin: Natural/Native occurrence			Site: 1992-06-20
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-11-30

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.22624° / -118.82649°	Township: 02N
UTM: Zone-11 N3788749 E331765	Range: 19W
Mapping Precision: SPECIFIC	Section: 25 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 4.1 acres	Elevation: 1,500 ft

Location: HILL SOUTH OF WOOD RANCH RESERVOIR (AKA LAKE BARD), SIMI HILLS.

Location Detail: MAPPED AT THE SOUTHEAST END OF THE 1592' HILLTOP. SITE IS ABOUT 1 MILE EAST OF THE JUNCTION OF HIGHWAY 23 AND SUNSET HILLS BLVD.

Ecological: CHAPARRAL; IN ROCKY SANDSTONE SUBSTRATE WITH CEANOTHUS MEGACARPUS AND ADENOSTOMA FASCICULATUM.

Threat: POTENTIAL RESIDENTAL DEVELOPMENT.

General: MORE THAN 50 PLANTS OBSERVED IN 1992.

Owner/Manager: PVT

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

_____ **Habitat Associations** _____

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 49	Map Index: 27693	EO Index: 8239	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 2009-07-13
Origin: Natural/Native occurrence			Site: 2009-07-13
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-10

Quad Summary: Triunfo Pass (3411818/113C), Newbury Park (3411828/113B), Point Dume (3411817/113D), Thousand Oaks (3411827/113A)
County Summary: Ventura

Lat/Long: 34.12920° / -118.88167°	Township: 01N
UTM: Zone-11 N3778080 E326483	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 33 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,200 ft

Location: SOUTH AND WEST OF LAKE SHERWOOD, SOUTH OF THOUSAND OAKS, SANTA MONICA MOUNTAINS.
Location Detail: MAPPED BY CNDDDB AS TWO NON-SPECIFIC POLYGONS. NORTHERN POLYGON COVERS 846 ACRES AND IS BASED ON MAPS OF LAKE SHERWOOD AREA PLANNING UNIT 2 AND LAKE SHERWOOD TENTATIVE TRACT 4192. SOUTHERN TINY POLYGON MAPPED BASED ON 2009 GPS DATA BY MOINE.
Ecological: ASSOCIATED WITH ADENOSTOMA FASCICULATUM AND CEANOTHUS MEGACARPUS.
Threat: PORTIONS OF THE OCCURRENCE HAVE BEEN DEVELOPED.
General: UNKNOWN NUMBER OF PLANTS OBSERVED IN NORTHERN POLYGON IN 1990 AND 1998. PLANTS WERE RELATIVELY ABUNDANT IN UPLAND AND ROCKY AREAS IN 1998. MORE SPECIFIC LOCATIONS NEEDED FOR PLANTS IN N POLYGON. 1 PLANT OBSERVED IN SOUTHERN POLYGON IN 2009.
Owner/Manager: PVT

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 53	Map Index: 27686	EO Index: 736	— Dates Last Seen —
Occ Rank: Unknown			Element: 2005-07-03
Origin: Natural/Native occurrence			Site: 2005-07-03
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-10-14

Quad Summary: Santa Susana (3411836/138C)

County Summary: Ventura, Los Angeles

Lat/Long: 34.26990° / -118.63360°	Township: 02N
UTM: Zone-11 N3793290 E349611	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 1,500 ft

Location: SANTA SUSANA PASS, SIMI HILLS.

Location Detail:

Ecological:

Threat:

General: MAIN SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1928 HOWELL COLLECTION FROM SANTA SUSANA PASS. 2005 WISCH PHOTOS FROM ROCKY PEAK PARK, IN POST FIRE CHAPARRAL, ALSO ATTRIBUTED HERE.

Owner/Manager: MRCA-ROCKY PEAK PARK

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 73	Map Index: 47964	EO Index: 47964	Dates Last Seen
Occ Rank: Fair			Element: 1998-06-25
Origin: Natural/Native occurrence			Site: 1998-06-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-05-21

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.29502° / -118.79664°	Township: 03N
UTM: Zone-11 N3796329 E334650	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 32 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area:	Elevation:

Location: SIMI VALLEY LANDFILL, NORTH OF SIMI VALLEY, RIDGE BETWEEN BREA AND ALAMOS CANYONS.

Location Detail: MAPPED WITHIN THE NW 1/4 OF THE NW 1/4 OF SECTION 5, THE NORTH HALF OF THE NE 1/4 OF SECTION 6, THE SOUTH HALF OF THE SE 1/4 OF SECTION 31 AND THE SW 1/4 OF SECTION 32.

Ecological: AREA MOSTLY DISTURBED, DOMINATED BY CENTAUREA MELITENSIS, BUT PLANTS ALSO SEEM TO GROW FROM UNDER CANOPY OF SCATTERED CHAMISE AND PURPLE SAGE SHRUBS.

Threat: PROPOSED LANDFILL EXPANSION WILL COME WITHIN 200 FEET OF THIS POPULATION, FURTHER ISOLATING THESE PLANTS.

General: 8 PLANTS OBSERVED IN 1998.

Owner/Manager: PVT-SIMI VALLEY LANDFILL

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 75	Map Index: 80719	EO Index: 47984	Dates Last Seen
Occ Rank: Unknown			Element: 2009-06-25
Origin: Natural/Native occurrence			Site: 2009-06-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-11-17

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.11988° / -118.63312°	Township: 01N
UTM: Zone-11 N3776653 E349388	Range: 17W
Mapping Precision: SPECIFIC	Section: 35 Qtr: S
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,300 ft

Location: ALONG OLD TOPANGA CANYON ROAD, 0.6 ROAD MILE NORTH OF ZUNIGA ROAD, TOPANGA.

Location Detail:

Ecological: ROCKY SANDSTONE OUTCROP ALONG ROAD.

Threat: POSSIBLY THREATENED BY ROAD MAINTENANCE.

General: APPROXIMATELY 12 PLANTS OBSERVED IN 2009. 1938 COOKE COLLECTION FROM TOPANGA CANYON ALSO ATTRIBUTED HERE.

Owner/Manager: PVT

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 79	Map Index: 48229	EO Index: 48229	— Dates Last Seen —
Occ Rank: Good			Element: 2001-06-01
Origin: Natural/Native occurrence			Site: 2001-06-01
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-07-12

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.19715° / -118.68770°	Township: 01N
UTM: Zone-11 N3785303 E344497	Range: 17W
Mapping Precision: SPECIFIC	Section: 05 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 9.2 acres	Elevation: 1,600 ft

Location: AHMANSON RANCH, SOUTH OF BELL CANYON ON THE SOUTH SIDE OF SIMI HILLS, WEST OF WOODLAND HILLS.

Location Detail: ALONG TRAIL ON TOP OF RIDGE SOUTH OF BELL CANYON.

Ecological: FOUND IN ASSOCIATION WITH COAST SAGE SCRUB AND NON-NATIVE AND NATIVE FOOTHILL GRASSLAND IN ROCKY AND SANDY AREAS WITH SOME GRANITIC MATERIAL.

Threat: SITE PLANNED FOR DEVELOPMENT.

General: 155 PLANTS OBSERVED IN 2001. LOCATION OF OCCURRENCE WILL NOT BE IMPACTED BY DEVELOPMENT.

Owner/Manager: PVT-AHMANSON LAND CO

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 105	Map Index: 61020	EO Index: 61056	— Dates Last Seen —
Occ Rank: Unknown			Element: 1971-07-13
Origin: Natural/Native occurrence			Site: 1971-07-13
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-04-19

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20341° / -118.85352°	Township: 01N
UTM: Zone-11 N3786263 E329229	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 03 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 950 ft

Location: NEAR THOUSAND OAKS. HIGHWAY 23, 2.0 MILES NORTH OF HIGHWAY 101.

Location Detail:

Ecological: CHAPARRAL ON ROADSIDE OF DECOMPOSED GRANITE.

Threat: EXTENSIVE DEVELOPMENT SURROUNDS THIS AREA.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1971 COLLECTION BY BRUHNS. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 106	Map Index: 61021	EO Index: 61057	— Dates Last Seen —
Occ Rank: Unknown			Element: 1999-07-28
Origin: Natural/Native occurrence			Site: 1999-07-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-10-23

Quad Summary: Santa Susana (3411836/138C)

County Summary: Ventura

Lat/Long: 34.30486° / -118.69602°	Township: 03N
UTM: Zone-11 N3797261 E343928	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 31 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,250 ft

Location: ROUGHLY 2 MILES NORTH OF SANTA SUSANA, BETWEEN TAPO AND CHIVO CANYONS. AT MARR RANCH.

Location Detail: AT THE SOUTH FOOT OF THE HILLS, NORTH OF TEXAS AVE. MAPPED BY CNDDDB ACCORDING TO T-R-S INFORMATION PROVIDED BY SANDERS & PROVANCE: T3N, R17W, NE 1/4 OF SECTION 31.

Ecological: DRY, SOUTH-FACING SLOPES WITH COASTAL SAGE SCRUB AND ANNUAL GRASSLAND.

Threat: HEAVILY GRAZED.

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1999 COLLECTION BY SANDERS AND PROVANCE.

Owner/Manager: PVT

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 107	Map Index: 61022	EO Index: 61058	Dates Last Seen
Occ Rank: Poor			Element: 2004-05-24
Origin: Natural/Native occurrence			Site: 2004-05-24
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-04-19

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.28883° / -118.82307°	Township: 02N
UTM: Zone-11 N3795685 E332204	Range: 19W
Mapping Precision: SPECIFIC	Section: 01 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 780 ft

Location: 1 AIR MILE SE OF MOORPARK COLLEGE. JUST NORTH OF HIGHWAY 118 NEAR THE WESTERN EDGE OF OAK PARK.

Location Detail: IN THE SE 1/4 OF THE NW 1/4 OF SECTION 1. NEAR TRAIL.

Ecological: LOW QUALITY COASTAL SAGE SCRUB, RECENTLY BURNED. ASSOCIATES INCLUDE MUSTARDS, BROMES, AND ENCELIA CALIFORNICA. EXPOSED RIDGELINE TRAIL WITH WHITE, CHALKY SOIL.

Threat: PLANT OBSERVED GROWING IN THE CENTER OF A FOOT TRAIL.

General: 1 PLANT OBSERVED IN 2004.

Owner/Manager: VEN COUNTY-PARKS & REC

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 108	Map Index: 63559	EO Index: 63654	— Dates Last Seen —
Occ Rank: Poor			Element: 2005-06-15
Origin: Natural/Native occurrence			Site: 2005-06-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-12-30

Quad Summary: Santa Susana (3411836/138C)

County Summary: Los Angeles

Lat/Long: 34.25256° / -118.62775°	Township: 02N
UTM: Zone-11 N3791359 E350118	Range: 17W
Mapping Precision: SPECIFIC	Section: 14 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 1.0 acres	Elevation: 1,155 ft

Location: OAKWOOD CEMETERY VICINITY, ABOUT 0.8 AIR MILE ESE OF CHATSWORTH PEAK, SANTA SUSANA STATE HISTORIC PARK.

Location Detail: FOUR PLANTS FOUND NEAR TRAIL.

Ecological: IN COASTAL SAGE SCRUB COMMUNITY ON A SOUTH-FACING SLOPE. THE RARE DEINANDRA MINTHORNII ALSO OCCURS AT THIS SITE.

Threat: RECREATION.

General: FOUR INDIVIDUALS OBSERVED IN 2005. SITE IS WITHIN A STATE HISTORIC PARK. SEPTEMBER 2005 TOPANGA FIRE BURNED THE ENTIRE PARK. BURG WILL RESURVEY FOR THIS SPECIES IN 2006.

Owner/Manager: DPR-SANTA SUSANA SHP

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 162	Map Index: 77426	EO Index: 78335	— Dates Last Seen —
Occ Rank: Poor			Element: 2006-06-25
Origin: Natural/Native occurrence			Site: 2006-06-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-11-25

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.10012° / -118.85248°	Township: 01S
UTM: Zone-11 N3774807 E329116	Range: 19W
Mapping Precision: SPECIFIC	Section: 10 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,600 ft

Location: 0.5 AIR MILE SE OF THE INTERSECTION OF MULHOLLAND HIGHWAY AND WESTLAKE BLVD, NORTH OF MALIBU COUNTRY CLUB, MALIBU.

Location Detail: ALONG BROOKINGS TRAIL.

Ecological: SITE COMPRISED OF SEVERAL COMMUNITIES INCLUDING COASTAL SAGE SCRUB, CHAMISE CHAPARRAL, SOUTHERN WILLOW SCRUB, MULEFAT SCRUB, WILLOW/SYCAMORE/OAK/COTTONWOOD WOODLAND, GRASSLANDS, CALIFORNIA WALNUT WOODLAND, AND CEANOTHUS CHAPARRAL.

Threat: DEVELOPMENT NEARBY.

General: 1 PLANT OBSERVED IN 2006.

Owner/Manager: PVT

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

_____ **Habitat Associations** _____

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 172	Map Index: 77454	EO Index: 78369	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1998-05-27
Origin: Natural/Native occurrence			Site: 1998-05-27
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-02

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles, Ventura

Lat/Long: 34.23029° / -118.66334°	Township: 02N
UTM: Zone-11 N3788941 E346801	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 28 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 1,200 ft

Location: SOUTH OF WOOLSEY CANYON ROAD, APPROXIMATELY 0.25 MILE DOWN THE EXISTING DIRT ROAD, SANTA MONICA MOUNTAINS.

Location Detail: T-R-S GIVEN AS T2N, R17W, SECTION 28. UNCERTAIN WHICH DIRT ROAD WAS TRAVELLED DOWN. MAPPED BY CNDDDB AS BEST AS POSSIBLE TO ENCOMPASS THE GENERAL AREA.

Ecological: CHAPARRAL. ASSOCIATED WITH DUDLEYA LANCEOLATA, ADENOSTOMA FASCICULATUM, MIMULUS AURANTIACUS, ERIOGONUM FASCICULATUM, MALOSMA LAURINA, ARTEMISIA CALIFORNICA, AND SALVIA MELLIFERA.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 1998 COLLECTION BY LEATHERMAN & DANIELS.

Owner/Manager: PVT

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 173	Map Index: 77456	EO Index: 78379	— Dates Last Seen —
Occ Rank: Good			Element: 2010-06-18
Origin: Natural/Native occurrence			Site: 2010-06-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-11-18

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.20158° / -118.74319°	Township: 01N
UTM: Zone-11 N3785880 E339392	Range: 18W
Mapping Precision: SPECIFIC	Section: 02 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 15.0 acres	Elevation: 1,600 ft

Location: RIDGELINE BETWEEN THE HEADS OF PALO COMADO AND CHEESEBORO CANYONS, SIMI HILLS, SOUTH OF SIMI VALLEY.

Location Detail: 3 COLONIES.

Ecological: CHAMISE CHAPARRAL, BURNED IN 2005. ASSOCIATED WITH SALVIA MELLIFERA, NASSELLA LEPIDA, ADENOSTOMA FASCICULATUM, LOTUS SCOPARIUS, TRICHOSTEMA LANATUM, PICKERINGIA MONTANA, ASTRAGALUS BRAUNTONII, AND NOLINA CISMONTANA.

Threat:

General: 14 PLANTS OBSERVED IN NW COLONY, 15 IN CENTER COLONY, AND 104 SEEN IN SE COLONY IN 2010.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 184	Map Index: 77473	EO Index: 78402	— Dates Last Seen —
Occ Rank: Good			Element: 2004-06-14
Origin: Natural/Native occurrence			Site: 2004-06-14
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-02

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.36645° / -118.56615°	Township: 03N
UTM: Zone-11 N3803900 E355986	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 09 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 500 ft

Location: W OF I-5, CA 4 MI N OF HWY 14 AND 6 MI S OF CASTAIC JUNCTION. LYON CANYON AND SURROUNDING SLOPES, CANYONS, AND RIDGES.

Location Detail: IN SECTIONS 4 AND 9. EXACT LOCATION(S) UNKNOWN. MAPPED BY CNDDDB TO ENCOMPASS THE SITE DESCRIBED AS BEST AS POSSIBLE.

Ecological: MOSTLY BURNED OVER CHAPARAL; SOME OAK WOODLANDS IN CANYON BOTTOMS; SOME RUDERAL AREAS AROUND ROADS AND FORMER DWELLINGS.

Threat: SITE PROPOSED FOR DEVELOPMENT AS OF 2004.

General: POPULATION DESCRIBED AS "PATCHY, SOMETIMES DOZENS OR 100S OF PLANTS, GEN. STEEP SLOPES" IN 2004.

Owner/Manager: PVT

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

_____ **Habitat Associations** _____

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 185	Map Index: 77474	EO Index: 78403	_____ Dates Last Seen _____
Occ Rank: Good			Element: 2005-XX-XX
Origin: Natural/Native occurrence			Site: 2005-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-03

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.29858° / -118.60105°	Township: 03N
UTM: Zone-11 N3796423 E352658	Range: 16W
Mapping Precision: SPECIFIC	Section: 31 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 11.0 acres	Elevation: 1,600 ft

Location: 1.5 AIR MILES NNW OF THE CONFLUENCE OF DEVIL CANYON AND BROWNS CANYON, SANTA SUSANA MOUNTAINS, NORTH OF CHATSWORTH.

Location Detail: NINE COLONIES. IN BROWNS CANYON RESOURCE PROPERTY.

Ecological: MODERATELY DENSE CHAMISE CHAPARRAL. PRIMARILY NORTH TO EAST-FACING SLOPES.

Threat: DISTURBED AREAS CONTAIN EXOTIC PLANTS.

General: SOME BULBS WERE TRANSPORTED TO THESE SITES FROM DEERLAKE RANCH DEVELOPMENT SITE (1 MILE TO THE SOUTH) AND PLANTED IN AREAS WHICH ALREADY HAD NATIVE C. PLUMMERAE. PLANTS HERE ARE A MIX OF NATIVE AND TRANSPLANTS.

Owner/Manager: MOUNTAINS REC & CONS AUTHORITY

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 186	Map Index: 77475	EO Index: 78410	— Dates Last Seen —
Occ Rank: Unknown			Element: 2006-XX-XX
Origin: Natural/Native occurrence			Site: 2006-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2009-12-03

Quad Summary: Santa Susana (3411836/138C)

County Summary: Los Angeles

Lat/Long: 34.34848° / -118.65286°	Township: 03N
UTM: Zone-11 N3802033 E347979	Range: 17W
Mapping Precision: SPECIFIC	Section: 15 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 6.0 acres	Elevation: 2,800 ft

Location: HEAD OF CHIVO CANYON, 0.2 AIR MILE SOUTH OF PALO SOLA MOTORWAY, NEWHALL RANCH, SANTA SUSANA MOUNTAINS.

Location Detail: 5 COLONIES.

Ecological: PRIMARILY ON STEEP SW-FACING RIDGES AND SLOPES IN CALIFORNIA SAGEBRUSH SCRUB AND GRASSLANDS. IN AREAS OF HIGH VEGETATIVE COVER AND A VARIETY OF SOIL TYPES (GRAVELLY LOAM, SANDY LOAM, ROCKY CLAY).

Threat:

General: APPROXIMATELY 78 PLANTS OBSERVED IN 2006.

Owner/Manager: PVT

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 187	Map Index: 77476	EO Index: 78415	— Dates Last Seen —
Occ Rank: Poor			Element: 2007-06-29
Origin: Transplant Outside of Native Hab./Range			Site: 2007-06-29
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2009-12-14

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.25449° / -118.82642°	Township: 02N
UTM: Zone-11 N3791883 E331827	Range: 19W
Mapping Precision: SPECIFIC	Section: 13 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 2.0 acres	Elevation: 1,100 ft

Location: 0.1 MILE WEST OF THE WEST END OF PRESIDENTIAL DR, NORTH OF E OLSEN RD, NEAR THE BORDER BETWEEN SIMI VALLEY AND MOORPARK.

Location Detail: MAPPED AS 3 POLYGONS.

Ecological: ROCKY OUTCROPS IN CHAPARRAL. NORTH TO NE-FACING SLOPES.

Threat: DEVELOPMENT AND BRUSH CLEARING FOR FIREBREAKS NEARBY.

General: THE TWO SOUTHERN POLYGONS WERE LOCATIONS WHERE THREE BULBS WERE DUG UP IN 2007. ALL THREE BULBS WERE THEN TRANSPLANTED TO THE NORTHERN POLYGON TO AVOID DEVELOPMENT OCCURRING AT THE SOUTHERN POLYGONS.

Owner/Manager: PVT

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 208	Map Index: 80720	EO Index: 81722	Dates Last Seen
Occ Rank: Good			Element: 2009-06-28
Origin: Natural/Native occurrence			Site: 2009-06-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-11-17

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.10424° / -118.64235°	Township: 01S
UTM: Zone-11 N3774932 E348509	Range: 17W
Mapping Precision: SPECIFIC	Section: 03 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,100 ft

Location: ALONG RED ROCK TRAIL, RED ROCK CANYON, WEST OF OLD TOPANGA CANYON, TOPANGA.

Location Detail: IN THE SE 1/4 OF THE SE 1/4 OF SECTION 3.

Ecological: OPEN CHAPARRAL SCRUB.

Threat: FUTURE FUELBREAK MAINTENANCE.

General: PLANTS WERE DESCRIBED AS "FREQUENT" AT SITE IN 2009.

Owner/Manager: SANTA MONICA MTNS CONS

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 209	Map Index: 80722	EO Index: 81737	Dates Last Seen
Occ Rank: Unknown			Element: 2010-07-09
Origin: Natural/Native occurrence			Site: 2010-07-09
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-11-18

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.08516° / -118.77048°	Township: 01S
UTM: Zone-11 N3773013 E336653	Range: 18W
Mapping Precision: SPECIFIC	Section: 16 Qtr: N
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 2,500 ft

Location: CASTRO MOTORWAY AT THE INTERSECTION WITH BULLDOG MOTORWAY, 1 MILE EAST OF CASTRO PEAK, SANTA MONICA MOUNTAINS.

Location Detail:

Ecological: ASSOCIATES INCLUDE MIMULUS AURANTIACUS, LOTUS SCOPARIUS, LAMARCKIA AUREA, AND DEINANDRA MINTHORNII. ERODED SANDSTONE SOILS.

Threat: SITE EXPERIENCES RECREATIONAL USE FROM HIKERS AND BIKERS.

General: CALOCHORTUS PLUMMERAE LISTED AS AN ASSOCIATE DURING A SURVEY FOR DEINANDRA MINTHORNII IN 2010. POPULATION SIZE UNKNOWN.

Owner/Manager: DPR-MALIBU CREEK STATE PARK

Calochortus plummerae		
Plummer's mariposa-lily		Element Code: PMLIL0D150
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	
Habitat Associations		
General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.		

Occurrence No. 210	Map Index: 80723	EO Index: 81740	Dates Last Seen
Occ Rank: Fair			Element: 2010-06-15
Origin: Natural/Native occurrence			Site: 2010-06-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-11-18

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.04920° / -118.81719°	Township: 01S
UTM: Zone-11 N3769101 E332271	Range: 19W
Mapping Precision: SPECIFIC	Section: 25 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 200 ft

Location: ZUMA CREEK, JUST SOUTH OF OLD DAM RUINS, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.

Location Detail: IN THE SE 1/4 OF THE SE 1/4 OF SECTION 25.

Ecological: SEDIMENTARY RUBBLE WITH NEARLY NO TOPSOIL. SW-FACING SLOPE. ASSOCIATED WITH SELAGINELLA BIGELOVII, MELICA IMPERFECTA, PELLAEA MUCRONATA, ERIOGONUM CINEREUM, AND NON-NATIVE ANNUAL GRASSES.

Threat: SITE IS THREATENED BY FALLING RUBBLE. NON-NATIVE GRASSES PRESENT.

General: 7 PLANTS OBSERVED IN 2010. 1 TO 6 PLANTS HAD BEEN OBSERVED HERE ON PRIOR YEARS.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Calochortus plummerae

Plummer's mariposa-lily

Element Code: PMLIL0D150

Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G3	CNPS List: 1B.2
State: None	State: S3	

Habitat Associations

General: COASTAL SCRUB, CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.

Micro: OCCURS ON ROCKY AND SANDY SITES, USUALLY OF GRANITIC OR ALLUVIAL MATERIAL. CAN BE VERY COMMON AFTER FIRE. 90-1610M.

Occurrence No. 213	Map Index: 80726	EO Index: 81743	— Dates Last Seen —
Occ Rank: Unknown			Element: 2009-XX-XX
Origin: Natural/Native occurrence			Site: 2009-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-11-18

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.21640° / -118.65554°	Township: 02N
UTM: Zone-11 N3787389 E347495	Range: 17W
Mapping Precision: SPECIFIC	Section: 34 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,500 ft

Location: 0.4 AIR MILE SW OF THE MOUTH OF DAYTON CANYON, RIDGE WEST OF ROSCOE VALLEY CIRCLE PARK, WEST OF CANOGA PARK.

Location Detail: ON NORTH-FACING SADDLE ON RIDGELINE.

Ecological: CALCAREOUS SANDSTONE OUTCROPPING WITH LITTLE SOIL. ASSOCIATED WITH ADENOSTOMA FASCICULATUM, CEANOTHUS MEGACARPUS, SALVIA MELLIFERA, NOLINA CISMONTANA, AND ASTRAGALUS BRAUNTONII. SITE BURNED IN FALL 2005.

Threat: IMPACTS BY HIKERS MAY INCREASE AFTER FURTHER DEVELOPMENT OCCURS NEARBY.

General: CALOCHORTUS PLUMMERAE LISTED AS AN ASSOCIATE DURING SURVEYS FOR NOLINA CISMONTANA IN 2009 TO EARLY 2010. PRESUMABLY CALOCHORTUS PLANTS WERE OBSERVED IN SUMMER 2009. POPULATION SIZE NOT PROVIDED.

Owner/Manager: UNKNOWN

Centromadia parryi ssp. australis

southern tarplant

Element Code: PDAST4R0P4

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: None

Global: G4T2

CNPS List: 1B.1

State: None

State: S2.1

----- **Habitat Associations** -----

General: MARSHES AND SWAMPS (MARGINS), VALLEY AND FOOTHILL GRASSLAND.

Micro: OFTEN IN DISTURBED SITES NEAR THE COAST AT MARSH EDGES; ALSO IN ALKALINE SOILS SOMETIMES WITH SALTGRASS. SOMETIMES ON V

Occurrence No. 28

Map Index: 35233

EO Index: 694

----- **Dates Last Seen** -----

Occ Rank: Unknown

Element: 1930-XX-XX

Origin: Natural/Native occurrence

Site: 1930-XX-XX

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 1997-02-04

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)

County Summary: Los Angeles

Lat/Long: 34.01962° / -118.48594°

Township: 02S

UTM: Zone-11 N3765326 E362802

Range: 15W

Mapping Precision: NON-SPECIFIC

Section: XX **Qtr:** XX

Symbol Type: POINT

Meridian: S

Radius: 1 mile

Elevation: 100 ft

Location: SANTA MONICA.

Location Detail:

Ecological:

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1930 COLLECTION BY DAVIDSON. THIS SPECIMEN FOUND IN H. PUNGENS FILE AT RSA AND TENTATIVELY IDENTIFIED AS H. PARRYI SSP. AUSTRALIS.

Owner/Manager: UNKNOWN

Chloropyron maritimum ssp. maritimum

salt marsh bird's-beak

Element Code: PDSCR0J0C2

Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G4?T2	CNPS List: 1B.2
State: Endangered	State: S2.1	

Habitat Associations

General: COASTAL SALT MARSH, COASTAL DUNES.
Micro: LIMITED TO THE HIGHER ZONES OF THE SALT MARSH HABITAT. 0-30M.

Occurrence No. 14	Map Index: 35233	EO Index: 34955	— Dates Last Seen —
Occ Rank: None			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: 1981-XX-XX
Presence: Extirpated			
Trend: Unknown			Record Last Updated: 1998-10-16

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)
County Summary: Los Angeles

Lat/Long: 34.01962° / -118.48594°	Township: 02S
UTM: Zone-11 N3765326 E362802	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 100 ft

Location: NEAR SANTA MONICA.
Location Detail: EXACT LOCATION NOT KNOWN. MAPPED IN GENERAL VICINITY OF SANTA MONICA.
Ecological:
Threat:
General: UNKNOWN WHEN COLLECTED BY HASSE. AREA SEARCHED IN 1980, 1981; NO PLANTS OBSERVED. SPECIES IS PROBABLY EXTIRPATED AT THIS SITE (FOX AND KNUDSEN, 1982; P. ALLEN, 1974).
Owner/Manager: UNKNOWN

Chorizanthe parryi var. fernandina		
San Fernando Valley spineflower		Element Code: PDPGN040J1
Status	NDDB Element Ranks	Other Lists
Federal: Candidate	Global: G2T1	CNPS List: 1B.1
State: Endangered	State: S1.1	
Habitat Associations		
General: COASTAL SCRUB.		
Micro: SANDY SOILS. 3-1035M.		

Occurrence No. 7	Map Index: 41264	EO Index: 41264	Dates Last Seen
Occ Rank: None			Element: 1901-04-04
Origin: Natural/Native occurrence			Site: 1901-04-04
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 2008-09-29

Quad Summary: Canoga Park (3411825/112A), Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.25747° / -118.60154°	Township: 02N
UTM: Zone-11 N3791864 E352541	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 18 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 1,000 ft

Location: CHATSWORTH PARK.

Location Detail: EXACT LOCATION NOT KNOWN; MAPPED IN GENERAL VICINITY OF CHATSWORTH.

Ecological:

Threat: MUCH OF THE SUITABLE HABITAT IN THIS AREA HAS BEEN DEVELOPED.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1901 COLLECTION BY ABRAMS. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Chorizanthe parryi var. fernandina		
San Fernando Valley spineflower		Element Code: PDPGN040J1
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: Candidate	Global: G2T1	CNPS List: 1B.1
State: Endangered	State: S1.1	
_____ Habitat Associations _____		
General: COASTAL SCRUB.		
Micro: SANDY SOILS. 3-1035M.		

Occurrence No. 11 **Map Index:** 41269 **EO Index:** 41269 — **Dates Last Seen** —
Occ Rank: Excellent **Element:** 2002-04-23
Origin: Natural/Native occurrence **Site:** 2002-04-23
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2008-09-29

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.17306° / -118.68320°	Township: 01N
UTM: Zone-11 N3782625 E344868	Range: 17W
Mapping Precision: SPECIFIC	Section: 17 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 31.1 acres	Elevation: 1,300 ft

Location: AHMANSON RANCH, SOUTH SIDE OF LASKEY MESA ON THE SOUTHERN SLOPES OF THE SIMI HILLS, WEST OF WOODLAND HILLS.

Location Detail: PLANTS FOUND IN 14 "AREAS OF OPEN-SOIL HABITATS CONCENTRATED ALONG THE OUTER SOUTHERN RIM OF LASKEY MESA." ELEVATIONS RANGED FROM 1220 TO 1406 FEET. LOCATED IN T1N R17W SEC 16, 17 AND 8.

Ecological: ON SANDY SOIL HABITATS ASSOCIATED WITH THE MODELO FORMATION. SEEN MOST OFTEN IN SPARSELY VEGETATED AREAS WHERE SOILS ARE THIN, COMPACTED OR BEDROCK IS EXPOSED. ALSO FOUND ALONG INTERFACE BETWEEN COASTAL SAGE SCRUB & NON-NATIVE GRASSLANDS.

Threat: SITE APPROVED FOR DEVELOPMENT, FROM 6.8 TO 24% OF PLANTS COULD BE ELIMINATED BY GRADING. EXOTIC GRASSES ALSO THREATEN.

General: 5,000-10,000 PLANTS SEEN BY REIFNER & BOMPKAMP IN 1999; 23,000 PLANTS ESTIMATED LATER IN 1999. IN 2000 OVER 1.4 MILLION PLANTS ESTIMATED; HARLACHER QUESTIONED SURVEY METHODS. 1.8 MILLION PLANTS EST IN 2001. UNK # SEEN BY MEYER IN 2002.

Owner/Manager: PVT

Chorizanthe parryi var. parryi

Parry's spineflower

Element Code: PDPGN040J2

_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G3T2	CNPS List: 1B.1
State: None	State: S2	

_____ **Habitat Associations** _____

General: COASTAL SCRUB, CHAPARRAL.
Micro: DRY SLOPES AND FLATS; SOMETIMES AT INTERFACE OF 2 VEG TYPES, SUCH AS CHAP AND OAK WDLAND; DRY, SANDY SOILS. 40-1705M.

Occurrence No. 8	Map Index: 17746	EO Index: 10140	_____ Dates Last Seen _____
Occ Rank: None			Element: 1957-04-27
Origin: Natural/Native occurrence			Site: 1990-XX-XX
Presence: Possibly Extirpated			
Trend: Unknown			Record Last Updated: 2008-10-21

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.03062° / -118.75926°	Township: 02S
UTM: Zone-11 N3766947 E337584	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 03 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 300 ft

Location: WEST SIDE OF THE MOUTH OF LATIGO CANYON, 3 MILES NORTHEAST OF POINT DUME, SANTA MONICA MOUNTAINS.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB AS BEST GUESS W OF THE MOUTH OF LATIGO CANYON.

Ecological:

Threat:

General: ONLY SOURCE OF INFO FOR THIS SITE IS A 1957 THOMAS COLLECTION. T. THOMAS (2008) NOTES THAT HE SEARCHED FOR THIS PLANT FOR MANY YEARS (1981-1990) AND NEVER LOCATED IT. SANDERS (2008) SUSPECTS THAT THIS MAY BE A MIS-ID. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 3	Map Index: 00867	EO Index: 16971	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1987-XX-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.27573° / -118.61598°	Township: 02N
UTM: Zone-11 N3793910 E351244	Range: 17W
Mapping Precision: SPECIFIC	Section: 12 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,250 ft

Location: SOUTH SIDE OF HIGHWAY 118 ABOUT 1 MILE EAST OF LAX/VEN COUNTY LINE, WEST OF TOPANGA CANYON BLVD, SANTA SUSANA MTS.

Location Detail: MAPPED JUST SOUTH OF HIGHWAY AND 0.6 MILE WEST OF SANTA SUSANA AVE.

Ecological: PLANTS IN THIS AREA VARIOUSLY REPORTED TO BE "GROWING IN FULL SUN AND OPEN" AND "INFREQUENT IN CHAPARRAL".

Threat:

General: TYPE LOCALITY (KECK #1953 DS) ATTRIBUTED TO THIS VICINTY. SITE MAPPED BASED UPON 1987 MAP BY S. TERESA. INCLUDES FORMER OCCURRENCE #5.

Owner/Manager: PVT

Deinandra minthornii

Santa Susana tarplant

Element Code: PDAST4R0J0

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: None **Global:** G2 **CNPS List:** 1B.2
State: Rare **State:** S2.2

----- **Habitat Associations** -----
General: CHAPARRAL, COASTAL SCRUB.
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.

Occurrence No. 4 **Map Index:** 00840 **EO Index:** 16972 **----- Dates Last Seen -----**
Occ Rank: Unknown **Element:** 1978-04-XX
Origin: Natural/Native occurrence **Site:** 1978-04-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 1989-08-11

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.22805° / -118.63481° **Township:** 02N
UTM: Zone-11 N3788650 E349425 **Range:** 17W
Mapping Precision: NON-SPECIFIC **Section:** XX **Qtr:** XX
Symbol Type: POINT **Meridian:** S
Radius: 1/5 mile **Elevation:** 925 ft

Location: ON SANDSTONE HILL, PENINSULA AT SOUTHWEST PART OF CHATSWORTH RESERVOIR, SANTA SUSANA MOUNTAINS.

Location Detail:

Ecological: SCATTERED ON SANDSTONE HILL.

Threat:

General: ADDITIONAL INFORMATION NEEDED FOR THIS SITE.

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 6	Map Index: 00808	EO Index: 16969	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1985-01-25
Origin: Natural/Native occurrence			Site: 1985-01-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1989-08-11

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.10805° / -118.65093°	Township: 01S
UTM: Zone-11 N3775367 E347725	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 03 Qtr: S
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 1,800 ft

Location: SOUTH SLOPE CALABASAS PEAK, SANTA MONICA MTS.

Location Detail:

Ecological: ON MIOCENE TOPANGA SANDSTONE ROCK OUTCROP. ASSOCIATED WITH ZAUSCHNERIA CANA, ERIOGONUM FASCICULATUM, LOTUS ARGOPHYLLUS, AND BRICKELLIA NEVINII.

Threat:

General:

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 7	Map Index: 00827	EO Index: 16968	— Dates Last Seen —
Occ Rank: Fair			Element: 1987-04-15
Origin: Natural/Native occurrence			Site: 1987-04-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Santa Susana (3411836/138C)

County Summary: Ventura

Lat/Long: 34.25630° / -118.64382°	Township: 02N
UTM: Zone-11 N3791797 E348646	Range: 17W
Mapping Precision: SPECIFIC	Section: 15 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 38.8 acres	Elevation: 2,200 ft

Location: CHATSWORTH PEAK, SOUTHEAST OF SIMI VALLEY IN THE SIMI HILLS, SANTA SUSANA MOUNTAINS.

Location Detail: MAPPED ALONG SUMMIT AND WESTERN SLOPES OF CHATSWORTH PEAK, EAST OF BOX CANYON.

Ecological: MIXED SAGE SCRUB/CHAPARRAL WITH SOME OPEN AREAS OF THIN SOILS DOMINATED BY ANNUAL GRASSES. ASSOCIATED WITH SALVIA, MALACOTHAMNUS FASCICULATUS, ADENOSTOMA, HETEROMELES ARBUTIFOLIA, MIMULUS, AND AVENA. IN CREVICES IN SANDSTONE BOULDERS.

Threat:

General: 18+ PLANTS OBSERVED NEAR SUMMIT IN 1987, OTHER COLONIES NOT SURVEYED. INCLUDES FORMER OCCURRENCE #30.

Owner/Manager: PVT, UNKNOWN

Deinandra minthornii

Santa Susana tarplant

Element Code: PDAST4R0J0

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: None **Global:** G2 **CNPS List:** 1B.2
State: Rare **State:** S2.2

----- **Habitat Associations** -----
General: CHAPARRAL, COASTAL SCRUB.
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.

Occurrence No. 8 **Map Index:** 00388 **EO Index:** 16964 ----- **Dates Last Seen** -----
Occ Rank: Unknown **Element:** 1978-05-XX
Origin: Natural/Native occurrence **Site:** 1978-05-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 1995-11-30

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.09138° / -118.81870° **Township:** 01S
UTM: Zone-11 N3773781 E332216 **Range:** 19W
Mapping Precision: NON-SPECIFIC **Section:** 12 **Qtr:** XX
Symbol Type: POINT **Meridian:** S
Radius: 1 mile **Elevation:** 1,825 ft

Location: SOUTHWEST OF CORNELL ROAD, NORTHWEST OF LATIGO CANYON, SANTA MONICA MOUNTAINS.

Location Detail:

Ecological:

Threat:

General: ADDITIONAL INFORMATION NEEDED FOR THIS SITE.

Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 9	Map Index: 00575	EO Index: 15153	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1982-XX-XX
Origin: Natural/Native occurrence			Site: 1982-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.08224° / -118.75568°	Township: 01S
UTM: Zone-11 N3772665 E338014	Range: 18W
Mapping Precision: SPECIFIC	Section: 15 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 39.8 acres	Elevation: 2,025 ft

Location: UPPER END CORRAL CANYON ROAD, ABOUT 2 MILES EAST OF CASTRO PEAK, SANTA MONICA MOUNTAINS.

Location Detail: THREE COLONIES; N COLONY NEAR CENTER OF SEC 15 ALONG NE SIDE OF ROAD AS IT BEGINS TO HEAD WEST TOWARDS CASTRO PEAK; CENTRAL COLONY ALONG W SIDE OF ROAD OPPOSITE 1980' BM; S COLONY ALONG W SIDE OF ROAD ABOUT 250 M SOUTH OF 1980' BM.

Ecological: IN CHAMISE CHAPARRAL ON SANDSTONE OUTCROPS IN CREVICES, OFTEN ON EASTERN EXPOSURES. ASSOCIATED WITH ERIOGONUM WRIGHTII SSP. MEMBRANACEUM, ZAUSCHNERIA CANA, ERIASTRUM DENSIFOLIUM, AND RHUS LAURINA.

Threat:

General: OVER 1000 PLANTS SEEN IN CENTRAL COLONY IN 1982, 100+ PLANTS REPORTED IN N AND S COLONIES IN 1983.

Owner/Manager: DPR-MALIBU CREEK SP

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 11	Map Index: 00899	EO Index: 16967	— Dates Last Seen —
Occ Rank: Unknown			Element: 1987-XX-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.27812° / -118.60449°	Township: 02N
UTM: Zone-11 N3794158 E352306	Range: 16W
Mapping Precision: SPECIFIC	Section: 07 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 17.5 acres	Elevation: 1,250 ft

Location: NEAR JUNCTION OF HIGHWAY 118 AND SANTA SUSANA AVE (TOPANGA CANYON BOLD), CHATSWORTH.

Location Detail: THREE COLONIES; TWO JUST NORTH OF JUNCTION AND ONE JUST EAST OF JUNCTION. (SURVEYS MADE WHEN JUNCTION WAS E-TERMINOUS OF HIGHWAY AND N-TTRMINOUS OF SANTA SUSANA AVE).

Ecological: IN COASTAL SCRUB ON STEEP SANDSTONE OUTCROPS. ASSOCIATED WITH MALACOTHAMNUS FASCICULATUS, CORETHROGYNE FILAGINIFOLIA, MALOSMA LAURINA, NICOTIANA GLAUCA, ERIOGONUM FASCICULATUM, LOTUS SCOPARIUS, ADENOSTOMA, AND ARTEMISIA CALIFORNICA.

Threat: PART OF AREA PROPOSED FOR CHURCH FACILITY IN 1985.

General: 50-70 PLANTS REPORTED IN THIS AREA IN 1978; LESS THAN 500 PLANTS SEEN IN 1985.

Owner/Manager: PVT

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 15	Map Index: 00793	EO Index: 11842	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1984-01-03
Origin: Natural/Native occurrence			Site: 1984-01-03
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.23143° / -118.65533°	Township: 02N
UTM: Zone-11 N3789056 E347542	Range: 17W
Mapping Precision: SPECIFIC	Section: 27 Qtr: N
Symbol Type: POLYGON	Meridian: S
Area: 42.4 acres	Elevation: 1,400 ft

Location: WEST OF LAKESIDE PARK ALONG WOOLSEY CANYON & SLOPES NORTH OF DAYTON CANYON, SIMI HILLS.

Location Detail: SEVERAL COLONIES MAPPED MOSTLY WITHIN THE N 1/2 OF SECTION 27 AND THE SE 1/4 NE 1/4 SECTION 28. PLANTS ALONG WOOLSEY CANYON RD IN SE 1/4 SEC 21 (R.F. TOWNER, 1984) INCLUDED AT THIS SITE BUT NOT MAPPED HERE DUE TO LACK OF MAP DETAIL.

Ecological: AMONG SANDSTONE BOULDERS IN CRACKS, IN COASTAL SAGE AND CHAPARRAL. ASSOCIATED WITH LOTUS SCOPARIUS, RIBES MALVACEUM, AND RHAMNUS ILICIFOLIA.

Threat: PLANNED DEVELOPMENT FOR SITE; PART OF POPULATION SEPARATED FROM DEVELOPMENT SITE BY ROAD.

General: 200 PLANTS OBSERVED IN SECTIONS 27 AND 28 BY BOWLAND IN 1989. 100 PLANTS OBSERVED ALONG WOOLSEY CANYON ROAD BY TOWNER IN 1984. INCLUDES FORMER OCCURRENCE #32.

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 16	Map Index: 00551	EO Index: 13181	_____ Dates Last Seen _____
Occ Rank: Excellent			Element: 1987-09-29
Origin: Natural/Native occurrence			Site: 1987-09-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20559° / -118.77944°	Township: 01N
UTM: Zone-11 N3786383 E336059	Range: 18W
Mapping Precision: SPECIFIC	Section: 04 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 15.8 acres	Elevation: 2,100 ft

Location: JUST EAST OF SIMI PEAK SUMMIT ON JORDAN RANCH, SIMI HILLS.

Location Detail: THREE COLONIES MAPPED MOSTLY WITHIN THE NE CORNER OF SECTION 5 (OR 4; SECTIONS CONFUSING IN THIS AREA). SITES MAPPED ABOUT 200 M EAST OF VABM 2403, 100M NE OF VABM, AND 200 M NORTH OF VABM.

Ecological: ON SANDSTONE OUTCROPS IN MIXED CHAPARRAL AND CEANOTHUS CRASSIFOLIUS CHAPARRAL. ASSOCIATED WITH ERIOGONUM WRIGHTII MEMBRANACEUM.

Threat: AREA BEING CONSIDERED FOR GOLF COURSE.

General: ABOUT 200 PLANTS OBSERVED AT JORDAN RANCH IN 1987 (INCLUDING OCCURRENCES #16, 39, 40, AND 41). SPECIES MAY BE MORE WIDESPREAD THAN INDICATED BY SURVEY (WISHNER 1987). NEW OCCURRENCES # 39-41 FORMERLY CONSIDERED PART OF THIS OCCURRENCE.

Owner/Manager: PVT

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 17	Map Index: 00756	EO Index: 15156	— Dates Last Seen —
Occ Rank: Unknown			Element: 1979-11-28
Origin: Natural/Native occurrence			Site: 1979-11-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1989-08-11

Quad Summary: Calabasas (3411826/112B), Santa Susana (3411836/138C)

County Summary: Ventura

Lat/Long: 34.24525° / -118.68432°	Township: 02N
UTM: Zone-11 N3790632 E344897	Range: 17W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 669.8 acres	Elevation: 2,197 ft

Location: SAGE RANCH 1 MILE (0.8 KM) NORTHWEST OF ROCKETDYNE LABORATORY ON BLACK CANYON ROAD, SIMI HILLS.

Location Detail:

Ecological: SCATTERED ON OPEN ROCKY SANDSTONE OUTCROPS IN CREVICES WITH ERIOGONUM FASCICULATUM, RIBES INDECORUM, PRUNUS ILICIFOLIA, AND ERIODICTYON SP.

Threat:

General: SITE BASED UPON 1979 COLLECTION BY TANOWITZ AND WHITMORE (#1803 UCSB).

Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 18	Map Index: 00790	EO Index: 16965	— Dates Last Seen —
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Santa Susana (3411836/138C)

County Summary: Ventura

Lat/Long: 34.26145° / -118.66143°	Township: 02N
UTM: Zone-11 N3792394 E347034	Range: 17W
Mapping Precision: SPECIFIC	Section: 16 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 17.1 acres	Elevation: 1,100 ft

Location: JUST EAST OF SANTA SUSANA KNOLLS NEAR LOS ANGELES AVE AND SP RR TRACKS, SE END OF SIMI VALLEY, SIMI HILLS.

Location Detail: TWO COLONIES; ONE ALONG EITHER SIDE OF LOS ANGELES AVE ON NORTH SIDE OF RR TRACKS, THE SECOND IS SOUTH OF LOS ANGELES AVE AND NORTH OF SANTA SUSANA COUNTY PARK.

Ecological:

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS MAP DETAIL PROVIDED BY KUHN. DATE OF SURVEY NOT KNOWN.

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 19	Map Index: 00648	EO Index: 16966	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.23153° / -118.72300°	Township: 02N
UTM: Zone-11 N3789170 E341308	Range: 18W
Mapping Precision: SPECIFIC	Section: 25 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 41.1 acres	Elevation: 1,800 ft

Location: ABOUT 0.5 MILE WEST OF BURRO FLATS ALONG UPPER SLOPES ABOVE MEIER CANYON, SIMI HILLS.
Location Detail: MAPPED EAST AND WEST OF BENCHMARK 1847'.
Ecological:
Threat:
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS MAP DETAIL PROVIDED BY KUHN.
Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
Status	NDDB Element Ranks	Other Lists
Federal: None State: Rare	Global: G2 State: S2.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB. Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 20	Map Index: 00693	EO Index: 16962	Dates Last Seen
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.22610° / -118.70738°	Township: 02N
UTM: Zone-11 N3788544 E342737	Range: 17W
Mapping Precision: SPECIFIC	Section: 30 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 37.5 acres	Elevation: 1,750 ft

Location: SLOPES ALONG SE EDGE OF BURRO FLATS, SIMI HILLS.
Location Detail: MAPPED NEAR HEAD OF TRIBUTARY TO BELL CANYON.
Ecological:
Threat:
General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS MAP DETAIL PROVIDED BY KUHN.
Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 21	Map Index: 00461	EO Index: 16963	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: XXXX-XX-XX
Origin: Natural/Native occurrence			Site: XXXX-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Thousand Oaks (3411827/113A)
 County Summary: Ventura

Lat/Long: 34.20976° / -118.79782°	Township: 02N
UTM: Zone-11 N3786875 E334374	Range: 18W
Mapping Precision: SPECIFIC	Section: 32 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 22.1 acres	Elevation: 1,400 ft

Location: ABOUT 1 MILE WNW OF SIMI PEAK SUMMIT, SIMI HILLS.
 Location Detail: MAPPED ALONG SOUTH SIDE OF ALBERTSON MOTORWAY MOSTLY WITHIN THE NE 1/4 OF SE 1/4 OF SECTION 31 AND NW 1/4 OF SW 1/4 OF SECTION 32. POPULATION MAY EXTEND FURTHER TO THE SOUTH.
 Ecological:
 Threat:
 General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS MAP DETAIL PROVIDED BY KUHN.
 Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 22	Map Index: 00527	EO Index: 16960	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1983-12-12
Origin: Natural/Native occurrence			Site: 1983-12-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Point Dume (3411817/113D)
County Summary: Los Angeles

Lat/Long: 34.08516° / -118.77390°	Township: 01S
UTM: Zone-11 N3773018 E336337	Range: 18W
Mapping Precision: SPECIFIC	Section: 16 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 6.1 acres	Elevation: 2,500 ft

Location: 0.7 MILES EAST OF CASTRO PEAK LOOKOUT, SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA.
Location Detail: ALONG FIRE ROAD EAST OF PEAK WITHIN THE SE 1/4 NW 1/4 SECTION 16.
Ecological: IN UPTILTED NONMARINE SANDSTONE CONGLOMERATE BEDS ON EAST-WEST TRENDING RIDGE IN CHAMISE CHAPARRAL. ASSOCIATED WITH ERIOGONUM WRIGHTII SSP. MEMBRANACEUM.
Threat: OCCASIONAL ROCK CLIMBING IN THE AREA.
General: 1982 FIRE OPENED UP THE CHAPARRAL.
Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 23	Map Index: 00552	EO Index: 16961	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1983-12-12
Origin: Natural/Native occurrence			Site: 1983-12-12
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.08610° / -118.76568°	Township: 01S
UTM: Zone-11 N3773109 E337098	Range: 18W
Mapping Precision: SPECIFIC	Section: 16 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 25.2 acres	Elevation: 2,025 ft

Location: 1.25 AIR MI EAST OF CASTRO PEAK LOOKOUT, SANTA MONICA MOUNTAINS.

Location Detail: NORTH OF FIRE ROAD LEADING TO LOOKOUT; MAPPED MOSTLY WITHIN THE NE 1/4 NE 1/4 SECTION 16.

Ecological: UPTILTED NONMARINE SANDSTONE CONGLOMERATE BEDS ON EAST-WEST TRENDING RIDGES IN CHAMISE CHAPARRAL. ASSOCIATED WITH ERIOGONUM WRIGHTII SSP. MEMBRANACEUM.

Threat: OCCASIONAL ROCK CLIMBING IN THE AREA.

General: 1982 FIRE OPENED UP THE CHAPARRAL.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 24	Map Index: 00602	EO Index: 16958	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1984-08-XX
Origin: Natural/Native occurrence			Site: 1984-08-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.21245° / -118.74258°	Township: 02N
UTM: Zone-11 N3787085 E339469	Range: 18W
Mapping Precision: SPECIFIC	Section: 35 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 2,100 ft

Location: ABOUT 2.25 AIR MILES WSW OF BURRO FLATS ALONG DIVIDE BETWEEN CHEESEBORO CANYON AND LAS VIRGINES CANYON, SIMI HILLS.

Location Detail: MAPPED ALONG ROAD (POWERLINE ACCESS ROAD) ON CREST OF RIDGE ABOUT 100 METERS NORTH OF 2189' BENCHMARK.

Ecological: ON SANDSTONE OUTCROP.

Threat:

General: FEWER THAN 10 PLANTS OBSERVED IN 1984.

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 25	Map Index: 00881	EO Index: 12549	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1987-03-05
Origin: Natural/Native occurrence			Site: 1987-03-05
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.27978° / -118.61137°	Township: 02N
UTM: Zone-11 N3794353 E351676	Range: 17W
Mapping Precision: SPECIFIC	Section: 01 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 10.5 acres	Elevation: 1,575 ft

Location: NORTHWEST OF CHATSWORTH, HILLTOP BETWEEN HIGHWAY 118 AND FERN ANN FALLS, SANTA SUSANA MOUNTAINS.

Location Detail: MAPPED ALONG DIRT ROAD WITHIN THE SW 1/4 SE 1/4 SECTION 1.

Ecological: INTERIOR FORM OF COASTAL SAGE SCRUB ON ROCKY SANDSTONE. ASSOCIATED WITH SALVIA MELLIFERA, MALOSMA LAURINA, ARCTOSTAPHYLOS SP., ENCELIA CALIFORNICA, AND YUCCA WHIPPLEI.

Threat: RELOCATION AND ENLARGEMENT OF EXISTING WATER TANK WOULD REMOVE 70-100% OF PLANTS.

General: ABOUT 250 PLANTS SEEN IN 1986. PLANTS TO BE TRANSPLANTED TO CUT SLOPES. WILL BE TEMPORARILY STORED IN TUBS UNTIL GRADING COMPLETED. NO WORK SO FAR IN 1987.

Owner/Manager: LAX COUNTY

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 27	Map Index: 00823	EO Index: 15158	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1987-10-02
Origin: Natural/Native occurrence			Site: 1987-10-02
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1989-08-11

Quad Summary: Santa Susana (3411836/138C), Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.24939° / -118.64443°	Township: 02N
UTM: Zone-11 N3791031 E348577	Range: 17W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 36.7 acres	Elevation: 1,800 ft

Location: EAST OF BOX CANYON NEAR BOX CANYON FIRE STATION, BETWEEN CHATSWORTH PEAK AND CHATSWORTH RESERVOIR, SIMI HILLS.

Location Detail: 0.25 MILE EAST OF BOX CANYON ROAD, ALONG STUDIO ROAD, AND AT OLD WESTERTOWN MOVIE STUDIO. MOST VIGOROUS STANDS ADJACENT TO ROAD CUTS.

Ecological: IN CREVICES OF SANDSTONE BOULDERS AND IN THIN SOIL. IN MIXED COASTAL SAGE SCRUB/CHAPARRAL WITH SCATTERED QUERCUS AGRIFOLIA ON N-FACING SLOPE.

Threat: PLANTS ADJACENT TO ROAD THREATENED BY ROAD MAINTENANCE ACTIVITIES. HOUSING DEVELOPMENT ALSO THREATENS.

General: OVER 100 PLANTS IN 5 COLONIES OBSERVED IN 1986, 100+ ADDITIONAL PLANTS OBSERVED IN 3 NEW COLONIES IN 1987.

Owner/Manager: PVT

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 28	Map Index: 00887	EO Index: 16959	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1987-XX-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Oat Mountain (3411835/138D)
 County Summary: Los Angeles

Lat/Long: 34.28442° / -118.61029°	Township: 02N
UTM: Zone-11 N3794866 E351783	Range: 17W
Mapping Precision: SPECIFIC	Section: 01 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 7.1 acres	Elevation: 1,400 ft

Location: BETWEEN FERN ANN FALLS AND DEVIL CANYON, ABOUT 0.4 MILE NORTH OF HIGHWAY 118, NORTH OF CHATSWORTH, SANTA SUSANA MTNS.

Location Detail: MAPPED WITHIN THE N 1/2 SE 1/4 SECTION 1.

Ecological:

Threat:

General: MAP DETAIL IS ONLY SOURCE OF INFORMATION FOR THIS SITE.

Owner/Manager: PVT

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 29	Map Index: 00855	EO Index: 15159	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1987-XX-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Santa Susana (3411836/138C), Oat Mountain (3411835/138D)

County Summary: Los Angeles

Lat/Long: 34.28382° / -118.62438°	Township: 02N
UTM: Zone-11 N3794820 E350485	Range: 17W
Mapping Precision: SPECIFIC	Section: 02 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 47.6 acres	Elevation: 1,600 ft

Location: NEAR HIALEAH SPRINGS ABOUT 1 MILE NORTH OF SANTA SUSANA PASS AND 0.5 MILE WEST OF FERN ANN FALLS, SANTA SUSANA MTNS.

Location Detail: MAPPED MOSTLY WITHIN THE E 1/2 SE 1/4 SECTION 2; SW 1/4 SE 1/4 SECTION 2; AND N 1/2 NE 1/4 SECTION 11.

Ecological:

Threat: THREATENED BY PROPOSED INDIAN WELLS ESTATES HOUSING DEVELOPMENT.

General: MAP DETAIL IS ONLY SOURCE OF INFORMATION FOR THIS SITE.

Owner/Manager: PVT

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 31	Map Index: 00730	EO Index: 16954	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1987-06-10
Origin: Natural/Native occurrence			Site: 1987-06-10
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.21744° / -118.68789°	Township: 02N
UTM: Zone-11 N3787554 E344517	Range: 17W
Mapping Precision: SPECIFIC	Section: 32 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,850 ft

Location: ABOUT 1.5 MILES ESE OF BURRO FLATS AND 1 MILE NORTH OF BELL CANYON, SIMI HILLS.

Location Detail: ABOUT 2000' NORTH OF TERMINUS OF NORTH HACIENDA RD AND 200' NORTH OF BELL CANYON RESERVOIR #1.

Ecological: IN ROCK CREVICES OF MASSIVE SANDSTONE BOULDERS IN OPEN CHAPARRAL. ASSOCIATED WITH ANNUAL GRASSES, RHUS LAURINA, ADENOSTOMA FASCICULATUM, CEANOTHUS CUNEATUS, ERIOGONUM FASCICULATUM, MALACOTHAMNUS FASCICULATUS, AND MIMULUS.

Threat: AREA HEAVILY GRAZED.

General: 25 PLANTS SEEN IN 1987. SEVERAL BRUSH FIRES BETW/1972-1987.

Owner/Manager: PVT

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 33	Map Index: 21648	EO Index: 8675	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1988-09-14
Origin: Natural/Native occurrence			Site: 1988-09-14
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1992-08-28

Quad Summary: Calabasas (3411826/112B)
County Summary: Ventura

Lat/Long: 34.24380° / -118.63569°	Township: 02N
UTM: Zone-11 N3790398 E349373	Range: 17W
Mapping Precision: SPECIFIC	Section: 23 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,150 ft

Location: CHATSWORTH LAKE MANOR, WEST SIDE OF THOMPSON LANE (AVENUE), SIMI HILLS.
Location Detail: ABOUT 15 FEET NORTH OF UNLOCKED GATE, AND ABOUT 75 FEET SOUTH OF TAN WATER TANK, EAST SIDE OF ROAD. DOWNSLOPE FROM CROSS ON TOP OF HILL.
Ecological: ON ROCKY E-FACING SLOPE, IN CREVICES. WITH SALVIA SP. AND ADENOSTOMA FASCICULATUM.
Threat: NO VISIBLE DISTURBANCE TO SITE IN 1988.
General: ABOUT 30 PLANTS SEEN IN 1988.
Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 34	Map Index: 21647	EO Index: 8496	_____ Dates Last Seen _____
Occ Rank: Excellent			Element: 1989-01-19
Origin: Natural/Native occurrence			Site: 1989-01-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1992-09-09

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.14806° / -118.86723°	Township: 01N
UTM: Zone-11 N3780147 E327853	Range: 19W
Mapping Precision: SPECIFIC	Section: 22 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 4.2 acres	Elevation: 1,100 ft

Location: NORTH SIDE OF LAKE SHERWOOD, ALONG MAJOR TRIBUTARY, SANTA MONICA MOUNTAINS.

Location Detail: MAPPED ALONG EAST SIDE OF TRIBUTARY NEAR BOTTOM OF SLOPE ABOUT 500 METERS NNE OF POTRERO ROAD AND 0.7 MILES NW OF SPILLWAY AT LAKE SHERWOOD.

Ecological: ON VERTICAL FACES ALONG WEST ASPECT OF CANYON, ON OUTCROPS OF CONEJO VOLCANIC BRECCIA IN COASTAL SAGEBRUSH, ADJACENT TO SOUTHERN OAK WOODLAND/WILLOW SCRUB IN CANYON BOTTOM. NOT TYPICAL HABITAT FOR THIS PLANT (USUALLY FOUND ON SANDSTONE).

Threat: PROPOSED FUTURE DEVELOPMENT.

General: ABOUT 20 PLANTS SEEN IN 1989. ACCORDING TO WISNER, THIS SITE REPRESENTS A SPECTACULAR EXAMPLE OF WOODLAND AND RIPARIAN HABITATS.

Owner/Manager: PVT

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 35	Map Index: 21646	EO Index: 8497	— Dates Last Seen —
Occ Rank: Good			Element: 1992-04-28
Origin: Natural/Native occurrence			Site: 1992-04-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-12-07

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.19965° / -118.79601°	Township: 01N
UTM: Zone-11 N3785751 E334521	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 06 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 1,700 ft

Location: CITY OF THOUSAND OAKS, 1.1 MILE SW OF SIMI PEAK, SIMI HILLS.

Location Detail: WEST OF WESTERN TERMINUS OF FALLING STAR AVENUE AND NORTH OF KANAN ROAD. MOST ACCURATE MAP FOR SITE IS BASED ON 1992 OBSERVATION OF ASTRAGALUS BRAUNTONII WHICH REPORTED H. MINTHORNII AS ASSOCIATE.

Ecological: VENTURAN COASTAL SCRUB IN CRACKS IN LARGE SANDSTONE BOULDERS WITH ERIOGONUM FASCICULATUM, ADENOSTOMA FASCICULATUM, ARTEMISIA CALIFORNICA, MALOSMA. NEAR OTHER RARE PLANTS: ASTRAGALUS BRAUNTONII, CALOCHORTUS CATALINAE, AND NOLINA PARRYI.

Threat: RECREATION.

General: 1 PLANT SEEN IN 1989; 29 SEEN IN 1992. CURRENTLY IN NATURAL OPEN SPACE. AREA IS INACCESSIBLE EXCEPT BY HIKING OVER BOULDERS AND THROUGH BRUSH.

Owner/Manager: PVT-COSCA

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 36	Map Index: 38638	EO Index: 33645	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1995-10-19
Origin: Natural/Native occurrence			Site: 1995-10-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.24389° / -118.63139°	Township: 02N
UTM: Zone-11 N3790402 E349768	Range: 17W
Mapping Precision: SPECIFIC	Section: 23 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,225 ft

Location: NORTH OF CHATSWORTH RESERVOIR, JUST EAST OF LAX/VEN COUNTY LINE AND 0.35 MILE NORTH OF VALLEY CIRCLE BLVD, SIMI HILLS.

Location Detail:

Ecological: ON SANDSTONE RIDGE IN COASTAL SAGE SCRUB DOMINATED BY MALACOTHAMNUS FASCICULATUS AND ANNUAL GRASSLAND. THIN SOIL OVER SANDSTONE BEDROCK AND IN SANDSTONE CREVICES. BURNED ABOUT 2 YRS AGO.

Threat:

General: ABOUT 50 PLANTS OBSERVED IN 1995.

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 37	Map Index: 38639	EO Index: 33646	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1995-10-19
Origin: Natural/Native occurrence			Site: 1995-10-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.24104° / -118.62771°	Township: 02N
UTM: Zone-11 N3790080 E350103	Range: 17W
Mapping Precision: SPECIFIC	Section: 23 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,100 ft

Location: NORTH OF CHATSWORTH RESERVOIR, 0.25 MI EAST OF LAX/VEN COUNTY LINE AND JUST NORTH OF VALLEY CIRCLE BLVD, SIMI HILLS.

Location Detail: ON SOUTH-FACING SLOPE DIRECTLY EAST OF CHASTWORTH OAKS PARK.

Ecological: ON MARGINS OF DISTURBED PATHWAY ALONG SANDSTONE RIDGE IN COASTAL SAGE SCRUB DOMINATED BY MALACOTHAMNUS FASCICULATUS. THIN SOIL AND ANNUAL GRASS COVER IS LOW. BURNED ABOUT 2 YRS AGO.

Threat:

General: ABOUT 30 PLANTS OBSERVED IN 1995.

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 38	Map Index: 38640	EO Index: 33647	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1995-10-19
Origin: Natural/Native occurrence			Site: 1995-10-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Canoga Park (3411825/112A), Calabasas (3411826/112B)

County Summary: Los Angeles

Lat/Long: 34.24851° / -118.62855°	Township: 02N
UTM: Zone-11 N3790910 E350039	Range: 17W
Mapping Precision: SPECIFIC	Section: 23 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 17.5 acres	Elevation: 1,400 ft

Location: NORTH OF CHATSWORTH RESERVOIR, 0.25 MI EAST OF LAX/VEN COUNTY LINE AND 0.6 MI NORTH OF VALLEY CIRCLE BLVD, SIMI HILLS.

Location Detail: THREE COLONIES MAPPED WITHIN THE N 1/2 NE 1/4 SECTION 23.

Ecological: IN COASTAL SAGE SCRUB DOMINATED BY MALACOTHAMNUS FASCICULATUS AND ANNUAL GRASSLAND. ASSOCIATES INCLUDE HETERO THECA GRANDIFLORA AND SALSOLA TRAGUS. SOILS THIN; COMPACTED AT FORMER HELICOPTER LANDING PAD.

Threat: TWO OF THREE SITES HAVE BEEN MOWN REPEATEDLY.

General: 55+ PLANTS OBSERVED IN COLONIES RANGING IN SIZE FROM 5 TO 40 PLANTS IN 1995.

Owner/Manager: UNKNOWN

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 39	Map Index: 38641	EO Index: 33648	_____ Dates Last Seen _____
Occ Rank: Excellent			Element: 1987-09-29
Origin: Natural/Native occurrence			Site: 1987-09-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20491° / -118.77173°	Township: 01N
UTM: Zone-11 N3786295 E336768	Range: 18W
Mapping Precision: SPECIFIC	Section: 04 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 2,100 ft

Location: SOUTH OF CHINA FLAT, ABOUT 0.5 MILE EAST OF SIMI PEAK SUMMIT ON JORDAN RANCH, SIMI HILLS.
Location Detail: MAPPED WITHIN THE NE 1/4 NW 1/4 SECTION 4.
Ecological: ON SANDSTONE OUTCROPS IN MIXED CHAPARRAL AND CEANOTHUS CRASSIFOLIUS CHAPARRAL. ASSOCIATED WITH ERIOGONUM WRIGHTII MEMBRANACEUM.
Threat: AREA BEING CONSIDERED FOR GOLF COURSE.
General: ABOUT 200 PLANTS OBSERVED AT JORDAN RANCH IN 1987 (INCLUDING OCCURRENCES # 16, 39, 40, AND 41). SPECIES MAY BE MORE WIDESPREAD THAN INDICATED BY SURVEY (WISHNER 1987). THIS SITE FORMERLY CONSIDERED PART OF OCCURRENCE #16.
Owner/Manager: PVT

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 40	Map Index: 38642	EO Index: 33649	— Dates Last Seen —
Occ Rank: Excellent			Element: 1987-09-29
Origin: Natural/Native occurrence			Site: 1987-09-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-05-15

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20721° / -118.76392°	Township: 02N
UTM: Zone-11 N3786538 E337492	Range: 18W
Mapping Precision: SPECIFIC	Section: 34 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 28.7 acres	Elevation: 2,000 ft

Location: EAST OF CHINA FLAT, ABOUT 1 MILE ENE OF SIMI PEAK SUMMIT ON JORDAN RANCH, SIMI HILLS.

Location Detail: 6 COLONIES MAPPED MOSTLY WITHIN THE SE 1/4 SE 1/4 SECTION 33.

Ecological: ON SANDSTONE OUTCROPS IN MIXED CHAPARRAL AND CEANOTHUS CRASSIFOLIUS CHAPARRAL. ASSOCIATED WITH ERIOGONUM WRIGHTII MEMBRANACEUM.

Threat: AREA BEING CONSIDERED FOR GOLF COURSE.

General: ABOUT 200 PLANTS OBSERVED AT JORDAN RANCH IN 1987 (INCLUDING OCCURRENCES # 16, 39, 40, AND 41). SPECIES MAY BE MORE WIDESPREAD THAN INDICATED BY SURVEY (WISHNER 1987). THIS SITE FORMERLY CONSIDERED PART OF OCCURRENCE #16.

Owner/Manager: PVT

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 41	Map Index: 38643	EO Index: 33650	_____ Dates Last Seen _____
Occ Rank: Excellent			Element: 1987-09-29
Origin: Natural/Native occurrence			Site: 1987-09-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20798° / -118.75404°	Township: 02N
UTM: Zone-11 N3786607 E338404	Range: 18W
Mapping Precision: SPECIFIC	Section: 34 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 14.9 acres	Elevation: 1,900 ft

Location: EAST OF CHINA FLAT, ABOUT 1.5 MILE EAST OF SIMI PEAK SUMMIT ON JORDAN RANCH, SIMI HILLS.

Location Detail: THREE COLONIES MAPPED MAPPED ALONG DIRT ROAD TO CHINA FLAT, WITHIN THE SE 1/4 SW 1/4 SECTION 34.

Ecological: ON SANDSTONE OUTCROPS IN MIXED CHAPARRAL AND CEANOTHUS CRASSIFOLIUS CHAPARRAL. ASSOCIATED WITH ERIOGONUM WRIGHTII MEMBRANACEUM.

Threat: AREA BEING CONSIDERED FOR GOLF COURSE.

General: ABOUT 200 PLANTS OBSERVED AT JORDAN RANCH IN 1987 (INCLUDING OCCURRENCES # 16, 39, 40, AND 41). SPECIES MAY BE MORE WIDESPREAD THAN INDICATED BY SURVEY (WISHNER 1987). THIS SITE FORMERLY CONSIDERED PART OF OCCURRENCE #16.

Owner/Manager: PVT

Deinandra minthornii		
Santa Susana tarplant		Element Code: PDAST4R0J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: ON SANDSTONE OUTCROPS AND CREVICES, IN SHRUBLAND. 280-760M.		

Occurrence No. 42	Map Index: 38647	EO Index: 33654	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1995-10-11
Origin: Natural/Native occurrence			Site: 1995-10-11
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-04-28

Quad Summary: Santa Susana (3411836/138C)

County Summary: Los Angeles

Lat/Long: 34.26408° / -118.63153°	Township: 02N
UTM: Zone-11 N3792641 E349792	Range: 17W
Mapping Precision: SPECIFIC	Section: 14 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,650 ft

Location: ABOUT 0.3 MILE SOUTH OF SANTA SUSANA PASS JUST EAST OF VEN/LAX COUNTY LINE, SIMI HILLS.

Location Detail: MAPPED ALONG SECTION LINE BETWEEN SEC 11 AND SEC 14 ON SOUTH SIDE OF SANTA SUSANA TUNNEL ROUTE.

Ecological: REMNANT COASTAL SAGE SCRUB AND ANNUAL GRASSLAND IN CREVICES OF SANDSTONE BEDROCK OUTCROP.

Threat:

General: "UNCOMMON" IN 1995.

Owner/Manager: UNKNOWN

Delphinium parryi ssp. blochmaniae		
dune larkspur		Element Code: PDRAN0B1B1
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4T2	CNPS List: 1B.2
State: None	State: S2.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL DUNES (MARITIME).		
Micro: ON ROCKY AREAS AND DUNES. 30-375M.		

Occurrence No. 1	Map Index: 28618	EO Index: 29816	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1987-XX-XX
Origin: Natural/Native occurrence			Site: 1987-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1996-12-17

Quad Summary: Thousand Oaks (3411827/113A)
 County Summary: Ventura

Lat/Long: 34.12948° / -118.85459°	Township: 01N
UTM: Zone-11 N3778065 E328981	Range: 19W
Mapping Precision: SPECIFIC	Section: 34 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,000 ft

Location: EAST SIDE OF HIGHWAY 23 JUST SOUTH OF LAKE ELEANOR, SOUTH OF THOUSAND OAKS. EAST SIDE OF ROAD.

Location Detail:

Ecological: MAPPED WITHIN OAK WOODLAND. OTHER RARE PLANTS IN AREA.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS MAP FROM LAKE ELEANOR OPEN SPACE AREA BY WESTEC SERVICES, INC. PROVIDED BY BURGESS.

Owner/Manager: UNKNOWN

Didymodon norrisii		
Norris' beard moss		Element Code: NBMUS2C0H0
Status	NDDB Element Ranks	Other Lists
Federal: None State: None	Global: G3G4 State: S3S4	CNPS List: 2.2
Habitat Associations		
General: CISMONTANE WOODLAND, LOWER MONTANE CONIFEROUS FOREST.		
Micro: MOSS FROM SEASONALLY WET SHEET DRAINAGES ON EXPOSED ROCK SLABS OR TERRACES THAT COMPLETELY DRY IN SUMMER. LESS FREQUENTL		

Occurrence No. 29	Map Index: 78542	EO Index: 79463	Dates Last Seen
Occ Rank: Unknown			Element: 2005-04-02
Origin: Natural/Native occurrence			Site: 2005-04-02
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-04-12

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.08143° / -118.82423°	Township: 01S
UTM: Zone-11 N3772687 E331686	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 13 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 1,500 ft

Location: ZUMA CANYON, ROCK OUTCROP ON WEST BANK OF ZUMA CREEK ABOUT 50 M SOUTH FROM INTERSECTION OF ZUMA CRK AND BACKBONE TRAIL.

Location Detail: EXACT LOCATION UNKONWN. MAPPED AS BEST GUESS BY CNDDDB IN VICINITY OF INTERSECTION OF ZUMA CREEK AND BACKBONE TRAIL. NE1/4 OF SW1/4 SEC 13.

Ecological: ADENOSTOMA FASCICULATUM/CEANOTHUS SPINOSUS CHAPARRAL ALONG SEASONAL CREEK.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS A 2005 SAGAR COLLECTION. NEEDS FIELDWORK.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Dithyrea maritima		
beach spectaclepod		Element Code: PDBRA10020
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.1
State: Threatened	State: S2.1	
_____ Habitat Associations _____		
General: COASTAL DUNES, COASTAL SCRUB. FORMERLY MORE WIDESPREAD IN COASTAL HABITATS IN SO. CALIF.		
Micro: SEA SHORES, ON SAND DUNES, AND SANDY PLACES NEAR THE SHORE. 3-50M.		

Occurrence No. 11	Map Index: 40194	EO Index: 35196	— Dates Last Seen —
Occ Rank: Unknown			Element: 1884-07-XX
Origin: Natural/Native occurrence			Site: 1884-07-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-11-17

Quad Summary: Venice (3311884/090B), Beverly Hills (3411814/111C), Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.01281° / -118.49073°	Township: 02S
UTM: Zone-11 N3764578 E362349	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: 07 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 20 ft

Location: DUNES OF COAST NEAR SANTA MONICA.

Location Detail: EXACT LOCATION NOT KNOWN; MAPPED NEAR THE BEACHES WEST OF SANTA MONICA.

Ecological: DUNES.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1884 SIGHTING (COLLECTION?) BY W.S. LYON REPORTED BY MAJOR (1979).

Owner/Manager: UNKNOWN

Dodecahema leptoceras		
slender-horned spineflower		
		Element Code: PDPGN0V010
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G1	CNPS List: 1B.1
State: Endangered	State: S1	
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB (ALLUVIAL FAN SAGE SCRUB).		
Micro: FLOOD DEPOSITED TERRACES AND WASHES; ASSOC INCLUDE ENCELIA, DALEA, LEPIDOSPARTUM, ETC. 200-760M.		

Occurrence No. 6 Map Index: 38551 EO Index: 41052 — Dates Last Seen —
 Occ Rank: None Element: 1893-05-XX
 Origin: Natural/Native occurrence Site: 1893-05-XX
 Presence: Possibly Extirpated
 Trend: Unknown Record Last Updated: 1999-05-14

Quad Summary: Oat Mountain (3411835/138D), Santa Susana (3411836/138C), Mint Canyon (3411844/137B), San Fernando (3411834/137C), Newhall (3411845/138A), Val Verde (3411846/138B)
County Summary: Los Angeles

Lat/Long: 34.38808° / -118.54413° Township: 04N
 UTM: Zone-11 N3806267 E358048 Range: 16W
 Mapping Precision: NON-SPECIFIC Section: 34 Qtr: XX
 Symbol Type: POINT Meridian: S
 Radius: 5 mile Elevation: 1,300 ft

Location: NEWHALL.
Location Detail:
Ecological:
 Threat: MUCH OF THIS AREA DEVELOPED ACCORDING TO TOPO MAPS.
 General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1893 COLLECTION BY DAVIDSON.
 Owner/Manager: UNKNOWN

Dudleya blochmaniae ssp. blochmaniae

Blochman's dudleya

Element Code: PDCRA04051

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G2T2	CNPS List: 1B.1
State: None	State: S2.1	

_____ **Habitat Associations** _____

General: COASTAL SCRUB, COASTAL BLUFF SCRUB, VALLEY AND FOOTHILL GRASSLAND.
Micro: OPEN, ROCKY SLOPES; OFTEN IN SHALLOW CLAYS OVER SERPENTINE OR IN ROCKY AREAS W/LITTLE SOIL. 5-450M.

Occurrence No. 5	Map Index: 17722	EO Index: 919	_____ Dates Last Seen _____
Occ Rank: Unknown	Origin: Natural/Native occurrence		Element: 1959-06-04
Presence: Presumed Extant	Trend: Unknown		Site: 1959-06-04
			Record Last Updated: 1991-10-09

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.00175° / -118.80670°	Township: 02S
UTM: Zone-11 N3763821 E333148	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 07 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 120 ft

Location: POINT DUME.

Location Detail: HERBARIUM COLLECTION DID NOT GIVE MORE PRECISE LOCATION INFORMATION.

Ecological: COMMON ON CLAYEY SLOPES IN COASTAL SAGE.

Threat:

General:

Owner/Manager: DPR-POINT DUME SB

Dudleya blochmaniae ssp. blochmaniae

Blochman's dudleya

Element Code: PDCRA04051

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G2T2	CNPS List: 1B.1
State: None	State: S2.1	

_____ **Habitat Associations** _____

General: COASTAL SCRUB, COASTAL BLUFF SCRUB, VALLEY AND FOOTHILL GRASSLAND.
Micro: OPEN, ROCKY SLOPES; OFTEN IN SHALLOW CLAYS OVER SERPENTINE OR IN ROCKY AREAS W/LITTLE SOIL. 5-450M.

Occurrence No. 6	Map Index: 17710	EO Index: 10034	_____ Dates Last Seen _____
Occ Rank: Unknown	Origin: Natural/Native occurrence		Element: 1948-06-03
Presence: Presumed Extant	Trend: Unknown		Site: 1948-06-03
			Record Last Updated: 1991-12-05

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.03916° / -118.70273°	Township: 01S
UTM: Zone-11 N3767805 E342820	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 250 ft

Location: MOUTH OF WINTER CANYON, NEAR MALIBU BEACH.

Location Detail:

Ecological: IN RED CLAY SOIL OF FLAT AREA.

Threat:

General: LOCALLY ABUNDANT IN 1948.

Owner/Manager: PVT?

Dudleya blochmaniae ssp. blochmaniae

Blochman's dudleya

Element Code: PDCRA04051

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----

Federal: None

Global: G2T2

CNPS List: 1B.1

State: None

State: S2.1

----- **Habitat Associations** -----

General: COASTAL SCRUB, COASTAL BLUFF SCRUB, VALLEY AND FOOTHILL GRASSLAND.

Micro: OPEN, ROCKY SLOPES; OFTEN IN SHALLOW CLAYS OVER SERPENTINE OR IN ROCKY AREAS W/LITTLE SOIL.
5-450M.

Occurrence No. 30

Map Index: 47885

EO Index: 47885

----- **Dates Last Seen** -----

Occ Rank: Unknown

Element: XXXX-XX-XX

Origin: Natural/Native occurrence

Site: XXXX-XX-XX

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2002-05-09

Quad Summary: Canoga Park (3411825/112A), Calabasas (3411826/112B)

County Summary: Ventura, Los Angeles

Lat/Long: 34.23435° / -118.64252°

Township: 02N

UTM: Zone-11 N3789360 E348727

Range: 17W

Mapping Precision: NON-SPECIFIC

Section: 27 **Qtr:** XX

Symbol Type: POINT

Meridian: S

Radius: 1 mile

Elevation:

Location: NEAR THE CHATSWORTH RESERVOIR.

Location Detail: EXACT LOCATION UNKNOWN, MAPPED IN THE VICINITY OF THE CHATSWORTH RESERVOIR.

Ecological:

Threat:

General:

Owner/Manager: UNKNOWN

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T1 State: S1.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, CISMONTANE WOODLAND. Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 1 **Map Index:** 17774 **EO Index:** 43525 **Dates Last Seen**

Occ Rank: Unknown **Element:** 1990-03-XX
Origin: Natural/Native occurrence **Site:** 1990-03-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A)
County Summary: Ventura

Lat/Long: 34.14186° / -118.84846°	Township: 01N
UTM: Zone-11 N3779428 E329572	Range: 19W
Mapping Precision: SPECIFIC	Section: 26 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,000 ft

Location: JUST SE OF INTERSECTION OF POTRERO RD & DECKER RD (WESTLAKE BLVD), EAST OF LAKE SHERWOOD, SOUTH OF THOUSAND OAKS.

Location Detail:

Ecological: N-FACING LOWER VOLCANIC SLOPES. ASSOCIATED SPECIES NEARBY INCLUDE JUNIPERUS CALIFORNICA, LASTHENIA CORONARIA, CALOCHORTUS VENUSTUS, AND LEWISIA REDIVIVA.

Threat: CITY OF AGOURA HILLS PROPOSED DEVELOPMENT WOULD DESTROY MAJORITY OF POTENTIAL HABITAT & POSSIBLY SOME EXISTING COLONIES.

General: ABOUT 100 PLANTS OBSERVED IN 1990 BETWEEN THIS OCCURRENCE AND OCCURRENCES #5, 6, 7. THIS OCCURRENCE WAS FORMERLY D. CYMOSA SSP. OVATIFOLIA OCCURRENCE #6

Owner/Manager: PVT

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T1 State: S1.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, CISMONTANE WOODLAND. Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 2 **Map Index:** 17773 **EO Index:** 43526 **Dates Last Seen**

Occ Rank: Excellent **Element:** 1986-05-20
Origin: Natural/Native occurrence **Site:** 1986-05-20
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A)
County Summary: Ventura

Lat/Long: 34.13830° / -118.85553°	Township: 01N
UTM: Zone-11 N3779045 E328912	Range: 19W
Mapping Precision: SPECIFIC	Section: 27 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,500 ft

Location: WEST OF LAKE ELEANOR, 0.2 MI WEST OF WESTLAKE ROAD ABOUT 0.5 MI SOUTH OF JCT WITH POTRERO RD, SOUTH OF THOUSAND OAKS.

Location Detail: ON LEVEL AREAS & SHEER CLIFFS. FIELD FORM SAID "SE OF SE QUARTER OF SEC. 27; MAPPING IN CNDDDB SHOULD BE CLOSE; MAY BE A LITTLE OFF.

Ecological: PARTIAL SHADE ON N-FACING VOLCANIC CLIFFS & OUTCROPS (CONEJO VOLCANICS) IN UNIQUE RUPICOLOUS ASSOCIATION TERMED CONEJO ROCK PLANT BY BURGESS; WITH SELAGINELLA BIGELOVII, ERIOGONUM CROCATUM & DUDLEYA LANCEOLATA. SURROUNDED BY COAST SAGE SCRUB.

Threat:

General: ABOUT 100 PLANTS IN 1986. SITE TO BE PERMANENTLY PRESERVED AS OPEN SPACE BY CONEJO OPEN SPACE CONSERVATION AGENCY (COSCA). FORMERLY DUDLEYA CYMOSA SSP. OVATIFOLIA OCCURRENCE # 7.

Owner/Manager: CONEJO OPEN SPACE CONS AGENCY

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: Threatened	Global: G5T1	CNPS List: 1B.2
State: None	State: S1.2	
_____ Habitat Associations _____		
General: CHAPARRAL, CISMONTANE WOODLAND.		
Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 3	Map Index: 43527	EO Index: 43527	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1980-05-25
Origin: Natural/Native occurrence			Site: 1980-05-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles, Ventura

Lat/Long: 34.13281° / -118.85079°	Township: 01N
UTM: Zone-11 N3778428 E329338	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 34 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 980 ft

Location: EAST OF LAKE ELEANOR, ON HIGHWAY 23 BETWEEN POTRERO ROAD AND CARLISLE ROAD, SANTA MONICA MOUNTAINS.

Location Detail: ON NORTH FACING VOLCANIC ROCK. EXACT LOCATION UNKNOWN; DIRECTIONS GIVEN VARIOUSLY AS "EAST OF LAKE ELEANOR" AND "ACROSS LAKE ELEANOR". MAPPED AS BEST GUESS BY CNDDDB TO INCLUDE SLOPES EAST OF LAKE ELEANOR.

Ecological: ON MOSSY, NORTH FACING VOLCANIC ROCK WITH QUERCUS AGRIFOLIA, RHUS DIVERSILOBA, AND RHAMNUS CROCEA.

Threat:

General: UNKNOWN NUMBER OF PLANTS OBSERVED IN 1980; NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T1 State: S1.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, CISMONTANE WOODLAND.		
Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 4	Map Index: 43528	EO Index: 43528	Dates Last Seen
Occ Rank: Excellent			Element: 1992-05-29
Origin: Natural/Native occurrence			Site: 1992-05-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.13416° / -118.83197°	Township: 01N
UTM: Zone-11 N3778547 E331077	Range: 19W
Mapping Precision: SPECIFIC	Section: 25 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 15.9 acres	Elevation: 1,000 ft

Location: BALDWIN WESTLAKE PROPERTY, ABOUT 1.1 MILES EAST OF NORTH END OF LAKE ELEANOR, SANTA MONICA MOUNTAINS.

Location Detail: 491 ACRES SURROUNDING LAS VIRGENES RESERVOIR, CITY OF WESTLAKE VILLAGE.

Ecological: ON ROCKY SUBSTRATES, MOSTLY NORTH FACING SLOPES.

Threat: POTENTIAL FUTURE SALE TO BALDWIN DEVELOPMENT COMPANY.

General: ABOUT 1000 PLANTS OBSERVED IN 1992 BETWEEN THIS OCCURRENCE AND OCCURRENCE #5. WISHNER STATES THAT THIS SITE CONTAINS OTHER SIGNIFICANT HABITAT AND BIOLOGICAL RESOURCE VALUES.

Owner/Manager: PVT-FDIC

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T1 State: S1.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, CISMONTANE WOODLAND.		
Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 5	Map Index: 43529	EO Index: 43529	— Dates Last Seen —
Occ Rank: Unknown			Element: 1990-03-XX
Origin: Natural/Native occurrence			Site: 1990-03-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A), Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.12952° / -118.82011°	Township: 01N
UTM: Zone-11 N3778013 E332162	Range: 19W
Mapping Precision: SPECIFIC	Section: 36 Qtr: N
Symbol Type: POLYGON	Meridian: S
Area: 58.8 acres	Elevation: 900 ft

Location: VICINITY OF SANTA MONICA MOUNTAINS RECREATION AREA AND TRIUNFO CANYON, ABOUT 1-1.5 MI S OF HWY 101, WSW OF AGOURA HILLS.

Location Detail: 24 COLONIES MAPPED AS 13 POLYGONS. COLONIES SCATTERED BETWEEN NORTH END OF TRIUNFO CANYON, SMMRA, AND LAS VIRGENES RESERVOIR.

Ecological: ON N AND S-FACING SLOPES OF TRIUNFO CANYON. IN COASTAL SAGE SCRUB AND SOUTHERN OAK WOODLAND ON S SIDE OF CANYON, IN ANNUAL GRASSLAND ON UPPER SLOPES OF NORTH SIDE OF CANYON.

Threat: CITY OF AGOURA HILLS PROPOSED DEVELOPMENT WOULD DESTROY MAJORITY OF POTENTIAL HABITAT IN THE VICINITY.

General: SMALL PORTION OF THIS OCCURRENCE SEEN BY T. THOMAS IN 1990, REST OF OCCURRENCE SEEN BY WISHNER IN 1986. THIS OCCURRENCE WAS FORMERLY D. CYMOSA SSP. OVATIFOLIA OCCURENCE #3.

Owner/Manager: UNKNOWN

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T1 State: S1.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, CISMONTANE WOODLAND. Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 6 **Map Index:** 17775 **EO Index:** 43530 **— Dates Last Seen —**

Occ Rank: Unknown **Element:** 1990-03-XX
Origin: Natural/Native occurrence **Site:** 1990-03-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A)
County Summary: Los Angeles

Lat/Long: 34.14172° / -118.78842°	Township: 01N
UTM: Zone-11 N3779314 E335107	Range: 18W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,060 ft

Location: LADYFACE MOUNTAIN, ABOUT 1 MILE NW OF LADYFACE SUMMIT, 0.3 MILE SOUTH OF VENTURA FREEWAY, WSW OF AGOURA HILLS.

Location Detail:

Ecological: N-FACING VOLCANIC SLOPES. NEARBY ASSOCIATES INCLUDE JUNIPERUS CALIFORNICA, LASTHENIA CORONARIA, AND HAPLOPAPPUS LINEARIFOLIUM.

Threat: CITY OF AGOURA HILLS PROPOSING A DEVELOPMENT UP TO THE 1100 FT CONTOUR ON THE N SLOPE OF LADYFACE.

General: PROPOSED DEVELOPMENT WOULD REMOVE THE MAJORITY OF POTENTIAL HABITAT. ABOUT 100 PLANTS SEEN IN 1990 BETWEEN THIS OCCURRENCE AND OCC'S 1, 5, 7. THIS OCCURENCE WAS FORMERLY D. CYMOSA SSP. OVATIFOLIA OCCURENCE #4.

Owner/Manager: PVT

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T1 State: S1.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, CISMONTANE WOODLAND.		
Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 7	Map Index: 17776	EO Index: 43531	Dates Last Seen
Occ Rank: Unknown			Element: 2000-XX-XX
Origin: Natural/Native occurrence			Site: 2000-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.14154° / -118.75756°	Township: 01N
UTM: Zone-11 N3779245 E337953	Range: 18W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 3.5 acres	Elevation: 900 ft

Location: CORNELL CORNERS, 0.1-0.3 AIRMILES SOUTH OF MALIBU JUNCTION, ALONG CORNELL ROAD, SOUTH OF AGOURA HILLS.

Location Detail: ON SE SIDE OF CORNELL RD. SEVERAL OLD COLLECTIONS FROM THE CORNELL CORNERS AREA.

Ecological: N-FACING VOLCANIC SLOPES. NEARBY ASSOCIATED SPECIES INCLUDE JUNIPERUS CALIFORNICA, LASTHENIA CORONARIA, LEWISIA REDIVIVA, MALOSMA LAURINA, HAPLOPAPPUS LINEARIS, DICHELOSTEMMA PULCHELLA, DELPHINIUM PARRYI, CALOCHORTUS VENUSTUS.

Threat: CITY OF AGOURA HILLS PROPOSED DEVELOPMENT WOULD WIPE OUT MAJORITY OF POTENTIAL HABITAT IN VICINITY.

General: THIS OCCURENCE WAS FORMERLY D. CYMOSA SSP. OVATIFOLIA OCCURENCE #5.

Owner/Manager: PVT

Dudleya cymosa ssp. agourensis		
Agoura Hills dudleya		Element Code: PDCRA040A7
Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G5T1	CNPS List: 1B.2
State: None	State: S1.2	
Habitat Associations		
General: CHAPARRAL, CISMONTANE WOODLAND.		
Micro: ROCKY, VOLCANIC BRECCIA. 200-500M.		

Occurrence No. 8	Map Index: 43532	EO Index: 43532	Dates Last Seen
Occ Rank: Unknown			Element: 2000-XX-XX
Origin: Natural/Native occurrence			Site: 2000-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2000-08-18

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.13056° / -118.76232°	Township: 01N
UTM: Zone-11 N3778035 E337493	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 34 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/10 mile	Elevation: 1,000 ft

Location: WEST SIDE OF KANAN ROAD NEAR CASTLE VIEW DRIVE. 1.5 ROAD MILES SOUTH OF HIGHWAY 101. SOUTH OF AGOURA HILLS.

Location Detail: WEST SIDE OF KANAN ROAD. MAPPED AT INTERSECTION OF KANAN ROAD AND CASTLE VIEW DRIVE BY CNDDDB.

Ecological:

Threat:

General: RIEFNER VISITED SITE IN SPRING 2000. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Dudleya cymosa ssp. marcescens		
marcescent dudleya		Element Code: PDCRA040A3
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: Rare	Global: G5T2 State: S2.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL. Micro: ON SHEER ROCK SURFACES AND ROCKY VOLCANIC CLIFFS. 180-520M.		

Occurrence No. 1	Map Index: 00472	EO Index: 19739	Dates Last Seen
Occ Rank: Unknown			Element: 1982-05-21
Origin: Natural/Native occurrence			Site: 1982-05-21
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-11-30

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.10139° / -118.79342°	Township: 01S
UTM: Zone-11 N3774850 E334568	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 08 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 1,050 ft

Location: ALONG BANKS OF EPHEMERAL STREAM. ABOUT 1.0 MI ABOVE SEMINOLE HOT SPRINGS, OFF CORNELL ROAD.

Location Detail:

Ecological: ON ROCKS WITH MOSS IN SHADED AREAS. ALONG BANKS OF AN EPHEMERAL STREAM.

Threat: FIRES DESTROYED PART OF THE HABITAT IN 1978.

General: LESS THAN 50 PLANTS SEEN IN 1982. OWNER OF PART OF THE SITE AWARE OF THE NEED FOR PROTECTION.

Owner/Manager: UNKNOWN

Dudleya cymosa ssp. marcescens		
marcescent dudleya		Element Code: PDCRA040A3
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: Rare	Global: G5T2 State: S2.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL. Micro: ON SHEER ROCK SURFACES AND ROCKY VOLCANIC CLIFFS. 180-520M.		

Occurrence No. 5	Map Index: 00664	EO Index: 19730	Dates Last Seen
Occ Rank: Unknown			Element: 1979-06-28
Origin: Natural/Native occurrence			Site: 1979-06-28
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-04-25

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.08888° / -118.71869°	Township: 01S
UTM: Zone-11 N3773344 E341439	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: SE
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 725 ft

Location: 100 METERS NW OF SALVATION ARMY CAMP ON S SIDE OF ROAD ALONGMALIBU CREEK, MALIBU STATE

Location Detail:

Ecological: ON STEEP NORTH FACING ROCKY CLIFF FACE. PARTIALLY SHADED. ASSOCIATED WITH SELAGINELLA BIGELOVII, SALIX, RIBES CALIFORNICUM AND SYMPHORICARPOS.

Threat:

General:

Owner/Manager: UNKNOWN

Dudleya cymosa ssp. marcescens		
marcescent dudleya		Element Code: PDCRA040A3
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: Rare	Global: G5T2 State: S2.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL. Micro: ON SHEER ROCK SURFACES AND ROCKY VOLCANIC CLIFFS. 180-520M.		

Occurrence No. 6	Map Index: 00631	EO Index: 19728	Dates Last Seen
Occ Rank: Unknown			Element: 1984-05-XX
Origin: Natural/Native occurrence			Site: 1984-05-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2007-04-05

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09735° / -118.73155°	Township: 01S
UTM: Zone-11 N3774303 E340268	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 11 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 600 ft

Location: ROCKY POOL, MALIBU CREEK STATE PARK.

Location Detail:

Ecological: ON ROCK OUTCROP OF CONEJO VOLCANICS. IN BOTTOM OF CANYON WITH SELAGINELLA BIGELOVII, SEDUM SPATHULIFOLIUM.

Threat: POOL IS A POPULAR RECREATION SITE; ROCK SCRAMBLING DISLODGES SOME PLANTS PER THOMAS.

General: LESS THAN 50 PLANTS IN 1981. ALSO SEEN IN 1984.

Owner/Manager: DPR-MALIBU CREEK SP

California Department of Fish and Game
Natural Diversity Database
Full Report for Selected Elements
SSFL - Full Report- 9 quad search centered on Calabasas Quad

Dudleya cymosa ssp. marcescens

marcescent dudleya

Element Code: PDCRA040A3

----- Status ----- NDDB Element Ranks ----- Other Lists -----

Federal: Threatened

Global: G5T2

CNPS List: 1B.2

State: Rare

State: S2.2

----- Habitat Associations -----

General: CHAPARRAL.

Micro: ON SHEER ROCK SURFACES AND ROCKY VOLCANIC CLIFFS. 180-520M.

Occurrence No. 7

Map Index: 00608

EO Index: 19729

----- Dates Last Seen -----

Occ Rank: Unknown

Element: 1984-05-18

Origin: Natural/Native occurrence

Site: 1984-05-18

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 1995-08-23

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.10528° / -118.73982°

Township: 01S

UTM: Zone-11 N3775196 E339520

Range: 18W

Mapping Precision:NON-SPECIFIC

Section: 02 Qtr:SW

Symbol Type: POINT

Meridian: S

Radius: 1/5 mile

Elevation: 800 ft

Location: "UDELL GORGE," MALIBU CREEK STATE PARK.

Location Detail: 2-20 METERS ABOVE THE CREEK BOTTOM.

Ecological: ON VOLCANIC BOULDERS, NORTH FACING SLOPE. WITH SELAGINELLA BIGELOVII.

Threat:

General:

Owner/Manager: DPR-MALIBU CREEK SP

Dudleya cymosa ssp. ovatifolia		
Santa Monica dudleya		Element Code: PDCRA040A5
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T2 State: S2.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB. Micro: IN CANYONS ON SEDIMENTARY CONGLOMERATES; PRIMARILY N-FACING SLOPES. 210-500M.		

Occurrence No. 2	Map Index: 17769	EO Index: 10157	Dates Last Seen
Occ Rank: Unknown			Element: 1984-XX-XX
Origin: Natural/Native occurrence			Site: 1984-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-08-23

Quad Summary: Topanga (3411815/112D)

County Summary: Los Angeles

Lat/Long: 34.07550° / -118.59049°	Township: 01S
UTM: Zone-11 N3771668 E353244	Range: 16W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 64.9 acres	Elevation: 700 ft

Location: TOPANGA STATE PARK, ALONG TOPANGA CANYON BLVD. 1.1-1.5 MI S OF TRIPPET RANCH, SANTA MONICA MOUNTAINS.

Location Detail: BOTH SIDES OF TOPANGA CANYON BLVD JUST SOUTH OF FERNWOOD.

Ecological: MOSTLY ON EAST-FACING MOSS COVERED CONGLOMERATE ROCK WITH UMBELLULARIA CALIFORNICA, PLATANUS RACEMOSA, ALNUS RHOMBIFOLIA, RHUS DIVERSILOBA, AND BOYKENIA ELATA.

Threat:

General: LOCALLY ABUNDANT IN 1980.

Owner/Manager: DPR-TOPANGA SP

Dudleya cymosa ssp. ovatifolia		
Santa Monica dudleya		Element Code: PDCRA040A5
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G5T2 State: S2.2	CNPS List: 1B.2
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB. Micro: IN CANYONS ON SEDIMENTARY CONGLOMERATES; PRIMARILY N-FACING SLOPES. 210-500M.		

Occurrence No. 10	Map Index: 38074	EO Index: 33081	Dates Last Seen
Occ Rank: Unknown			Element: 1980-05-25
Origin: Natural/Native occurrence			Site: 1980-05-25
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-02-06

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.05784° / -118.69424°	Township: 01S
UTM: Zone-11 N3769864 E343638	Range: 17W
Mapping Precision: NON-SPECIFIC	Section: 30 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 2/5 mile	Elevation: 850 ft

Location: MALIBU CANYON ALONG MALIBU CANYON ROAD ABOUT 1.9 MILES NORTH OF HIGHWAY 1, SANTA MONICA MOUNTAINS.

Location Detail: EXACT LOCATION NOT KNOWN; SITE MAPPED AT CNDDDB IS A BEST GUESS BASED UPON INFORMATION PROVIDED BY NAKAI.

Ecological: NORTHEAST-FACING SANDSTONE ROCK FACE. GROWING WITH TOXICODENDRON DIVERSILOBUM, UMBELLULARIA CALIFORNICA, RUBUS URSINUS, AND RHAMNUS CROCEA.

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS 1980 COLLECTION BY NAKAI.

Owner/Manager: UNKNOWN

California Department of Fish and Game
Natural Diversity Database
Full Report for Selected Elements
SSFL - Full Report- 9 quad search centered on Calabasas Quad

Dudleya multicaulis

many-stemmed dudleya

Element Code: PDCRA040H0

----- **Status** ----- **NDDB Element Ranks** ----- **Other Lists** -----
Federal: None **Global:** G2 **CNPS List:** 1B.2
State: None **State:** S2

----- **Habitat Associations** -----
General: CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.
Micro: IN HEAVY, OFTEN CLAYEY SOILS OR GRASSY SLOPES. 0-790M.

Occurrence No. 23 **Map Index:** 00845 **EO Index:** 19704 **----- Dates Last Seen -----**
Occ Rank: Unknown **Element:** 1978-04-XX
Origin: Natural/Native occurrence **Site:** 1978-04-XX
Presence: Presumed Extant
Trend: Unknown **Record Last Updated:** 2006-01-04

Quad Summary: Calabasas (3411826/112B)
County Summary: Los Angeles

Lat/Long: 34.22889° / -118.63259° **Township:** 02N
UTM: Zone-11 N3788740 E349631 **Range:** 17W
Mapping Precision: NON-SPECIFIC **Section:** XX **Qtr:** XX
Symbol Type: POINT **Meridian:** S
Radius: 1/5 mile **Elevation:** 1,000 ft

Location: CHATSWORTH RESERVOIR, SOUTH SIDE.
Location Detail:
Ecological: ON ROCKY OUTCROP.
Threat:
General: 10 PLANTS IN 1978.
Owner/Manager: PVT

Dudleya parva		
Conejo dudleya		Element Code: PDCRA04016
Status	NDDB Element Ranks	Other Lists
Federal: Threatened	Global: G2	CNPS List: 1B.2
State: None	State: S2.1	
Habitat Associations		
General: COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: IN CLAYEY OR VOLCANIC SOILS ON ROCKY SLOPES AND GRASSY HILLSIDES. 60-450M.		

Occurrence No. 3	Map Index: 00277	EO Index: 12346	Dates Last Seen
Occ Rank: Excellent			Element: 1987-05-15
Origin: Natural/Native occurrence			Site: 1987-05-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1991-07-03

Quad Summary: Thousand Oaks (3411827/113A)
County Summary: Ventura

Lat/Long: 34.23340° / -118.86399°	Township: 02N
UTM: Zone-11 N3789606 E328325	Range: 19W
Mapping Precision: SPECIFIC	Section: 27 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 38.2 acres	Elevation: 1,000 ft

Location: BTWN NORWEGIAN GRADE (MOORPARK RD) & OLSEN RD, HEAD OF ARROYO SANTA ROSA. PART OF OCC W/I JOEL MCCREA WILDLIFE PRESERVE.

Location Detail:

Ecological: ON NW-FACING BARE ROCK HILLSIDE AND VOLCANIC CLIFFS. ASSOCIATED WITH SELAGINELLA BIGELOVII, ERIOGONUM FASCICULATUM, AND CORNUS GLABRATA.

Threat: GRAZED WHEN VISITED IN 1978, SUBDIVISIONS NEARBY. TRAMPLING BY HIKERS ALSO THREATENS.

General: ORIGINALLY REPORTED IN 1948. LESS THAN 10,000 PLANTS SEEN IN 1983, 2000-3000 PLANTS SEEN IN 1987. PRESERVED AS OPEN SPACE BY THE CONEJO OPEN SPACE CONSERVATION ASSOCIATION (COSCA).

Owner/Manager: PVT

Dudleya parva		
Conejo dudleya		Element Code: PDCRA04016
Status	NDDB Element Ranks	Other Lists
Federal: Threatened State: None	Global: G2 State: S2.1	CNPS List: 1B.2
Habitat Associations		
General: COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: IN CLAYEY OR VOLCANIC SOILS ON ROCKY SLOPES AND GRASSY HILLSIDES. 60-450M.		

Occurrence No. 15	Map Index: 17844	EO Index: 10023	Dates Last Seen
Occ Rank: Good			Element: 1991-06-13
Origin: Natural/Native occurrence			Site: 1991-06-13
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1993-03-18

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.23677° / -118.86744°	Township: 02N
UTM: Zone-11 N3789986 E328014	Range: 19W
Mapping Precision: SPECIFIC	Section: 21 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 2.4 acres	Elevation: 1,000 ft

Location: MOUNTCLEF RIDGE, RIDGE N OF NORWEGIAN GRADE SUMMIT.

Location Detail: ADJACENT TO (W OF) YMCA CAMP.

Ecological: IN CSS AND GRASSLAND MIXTURE IN THIN SOILS OVER CONEJO VOLCANIC BASALT. CACTI SOMETIMES PRESENT. PLANTS SEEM TO BE RESTRICTED TO SUMMIT ON N SLOPES OF MONTCLEF RIDGE. SITE IS POTENTIAL HABITAT FOR PENTACHAETA LYONII.

Threat: ORVS AND COLLECTING COULD THREATEN THIS OCCURRENCE.

General: LESS THAN 100 PLANTS SEEN IN 1991. LAND WAS TO BE DEDICATED TO CONEJO OPEN SPACE CONSERVATION ASSOCIATION AS CONDITION OF DEVELOPMENT PROJECT APPROVAL.

Owner/Manager: PVT

Eriogonum crocatum		
conejo buckwheat		
		Element Code: PDPGN081G0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: Rare	State: S2.1	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: CONEJO VOLCANIC OUTCROPS; ROCKY SITES. 50-580M.		

Occurrence No. 6	Map Index: 00301	EO Index: 21048	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1983-06-06
Origin: Natural/Native occurrence			Site: 1983-06-06
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1995-11-30

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.13680° / -118.85467°	Township: 01N
UTM: Zone-11 N3778877 E328989	Range: 19W
Mapping Precision: SPECIFIC	Section: 27 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 23.7 acres	Elevation: 1,500 ft

Location: 60-150 METERS ABOVE THE NORTHWEST HALF OF LAKE ELEANOR.

Location Detail: FOUND ON EACH SIDE OF LAKE.

Ecological: FOUND ON CLIFF AND ROCK OUTCROPS ABOVE CHAPARRAL. NEAR AN OCCURRENCE OF LEWISIA REDIVIVA MINOR. OTHER ASSOC INCLUDE ADENOSTOMA, MIMULUS LONGIFLORUS, DUDLEYA PULVERULENTA.

Threat: NUMEROUS TRAILS THROUGH AREA. IN THE 1980'S, THE AREA WAS HEAVILY USED AS A "PARTY" RECREATION AREA.

General: GOOD AGE DISTRIBUTION IN 1983. LESS THAN 20 PLANTS SEEN IN 1983 ON EAST SIDE OF LAKE AND SEVERAL HUNDRED ON WEST SIDE.

Owner/Manager: PVT

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Harpagonella palmeri		
Palmer's grapplinghook		Element Code: PDBOR0H010
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4	CNPS List: 4.2
State: None	State: S3.2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND.		
Micro: CLAY SOILS; OPEN GRASSY AREAS W/IN SHRUBLAND. 15-830M.		

Occurrence No. 60 Map Index: 38551 EO Index: 33558 — Dates Last Seen —
 Occ Rank: Unknown Element: XXXX-XX-XX
 Origin: Natural/Native occurrence Site: XXXX-XX-XX
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 1998-04-03

Quad Summary: Oat Mountain (3411835/138D), Santa Susana (3411836/138C), Mint Canyon (3411844/137B), San Fernando (3411834/137C), Newhall (3411845/138A), Val Verde (3411846/138B)
 County Summary: Los Angeles

Lat/Long: 34.38808° / -118.54413°	Township: 04N
UTM: Zone-11 N3806267 E358048	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 34 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 5 mile	Elevation: 1,300 ft

Location: NEAR NEWHALL.
 Location Detail:
 Ecological:
 Threat:
 General: BOYD REPORTS COLLECTION FROM THIS LOCALE IS HOUSED AT RSA. COLLECTOR AND NUMBER UNKNOWN.
 Owner/Manager: UNKNOWN

Lasthenia glabrata ssp. coulteri

Coulter's goldfields

Element Code: PDAST5L0A1

_____ **Status** _____ **NDDB Element Ranks** _____ **Other Lists** _____

Federal: None

Global: G4T3

CNPS List: 1B.1

State: None

State: S2.1

_____ **Habitat Associations** _____

General: COASTAL SALT MARSHES, PLAYAS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.

Micro: USUALLY FOUND ON ALKALINE SOILS IN PLAYAS, SINKS, AND GRASSLANDS. 1-1400M.

Occurrence No. 85

Map Index: 00743

EO Index: 81897

_____ **Dates Last Seen** _____

Occ Rank: Unknown

Element: 1933-04-20

Origin: Natural/Native occurrence

Site: 1933-04-20

Presence: Presumed Extant

Trend: Unknown

Record Last Updated: 2010-11-30

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.03388° / -118.68508°

Township: 01S

UTM: Zone-11 N3767192 E344439

Range: 17W

Mapping Precision: NON-SPECIFIC

Section: XX **Qtr:** XX

Symbol Type: POINT

Meridian: S

Radius: 1 mile

Elevation: 13 ft

Location: NEAR MALIBU.

Location Detail: ALONG THE ROOSEVELT HIGHWAY (NOW KNOWN AS PACIFIC COAST HIGHWAY) NEAR THE BEACH. EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB AS BEST GUESS CENTERED ON MALIBU AREA AND MALIBU LAGOON.

Ecological:

Threat:

General: ONLY SOURCE OF INFORMATION IS A 1933 BAUER COLLECTION. NEEDS FIELDWORK.

Owner/Manager: UNKNOWN

Lasthenia glabrata ssp. coulteri		
Coulter's goldfields		Element Code: PDAST5L0A1
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4T3	CNPS List: 1B.1
State: None	State: S2.1	
_____ Habitat Associations _____		
General: COASTAL SALT MARSHES, PLAYAS, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS.		
Micro: USUALLY FOUND ON ALKALINE SOILS IN PLAYAS, SINKS, AND GRASSLANDS. 1-1400M.		

Occurrence No. 87	Map Index: 81133	EO Index: 81900	— Dates Last Seen —
Occ Rank: Unknown			Element: 1966-04-04
Origin: Natural/Native occurrence			Site: 1966-04-04
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-12-20

Quad Summary: Canoga Park (3411825/112A)
 County Summary: Los Angeles

Lat/Long: 34.23434° / -118.60497°	Township: 02N
UTM: Zone-11 N3789305 E352185	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 30 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation:

Location: NEAR HIGHWAY 27, 12 MILES NORTH OF TOPANGA.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB AS BEST GUESS 12 MILES NORTH OF TOPANGA NEAR HIGHWAY 27 AND EAST END OF CHATSWORTH RESERVOIR.

Ecological: "ROCKY HILLSIDE". HABITAT INFORMATION ON COLLECTION LABEL DOES NOT SEEM APPROPRIATE FOR THIS SPECIES.

Threat: MUCH DEVELOPMENT HAS OCCURRED IN THIS AREA.

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1966 ANDERSON COLLECTION. COLLECTION STATES LASTHENIA GLABRATA WITH NO SUBSPECIES DESIGNATION. SUBSPECIES COULTERI INFERRED BY RANGE MAPS. ID SHOULD BE CHECKED AS HABITAT IS NOT APPROPRIATE.

Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Nolina cismontana		
chaparral nolina		Element Code: PMAGA080E0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: PRIMARILY ON SANDSTONE AND SHALE SUBSTRATES; ALSO KNOWN FROM GABBRO. 140-1275M.		

Occurrence No. 20	Map Index: 00591	EO Index: 54600	_____ Dates Last Seen _____
Occ Rank: Good			Element: 1987-09-29
Origin: Natural/Native occurrence			Site: 1987-09-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-03-24

Quad Summary: Calabasas (3411826/112B)

County Summary: Ventura

Lat/Long: 34.18861° / -118.74531°	Township: 01N
UTM: Zone-11 N3784445 E339171	Range: 18W
Mapping Precision: SPECIFIC	Section: 11 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 2.9 acres	Elevation: 1,200 ft

Location: JORDAN RANCH, PALO COMADO CANYON, SIMI HILLS.

Location Detail: TWO COLONIES, ONE ON EITHER SIDE OF THE CANYON. MAPPED WITHIN THE NE 1/4 OF THE NE 1/4 OF SECTION 10 AND THE NW 1/4 OF THE NW 1/4 OF SECTION 11.

Ecological: LOW SLOPES OF CANYON WALLS IN OPEN BRUSHLAND. WITH ERIODICTYON CRASSIFOLIUM, ADENOSTOMA FASCICULATUM, HEMIZONIA MINTHORNII AND BRICKELLIA NEVINII.

Threat:

General: SITE PRESERVED AS PALO COMADO CANYON UNIT OF THE SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA. UNKNOWN NUMBER OF PLANTS SEEN IN 1987. OTHER RARE PLANT AT SITE: ASTRAGALUS BRAUNTONII.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Nolina cismontana		
chaparral nolina		Element Code: PMAGA080E0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2	
_____ Habitat Associations _____		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: PRIMARILY ON SANDSTONE AND SHALE SUBSTRATES; ALSO KNOWN FROM GABBRO. 140-1275M.		

Occurrence No. 21	Map Index: 54601	EO Index: 54601	— Dates Last Seen —
Occ Rank: Excellent			Element: 2004-03-15
Origin: Natural/Native occurrence			Site: 2004-03-15
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2005-07-06

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.20249° / -118.80111°	Township: 01N
UTM: Zone-11 N3786074 E334056	Range: 18W
Mapping Precision: SPECIFIC	Section: 06 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 22.9 acres	Elevation: 1,600 ft

Location: SIMI HILLS, NORTH RANCH OPEN SPACE, W OF WESTERN TERMINUS OF FALLING STAR AVE. AND N OF KANAN ROAD.

Location Detail: 2 CNDDDB POLYGONS: (1) IN THE SE 1/4 OF THE NE 1/4 OF SECTION 6, AND (2) IN THE SW 1/4 OF SE 1/4 OF SECTION 31.

Ecological: ARID SOUTH AND NORTH-FACING SLOPES IN DENSE SAGE SCRUB. WITH ADENOSTOMA FASCICULATUM, SALVIA MELLIFERA, MALOSMA LAURINA, ENCELIA CALIFORNICA, CRYPTANTHUS SP., BROMUS RUBENS, MARRUBIUM VULGARE AND HAPLOPAPPUS SQUARROSUS.

Threat:

General: SITE IS PERMANENTLY DEDICATED OPEN SPACE MANAGED BY THE CONEJO OPEN SPACE CONSERVANCY. AT COLONY (1), 74-100 PLANTS SEEN IN 1992. UNKNOWN NUMBER OF PLANTS AT COLONY (2). ASTRAGALUS BRAUNTONII AND DEINANDRA MINTHORNII ALSO AT THIS SITE.

Owner/Manager: CONEJO OPEN SPACE CONS AGENCY

Nolina cismontana		
chaparral nolina		Element Code: PMAGA080E0
Status	NDDB Element Ranks	Other Lists
Federal: None	Global: G2	CNPS List: 1B.2
State: None	State: S2	
Habitat Associations		
General: CHAPARRAL, COASTAL SCRUB.		
Micro: PRIMARILY ON SANDSTONE AND SHALE SUBSTRATES; ALSO KNOWN FROM GABBRO. 140-1275M.		

Occurrence No. 22	Map Index: 54602	EO Index: 54602	Dates Last Seen
Occ Rank: Poor			Element: 1993-05-02
Origin: Natural/Native occurrence			Site: 1993-05-02
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-03-11

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.18316° / -118.77109°	Township: 01N
UTM: Zone-11 N3783883 E336785	Range: 18W
Mapping Precision: SPECIFIC	Section: 09 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 28.9 acres	Elevation: 1,300 ft

Location: OAK CANYON COMMUNITY PARK, IN THE COMMUNITY OF OAK PARK, SIMI HILLS.

Location Detail: 4 COLONIES MAPPED AS 1 POLYGON BY CNDDDB, NW OF THE INTERSECTION OF KANAN ROAD AND HOLLY TREE DRIVE, IN THE NE 1/4 OF THE SW 1/4 OF SECTION 9.

Ecological: ON HILLSIDE SLOPES IN SAGE SCRUB, IN DISTURBED AREA OF CALCAREOUS SOIL. WITH SALVIA MELLIFERA, ENCELIA CALIFORNICA, RHUS OVATA, MARRUBIUM VULGARE, MELLILLOTUS INDICUS, BRASSICA NIGRA, AND BROMUS RUBENS.

Threat: PROPOSED PARK EXPANSION.

General: UNKNOWN NUMBER OF PLANTS SEEN IN 1993. UNDATED COLLECTIONS BY DICE & TRAGER "MEDEA CREEK, 2 KM SSE OF SIMI PEAK" ATTRIBUTED TO THIS SITE. OTHER RARE PLANTS AT THIS SITE: ASTRAGALUS BRAUNTONII AND CALOCHORTUS CATALINAE.

Owner/Manager: RANCHO SIMI RPD

Orcuttia californica		
California Orcutt grass		Element Code: PMPOA4G010
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: VERNAL POOLS. Micro: 15-660M.		

Occurrence No. 32 Map Index: 38551 EO Index: 47237 — Dates Last Seen —
 Occ Rank: Unknown Element: XXXX-XX-XX
 Origin: Natural/Native occurrence Site: XXXX-XX-XX
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2002-02-14

Quad Summary: Oat Mountain (3411835/138D), Santa Susana (3411836/138C), Mint Canyon (3411844/137B), San Fernando (3411834/137C), Newhall (3411845/138A), Val Verde (3411846/138B)
County Summary: Los Angeles

Lat/Long: 34.38808° / -118.54413°	Township: 04N
UTM: Zone-11 N3806267 E358048	Range: 16W
Mapping Precision: NON-SPECIFIC	Section: 34 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 5 mile	Elevation: 1,300 ft

Location: NEWHALL.
Location Detail: EXACT LOCATION UNKNOWN, MAPPED IN GENERAL VICINITY OF NEWHALL.
Ecological:
Threat:
General: RECENT REPORT OF ORCUTTIA CALIFORNICA AT NEWHALL ACCORDING TO REISER (2001). UNKNOWN WHEN SEEN. NEEDS FIELDWORK.
Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Orcuttia californica		
California Orcutt grass		Element Code: PMPOA4G010
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2.1	
Habitat Associations		
General: VERNAL POOLS.		
Micro: 15-660M.		

Occurrence No. 33 Map Index: 47238 EO Index: 47238 — Dates Last Seen —
 Occ Rank: Unknown Element: XXXX-XX-XX
 Origin: Natural/Native occurrence Site: XXXX-XX-XX
 Presence: Presumed Extant
 Trend: Unknown Record Last Updated: 2002-02-14

Quad Summary: Thousand Oaks (3411827/113A)
 County Summary: Ventura

Lat/Long: 34.16683° / -118.83179°	Township: 01N
UTM: Zone-11 N3782169 E331159	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 13 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation:

Location: THOUSAND OAKS.
 Location Detail: EXACT LOCATION UNKNOWN, MAPPED IN GENERAL VICINITY OF THOUSAND OAKS.
 Ecological:
 Threat:
 General: RECENT REPORT OF ORCUTTIA CALIFORNICA AT THOUSAND OAKS ACCORDING TO REISER (2001). UNKNOWN WHEN SEEN. NEEDS FIELDWORK.
 Owner/Manager: UNKNOWN

California Department of Fish and Game
 Natural Diversity Database
 Full Report for Selected Elements
 SSFL - Full Report- 9 quad search centered on Calabasas Quad

Orcuttia californica		
California Orcutt grass		Element Code: PMPOA4G010
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2.1	CNPS List: 1B.1
Habitat Associations		
General: VERNAL POOLS. Micro: 15-660M.		

Occurrence No. 35	Map Index: 55259	EO Index: 55259	Dates Last Seen
Occ Rank: Fair			Element: 2003-07-29
Origin: Natural/Native occurrence			Site: 2003-07-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2004-04-23

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.25539° / -118.83831°	Township: 02N
UTM: Zone-11 N3792003 E330734	Range: 19W
Mapping Precision: SPECIFIC	Section: 14 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 1.8 acres	Elevation: 680 ft

Location: EAST OF TIERRA REJADA VALLEY, APPROXIMATELY 0.5 AIRMILE EAST OF LANDING FIELD.

Location Detail: ONE SMALL COLONY LOCATED IN THE NORTHWEST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 14.

Ecological: SOUTHERLY LOBE OF VERNAL POOL/MARSH SYSTEM FED BY INTERMITTENT STREAM. DOMINANT PLANTS INCLUDE ECHINODORUS BERTEROI, CRYPIS VAGINIFLORA, GNAPHALIUM PALUSTRE. ASSOC: ELEOCHARIS MACROSTACHYA, XANTHIUM STRUMARIUM & MALVELLA LEPROSA.

Threat: EVIDENCE OF PHYSICAL MANIPULATION (PERHAPS PLOWING) AT SOUTH END. SEPARATED FROM DEEPER MODIFIED WETLAND BY BERM.

General: 24+ INDIVIDUALS OBSERVED IN 2003.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 3	Map Index: 72343	EO Index: 13809	— Dates Last Seen —
Occ Rank: Poor			Element: 2008-05-30
Origin: Natural/Native occurrence			Site: 2008-05-30
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2008-10-03

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.09250° / -118.65443°	Township: 01S
UTM: Zone-11 N3773647 E347374	Range: 17W
Mapping Precision: SPECIFIC	Section: 10 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 6.0 acres	Elevation: 1,225 ft

Location: STUNTS RANCH, SOUTH AND WEST OF COLD CREEK, APPROX 4.5 AIR MILES NNE OF MALIBU BEACH.

Location Detail: NW POLY MAPPED ACC TO A HAND-DRAWN MAP FROM THOMAS (1984). SE POLY MAPPED ACC TO GPS COORDINATES FROM JENSEN (2008).

Ecological: IN NASSELLA PULCHRA GRASSLAND ON PREHISTORIC LAND SLIDE OF CLAY SOIL. GRASSLAND DOMINATED BY NON-NATIVE PLANTS WITH HEMIZONIA RAMOSISSIMA, CENTAUREA MELLITENSIS, RUMEX CRISPUS, EXOTIC GRASSES.

Threat: MUCH GOPHER DISTURBANCE, WEED INVASION, AND FIRE DISTURBANCE.

General: NW POLY: <1000 PLANTS IN 1982, <100 IN 1984, 6 IN 1987, 12 IN 1988, 3 IN 1989, 0 IN 1990, 1994, 1995, & 1997. SE POLY: 12 PLANTS SEEN IN 2008. NW POLY NEEDS FIELDWORK TO DETERMINE IF THE POPULATION IS EXTIRPATED.

Owner/Manager: UC-STUNT RANCH RESERVE

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 4	Map Index: 00391	EO Index: 16676	— Dates Last Seen —
Occ Rank: None			Element: 1964-05-07
Origin: Natural/Native occurrence			Site: 1997-XX-XX
Presence: Extirpated			
Trend: Unknown			Record Last Updated: 2008-09-24

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.09723° / -118.82452°	Township: 01S
UTM: Zone-11 N3774439 E331690	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 12 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 1,800 ft

Location: SADDLE ROCK RANCH, NEAR SEMINOLE HOT SPRINGS.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED BY CNDDDB ACCORDING TO A NOTE BY THOMAS THAT THE SITE WAS LOCATED IN THE "FLAT AREA NEAR SECTION LABEL 12" (SEE MOR94U0003).

Ecological: ALONG SIDES OF FIRE BREAK IN CHAPARRAL.

Threat: SITE IS NOW AN AVOCADO ORCHARD.

General: SITE BASED UPON A 1963 MUDD COLLECTION AND A 1964 RAVEN & THORNE COLLECTION. THOMAS MENTIONS IN 1989 THAT SITE HAS BEEN EXTIRPATED BY AN AVOCADO ORCHARD. FOTHERINGHAM WAS UNABLE TO LOCATE SITE IN 1997; PRESUMED EXTIRPATED.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 5	Map Index: 00300	EO Index: 12610	— Dates Last Seen —
Occ Rank: Fair			Element: 2001-11-17
Origin: Natural/Native occurrence			Site: 2001-11-17
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2008-10-03

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.11425° / -118.85289°	Township: 01S
UTM: Zone-11 N3776374 E329107	Range: 19W
Mapping Precision: SPECIFIC	Section: 03 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,500 ft

Location: ALONG UPPER WESTLAKE BLVD, SANTA MONICA MTNS.

Location Detail: WEST SIDE OF ROAD.

Ecological: PLANT IN POCKET GRASSLANDS (NASELLA PULCHRA & EUROPEAN ANNUALS) AMONG CHAPARRAL-CEANOTHUS MEGACARPUS/QUERCUS BERBERIDIFOLIA. SOILS DERIVED FROM CONEJO VOLCANIC SUBSTRATE.

Threat: POTENTIAL DEVELOPMENT, EXOTIC PLANTS, GOPHER ACTIVITY, DEBRIS DUMPING, & RD MAINTENANCE THREATEN.

General: FEWER THAN 100 PLANTS SEEN IN 1982; FEWER THAN 50 PLANTS SEEN IN 1984; NONE IN 1987, 1990, OR 1997. 200 PLANTS SEEN IN 2001.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 6	Map Index: 00409	EO Index: 15205	— Dates Last Seen —
Occ Rank: Unknown			Element: 2005-XX-XX
Origin: Natural/Native occurrence			Site: 2005-XX-XX
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2008-10-03

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.09954° / -118.81395°	Township: 01S
UTM: Zone-11 N3774678 E332670	Range: 18W
Mapping Precision: SPECIFIC	Section: 07 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 17.8 acres	Elevation: 1,750 ft

Location: AT JCT OF KANAN AND MULHOLLAND HWY, ROCKY OAKS UNIT OF SANTA MONICA MOUNTAINS NATIONAL RECREATION AREA,

Location Detail: SITE IS PART OF SANTA MONICA MTNS NRA. NPS DEVELOPING RECOVERY PLAN. IN 2004 PART OF THIS SITE HAD P. LYONII SEEDS (FROM LARGER POPS ON SITE) ADDED TO IT AS PART OF A STUDY ON THE EFFECTS OF NON-NATIVE PLANTS ON P. LYONII (BRIGHAM 2007).

Ecological: IN CLAY SOIL IN NASSELLA PULCHRA GRASSLAND ASSOCIATED WITH CHORIZANTHE STATICOIDES AND EUROPEAN ANNUALS.

Threat: REC USE, EXOTIC SPP, SOIL DUMPING & TRAMPLING THREATEN. 2 REMAINING COLONIES FENCED. DRAINAGE DITCH DUG IN 1996/1997.

General: 5,500-10,000 PLANTS IN 1982, <10,000 IN 1984, <100 IN 1987, <1000 IN 1988. IN 1994, 2 OF 4 COLONIES REMAIN HERE; 2 WERE EXTIRPATED BY EQUESTRIAN ACTIVITIES. 450 PLANTS REPORTED IN 2003, UNK # IN 2004 & 2005.

Owner/Manager: NPS-SANTA MONICA MOUNTAINS NRA

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 9	Map Index: 00612	EO Index: 16670	— Dates Last Seen —
Occ Rank: None			Element: 1990-XX-XX
Origin: Natural/Native occurrence			Site: 1994-XX-XX
Presence: Possibly Extirpated			
Trend: Decreasing			Record Last Updated: 2008-10-03

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.10553° / -118.73812°	Township: 01S
UTM: Zone-11 N3775220 E339677	Range: 18W
Mapping Precision: SPECIFIC	Section: 02 Qtr: SW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 800 ft

Location: JUST EAST OF ENTRANCE TO UDELL GORGE, MALIBU CREEK STATE PARK.

Location Detail: AT THE EDGE OF AN EQUESTRIAN TRAIL. SE1/4 OF SW1/4 SEC 2.

Ecological: ALONG EDGE OF TRAIL THROUGH GRASSLAND WITH NASSELLA PULCHRA STAND NEARBY. ON CLAY SOIL DERIVED FROM SHALE ASSOCIATED WITH NAVARRETIA PUBESCENS.

Threat: TRAIL CONSTRUCTION AND EQUESTRIAN AND FOOT TRAFFIC ARE THREATS. NO PLANTS SEEN AFTER HORSES USED TRAIL WHEN STILL WET.

General: LESS THAN 100 PLANTS IN 1983, LESS THAN 50 IN 1984, 3 IN 1988, 11 IN 1989, 40 IN 1990, NONE SEEN 1992-1994. ACCORDING TO FOTHERINGHAM, POPULATION EXTIRPATED BUT HABITAT REMAINS. NEEDS FIELDWORK.

Owner/Manager: DPR-MALIBU CREEK SP

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 10	Map Index: 00291	EO Index: 8882	— Dates Last Seen —
Occ Rank: Good			Element: 2006-06-01
Origin: Natural/Native occurrence			Site: 2006-06-01
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2008-09-23

Quad Summary: Thousand Oaks (3411827/113A), Point Dume (3411817/113D)

County Summary: Los Angeles, Ventura

Lat/Long: 34.12710° / -118.85441°	Township: 01N
UTM: Zone-11 N3777802 E328993	Range: 19W
Mapping Precision: SPECIFIC	Section: 34 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 34.0 acres	Elevation: 1,000 ft

Location: IN THE VICINITY OF THE INTERSECTION OF DECKER RD AND CARLISLE RD, SSW OF LAKE ELEANOR, SANTA MONICA MOUNTAINS.

Location Detail: MAPPED BY CNDDDB AS 9 POLYGONS ON BOTH SIDES OF THE VEN/LAX COUNTY LINE. MAPPED TO ENCOMPASS MAP INFO FROM THOMAS 1983, WESTEC SERVICES (DATE UNK), A 1990 VANDER MAP, A 1992 KEELEY MAP, A 1999 WELTER MAP, & 2006 GPS INFO FROM WARNIMENT.

Ecological: FOUND IN SMALL GRASSY OPENINGS OF COASTAL SAGE SCRUB/CHAPARRAL ALONG FIRE ROAD CUTS AND IN SOME NATURAL OPENINGS. CLAY DERIVED FROM VOLCANICS WITH OCCASIONAL BOULDERS. ASSOCIATES INCLUDE NASELLA PULCHRA, CALOCHORTUS PLUMMERAE, ETC.

Threat: DEV HAS EXTIRPATED PORTIONS IN LA CO. THREATENED BY FURTHER DEV, RD CONSTRUCTION, RECREATION, GRAZING, INVASIVE PLANTS.

General: >1000 IN 1983, ~1000 IN 1987, >1000 IN 1988 & 1990. PORTIONS IN LA CO HAD 1000+ IN 1990, 6000-9000 EST IN 1991 & 1992, ~14,000 IN 1995, & 80,000 IN 1998 BUT MUCH HAS SINCE BEEN EXTIRP BY DEV. 20 IN W-MOST POLY IN 2006. INCL FORMER EO #28.

Owner/Manager: CONEJO OPEN SPACE CONS AG, PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 11	Map Index: 00315	EO Index: 8226	— Dates Last Seen —
Occ Rank: Good			Element: 1999-05-16
Origin: Natural/Native occurrence			Site: 1999-05-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-24

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.13938° / -118.84401°	Township: 01N
UTM: Zone-11 N3779146 E329977	Range: 19W
Mapping Precision: SPECIFIC	Section: 26 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 24.0 acres	Elevation: 1,225 ft

Location: RIDGE EAST OF LAKE ELEANOR DAM, EAST OF WESTLAKE BLVD, SANTA MONICA MOUNTAINS.

Location Detail: THREE COLONIES ALONG RIDGE.

Ecological: ON RIDGETOP IN NARROW STRIP OF GRASSLAND IN CHAMISE AND RED-SHANK CHAPARRAL IN THIN SOIL ON VOLCANIC BRECCIA. ASSOCIATED W/ ORTHOCARPUS PURPURASCENS, STYLOCLINE GNAPHALOIDES, BROMUS HORDACEUS, BROMUS MADRITENSIS, TRIFOLIUM TRIDENTATUM.

Threat: POTENTIAL DEVELOPMENT. HABITAT HAD BEEN MODIFIED IN 1987. ORVS, FOOT TRAFFIC & INVASIVE GRASSES ALSO THREATEN.

General: NORTHERN POLY: 1000 INDIVIDUALS OBS IN 1998. SOUTHEAST POLY: 8000-9000 PLANTS OBS IN 1999. SOUTHWEST POLY: <100 PLANTS SEEN IN 1983, 0 IN 1987, <100 IN 1992. SITE BURNED IN 1996, 10 PLANTS OBSERVED ON EAST EDGE OF BURN IN 1997.

Owner/Manager: CONEJO OPEN SPACE CONS AG, PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 13	Map Index: 00589	EO Index: 16664	— Dates Last Seen —
Occ Rank: Unknown			Element: 1926-04-26
Origin: Natural/Native occurrence			Site: 1926-04-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-19

Quad Summary: Malibu Beach (3411816/112C), Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.04750° / -118.74787°	Township: 01S
UTM: Zone-11 N3768800 E338668	Range: 18W
Mapping Precision: NON-SPECIFIC	Section: 27 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation:

Location: MALIBU HILLS, SANTA MONICA MOUNTAINS.

Location Detail: MAPPED VERY GENERALLY IN AREA OF MALIBU HILLS; COLLECTION LOCATION NOT PRECISE.

Ecological:

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1926 JONES COLLECTION. NEEDS FIELDWORK.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 14	Map Index: 22703	EO Index: 8205	— Dates Last Seen —
Occ Rank: Good			Element: 1992-12-XX
Origin: Natural/Native occurrence			Site: 1992-12-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2002-09-10

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.24727° / -118.82957°	Township: 02N
UTM: Zone-11 N3791087 E331524	Range: 19W
Mapping Precision: SPECIFIC	Section: 24 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,060 ft

Location: ABOUT 0.3 MILE NORTH OF WOOD RANCH RESERVOIR JUST EAST OF VENTURA COUNTY SHERIFF'S SUBSTATION ON OLSON ROAD.

Location Detail: ABOVE CALLEGUAS MUNICIPAL WATER DISTRICT FACILITY.

Ecological: FLAT AREA OF DISTURBED COASTAL SCRUB/CACTUS SCRUB. IN COARSE SOILS W/ LITTLE VEGETATION. FESTUCA MEGALURA, GLIA ANGELENSIS, HEMIZONIA FASCICULATA, STYLOCLINE GNAPHALOIDES, LESSINGIA FILAGINIFOLIA, ARTEMISIA CALIFORNICA ET AL.

Threat: PVT LANDS PROPOSED FOR DEVELOPMENT. SITE OFTEN USED AS A TURNAROUND AREA BY VEHICLES. EXOTICS AND DUMPING ALSO THREATEN.

General: 400 PLANTS SEEN IN 1989. 20% OF POPULATION IMPACTED IN 1992 BY EARTHMOVING OPERATIONS RELATED TO WATER DISTRICT'S EXPANSION. OWNED/MANAGED BY CALLEGUAS MUNICIPAL WATER DISTRICT.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 15	Map Index: 22706	EO Index: 8228	— Dates Last Seen —
Occ Rank: Excellent			Element: 1998-XX-XX
Origin: Natural/Native occurrence			Site: 1998-XX-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-26

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.13038° / -118.86547°	Township: 01N
UTM: Zone-11 N3778184 E327979	Range: 19W
Mapping Precision: SPECIFIC	Section: 34 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 12.0 acres	Elevation: 1,100 ft

Location: ADJACENT TO CARLISLE INLET AND DRAINAGE ON BOTH SIDES OF PARK RD, SOUTH OF LAKE SHERWOOD.

Location Detail: ON BOTH SIDES OF INLET. MAPPED AS 7 POLYGONS ACCORDING TO A 1998 WISHNER MAP.

Ecological: ON SLOPES IN OPENINGS IN CHAPARRAL WITH CEANOTHUS CUNEATUS, C. CRASSIFOLIUS, ADENOSTOMA FASCICULATA. (OPENINGS CAUSED BY BRUSH CLEARANCE IN 1986 AND FIRE IN 1988).

Threat: APPROVED FOR DEVELOPMENT (1993). ANNUAL GRASSES & "GOPHER-TILLING" THREATEN. FIRE FUELS MANAGEMENT ALSO THREATENS.

General: 3700-4400 PLANTS IN 1990, <4000 IN 1993, 3300-3600 PLANTS IN 1998. ONE SUB-POP'N (EST. SIZE 500 PLANTS) DISKED AS PART OF FIRE MGMNT IN 1993; <10 PLANTS REMAINED IN THIS SUBPOP IN 1994, RECOVERED TO 400 IN 1998.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 16	Map Index: 22705	EO Index: 8229	— Dates Last Seen —
Occ Rank: Unknown			Element: 2001-07-17
Origin: Natural/Native occurrence			Site: 2001-07-17
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2008-09-24

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.14607° / -118.86832°	Township: 01N
UTM: Zone-11 N3779929 E327748	Range: 19W
Mapping Precision: SPECIFIC	Section: 28 Qtr: NE
Symbol Type: POLYGON	Meridian: S
Area: 8.0 acres	Elevation: 1,050 ft

Location: ON SLOPES ADJACENT TO MAJOR TRIBUTARY TO LAKE, N OF LAKE SHERWOOD.

Location Detail: MAPPED ACCORDING TO A 1990 WISHNER MAP. W POLY (CONSISTS OF 2 SUBPOPULATIONS): BULLDOZED (2000?), UNKNOWN IF NOW EXTIRPATED. E POLY: SEVERE DECLINE AND NOW CONTAINS A MIXTURE OF NATURAL AND TRANSPLANTED INDIVIDUALS.

Ecological: IN OPENINGS IN CHAPARRAL DOMINATED BY GRASSES AND NATIVE ANNUAL HERBS. ALSO ASSOCIATED WITH CEANOTHUS CUNEATUS, ADENOSTOMA FASCICULATUM.

Threat: DEVELOPMENT UNDERWAY (WISHNER, 1994). W POLY DISKED DURING FUELS MANAGEMENT. E POLY THREATENED BY GOPHERS & WEEDS.

General: TOTAL OF 330 PLANTS SEEN IN 1990 IN 3 SUBPOPULATIONS. TWO OF 3 SUBPOPS BULLDOZED, 3RD SUB POP IN SEVERE DECLINE AND WAS SUBSEQUENTLY ENHANCED WITH TRANSPLANTS IN 2001 (110 OF 230 TRANSPLANTS SURVIVED AS OF JULY 2001). NEEDS FIELDWORK.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 17	Map Index: 22107	EO Index: 22074	— Dates Last Seen —
Occ Rank: Fair			Element: 1998-05-19
Origin: Natural/Native occurrence			Site: 1998-05-19
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-24

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.10704° / -118.86141°	Township: 01S
UTM: Zone-11 N3775588 E328306	Range: 19W
Mapping Precision: SPECIFIC	Section: 03 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 10.0 acres	Elevation: 1,780 ft

Location: NW OF THE INTERSECTION OF MULHOLLAND HWY & HWY 23 (DECKER RD), SANTA MONICA MTNS.

Location Detail: W POLY MAPPED BY CNDDDB AS ACCORDING TO A 1993 HOVORE MAP. E POLY MAPPED BY CNDDDB ACCORDING TO A 1998 WISHNER MAP.

Ecological: ASSOCIATED WITH CEANOTHUS MEGACARPUS AND HETEROMELES ARBUTUFOLIA. SITE WITH CLEARED AREAS OF ANNUAL GRASSLAND AND COASTAL SAGE SCRUB SPECIES.

Threat: PROPERTY APPROVED FOR A 3-LOT SPLIT (1993) ON THE BASIS THAT IT DOESN'T IMPACT THE PLANTS. HORSE GRAZING ALSO A THREAT.

General: W POLY: SEEN IN 1992, HUNDREDS OF PLANTS OBSERVED WITHIN FOUR SUB-POPULATIONS IN 1993, <1000 IN 1994. E POLY: 1000 IN 1998. FIRE FUELS MODIFICATION HAS ALSO MODIFIED SITE.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 18	Map Index: 22108	EO Index: 25763	— Dates Last Seen —
Occ Rank: Fair			Element: 1989-07-18
Origin: Natural/Native occurrence			Site: 1989-07-18
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-24

Quad Summary: Point Dume (3411817/113D)
County Summary: Los Angeles

Lat/Long: 34.09756° / -118.84240°	Township: 01S
UTM: Zone-11 N3774505 E330042	Range: 19W
Mapping Precision: SPECIFIC	Section: 11 Qtr: NW
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 2,060 ft

Location: NEAR "GUESTHOUSE" AT THE FRANK LLOYD WRIGHT "EAGLE'S NEST" HOMESITE, MULHOLLAND HIGHWAY.
Location Detail: POPULATION ABOUT 300 FT SSW OF GUESTHOUSE. SE1/4 OF NW1/4 SEC 11.
Ecological: SPARSELY VEGETATED CONEJO VOLCANIC SOILS ALONG RIDGELINE FUELBREAK IN CHAMISE CHAPARRAL W/CORETHROGYNE FILAGINIFOLIA, FESTUCA MEGALURA, & AVENA BARBATA. SUBDIVIDED AREA INCLUDES GOOD QUALITY NASSELLA PULCHRA GRASSLAND & RED SHANK CHAPARRAL.
Threat: PROPOSED SUBDIVISION (1989) & FIRE FUELS MGMT THREATENS. POPULATION MAY HAVE BEEN DISKED (1997).
General: 200 PLANTS SEEN IN 1989. NEEDS FIELDWORK.
Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 26	Map Index: 22760	EO Index: 18655	— Dates Last Seen —
Occ Rank: Good			Element: 1992-05-29
Origin: Natural/Native occurrence			Site: 1992-05-29
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-24

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.12881° / -118.84058°	Township: 01N
UTM: Zone-11 N3777968 E330272	Range: 19W
Mapping Precision: SPECIFIC	Section: 35 Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 7.0 acres	Elevation: 1,100 ft

Location: PART OF "BALDWIN WESTLAKE PROPERTY"; ABOUT 0.8 MI E OF DECKER ROAD, JUST W OF LAS VIRGENES RESERVOIR, SANTA MONICA MTNS.

Location Detail: ALONG THE ENTRANCE ROAD TO THE RESERVOIR FACILITIES COMPLEX. OWNERSHIP IS LVMWD & PVT. OVER 95% OF OCCURRENCE MANAGED BY SANTA MONICA MOUNTAINS CONSERVANCY, REMAINDER IS ON PRIVATE HOLDINGS.

Ecological: GRASSLAND AND CHAPARRAL ECOTONES IN AREAS OF RECENT DISTURBANCES WITH LITTLE COMPETITION FROM SHRUBS AND ANNUAL GRASSES. ASSOCIATES INCLUDE BROMUS HORDEACEUS, B. MADRITENSIS, AVENA BARBATA, CENTAUREA MELITENSIS, PLANTAGO ERECTA, ETC.

Threat: SITE RECEIVES HEAVY RECREATIONAL PRESSURE, PVT OWNED PORTION MAY BE SUBJECT TO DEVELOPMENT.

General: OVER 5000 TOTAL PLANTS SEEN HERE AND AT OCCURRENCE 27 IN 1992.

Owner/Manager: NPS-SANTA MONICA MTNS NRA, PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 27	Map Index: 22761	EO Index: 8204	— Dates Last Seen —
Occ Rank: Good			Element: 2005-05-26
Origin: Natural/Native occurrence			Site: 2005-05-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-30

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.13010° / -118.81917°	Township: 01N
UTM: Zone-11 N3778075 E332248	Range: 19W
Mapping Precision: SPECIFIC	Section: 36 Qtr: N
Symbol Type: POLYGON	Meridian: S
Area: 45.0 acres	Elevation: 950 ft

Location: PART OF "BALDWIN WESTLAKE PROPERTY"; 1.7-2.5 MILES E OF DECKER ROAD, E OF LAS VIRGENES RESERVOIR, SANTA MONICA MTNS.

Location Detail: OWNERSHIP IS LAS VIRGENES MUNICIPAL WATER DISTRICT & PVT; MORE THAN 95% OF OCCURRENCE IS MANAGED BY THE SANTA MONICA MOUNTAINS CONSERVANCY. NW-MOST POLY MAY BE ERRONEOUS; MAPPED ACC TO A WALL MAP BUT MAP DOES NOT MATCH COORDINATES.

Ecological: GRASSLAND AND CHAPARRAL ECOTONES; IN AREAS SUCH AS ROADWAYS AND RECENT DISTURBANCES, WITH LITTLE COMPETITION FROM SHRUBS AND ANNUAL GRASSES. ASSOCIATES INCL ERIOGONUM FASCICULATUM, BLOOMERIA CROCEA, DICHELOSTEMMA CAPITATUM, ETC.

Threat: RECEIVES HEAVY RECREATIONAL PRESSURES, PRIVATELY OWNED PORTION MAY BE SUBJECT TO DEVELOPMENT.

General: OVER 5000 PLANTS TOTAL SEEN IN 1992 BETWEEN HERE & EO #26. IN 1997, THERE WERE "NUMEROUS DENSE PATCHES IN DISTURBED AREAS AND MORE SPARSE POPULATIONS IN GAPS BETWEEN SHRUBS IN CHAPARRAL." 5000 PLANTS SEEN HERE IN 2005.

Owner/Manager: NPS-SANTA MONICA MTNS NRA, PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 29	Map Index: 24356	EO Index: 26999	— Dates Last Seen —
Occ Rank: Poor			Element: 1994-XX-XX
Origin: Natural/Native occurrence			Site: 1994-XX-XX
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2008-09-24

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.25710° / -118.81698°	Township: 02N
UTM: Zone-11 N3792157 E332702	Range: 19W
Mapping Precision: SPECIFIC	Section: 13 Qtr: E
Symbol Type: POLYGON	Meridian: S
Area: 8.0 acres	Elevation: 1,200 ft

Location: RONALD REAGAN PRESIDENTIAL LIBRARY SITE, ALONG PRESIDENTIAL DRIVE, W OF SIMI VALLEY.

Location Detail: MAPPED BY CNDDDB ACCORDING TO A 1989 MCCLELLAND MAP. A 1998 FOTHERINGHAM REPORT MENTIONS THAT THERE ARE STILL POPULATIONS S OF THE LIBRARY THAT ARE IN YET-TO-BE-BUILT LOTS; NEED MAP DETAIL.

Ecological: SHALLOW VOLCANIC-DERIVED SOILS WITH DUDLEYA ABRAMSII PARVA (ALSO RARE).

Threat: ROAD BUILDING AND MAINTENANCE THREATENS.

General: IN 1994, THOMAS MENTIONS THERE WERE 2 SUBPOPS, ONE WAS DESTROYED BY THE RD & MITIGATION PLANTING HAS FAILED; THE OTHER SUBPOP LOCATED ADJACENT TO THE RD HAD 500 PLANTS IN 1994. UNSURE WHICH SUBPOPS THOMAS IS REFERRING TO. NEEDS FIELDWORK.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 30	Map Index: 25140	EO Index: 28650	— Dates Last Seen —
Occ Rank: Good			Element: 2008-06-25
Origin: Natural/Native occurrence			Site: 2008-06-25
Presence: Presumed Extant			
Trend: Decreasing			Record Last Updated: 2008-10-03

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.26538° / -118.85495°	Township: 02N
UTM: Zone-11 N3793138 E329222	Range: 19W
Mapping Precision: SPECIFIC	Section: 10 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 8.0 acres	Elevation: 675 ft

Location: CARLSBERG DEVELOPMENT; IMMEDIATELY NW OF THE INTERSECTION OF THE HWY 23 FREEWAY AND TIERRA REJADA RD, CLOVERLEAF.

Location Detail: BETWEEN VERNAL POOL AND TIERRA REJADA. MAPPED BY CNDDDB TO ENCOMPASS MULTIPLE YEARS WORTH OF SURVEY DATA FROM MOUNTAINS RECREATION AND CONSERVATION AUTHORITY (LAST SURVEY IN 2007).

Ecological: IN THIN ROCKY CONEJO VOLCANICS, ON NE SIDE OF A COASTAL SAGE SCRUB STAND. WITH SALVIA LEUCOPHYLLA, ENCELIA CALIFORNICA, BACCHARIS PILULARIS, LASTHENIA CALIFORNICA, PECTOCARYA LINEARIS. ADJACENT VERNAL POOL SUPPORTS ORCUTTIA CALIFORNICA.

Threat: HOUSING DEV; MINIMAL BUFFER. POSS THREATENED BY FUEL MODIFICATION, DUMPING, TRENCHING, & NON-NATIVE SPECIES.

General: 1000 PLANTS IN 1991. 230,000 PLANTS PRESENT IN 1997 PER FOTHERINGHAM (LARGEST KNOWN POP). <1000 INDIVIDUALS OBSERVED IN 2007. 4 PLANTS OBSERVED IN 2008.

Owner/Manager: MTNS REC & CONS AUTHORITY

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 31	Map Index: 25971	EO Index: 5250	Dates Last Seen
Occ Rank: Fair			Element: 1991-05-XX
Origin: Natural/Native occurrence			Site: 1991-05-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-06-02

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.27414° / -118.84160°	Township: 02N
UTM: Zone-11 N3794087 E330469	Range: 19W
Mapping Precision: SPECIFIC	Section: 11 Qtr: NW
Symbol Type: POLYGON	Meridian: S
Area: 12.2 acres	Elevation: 1,100 ft

Location: CLOVER CAST DEVELOPMENT; VICINITY OF SIMI VALLEY, EAST OF HWY 23, NORTH OF TIERRA REJADA RD.

Location Detail: SUMMIT OF RIDGELINE IN SECTION 11; ONE IN A SADDLE AND ONE NEAR THE TOP OF THE SECOND HIGHEST KNOB.

Ecological: IN SPARSELY VEGETATED, GRASSY OPENINGS IN VOLCANIC CLAY SOILS WITHIN COASTAL SAGE SCRUB. CALOCHORTUS CATALINAE COMMON NEARBY AND ON NORTH-FACING SLOPES.

Threat: RECREATIONAL USE OF THIS OPEN SPACE A POSSIBLE THREAT FROM NEARBY RESIDENTIAL AREAS. APPROVED DEVELOPMENT HERE.

General: 60 PLANTS IN 1991. TO BE INCLUDED IN "RARE PLANT PRESERVE" OF ABOUT 50 ACRES AS MITIGATED NEGATIVE DECLARATION FOR HOUSING DEVELOPMENT. MAY NEED ACTIVE MANAGEMENT PLAN SOON.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 32	Map Index: 25972	EO Index: 5262	— Dates Last Seen —
Occ Rank: Excellent			Element: 1991-11-XX
Origin: Natural/Native occurrence			Site: 1991-11-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-25

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Ventura

Lat/Long: 34.15681° / -118.85944°	Township: 01N
UTM: Zone-11 N3781106 E328589	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 22 Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1/5 mile	Elevation: 1,100 ft

Location: AT NORTHWEST TERMINUS OF BRIDGEGATE STREET; WEST OF THORNHILL AVENUE, THOUSAND OAKS.

Location Detail: EXACT LOCATION UNKNOWN. MAPPED AT THE END OF BRIDGEGATE STREET AT CNDDB. MAP DETAIL NEEDED. THIS AREA WAS ONCE PRIVATE BUT NOW APPEARS TO BE OWNED BY CONEJO OPEN SPACE CONSERVATION AGENCY (COSCA).

Ecological: ASSOCIATED WITH FRITILLARIA BIFLORA, LEWISIA REDIVIVA, & DUDLEYA CYMOSA OVATIFOLIA.

Threat: PROPOSED DEVELOPMENT THREATENS. IT IS ALSO SUSCEPTIBLE TO BEING REMOVED FOR FUELS MANAGEMENT & INCREASE IN REC USE.

General: 11,050 IN 1991 IN 4 GROUPS: 10,000 ON E-FACING SLOPE OF WESTERNMOST RIDGE; 500 JUST SOUTH OF THAT; 500 ON W FACE ON NORTH PORTION; AND 50 JUST N OF THE LATTER. NEEDS FIELDWORK.

Owner/Manager: CONEJO OPEN SPACE CONS AGENCY?

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 33	Map Index: 26105	EO Index: 5210	— Dates Last Seen —
Occ Rank: Fair			Element: 1992-05-XX
Origin: Natural/Native occurrence			Site: 1992-05-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-10-03

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.13463° / -118.75257°	Township: 01N
UTM: Zone-11 N3778470 E338400	Range: 18W
Mapping Precision: SPECIFIC	Section: XX Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 8.1 acres	Elevation: 900 ft

Location: CORNELL ROAD BEHIND THE MALIBU FIRE STATION, SOUTH OF MALIBU JUNCTION.

Location Detail: TWO COLONIES MAPPED WITHIN 0.1 MILE OF THE ROAD; ONE DUE EAST OF THE FIRE STATION, THE OTHER NNE OF THE STATION.

Ecological: GROWING IN DISTURBED GRASSLAND AND BUCKWHEAT SCRUB.

Threat: SITE HAD FORMERLY BEEN PROPOSED FOR DEVELOPMENT; SITE IS HEAVILY GRAZED AND POUNDED BY HORSES.

General: 4,000 PLANTS OBSERVED BETWEEN THIS SITE AND OCCURRENCE #34 ACROSS THE ROAD IN 1992. SITE ORIGINALLY OBSERVED IN 1988 BUT NEVER REPORTED.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 34	Map Index: 26104	EO Index: 5211	— Dates Last Seen —
Occ Rank: Fair			Element: 1992-05-XX
Origin: Natural/Native occurrence			Site: 1992-05-XX
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-23

Quad Summary: Thousand Oaks (3411827/113A)

County Summary: Los Angeles

Lat/Long: 34.13624° / -118.75978°	Township: 01N
UTM: Zone-11 N3778660 E337738	Range: 18W
Mapping Precision: SPECIFIC	Section: XX Qtr: XX
Symbol Type: POLYGON	Meridian: S
Area: 7.3 acres	Elevation: 880 ft

Location: SMALL RIDGETOPS AT EAST END OF LADYFACE NEAR CORNELL ROAD, SOUTH OF MALIBU JUNCTION.

Location Detail: TWO COLONIES MAPPED ABOUT 0.6 AND 0.7 MILES, RESPECTIVELY, SOUTH OF WHERE CORNELL ROAD MEETS HIGHWAY 101.

Ecological: GROWING IN DISTURBED GRASSLAND AND BUCKWHEAT SCRUB.

Threat: SITE HAD FORMERLY BEEN PROPOSED FOR DEVELOPMENT, PRESENTLY HEAVILY GRAZED AND POUNDED BY HORSES.

General: 4,000 PLANTS OBSERVED BETWEEN THIS SITE AND OCCURRENCE #33 ACROSS THE ROAD IN 1992. SITE ORIGINALLY OBSERVED IN 1988 BUT NEVER REPORTED.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 35	Map Index: 28019	EO Index: 20868	— Dates Last Seen —
Occ Rank: Excellent			Element: 1996-05-17
Origin: Natural/Native occurrence			Site: 1996-05-17
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-10-03

Quad Summary: Malibu Beach (3411816/112C)

County Summary: Los Angeles

Lat/Long: 34.10434° / -118.74801°	Township: 01S
UTM: Zone-11 N3775104 E338762	Range: 18W
Mapping Precision: SPECIFIC	Section: 03 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 4.0 acres	Elevation: 850 ft

Location: APPROX 0.6 AIR MI SSE OF THE INTERSECTION OF MULHOLLAND HWY AND LAKE VISTA DR., SE OF MALIBU LAKE.

Location Detail: THE POPULATION GROWS ALONG A RIDGE AND AN ANIMAL (POSSIBLY HUMAN) TRAIL BISECTS THE POPULATION. MALIBOU LAKE MOUNTAIN CLUB LTD. COMMUNITY HAS DESIGNATED THIS PARCEL FOR RECREATIONAL USE. ADJACENT TO THE POPULATION IS MALIBU CREEK SP.

Ecological: SW-FACING OPENING ON SLOPING RIDGELINE IN CHAPARRAL. ASSOCIATED SPECIES INCLUDE NASSELLA PULCHRA, BROMUS HORDEACEUS, NAVARRETIA PUBESCENS, CENTAUREA MELITENSIS, ERIGERON FOLIOSUS, AND ADJACENT CHAPARRAL.

Threat: FOOT TRAFFIC AND RECREATIONAL ACTIVITIES.

General: ~2000 PLANTS SEEN IN 1996.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered State: Endangered	Global: G2 State: S2	CNPS List: 1B.1
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 37	Map Index: 38849	EO Index: 33856	— Dates Last Seen —
Occ Rank: Fair			Element: 1995-05-22
Origin: Natural/Native occurrence			Site: 1995-05-22
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 1998-05-29

Quad Summary: Simi (3411837/139D)

County Summary: Ventura

Lat/Long: 34.28090° / -118.84928°	Township: 02N
UTM: Zone-11 N3794849 E329776	Range: 19W
Mapping Precision: SPECIFIC	Section: 03 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area: 2.4 acres	Elevation: 920 ft

Location: ABOUT 4000 FT ESE OF INTERSECTION OF HWY 23 AND NEW LOS ANGELES AVE, E OF MOORPARK, TIERRA REJADA HILLS,

Location Detail: PLANTS FOUND WITHIN GRADED DIRT ROADWAY AND MARGINS.

Ecological: COASTAL SCRUB/GRASSLAND ECOTONE. IN SOME PLACES HIGHLY DISTURBED AND DOMINATED BY STUNTED GROWTH OF CENTAUREA MELITENSIS.

Threat: COMPETITION W/ CENTAUREA AND MUSTARDS, AND GRAZING. PROPOSED COMMERCIAL AND MANUFACTURING FACILITY FOR PORTION OF SITE.

General: 1200 PLANTS IN 1995.

Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 43	Map Index: 72370	EO Index: 73306	— Dates Last Seen —
Occ Rank: Excellent			Element: 2003-05-16
Origin: Natural/Native occurrence			Site: 2003-05-16
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-25

Quad Summary: Point Dume (3411817/113D)
County Summary: Los Angeles

Lat/Long: 34.10767° / -118.79614°	Township: 01S
UTM: Zone-11 N3775550 E334328	Range: 18W
Mapping Precision: SPECIFIC	Section: 05 Qtr: SW
Symbol Type: POLYGON	Meridian: S
Area: 11.0 acres	Elevation: 950 ft

Location: IMMEDIATELY W OF SEMINOLE HOT SPRINGS IN LA SIERRA CANYON, NW OF MULHOLLAND HWY.
Location Detail: MAPPED AS 3 POLYGONS ACCORDING TO A 2003 MEYER MAP.
Ecological: A SERIES OF GRASSY HERBACEOUS OPENINGS IN CHAPARRAL, ALONG EDGE OF FOOT TRAIL ON A SPARSELY VEGETATED OLD SCRAPED AREA. ASSOC W/ BROMUS HORDEACEUS, VULPIA MYUROS, HEMIZONIA FASCICULATA, CENTAUREA MELITENSIS, ETC. ON CONEJO VOLCANICS.
Threat: 61 ACRE SITE APPROVED FOR 6 PARCELS; COULD BE LOST TO DEVELOPMENT & FUEL MODIFICATIONS. EFFORT TO PURCHASE IN PROGRESS.
General: 10,000+ PLANTS SEEN IN 2003. MEYER MENTIONS THAT CARL WISHNER ALSO SAW THIS SITE SOMETIME IN 2001 OR 2002.
Owner/Manager: PVT

Pentachaeta lyonii		
Lyon's pentachaeta		Element Code: PDAST6X060
Status	NDDB Element Ranks	Other Lists
Federal: Endangered	Global: G2	CNPS List: 1B.1
State: Endangered	State: S2	
Habitat Associations		
General: CHAPARRAL, VALLEY AND FOOTHILL GRASSLAND.		
Micro: EDGES OF CLEARINGS IN CHAP., USUALLY AT THE ECOTONE BTWN GRASSLAND AND CHAPARRAL OR EDGES OF FIREBREAKS. 30-630M.		

Occurrence No. 44	Map Index: 72371	EO Index: 73307	Dates Last Seen
Occ Rank: Poor			Element: 2006-06-13
Origin: Natural/Native occurrence			Site: 2006-06-13
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2008-09-23

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.10002° / -118.85222°	Township: 01S
UTM: Zone-11 N3774795 E329140	Range: 19W
Mapping Precision: SPECIFIC	Section: 10 Qtr: NE
Symbol Type: POINT	Meridian: S
Radius: 80 meters	Elevation: 1,700 ft

Location: E SIDE OF BROOKINS TRAIL, APPROX 0.6 RD MI S OF THE INTERSECTION OF MULHOLLAND HWY & BROOKINS TRAIL, SANTA MONICA MTNS.

Location Detail: MAPPED ACCORDING TO GPS COORDINATES PROVIDED BY TERACOR RESOURCE MANAGEMENT.

Ecological: LOCATED ON EXPOSED SOILS ADJACENT TO A ROCK OUTCROP WITHIN COASTAL SAGE SCRUB. SITE COMPRISED OF SEVERAL VEGETATION COMMUNITIES INCLUDING COASTAL SAGE SCRUB, CHAMISE CHAPARRAL, SOUTHERN WILLOW SCRUB, MULEFAT SCRUB, ETC.

Threat:

General: 3 PLANTS SEEN IN 2006.

Owner/Manager: PVT

Sidalcea neomexicana		
Salt Spring checkerbloom		Element Code: PDMAL110J0
_____ Status _____	NDDB Element Ranks	_____ Other Lists _____
Federal: None	Global: G4?	CNPS List: 2.2
State: None	State: S2S3	
_____ Habitat Associations _____		
General: ALKALI PLAYAS, BRACKISH MARSHES, CHAPARRAL, COASTAL SCRUB, LOWER MONTANE CONIFEROUS FOREST, MOJAVEAN DESERT SCRUB.		
Micro: ALKALI SPRINGS AND MARSHES. 0-1500M.		

Occurrence No. 8 Map Index: 35233 EO Index: 693 _____ Dates Last Seen _____

Occ Rank: Unknown Element: XXXX-XX-XX

Origin: Natural/Native occurrence Site: XXXX-XX-XX

Presence: Presumed Extant

Trend: Unknown Record Last Updated: 1996-07-22

Quad Summary: Topanga (3411815/112D), Beverly Hills (3411814/111C)

County Summary: Los Angeles

Lat/Long: 34.01962° / -118.48594°	Township: 02S
UTM: Zone-11 N3765326 E362802	Range: 15W
Mapping Precision: NON-SPECIFIC	Section: XX Qtr: XX
Symbol Type: POINT	Meridian: S
Radius: 1 mile	Elevation: 100 ft

Location: SANTA MONICA.

Location Detail:

Ecological:

Threat:

General: ONLY SOURCE OF INFORMATION FOR THIS SITE IS UNDATED COLLECTION BY HASSE CITED BY JEPSON (1936).

Owner/Manager: UNKNOWN

Thelypteris puberula var. *sonorensis*

Sonoran maiden fern

Element Code: PPTHE05192

_____ Status _____	_____ NDDB Element Ranks _____	_____ Other Lists _____
Federal: None	Global: G5T3	CNPS List: 2.2
State: None	State: S2.2?	

_____ **Habitat Associations** _____

General: MEADOWS AND SEEPS.
Micro: ALONG STREAMS, SEEPAGE AREAS. 50-550M.

Occurrence No. 4	Map Index: 28076	EO Index: 18438	_____ Dates Last Seen _____
Occ Rank: Unknown			Element: 1966-03-26
Origin: Natural/Native occurrence			Site: 1966-03-26
Presence: Presumed Extant			
Trend: Unknown			Record Last Updated: 2010-10-01

Quad Summary: Point Dume (3411817/113D)

County Summary: Los Angeles

Lat/Long: 34.04601° / -118.87037°	Township: 01S
UTM: Zone-11 N3768836 E327356	Range: 19W
Mapping Precision: NON-SPECIFIC	Section: 28 Qtr: SE
Symbol Type: POLYGON	Meridian: S
Area:	Elevation: 300 ft

Location: ENCINAL CANYON; ABOUT 0.5-2 MILES FROM MOUTH, SANTA MONICA MOUNTAINS.

Location Detail: MAPPED BY CNDDDB AS BEST GUESS ALONG THE LOWER PORTION OF ENCINAL CYN TO ENCOMPASS A 1963 KIEFER COLLECTION FROM "CA. 2 MI FROM COAST, ENCINAL CYN, 500 FT" AND A 1966 KIEFER COLLECTION FROM "~0.5 MI FROM MOUTH, ENCINAL CYN, 200-300 FT".

Ecological: SEEPAGE AREAS ALONG STREAM; LIGHT TO FULL SHADE.

Threat:

General: SITE BASED ON A 1966 KIEFER COLLECTION; FEW PLANTS IN 1966. A 1963 KIEFER COLLECTION IS ALSO ATTRIBUTED HERE BASED MAINLY ON ITS LOWER ELEVATION (500 FT) BUT DIRECTIONS PLACE IT FURTHER UP THE CANYON. INCLUDES FORMER OCCURRENCE #5.

Owner/Manager: UNKNOWN

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Appendix 3.2C Wetland Delineation

Provided in separate file

Please see separate file

Appendix 3.2D
Jurisdictional Determination

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DEPARTMENT OF THE ARMY

Los Angeles District, Corps of Engineers
Ventura Field Office
2151 Alessandro Drive, Suite 110
Ventura, CA 93001

February 12, 2013

REPLY TO
ATTENTION OF

Regulatory Division

Allen Elliot, SSFL Project Director
National Aeronautics and Space Administration
Office of Center Operations
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

SUBJECT: Approved Jurisdictional Determination regarding presence/absence of geographic jurisdiction

Dear Mr. Elliot:

Reference is made to your request (File No. SPL-2012-00520-AJS) dated April 11, 2012 for an approved Department of the Army jurisdictional determination (JD) for the NASA-Administered Property at the Santa Susana Field Lab (at long: -118.698205, lat : 34.232447) located near the City of Simi Valley, Ventura County, California.

As you may know, the Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, then a permit is required. The first test determines whether or not the proposed project is located in a water of the United States (i.e., it is within the Corps' geographic jurisdiction). The second test determines whether or not the proposed project is a regulated activity under Section 10 of the River and Harbor Act or Section 404 of the Clean Water Act. As part of the evaluation process, pertaining to the first test only, we have made the jurisdictional determination below.

Based on available information, we have determined there are waters of the United States on the project site, as well as non-jurisdictional aquatic resources, in the locations depicted on the enclosed drawing. The Corps concurs with the findings and extent of waters of the United States and wetlands as presented in the "Wetlands and Waters of the United States, Delineation for the NASA-Administered Portions of the Santa Susana Field Laboratory, Ventura County, California" dated March 2012, with the exception of "SW-1 Pond," "Drainage A-1" and "PLF Drainage." These features consist of poorly defined swales or erosional features lacking an ordinary high water mark and thus not considered waters of the United States. The basis for our determination can be found in the enclosed JD form(s).

The aquatic resource identified as "SW-2 Pond" including the associated tributary drainage on the above drawing is an intrastate isolated water with no apparent interstate or foreign commerce connection. As such, this water is not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Clean Water Act. Other Federal, State, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board and/or the U.S. Fish and Wildlife Service.

This letter contains an approved jurisdictional determination for the NASA-Administered Property at the Santa Susana Field Lab. If you object to this decision, you may

request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet (Appendix A) and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division, CESPDPDS-O, 2042B
1455 Market Street, San Francisco, California 94103-1399

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. Part 331.5, and that it has been received by the Division Office within 60 days of the date on the NAP. Should you decide to submit an RFA form, it must be received at the above address by **April 13, 2013**. It is not necessary to submit an RFA form to the Division office if you do not object to the decision in this letter.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you wish to submit new information regarding the approved jurisdictional determination for this site, please submit this information to Antal Szijj at the letterhead address April 13, 2013. The Corps will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. A revised or reissued jurisdictional determination can be appealed as described above.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular project site identified in your request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

If you have any questions, please contact Antal Szijj of my staff at 805-585-2147 or via e-mail at Antal.J.Szijj@usace.army.mil.

Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,



Aaron O. Allen
Chief, North Coast Branch
Regulatory Division

Enclosures

Cf: Steve Long, CH2M Hill

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

Applicant: NASA		File Number: SPL-2012-520	Date: 12-Feb-2013
Attached is:		See Section below	
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
	PERMIT DENIAL	C	
X	APPROVED JURISDICTIONAL DETERMINATION	D	
	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION

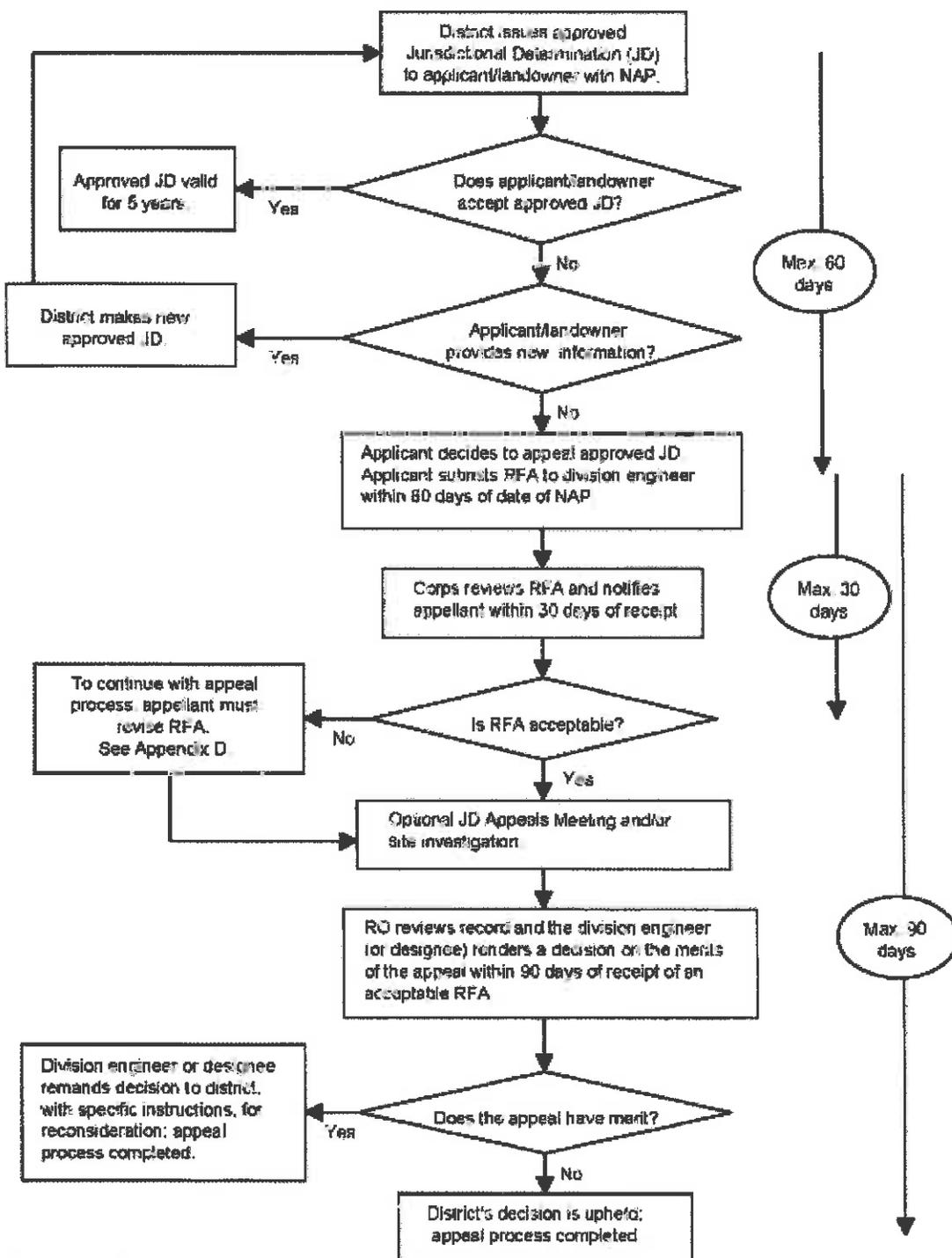
If you have questions regarding this decision and/or the appeal process you may contact:
Antal Szijj, Senior Project Manager
U.S. Army Corps of Engineers
Los Angeles District, Ventura Field Office
2151 Alessandro Dr, Suite 110
Ventura, CA 93001
Phone: (805)-585-2147 Fax (805) 585-2154
Email: antal.j.szijj@usace.army.mil

If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division
1455 Market Street, 2052B
San Francisco, California 94103-1399
Phone: (415) 503-6574 Fax: (415) 503-6646
Email: thomas.j.cavanaugh@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:
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Administrative Appeal Process for Approved Jurisdictional Determinations



APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 01/14/2013

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESPL-RG-N, Ventura Field Office; SSFL NASA Property Delineation; File no. SPL-2012-520-AJS: Southwestern Drainage tributary

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Ventura City: unincorporated (SSFL)
Center coordinates of site (lat/long in degree decimal format): Lat. 32.2279° N Long. 118.7080° W
Universal Transverse Mercator:

Name of nearest waterbody: Bell Creek

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Los Angeles River

Name of watershed or Hydrologic Unit Code (HUC): Los Angeles River (18070105)

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 09/12/2012

Field Determination. Date(s): Jan 2012

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There *are* "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There *are* "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 1300 linear feet: 2 width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM.

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination:

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 37 square miles

Drainage area: 40 acres

Average annual rainfall: 19 inches

Average annual snowfall: 0 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 3 tributaries before entering TNW.

Project waters are 5-10 river miles from TNW.

Project waters are 1 (or less) river miles from RPW.

Project waters are 3-10 aerial (straight) miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: n/a.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Identify flow route to TNW⁵: Upper Southwestern Drainage flows into R2A Pond, thence to Bell Canyon Channel (natural), thence to the channelized section of lower Bell Canyon. The downstream TNW is upper end of the Los Angeles River, at the confluence of Bell Canyon Channel and Arroyo Calabasas.
Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: culvert, shotcrete swales, water control weirs and impoundments present.

Tributary properties with respect to top of bank (estimate):

Average width: 4-5 feet
Average depth: 1 foot
Average side slopes: 2:1

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: some incision evident.

Presence of run/riffle/pool complexes. Explain: n/a.

Tributary geometry: meandering

Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: ephemeral flow

Estimate average number of flow events in review area/year: 2-5

Describe flow regime: ephemeral.

Other information on duration and volume: Channel previously affected by discharges from SSFL test operations requiring cooling water (no longer conducted). Channel and downstream impoundments acted to collect cooling water discharges during rocket engine testing.

Surface flow is: confined. Characteristics:

Subsurface flow: unknown. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

⁶ A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷ Ibid.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: water not present at time of delineation.

Identify specific pollutants, if known: heavy metals.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width): lower reach support mulefat and arroyo willow.
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

- Wetland size: acres
- Wetland type. Explain: .
- Wetland quality. Explain:
- Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: Pick List. Explain: surface water only present in impounded areas.

Surface flow is: Pick List

Characteristics:

Subsurface flow: Pick List. Explain findings:

- Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- Directly abutting
- Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:
 - Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.
Project waters are Pick List aerial (straight) miles from TNW.
Flow is from: Pick List.
Estimate approximate location of wetland as within the Pick List floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:
Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):2.
- Vegetation type/percent cover. Explain: .
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: Pick List
Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: The subject tributary is a small ephemeral drainage with a narrow (approx 2-3 foot) but well-defined ordinary high water mark. The channel itself is largely unvegetated, but adjacent uplands include coast live oak, ceanothus, coyotebrush and chamise. The tributary drains an area that supported the Systems Test Laboratory facilities. Flows are eventually conveyed to the "southwestern drainage" prior to entering a secondary holding pond and thence to Bell Canyon Channel. The downstream TNW (upper reach of the Los Angeles River) is approximately 8 miles downstream. The total drainage area of the tributary represents approximately 0.002% of the watershed draining to the downstream TNW. Soil testing within the channel and surrounding watershed have revealed elevated levels of heavy metals (lead, cadmium, copper and/or mercury). Bell Canyon Channel, inclusive of the reach within the review area, is included on the list 303(d) impaired waterbodies due to bacterial contamination. The tributary therefore has a significant nexus to the downstream TNW by virtue of its potential to deliver contaminants downstream.
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: Wetlands present are palustrine in nature as the result of impoundments of tributary. Flow and potential pollutants would be conveyed through wetland, therefore the wetlands in question have a significant nexus to the downstream TNW.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. RPWs that flow directly or indirectly into TNWs.

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
- Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: 1,300 linear feet; 3 width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: 0.64 acres.

7. Impoundments of jurisdictional waters.⁹

- As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
- Demonstrate that impoundment was created from "waters of the U.S.," or
 - Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 - Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: _____
- Other factors. Explain: _____

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: _____ linear feet _____ width (ft).
- Other non-wetland waters: _____ acres.
Identify type(s) of waters: _____
- Wetlands: _____ acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: _____
- Other: (explain, if not covered above): _____

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet _____ width (ft).
- Lakes/ponds: 0.155 acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet, _____ width (ft).
- Lakes/ponds: _____ acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: _____
- USDA Natural Resources Conservation Service Soil Survey. Citation: _____
- National wetlands inventory map(s). Cite name: _____
- State/Local wetland inventory map(s): _____
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): _____

¹⁹ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- Other (Name & Date):
- Previous determination(s). File no. and date of response letter:
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: The subject tributary is a small first order drainage channel with an average OHWM width of 2-3 feet. The drainage area is roughly 40 acres. Soil sampling within the drainage area has identified elevated levels of heavy metals and dioxin. Based on these results, the subject tributary appears to have a significant nexus to the downstream TNW (upper Los Angeles River, approximately 8 river miles downstream) based on the potential to deliver contaminants downstream.

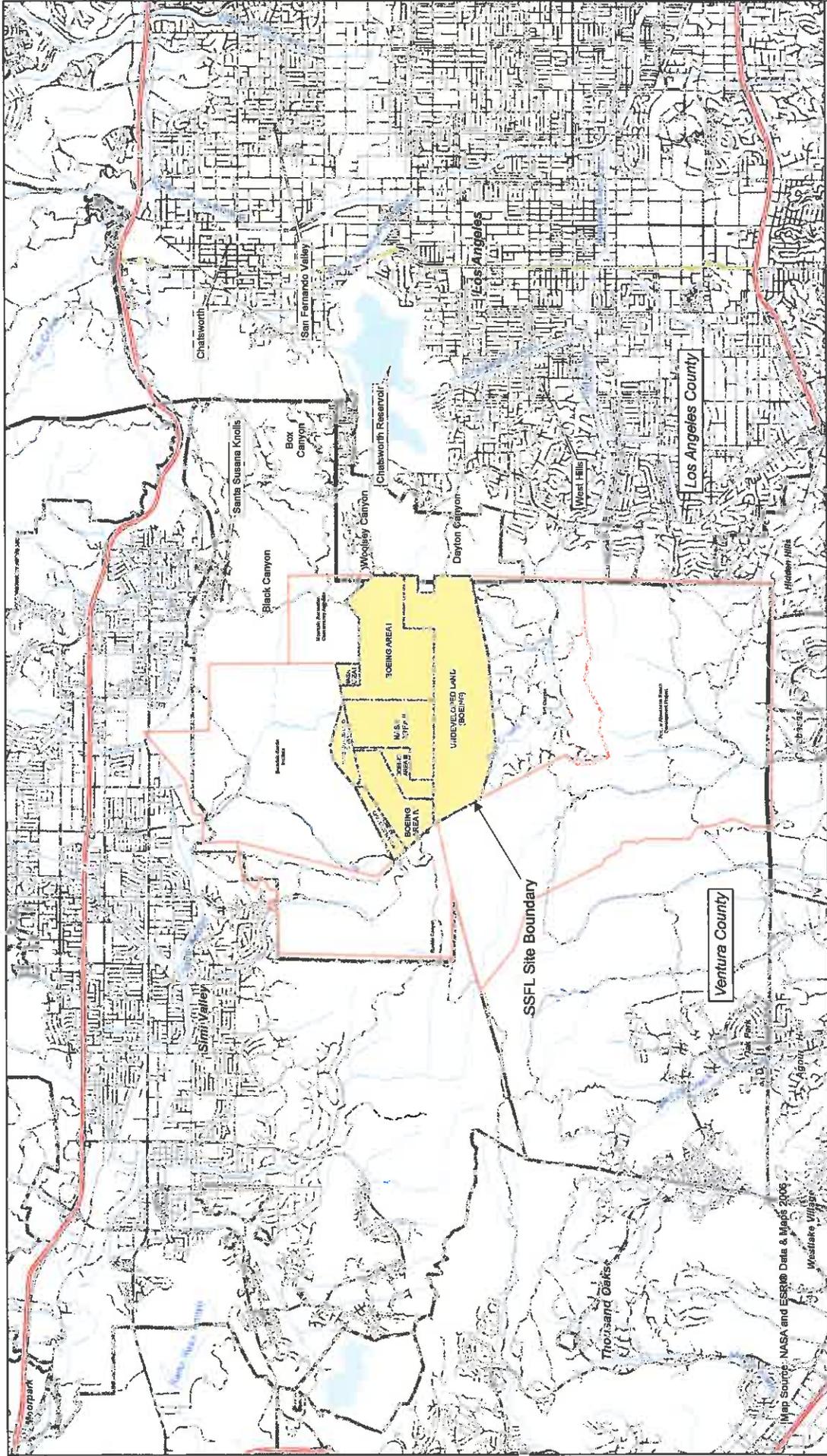
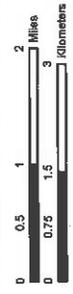
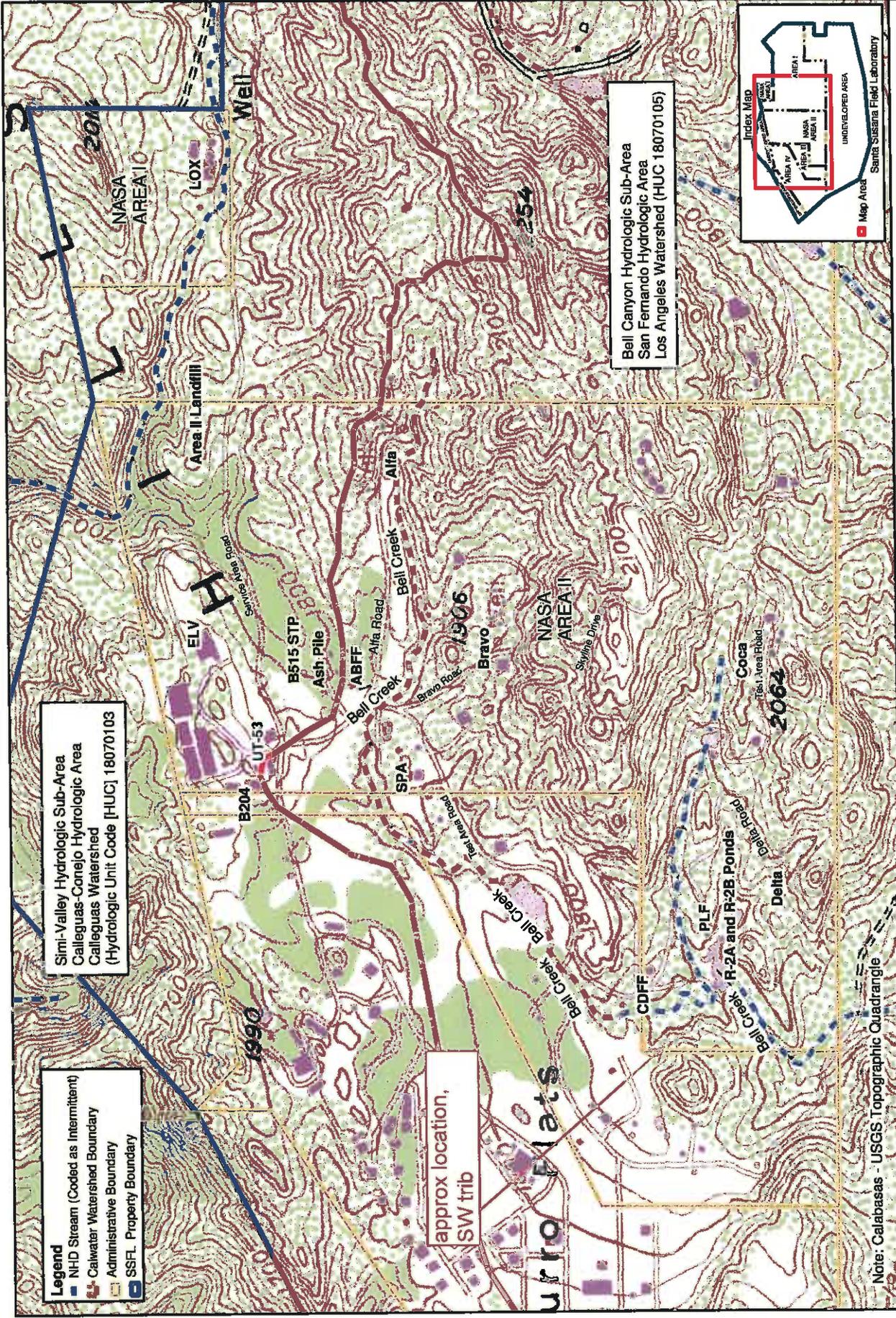


Figure 1-1
 Regional Map
 NASA Wellands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California

01-18-2012
 by
 A. Dwyer



Map Source: NASA and ES&S Data & Maps 2006



Simi-Valley Hydrologic Sub-Area
 Calleguas-Conejo Hydrologic Area
 Calleguas Watershed
 (Hydrologic Unit Code [HUC] 18070103)

Legend
 NHD Stream (Coded as Intermittent)
 Watershed Boundary
 Administrative Boundary
 SSFL Property Boundary

approx location,
 SW trib

Bell Canyon Hydrologic Sub-Area
 San Fernando Hydrologic Area
 Los Angeles Watershed (HUC 18070105)

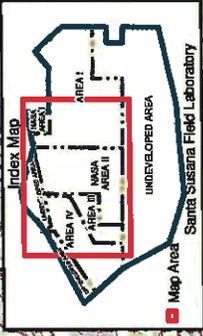


Figure D-1
 USGS Quadrangle Topographic Map and NHD Information
 NASA Wetlands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California

Map Date: 1/2012
 Map Scale: 1:25,000
 Map Projection: UTM
 Map Datum: NAD 83
 Map Contour Interval: 10 Feet
 Map Contour Elevation: 1900 Feet
 Map Contour Interval: 10 Feet
 Map Contour Elevation: 1900 Feet



Note: Calabasas - USGS Topographic Quadrangle



southwestern drainage trib

Google

Eye alt 6151 ft

© 2013 Google, 34° 41' 2.99" N, 118° 43' 05.02" W, elev: 1295 ft

1990

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 09/12/2012

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESPL-RG-N, Ventura Field Office; SSFL NASA Property Delineation; File no. SPL-2012-520-AJS: Upper Bell Creek (aka Southwestern Drainage)

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Ventura City: unincorporated (SSFL)
Center coordinates of site (lat/long in degree decimal format): Lat. 32.23245° N, Long. 118.6982° W
Universal Transverse Mercator:

Name of nearest waterbody: Bell Creek

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Los Angeles River

Name of watershed or Hydrologic Unit Code (HUC): Los Angeles River (18070105)

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 09/12/2012

Field Determination. Date(s): Jan 2012

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There *are* "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There *are* "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 13200 linear feet: 5 width (ft) and/or 1.52 acres.

Wetlands: 0.64 acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHW M

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW:

Summarize rationale supporting determination:

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. **Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.**

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 37 square miles

Drainage area: 1060 acres

Average annual rainfall: 19 inches

Average annual snowfall: 0 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 3 tributaries before entering TNW.

Project waters are 5-10 river miles from TNW.

Project waters are 1 (0 less) river miles from RPW.

Project waters are 5-10 aerial (straight) miles from TNW.

Project waters are 1 (0 less) aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: n/a.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Identify flow route to TNW⁵: Upper Southwestern Drainage flows into R2A Pond, thence to Bell Canyon Channel (natural), thence to the channelized section of lower Bell Canyon. The downstream TNW is upper end of the Los Angeles River, at the confluence of Bell Canyon Channel and Arroyo Calabasas.
Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: culvert, shotcrete swales, water control weirs and impoundments present.

Tributary properties with respect to top of bank (estimate):

Average width: 4-5 feet
Average depth: 1 feet
Average side slopes: 2:1

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: some incision evident.

Presence of run/riffle/pool complexes. Explain: n/a.

Tributary geometry: Meandering

Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: Ephemeral flow

Estimate average number of flow events in review area/year: 2-5

Describe flow regime: ephemeral.

Other information on duration and volume: Channel previously affected by discharges from SSFL test operations requiring cooling water (no longer conducted). Channel and downstream impoundments acted to collect cooling water discharges during rocket engine testing.

Surface flow is: Discrete and confined. Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

⁶ A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷ Ibid.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: water not present at time of delineation.

Identify specific pollutants, if known: heavy metals.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width): lower reach support mulefat and arroyo willow.
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) **General Wetland Characteristics:**

Properties:

Wetland size: 0.64 acres

Wetland type. Explain: palustrine.

Wetland quality. Explain: poor. formed as a result of 2 impoundments (0.51 and 0.13 acre respectively) intened to collect runoff from testing operations (no longer conducted). An additional impoundment area outside the review area (Boeing property) is also present and likely supports similar degraded palustrine wetlands.

Project wetlands cross or serve as state boundaries. Explain: n/a.

(b) **General Flow Relationship with Non-TNW:**

Flow is: ephemeral flow. Explain: surface water only present in impounded areas.

Surface flow is: Not present

Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

(c) **Wetland Adjacency Determination with Non-TNW:**

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) **Proximity (Relationship) to TNW**

Project wetlands are 5-10 river miles from TNW.

Project waters are 5-10 aerial (straight) miles from TNW.

Flow is from: Wetland to navigable waters.

Estimate approximate location of wetland as within the 2-year or less floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: dry at time of delineation.

Identify specific pollutants, if known: heavy metals detected downstream.

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

Riparian buffer. Characteristics (type, average width):2.

Vegetation type/percent cover. Explain: Open water area varies depending on inundation. Fringe area supports Typha

sp. and sparse mulefat and arroyo willow.

Habitat for:

Federally Listed species. Explain findings:

Fish/spawn areas. Explain findings:

Other environmentally-sensitive species. Explain findings:

Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: 2

Approximately (.64) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
y	0.13	y	0.51

Summarize overall biological, chemical and physical functions being performed: 1 very small impoundment area with managed hydrology. Dominated by Typha sp. and unvegetated open water (dry at time of delineation). A second, larger impoundment occurs immediately downstream also collecting flow from the COCA drain and PLV drain. Impoundments were originally constructed to collect runoff from testing operations, which may also contain contaminants. An additional impoundment along flow route likely supports palustrine fringe wetlands, however this was outside the assessment area.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: The subject tributary is a small ephemeral drainage with a discontinuous ordinary high water mark averaging 4-5 feet in width. The tributary includes concrete-lined sections and flow control weirs. Historically, the channel functioned to collect and convey runoff from adjacent rocket engine test stands that require substantial amounts of cooling water during testing. Flows are eventually conveyed to a holding pond off the NASA property (Boeing property) and thence to a secondary pond and thence to Bell Canyon Channel. The downstream TNW (upper reach of the Los Angeles River) is approximately 8 miles downstream. The total drainage area of the tributary represents approximately 2% of the watershed draining to the downstream TNW. Soil testing within the channel and surrounding watershed have revealed elevated levels of heavy metals (lead, cadmium, copper and/or mercury). Bell Canyon Channel, inclusive of the reach within the review area, is included on the list 303(d) impaired waterbodies due to bacterial contamination. The tributary therefore has a significant nexus to the downstream TNW by virtue of its potential to deliver contaminants downstream.
3. Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW. Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: Wetlands present are palustrine in nature as the result of impoundments of tributary. Flow and potential pollutants would be conveyed through wetland, therefore the wetlands in question have a significant nexus to the downstream TNW.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

- TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
 Tributaries of TNW where tributaries have continuous flow: "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters:

3. **Non-RPWs⁸ that flow directly or indirectly into TNWs.**

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: 10200 linear feet; 5 width (ft).
 Other non-wetland waters: acres.
Identify type(s) of waters:

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
 Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
 Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: 0.64 acres.

7. **Impoundments of jurisdictional waters.⁹**

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
 Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
 Demonstrate that water is isolated with a nexus to commerce (see E below).

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: _____
- Other factors. Explain: _____

Identify water body and summarize rationale supporting determination: _____

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: _____ linear feet _____ width (ft).
- Other non-wetland waters: _____ acres.
Identify type(s) of waters: _____
- Wetlands: _____ acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: _____
- Other: (explain, if not covered above): _____

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet _____ width (ft).
- Lakes/ponds: 0.155 acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet, _____ width (ft).
- Lakes/ponds: _____ acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

SECTION IV: DATA SOURCES.

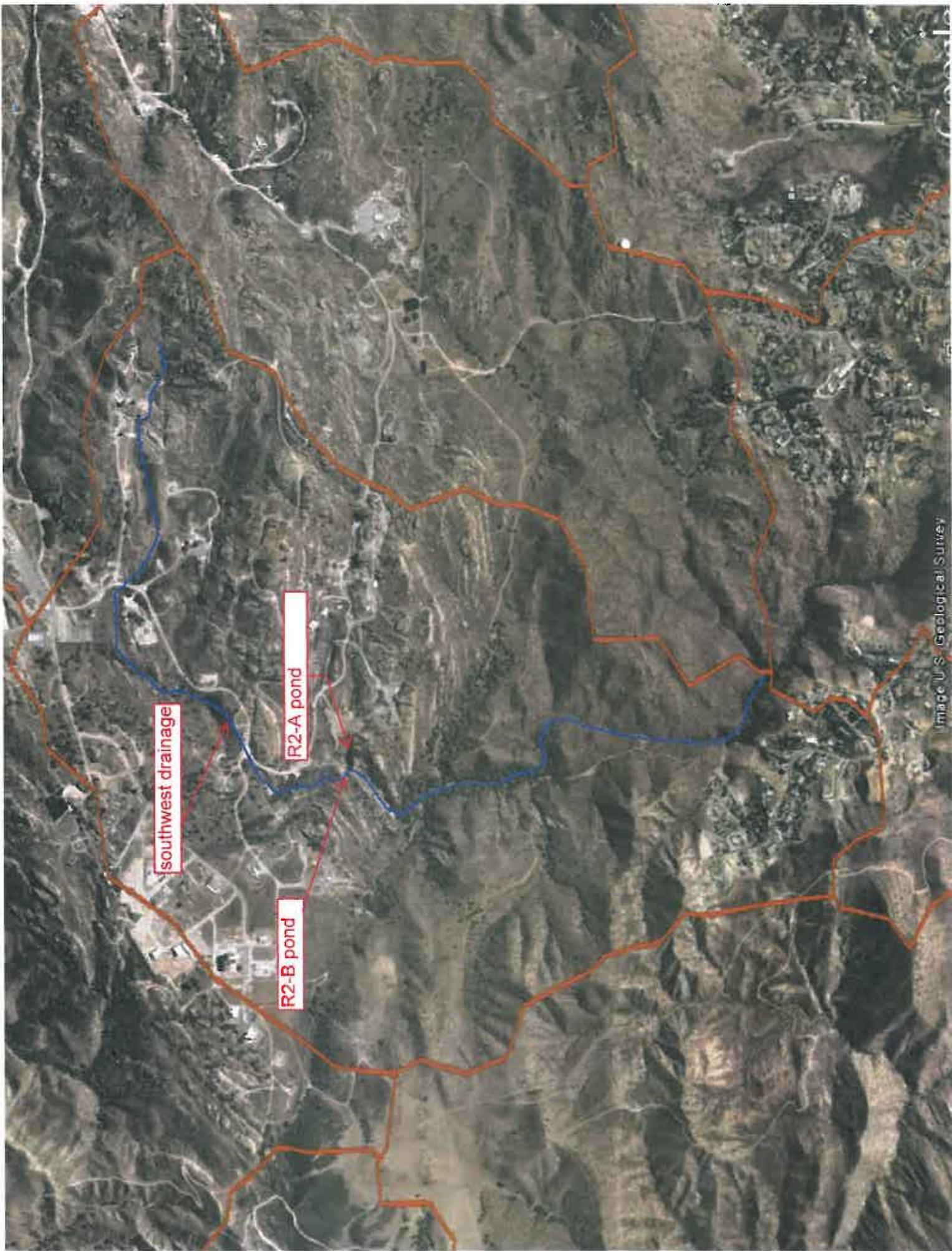
A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: _____
- USDA Natural Resources Conservation Service Soil Survey. Citation: _____
- National wetlands inventory map(s). Cite name: _____

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date):
or Other (Name & Date):
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: The subject tributary is a small first order drainage channel with an average OHWM width of 4-5 feet. The drainage area is roughly 1,060 acres. Soil sampling within the drainage area has identified elevated levels of heavy metals and dioxin. Based on these results, the subject tributary appears to have a significant nexus to the downstream TNW (upper Los Angeles River, approximately 8 river miles downstream) based on the potential to deliver contaminants downstream.



APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 11/15/2012

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESPL-RG-N, Ventura Field Office, SSFL NASA Property Delineation; file no. SPL-2012-520-AJS: SW-2 Pond

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Ventura City: unincorporated (SSFL)
Center coordinates of site (lat/long in degree decimal format): Lat. 34.2389° N, Long. 118.6892° W
Universal Transverse Mercator:

Name of nearest waterbody: SW-2 Pond

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: n/a (isolated)

Name of watershed or Hydrologic Unit Code (HUC): Calleguas Creek (18070103)

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 01/09/2013

Field Determination. Date(s): 12/20/2012

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There ~~are no~~ "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There ~~are no~~ "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: Field Limit

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: Pond appears to be isolated based on field observations and site topography.

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

- 1. TNW
Identify TNW:

Summarize rationale supporting determination:

- 2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

- (i) General Area Conditions:
Watershed size: Pick List
Drainage area: Pick List
Average annual rainfall: inches
Average annual snowfall: inches

- (ii) Physical Characteristics:
(a) Relationship with TNW:
 Tributary flows directly into TNW.
 Tributary flows through Pick List tributaries before entering TNW.

Project waters are Pick List river miles from TNW.
Project waters are Pick List river miles from RPW.
Project waters are Pick List aerial (straight) miles from TNW.
Project waters are Pick List aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain:

Identify flow route to TNW⁵:
Tributary stream order, if known:

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) **General Tributary Characteristics (check all that apply):**

- Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain:

Tributary properties with respect to top of bank (estimate):

Average width: feet
Average depth: feet
Average side slopes: Pick List.

Primary tributary substrate composition (check all that apply):

- | | | |
|--|--|-----------------------------------|
| <input type="checkbox"/> Silts | <input type="checkbox"/> Sands | <input type="checkbox"/> Concrete |
| <input type="checkbox"/> Cobbles | <input type="checkbox"/> Gravel | <input type="checkbox"/> Muck |
| <input type="checkbox"/> Bedrock | <input type="checkbox"/> Vegetation. Type/% cover: | |
| <input type="checkbox"/> Other. Explain: | | |

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:

Presence of run/riffle/pool complexes. Explain:

Tributary geometry: Pick List

Tributary gradient (approximate average slope): %

(c) **Flow:**

Tributary provides for: Pick List

Estimate average number of flow events in review area/year: Pick List

Describe flow regime:

Other information on duration and volume:

Surface flow is: Pick List. Characteristics:

Subsurface flow: Pick List. Explain findings:

- Dye (or other) test performed:

Tributary has (check all that apply):

- | | |
|---|---|
| <input type="checkbox"/> Bed and banks | |
| <input type="checkbox"/> OHWM ⁶ (check all indicators that apply): | |
| <input type="checkbox"/> clear, natural line impressed on the bank | <input type="checkbox"/> the presence of litter and debris |
| <input type="checkbox"/> changes in the character of soil | <input type="checkbox"/> destruction of terrestrial vegetation |
| <input type="checkbox"/> shelving | <input type="checkbox"/> the presence of wrack line |
| <input type="checkbox"/> vegetation matted down, bent, or absent | <input type="checkbox"/> sediment sorting |
| <input type="checkbox"/> leaf litter disturbed or washed away | <input type="checkbox"/> scour |
| <input type="checkbox"/> sediment deposition | <input type="checkbox"/> multiple observed or predicted flow events |
| <input type="checkbox"/> water staining | <input type="checkbox"/> abrupt change in plant community |
| <input type="checkbox"/> other (list): | |
| <input type="checkbox"/> Discontinuous OHWM. ⁷ Explain: | |

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

- | | |
|--|--|
| <input checked="" type="checkbox"/> High Tide Line indicated by: | <input checked="" type="checkbox"/> Mean High Water Mark indicated by: |
| <input type="checkbox"/> oil or scum line along shore objects | <input type="checkbox"/> survey to available datum; |
| <input type="checkbox"/> fine shell or debris deposits (foreshore) | <input type="checkbox"/> physical markings; |
| <input type="checkbox"/> physical markings/characteristics | <input type="checkbox"/> vegetation lines/changes in vegetation types. |
| <input type="checkbox"/> tidal gauges | |
| <input type="checkbox"/> other (list): | |

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain:

Identify specific pollutants, if known:

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

Provide estimates for jurisdictional waters in the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

Tributary waters: linear feet width (ft).

Other non-wetland waters: acres.

Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: 0.15 acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps: .
- Corps navigable waters' study: .
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: .
- USDA Natural Resources Conservation Service Soil Survey. Citation: .
- National wetlands inventory map(s). Cite name: .
- State/Local wetland inventory map(s): .
- FEMA/FIRM maps: .
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): google earth, various dates.
or Other (Name & Date): site photos 12/20/2012.
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law: .
- Applicable/supporting scientific literature: .
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: The subject pond appears to be an excavated feature approximately 0.15 acre in size that is seasonally ponded and supports wetland characteristics (classified as a seasonally flooded palustrine emergent wetland). There is no evidence indicating the pond overflows and connects with non-isolated drainage features which ultimately drain to a TNW or cross state lines. The pond is within the larger Calleguas Creek watershed and sits within an elevated plateau area surrounded by rock formations to the

north, east and south.. The drainage area of the pond is estimated to be approximately 20 acres. A small area of ponded water was evident within the larger feature during a 12/20/2012 site visit. No evidence of outflow (scour, debris deposits, etc) was observed. The nearest drainage feature, an ephemeral drainage channel ("northern drainage") ultimately draining to Calleguas Creek, is approximately 500 lateral feet and 100 vertical feet removed from the pond at its nearest point. No sources of interstate commerce were identified.

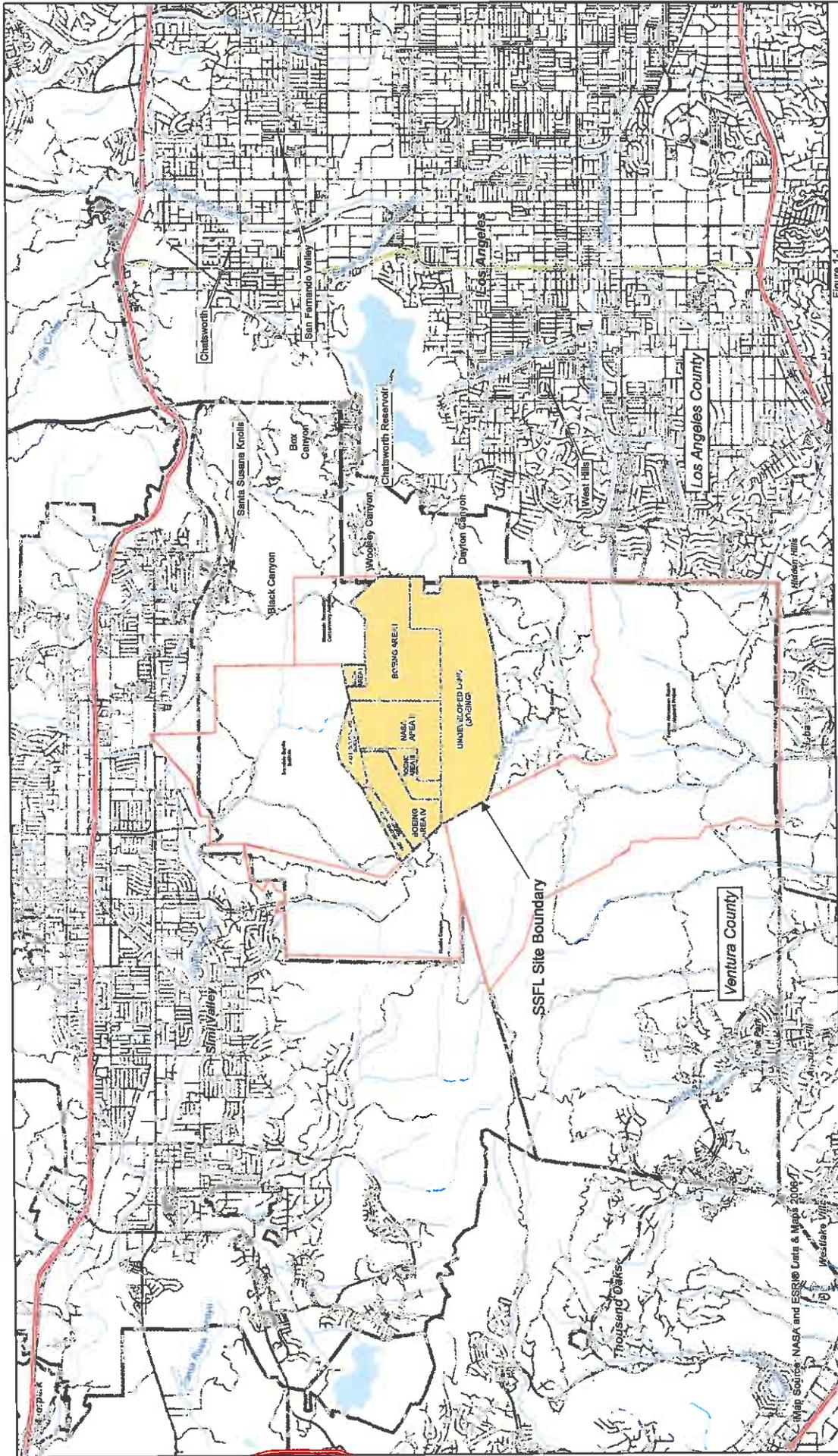


Figure 1-1
 Regional Map
 NASA Wetlands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California

01-Feb-2012
 Drawn By:
 A. Casey



Map Sources: NASA and ES&S © Curtis & Mingo (2006)
 Westlake Village

Map Document: C:\N\NASA\SSFL\temp\B18_2011\Bsurvey_Spring07\SSFL_Regional_Wetlands\B18.mxd



Base map aerial photography dated 2007

0 750 1,500 3,000 Feet



Map Document: C:\MMS\SSFL\umpalEB_2011\BseSurvey_091422\111358FL_05a_Overview_Wetlands.dwg

Legend

-  NASA-Administered Property Boundary
-  SSFL Administrative Areas

Figure 1-2
Site Overview
 NASA Wetlands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California



SW-2 pond drainage area (approx 20 acres)



SW-2 pond (12/20/2012)

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 09/12/2012

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESPL-RG-N, Ventura Field Office; SSFL NASA Property Delineation; File no. SPL-2012-520-AJS: Northern Drainage

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Ventura City: unincorporated (SSFL)
Center coordinates of site (lat/long in degree decimal format): Lat. 32.23245° N, Long. 118.6982° W
Universal Transverse Mercator:

Name of nearest waterbody: Northern Drainage

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Lower Calleguas Creek

Name of watershed or Hydrologic Unit Code (HUC): Calleguas Creek (18070103)

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 09/12/2012

Field Determination. Date(s): Jan 2012

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There ~~are no~~ "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There ~~are and are not~~ "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 3200 linear feet: 8width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM.

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

- Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: **a small pond, approximately 0.15 acre in size and apparently excavated within the drainage area, was determined to be isolated. A separate JD form was prepared to address this pond.**

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination:

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 291 square miles
Drainage area: 400 acres
Average annual rainfall: 19 inches
Average annual snowfall: 0 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

- Tributary flows directly into TNW.
 Tributary flows through 4 tributaries before entering TNW.

Project waters are 1.5-3 river miles from TNW.
Project waters are 2-3 river miles from RPW.
Project waters are 1.5-2.5 aerial (straight) miles from TNW.
Project waters are 2-5 aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: n/a.

Identify flow route to TNW⁵: Northern Drainage flows approximately 2.5 miles to Meier Creek, thence to Arroyo Simi, Arroyo Las Posas and Calleguas Creek. The downstream TNW is the upper limit of tidal influence on Calleguas Creek.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: culverted road xings.

Tributary properties with respect to top of bank (estimate):

Average width: 8 feet
Average depth: 2 feet
Average side slopes: 2:1.

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: some incision evident.

Presence of run/riffle/pool complexes. Explain: n/a.

Tributary geometry: Meandering

Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: Seasonal flow

Estimate average number of flow events in review area/year: 2-5

Describe flow regime: intermittent.

Other information on duration and volume:

Surface flow is: Confined. Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: water not present at time of delineation.

Identify specific pollutants, if known: heavy metals, dioxin.

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: _____ acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: Pick List. Explain:

Surface flow is: Pick List

Characteristics:

Subsurface flow: Pick List. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- Directly abutting
- Not directly abutting
 - Discrete wetland hydrologic connection. Explain:
 - Ecological connection. Explain:
 - Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.

Project waters are Pick List aerial (straight) miles from TNW.

Flow is from: Pick List.

Estimate approximate location of wetland as within the Pick List floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: Pick List

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: The subject tributary is an ephemeral drainage with an ordinary high water mark of 6-10 feet in width. Estimated discharge volumes at Outfall 009 (which includes the subject tributary plus the contribution from the ELV tributary) is approximately 12 cfs for a 1-year, 24-hour flood event, 49 cfs for the 10-year event and 100 cfs for the 100-year event. The downstream TNW (upper limit of tidal influence on Calleguas Creek) is approximately 28 miles downstream. The total drainage area of the tributary represents approximately 0.21% of the watershed draining to the downstream TNW. Soil testing within the channel and surrounding watershed have revealed elevated levels of heavy metals (lead, cadmium, copper and/or mercury) as well as dioxin at one location. The tributary therefore has a significant nexus to the downstream TNW by virtue of its potential to deliver contaminants downstream.
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
- Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: **3,000** linear feet; **8** width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: _____
- Other factors. Explain: _____

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: _____ linear feet _____ width (ft).
- Other non-wetland waters: _____ acres.
Identify type(s) of waters: _____
- Wetlands: _____ acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: _____
- Other: (explain, if not covered above): _____

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet _____ width (ft).
- Lakes/ponds: 0.15 acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet, _____ width (ft).
- Lakes/ponds: _____ acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

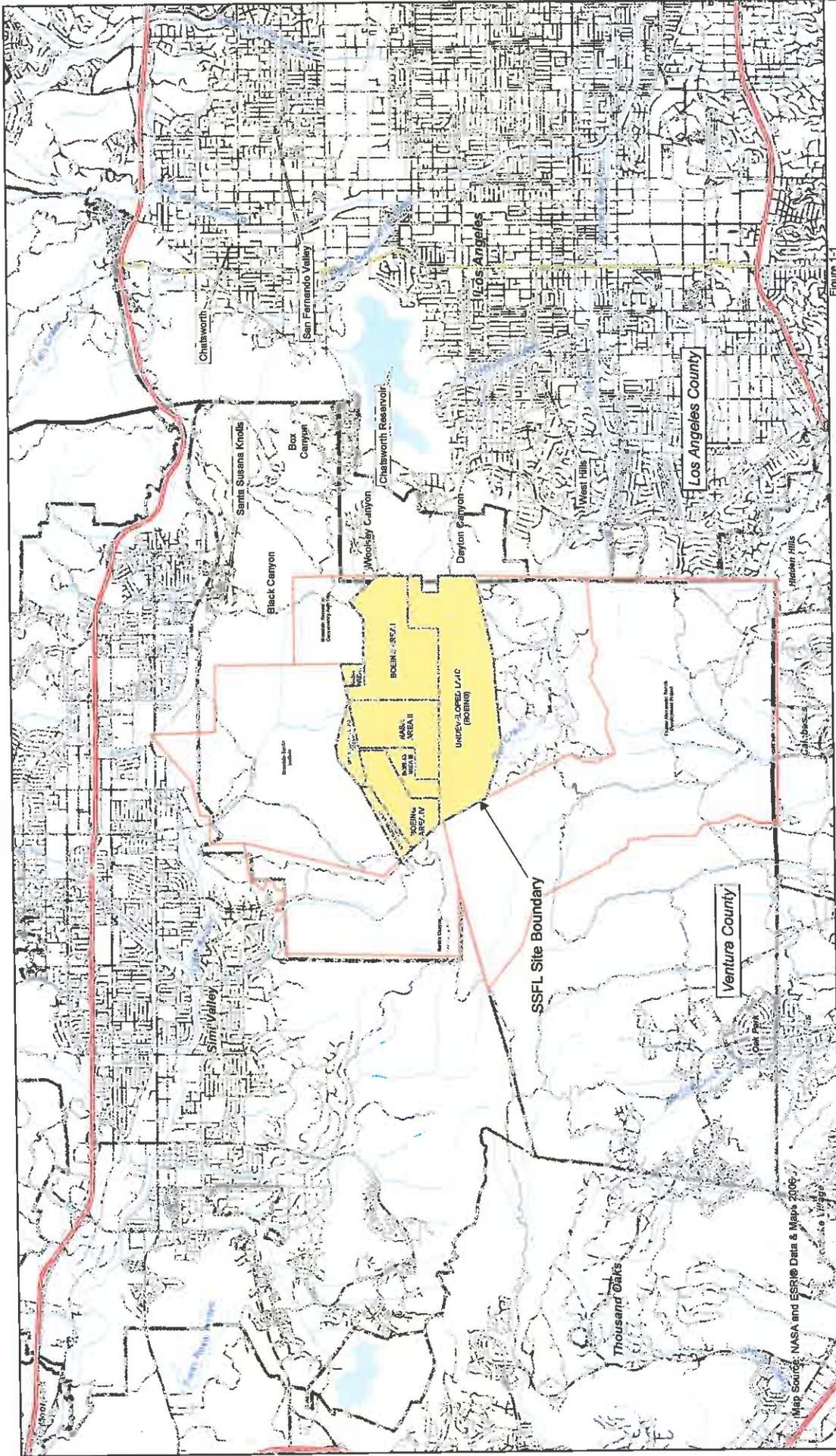
SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name:
- USDA Natural Resources Conservation Service Soil Survey. Citation:
- National wetlands inventory map(s). Cite name:
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): _____
or Other (Name & Date): _____
- Previous determination(s). File no. and date of response letter: file no SPL-2009-412-AJS (4/27/2010).

- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: The subject tributary is a small 2nd order drainage channel with an average OHWM width of 6 feet. The drainage area, including the two 1st order streams that feed into tributary 2 (tribs 3 & 4) is roughly 400 acres. Flows from the tributary pass through the Outfall 009 water quality sampling station installed by the applicant. Data from the sampling station (2004-2007) showed exceedences of permit limits of copper on one occasion, lead on 2 occasions and a dioxin congener on three occasions. Soil sampling within the drainage area has identified elevated levels of heavy metals and dioxin. Based on these results, the subject tributary appears to have a significant nexus to the downstream TNW (upper limit of tidal influence on Calleguas Creek) based on the potential to deliver contaminants downstream.



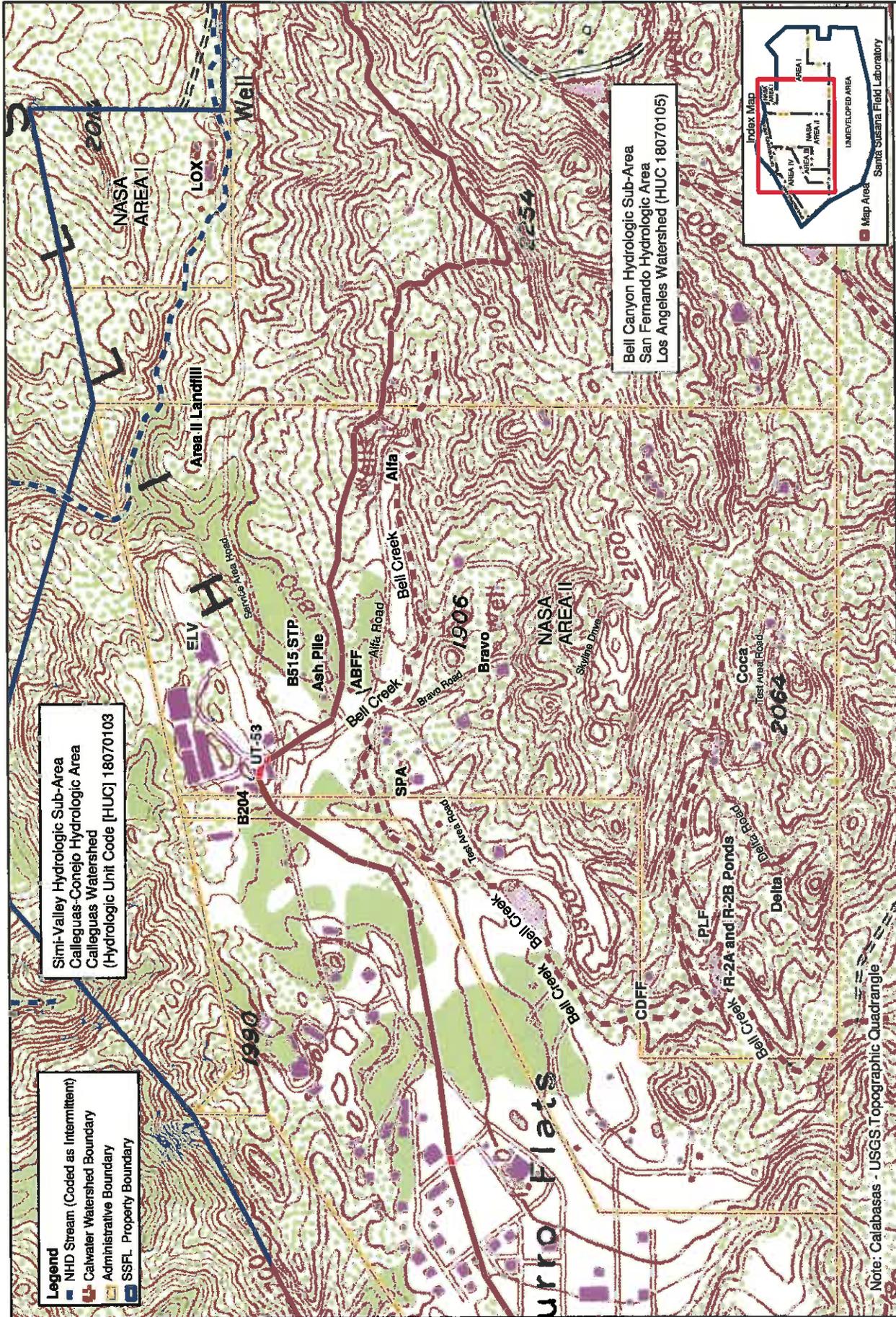
Map Source: NASA and ESRI® Data & Maps ©2006



Map Document: C:\NAB\3SFL\workspace_2011\3SFL_Symlog\11\SSFL_Regional_WaterData.RPT.mxd

01-Feb-2012
Drawn By:
A. Conroy

Figure 11
Regional Map
NASA Wetlands and Waters of the U.S. Delineation Report
Santa Susana Field Laboratory
Ventura County, California



Legend

- NHD Stream (Coded as Intermittent)
- Calwater Watershed Boundary
- Administrative Boundary
- SSFL Property Boundary

Simi-Valley Hydrologic Sub-Area
 Calleguas-Conejo Hydrologic Area
 Calleguas Watershed
 (Hydrologic Unit Code [HUC] 18070103)

Bell Canyon Hydrologic Sub-Area
 San Fernando Hydrologic Area
 Los Angeles Watershed (HUC 18070105)



Figure D-1
 USGS Quadrangle Topographic Map and NHD Information
 NASA Wetlands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California

Map Document: C:\MapDocs\SP4\mapdoc\B_2011\WatershedReport\B_USGS_MXD_01.mxd
 Date: 1/2/2011 10:54:00 AM
 Author: A. Crisp
 Project: 18070103



Note: Calabasas - USGS Topographic Quadrangle



Image U.S. Geological Survey

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 01/15/2013

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESPL-RG-N, Ventura Field Office; SSFL NASA Property Delineation; File no. SPL-2012-520-AJS: COCA Drainage

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Ventura City: unincorporated (SSFL)
Center coordinates of site (lat/long in degree decimal format): Lat. 32.23245° N, Long. 118.6982° W
Universal Transverse Mercator:

Name of nearest waterbody: COCA drainage

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Los Angeles River

Name of watershed or Hydrologic Unit Code (HUC): Los Angeles River (18070105)

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 09/12/2012

Field Determination. Date(s): Jan 2012

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are no "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 2,000 linear feet: 5 width (ft) and/or 0.42 acres.

Wetlands: 0.33 acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: .

Summarize rationale supporting determination:

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. **Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.**

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: 375 square miles

Drainage area: 45 acres

Average annual rainfall: 19 inches

Average annual snowfall: 0 inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

Tributary flows directly into TNW.

Tributary flows through 3 tributaries before entering TNW.

Project waters are 5-10 river miles from TNW.

Project waters are 1 (or less) river miles from RPW.

Project waters are 5-10 aerial (straight) miles from TNW.

Project waters are 1 (or less) aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: n/a.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

Identify flow route to TNW⁵: Upper Southwestern Drainage flows into R2A Pond, thence to Bell Canyon Channel (natural), thence to the channelized section of lower Bell Canyon. The downstream TNW is upper end of the Los Angeles River, at the confluence of Bell Canyon Channel and Arroyo Calabasas.
 Tributary stream order, if known: 1.

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: culvert, shotcrete swales, water control weirs and impoundments present.

Tributary properties with respect to top of bank (estimate):

Average width: 4-5 feet
 Average depth: 1 feet
 Average side slopes: 2:1

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: some incision evident.

Presence of run/riffle/pool complexes. Explain: n/a.

Tributary geometry: Relatively straight;

Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: Ephemeral flow

Estimate average number of flow events in review area/year: 1-5

Describe flow regime: ephemeral.

Other information on duration and volume: Channel previously affected by discharges from SSFL test operations requiring cooling water (no longer conducted). Channel and downstream impoundments acted to collect cooling water discharges during rocket engine testing.

Surface flow is: Discrete and confined. Characteristics:

Subsurface flow: Unknown Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

⁶ A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷ Ibid.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: water not present at time of delineation.

Identify specific pollutants, if known: heavy metals.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: 0.33 acres

Wetland type. Explain: palustrine.

Wetland quality. Explain: poor. formed as a result of impoundments intened to collect runoff from testing operations (no longer conducted).

Project wetlands cross or serve as state boundaries. Explain: n/a.

(b) General Flow Relationship with Non-TNW:

Flow is: ephemeral flow Explain:

Surface flow is: Not present

Characteristics:

Subsurface flow: Unknown Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are 5-10 river miles from TNW.

Project waters are 5-10 aerial (straight) miles from TNW.

Flow is from: Wetland to navigable waters.

Estimate approximate location of wetland as within the 2-year or less floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: dry at time of delineation.

Identify specific pollutants, if known: heavy metals detected downstream.

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- Riparian buffer. Characteristics (type, average width):
- Vegetation type/percent cover. Explain:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis:

Approximately (0.33) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>	<u>Directly abuts? (Y/N)</u>	<u>Size (in acres)</u>
y	0.33		

Summarize overall biological, chemical and physical functions being performed: very small impoundment area with managed hydrology. Dominated by Typha sp. and unvegetated open water (dry at time of delineation). An additional impoundment along flow route likely supports palustrine fringe wetlands, however this was outside the assessment area.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D:
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: The subject tributary is a small ephemeral drainage with a discontinuous ordinary high water mark averaging 4-5 feet in width. The tributary includes concrete-lined sections and flow control wiers. Historically, the channel functioned to collect and convey runoff from adjacent rocket engine test stands that require substantial amounts of cooling water during testing. Flows are eventually conveyed to a holding pond off the NASA property (Boeing property) and thence to a secondary pond ("R2A Pond") and thence to Bell Canyon Channel. The downstream TNW (upper reach of the Los Angeles River) is approximately 8 miles downstream. The total drainage area of the tributary represents approximately 2% of the watershed draining to the downstream TNW. Soil testing within the channel and surrounding watershed have revealed elevated levels of heavy metals (lead, cadmium, copper and/or mercury). The tributary therefore has a significant nexus to the downstream TNW by virtue of its potential to deliver contaminants downstream.
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: Wetlands present are palustrine in nature as the result of impoundments of tributary. Flow and potential pollutants would be conveyed through wetland, therefore the wetlands in question have a significant nexus to the downstream TNW.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.

Wetlands adjacent to TNWs: acres.

2. RPWs that flow directly or indirectly into TNWs.

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
- Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: 3700 linear feet; 5 width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: 0.13 acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: .
- Other factors. Explain: .

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
Identify type(s) of waters: .
- Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: 0.155 acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- Lakes/ponds: acres.
- Other non-wetland waters: acres. List type of aquatic resource: .
- Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name:
- USDA Natural Resources Conservation Service Soil Survey. Citation:
- National wetlands inventory map(s). Cite name:
- State/Local wetland inventory map(s):

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date):
or Other (Name & Date):
- Previous determination(s). File no. and date of response letter: .
- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: The subject tributary is a small first order drainage channel with an average OHWM width of 4-5 feet. The drainage area is roughly 495 acres. Soil sampling within the drainage area has identified elevated levels of heavy metals and dioxin. Based on these results, the subject tributary appears to have a significant nexus to the downstream TNW (upper Los Angeles River, approximately 8 river miles downstream) based on the potential to deliver contaminants downstream.

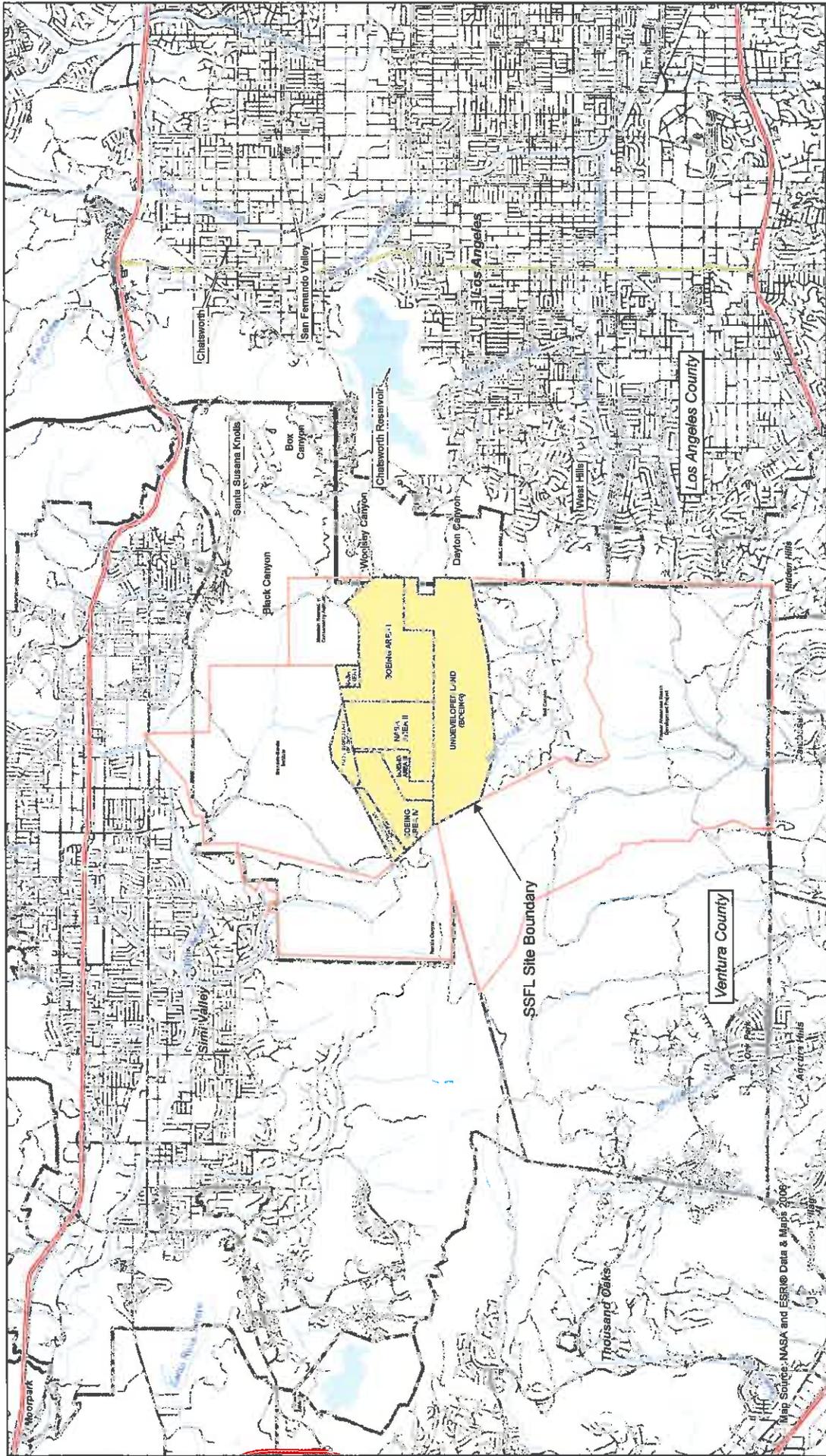
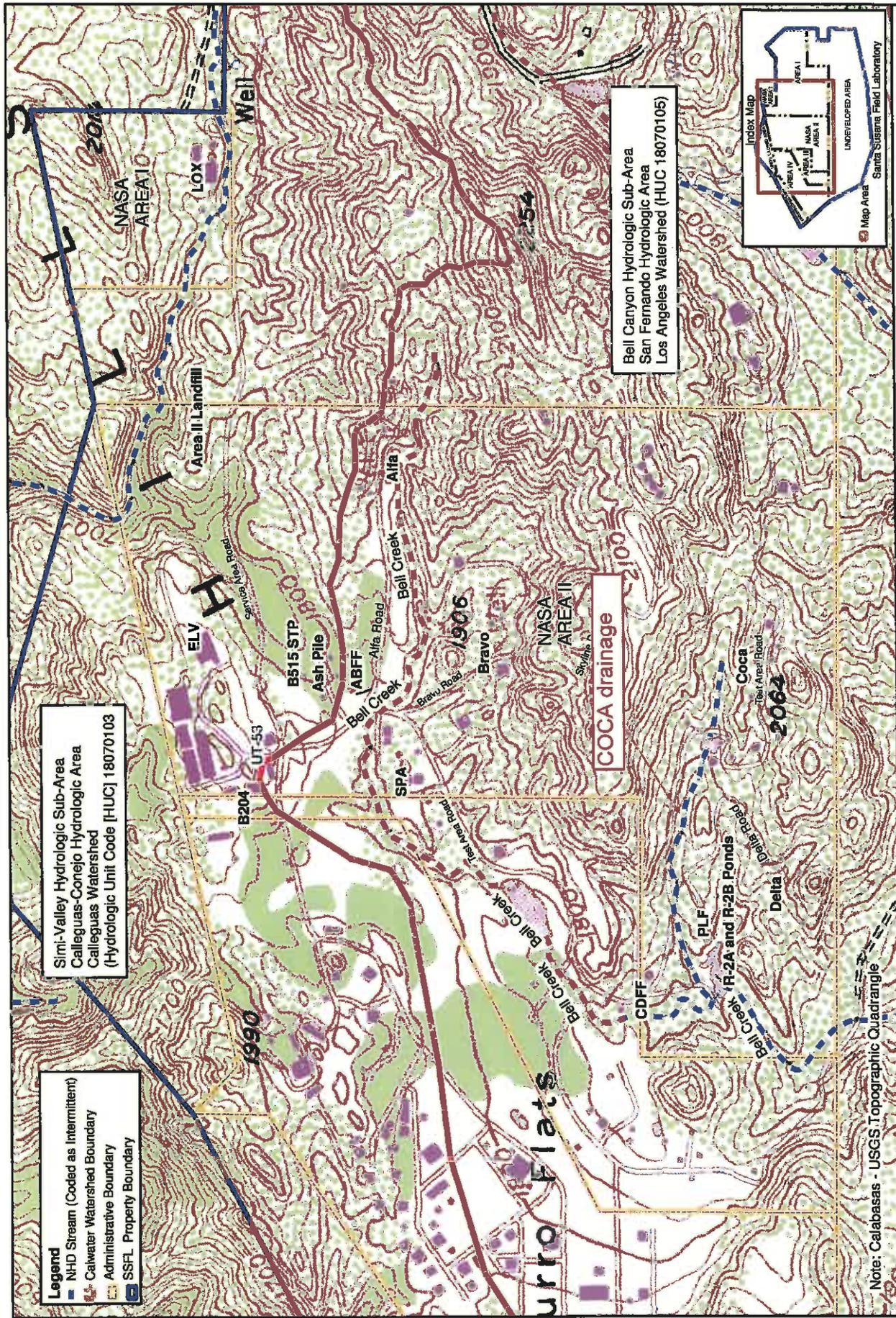


Figure 1-1
 Regional Map
 NASA Welllands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California

01-Feb-2012
 10:58 AM
 A. Conroy





Legend

- NHD Stream (Coded as Intermittent)
- Calwater Watershed Boundary
- Administrative Boundary
- SSFL Property Boundary

Simi-Valley Hydrologic Sub-Area
 Calleguas-Conejo Hydrologic Area
 Calleguas Watershed
 (Hydrologic Unit Code [HUC] 18070103)

COCA drainage

Bell Canyon Hydrologic Sub-Area
 San Fernando Hydrologic Area
 Los Angeles Watershed (HUC 18070105)

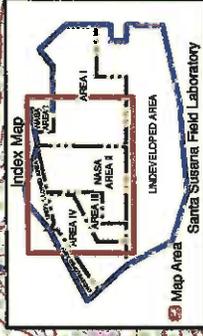


Figure D-1
 USGS Quadrangle Topographic Map and NHD Information
 Santa Susana Field Laboratory
 Santa Susana Field Laboratory
 Ventura County, California

Map Date: 1/2012
 Map Scale: 1:50,000
 Data Source: USGS
 Data Date: 1/2012



Note: Calabasas - USGS Topographic Quadrangle

Map Document: C:\NASASFL\workspace\2011\MapInfo\Report\USGS_18070103.mxd



APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): 09/12/2012

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: CESPL-RG-N, Ventura Field Office; SSFL NASA Property Delineation; File no. SPL-2012-520-AJS: ELV Drainage

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: Ventura City: unincorporated (SSFL)
Center coordinates of site (lat/long in degree decimal format): Lat. 32.23245° N, Long. 118.6982° W
Universal Transverse Mercator:

Name of nearest waterbody: ELV Drainage

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Lower Calleguas Creek

Name of watershed or Hydrologic Unit Code (HUC): Calleguas Creek (18070103)

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 09/12/2012

Field Determination. Date(s): Jan 2012

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

Waters subject to the ebb and flow of the tide.

Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **are** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- TNWs, including territorial seas
- Wetlands adjacent to TNWs
- Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- Non-RPWs that flow directly or indirectly into TNWs
- Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- Impoundments of jurisdictional waters
- Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: 1250 linear feet: 5 width (ft) and/or 0.171 acres.

Wetlands: 0 acres.

c. Limits (boundaries) of jurisdiction based on: Established by OHWM

Elevation of established OHWM (if known):

2. Non-regulated waters/wetlands (check if applicable):³

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain:

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**

Identify TNW:

Summarize rationale supporting determination:

2. **Wetland adjacent to TNW**

Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. **Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.**

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) **General Area Conditions:**

Watershed size: 29¹ square miles

Drainage area: 67 acres

Average annual rainfall: 19 inches

Average annual snowfall: 0 inches

(ii) **Physical Characteristics:**

(a) **Relationship with TNW:**

Tributary flows directly into TNW.

Tributary flows through 4 tributaries before entering TNW.

Project waters are 2.5-3.0 river miles from TNW.

Project waters are 2-3 river miles from RPW.

Project waters are 20-25 aerial (straight) miles from TNW.

Project waters are 2-5 aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: n/a.

Identify flow route to TNW⁵: ELV Drainage flows approximately 2.5 miles to Meier Creek, thence to Arroyo Simi, Arroyo Las Posas and Calleguas Creek. The downstream TNW is the upper limit of tidal influence on Calleguas Creek.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary stream order, if known: 1.

(b) General Tributary Characteristics (check all that apply):

Tributary is: Natural
 Artificial (man-made). Explain:
 Manipulated (man-altered). Explain: culverted road xing, and approx 100-foot section has been lined with asphalt.

Tributary properties with respect to top of bank (estimate):

Average width: 5 feet
Average depth: 1 feet
Average side slopes: 2:1

Primary tributary substrate composition (check all that apply):

Silts Sands Concrete
 Cobbles Gravel Muck
 Bedrock Vegetation. Type/% cover:
 Other. Explain:

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: some incision evident.

Presence of run/riffle/pool complexes. Explain: n/a.

Tributary geometry: Meandering

Tributary gradient (approximate average slope): 1 %

(c) Flow:

Tributary provides for: Seasonal flow

Estimate average number of flow events in review area/year: 2-5

Describe flow regime: intermittent.

Other information on duration and volume:

Surface flow is: Confined. Characteristics:

Subsurface flow: Unknown. Explain findings:

Dye (or other) test performed:

Tributary has (check all that apply):

Bed and banks
 OHWM⁶ (check all indicators that apply):
 clear, natural line impressed on the bank the presence of litter and debris
 changes in the character of soil destruction of terrestrial vegetation
 shelving the presence of wrack line
 vegetation matted down, bent, or absent sediment sorting
 leaf litter disturbed or washed away scour
 sediment deposition multiple observed or predicted flow events
 water staining abrupt change in plant community
 other (list):
 Discontinuous OHWM.⁷ Explain:

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

High Tide Line indicated by: Mean High Water Mark indicated by:
 oil or scum line along shore objects survey to available datum;
 fine shell or debris deposits (foreshore) physical markings;
 physical markings/characteristics vegetation lines/changes in vegetation types.
 tidal gauges
 other (list):

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: water not present at time of delineation.

Identify specific pollutants, if known: heavy metals, dioxin recorded at monitoring station (Outfall 009) which includes the subwatershed of this drainage feature. No monitoring results of this specific drainage channel are available, however the drainage area

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

includes facilities historically operated as part of the Santa Susanna Field Lab and it likely similar contaminants would be generated within this drainage area.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- Riparian corridor. Characteristics (type, average width):
- Wetland fringe. Characteristics:
- Habitat for:
 - Federally Listed species. Explain findings:
 - Fish/spawn areas. Explain findings:
 - Other environmentally-sensitive species. Explain findings:
 - Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain:

Wetland quality. Explain:

Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: Pick List. Explain:

Surface flow is: Pick List

Characteristics:

Subsurface flow: Pick List. Explain findings:

Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

Directly abutting

Not directly abutting

Discrete wetland hydrologic connection. Explain:

Ecological connection. Explain:

Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.

Project waters are Pick List aerial (straight) miles from TNW.

Flow is from: Pick List.

Estimate approximate location of wetland as within the Pick List floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

Riparian buffer. Characteristics (type, average width):

Vegetation type/percent cover. Explain:

Habitat for:

Federally Listed species. Explain findings:

Fish/spawn areas. Explain findings:

Other environmentally-sensitive species. Explain findings:

Aquatic/wildlife diversity. Explain findings:

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: Pick List

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N) Size (in acres) Directly abuts? (Y/N) Size (in acres)

Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: The subject tributary is a small ephemeral drainage with an ordinary high water mark averaging 5 feet in width. Estimated discharge volumes at Outfall 009 (which includes the subject tributary plus the contribution from the Northern Drainage) is approximately 12 cfs for a 1-year, 24-hour flood event, 49 cfs for the 10-year event and 100 cfs for the 100-year event. The downstream TNW (upper limit of tidal influence on Calleguas Creek) is approximately 28 miles downstream. The total drainage area of the tributary represents approximately 0.03% of the watershed draining to the downstream TNW. Soil testing within the channel and surrounding watershed have revealed elevated levels of heavy metals (lead, cadmium, copper and/or mercury) as well as dioxin at one location. The tributary therefore has a significant nexus to the downstream TNW by virtue of its potential to deliver contaminants downstream.
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
 TNWs: linear feet width (ft), Or, acres.
 Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**

- Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial:
- Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: linear feet width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

- Tributary waters: 1,200 linear feet; 5 width (ft).
- Other non-wetland waters: acres.
- Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- Demonstrate that impoundment was created from "waters of the U.S.," or
- Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- which are or could be used by interstate or foreign travelers for recreational or other purposes.
- from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- which are or could be used for industrial purposes by industries in interstate commerce.
- Interstate isolated waters. Explain: _____
- Other factors. Explain: _____

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- Tributary waters: _____ linear feet _____ width (ft).
- Other non-wetland waters: _____ acres.
Identify type(s) of waters: _____
- Wetlands: _____ acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
 - Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: _____
- Other: (explain, if not covered above): _____

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet _____ width (ft).
- Lakes/ponds: 0.155 acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- Non-wetland waters (i.e., rivers, streams): _____ linear feet _____ width (ft).
- Lakes/ponds: _____ acres.
- Other non-wetland waters: _____ acres. List type of aquatic resource: _____
- Wetlands: _____ acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps:
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: _____
- USDA Natural Resources Conservation Service Soil Survey. Citation: _____
- National wetlands inventory map(s). Cite name: _____
- State/Local wetland inventory map(s): _____
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum of 1929)
- Photographs: Aerial (Name & Date): _____
or Other (Name & Date): _____
- Previous determination(s). File no. and date of response letter: file no SPL-2009-412-AJS (4/27/2010).

- Applicable/supporting case law:
- Applicable/supporting scientific literature:
- Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: The subject tributary is a small first order drainage channel with an average OHWM width of 4 feet. The drainage area is roughly 67 acres. Flows from the tributary pass through the Outfall 009 water quality sampling station installed by the applicant. Data from the sampling station (2004-2007) showed exceedences of permit limits of copper on one occasion, lead on 2 occasions and a dioxin congener on three occasions. Soil sampling within the drainage area has identified elevated levels of heavy metals and dioxin. Based on these results, the subject tributary appears to have a significant nexus to the downstream TNW (upper limit of tidal influence on Calleguas Creek) based on the potential to deliver contaminants downstream.

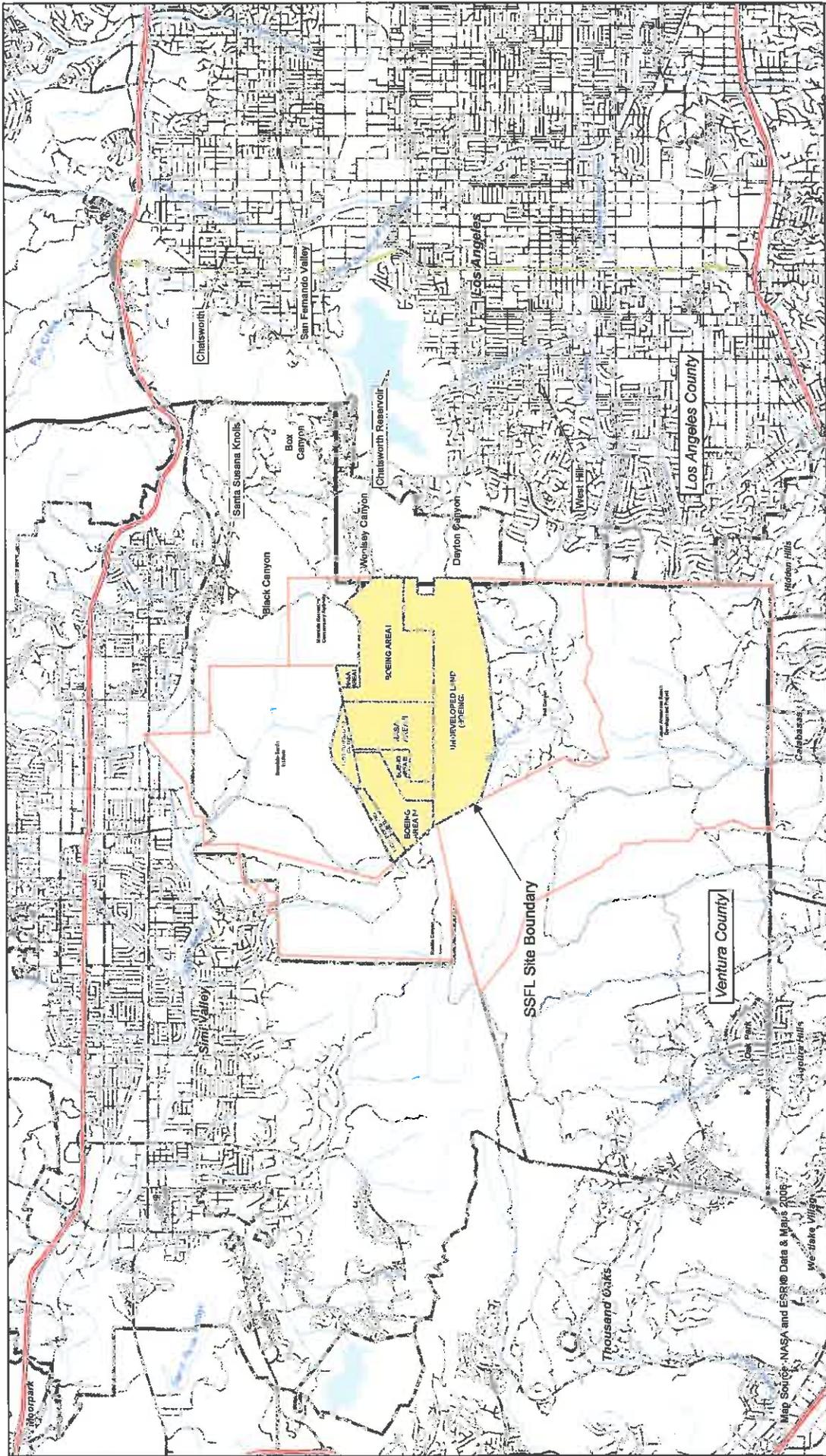
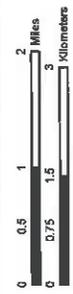


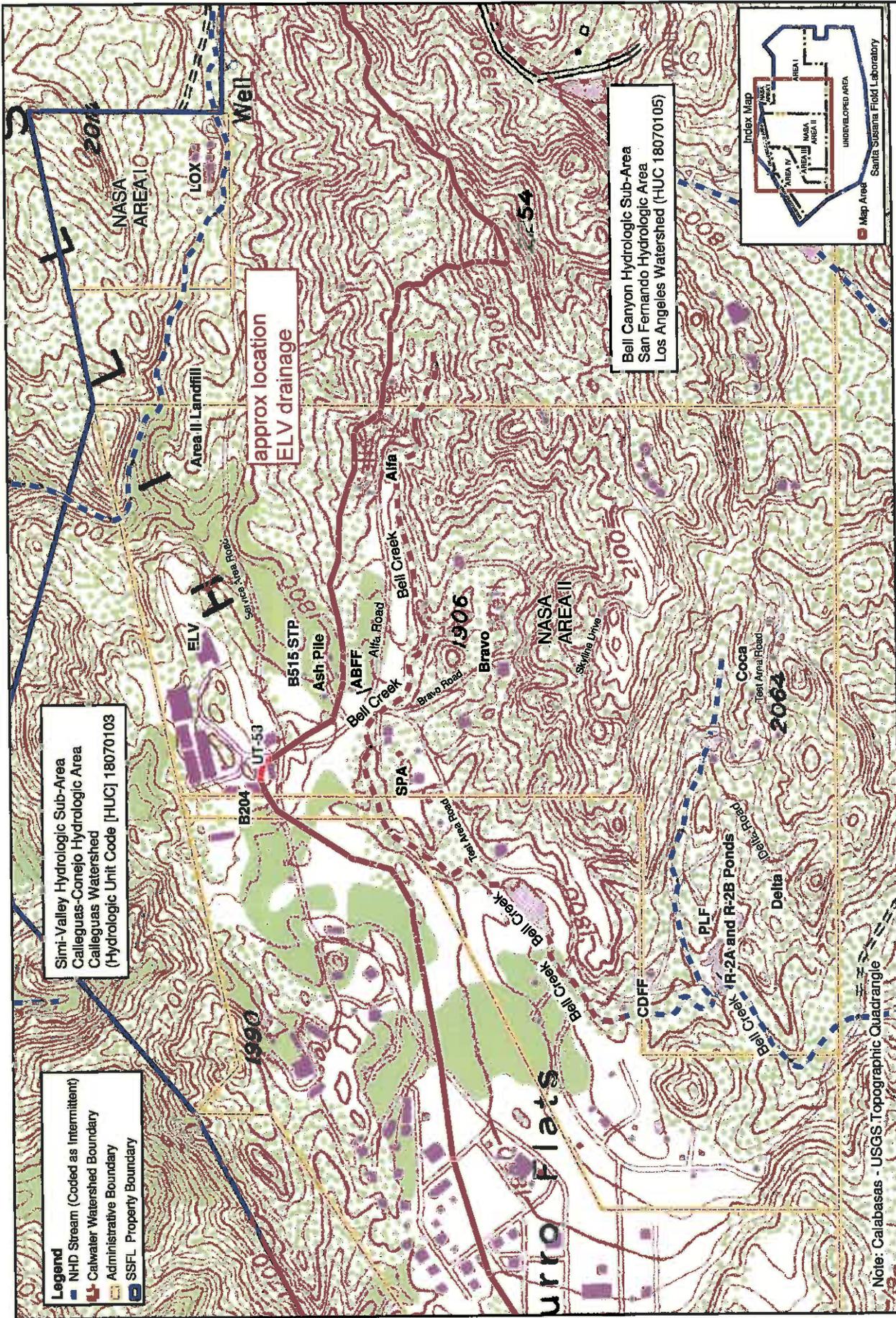
Figure 1-1
 Regional Map
 NASA Wetlands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California

11-Feb-2012
 A. Gentry

Map Source: NASA and ESR® Data & Maps 2009

Map Date: 11/20/11





Legend

- NHD Stream (Coded as Intermittent)
- Calwater Watershed Boundary
- Administrative Boundary
- SSFL Property Boundary

Simi-Valley Hydrologic Sub-Area
 Calleguas-Conejo Hydrologic Area
 Calleguas Watershed
 (Hydrologic Unit Code [HUC] 18070103)

approx location
 ELV drainage

Bell Canyon Hydrologic Sub-Area
 San Fernando Hydrologic Area
 Los Angeles Watershed (HUC 18070105)

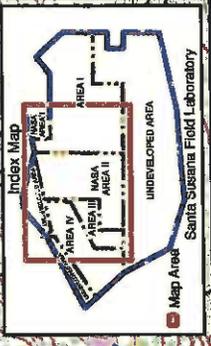
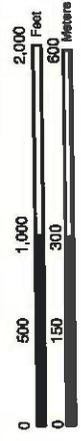
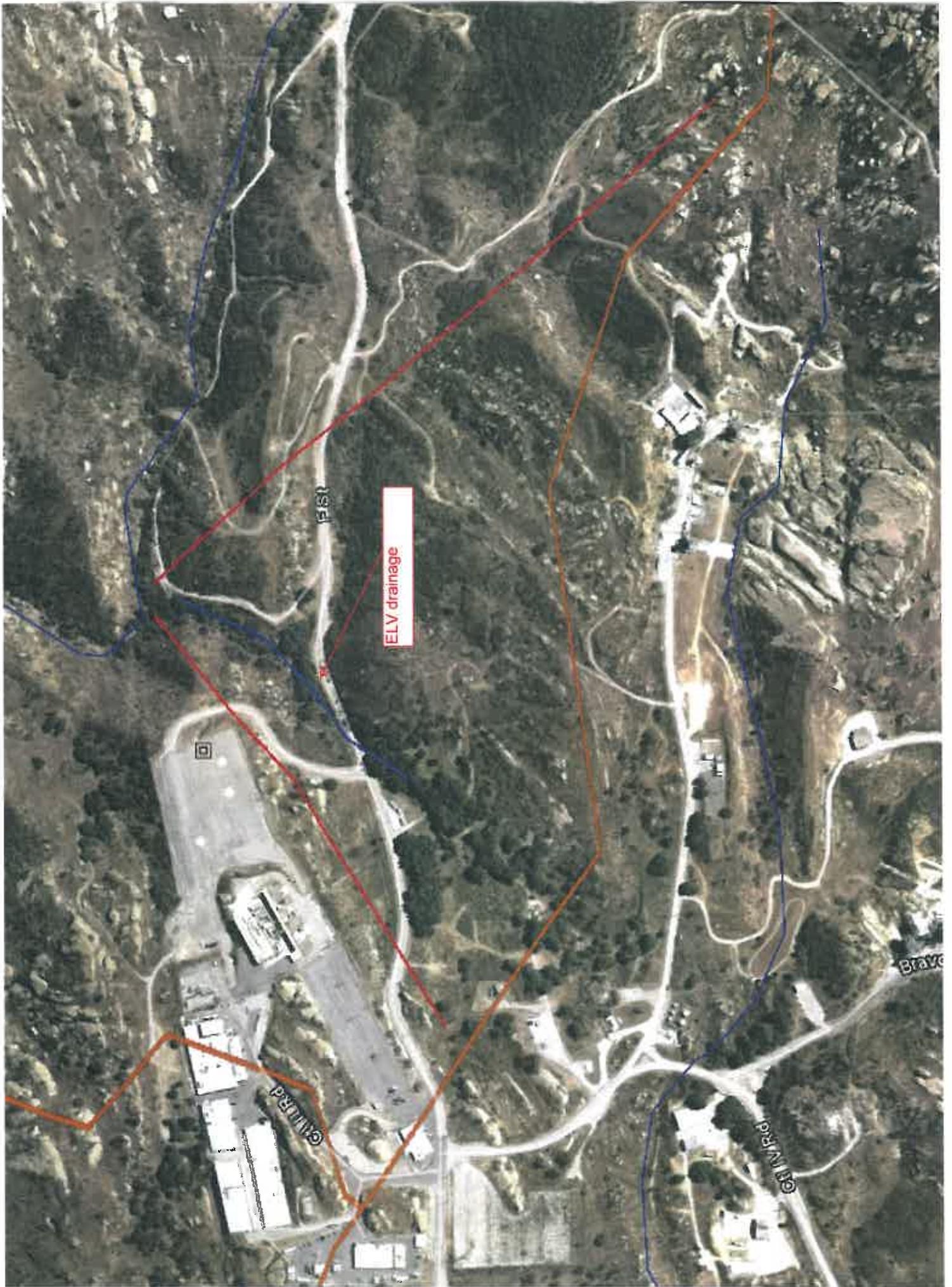


Figure D-1
 USGS Quadrangle Topographic Map and NHD Information
 NASA Wetlands and Waters of the U.S. Delineation Report
 Santa Susana Field Laboratory
 Ventura County, California

Map Date: 01/2012
 Project: 18070103
 Date: 01/2012



Note: Calabasas - USGS Topographic Quadrangle



ELV drainage

PST

GAIN Rd

10th Rd

Brave