Appendix A. Citations

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Appendix B. Glossary of Terms

Glossary of Terms

Adaptive Management	The rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities. A process that uses feedback from refuge research and monitoring and evaluation of management actions to support or modify objectives and strategies at all planning levels.
Alternatives	Different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the Refuge System mission, and resolving issues.
Biological Diversity	The variety of life, including the variety of living organisms, the genetic differences among them, and the communities in which they occur.
Biological Integrity	Biotic composition, structure, and function at the genetic, organism, and community levels consistent with natural conditions, including the natural biological processes that shape genomes, organisms, and communities.
CFR	Code of Federal Regulations.
Compatible Use	A wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge unit (Service Manual 603 FW 3.6).
Comprehensive Conservation Plan (CCP)	A document that: (1) describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; (2) helps fulfill the mission of the Refuge System; (3) maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; (4) helps achieve the goals of the National Wilderness Preservation System; and (5) meets other mandates.
Concern	See Issue.
Coordination Area	A wildlife management area made available to a State, by "(A) cooperative agreement between the United States Fish and Wildlife Service and the State fish and game agency pursuant to Section 4 of the Fish and Wildlife Coordination Act (16 U.S.C. 664); or (B) long-term leases or agreements pursuant to the Bankhead-Jones Farm Tenant Act (50 Stat. 525; 7 U.S.C. 1010 et seq.)." States manage Coordination Areas, but they are part of the Refuge System. CCPs are not required for Coordination Areas.
Cultural Resource Overview	A comprehensive document prepared for a field office that discusses, among other things, an area's prehistory and cultural history, the nature and extent of known cultural resources in the area, relevant previous research, management objectives, and resource management conflicts or issues, and provides a general statement on how program objectives should be met and conflicts resolved. An overview should reference or incorporate information from a field offices background or literature search as described in Section VIII of the Cultural Resource Management Handbook (Service Manual 614 FW 1.7).

Cultural Resource Inventory	A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. There are various levels of cultural resources inventories, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, and sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in 36 CFR 60.4 (Service Manual 614 FW 1.7).
Designated Wilderness Area	An area designated by the United States Congress for management as part of the National Wilderness Preservation System (Service Manual 610 FW 1.5).
Ecological Integrity	The integration of biological integrity, natural biological diversity, and environmental health; replication of natural ecological conditions.
Ecosystem	A biological community together with its environment, functioning as a unit. For administrative purposes, we have designated 53 ecosystems covering the United States and its possessions. These ecosystems generally correspond with watershed boundaries, and their sizes and ecological complexity vary.
Ecosystem Approach	An approach to conservation and restoration that focuses on protecting or restoring the natural function, structure, and species composition of an ecosystem, recognizing that all components are interrelated.
Environmental Health	Abiotic composition, structure, and function of the environment consistent with natural conditions, including the natural abiotic processes that shape the environment.
Environmental Impact Statement (EIS)	A detailed written statement, required by section 102(2)(C) of the National Environmental Policy Act, that analyzes the environmental impacts of a proposed action, including unavoidable adverse effects of the project, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).
Environmental Assessment (EA)	A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose of and need for an action and the reasonable alternatives to the action, and analyzes the action's potential impacts in sufficient detail to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).
Finding of No Significant Impact (FONSI)	A document prepared in compliance with the National Environmental Policy Act and supported by an environmental assessment that briefly explains why a Federal action will have no significant effect on the natural or human environment (40 CFR 1508.13).
Goal	Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units.
Issue	Any unsettled matter that requires a management decision, such as an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict between uses, public concern, or the presence of an undesirable resource condition.

Management Alternative	See Alternative.
Management Concern	See Issue.
Management Opportunity	See Issue.
Mission Statement	Succinct statement of the unit's purpose and reason for being (Region 7 Planning Staff).
National Wildlife Refuge (refuge)	A designated area of land or water, or an interest in land or water, within the Refuge System (excluding Coordination Areas). Find a complete listing of all units of the Refuge System in the current Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service.
National Wildlife Refuge System Mission (mission)	"The mission of the System is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."
National Environmental Policy Act of 1969 (NEPA).	Requires all agencies, including the Service, to examine the environmental impacts of their actions and to incorporate environmental information and public participation into the planning and implementation of all actions. Federal agencies must integrate NEPA compliance with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (40 CFR 1500).
National Wildlife Refuge System, Refuge System, or System	Various categories of lands, waters, and interests therein that are administered by the Secretary of the Interior for the protection, conservation, and where appropriate, restoration of fish and wildlife, including species that are threatened with extinction; includes wildlife ranges, game ranges, and wildlife management or waterfowl production areas.
No Action Alternative	An alternative under which existing management would be continued.
Non-Priority Public Uses	Any use other than a compatible wildlife-dependent recreational use.
Notice of Intent (NOI)	A notice that an environmental impact statement will be prepared and considered (40 CFR 1508.22). Published in the Federal Register.
Objective	A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. Objectives should be attainable, time-specific, and measurable.
Opportunities	Potential solutions to issues.
Planning Area	The area upon which a planning effort will focus. A planning area may include lands outside existing planning unit boundaries currently under study for future inclusion in the Refuge System and/or partnership planning efforts. It also may include watersheds or ecosystems that are outside our jurisdiction but affect the planning unit. At a minimum, the planning area includes all lands within the approved boundary of a refuge.

Planning Team	Planning teams are interdisciplinary in membership and function. Teams generally consist of a Planning Team Leader, the Refuge Manager and staff biologists, a state natural resource agency representative, and other appropriate program specialists (e.g., social scientist, ecologist, recreation specialist). We also will ask other Federal and Tribal natural resource agencies to provide team members, as appropriate. The planning team prepares the CCP and appropriate NEPA documentation.
Planning Unit	A single refuge, an ecologically or administratively related refuge complex, or a distinct unit of a refuge. The planning unit also may include lands currently outside refuge boundaries.
Preferred Alternative	The Service's selected alternative at the draft CCP stage.
Prescribed Fire	The application of fire to wildland fuels to achieve identified land use objectives (Service Manual 621 FW 1.7). May be ignited naturally or intentionally.
Priority Public Uses	Compatible wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) are the priority general public uses of the System and shall receive priority consideration in refuge planning and management.
Proposed Action	The Service's proposed action for Comprehensive Conservation Plans is to prepare the CCP and implement the preferred alternative it outlines.
Public Involvement	The process by which interested and affected individuals, organizations, agencies, and governmental entities participate in the planning and decision-making process.
Public Involvement Plan	Broad long-term guidance for involving the public in the comprehensive planning process.
Public	Individuals, organizations, and groups; officials of Federal, State, and local government agencies; Native American tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.
Purposes of the Refuge	"The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit." For refuges that encompass wilderness designated by Congress, the purposes of the Wilderness Act are additional purposes of the refuge.
Refuge Operating Needs System (RONS)	The Refuge Operating Needs System is a national database that lists the unfunded operational needs of each refuge. We include projects required to implement approved plans and meet goals, objectives, and legal mandates.
Refuge Purposes	The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, a refuge unit, or refuge subunit (Service Manual 602 FW 1.5).
Refuge Goal	See Goal.

Step-Down Management Plan	A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, safety) or groups of related subjects. It describes strategies and implementation schedules for meeting CCP goals and objectives.
Stakeholders	The people who have a direct interest or involvement in something (usually open space or urban lands or a plan for the management of such lands). Stakeholders in a CCP usually include Service staff and members of the local community.
Strategy	A specific action, tool, technique, or combination of actions, tools, and techniques used to meet unit objectives.
Tiering	The practice of covering general matters in broader ("programmatic") environmental impact statements with subsequent narrower ("focused") statements addressing specific issues; focused documents incorporate by reference the general discussions in the broader document (40 CFR 1508.28).
Trust	Describes a resource that is committed to the stewardship of a legally responsible agency (trustee agency) to be cared for or preserved in the public interest. E.g., *trust species*.
Undertaking	A project or plan initiated or overseen by a Federal agency; roughly equivalent to the NEPA usage of *action*.
Unit Objective	See Objective.
U.S. Fish and Wildlife Service Mission	Our mission is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.
Vision Statement	A concise statement of the desired future condition of the planning unit, based primarily upon the Refuge System mission, specific refuge purposes, and other relevant mandates (Service Manual 602 FW 1.5).
Wilderness	See Designated Wilderness.
Wilderness Review	The process we use to determine whether we should recommend Refuge System lands and waters to Congress for wilderness designation. The wilderness review process consists of three phases: inventory, study, and recommendation. The inventory is a broad look at the refuge to identify lands and waters that meet the minimum criteria for wilderness. The study evaluates all values (ecological, recreational, cultural), resources (e.g., wildlife, water, vegetation, minerals, soils), and uses (management and public) within the Wilderness Study Area. The findings of the study determine whether we will recommend the area for designation as wilderness.
Wildfire	A free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands (Service Manual 621 FW 1.7).
Wildland Fire	Every wildland fire is either a wildfire or a prescribed fire (Service Manual 621 FW 1.3).

Wildlife-Dependent Recreational Use	"A use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation." These are the six priority public uses of the Refuge System as established in the National Wildlife Refuge System Administration Act, as amended. Wildlife-dependent recreational uses, other than the six priority public uses, are those that depend on the presence of wildlife. We consider these other uses in the preparation of refuge CCPs; however, the six priority public uses will always take precedence.
Vision Statement	A concise statement of what the planning unit should be, or what we hope to do, based primarily upon the Refuge System mission, specific refuge purposes, and other mandates. We will tie the vision statement for the refuge to the mission of the Refuge System, the purpose(s) of the refuge, the maintenance or restoration of the ecological integrity of each refuge and the Refuge System, and other mandates.

Appendix C. Refuge Plant List and Special-Status Species on the Refuge

APPENDIX C

Refuge Plant List and Special-Status Species on the Refuge

Table C-1. Refuge Plant List.

This list of plant species was generated by California Native Plant Society during a partial survey of the Refuge in 1992, with a few later additions by Refuge staff. It is not intended to be a definitive list.

ABRONIA LATIFOLIA - YELLOW SAND VERBENA
ABRONIA UMBELLATA - PINK SAND VERBINA/BEACH VERBENA
ACER NEGUNDO - BOX ELDER
ACHILLEA MILLEFOLIUM VAR. ARENICOLA - (=A. BOREALIS SSP. A.) COAST YARROW/SAND MILFOIL
AGOSERIS APARGIOIDES VAR. EASTWOODAE - AGOSERIS
ALNUS RHOMBIFOLIA - ALDER
AMBROSIA CHAMISSONIS - (=FRANSERIA C./F. C. SSP. BIPINNATISECTA) BEACH BUR
AMMOPHILA ARENARIA - BEACH GRASS
AMSINCKIA SPECTABILIS - FIDDLENECK/SEASIDE AMSINCKIA
ANAGALLIS ARVENSIS - SCARLET PIMPERNEL
ARMERIA MARITIMA SSP. CALIFORNICA - THRIFT
ARTEMISIA CALIFORNICA - CALIFORNIA SAGEBRUSH
ARTEMISIA DOUGLASIANA - MUGWORT
ARTEMISIA PYCNOCEPHALA - BEACH SAGEWORT
ASTER SUBSPICATUS - DOUGLAS' ASTER
ATRIPLEX CALIFORNICA - SALTBUSH
ATRIPLEX LENTIFORMIS - QUAIL BRUSH
ATRIPLEX LEUCOPHYLLA - WHITELEAF SALTBUSH
ATRIPLEX PATULA SSP. HASTATA - ORACHE/FAT HEN
BACCHARIS DOUGLASII - DOUGLAS' BACCHARIS
BACCHARIS GLUTINOSA - (=B. VIMINEA) WATER-WALLY/MULE FAT/SEEP-WILLOW
BACCHARIS PILULARIS VAR. CONSANGUINEA - COYOTE BRUSH
BRASSICA RAPA SSP. OLIFERA - (=B. CAMPESTRIS) FIELD MUSTARD
BROMUS CARINATUS- BROME
CAKILE MARITIMA - SEA ROCKET
CALYSTEGIA SOLDANELLA - BEACH MORNING-GLORY
CAMISSONIA CHEIRANTHIFOLIA - BEACH PRIMROSE
CARDIONEMA RAMOSISSIMUM - SANDMAT
CAREX OBNUPTA - SEDGE
CARPOBOTUS AEQUILATERUS - (=MESEMBRYANTHEMUM CHILENSIS) SEA FIG
CASTILLEJA LATIFOLIA - INDIAN PAINT BRUSH/SEASIDE PAINTED CUP
CENTAUREA MELITENSIS - TOCALOTE
CHENOPODIUM ALBUM - LAMB'S QUARTERS
CHENOPODIUM AMBROSIOIDES - (=C. A. VAR. SUFFRUTICOSUM) MEXICAN TEA
CHENOPODIUM CALIFORNICUM - GOOSEFOOT/SOAP PLANT
CHLOROGALUM POMERIDIANUM VAR. DIVARICATUM - SOAP ROOT/AMOLE
CHORIZANTHE CUSPIDATA VAR. MARGINATA - SAN FRANCISCO SPINE-FLOWER
CHORIZANTHE PUNGENS - MONTEREY SPINE-FLOWER
CIRSIUM VULGARE - BULL THISTLE
CLAYTONIA PERFOLIATA - (=MONTIA P./ C. P. VAR. NUBIGENA) MINERS LETTUCE
CORETHROGYNE CALIFORNICA - BEACH ASTER
MARAH FABACEUS - MANROOT/WILD CUCUMBER
MEDICAGO POLYMORPHA - (=M. HISPIDA/V.CONFINIS/V. BREVISPINA) BUR-CLOVER
MELILOTUS ALBA - WHITE SWEET-CLOVER
MELILOTUS INDICA - SWEET-CLOVER
CORETHROGYNE LEUCOPHYLLA - BRANCHING BEACH ASTER
CORNUS SERICEA - CREEKSIDE DOGWOOD
COTULA CORONOPIFOLIA - BRASS BUTTONS
CRASSULA ERECTA - (=TILLAEA E.) SAND PIGMYWEED
CRYPTANTHA LEIOCARPA - COAST CRYPTANTHA
CUSCUTA SALINA - ALKALI DODDER
CUSCUTA SP. - DODDER
DESCHAMPSIA CAESPITOSA - HAIR GRASS
DISTICHLIS SPICATA - (=D. S. V. STOLONIFERA) SALT GRASS
DUDLEYA CAESPITOSA - SEA LETTUCE
DUDLEYA FARINOSA - LIVE FOREVER/BLUFF LETTUCE
ELYMUS GLAUCUS - BLUE WILD RYE
ELYMUS MOLLIS - DUNE RYE GRASS
ELYMUS PACIFICUS - GOULD'S RYE GRASS
EPILOBIUM CILIATHUM SSP. GLANDULOSUM - (=E. ADENOCAULON V. OCCIDENTALE) NORTHERN WILLOW HERB
EPILOBIUM CILIATUM SSP. WATSONII - (=E. W./E. W. V. FRANCISCANUM COAST COTTONWEED ERICAMERIA
ERICOIDES - (=HAPLOPAPPUS E.& SSP. BLAKEI) MOCK HEATHER
ERIOGONUM LATIFOLIUM - BEACH BUCKWHEAT
ERIOGONUM PARVIFOLIUM - (=E. P. SSP. LUCIDUM) DUNE BUCKWHEAT
ERIOPHYLLUM STAECHADIFOLIUM - (=E. S. VAR. ARTEMISIIFOLIUM) LIZARD TAIL/GOLDEN YARROW
ERODIUM CICUTARIUM - RED-STEMMED FILAREE
ERYSIMUM AMMOPHILUM - DUNE WALLFLOWER
ESCHSCHOLZIA CALIFORNICA VAR. MARITIMA - CALIFORNIA/BEACH POPPY
FRANKENIA GRANDIFOLIA - ALKALI HEATH
GALIUM SP. - BEDSTRAW
GILIA TENUIFLORA - SLENDER-FLOWERED GILIA
GNAPHALIUM CALIFORNICUM - CALIFORNIA EVERLASTING
GNAPHALIUM CHILENSE - COTTON-BATTING PLANT
GNAPHALIUM PALUSTRE - EVERLASTING
GRINDELIA LATIFOLIA - COAST GUM PLANT
HELIOTROPIUM CURASSAVICUM VAR. OCULATUM - SEASIDE HELIOTROPE
HORDEUM BRACHYANTHERUM - BARLEY
JAUMEA CARNOSA - FLESHY MARSH-HERB/FLESHY JAUMEA
JUNCUS BUFONIOS - TOAD RUSH
JUNCUS LESEURII - SALT RUSH
LATHYRUS LITTORALIS - BEACH PEA
LINARIA TEXANA - (=L. CANADENSIS VAR. TEXANA) TOADFLAX
LOTUS HEERMANNII VAR. ERIOPHORUS - WOOLLY LOTUS
LOTUS SCOPARIUS - DEERWEED
LUPINUS ALBIFRONS - SILVER LUPINE
LUPINUS CHAMISSONIS - BLUE BUSH LUPINE
MALVA NICAEENSIS - BULL MALLOW
MALVA PARVIFLORA - CHEESEWEED

OENANTHE SARMENTOSA - AMERICAN WATER-LOVAGE
OROBANCHE CALIFORNICA - (=O. GRAYANA VAR. NELSONII & VIOLACEA)CALIFORNIA BROOMRAPE
ORTHOCARPUS FAUCIBARBATUS VAR. ALBIDUS - SMOOTH ORTHOCARPUS
PARAPHOLIS INCURVA - SICKLE GRASS
PHACELIA DISTANS - WILD HELIOTROPE
PHACELIA RAMOSISSIMA - (=P. R. VAR. MONTEREYENSIS) BRANCHING PHACELIA
PHALARIS AQUATICA - HARDING GRASS
PHRAGMITES AUSTRALIS - (=P. COMMUNIS) COMMON REED
PLAGIOBOTHRYS SP. - POPCORN FLOWER
PLANTAGO CORONOPUS - CUT-LEAVED PLANTAIN
PLATANUS RACEMOSA - SYCAMORE
POA DOUGLASII - DOUGLAS' BLUE GRASS
POLYGONUM AMPHIBIUM - (=P. COCCINEUM) SWAMP KNOTWEED
POLYGONUM AVICULARE - KNOTWEED
POLYGONUM PARONYCHIA - BEACH KNOTWEED
POLYPOGON MONSPELIENSIS - RABBITS-FOOT GRASS
POPULUS FREMONTII - COTTONWOOD
POTETILLA EGEDEI - (=P. E. VAR. GRANDIS) PACIFIC SILVERWEED
PSORALEA ORBICULARIS - ROUNDLEAF PSORALEA
ROSA CALIFORNICA - CALIFORNIA WILD ROSE
RUBUS URSINUS - (=R. VITIFOLIUS) PACIFIC BLACKBERRY
RUMEX CONGLOMERATUS - GREEN OR CLUSTERED DOCK
RUMEX CRASSUS - DOCK
RUMEX CRISPUS - CURLY DOCK
RUMEX MARITIMUS VAR. PERSICARIOIDES - (=R. P.) PERSIAN DOCK
RUMEX OCCIDENTALIS VAR. FENESTRATUS - (=R. F.) MARSH DOCK
SALIX HINDSIANA - SAND BAR WILLOW
SALIX LASIOLEPIS - ARROYO WILLOW
SARCOCORNIA PACIFICA - (=SALICORNIA P.) PICKLEWEED/ SAMPHIRE
SCIRPUS SP. - TULE
SIDA HEDERACEA - (=S. LEPROSA VAR. H.) ALKALI MALLOW
SILENE SP. - CATCHFLY
SOLIDAGO OCCIDENTALIS - (=EUTHAMIA O.) WESTERN GOLDENROD
SONCHUS OLERACEUS - COMMON SOW THISTLE
SORGHUM HALEPENSE - JOHNSON GRASS
SPERGULARIA BOCCONII - BOCCONE'S SAND SPURREY
SPERGULARIA RUBRA - PURPLE SAND SPURRY
STACHYS CHAMISSONIS - HEDGE NETTLE
STACHYS SP. - HEDGE NETTLE
STELLARIA LITTORALIS - CHICKWEED
TETRAGONIA TETRAGONIOIDES - (=T. EXPANSA) NEW ZEALAND SPINACH
TOXICODENDRON DIVERSILOBUM - (=RHUS D.) POISON OAK
TYPHA LATIFOLA - BROAD-LEAVED CAT-TAIL/SOFT FLAG
VERONICA ANAGALLIS-AQUATICA - WATER SPEEDWELL
VULPIA OCTOFLORA - (=FESTUCA O.) SIX WEEKS FESCUE
XANTHIUM STRUMARIUM VAR. CANADENSE - COCKLEBUR

Table C-2. Special-status species on the Refuge.

Common and Scientific Name	*Legal Status*[a] *Federal/BCC/State/CNPS*	*Occurrence at Salinas River NWR*
Plants		
Sandmat manzanita *Arctostaphylos pumila*	–/–/1B	Not reported to occur at the Refuge but suitable habitat present.
Monterey spineflower *Chorizanthe pungens* var. *pungens*	T/–/1B	Occurs on the Refuge; suitable habitat abundant on dunes and species also occurs nearby.
Robust spineflower *Chorizanthe robusta* var. *robusta*	E/–/1B	No populations known to occur at the Refuge; occurs in dunes immediately north and south of Refuge.
Seaside bird's-beak *Cordylanthus rigidus* ssp. *littoralis*	–/E/1B	Not reported to occur at the Refuge; suitable habitat present.
Eastwood's goldenbush *Ericameria fasciculata*	–/–/1B	Not reported to occur at the Refuge; suitable habitat present.
Coast wallflower *Erysimum ammophilum*	–/–/1B	Not reported to occur at the Refuge; suitable habitat present.
Menzies' wallflower *Erysimum menziesii* ssp. *menziesii*	E/E/1B	Probably occurred historically at the Refuge; no populations currently known from the site.
Yadon's wallflower *Erysimum menziesii* ssp. *yadonii*	E/E/1B	A population of this species was located on the Refuge in the 1970s, but was likely extirpated in 1980 by natural disturbance of the central foredune community.
Monterey gilia *Gilia tenuiflora* ssp. *arenaria*	E/T/1B	Occurs on the Refuge and at Salinas River State Beach north of the Refuge.
Tidestrom's lupine *Lupinus tidestromii*	E/E/1B	Not reported to occur at the Refuge; suitable habitat present.
Wildlife		
Smith's blue butterfly *Euphilotes (=Shijimaeoides) enoptes smithi*	E/–	Occurs at the Refuge.
Steelhead *Oncorhynchus mykiss*	T/–	Collected in Salinas River Lagoon in 1963 and 1991. Small numbers likely occur at the Refuge.
Southwestern pond turtle *Clemmys marmorata pallida*	–/SSC	No known occurrences at the Refuge; occurrences have been reported in the vicinity.
Black legless lizard *Anniella pulchra nigra*	–/SSC	Occurs at the Refuge in the central foredune and central dune scrub communities.
Common loon *Gavia immer*	–/SSC	Often forages in the Salinas River Lagoon during winter migration.
American white pelican *Pelecanus erythrorhynchos*	–/SSC	A small flock often forages and roosts in the Salinas River Lagoon from July through March.
California brown pelican *Pelecanus occidentalis*	E/E	Occurs year-round at the Refuge; most common between April and December.
Double-crested cormorant *Phalacrocorax auritus*	–/SSC	Roosts and forages around the Salinas River Lagoon.
White-faced ibis *Plegadis chihi*	--/SSC	Has been observed at the Refuge during fall and winter migrations.
Osprey *Pandion haliaetus*	–/SSC	Often forages at the Refuge during fall and spring migrations.
White-tailed kite *Elanus leucurus*	–/FP	Often forages at the Refuge during winter; known to nest in the vicinity.
Bald eagle *Haliaeetus leucocephalus*	T/E	May forage occasionally at the Salinas River Lagoon during fall, winter, and spring.
Northern harrier *Circus cyaneus*	–/SSC	Commonly forages at the Refuge; may nest onsite.
Sharp-shinned hawk *Accipiter striatus*	–/SSC	Uncommon winter visitor to the area; forages at the Refuge.

Table C-2. Special-status species on the Refuge.

Common and Scientific Name	*Legal Status*[a] *Federal/BCC/State/CNPS*	*Occurrence at Salinas River NWR*
Cooper's hawk *Accipiter cooperii*	–/SSC	Uncommon winter visitor to the area; forages at the Refuge.
Golden eagle *Aquila chrysaetos*	PR/SSC, FP	May forage occasionally at the Refuge.
Prairie falcon *Falco mexicanus*	–/R,C/SSC	Uncommon winter visitor to the area; forages at the Refuge.
Merlin *Falco columbarius*	–/SSC	Uncommon winter visitor to the area; forages at the Refuge.
American peregrine falcon *Falco peregrinus anatum*	–/R,C/E	Uncommon winter visitor to the area; forages at the Refuge.
Whimbrel *Numenius phaeopus*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
California clapper rail *Rallus longirostris obsoletus*	E/E/FP	Reported once from the Refuge; no suitable nesting habitat is found onsite.
Greater sandhill crane *Grus canadensis tabida*	–/T	Very rare spring and fall migrant at the Refuge and in the vicinity.
Western snowy plover *Charadrius alexandrinus nivosus*	T/SSC (coastal)	Year-round resident at the Refuge. The beach provides one of the most important breeding areas for this species in the Monterey Bay area.
Mountain plover *Charadrius montanus*	C/R,C/SSC	Rare winter visitor to the Refuge.
Long-billed curlew *Numenius americanus*	–/R,C/SSC	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
Red knot *Calidris canutus*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
Marbled godwit *Limosa fedoa*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
Short-billed dowitcher *Limnodromus griseus*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
California gull *Larus californicus*	–/SSC	Very common visitor to the Refuge.
California least tern *Sterna antillarum (=albifrons) browni*	E/E	Historically nested onsite; now an occasional spring migrant.
Elegant tern *Sterna elegans*	--/R,C/SSC	A large local population roosts and forages at the Refuge.
Black skimmer *Rynchops niger*	–/R,C/SSC	Occasionally forages in the Salinas River Lagoon. Potential nesting habitat is present.
Short-eared owl *Asio flammeus*	–/SSC	Suitable nesting and foraging habitat occurs in tall grassland habitat at the Refuge.
Western burrowing owl *Athene cunicularia hypugea*	--/SSC	Rare fall migrant and occasional wintering birds in the vicinity of the Refuge.
Willow flycatcher *Empidonax traillii*	--/E	Rare winter and spring migrant in central coast arroyo willow riparian forest near the Refuge.
Black swift *Cypseloides niger*	–/R,C/SSC	Rare spring and fall migrant through the Refuge.
Loggerhead shrike *Lanius ludovicianus*	–/R,C/SSC	Common resident at the Refuge.
California yellow warbler *Dendroica petechia brewsteri*	–/SSC	May nest in central coast arroyo willow riparian forest near the Refuge.
Purple martin *Progne subis*	–/SSC	Rare spring and late-summer migrant through the Refuge.

Table C-2. Special-status species on the Refuge.

Common and Scientific Name	*Legal Status*[a] *Federal/BCC/State/CNPS*	*Occurrence at Salinas River NWR*
Common yellowthroat *Geothlypis trichas sinuosa*	–/C/SSC	May nest in central coast arroyo willow riparian forest near the Refuge.
Song sparrow *Melospiza melodia*	–/C/–	Common resident at the Refuge.
Bank swallow *Riparia riparia*	–/T	Rare spring and summer migrant through the Refuge.
Yellow-breasted chat *Icteria virens*	–/SSC	Rare spring and fall migrant in riparian scrub at the Refuge.
Tricolored blackbird *Agelaius tricolor*	–/R,C/SSC	Occasionally forages at the Refuge.
Southern sea otter *Enhydra lutris nereis*	T/FP	Occasionally observed in offshore areas of the Refuge

[a]Status explanations:

Federal

E = listed as endangered under the Federal Endangered Species Act.
T = listed as threatened under the Federal Endangered Species Act.
PE = proposed for listing as endangered under the Federal Endangered Species Act.
PR = protected under the Golden Eagle Protection Act.
PT = proposed for listing as threatened under the Federal Endangered Species Act.
C = species for which the Service has sufficient information on file regarding biological vulnerability and threat(s) to support issuance of a proposed rule to list.
– = no listing.

Birds of Conservation Concern(BCC)

Species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973. This is a congressionally mandated list, compiled by USFWS as mandated by the Fish and Wildlife Conservation Act (1988 amendment).

R = Regional.
C = South Pacific Coast California.

State

E = listed as endangered under the California Endangered Species Act.
T = listed as threatened under the California Endangered Species Act.
R = listed as rare under the California Native Plant Protection Act. (This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.)
C = species is a candidate for listing under the California Endangered Species Act.
SSC = California State species of special concern.
FP = species is fully protected in California under California Fish and Game Code Section 3511 (birds), 4700 (mammals), or 5050 (reptiles and amphibians).
– = no listing.

California Native Plant Society

1A = List 1A (species presumed extinct in California).
1B = List 1B (species rare, threatened, or endangered in California and elsewhere).
2 = List 2 (species rare, threatened, or endangered in California but more common elsewhere).
3 = List 3 (species about which more information is needed to determine their status).
4 = List 4 (species of limited distribution).
– = no listing.

Sources: California Native Plant Society 2001, California Department of Fish and Game 2002.

Appendix D. Relationship between Vegetation Types Used in this CCP and National Vegetation Classification System

Matrix Showing Relationship between Vegetation Types Used in this CCP and National Vegetation Classification System

CCP Vegetation Type (Holland 1986)	*National Vegetation Classification System (Federal Geographic Data Committee 1997)*		
	Alliance	*Formation*	*Class – Subclass – Group*
Northern coastal salt marsh	*Salicornia* (*bigelovii*, *virginica*) tidal herbaceous alliance	Tidal temperate perennial forb vegetation	V.B.2. Herbaceous – Perennial forb – Temperate or subpolar perennial forb
Coast brackish marsh	n/a	Tidal temperate or subpolar grassland	V.A.5. Herbaceous – Perennial graminoid vegetation – Temperate or subpolar grassland
Central coast riparian scrub	*Salix lasiolepis* temporarily flooded shrubland alliance	Temporarily flooded cold-deciduous shrubland	III.B.2. Shrubland – Deciduous shrubland – Cold deciduous shrubland
Central foredunes	n/a	Dunes with sparse herbaceous vegetation	VII.C.1. Sparse vegetation – Unconsolidated material sparse vegetation – Sparsely vegetated sand dunes
Central dune scrub	*Lupinus arboreus* shrubland alliance	Temperate broad-leaved evergreen shrubland	III.A.2. Shrubland – Evergreen shrubland – Temperate broad-leaved evergreen shrubland
Coyote brush scrub	*Baccharis pilularis* shrubland alliance	Microphyllous evergreen shrubland	III.A.4. Shrubland – Evergreen shrubland – Microphyllous evergreen shrubland

Appendix E. Planning Team Members and Persons Responsible for Preparing this Document

APPENDIX E

List of Planning Team Members and Persons Responsible for Preparing this Document

U.S. Fish and Wildlife Service

Christopher Barr*	Refuge Manager, Guadalupe-Nipomo Dunes NWR (Former Refuge Manager, Salinas River NWR)
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Ivette Loredo*	Refuge Manager, Salinas River NWR
Matt Gay*	Former Chief of Public Use, San Francisco Bay NWR Complex
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Debby Jew	Mailing List
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* Member of CCP Planning Team

APPENDIX E – *List of Planning Team Members and Persons Responsible for Preparing this Document*

Appendix F. Wilderness Review

Wilderness Review

A wilderness review is the process used by the Service to determine whether or not to recommend lands or waters in the National Wildlife Refuge System to Congress for designation as wilderness. The Service is required to conduct a wilderness review for each refuge as part of the CCP process. Lands or waters that meet the minimum criteria for wilderness are identified in a CCP and further evaluated to determine whether they merit recommendation for inclusion in the Wilderness System.

According to Section 13 of the Service's Director's Order No. 125 (12 July 2000), in order for a refuge to be considered for wilderness designation, all or part of the refuge must:

- Be affected primarily by the forces of nature, with the human imprint substantially unnoticeable;
- Have outstanding opportunities for solitude or a primitive and unconfined type of recreation;
- Have at least 5,000 contiguous acres (2,000 ha) or be sufficient in size to make practicable its preservation and use in an unimpaired condition, or be capable of restoration to wilderness character through appropriate management, at the time of review; or
- Be a roadless island.

The Salinas River National Wildlife Refuge (Refuge) comprises 366 acres, which is much smaller than the area required for designation as wilderness. Moreover, the Refuge contains much evidence of past human use, including roads, an abandoned bomb shelter, and an early successional plant community that began to develop following the cessation of agriculture on the site. For these reasons, the Refuge does not meet the criteria for wilderness designation.

Appendix G. Compatibility Determinations

Compatibility Determination

Use: Waterfowl Hunting

Refuge Name: Salinas River National Wildlife Refuge
Monterey County, California
San Francisco Bay National Wildlife Refuge Complex

Establishing and Acquisition Authority(ies):
An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes (16 U.S.C. 667b).

Refuge Purpose(s): "Particular value in carrying out the national migratory bird management program" (16 U.S.C. 667b).

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): The Salinas River National Wildlife Refuge (Refuge) proposes to continue to provide limited opportunities for hunting that are compatible with the Refuge purpose. Hunting is identified as a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Improvement Act of 1997. Hunting of waterfowl, including Canada geese (*Branta canadensis*), mallards (*Anas platyrhynchos*), American coots (*Fulica americana*), and common moorhens (*Gallinula chloropus*), would be permitted in the designated hunting area along the south bank of the Salinas River. The Refuge would remain closed to all other forms of hunting and target shooting.

The Refuge proposes to allow waterfowl hunting along the Salinas River, on approximately 38 acres of the Refuge or approximately 10% of the entire Refuge. This proposed hunt area represents a 15% reduction from the existing 45 acre hunt area (see Figures 5 and 6 in the Draft CCP). The existing hunt area along the northern 800 linear feet of the Salinas River would be eliminated to minimize disturbance to brown pelicans roosting along the Salinas River lagoon, the area closest to the rivermouth. The hunting area is delineated by signs; only pedestrian access is permitted. During the hunting season, hunting dogs are allowed off leash and under voice control for the purpose of retrieving waterfowl from the river. All firearms must remain unloaded until hunters are within the designated hunt area.

The size of the existing hunting area currently limits hunting use to approximately 15 hunters per day or 250 hunter visits annually; a maximum count of 16 hunters per day was recorded on

opening day in October 1999. Refuge staff estimate 4-6 hunters per day on the Refuge during the waterfowl hunt season, typically from October through January. Hunting use has been, and would be expected to continue to be, heaviest on the weekends and on Wednesdays. The Association of Monterey Bay Area Governments predicts that Monterey County's population will increase by 27% between 2000 and 2015 (www.ambag.org, accessed 5/24/01). Overall use of the Refuge will likely increase proportionally, but hunting use is expected to increase less rapidly than nonconsumptive uses, and may decrease because of the proposed decrease in the size of the hunting area. For additional details about this proposed use, please see the Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan (USFWS 2002) as well as the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001), which are herein incorporated by reference.

Availability of Resources: Adequate funding and staff exist to manage the waterfowl hunting program at the Salinas River National Wildlife Refuge. It is estimated that 10% of a full-time employee would be necessary to provide law enforcement support, maintain the trail, and monitor hunting use. This would be accomplished concurrently with enforcing and monitoring the other priority public uses. Without additional staff time, existing staff could provide periodic law enforcement. Law enforcement support would also be provided by California Department of Fish and Game wardens under a cooperative agreement with the Refuge. Additional staff time would be needed to adequately monitor hunting use on the Refuge. Additional funding would also be needed for the interpretive signs and materials. Those costs are incorporated into the Compatibility Determination for environmental education and interpretation. The Refuge would pursue a variety of funding sources in order to fully support this use, including agreements with other agencies, and grant funding and volunteer assistance for monitoring.

Anticipated Impacts of the Use(s):

Impacts are also discussed in Chapter 5 of the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001).

Endangered and Threatened Species: Human activity, including hunting, can have adverse impacts on rare species that utilize the Refuge for nesting, roosting, or foraging.

The endangered California brown pelican (*Pelecanus occidentalis californicus*) utilizes the lagoon at the mouth of the Salinas River, islands near the river mouth, and portions of the beach strand as roosting sites, particularly from April through December. Disturbance to roosting pelicans can occur in the northern 15% of the existing hunting area, where hunters are in close proximity to the mouth of the river and the northernmost, largest island. Disturbance from hunting dogs and from firearm discharge in close proximity to the roosting area can cause the birds to flush, resulting in stress to roosting birds. Reoccurring disturbance could ultimately cause the birds to abandon this roost site.

The Refuge's dune habitats are known to support several special-status species, including: two federally listed plants, the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*) and the Monterey

spineflower (*Chorizanthe pungens* var. *pungens*); Smith's blue butterfly (*Euphilotes enoptes smithi*) (federally listed as endangered); and the western snowy plover (*Charadrius alexandrinus nivosus*) (federally listed as threatened). Dune habitats on the Refuge are closed to the public, and hunters do not need to walk through dune or beach habitat to access the hunt area. The most direct route to the hunt area is along a trail through the grassland habitat on the Refuge (see Figures 2 and 3 in the CCP). Therefore, negative impacts on these species are not expected.

An Intra-Service Section 7 Consultation was conducted on the entire draft CCP. The resulting Biological Opinion (BO) (USFWS 2002b) concluded that adoption of the preferred alternative is not likely to jeopardize the continued existence of any of the listed species on the Refuge nor adversely modify critical habitat. With regard to hunting, the BO states that the proposed 7-acre reduction of the hunt area would remove hunting activities from within 650 yards of brown pelican roosting sites and should reduce the frequency at which, or eliminate entirely, the potential adverse effects to listed species.

Riparian and Grassland Habitats: The Refuge is actively involved in the restoration of the riparian and grassland habitats near the hunting area. Human activity (hunters accessing the hunt area) has the potential to adversely affect the restoration of these habitats.

Migratory Birds: Human activity may disturb nontarget migratory birds in upland, riparian, and aquatic habitats on the Refuge. Hunters may accidentally take nontarget migratory birds as a result of misidentification. Select numbers of waterfowl belonging to target species would be taken by hunters each season, but this is not expected to result in a significant adverse effect on their populations because of the small number of hunters expected to use the Refuge. Flyway hunting limits are set annually.

Other Biological Resources: Litter discarded by hunters can entangle wildlife or be ingested, resulting in injury or death. Because of the limited number of visitors to the Refuge, this would not pose a significant problem and could be handled with existing staff.

Public Review and Comment: Public review and comment was conducted concurrent with the public review and comment period for the CCP and associated Environmental Assessment. Please refer to Appendix K in the Final CCP (USFWS 2002) for a review of public comments and Refuge responses.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility:
Hunters will be permitted to have no more than 25 shells in their possession while on the Refuge. This will discourage hunters from taking long shots, reducing disturbance and decreasing the possibility of target misidentification. Hunters will also be required to use approved non-toxic shot while on the Refuge.

As discussed in *Description of Use(s)* above, hunting use is expected to increase less rapidly than nonconsumptive uses, and may decrease because of the proposed decrease in the size of the hunting area. Annual monitoring of hunter use and impacts will be implemented. The information gathered will be used to review and possibly revise hunting regulations to enhance the quality and safety of the Refuge's hunting program, and ensure hunting would continue to be compatible with the Refuge purpose and the mission of the National Wildlife Refuge System (System).

The Refuge will maintain a walking trail through the grassland to the hunt area and will install and maintain signs marking the hunt area boundary. In addition, by 2007, interpretive signs and an orientation kiosk will be installed on the Refuge to inform visitors about the Refuge's habitats and wildlife and ways of avoiding adverse impacts, including staying on trails. The walking trail and interpretive signs will minimize disturbance to grassland and riparian habitats by providing easy access to the hunt area and by interpreting the importance and sensitivity of Refuge habitats and restoration efforts. Additional interpretive materials will be installed in the orientation kiosk to interpret Refuge regulations and the laws governing take of migratory waterfowl and to reduce likelihood of take of nontarget species.

The Refuge will maintain an active law enforcement presence, by using Refuge officers and through a cooperative agreement with California Department of Fish and Game, to ensure public compliance with hunting regulations and the stipulations presented herein. The Refuge will increase law enforcement patrols, especially during the opening weeks of the season, to document hunter use and ensure compliance with Refuge regulations.

Justification: The Refuge is one of two sites in the local area open for public waterfowl hunting during the hunting season and offers the only local waterfowl hunting area that can be accessed on foot. The nearest alternative location for public waterfowl hunting is the state-owned Moss Landing Wildlife Area, approximately 10 miles to the north, which can only be accessed by boat. Other public hunting areas, such as the San Luis National Wildlife Refuge near the community of Los Banos, are located 80 miles or more away. The Refuge is thus a key resource for local waterfowl hunters.

Hunting is identified as a priority public use of the National Wildlife Refuge System (System) under the National Wildlife Refuge System Improvement Act of 1997, along with fishing, environmental education, interpretation, wildlife observation, and photography. As an expressed priority use of the Refuge system, this use takes precedence over other potential public uses in Refuge planning and management. The Service strives to provide priority public uses when compatible with the purpose of the Refuge and the mission of the System. Approximately 80

acres of Refuge land along the Salinas River is conducive to hunting; hunting would be permitted in an area of approximately 38 acres (2,800 linear feet of riverbank). With the reduction of the hunting area and management conducted in accordance with the stipulations herein, waterfowl hunting would not be expected to result in adverse impacts to Refuge resources and would be compatible with the Refuge purpose and System mission.

Mandatory Reevaluation Date (provide month and year):

Dec. 2017 Mandatory 15-Year Reevaluation Date (for priority public uses)

_____ Mandatory 10-Year Reevaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision (check one below):

Conducted with Comprehensive Conservation Plan

_____Categorical Exclusion without Environmental Action Statement

_____Categorical Exclusion and Environmental Action Statement

__X__ Environmental Assessment and Finding of No Significant Impact

_____Environmental Impact Statement and Record of Decision

References Cited:

U.S. Fish and Wildlife Service (USFWS). 2002. Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan, December 2002. U. S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2002b. Biological Opinion for the Salinas River National Wildlife Refuge Comprehensive Conservation Plan (1-8-01-FW-66). U.S. Fish and Wildlife Service, Ventura, California.

U.S. Fish and Wildlife Service (USFWS). 2001. Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment, August 2001. U. S. Fish and Wildlife Service, Portland, Oregon.

Refuge Determination

Prepared by: _____ (Signature) 11-19-02 (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) 11/20/02 (Date)

Concurrence

Refuge Supervisor: _____ (Signature) 11/25/02 (Date)

Regional Chief,
National Wildlife
Refuge System: _____ (Signature) 12/12/02 (Date)

Acting California/Nevada
Operations Manager
(for CA and NV): _____ (Signature) 12.20.02 (Date)

Compatibility Determination

Use: Surf Fishing

Refuge Name: Salinas River National Wildlife Refuge
Monterey County, California
San Francisco Bay National Wildlife Refuge Complex

Establishing and Acquisition Authority:
An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes (16 U.S.C. 667b).

Refuge Purpose(s): "Particular value in carrying out the national migratory bird management program" (16 U.S.C. 667b)

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): The Salinas River National Wildlife Refuge (Refuge) is currently open to the public for access to surf fishing every day. The State Lands Commission has reserved all lands below mean high water (surf zone) for public access; thus, the U.S. Fish and Wildlife Service (Service) does not own these tidal lands and does not have the authority to regulate surf fishing or to close the beach to the public. However, the Refuge does provide access to surf fishing opportunities that are adjacent to our boundary. Because the Refuge boundary is the mean high water line, visitors who surf fish along the Refuge boundary also likely use Refuge lands while fishing (for example, to set up lines, place their gear, or rest). Access to the surf zone through the Refuge is by foot only along the 1-mile beach trail. Fishing is not allowed in other parts of the Refuge, such as the Salinas River and the saline pond. The Refuge proposes to continue to allow this public access to surf fishing. The National Wildlife Refuge System Improvement Act of 1997 identifies fishing as a priority public use for national wildlife refuges, along with hunting, environmental education, interpretation, wildlife observation, and photography.

Species of ocean fish caught in waters off the Refuge include surfperch (*Amphistichis* spp.) and striped bass (*Morone saxatilis*). Surf fishing is a year-round use, with an estimated maximum of 6–10 individuals utilizing the Refuge to access the surf zone every day. Peak periods include weekends and times when striped bass are foraging close to shore. For additional details about this proposed use, please see the Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan (USFWS 2002) as well as the Salinas River National Wildlife Refuge Draft

Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001), which are herein incorporated by reference.

Availability of Resources: Adequate funding and staff exist to manage for surf fishing access via the Salinas River National Wildlife Refuge. It is estimated that 10% of a full-time employee would be necessary to provide law enforcement support and maintenance. This would be accomplished concurrently with enforcing and monitoring the other priority public uses. Without additional staff time, existing staff can provide periodic law enforcement. Law enforcement support would also be provided by California Department of Fish and Game wardens under a cooperative agreement with the Refuge. Additional funding would also be needed for the interpretive signs, interpretive materials, and kiosk. Those costs are incorporated into the Compatibility Determination for environmental education and interpretation. The Refuge would pursue a variety of funding sources in order to fully support this use, including agreements with other agencies, and grant funding and volunteer assistance for monitoring.

Anticipated Impacts of the Use(s):

Impacts are also discussed in Chapter 5 of the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001).

Endangered and Threatened Species: Human activity can have adverse impacts on rare shore-nesting birds, especially during nesting and foraging activities. The western snowy plover (*Charadrius alexandrinus nivosus*), federally listed as threatened, is of primary concern to the Refuge. The Service strives to provide optimum breeding conditions for the western snowy plover, whose breeding habitat has become increasingly scarce due to development and heavy public use of beaches throughout its range. However, in recent years, the number of breeding snowy plovers on the Refuge, and throughout the species' range, has decreased as a result of adverse weather conditions on their wintering grounds and heavy predation by native and nonnative wildlife. Although current levels of public use are low, human activity in the dunes and beaches during the snowy plover breeding season has the potential to adversely affect plover reproductive success. Western snowy plovers utilize the entire beach profile, from the foredune through the coastal strand into the intertidal zone (between mean low tide and mean high tide lines) for breeding and foraging. Pedestrians entering the foredune and coastal strand habitats during the breeding season have the potential to trample well-camouflaged western snowy plover eggs and/or chicks or to disturb adults, keeping them away from the nest for extended periods of time, leaving the eggs or chicks vulnerable to predators, wind, and/or extreme temperatures.

Other federally listed species at the Refuge include: Smith's blue butterfly (*Euphilotes enoptes smithi*) and the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), federally listed as endangered; and the Monterey spineflower (*Chorizanthe pungens* var. *pungens*), federally listed as threatened. Visitors walking over the dunes have the potential to damage endangered and threatened dune plants and to introduce invasive species through inadvertent transfer of seeds or other propagules. They may also disturb Smith's blue butterfly or its host plants. The potential for illegal collection of rare plants, animals, and insects at the Refuge is an additional concern.

An Intra-Service Section 7 Consultation was conducted on the entire draft CCP. The resulting Biological Opinion (BO) (USFWS 2002b) concluded that adoption of the preferred alternative is not likely to jeopardize the continued existence of any of the listed species on the Refuge nor adversely modify critical habitat. With regard to general public access, the BO states that the proposed installation of interpretive signs and symbolic fencing would reduce effects of human disturbance to listed species, and that public use activities would not reduce the ability of the listed species to survive and recover.

Coastal Dunes and Wetlands: The potential for visitors to trample and destroy native dune and wetland vegetation is of concern.

Riparian and Grassland Habitats: The Refuge is actively involved in the restoration of riparian and grassland habitats. Off-trail human activity in these habitats can slow restoration efforts.

Migratory Birds: Human activity may disturb migratory birds utilizing the Refuge's habitats for foraging or nesting. Human activities near the wetland habitats could disturb foraging and nesting migratory birds, including black-necked stilts (*Himantopus mexicanus*), American avocets (*Recurvirostra americana*), and black skimmers (*Rynchops niger*), known to nest along the banks of the saline pond.

Other Biological Resources: Litter discarded by hunters can entangle wildlife or be ingested, resulting in injury or death. Because of the limited number of visitors to the Refuge, this would not pose a significant problem and could be handled with existing staff.

Surf fishing is allowed on State Beaches immediately north and a few miles south of the Refuge boundary. Some of the public access the Refuge from the north or south, along the beach. The ability to limit use of the tidal zone is regulated by the State Lands Commission. Therefore, should the Refuge close access through the Refuge for surf fishing, the public would still be able to access the tidal zone adjacent to the Refuge by walking along the beach from neighboring properties. However, concern about protecting rare native plants and animals and the overall integrity of the dune system requires that public use be monitored to avoid adverse impacts.

Public Review and Comment: Public review and comment was conducted concurrent with the public review and comment period for the CCP and associated Environmental Assessment. Please refer to Appendix K in the Final CCP (USFWS 2002) for a review of public comments and Refuge responses.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility: To continue to allow public access to the Refuge, the following measurers would be taken.

Western snowy plover breeding activities on the Refuge and throughout the Monterey Bay area have been closely monitored by Point Reyes Bird Observatory (PRBO) since 1984. The Refuge will continue to partner with PRBO to monitor and document western snowy plover use of the Refuge and document causes of disturbance and mortality, including human disturbance. Other threatened and endangered species and Refuge resources will also be monitored by Refuge staff as well as public compliance with Refuge regulations.

Clearer "Closed Area" signs would be installed at the boundary of the sensitive dune habitat by 2003.

In coordination with other agencies, such as State Parks and California Department of Fish and Game, the Refuge will develop and implement a docent program by 2006, to educate members of the public who use the Refuge during the snowy plover breeding season on the ecology of the plover and the sensitivity of the species' habitat and nests to disturbance. The docent program will also collect data on public use and disturbance to nesting shorebirds.

By 2007, interpretive signs and an orientation kiosk will be installed on the Refuge to inform visitors about the Refuge's habitats and wildlife and ways of avoiding adverse impacts, including staying on trails. The kiosk at the entrance will clearly state that dogs and horses are not allowed on the Refuge (except hunting dogs during the waterfowl season), and will include three signs:

(1) a sign providing a trail map, trail information, and regulations;
(2) a sign that describes the National Wildlife Refuge System; and
(3) an interchangeable sign for hunting season and snowy plover nesting season.

The trail from the parking lot to the beach will be well-marked. Symbolic fencing will be installed to guide public access through the dunes to the beach at the end of the trail. This will minimize trespass through closed areas, which has been a problem in the past, and will reduce disturbance to nesting birds and endangered and threatened plants within the dune habitat. If trespass continues to be a problem in the foredunes, symbolic fencing will also be installed along the foredune-beach boundary.

The Refuge will maintain an active law enforcement presence, by using Refuge officers and through a cooperative agreement with California Department of Fish and Game and California Department of Parks and Recreation, to ensure public compliance with all Refuge rules and regulations. Refuge law enforcement and other Refuge staff presence will be increased to ensure compliance with Refuge regulations.

Access to the Refuge will be allowed only between sunrise and sunset, unless a permit for alternative hours is acquired from the Refuge Manager in advance. Although the Refuge manager has the authority to close certain areas to public access, the State Lands Commission

has reserved all lands below mean high water for public access. Thus, complete closure of the beach profile by the Service is not possible. However, public access to the Refuge will be restricted to areas where access will put minimal stress on endangered and threatened animal and plant populations. Visitors will be directed to remain a safe distance from snowy plover nesting areas with signs and barriers, and by Refuge personnel and trained volunteers. Visitors will be directed away from areas where native plant restoration projects are under way, to prevent damage to fragile plants by trampling or by the introduction of nonnative plant species.

Justification: Currently, the Refuge's visitor use is relatively low; an estimated average of 6–10 visitors per day use the Refuge for access to surf fishing. Total visitor use of surrounding State Beaches averages 250,000 visitors per year, compared to the estimated annual use of 4,000–6,000 visitors per year on the Refuge. The Refuge does not anticipate a substantial increase in overall visitor use over the next 15 years, for the following reasons: no public use facilities, such as plumbed restrooms or picnic tables, are available, nor will they be constructed; inland access to the Refuge is via an unpaved road; and beach access is along a walking trail that is approximately 1 mile long. In addition, many nearby State Beaches will continue to be available that have easier access, offer many public use facilities, and support a wider variety of uses. At present, the Refuge primarily attracts visitors looking for a quality wildlife-oriented experience, and this is not expected to change in the future.

The National Wildlife Refuge System Improvement Act of 1997 identifies fishing as a priority public use for national wildlife refuges, along with hunting, environmental education, interpretation, wildlife observation, and photography. As expressed priority uses of the Refuge system, these uses take precedence over other potential public uses in Refuge planning and management. The Service strives to provide priority public uses when compatible with the purpose of the Refuge and the mission of the National Wildlife Refuge System (System). The Refuge provides access to the surf zone between sunrise and sunset, while surrounding State Parks open at 8:00 a.m. and close at 6:00 p.m. The Refuge, therefore, provides fishing opportunities at times when the local fishing population prefers to be out, in the early morning hours and at sunset. The state-owned beach adjacent to the Refuge is a popular fishing spot for many local residents.

Access to surf fishing as proposed would not be expected to result in adverse impacts to Refuge resources. With management conducted in accordance with the stipulations herein, access to surf fishing would be compatible with the Refuge purpose and the System mission.

Mandatory Reevaluation Date (provide month and year):

Dec. 2017	Mandatory 15-Year Reevaluation Date (for priority public uses)
_____	Mandatory 10-Year Reevaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision (check one below):

Conducted with the Comprehensive Conservation Plan

_____Categorical Exclusion without Environmental Action Statement

_____Categorical Exclusion and Environmental Action Statement

__X__Environmental Assessment and Finding of No Significant Impact

_____Environmental Impact Statement and Record of Decision

References Cited:

U.S. Fish and Wildlife Service (USFWS). 2002. Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan, December 2002. U. S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2002b. Biological Opinion for the Salinas River National Wildlife Refuge Comprehensive Conservation Plan (1-8-01-FW-66). U.S. Fish and Wildlife Service, Ventura, California.

U.S. Fish and Wildlife Service (USFWS). 2001. Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment, August 2001. U. S. Fish and Wildlife Service, Portland, Oregon.

Refuge Determination

Prepared by: _____ (Signature) 11-19-02 (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) 11/20/02 (Date)

Concurrence

Refuge Supervisor: _____ (Signature) 11-25-02 (Date)

Regional Chief,
National Wildlife
Refuge System: _____ (Signature) 12/12/02 (Date)

Acting
California/Nevada
Operations Manager
(for CA and NV): _____ (Signature) 12-20-02 (Date)

Compatibility Determination

Use: Wildlife Observation & Photography

Refuge Name: Salinas River National Wildlife Refuge
Monterey County, California
San Francisco Bay National Wildlife Refuge Complex

Establishing and Acquisition Authority:
An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes (16 U.S.C. 667b).

Refuge Purpose(s): "Particular value in carrying out the national migratory bird management program" (16 U.S.C. 667b)

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s):

Wildlife Observation: The Salinas River National Wildlife Refuge (Refuge) is currently open to the public for wildlife observation every day from sunrise to sunset. Access is by foot only. There are currently no orientation kiosks or interpretive signs. Areas closed to public access are delineated by signs, and include the dunes and saline pond. The beach access trail on the Refuge begins in grassland habitat, skirts the shore of the saline pond and salt marsh habitat, and traverses the dunes, providing quality wildlife observation opportunities in all of these habitats. A trail also exists through the grasslands to the riparian habitat on the south bank of the Salinas River.

Wildlife Photography: Photography, including other image-capturing activities such as videography, has occurred on the Refuge. There are no developed photography blinds or platforms on the Refuge and none are proposed at this time. However, ample opportunities exist for photography on the Refuge. This Compatibility Determination applies to personal photography only. Commercial photography or videography, if allowed, would require a Special Use Permit by the Refuge with specific restrictions.

Wildlife observation and photography have been identified as priority public uses for national wildlife refuges by the National Wildlife Refuge System Improvement Act of 1997. For additional details about this proposed use, please see the Salinas River National Wildlife Refuge

Final Comprehensive Conservation Plan (USFWS 2002) as well as the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001), which are herein incorporated by reference.

Availability of Resources:

Adequate funding and staff exist to manage for wildlife observation and photography at the Salinas River National Wildlife Refuge. Approximately 10% of a full-time employee would be required to provide law enforcement support, maintenance, and monitoring. This would be accomplished concurrently with enforcing and monitoring the other priority public uses. Improved signage, interpretive panels, and kiosk would require additional funding. Those costs are incorporated into the Compatibility Determination for environmental education and interpretation.

Anticipated Impacts of the Use(s):

Impacts are also discussed in Chapter 5 of the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001).

Endangered and Threatened Species: Human activity can have adverse impacts on rare shore-nesting birds, especially during nesting and foraging activities. The western snowy plover (*Charadrius alexandrinus nivosus*), federally listed as threatened, is of primary concern to the Refuge. The Service strives to provide optimum breeding conditions for the western snowy plover, whose breeding habitat has become increasingly scarce due to development and heavy public use of beaches throughout its range. However, in recent years, the number of breeding snowy plovers on the Refuge, and throughout the species' range, has decreased as a result of adverse weather conditions on their wintering grounds and heavy predation by native and nonnative wildlife. Although current levels of public use are low, human activity in the dunes and beaches during the snowy plover breeding season has the potential to adversely affect plover reproductive success. Western snowy plovers utilize the entire beach profile, from the foredune through the coastal strand into the intertidal zone (between mean low tide and mean high tide lines) for breeding and foraging. Pedestrians entering the foredune and coastal strand habitats during the breeding season have the potential to trample well-camouflaged western snowy plover eggs and/or chicks or to disturb adults, keeping them away from the nest for extended periods of time, leaving the eggs or chicks vulnerable to predators, wind, and/or extreme temperatures.

Other federally listed species at the Refuge include: Smith's blue butterfly (*Euphilotes enoptes smithi*) and the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), federally listed as endangered; and the Monterey spineflower (*Chorizanthe pungens* var. *pungens*), federally listed as threatened. Visitors walking over the dunes have the potential to damage endangered and threatened dune plants and to introduce invasive species through inadvertent transfer of seeds or other propagules. They may also disturb Smith's blue butterfly or its host plants. The potential for illegal collection of rare plants, animals, and insects at the Refuge is an additional concern.

An Intra-Service Section 7 Consultation was conducted on the entire draft CCP. The resulting Biological Opinion (BO) (USFWS 2002b) concluded that adoption of the preferred alternative is not likely to jeopardize the continued existence of any of the listed species on the Refuge nor adversely modify critical habitat. With regard to general public access, the BO states that the proposed installation of interpretive signs and symbolic fencing would reduce effects of human disturbance to listed species, and that public use activities would not reduce the ability of the listed species to survive and recover.

Coastal Dunes and Wetlands: The potential for visitors to trample and destroy native dune and wetland vegetation is of concern.

Riparian and Grassland Habitats: The Refuge is actively involved in the restoration of the riparian and grassland habitats. Off-trail human activity in these habitats can slow restoration efforts.

Migratory Birds: Human activity may disturb migratory birds utilizing the Refuge's habitats for feeding or nesting activities. Human activities near the wetland habitats could disturb feeding and nesting migratory birds, including black-necked stilts (*Himantopus mexicanus*), American avocets (*Recurvirostra americana*), and black skimmers (*Rynchops niger*), known to nest along the banks of the saline pond.

Other Biological Resources: Litter discarded by hunters can entangle wildlife or be ingested, resulting in injury or death. Because of the limited number of visitors to the Refuge, this would not pose a significant problem and could be handled with existing staff.

Public Review and Comment: Public review and comment was conducted concurrent with the public review and comment period for the CCP and associated Environmental Assessment. Please refer to Appendix K in the Final CCP (USFWS 2002) for a review of public comments and Refuge responses.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility: To continue to allow public access to the Refuge for wildlife observation and photography, the following measurers would be taken.

Western snowy plover breeding activities on the Refuge and throughout the Monterey Bay area have been closely monitored by Point Reyes Bird Observatory (PRBO) since 1984. The Refuge will continue to partner with PRBO to monitor and document western snowy plover use of the Refuge and document causes of disturbance and mortality, including human disturbance. Other

threatened and endangered species and Refuge resources will also be monitored by Refuge staff as well as public compliance with Refuge regulations.

Clearer "Closed Area" signs would be installed at the boundary of the sensitive dune habitat by 2003.

In coordination with other agencies, such as State Parks and California Department of Fish and Game, the Refuge will develop and implement a docent program by 2006, to educate members of the public who use the Refuge during the snowy plover breeding season on the ecology of the plover and the sensitivity of the species' habitat and nests to disturbance. The docent program will also collect data on public use and disturbance to nesting shorebirds.

By 2007, interpretive signs and an orientation kiosk will be installed on the Refuge to inform visitors about the Refuge's habitats and wildlife and ways of avoiding adverse impacts, including staying on trails. The kiosk at the entrance will clearly state that dogs and horses are not allowed on the Refuge (except hunting dogs during the waterfowl season), and will include three signs:

(1) a sign providing a trail map, trail information, and regulations;
(2) a sign that describes the National Wildlife Refuge System; and
(3) a interchangeable sign for hunting season and snowy plover nesting season.

The trail from the parking lot to the beach will be well-marked. Symbolic fencing will be installed to guide public access through the dunes to the beach at the end of the trail. This will minimize trespass through closed areas, which has been a problem in the past, and will reduce disturbance to nesting birds and endangered and threatened plants within the dune habitat. If trespass continues to be a problem in the foredunes, symbolic fencing will also be installed along the foredune-beach boundary.

The Refuge will maintain an active law enforcement presence, by using Refuge officers and through a cooperative agreement with California Department of Fish and Game and California Department of Parks and Recreation, to ensure public compliance with all Refuge rules and regulations. Refuge law enforcement and other Refuge staff presence will be increased to ensure compliance with Refuge regulations.

Access to the Refuge will be allowed only between sunrise and sunset, unless a permit for alternative hours is acquired from the Refuge Manager in advance. Because the State Lands Commission controls lands below the mean high tide line, complete closure of the beach profile by the Service is not possible. However, public access to the Refuge will be restricted to areas where access will put minimal stress on endangered and threatened animal and plant populations. Visitors will be directed to remain a safe distance from snowy plover nesting areas with signs and barriers, and by Refuge personnel and trained volunteers. Visitors will be directed away from areas where native plant restoration projects are under way, to prevent damage to fragile plants by trampling or by the introduction of nonnative plant species.

Justification: Currently, the Refuge's visitor use is relatively low; an estimated average of 4–6 visitors per day use the Refuge for wildlife observation and photography. Total visitor use of surrounding State Beaches averages 250,000 visitors per year compared to the estimated annual use of 4,000–6,000 visitors per year on the Refuge. The Refuge does not anticipate a substantial increase in overall visitor use over the next 15 years, for the following reasons: no public use facilities, such as plumbed restrooms or picnic tables, are available nor will they be constructed; inland access to the Refuge is via an unpaved road; and beach access is along a walking trail that is approximately 1 mile long. In addition, many nearby State Beaches will continue to be available that have easier access, offer many public use facilities, and support a wider variety of uses. At present, the Refuge primarily attracts visitors looking for a quality wildlife-oriented experience, and this is not expected to change in the future.

The National Wildlife Refuge System Improvement Act of 1997 identifies wildlife observation and wildlife photography as priority public uses for national wildlife refuges, along with hunting, fishing, environmental education, and interpretation. As expressed priority uses of the Refuge system, these uses take precedence over other potential public uses in Refuge planning and management. The Service strives to provide priority public uses when compatible with the purpose of the Refuge and the mission of the National Wildlife Refuge System (System).

Maintaining the existing level of wildlife observation and photography opportunities would allow the visiting public to continue to experience, enjoy, and learn about native wildlife species in their natural habitats. There are few coastal public lands available in the Monterey Bay area where the public can view and enjoy wildlife in a relatively undisturbed setting. Many of the State Beaches are relatively crowded and allow dogs, horses, and various types of non-wildlife oriented recreation. These uses can detract from the relatively "natural" environment that the Refuge visitor is typically looking for. However, the Refuge's concern about protecting rare native plants and animals and the overall integrity of the dune system requires that public use be monitored to avoid adverse impacts. With management conducted in accordance with the stipulations herein, wildlife observation and photography would be compatible with the Refuge purpose and the System mission.

Mandatory Reevaluation Date (provide month and year):

Dec. 2017 Mandatory 15-Year Reevaluation Date (for priority public uses)

_____ Mandatory 10-Year Reevaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision (check one below):

Conducted with the Comprehensive Conservation Plan

_____Categorical Exclusion without Environmental Action Statement

_____Categorical Exclusion and Environmental Action Statement

__X__Environmental Assessment and Finding of No Significant Impact

_____Environmental Impact Statement and Record of Decision

References Cited:

U.S. Fish and Wildlife Service (USFWS). 2002. Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan, December 2002. U. S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2002b. Biological Opinion for the Salinas River National Wildlife Refuge Comprehensive Conservation Plan (1-8-01-FW-66). U.S. Fish and Wildlife Service, Ventura, California.

U.S. Fish and Wildlife Service (USFWS). 2001. Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment, August 2001. U. S. Fish and Wildlife Service, Portland, Oregon.

Refuge Determination

Prepared by: _____ (Signature) 11-19-02 (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) 11/20/02 (Date)

Concurrence

Refuge Supervisor: _____ (Signature) 11-25-02 (Date)

Regional Chief,
National Wildlife
Refuge System: _____ (Signature) 12/12/02 (Date)

Acting
California/Nevada
Operations Manager
(for CA and NV): _____ (Signature) 12-20-02 (Date)

Compatibility Determination

Use: Environmental Education and Interpretation

Refuge Name: Salinas River National Wildlife Refuge
Monterey County, California
San Francisco Bay National Wildlife Refuge Complex

Establishing and Acquisition Authority:
An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes (16 U.S.C. 667b).

Refuge Purpose(s): "Particular value in carrying out the national migratory bird management program" (16 U.S.C. 667b)

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): The Salinas River National Wildlife Refuge (Refuge) has the opportunity to interpret coastal resources and increase public awareness of the importance of protecting wildlife habitat and threatened and endangered species. Environmental education and interpretation have been identified as priority public uses for national wildlife refuges by the National Wildlife Refuge System Improvement Act of 1997. The Refuge supports regionally important populations of special-status species, including western snowy plover (*Charadrius alexandrinus nivosus*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*) (both federally listed as threatened), and Smith's blue butterfly and Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*) (both federally listed as endangered). Environmental education and interpretation at the Refuge would focus on endangered species and habitat management. In addition, the Refuge would educate the public about the National Wildlife Refuge System and the U.S. Fish and Wildlife Service (Service) mission.

The Refuge is currently open to the public for environmental education and interpretation opportunities on foot. However, no interpretive or educational displays or materials exist at the Refuge. Some educational institutions or non-profit groups (such as local Audubon chapters) may currently utilize the Refuge for education; however, the Refuge does not have estimates of this type of use.

The Refuge proposes to enhance existing environmental education partnerships and develop new partnerships with local schools, universities, and organizations. The Refuge would develop

environmental education and interpretive materials, including: a general Refuge brochure, fact sheets on particular species and habitats, and a guide for educators on endangered species issues. These materials and programs would serve to interpret the valuable coastal resources of the Refuge and surrounding region, as well as the purpose of the Refuge and the mission of the National Wildlife Refuge System (System).

In coordination with other agencies, such as State Parks and California Department of Fish and Game, the Refuge would develop and implement a docent program by 2006, to educate members of the public who use the Refuge during the snowy plover breeding season on the ecology of the plover and the sensitivity of the species' habitat and nests to disturbance. Docents would also have information on management activities and resource issues.

By 2007, an orientation kiosk at the Refuge entrance and interpretive signs along the hiking trails would be installed. The orientation kiosk at the entrance would include three signs:

(1) a sign providing a trail map, trail information, and regulations,
(2) a sign that describes the National Wildlife Refuge System, and
(3) an interchangeable sign for hunting season and snowy plover nesting season.

The kiosk and interpretive signs would provide visitors with information on the various habitat types on the Refuge, including coastal dunes, coastal grassland, riparian, and salt marsh; the species that can be found in these habitats, including threatened and endangered species; and ways of avoiding adverse effects on these resources. For additional details about this proposed use, please see the Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan (USFWS 2002) as well as the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001), which are herein incorporated by reference.

Availability of Resources: Approximately $85,000 would be needed for interpretive materials, interpretive panels, kiosk, and signs. Additionally, managing the uses, implementing the docent program, providing law enforcement, and monitoring the use would require an additional 60% full-time employee (FTE) (park ranger) in addition to the 5-10% FTE that could be devoted by redirecting current staff time. Upon receiving the increased funding and staff proposed in the CCP, the Refuge would be able to provide interpretation and education opportunities at the Salinas River National Wildlife Refuge, as well as educational materials. The Refuge would pursue a variety of funding sources in order to support this use, including agreements with other agencies, grant funding, and volunteer assistance. Until this increased funding is received, the Refuge does not have any resources for environmental education and interpretation.

Anticipated Impacts of the Use(s):

Impacts are also discussed in Chapter 5 of the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001).

Endangered and Threatened Species: Human activity can have adverse impacts on rare shore-nesting birds, especially during nesting and foraging activities. The western snowy plover (*Charadrius alexandrinus nivosus*), federally listed as threatened, is of primary concern to the Refuge. The Service strives to provide optimum breeding conditions for the western snowy plover, whose breeding habitat has become increasingly scarce due to development and heavy public use of beaches throughout its range. However, in recent years, the number of breeding snowy plovers on the Refuge, and throughout the species' range, has decreased as a result of adverse weather conditions on their wintering grounds and heavy predation by native and nonnative wildlife. Although current levels of public use are low, human activity in the dunes and beaches during the snowy plover breeding season has the potential to adversely affect plover reproductive success. Western snowy plovers utilize the entire beach profile, from the foredune through the coastal strand into the intertidal zone (between mean low tide and mean high tide lines) for breeding and foraging. Pedestrians entering the foredune and coastal strand habitats during the breeding season have the potential to trample well-camouflaged western snowy plover eggs and/or chicks or to disturb adults, keeping them away from the nest for extended periods of time, leaving the eggs or chicks vulnerable to predators, wind, and/or extreme temperatures.

Other federally listed species at the Refuge include: Smith's blue butterfly (*Euphilotes enoptes smithi*) and the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), federally listed as endangered; and the Monterey spineflower (*Chorizanthe pungens* var. *pungens*), federally listed as threatened. Visitors walking over the dunes have the potential to damage endangered and threatened dune plants and to introduce invasive species through inadvertent transfer of seeds or other propagules. They may also disturb Smith's blue butterfly or its host plants. The potential for illegal collection of rare plants, animals, and insects at the Refuge is an additional concern.

An Intra-Service Section 7 Consultation was conducted on the entire draft CCP. The resulting Biological Opinion (BO) (USFWS 2002b) concluded that adoption of the preferred alternative is not likely to jeopardize the continued existence of any of the listed species on the Refuge nor adversely modify critical habitat. With regard to public access, the BO states that the proposed installation of interpretive signs and symbolic fencing would reduce effects of human disturbance to listed species, and that public use activities would not reduce the ability of the listed species to survive and recover. In addition, it states that the use of well-trained volunteer docents would benefit listed species at the Refuge.

Coastal Dunes and Wetlands: The potential for visitors to trample and destroy native dune and wetland vegetation is of concern.

Riparian and Grassland Habitats: The Refuge is actively involved in the restoration of the riparian and upland habitats. Off-trail human activity in these habitats can slow restoration efforts.

Migratory Birds: Human activity may disturb migratory birds utilizing the Refuge's habitats for feeding or nesting activities. Human activities near the wetland habitats could disturb feeding and nesting migratory birds, including black-necked stilts (*Himantopus mexicanus*), American

avocets (*Recurvirostra americana*), and black skimmers (*Rynchops niger*), known to nest along the banks of the saline pond.

Other Biological Resources: Litter discarded by hunters can entangle wildlife or be ingested, resulting in injury or death. Because of the limited number of visitors to the Refuge, this would not pose a significant problem and could be handled with existing staff.

Public Review and Comment: Public review and comment was conducted concurrent with the public review and comment period for the CCP and associated Environmental Assessment. Please refer to Appendix K in the Final CCP (USFWS 2002) for a review of public comments and Refuge responses.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility: In order to allow public access to the Refuge for environmental education and interpretation, the following measurers will be taken.

Educators or groups who wish to visit or learn about the Refuge would receive interpretive materials from the Refuge staff. These materials would emphasize endangered species management and would include a general Refuge brochure, a fact sheet on particular species and habitats, and an endangered species guide.

Western snowy plover breeding activities on the Refuge and throughout the Monterey Bay area have been closely monitored by Point Reyes Bird Observatory (PRBO) since 1984. The Refuge will continue to partner with PRBO to monitor and document western snowy plover use of the Refuge and document causes of disturbance and mortality. Other threatened and endangered species and Refuge resources will also be monitored by Refuge staff.

Clearer "Closed Area" signs would be installed at the boundary of the sensitive dune habitat by 2003.

In coordination with other agencies, such as State Parks and California Department of Fish and Game, the Refuge will develop and implement a docent program by 2006, to educate members of the public who use the Refuge during the snowy plover breeding season on the ecology of the plover and the sensitivity of the species' habitat and nests to disturbance. The docent program will also collect data on public use and disturbance to nesting shorebirds.

By 2007, interpretive signs and an orientation kiosk will be installed on the Refuge to inform visitors about the Refuge's habitats and wildlife and ways of avoiding adverse impacts, including staying on trails.

The trail from the parking lot to the beach will be well-marked. Symbolic fencing will be installed to guide public access through the dunes to the beach at the end of the trail. This will minimize trespass through closed areas and reduce disturbance to nesting birds and threatened and endangered plants and butterflies within the dune habitat.

The Refuge will maintain an active law enforcement presence, by using Refuge officers and through a cooperative agreement with California Department of Fish and Game and California Department of Parks and Recreation, to ensure public compliance with all Refuge rules and regulations. Refuge law enforcement and other Refuge staff presence will be increased to ensure compliance with Refuge regulations.

Access to the Refuge will be allowed only between sunrise and sunset unless a permit for alternative hours is acquired from the Refuge Manager in advance. The Refuge manager will have the authority to close certain areas to interpretive programs, or to cancel activities as he or she deems necessary to fulfill the Refuge purpose. Public access will be restricted to areas where access will put minimal stress on endangered and threatened animal and plant populations. Visitors will be directed to remain a safe distance from snowy plover nesting areas with signs and barriers, and by Refuge personnel and trained volunteers. Visitors will be directed away from areas where native plant restoration projects are under way, to prevent damage to fragile plants by being crushed underfoot or by the introduction of nonnative plant species.

Concerns about protecting rare native plants and animals, and the overall integrity of the dune ecosystem, require that public use be monitored, and that Refuge staff be closely involved in the development of environmental educational programs.

Justification: The goals of the National Wildlife Refuge System (System) include providing an understanding and appreciation of fish and wildlife ecology and the human role in the environment, and providing Refuge visitors with high-quality, safe, wholesome, and enjoyable recreational experiences oriented toward wildlife, to the extent these activities are compatible with the purpose for which a refuge was established and the mission of the System. In addition, the National Wildlife Refuge System Improvement Act of 1997 identifies environmental education and interpretation as priority public uses for National Wildlife Refuges, along with hunting, fishing, wildlife observation and photography. As expressed priority uses of the Refuge system, these uses take precedence over other potential public uses in Refuge planning and management. The Service strives to provide priority public uses when compatible with the purpose of the Refuge and the mission of the System.

Environmental education and interpretive programs provide opportunities for the visiting public to learn about and experience native plants, fish, and wildlife in their natural habitat. The Refuge can also educate the public about its role within the agency and the National Wildlife Refuge System, developing better community awareness, volunteer involvement, and advocacy. The Refuge also has the opportunity to provide meaningful educational information on habitat restoration and on endangered species and their management. This use, when conducted in accordance with the stipulations, would not be expected to result in adverse impacts to Refuge

resources, and may benefit resources by educating the public to resource issues. Proposed environmental education and interpretation conducted in accordance with the stipulations herein would be compatible with the Refuge purpose and System mission.

Mandatory Reevaluation Date (provide month and year):

Dec. 2017 Mandatory 15-year Reevaluation Date (for priority public uses)

_____ Mandatory 10-Year Reevaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision (check one below):

Conducted with Comprehensive Conservation Plan

_____Categorical Exclusion without Environmental Action Statement

_____Categorical Exclusion and Environmental Action Statement

__X__Environmental Assessment and Finding of No Significant Impact

_____Environmental Impact Statement and Record of Decision

References Cited:

U.S. Fish and Wildlife Service (USFWS). 2002. Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan, December 2002. U. S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2002b. Biological Opinion for the Salinas River National Wildlife Refuge Comprehensive Conservation Plan (1-8-01-FW-66). U.S. Fish and Wildlife Service, Ventura, California.

U.S. Fish and Wildlife Service (USFWS). 2001. Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment, August 2001. U. S. Fish and Wildlife Service, Portland, Oregon.

Refuge Determination

Prepared by: _____ (Signature) 11-19-02 (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) 11/20/02 (Date)

Concurrence

Refuge Supervisor: _____ (Signature) 11-25-02 (Date)

Regional Chief,
National Wildlife
Refuge System: _____ (Signature) 12/12/02 (Date)

Acting
California/Nevada
Operations Manager
(for CA and NV): _____ (Signature) 12-20-02 (Date)

Compatibility Determination

Use: Research

Refuge Name: Salinas River National Wildlife Refuge
Monterey County, California
San Francisco Bay National Wildlife Refuge Complex

Establishing and Acquisition Authority:
An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes (16 U.S.C. 667b).

Refuge Purpose(s): "Particular value in carrying out the national migratory bird management program" (16 U.S.C. 667b)

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (System) is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): The Salinas River National Wildlife Refuge (Refuge) receives periodic requests to conduct scientific research. Although research is not identified as a priority public use by the National Wildlife Refuge System Improvement Act of 1997, scientific research can benefit Refuge resources and support the purpose of the Refuge and mission of the System. The Refuge proposes to give priority to studies that contribute to the enhancement, protection, use, preservation, and management of native Refuge wildlife populations and their habitats. Research applicants would be required to submit a proposal summarizing:

(1) objectives of the study;

(2) justification for the study;

(3) detailed study methodology and schedule;

(4) potential impacts on Refuge wildlife and/or habitats, including short- and long-term disturbance, injury, and mortality;

(5) research personnel required and their qualifications/experience;

(6) status of necessary permits (i.e., scientific collecting permits, endangered species permit);

(7) costs to Refuge and Refuge staff time requested, if any; and

(8) anticipated end products (i.e., reports, publications).

Research proposals would be reviewed by Refuge staff or others, as appropriate. The following criteria, and others as necessary, would be used to assess research proposals:

(1) Research that would contribute to Refuge management would have higher priority than other requests.

(2) Research that would conflict with other ongoing research, monitoring, or management programs would not be approved.

(3) Research projects that can be carried out elsewhere (off-Refuge) would be less likely to be approved.

(4) Research that causes undue disturbance or is intrusive would likely not be approved. The degree and type of disturbance would be carefully weighed when evaluating a research request; many shorebird species are very sensitive to disturbance, and habitats, particularly the dunes that support several threatened and endangered plants and the endangered Smith's blue butterfly (*Euphilotes enoptes smithi*), are prone to destruction by foot traffic.

(5) Evaluation of research requests would determine whether any effort has been made to minimize disturbance through study design (for example, by considering adjustments in the location, timing, or scope of the study, the number of participants, study methods, the number of study sites, etc.).

(6) If it would be impossible for the Refuge to monitor researcher activities because of staffing or logistical constraints, requests for research may be denied, depending on the circumstances.

(7) The duration of the project would be considered and agreed upon before approval. Open-ended projects would not be approved. All projects would be reviewed annually to assess whether they continue to meet these criteria (and others as necessary), continue to operate as originally proposed, and are contributing to the objectives of the study.

Approved research projects would be conducted under a Refuge-issued Special Use Permit with case-specific stipulations. For additional details about this proposed use, please see the Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan (USFWS 2002) as well as the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001), which are herein incorporated by reference.

Availability of Resources: Adequate funding and staff exist to manage for research at the Salinas River National Wildlife Refuge. As always, discretionary use of staff time would be weighed through a cost-benefit analysis.

Anticipated Impacts of the Use(s):

Impacts are also discussed in Chapter 5 of the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001).

Endangered and Threatened Species: Human activity can have adverse impacts on rare shore-nesting birds, especially during nesting and foraging activities. The western snowy plover (*Charadrius alexandrinus nivosus*), federally listed as threatened, is of primary concern to the Refuge. The Service strives to provide optimum breeding conditions for the western snowy plover, whose breeding habitat has become increasingly scarce due to development and heavy public use of beaches throughout its range. However, in recent years, the number of breeding snowy plovers on the Refuge, and throughout the species' range, has decreased as a result of adverse weather conditions on their wintering grounds and heavy predation by native and nonnative wildlife. Although current levels of public use are low, human activity in the dunes and beaches during the snowy plover breeding season has the potential to adversely affect plover reproductive success. Western snowy plovers utilize the entire beach profile, from the foredune through the coastal strand into the intertidal zone (between mean low tide and mean high tide lines) for breeding and foraging. Pedestrians entering the foredune and coastal strand habitats during the breeding season have the potential to trample well-camouflaged western snowy plover eggs and/or chicks or to disturb adults, keeping them away from the nest for extended periods of time, leaving the eggs or chicks vulnerable to predators, wind, and/or extreme temperatures.

Other federally listed species at the Refuge include: Smith's blue butterfly (*Euphilotes enoptes smithi*) and the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), federally listed as endangered; and the Monterey spineflower (*Chorizanthe pungens* var. *pungens*), federally listed as threatened. Researchers walking over the dunes have the potential to damage endangered and threatened dune plants and to introduce invasive species through inadvertent transfer of seeds or other propagules. They may also disturb Smith's blue butterfly or its host plants.

An Intra-Service Section 7 Consultation was conducted on the entire draft CCP. The resulting Biological Opinion (BO) (USFWS 2002b) concluded that adoption of the preferred alternative is not likely to jeopardize the continued existence of any of the listed species on the Refuge nor adversely modify critical habitat. With regard to research, the BO states that the evaluation criteria for research proposals contain several criteria that would ensure that research activities are not causing undue adverse effects to listed species.

Coastal Dunes and Wetlands: The potential for researchers to trample and destroy native dune and wetland vegetation is of concern.

Upland and Riparian Habitats: The Refuge is actively involved in the restoration of the riparian and upland habitats. Off-trail human activity in these habitats can slow restoration efforts.

Migratory Birds: Human activity may disturb migratory birds utilizing the Refuge's habitats for feeding or nesting activities. Human activities near the wetland habitats could disturb feeding

and nesting migratory birds, including black-necked stilts (*Himantopus mexicanus*), American avocets (*Recurvirostra americana*), and black skimmers (*Rynchops niger*), known to nest along the banks of the saline pond.

Minimal impact on Refuge wildlife and habitats is expected with research studies. Some level of disturbance is expected with all research activities, because most researchers would be entering areas that are normally closed to the public and may be collecting samples or handling plants or wildlife. Special Use Permits would include conditions to ensure that impacts on wildlife and habitats are reduced as much as possible.

Public Review and Comment: Public review and comment was conducted concurrent with the public review and comment period for the CCP and associated Environmental Assessment. Please refer to Appendix K in the Final CCP (USFWS 2002) for a review of public comments and Refuge responses.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility: Concerns about protecting rare native plants and animals and the overall integrity of the dune ecosystem require that Refuge staff closely review proposed research projects and that research activities and impacts be monitored. To continue to allow research on the Refuge, the following measurers would be taken.

Western snowy plover breeding activities on the Refuge and throughout the Monterey Bay area have been closely monitored by Point Reyes Bird Observatory (PRBO) since 1984. The Refuge will continue to partner with PRBO to monitor and document western snowy plover use of the Refuge and document causes of mortality and disturbance. Other threatened and endangered species and Refuge resources will also be monitored by Refuge staff, and the locations of extremely sensitive wildlife habitat areas will be considered when evaluating requests for research.

If proposed research methods would adversely affect, or would have the potential to adversely affect, Refuge resources (habitat or wildlife), the researcher will be required to demonstrate the need for the research and to identify potential impacts in advance of their occurrence. The researcher will also be required to develop mitigation measures to minimize potential impacts; mitigation measures will be listed as conditions on the Special Use Permit. Refuge staff may accompany researchers at any time to assess potential impacts, and may determine that previously approved research and Special Use Permits should be terminated because of impacts. All Refuge rules and regulations must be followed unless otherwise excepted by Refuge management.

Justification: Research projects would contribute to the enhancement, protection, use, preservation, and management of native Refuge wildlife populations and their habitats, or they would not be approved. The anticipated level of research to be conducted on the Refuge at any given time would be compatible because the Refuge would ensure that research proposals support the purpose of the Refuge and mission of the System. In view of the impacts research activities may have on the Service's ability to achieve the Refuge purpose, sufficient restrictions will be placed on the researcher to ensure that disturbance is kept to a minimum.

Mandatory Reevaluation Date (provide month and year):

_____ Mandatory 15-Year Reevaluation Date (for priority public uses)

Dec. 2012 Mandatory 10-Year Reevaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision (check one below):

Conducted with Comprehensive Conservation Plan

_____Categorical Exclusion without Environmental Action Statement

_____Categorical Exclusion and Environmental Action Statement

__X__Environmental Assessment and Finding of No Significant Impact

_____Environmental Impact Statement and Record of Decision

References Cited:

U.S. Fish and Wildlife Service (USFWS). 2002. Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan, December 2002. U. S. Fish and Wildlife Service, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2002b. Biological Opinion for the Salinas River National Wildlife Refuge Comprehensive Conservation Plan (1-8-01-FW-66). U.S. Fish and Wildlife Service, Ventura, California.

U.S. Fish and Wildlife Service (USFWS). 2001. Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment, August 2001. U. S. Fish and Wildlife Service, Portland, Oregon.

Refuge Determination

Prepared by: _____ (Signature) 11-19-02 (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) 11/20/02 (Date)

Concurrence

Refuge Supervisor: _____ (Signature) 11-25-02 (Date)

Regional Chief,
National Wildlife
Refuge System: _____ (Signature) 12/12/02 (Date)

Acting
California/Nevada
Operations Manager
(for CA and NV): _____ (Signature) 12-20-02 (Date)

Compatibility Determination

Use: Mosquito Control

Refuge Name: Salinas River National Wildlife Refuge
Monterey County, California
San Francisco Bay National Wildlife Refuge Complex

Establishing and Acquisition Authority:
An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes (16 U.S.C. 667b).

Refuge Purpose(s): "Particular value in carrying out the national migratory bird management program" (16 U.S.C. 667b)

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System (System) is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s): Three mosquito species are typically found at the Salinas River National Wildlife Refuge (Refuge):*Ochlerotatus washinoi*, *Culiseta inornata*, and *Culex tarsalis*. The Northern Salinas Valley Mosquito Abatement District (NSVMAD) has been conducting mosquito control at this site for over forty years, beginning while this land was still owned by the military. In 1994, the Refuge completed a compatibility determination for this activity which stipulated a stepped approach for mosquito control at the Refuge. NSVMAD proposes to continue this approach. The first two steps utilize biorationals: either the bacterium *Bacillus thuringiensis israelensis* (Bti) or the juvenile hormone analog methoprene. Although there is no official definition of "biorational," they are generally described as pest control materials of a natural origin that have limited or no adverse effects on the environment or beneficial organisms (Ware 1989). However, depending on timing and conditions (weather, water temperature, etc.), application of biorationals is not always effective. As a last resort, Golden Bear 1111 oil (Golden Bear), a petroleum distillate, is applied. Material selection is based on efficacy, stage of mosquito development, water temperature, and species of mosquito. NSVMAD prefers to use Bti because it is the most effective treatment; it is also the most selective of the available treatments (i.e. has the fewest nontarget effects). NSVMAD has only used Golden Bear four times in the past 22 years. Bti would typically be applied in a liquid formulation known as Teknar HP-D, at a rate of 0.5 - 1.0 pints per acre as specified on the label. The Refuge proposes to allow the NSVMAD to continue these activities under an annual Special Use Permit (SUP) and the stipulations presented herein. Mosquito abatement is not identified as a priority public use by the National Wildlife Refuge System Improvement Act of 1997.

The Refuge is located in the Monterey Bay area. Located less than 3 miles from the Refuge are the City of Marina and the City of Castroville. Additionally, approximately half a mile north of the Refuge is the Monterey Dunes Colony housing development of 120 residences. Finally, the artichoke farms immediately adjacent to the Refuge are worked year-round by approximately 10-100 field workers per day. Residents have expressed their concerns to the NSVMAD about mosquito nuisance as well as the potential for the transmission of mosquito-borne diseases such as West Nile virus and western equine encephalitis (NSVMAD 2002).

Mosquito control applications could occur any time between November and June, depending on environmental conditions. Mosquito control would more typically occur from December through April in the saline pond and adjacent salt marsh habitat on the Refuge (See Fig. 1). This area is closed to the public. The saline pond and marsh are flooded during winter rains and winter high tides, resulting in a potential mosquito breeding site with an area of approximately 80 acres (range 25-130 acres). In most years, the pond dries in the summer. NSVMAD would monitor the pond weekly during the winter and spring to detect presence of mosquito larvae and identify to species. This would involve a monitor walking along the pond and sampling the invertebrates with a 16 ounce dipper.

Treatment would be conducted almost exclusively by aerial application, but on rare occasions, when the treatment area is small, spraying would be done by hand. Aerial applications would be made using a helicopter flown at an altitude of 5–8 feet at an airspeed of 55 mph. Flight altitude would be low in order to minimize drift and thus increase efficiency. Swath width would be 66 feet, so several passes would be made. Treatment duration would be 10–25 minutes, depending on the size of the treatment area. An onboard GPS system would be used by the pilot to guide transects and minimize overlap and skips (R&B Helicopters 2002). Treatments would usually be conducted in the early morning. Helicopter application would be utilized because it is more effective and efficient than other methods; it also prevents surface disturbance to sensitive marsh habitat.

In the past, the presence of any *Culex tarsalis* pupae or larvae on the Refuge triggered control by NSVMAD because this species is a known vector of human disease, including West Nile virus, St. Louis encephalitis, and western equine encephalitis, as well as a moderately aggressive biter with a flight range of 10-15 miles. Presence of *Ochlerotatus washinoi* has also triggered control in the past because of its flight range of several miles, its aggressive nature as a daytime biter, and its ability to produce large numbers. However, the Refuge now proposes to institute a threshold of 0.5 larvae per dip for control of these species. This new threshold is likely to result in fewer treatments each season, limiting control to occasions when larger numbers of mosquitos would be produced. In contrast to the previous two species, presence of the less aggressive *Culiseta inornata* did not necessarily trigger control in the past. NSVMAD considered environmental conditions including water temperature, density of mosquito larvae, and presence of mosquito predators in deciding whether the mosquitos could become a problem and therefore whether to treat. In the last twenty-two years, *Culiseta* has only been treated four times. The Refuge proposes a minimum threshold of at least 1.0 larvae per dip for control of this species. Even when this threshold is met, NSVMAD may decide not to treat *Culiseta* based on other .

Potential Mosquito Treatment Area

CA/NV Refuge Planning Office - Oct 2008

500 0 500 1,000 1,500 Feet

Potential Mosquito Treatment Area (Actual area treated ranges from 25 - 130 acres)

Snowy Plover Nesting Habitat

CA Brown Pelican Roosting Habitat

environmental conditions. Treatment for general control of mosquitos would be limited to Bti and methoprene

The use of Golden Bear or monomolecular films is strongly discouraged and would only be allowed in cases when other larvicides have failed and a human health concern exists. This would be determined by the Refuge in conjunction with NSVMAD and the appropriate health authorities. Notification and concurrence by the U.S. Fish and Wildlife Service (Service) would be required for use of larvacides other than methoprene or Bti. Frequent monitoring should preclude the use of oils/films in most cases.

In the event that mosquitos from the Refuge pose a human-health emergency, the most appropriate control technique would be utilized and stipulations herein would be implemented. The threshold for treatment could be as low as any presence of mosquito larvae, depending on human health risk. The most appropriate pesticide for effective mosquito control would be utilized, including adulticides. Notification and concurrence by the U.S. Fish and Wildlife Service (Service) would be required for use of adulticides, to treat for human health emergencies. For the purpose of this compatibility determination, in order to allow use of adulticides, a human-health emergency is defined by the presence of human disease virus-positive mosquitos or virus-positive birds in Monterey County or adjacent counties. West Nile virus was first detected in California in 2002, and *Culex tarsalis* is a known vector for the disease. This disease has quickly spread across the country since first detected on the East Coast in 1999. Its rapid spread has necessitated the development of increased disease monitoring and mosquito abatement by mosquito abatement districts nationwide. The Centers for Disease Control and Prevention advocates that mosquito abatement districts conduct surveillance for the virus (including the use of sentinel bird flocks), monitor mosquito populations, and implement control measures prior to the occurrence of West Nile virus infections in humans or domestic animals (CDC 1999). They note that the "most effective and economical way to control mosquitos is by larval source reduction" (CDC 1999). In addition to the threat of West Nile virus, *Culex tarsalis* in Monterey County can also transmit St. Louis encephalitis, and western equine encephalitis. Mosquito-borne human disease viruses were last recorded in sentinel flocks in Monterey County in 1994 (St. Louis encephalitis), but they have been documented more recently in San Luis Obispo County, immediately south (NSVMAD 2002).

Mosquito populations are related to precipitation amounts. In years when rainfall is below normal, mosquito populations are low and control has been reduced or nonexistent. Conversely, when rainfall is above normal, mosquito populations are larger and mosquito control has been increased. For example, between 1988 and 1991, rainfall was below normal and no mosquito control was conducted at the Refuge these years. Typically, there have been 2-4 treatments in a season. In the last twenty-two years, mosquito control applications occurred 2.3 times per season on average. All mosquito control activities would be conducted by the Northern Salinas Valley Mosquito Abatement District under an annual Refuge-issued Special Use Permit with necessary stipulations.

For additional details about this proposed use, please see the Salinas River National Wildlife Refuge Final Comprehensive Conservation Plan (USFWS 2002) as well as the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001), which are herein incorporated by reference.

Availability of Resources: Adequate funding and staff exist to manage for mosquito control at the Salinas River National Wildlife Refuge. It is estimated that approximately 5% of a full-time employee (FTE) would be needed to monitor treatment of the pond and potential effects to wildlife, to survey the pond for nesting birds, and to develop and administer the required permits and documentation. This can be accomplished with existing staff and Point Reyes Bird Observatory cooperators. Additional funding would be necessary to conduct detailed research on potential effects of mosquito control on Refuge resources. The Refuge would attempt to secure additional funds through a variety of grants as well as cooperative research with universities, United States Geological Survey, and/or the mosquito abatement districts.

Anticipated Impacts of the Use(s):

Impacts are also discussed in Chapter 5 of the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment (USFWS 2001).

Toxicity and Effects to Nontarget Organisms: Bti is used almost exclusively by the NSVMAD when treating the Refuge. The bacterium Bti is a microbial insecticide that, when ingested, is toxic to mosquitos, black flies and several other members of the nematocera suborder within the order diptera. The intact toxin is not active against vertebrates (Boisvert and Boisvert 2000). The greatest degrees of susceptibility are within a few families: the culicidae (mosquitos), the simuliidae (black flies) and the chironomidae (midges); with mosquitos and black flies being the most susceptible (Boisvert and Boisvert 2000).

Bti is used widely because of its high specificity for target species and environmental safety (Ali 1981; Merritt et a. 1989). Laboratory and field studies have shown that Bti is toxic to some larval chironomids, but many factors, such as temperature, water depth, aquatic vegetation, and suspended organic matter, reduce its toxicity to chironomids in the environment (Charbonneau et al. 1993; Merritt et al. 1989).

Numerous studies have been conducted on the effects of Bti on nontarget organisms (anything other than mosquitos or black flies). A recent comprehensive review of 75 of these studies (Boisvert and Boisvert 2000) found that 37 had documented that some nontarget organisms can be effected to a certain extent after a Bti treatment. The other 38 studies showed no effects to nontarget organisms studied. Some members of the diptera suborder nematocera have been shown to be the most common species susceptible to Bti. The susceptibility of chironomid larvae to Bti could be between 15 to 75 times less than mosquito or black fly larvae, but the studies indicated that a high dosage of Bti will affect chironomid populations. Although most of the studies were done either at overdosage or under laboratory conditions, 9 of the 23 studies reporting an effect on chironomid populations were done using actual operating conditions (in

the field at operational doses). Apart from chironomidae, seven other dipteran families were affected by Bti. During many experiments or trials using overdosages some of these families showed significant mortalities. All these families are dipteran and may possess in "overdosage" conditions the capacity to capture, ingest and digest toxic crystals. In sufficient quantity, this can produce enough toxic proteins to induce cellular damage that could lead to death. A high-dosage treatment is not necessary to obtain a complete control of mosquitos and black flies, but in "overdosage" conditions, secondary effects can be expected on nontarget organisms. At the level of treatment proposed for the Refuge (0.5-1.0 pints per acre), overdosages would not be used, so adverse impacts to nontarget species is expected to be negligible or nonexistent.

A study in saline habitats of the San Francisco Bay (Lawler et al. 2000) looked at the effects of methoprene and duplex (Bti and methoprene combined) on nontarget invertebrates. In these saline habitats, which more closely resembles the Refuge pond, corixids (water boatmen) were the most common invertebrate (corixids are not in the nematocera suborder of diptera whose members were affected by Bti; they are in the order hemiptera). Lawler et al. (2000) found no evidence that duplex or methoprene affected corixid survival or maturation or on abundances of other invertebrates they studied.

A long-term study on the effects of repeated Bti treatments on nontarget organisms in freshwater wetlands was performed by Hershey et al. (1998) over 4 years in Minnesota. Bti was applied for 3 consecutive years using 6 applications each year between mid-April and mid-July at recommended label rates. Boisvert & Boisvert (2000) consider this frequency of applications as "intensive" and "higher than normal." Highly significant reductions were observed in several insect groups in the second year and eventually the intensive treatments resulted in wetland communities that were depleted of most insects during the third year. Since Bti was likely to be directly toxic to only nematoceran diptera, the effects of Bti on other insect groups may have resulted from disruption of the invertebrate food web (Hershey et al. 1998). Because the application was repeated 6 times per season at 3-week or shorter intervals, nontarget insects were much more likely to have been exposed to the direct or indirect effects of Bti. Boisvert & Boisvert (2000) believe that the recent study by Su and Mulla (1999) provides some explanation for these Hershey et al. (1998) results. Su and Mulla (1999) found that shortly after a single Bti treatment the growth of two species of green algae was inhibited for nearly three weeks. Considering the type of habitat treated and the frequency of Bti applications by Hershey et al. (1998), it is likely that primary production of algae was almost totally inhibited for three years resulting in the dramatic changes in diversity indices that they observed. No such food web effects have been documented during "normal" use of these materials or in saline environments (Lawler et al. 1999). Conditions at the Refuge differ from those of the Hershey study in that the Refuge pond is saline and the frequency of proposed treatments is much lower (currently approximately 0-4 treatments spaced over 6 months; may be fewer with new threshold).

In conclusion, although Bti is the most selective of mosquito control treatments, there may be some effects to chironomids under normal operating conditions. However, repeating treatments at longer intervals give the nontarget community time to recover in case there are any effects (Mulla et al. 1979). Although Hershey et al. (1998) provides some evidence that intensive,

frequent, repeated Bti applications can result in a disruption to the invertebrate food web, less frequent applications with longer intervals between them may not show the same results. In addition, chironomids were the most abundant group in the freshwater wetlands of that study (Hershey et al. 1998). Thus the results of that study do not necessarily apply to the saline conditions at the Refuge, where applications are fewer and spaced out further. Therefore, at the level of treatment proposed, adverse impacts to nontargets are expected to be negligible or nonexistent. However, Hershey's study does demonstrate the need for long-term research to better understand the consequences of Bti application on the invertebrate food web.

NSVMAD has not used methoprene on the Refuge in the past, but certain environmental conditions may warrant its use. Methoprene, a juvenile hormone analog, is thought to be among the most target-specific of mosquito control agents, but it is also used effectively for control of pest chironomidae (Miura and Takahashi 1974; Mulla et al. 1979; Norland and Mulla 1975). Methoprene kills larvae during emergence, and thus should not be expected to directly affect larval abundance in short-term studies. Methoprene is not as specific as Bti (Breaud et al. 1977). Studies have shown deleterious effects of methoprene for predatory dytiscids (aquatic beetles) (Norland and Mulla 1975), and for notonectids (backswimmers) (Miura and Takahashi 1974), but low toxicity to other organisms such as zooplankton (Niemi et al. 1999; Miura and Takahashi 1973). Reduction of predators on methoprene-treated sites, including both dipteran and nondipteran predators, may have been due to a combination of direct and indirect effects from methoprene (Hershey 1998). Because Bti is more selective, it is the Refuge's preferred biorational treatment.

Oils or monomolecular films exhibit pesticide properties by forming a coating on top of water drowning larvae, pupae, and emerging adult mosquitos. They are derived from petroleum distillates. Golden Bear 1111, a trade name oil, has been applied on the Refuge by NSVMAD four times since 1981, the last application in 1993. Field studies on salt marshes in South San Francisco Bay indicated that GB-1111 had an initial significant impact on potential prey (water boatmen, brine flies, and mosquitos) of aquatic birds that dissipated rapidly 3-days post spray (USGS 2001). Another study found that GB-1111 application was harmless to bottom dwelling macroinvertebrates, including mayflies, dragonflies, and damselflies; however, surface breathing organisms, including diving beetles, notonectids and corixids, were markedly affected, with mortality observed soon after treatment (Mulla and Darwazeh 1981). In birds exposed to operational levels of Golden Bear, matting of feathers and mild hypothermia may result (USGS 2001). Clearly, Golden Bear is the least desirable of the larval treatment methods considered herein in terms of effects on nontarget organisms. Golden Bear would only be allowed in cases when other larvacides have failed and a human health concern exists.

The NSVMAD has never used adulticides at the Refuge. Mosquito adulticides are commonly synthetic chemicals with lethal effects on a broad spectrum of insect species. Use of adulticides should not be necessary if monitoring of mosquito populations is conducted properly because mosquitos would be controlled earlier, at the larval stage.

Although the Refuge's saline pond has not been quantitatively surveyed for aquatic invertebrates, staff from the Moss Landing Marine Lab have surveyed for presence of amphipods. John Oliver of the Marine Lab describes the invertebrates of the saline pond as similar to those of the Salinas River lagoon area (Moss Landing Marine Lab 2002). The two most abundant species are both amphipods (*Eogammarus* and *Corophium*); isopods (*Gnorimosphaeroma*) and worms (including polychaetes and oligochaetes) are also common; chironomid and other fly larvae are also present, though not dominant.

Endangered and Threatened Species: The following impacts are those that could potentially occur in the absence of stipulations, which are detailed later in this document.

Human activity can have adverse impacts on rare shore-nesting birds, especially during nesting and foraging activities. The western snowy plover (*Charadrius alexandrinus nivosus*), federally listed as threatened, is of primary concern to the Refuge. The Service strives to provide optimum breeding conditions for the western snowy plover, whose breeding habitat has become increasingly scarce due to development and heavy public use of beaches throughout its range. However, in recent years, the number of breeding snowy plovers on the Refuge, and throughout the species' range, has decreased as a result of adverse weather conditions on their wintering grounds and heavy predation by native and nonnative wildlife. Human activity in the dunes and beaches during the snowy plover breeding season has the potential to adversely affect plover reproductive success. Western snowy plovers utilize the entire beach profile, from the foredune through the coastal strand into the intertidal zone (between mean low tide and mean high tide lines) for breeding and foraging. In addition, Point Reyes Bird Observatory has documented adult snowy plovers bringing chicks to the saline pond area to brood from May through September, as this area provides excellent cover and a good food source. The most commonly used brooding site in the area is also located on the Refuge, at the mouth of the Salinas River. The endangered California brown pelican *(Pelecanus occidentalis californicus*) also utilizes the lagoon at the mouth of the Salinas River, as well as islands near the rivermouth, and portions of the beach strand as roosting sites, particularly from April through December.

A NSVMAD monitor would walk along the saline pond edge and sample for mosquito larvae with a 16 ounce dipper. At least ten samples would be taken at different parts of the pond or marsh. Disturbance to plovers, and other birds, is expected to be minimal because monitoring would be done by one person, the monitor would not walk through the dunes, and the monitor would keep moving, limiting the duration of the disturbance to any particular area. In addition, monitoring would be more frequent prior to the breeding season when water levels are higher. As the pond dries down, monitoring frequency would be reduced to once every two weeks. Both plovers and pelicans may be disturbed by treatment activities. These effects as well as potential effects to plover food resources are discussed further under the migratory birds heading below.

Other federally listed species at the Refuge include: Smith's blue butterfly (*Euphilotes enoptes smithi*) and the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*) (federally listed as endangered); and the Monterey spineflower (*Chorizanthe pungens* var. *pungens*) (federally listed as

threatened). NSVMAD personnel do not enter dune areas, so impacts on these species are not expected.

An Intra-Service Section 7 Consultation was conducted on the entire draft CCP, including the proposed mosquito abatement activities. The resulting Biological Opinion (BO) (USFWS 2002b) concluded that adoption of the preferred alternative is not likely to jeopardize the continued existence of any of the listed species on the Refuge nor adversely modify critical habitat.

Wetlands and Migratory Birds: The following impacts are those that could potentially occur in the absence of stipulations, which are detailed later in this document.

The saline pond and salt marsh habitats support a variety of migratory birds including shorebirds, raptors, terns, and waterfowl. The lagoon at the mouth of the Salinas River supports pelicans, waterfowl, terns, gulls, and wading birds.

Shorebirds utilize the saline pond and rivermouth throughout the year. Peak shorebird numbers occur during the spring (April–May) and fall (September–October) migration periods when hundreds of shorebirds are present at the saline pond and on the mudflats adjacent to the river. A variety of wintering shorebirds utilize the pond area, including western sandpipers, American avocets, black-necked stilts, dowitchers, sanderlings, and plovers. In addition several species are known to nest in the pond area including the American avocet, black-necked stilt, Caspian tern, and black skimmers.

The rivermouth lagoon provides important habitat for migrating, wintering, and a few breeding waterfowl as well as a variety of waterbirds including gulls, herons, egrets, cormorants, and pelicans. The Salinas River and rivermouth lagoon support a wintering waterfowl population of approximately 500–3,000. The high salinity and comparatively shallow depths of the saline pond attract fewer waterfowl and waterbirds than the rivermouth lagoon (John Gilchrist and Associates et al. 1997). The Refuge pond is used by dabbling ducks during spring migration as a stopover foraging and roosting site. Daily winter waterfowl populations in the pond range from 10 to 100, depending on available water.

Helicopter application of mosquito pesticides may result in direct short-term disturbance of birds utilizing the saline pond and salt marsh. PRBO has observed flushing of nesting plovers and other shorebirds during helicopter treatment, although no nest or chick loss has been documented to this cause. However, disturbance during the breeding season does have the potential to decrease breeding success. Shorebirds tend to leave the pond area during applications, potentially resulting in separation of chicks from adults if applications are made after March, when shorebirds are nesting. Helicopter applications during the nesting season may also result in eggs or chicks being blown from nests by rotor wash.

Pelicans, terns, and gulls roosting on the rivermouth flush when disturbed and then attempt to return to the roost. Repeated passes by the helicopter near the rivermouth may result in a

majority of these birds leaving the area. Herons and egrets will also flush from the rivermouth areas when disturbed, moving upstream to undisturbed areas. These undisturbed areas are adjacent stretches of the Salinas River, both within and outside the Refuge. Waterfowl species react differently to the disturbance. Dabblers such as pintails and mallards flush and leave the area. Diving ducks such as ruddy ducks, buffleheads, and scaups will dive or move to avoid the disturbance but generally do not leave the Refuge. Birds along the rivermouth can be flushed as the helicopter is entering or exiting the area as well as during treatment if the treatment area is large, approximately 100 acres or more (R&B Helicopters 2002). When the treatment area is smaller, the area of marsh near the river mouth is not flooded (see Fig. 1), thus the helicopter does not fly close enough to the river during treatment to flush birds there. In the past twenty-two years, treatment size has been 100 acres or more only 5 times. Therefore, birds using the rivermouth lagoon area have been primarily flushed as the helicopter enters and exits the area, not during treatment.

In contrast to helicopter application, hand-treatment of the pond would require several persons walking through the entire marsh over a few days, and treatment by motor-vehicle would require its use throughout the marsh and would damage habitat. Both hand and motor-vehicle application would prolong the period of treatment and would result in trampling of native vegetation and potentially wildlife.

In addition, there may be secondary impacts on birds utilizing the treated pond. Birds feed on a wide variety of insects and other invertebrates. In particular, waterfowl and shorebirds utilize aquatic invertebrates as a source of protein during spring migration. The food source available in the pond may be reduced for birds and other native wildlife. However, indirect food-chain effects to vertebrates have not been documented thus far. Hanowski et al. (1997) collected data 2 years before treatment and 3 years after treatments of either Bti or methoprene were applied. They found no effect of Bti or methoprene treatments on the bird community or on 19 individual bird species. The authors believe that other factors, such as predation and weather, were more important influences. Despite large decreases in insect density and biomass 2 and 3 years after treatment in the Hershey et al. study (1998), a related study at the same study site observed no direct or indirect negative effects of treatment with Bti or methoprene over a 3-year period on zooplankton or breeding birds (Niemi et al. 1999). There have been numerous studies that have found no effects of Bti treatment on fish, amphibians, crustaceans, molluscs, worms, beetles, dragonflies, damselflies, and many other aquatic invertebrates (see Boisvert and Boisvert 2000 for a review; also Lawler et al. 1999; USFWS 1998; Merritt et al. 1989).

The Refuge's saline pond attracts large numbers of shorebirds including terns (Caspian, Forsters, elegant), snowy plovers, American avocets, and black-necked stilts as well as phalaropes and waterfowl. Terns primarily eat small fish and crustaceans. The Refuge's saline pond fills through direct rainfall and runoff as well as periodic wave overwash during winter extreme high tides; it typically dries in the summer. In addition, salt is concentrated by evaporative loss and can vary extremely from 1 part per thousand (ppt) to 150 ppt (Gilchrist and Associates 1997). Therefore, although some fish may be washed into the pond from the tides, the pond is not expected to support large numbers fish. Fish eating species that use the pond, such as terns,

forage along the river and ocean shore. Other shorebirds are usually considered opportunistic feeders, eating what is available. Their diets can consist of small fish, small crustaceans (including copepods, amphipods, ostracods), crabs, snails, worms, beetles, mollusks, water bugs including corixids, lepidopterans, as well as flies and other aquatic insects, and seeds. Because of varied shorebird diets and limited number of mosquito control treatments anticipated, the Refuge does not expect impacts to shorebirds based on food availability. Diets of ducks are also varied and consist of seeds, other plant material including roots, tubers, and leaves, crustaceans, snails, and aquatic insects including mosquitos, damselflies, mayflies, and midges. In general duck diets in the winter consist primarily of plant material while breeding-season diets are higher in aquatic invertebrates which provide needed protein (Baldassarre et al. 1994). Goose diets, on the other hand, consist primarily of plant material. Most of the waterfowl using the Refuge are migratory and use the Refuge as wintering habitat. In addition, most mosquito control treatments occur prior to April. Therefore effects to waterfowl are expected to be negligible.

Public Review and Comment: Public review and comment was conducted concurrent with the public review and comment period for the CCP and associated Environmental Assessment. Please refer to Appendix K in the Final CCP (USFWS 2002) for a review of public comments and Refuge responses.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible With Following Stipulations

Stipulations Necessary to Ensure Compatibility: To continue to allow the NSVMAD to access the Refuge for mosquito control, the following measures would be taken:

A threshold level of 0.5-1.0 larvae per dip will be utilized for mosquito control. This should decrease frequency of applications.

Bti will be utilized over methoprene due to its higher target-specificity.

Golden Bear or other oils/films will only be allowed in cases when larvicides have failed and a human health concern exists, following a specific request to the Refuge and verbal concurrence. Prior to any application of Golden Bear, birds will be flushed from the pond by a helicopter flyover immediately before treatment. Treatment may be allowed only when entomological surveys determine the presence of mosquitos on the Refuge.

Other pesticides, such as more toxic organophospates or mosquito adulticides, will only be allowed in cases of a human health emergency, following a specific request to the Refuge and verbal concurrence. A human-health emergency is defined by the presence of human disease virus-positive mosquitos or virus-positive birds in Monterey County or adjacent counties.

Treatment may be allowed only when entomological surveys determine the presence of mosquitos on the Refuge.

As of the date this compatibility determination is signed, the Service has not finalized a contingency plan for dealing with mosquitos in a human, fish, or wildlife health emergency. However, this is expected to be finalized in 2003. At that time, it will be attached as an appendix to this determination and will be incorporated into the Refuge's mosquito control program. If this determination needs to be reassessed once the contingency plan is finalized, it will occur at that time.

Mosquito control will not be allowed during the shorebird nesting season (March 15–August 31) if shorebirds are known to be nesting or if snowy plovers are utilizing the pond, except in cases of a human health emergency.

The helicopter pilot will avoid flying low over the river to access or exit the Refuge, thus minimizing bird flush. Either the helicopter will access the Refuge without crossing the river or will fly high enough over the river to avoid bird flush. R&B Helicopters (2002) has confirmed that this is possible. The helicopter will not be allowed to land on the Refuge.

NSVMAD will need to notify the Refuge prior to monitoring or treating the pond. After March 15th, Refuge staff and cooperators will regularly survey the pond area for nesting birds and will let NSVMAD know if treatment will be allowed. The Refuge recognizes that a notification period of several days prior to treatment may allow larval development of mosquitos and precipitate the use of more harmful treatment materials. Therefore, the permittee will be required to notify the Refuge prior to monitoring/sampling efforts so Refuge staff will be aware that treatment may be imminent. In all cases, the permittee will give as much notice to the Refuge as is possible, and at least 24 hours notice.

Western snowy plover breeding activities on the Refuge and throughout the Monterey Bay area will continue to be monitored by Point Reyes Bird Observatory (PRBO). PRBO will monitor and document western snowy plover use of the Refuge and document causes of individual bird mortality as well as disturbance. If PRBO or Refuge staff observe disturbance to plovers caused by NSVMAD activities, the magnitude and frequency of such disturbance will be documented. Other threatened and endangered species and Refuge resources will also be monitored by Refuge staff. Terms and conditions of the Special Use Permit will be subject to annual modification if disturbance is considered to interfere with or detract from the fulfillment of the purpose of the Refuge or System mission. For example, if bird surveys determine that an unacceptable level of flushing or disturbance occurs during helicopter treatment, the Refuge may require modifications to treatment activities.

Mosquito control will be authorized annually by Special Use Permit. Permit conditions will stipulate that all control work will be carried out in conformance with pre-approved Pesticide Use Proposals and Section 7 Endangered Species consultations.

Justification:
After assessing the potential impacts from mosquito abatement activities, the Refuge has found that allowing these uses would not materially interfere with or detract from the purpose for which the Refuge was established or the mission of the National Wildlife Refuge System.

The Refuge is within a few miles of two communities, Castroville and Marina. In addition, a 120-unit housing complex is located approximately half a mile north of the Refuge, and approximately 6,000 visitors come to the Refuge each year. To protect Refuge visitors and be a good neighbor to the surrounding communities, mosquito control will continue to be allowed subject to the stipulations herein. These communities have been essentially mosquito-free since the NSVMAD began operations and any mosquitos encountered result in a large number of complaints to the district. However, the Refuge has determined that a threshold limit for mosquito control is appropriate and has thus incorporated that threshold into the stipulations herein. Mosquito control for human health emergencies does not necessitate thresholds. The most appropriate and effective control technique will be utilized.

Because frequency of treatment is expected to remain low and intervals between treatments long, overall effects to nontarget organisms are not expected to be significant. Two to three treatments per year spaced about 7 weeks apart have been the norm for the last seven years, and treatments may further decrease with the new threshold limits.

Treatment by helicopter is preferred because the short duration of the flight (10-25 minutes) minimizes disturbance to wildlife and no effects to vegetation are expected. Because pilots will no longer be able to fly low over the river to enter or exit the Refuge, disturbance to birds using the river and rivermouth lagoon will be minimized. In contrast, hand-treatment would require several persons walking through the entire marsh over a few days and motor-vehicle use through the marsh would damage habitat. Both hand and motor-vehicle application would prolong the period of treatment and would result in trampling of native vegetation and potentially wildlife.

Shorebird diets are varied, opportunistic, and do not rely heavily on dipterans, therefore, occasional reductions of mosquito larvae and potentially chironomids are not expected to impact their populations. Waterfowl diets are similarly varied, with invertebrates forming a large part of their diet only during the breeding season; thus they are also not expected to be impacted.

Mosquito abatement practices cause some temporary disturbances to wildlife. However, the number of treatment days per year is low, and if the applicator follows the stipulations herein and in the SUP, mosquito abatement practices should not materially interfere with or detract from the refuge purpose or System mission. Should further biological monitoring of this activity document a substantial prolonged reduction of bird use, direct destruction of shorebird nests, or other deleterious effects, this determination would be reanalyzed on the basis of the new data.

As mentioned in the Stipulations section, the Service is currently developing new national policy regarding mosquito control on refuges. This compatibility determination will be reviewed once the new policy is finalized.

Mandatory Reevaluation Date (provide month and year):

_____ Mandatory 15-Year Reevaluation Date (for priority public uses)

Dec. 2012 Mandatory 10-Year Reevaluation Date (for all uses other than priority public uses)

NEPA Compliance for Refuge Use Decision (check one below):

Conducted with Comprehensive Conservation Plan

_____Categorical Exclusion without Environmental Action Statement

_____Categorical Exclusion and Environmental Action Statement

__X__Environmental Assessment and Finding of No Significant Impact

_____Environmental Impact Statement and Record of Decision

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Refuge Determination

Prepared by: _____ (Signature) 1-19-02 (Date)

Refuge Manager/
Project Leader
Approval: _____ (Signature) 11/20/02 (Date)

Concurrence

Refuge Supervisor: _____ (Signature) 11-25-02 (Date)

Regional Chief,
National Wildlife
Refuge System: _____ (Signature) 12/12/02 (Date)

Acting

California/Nevada
Operations Manager
(for CA and NV): _____ (Signature) 12-20-02 (Date)

Appendix H. Salinas River NWR Avian Predator Management Plan

SALINAS RIVER NATIONAL WILDLIFE REFUGE
AVIAN PREDATOR MANAGEMENT PLAN

I. OVERVIEW

In conjunction with its existing mammalian predator management program and other wildlife and habitat management programs, the U.S. Fish and Wildlife Service proposes to implement an avian predator management program at the Salinas River National Wildlife Refuge (hereafter, Refuge). The goal of the program is to increase the production of the Refuge's population of western snowy plovers (*Charadrius alexandrinus nivosus*, federally listed as threatened) by selectively removing problem avian predators that pose a threat to western snowy plover adults, chicks, or eggs. Removal will be accomplished by live trapping and translocation or, in rare cases, lethal control. Likely target predators include northern harriers (*Circus cyaneus*), American kestrels (*Falco sparverius*), loggerhead shrikes (*Lanius ludovicianus*), common ravens (*Corvus corax*) and American crows (*Corvus brachyrhynchos*).

II. PURPOSE

The avian predator management program is intended to accomplish the following.

- Maintain a 5-year average population of 35–40 breeding western snowy plover adults on the Refuge.
- Maintain a 5-year average productivity of at least 1.0 fledged chick per male.
- Reduce the number of problem avian predators in localized areas. *Problem predators* are defined as individuals that belong to species known to prey on western snowy plovers and are exhibiting hunting behavior in western snowy plover nesting areas.

The program was developed to support the Refuge's management objective of recovering and maintaining a stable snowy plover population; the numerical targets reflect the best available data on the numbers of individuals necessary for a self-sustaining western snowy plover population. The avian predator management program was designed to operate in concert with existing management efforts, including the Monterey Integrated Predator Management Program.

III. BACKGROUND AND DESCRIPTION OF PROBLEM

The Pacific coast population of the western snowy plover (hereafter, snowy plover) breeds primarily on coastal beaches over a range that extends from southern Washington to southern Baja California. In 1993, the species was listed as threatened under the federal Endangered Species Act throughout this range. Threats to the snowy plover include increasing habitat loss, predation, and human disturbance of nesting grounds.

Significant loss of breeding habitat in southern California has made the state's remaining breeding areas crucial to maintaining a stable snowy plover population. The Monterey Bay region of California's central coast is particularly important, and the Refuge currently supports one of the state's most productive breeding populations of snowy plovers.

IV. EXISTING PREDATOR MANAGEMENT EFFORTS IN THE MONTEREY BAY AREA

The Point Reyes Bird Observatory (PRBO) has monitored the breeding success of snowy plovers throughout the Monterey Bay area since 1984. PRBO bands chicks and conducts a monitoring program that results in yearly estimates of

- breeding population size,
- number of nesting attempts,
- nesting success rate, and
- fledging success rate.

These studies make it possible to assess the status of the population, quantify impacts such as predation, and evaluate the success of various management programs. Information gathered by PRBO has been instrumental in the development of cooperative snowy plover management strategies involving various land management agencies in the Monterey Bay area, including the U.S. Fish and Wildlife Service (Service), the California Department of Parks and Recreation[1] (CDPR), and the California Department of Fish and Game[2] (CDFG).

The Monterey Integrated Predator Management Program was initiated in 1993 by the Service, CDPR, and CDFG, in response to low snowy plover reproductive success rates. It integrates a variety of techniques, including:

- removal of mammalian predators, primarily non-native red foxes (*Vulpes vulpes*), feral cats (*Felis catus*), and skunks (*Mephitis mephitis*);

- installation of nest exclosures and symbolic fencing (cable and post structures used to keep humans out of nesting areas);

- temporary closure of sensitive beach areas; and

- posting of informational signs.

The program has been very successful in increasing snowy plover hatch rates. Snowy

[1]California Department of Parks and Recreation has management responsibility for the area's State Beaches.

[2]California Department of Fish and Game manages the Moss Landing Wildlife Area.

plover hatch rates were high in 1999, 2000, and 2001; the 2000 hatch rate of 86% was the highest recorded since monitoring began in 1984. In addition, it was possible to use fewer exclosures around snowy plover nests in the Monterey Bay area in 2000 and 2001 than in the previous eight years because of the success of the mammalian predator management program. It is desirable to minimize the use of nest exclosures because avian predators learn to recognize them and use them as perches from which to prey on snowy plover chicks and adults; fledge rates decrease and adult loss increases when nests are exclosed.

Although recent hatch rates have been high and mammalian predation of snowy plovers appears to have decreased, in the late 1990's PRBO observed an increase in avian predation of snowy plover chicks in the Monterey Bay area, resulting in decreased fledge rates. In 1998, PRBO staff found 12 plover chick bands in a kestrel nest box adjacent to the Moss Landing Wildlife Area; PRBO has documented shrike, harrier, and kestrel predation on snowy plover chicks. Several incidents of avian predation on adult snowy plovers have also been recorded. Finally, PRBO has documented a positive correlation between sightings of avian predators and chick loss at study sites.

Although there have not yet been documented instances of crow or raven (corvids) predation of snowy plover nests on the Refuge, in the last few years PRBO has observed that the range of the raven in Monterey Bay has expanded to include coastal beach areas. Ravens have been documented preying on snowy plover nests in northern Santa Cruz County, Point Reyes National Seashore, San Francisco Bay, coastal Sonoma County, San Diego County, Mono Lake, Humboldt County and Coos Bay Oregon (CDFG 2001; USFWS 2001). Crows have been documented preying on snowy plover nests at Vandenberg Air Force Base, Atascadero Beach in San Luis Obispo County, and along the Oregon Coast (CDFG 2001; USFWS 2001). Therefore, there is a strong possibility that ravens and/or crows could become problem predators at the Refuge sometime in the future.

V. RELEVANCE TO REFUGE PURPOSE AND GOALS

The Refuge was established in 1974 for its "particular value in carrying out the national migratory bird management program," and one of the Refuge's three stated goals is to protect and enhance endangered species populations and their habitats. Snowy plovers have benefitted by management of mammalian predators since 1993, but monitoring results suggest that management of selected avian predators is also necessary to protect and maintain the snowy plover breeding population. Thus, the new plan has direct bearing on the Refuge's ability to fulfill its purpose and goals.

VI. COOPERATORS

This plan will be implemented in cooperation with the following agencies and organizations.

- Point Reyes Bird Observatory (PRBO)
- Santa Cruz Predatory Bird Research Group (SCPBRG)
- California Department of Fish and Game (CDFG)
- California Department of Parks and Recreation (CDPR)
- U.S. Department of Agriculture – Wildlife Services (USDA – WS)
- U.S. Fish and Wildlife Service, Ventura Field Office (USFWS)
- U.S. Fish and Wildlife Service, San Francisco Bay NWR Complex (USFWS)

VII. EXPERIMENTAL AVIAN PREDATOR MANAGEMENT STUDY

Because of decreased snowy plover fledge rates and continued adult loss believed to be primarily the result of avian predation, the Service and the Santa Cruz Predatory Bird Research Group, in cooperation with CDFG, CDPR, and PRBO, implemented a small-scale 3-year experimental avian predator relocation study at the Refuge and the Moss Landing Wildlife Area in 1999. The purpose of the study was to document the effects of avian predators on snowy plovers and to assess the efficacy of translocating avian predators.

The pilot year of the study (1999) provided initial data on the effects of avian predators on snowy plover reproductive success. A pair of northern harriers was removed from the Moss Landing Wildlife Area early in the 1999 breeding season, and plover fledging success during the first portion of the breeding season was 72%. However, a second pair of harriers nesting on private property approximately 3 miles away was not trapped, and fledge rates of plovers at the Wildlife Area decreased to 32% after heavy visitation by the second pair of harriers. A pair of harriers is also believed to have contributed significantly to the reproductive failure of snowy plovers at the Refuge in 1999. Though hatch rates were high, not a single chick fledged at the Refuge in 1999. During the period when the harrier pair were seen hunting at the Refuge, significant snowy plover chick loss was documented. The harrier pair could not be trapped in time to prevent chick losses.

The second year of the study (2000) saw improved protocols and increased funding, contributing to quicker and more efficient predator translocation and an overall increase in effectiveness. In addition, during the second study year, Zmudowski State Beach was included in the experiment based on evidence that shrikes were contributing to the low snowy plover fledge rates documented at this site (14% in 1999). Fledge rates were relatively high at all three Monterey Bay area study sites in 2000. At the Refuge, where three female harriers were translocated, the fledge rate increased from a 1997–1999 average of 14% to a value of 28% in 2000. A male harrier remained at the Refuge the entire season and could not be trapped, but removal of the females prevented harrier nesting and the consequent increase in food demands. At Zmudowski State Beach, where three shrikes were translocated, the fledge rate increased from a 1997–1999 average of 29% to a value of 57% in 2000, the highest fledge rate recorded there since 1984. At the Moss Landing Wildlife Area, where five harriers were translocated, the 2000 fledge rate was 42%. This is similar to the 1997–1999 average of 49%. Fledge rates at the Wildlife Area probably would have been higher, but two harriers arrived in the area in July. Because it was late in the season, cooperators initially felt that trapping was unnecessary. However, at least one of the late-arriving harriers was documented preying on snowy plover

chicks, and fledge rates decreased. Both late-arriving harriers were eventually trapped and relocated.

In 2001, one male harrier was trapped at the Refuge in May. Intermittent female harriers were sighted in April and throughout July but they either left or were not determined to be problem birds. This was the first year at the Refuge that problem predator(s) were able to be captured immediately, and the fledge rate was the highest recorded at 57%. At the Moss Landing Wildlife Area, an early female harrier left on her own. A nesting pair of harriers were allowed to remain because they were not determined to be problem predators. A second nesting pair was later found; the female was trapped and translocated but the male evaded trapping attempts and subsequently left the area. With no problem harriers remaining at the Wildlife Area, overall fledge success was also very high at 59%. Finally, at Zmudowski no shrikes nested and no birds had to be removed. Fledging success was an all-time record of 70%. At all three sites, snowy plover productivity reached record levels in the 2001 season and avian predator management was successful and timely.

During the three year study, cooperators learned a lot about the behavior of avian predators and the effectiveness of trapping devices and techniques. The experimental study also provided information on the effectiveness of translocation. Two harriers were equipped with radio transmitters in 1999 and were periodically checked for several months after their release. They survived and stayed in the general area of release. In addition, all translocated birds were banded in the three study years, so it was possible to determine that no birds returned to the capture area within the same season. And only one bird of the 14 total captures in 1999 and 2000 returned on subsequent years. This male harrier was originally trapped near the Moss Landing Wildlife Area and translocated in 1999. It was recaptured in 2000 in the same area., fitted with a radio transmitter and translocated again in 2000 to the Sutter Buttes, north of Sacramento. Once again, it returned to the same area near the Moss Landing Wildlife Area in 2001. Although this is the only bird that has returned from its translocation site, it may become necessary to adjust translocation distances in the future.

Based on analysis of the results of the 3-year experimental study, the Service and its cooperators concluded that avian predation is adversely affecting snowy plover reproductive success at the three study sites, and that trapping and translocation of problem avian predators is an effective strategy for reducing predation-related mortality and increasing fledge rates.

VIII. MANAGEMENT PLAN

Avian predator management may occur year-round but will be concentrated immediately prior to and during the snowy plover breeding season (March–September). Management strategies included in this plan will be implemented within the Refuge, or, with the consent of the appropriate agency or landowner, on adjacent public or private properties.

Under the avian predator management plan, the Refuge and its cooperators will continue to monitor snowy plovers to determine hatch and fledge rates as well as adult survivorship and population size. In addition, avian predators on the Refuge and adjacent lands will be

monitored; information recorded will include species observed and their behavior and habits. If an individual noncorvid predator is evaluated as posing a threat to snowy plovers at the Refuge, it will be trapped, banded, and relocated. The determination that relocation is necessary will be made by Refuge staff in consultation with PRBO biologists and monitors; CDFG and CDPR staff will be responsible for monitoring and managing avian predators on their respective lands, in cooperation with PRBO.

Trapped birds will be removed from the wild and held in a licensed and permitted rehabilitation/holding facility until they can be relocated and released in the wild. All translocated birds will be released in an area with suitable habitat at a distance from which they would not be expected to return (generally, more than 150 miles away). Release distances may be adjusted in the future based on documented return rates of translocated birds. All releases will be carried out with the permission of the landowner or land management agency.

Only licensed and authorized agencies or individuals will implement predator management actions; all activities will be conducted in a humane manner, under the direction of the Refuge manager and in close coordination with PRBO. Management actions will be carried out by the Santa Cruz Predatory Bird Research Group, USDA Wildlife Services, or other such qualified agencies or individuals. Refuge personnel and their cooperators may assist with capture efforts.

Non-lethal techniques will be used whenever possible for noncorvids. A combination of live-trapping techniques will be used, including bal-chatri traps, dho gaza nets, bow nets, net launchers with bait, and lures. Knowledge of the avian predator's habits will determine which trapping technique to employ.

Hazing or lethal control will only be used on extremely rare occasions when it is demonstrably necessary, for example, when repeated trapping attempts have failed and there is an immediate threat to snowy plover chicks. The decision to lethally remove an avian predator will be determined on a case-by-case basis, and will be based on the degree of threat, the breeding phase of the snowy plovers, professional judgment of the situation, and knowledge regarding the species involved. Lethal methods may include euthanasia and shooting, and will be implemented as humanely and selectively as possible. Shooting will be conducted only by government personnel trained and certified in firearm safety. In order to avoid human safety hazards, shooting will take place only when members of the public are not in the area.

If a problem raven or crow is found on the Refuge, it would likely be controlled lethally. The ability of crows and ravens to adapt and thrive in human-altered landscapes, both rural and urban/suburban, has led to dramatic increases in range and population sizes in western North America, including California (CDFG 2001; Johnston, 2001; Marzluff et al, 2001; USFWS 2001). Because they are effective predators on the nests and young of some threatened and endangered species, including snowy plovers, there is concern among management agencies that increases in corvid populations are having a negative impact on populations of some listed species (CDFG 2001). Translocation of corvids to other areas may negatively impact wildlife or agriculture in those areas. In some areas, ravens have been termed a "pest" and are causing economic damage as well as harming native wildlife (CDFG 2001). Farmers and ranchers are

able to obtain depredation permits to kill corvids that are feeding on crops or cattle feed (CDFG 2001). In addition, the small number of individual corvids that would potentially be taken by this project each year would not impact their overall populations.

Selective control of problem mammalian predators will continue as described in the Salinas River National Wildlife Refuge Predator Management Plan and Final Environmental Assessment (U.S. Fish and Wildlife Service 1993).

The Refuge and its cooperators will continue to explore avian predator management alternatives that will protect the snowy plover while minimizing disturbance to avian predators. There is particular interest in developing management techniques that would permit problem predators to remain on the Refuge but would prevent them from hunting in snowy plover nesting areas. For example, cooperators have expressed interest in conducting research to develop new types of radio collars and transmitters that would send a loud sound and/or vibration to the predator when it enters plover nesting habitat.

Additional measures to discourage avian predator use of snowy plover breeding areas will include continuing to attach metal spikes to signs on the refuge and removing two abandoned posts on the Refuge which serve as perching sites.

IX. ALTERNATIVES CONSIDERED

In addition to the management strategy described above, the Refuge and its cooperators considered several alternatives for avian predator management, including:

1) no action,
2) visual/auditory repellents,
3) lethal control only, and
4) use of physical barriers.

Cooperators agreed that the proposed management plan represents the most effective, most humane, and least disruptive alternative. If no action is taken, snowy plover fledge rates are expected to be too low to sustain the Refuge population; ultimately, snowy plovers may stop breeding on the Refuge, or the Refuge may act as a population "sink." Repellents, either visual repellents such as kites, flagging and streamers or auditory repellents such as cannons, shotguns, or other sonic devices were determined to be too disruptive to non-target wildlife. In addition, they are often effective for only short time periods until animals become accustomed to them (CDFG 2001). Lethal control only, while efficient and effective, was rejected for non-corvids because of its impact on the individual avian predators; cooperators judged it to be a less desirable option. For problem corvids, however, lethal control would likely be used. Raven and crow populations have increased substantially in the past 50 years along with agriculture and human habitation (CDFG 2001), and impacts to their overall population would be negligible. Finally, physical barriers (such as exclosures around snowy plover nests) have been used for a number of years at the Refuge and elsewhere throughout the snowy plover breeding range. While they are effective at reducing mammalian and corvid predation on eggs, they are

ineffective against chick and adult predators. Once chicks leave the exclosure, they are vulnerable to avian predation. In addition, adult snowy plovers in exclosed nests have been shown to be more vulnerable to loss than adults in unexclosed nests. Avian predators in the Refuge area as well as other parts of California have learned to target exclosures and wait until an adult or chick emerges (CDFG 2001).

X. JUSTIFICATION

The predator management program will result in small, localized reductions in populations of some native avian predator species around the Refuge. In most years, an estimated 2–6 birds or fewer will be affected, and impacts on individual birds will be minimized by the use of humane and selective techniques. Nonlethal methods will be used almost exclusively. Avian predators will be trapped and released into suitable habitat elsewhere. Populations of avian predators using grassland and riparian habitats will not be affected. The program proposes to remove only avian predators using the beach or salt pan areas, where snowy plovers nest.

Without effective predator management, large losses of chicks and adults of the western snowy plover will continue to threaten the recovery of this listed species. With predator management, including avian predator management, the Refuge snowy plover population is expected, at a minimum, to sustain its current size of approximately 35 breeding adults, and ideally, to increase to 40 breeding adults. Snowy plover reproductive success is expected to increase to 1.0 fledglings per male per year.

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Appendix I. Salinas River NWR Wildland Fire Management Plan

SALINAS RIVER NATIONAL WILDLIFE REFUGE

WILDLAND FIRE MANAGEMENT PLAN

2002

DECEMBER 2002

WILDLAND FIRE MANAGEMENT PLAN

SALINAS RIVER NATIONAL WILDLIFE REFUGE

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EXECUTIVE SUMMARY

When approved, this document will become the Salinas River National Wildlife Refuge fire management plan. Major components include:

- updated policy for prescribed fires at Salinas River National Wildlife Refuge,

- reference to and inclusion within the Refuge's 2001 Comprehensive Conservation Plan,

- format changes under the direction of Fire Management Handbook (Release Date 6/1/00), and

- establishes a Prescribed Fire Program for management of sensitive habitat and reduction of hazardous fuels.

This plan is written to provide guidelines for appropriate suppression and prescribed fire programs at Salinas River National Wildlife Refuge. Prescribed fires may be used to reduce hazard fuels, restore the natural processes and vitality of ecosystems, improve wildlife habitat, remove or reduce non-native species, and/or conduct ecological research.

INTRODUCTION

Salinas River National Wildlife Refuge (Refuge) is a valuable natural resource supporting a diversity of habitats and a great variety of aquatic and terrestrial biological resources. The Refuge provides important habitat to many endangered and threatened species as well as species that are candidates for federal listing. Historically, many factors have contributed to the decline of endangered, threatened and rare species present in the Refuge, including historic loss of habitat, human disturbance, exotic vegetation encroachment, and increased predation. The history of fire at the Refuge including fire regimes is not documented or well known.

The primary purpose for which the 367-acre Refuge was established in 1973 was for its "particular value in carrying out the national migratory bird management program." It was acquired by the Service through a transfer of surplus military land from the U.S. Army and U.S. Coast Guard. From 1974 through 1991, the area was operated as a Wildlife Management Area under a cooperative agreement with the California Department of Fish and Game. By the mid-1980's, the growing importance of the Refuge to sensitive species prompted the need for more active management and protection of its resources. In 1991, the Fish and Wildlife Service began managing the area as a National Wildlife Refuge under the National Wildlife Refuge System Administration Act and the Refuge Recreation Act of 1962. Management emphasis is on threatened and endangered species and sensitive migratory birds.

The Fire Management Plan (FMP) for the Refuge is written as an operational guide for managing the Refuge's wildland fire and prescribed fire programs. It defines levels of protection needed to ensure safety, protect facilities and resources, and restore and perpetuate natural processes, given the current understanding of the complex relationships in natural ecosystems. It is written to comply with a service-wide requirement that refuges with burnable vegetation develop a fire management plan (620 DM 1).

The FMP will be used to help achieve resource objectives of managing unplanned fire and using prescribed fire to control non-native vegetation and restore native upland grassland habitat. The Department of the Interior policy requires that all refuges with vegetation that can sustain fire must have a Fire Management Plan that details fire management policies, the use of prescribed fire for attaining resource management objectives, and fire program operational procedures. This plan is evaluated under NEPA in chapter five of the Draft Comprehensive Conservation Plan/Environmental Assessment.

The FMP outlines procedures for wildland suppression and prescribed fires. The fire plan furthers the mission of the Refuge by providing increased protection for Refuge resources and by establishing the framework for a prescribed fire program designed to enhance and maintain native grassland habitat on the Refuge. Increasing coordination and preparedness will help ensure quick response for suppression of fires which have the potential to be devastating to Refuge resources.

There is no dedicated fire staff at Salinas River NWR or San Francisco Bay NWRC. All wildland fires will be suppressed by local cooperating agencies with the oversight of the Project Leader and Zone Fire Management Officer (FMO). All prescribed fires will be coordinated through the Zone FMO.

COMPLIANCE WITH USFWS POLICY

The Refuge was established in 1973 by authority of 16 U.S.C. subsection 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes, 16 U.S.C. subsection 667b-667d, as amended) for wildlife conservation purposes and, in particular, for "carrying out the national migratory bird management program."

Values to be considered in the FMP include: protection of Refuge property and historical sites, protection of neighboring private properties, protection of endangered/threatened/and rare species, and enhancement and protection of Refuge habitats. There are currently 40 special status species known or believed to use habitat at the Refuge (Appendix C). Endangered species include the Smith's blue butterfly *(Euphilotes enoptes smithi)*, California brown pelican *(Pelecanus occidentalis)*, and the Monterey gilia *(Gilia tenuiflora* ssp. *arenaria)*; threatened species include the Western snowy plover *(Charadrius alexandrinus nivosus)* and Monterey spineflower *(Chorizanthe pungens* var. *pungens*).

This Fire Management Plan has been completed in conjunction with the Refuge's 2001 Comprehensive Conservation Plan (CCP). The following goals for Salinas River NWR were developed by Refuge staff and are outlined in the CCP. These goals further define the purpose and direction of the Refuge.

- Protect, restore, and enhance populations of migratory birds and other native species and their habitats.
- Protect and enhance populations of endangered, threatened, and rare species, and promote their recovery by restoring and enhancing their natural habitats.
- Provide opportunities for safe, unique, wildlife-dependent recreation when compatible with other Refuge goals.

Several operational plans are used by the Refuge to meet these objectives. These include the CCP, recovery plan for the endangered Smith's blue butterfly, recovery plan for coastal plants which includes the Monterey spineflower and Monterey (sand) gilia, predator management plan, hunt plan, and internal Section 7 endangered species consultations.

The FMP is a detailed program of action to implement fire management policies and objectives, and addresses policy on prescribed burning to control non-native vegetation and restore native grassland habitat. The FMP meets the objectives of the Refuge's operational plans by supporting strategies which rely upon fire as a management tool and by identifying where and when fire should be applied.

The Department Manual, DM 910 (USDI 1997) states the following regarding wildland fires:

> "Wildfires may result in loss of life, have detrimental impacts upon natural resources, and damage to or destruction of man-made developments. However, the use of fire under carefully defined conditions is to be a valuable tool in wildland management. Therefore, all wildfires within the Department will be classified either as wildfire or as prescribed fires.
>
> Wildfires, whether on lands administered by the Department or adjacent thereto, which threaten life, man-made structures, or are determined to be a threat to the natural resources or the facilities under the Department's jurisdiction, will be considered emergencies and their suppression given priority over normal Departmental programs.

Bureaus will give the highest priority to preventing the disaster fire - the situation in which a wildfire causes damage of such magnitude as to impact management objectives and/or socio-economic conditions of an area. However, no wildfire situation, with the possible exception of threat to human survival, requires the exposure of firefighters to life threatening situations. Within the framework of management objective and plans, overall wildfire damage will be held to the minimum possible giving full consideration to (1) an aggressive fire prevention program; (2) the least expenditure of public funds for effective suppression; (3) the methods of suppression least damaging to resources and the environment; and (4) the integration of cooperative suppression actions by agencies of the Department among themselves or with other qualified suppression organizations.

Prescribed fires...may be used to achieve agency land or resource management objectives as defined in the fire management plans....Prescribed fires will be conducted only when the following conditions are met:

a. Conducted by qualified personnel under written prescriptions.
b. Monitored to assure they remain within prescription.

Prescribed fires that exceed the limits of an approved prescribed fire plan will be reclassified as a wildfire. Once classified a wildfire, the fire will be suppressed and will not be returned to prescribed fire status."

The authority for funding (normal fire year programming) and all emergency fire accounts is found in the following authorities:

Section 102 of the General Provisions of the Department of Interior's annual Appropriations Bill provides the authority under which appropriated monies can be expended or transferred to fund expenditures arising from the emergency prevention and suppression of wildland fire.

P.L. 101-121, Department of the Interior and Related Agencies Appropriation Act of 1990, established the funding mechanism for normal year expenditures of funds for fire management purposes.

31 US Code 665(E)(1)(B) provides the authority to exceed appropriations due to wildland fire management activities involving the safety of human life and protection of property.

Authorities for procurement and administrative activities necessary to support wildland fire suppression missions are contained in the Interagency Fire Business Management Handbook. The Reciprocal Fire Protection Act of May 27, 1955 (42 USC 815a; 69Stat 66) provides Authorities to enter into agreements with other Federal bureaus and agencies; with state, county, and municipal governments; and with private companies, groups, corporations, and individuals regarding fire activities. Authority for interagency agreements is found in "Interagency Agreement between the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, US Fish and Wildlife Service of the United States Department of the Interior and the Forest Service of the United States Department of Agriculture" (1996).

FIRE MANAGEMENT OBJECTIVES

General Fire Management Objectives for this Refuge are:

1. Protect life and resources/property.
2. Use prescribed fire as a tool to accomplish Refuge habitat management objectives.

Specific Refuge Fire Management Objectives include:

1. Safely suppress all wildland fires using strategies and tactics appropriate to safety considerations and values at risk.
2. Minimize the impact and cost of fire suppression actions.
3. Prevent human-caused wildland fires.
4. Educate the public regarding the role of fire within the Refuge.
5. Use prescribed fire to reduce abundance and limit the spread of non-native plant species and enhance habitats for other species.

DESCRIPTION OF REFUGE

Salinas River NWR is located 11 miles northeast of the City of Monterey at the confluence of the Salinas River and Monterey Bay. The entire Refuge is located within Monterey County. The area is composed of one unit totaling 367 acres (Figure 1). The western boundary ends at the mean high water line of Monterey Bay, with the tidal lands reserved by the State Lands Commission. The northeast boundary lies in the Salinas River channel. The Refuge is bordered to the east and south by private lands, comprised of agricultural fields and coastal sand dunes. The Salinas River and Salinas River State Beach border the Refuge to the north.

The Monterey Bay area has a moderate maritime climate, with warm to hot, dry summers and moist, mild winters. July and August are virtually without rainfall while January and February are usually the wettest months. The amount of rainfall varies not only year to year but also on opposite ends of the Bay. Monterey averages about 15 inches (38 cm) annually while Santa Cruz receives an average of 28 inches (69 cm) (Monterey Bay National Marine Sanctuary Draft EIS, 1990).

CULTURAL RESOURCES

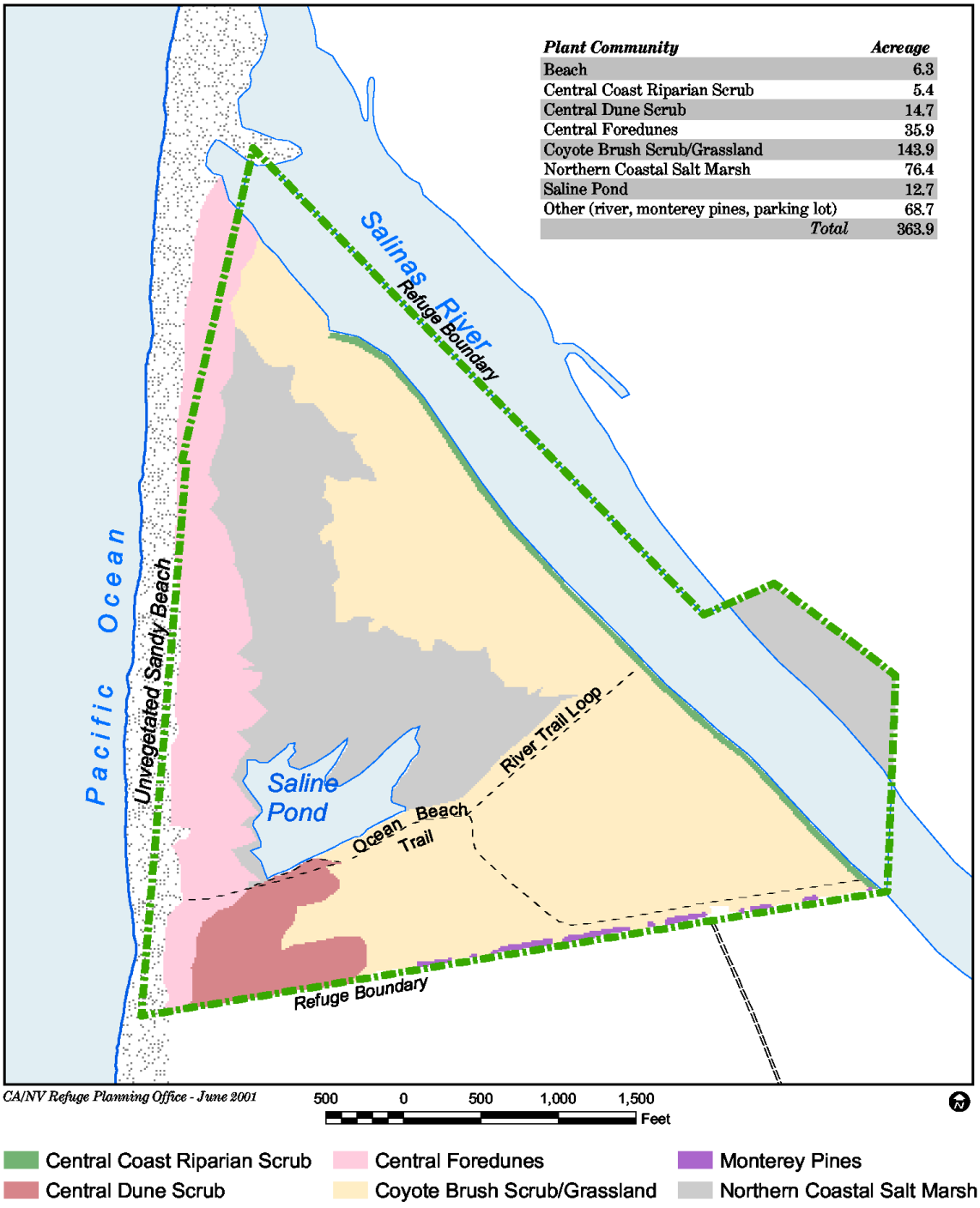
Under Federal ownership, archaeological and historical resources within the Refuge receive protection under Federal laws mandating the management of cultural resources, including, but not limited to, the Archaeological Resources Protection Act; the Archaeological and Historical Preservation Act; the Native American Graves and Repatriation Act, and the National Historic Preservation Act of 1966. To date, there are WWII concrete remnants from the foundation of three buildings of the "old U.S. Coast Guard LORAN structure" and a one room above ground concrete bomb shelter (U.S. Army Corps of Engineers, 1999). The Refuge's CCP includes an in depth review of the cultural setting, as well as a strategy to conduct a formal Refuge-wide cultural resource survey.

FISH AND WILDLIFE

Despite its small size, the Refuge is an important wildlife area in central coastal California (Habitat Restoration Group 1991). This is due to the lack of available wetland habitat elsewhere on the central

Figure 1: Vegetation

Figure 1. Vegetation Map



coast as well as the unique wildlife, diversity of habitats, and many significant biological resources the Refuge supports. The diverse habitats within the Refuge include: ocean beach, saline pond, riparian, sand dunes (includes foredunes and coastal scrub dunes), salt marsh, grassland, coastal river lagoon, and formerly farmed upland.

Wildlife of dune and beach habitats are able to live under harsh conditions. They survive with little or no fresh water, limited cover and forage. Three federally listed species are reported to occur in these areas of the Refuge: Smith's blue butterfly, western snowy plover, and California brown pelican. Other special-status species found in this habitat include globuse dune beetle *(Coelus globosus)*, black legless lizard *(Anniella pulcha nigra)*, American white pelican *(Pelecanus erythrorhynchos)*, merlin *(Falco columbarius)*, peregrine falcon, long-billed curlew *(Numenius americanus)*, California gull *(Larus californicus)*, elegant tern *(Sterna elegans)*, and Caspian tern *(Sterna elegans*) (Appendix C). There are also a variety of non-status species present including: western fence lizard *(Sceloporus occidentalis)*, gopher snake *(Pituophis melanoleucus)*, deer mouse *(Peromyscus maniculatis)*, gray fox *(Urocyon cinereoargenteus)*, red fox *(Vulpes fulva)*, and longtail weasel *(Mustela frenata)*.

The Salinas River Lagoon contains both fresh and salt water aquatic species. Native freshwater fish include: Sacramento blackfish *(Orthodon microlepidotus)*, Sacramento sucker *(Catostomus occidentalis)*, Sacramento squawfish *(Ptychocheilus grandis)*, California roach *(Lavinia exilicauda)*, threespine stickleback *(Gasterosteus aculeatus)* and the federally threatened steelhead/rainbow trout *(Oncorhynchus mykiss)*. Introduced freshwater fish include: carp *(Cyprinus carpo)*, white bass *(Morone chrysops)*, bluegill *(Lepomis macrochirus)*, green sunfish *(Lepomis cyanellus)*, mosquitofish *(Gambosia affinis)*, and threadfin shad *(Dorosoma petenense)*. Saltwater fish found year round at the Refuge include: starry flounder *(Platichthyes stellatus)* and staghorn sculpin *(Leptocottus armatus)*. Some of the saltwater fish that can be found in the Lagoon include: Pacific herring *(Clupia harengus)*, topsmelt *(Atherinops affinis)*, northern anchovy *(Engralis mordax)*, and at least 5 species of surfperch. (Refer to Chapter 4, Salinas River NWR CCP for a more complete list of species).

The upland areas contain grassland, coyote brush scrub, and previously farmed habitats and are used by a variety of wildlife. Reptiles present in these habitats include the western skink *(Eumeces skiltonianus)*, racer *(Coluber constrictor)*, gopher snake, common king snake *(Lampropeltis getulus)*, and western terrestrial garter snake *(Thamnophis elegans)*. Typical upland mammals include gray and red fox, longtail weasel, western harvest mouse *(Reithrodontomys megalotis)*, black-tailed jackrabbit *(Lepus californicus)*, deer mouse, and California ground squirrel *(Spermophylis beecheyi)*. Songbirds and raptors forage in this habitat. Special status species include: white-tailed kite *(Elanus leucurus)*, northern harrier *(Circus cyanus*), Cooper's hawk *(Accipiter cooperii)*, merlin, short-eared owl *(Asio flammeus)*, Monterey ornate shrew *(Sorex ornatus salarius)*, and Salinas harvest mouse (*Reithrodontomys megalotis*: Appendix C).

Wetland habitat found at the Refuge provide shelter, forage, and cover for a wide variety of herpetofauna, birds, crustaceans, insects, and mammals, including many special status species. The Refuge's federally listed species include the western snowy plover and the California brown pelican. Other special status species include: California brackish water snail *(Tryonia imitator)*, Southwestern pond turtle *(Clemmys marmorata pallida)*, steelhead, American white pelican, double-breasted cormorant *(Phalacrocorax auritus)*, bufflehead *(Bucephala albeola)*, osprey, white-tailed kite, northern harrier, sharp-shinned hawk *(Accipiter striatus)*, Cooper's hawk, merlin, long-billed curlew, California gull, elegant tern, Caspian tern, Forster's tern *(Sterna forsteri)*, short-eared owl, willow flycatcher *(Empidonax traillii)*, California yellow

warbler *(Dendroica petechia brewsteri)*, salt marsh wandering shrew *(Sorex vagrans halicoetes)*, Monterey ornate shrew, and Salinas harvest mouse (Appendix C). Some non-status herpetofauna include the western fence lizard, common garter snake *(Thamnophis sirtalis)*, sharp-tailed snake *(Contia tenuis)*, California slender salamander *(Batrachoseps attenuatus)*, and western toad *(Bufo boreas)*. Some mammals include muskrat *(Ondatra zibethica)*, red and gray fox, Virginia opossum *(Didelphis virginiana)*, vagrant shrew *(Sorex vagrans)*, and coyote (Refer to Salinas River CCP for a more complete list of species). The many bird species present are listed below.

This unique diversity of habitats supports an enormous variety of wildlife, including many species of migratory birds. The Refuge provides breeding, wintering, foraging, and roosting habitat for shorebirds, waterfowl, raptors, neotropical migrants, terns, gulls, and seabirds.

Shorebirds occur at the Refuge year round. The ocean beach and exposed mud flats found along the pond, river and island edges, provide excellent feeding and roosting habitat. Numbers peak during the spring and fall migration periods when thousands of shorebirds use the Refuge. Large wintering populations consist of a variety of species including western snowy plover , western sandpipers *(Calidris mauri)*, American avocets *(Recurvirostra americana)*, black-necked stilts *(Himantopus mexicanus)*, dunlin *(C. alpina)*, other small sandpipers *(Calidris* sp.*)*, sanderlings *(C. alba)*, dowitchers *(Limnodromus* sp.*)*, and phalaropes *(Phalaropus* sp.*)*.

Three species of shorebirds are known to nest on the Refuge. They include the Federally threatened western snowy plover, American avocet, and black-necked stilt. All three species have been documented nesting on Refuge islands occurring in the Salinas River. They also nest on saline flats that form as the saline pond evaporates throughout the summer. In addition, snowy plover nests within the foredune habitat.

The Refuge has been one of the most productive snowy plover breeding areas in central coastal California (SFNWRC 1998) and traditionally has supported a significant proportion of the remaining breeding population in Monterey Bay. Breeding plovers were once abundant on beaches in San Diego, Los Angeles, Orange, Ventura, and Santa Barbara Counties; however, loss of habitat and increased human disturbance have eliminated the birds from some or all of these areas. This loss of breeding habitat (and plovers) in southern California has made remaining breeding areas, particularly the Monterey Bay area, crucial to maintaining a stable plover population.

Since the mid-1980's, increased human disturbance and predation by non-native red fox *(Vulpes fulva)* have greatly reduced the nesting success of plovers in the Monterey Bay area and at the Refuge (SFNWRC 1998). Major threats to the snowy plover include human disturbance, loss of habitat, exotic vegetation encroachment, and increased predation (SFNWRC 1998). Presently, exotic vegetation control and predator management (avian and mammalian) are being conducted at the Refuge and at other lands throughout the Monterey Bay area to alleviate some of the pressures affecting snowy plovers.

A variety of waterbirds use the Refuge for foraging, roosting, and bathing. It provides one of the last freshwater roost sites in central California for as many as 1,400 endangered California brown pelicans. This freshwater roost is especially significant as it may aid the pelicans in ridding their pouches of saltwater lice (SFNWRC 1998). Also, the roost site allows the pelicans to successfully winter, building resources in preparation for the breeding season. Loss of the Moss Landing roost site, due to prolonged disturbance from restoration activities, has likely increased the importance of this Refuge roost site. One of the objectives of the California brown pelican Recovery Plan (USFWS 1983) is to ensure the long-term

protection of important roosting locations. Historically, the Federally endangered California least tern *(Sterna antillarum browni)* and Caspian tern nested at the Refuge. Caspian terns nested on the Refuge in 1996 after a failed attempt at Moss Landing Ecological and Estuarine Research Reserve. This breeding attempt on the Refuge was unsuccessful. Some of the eggs were abandoned while others were incubated to hatching. Indications are that the hatched chicks had been predated by avian predators. Prior to this attempt in 1996, the last nesting attempt by Caspian terns occurred in 1986 but that attempt also failed, probably due to human disturbance (SFNWRC 1998). In 1992, five California least terns were seen on the Refuge and may have been nesting in the vicinity. The Refuge also provides roosting and foraging habitat for elegant terns, Forster's terns *(S. Forsteri)*, double-crested cormorants, ring-billed gulls *(Larus delawarensis)*, California gulls *(L. californicus)*, Bonaparte's gulls *(L. philadelphia)*, western gulls *(L. occidentalis)*, great blue herons *(Ardea herodias)*, green-backed herons *(Butorides striatus)*, black-crowned night-herons *(Nycticorax nycticorax)*, snowy egrets *(Egretta thula)*, and great egrets *(Casmerodius albus)*.

The Refuge provides important wintering and breeding habitat for waterfowl in the Monterey Bay area. Wintering waterfowl populations vary from 500 to 3,000 on the Refuge depending on water availability. Primary species include ruddy duck *(Oxyura jamaicensis)*, mallard *(Anas platyrhynchos)*, green-winged teal *(A. crecca)*, American wigeon *(A. americana)*, northern shoveler *(A. clypeata)*, cinnamon teal *(A. cyanoptera)*, gadwall *(A. strepera)*, northern pintail *(A. acuta)*, scaup *(Aythya sp.)*, bufflehead, common goldeneye *(B. clangula)*, scoters *(Melanitta sp.)*, and canvasback *(A. valisineria)*. Wintering waterfowl use the Salinas River as well as the saline pond. This 15-acre pond and associated salt marsh is unique as there is no other pond of this type in central coastal California. It receives heavy use by dabbling ducks during spring migration, with as many as 500 ducks foraging and roosting there. Mallards, cinnamon teal, and gadwall have been documented nesting at the Refuge in recent years. These species nest throughout the Refuge in upland and wetland habitats. In addition, American coots *(Fulica americana)* are seasonally abundant, with as many as 600 present during winter months. Coots also nest at the Refuge in emergent wetland vegetation along the Salinas River.

Numerous species of raptors are supported by the Refuge. Northern harriers *(Circus cyaneus)*, American kestrels *(Falco sparverius)*, white-tailed kites *(Elanus leucurus)*, and short-eared owls *(Asio flammeus)* have been known to nest on the Refuge. Peregrine falcons , barn owls *(Tyto alba)*, red-tailed hawks *(Buteo jamaicensis)*, golden eagles *(Aquila chrysaetos)*, ospreys *(Pandion haliaetus)*, and merlins have also been observed on the Refuge.

VEGETATION

The biological environment of the Salinas River and surrounding areas (including the Refuge) has been altered drastically from pristine conditions. Historical accounts describe the area as supporting shallow lakes, sloughs, vernal pools, marsh vegetation, expanses of grassland, and riparian corridors. The Salinas River was a part of an enormous wetland ecosystem that included Elkhorn Slough and the Pajaro River. This wetland ecosystem was highly productive as wildlife habitat, especially as wintering habitat for a magnificent number and diversity of waterbird. This area also supported California grizzly bear *(Ursus californicus)* and tule elk *(Cervus elaphus nannodes)*.

Since the time of early European settlement in California, extensive areas have been converted for agricultural purposes. By the early 1900's, much of the land within the lower Salinas Valley had been converted to agricultural production. For example, a series of large finger lakes and associated wetlands had been drained, vernal pools were converted, riparian habitat was removed, and the Salinas and Pajaro rivers were channelized and associated wetlands drained. The mouth of the Salinas River was redirected

to its present location. The highly productive Salinas Valley wetland ecosystem that included the Salinas River, Elkhorn Slough and the Pajaro River had been fragmented and greatly reduced in size. As a result of agricultural conversion, the area's wildlife has been severely impacted (SFNWRC1998).

The extensive conversion of wetlands resulted in a significant reduction of birds (particularly waterbirds and neotropical migrants), the elimination of tule elk from the region and the probable loss of many vernal pool species. Over 90 percent of the Salinas Valley wetlands have been lost to agricultural conversion (SFNWRC 1998). A portion of the Refuge once contained an artichoke field. It has now returned to shrub and grassland habitat, through restoration efforts. As such, the Refuge provides important habitat as it is one of just a few places where remnant wetland and riparian habitats remain from the original Salinas Valley wetland ecosystem. This area was spared from being totally converted for agricultural purposes due to its close proximity to the ocean, susceptibility to flooding, and its former military ownership.

There is also a fragile sand dune system on the Refuge that supports a number of sensitive plant species. These dunes include foredunes and coastal scrub dunes. The foredunes are just above the high tide line and have stabilized to some degree, while the dune scrub just beyond the foredunes are more established. Plant species diversity in the foredunes is low. Species commonly found in the foredunes include yellow and pink sand verbena *(Abronia latifolia* and *A. umbellata)*, silky beach pea *(Lathyrus litoralis)*, beach primrose *(Casmissonia cheiranthifolia)*, sea rocket *(Cakile maritima)*, beach morning glory *(Calystegia sordanella)*, and beach bur *(Franseria chamissonis* ssp. *bipinnatisecta* and *F. c.* ssp. *chamissonis)* (Appendix C).

Dune scrub occurs in the more stabilized areas. The most common species include beach bur, mock heather *(Ericameria ericoides* ssp. *ericoides)*, branching phacelia *(Phacelia ramisissima)*, blue beach lupine *(Lupinus chamisonis)*, coast buckwheat *(Eriogonum latifolium)*, and dune buckwheat *(Eriogonum parvifolium)*. While neither species of buckwheat is rare or endangered they are hosts to the endangered Smith's blue butterfly. This habitat also supports federally listed plants, Monterey gilia (endangered) and Monterey spineflower (threatened), as well as, sensitive species like the coast wallflower *(Erysimum ammophilum)*, Monterey paintbrush, *(Castlleja latifolia* var. *latifolia)*, and branching beach aster (*Corethrogne leucophlla:* Appendix C).

Central coast riparian scrub occurs along the Salinas River and on islands within the River. Dominant plant species include willows such as arroyo willow *(Salix lasiolepis)*, red willow *(S. laevigata)*, sandbar willow *(S. hindsiana)*, and yellow willow *(S. lasiandra)*. Understory is typically dense and consists of young trees and shrubs, such as coyote brush *(Baccharis pilularis)*, poison oak *(Toxicodendron diversilobum)*, Himalayan blackberry *(Rubus ursinus)*, and California rose *(Rosa californica)*. The Watershed Institute of California State University have been conducting intensive restoration activities in this habitat to reestablish native riparian scrub vegetation and to slow bank erosion. Species planted include willows, box elder *(Acer negundo)*, creekside dogwood *(Cornus serica* ssp. *occidentalis)*, red alder *(Alnus rubra)*, and black cottonwood *(Populus trichocarpa)*.

Coyote brush scrub represents a successional community that has developed following the abandonment of agriculture fields that were in operation prior to Service occuaption. The dominant species is coyote brush *(Baccharis pilularis)*, which forms dense stands in some places. Grassland, with native and nonnative species, is interspersed throughout this habitat. The Watershed Institute has recently restored a large portion of the grassland to native grasses. In 1996, they drill-seeded 80 lbs. of a native grass mix composed of wild rye *(Elymus glaucus),* California barley *(Hordeum brachyantherum),* annual hair grass

(Deschamsia caespitosa), and California brome *(Bromus carinatus).* These native grasses have been maintained by intensive weed pulling, weed wacking, and mowing.

STRUCTURES AND FACILITIES

The only structure on the Refuge is a World War II era concrete bunker near the parking lot. Because the structure is made entirely of concrete, it is of little concern in a fire situation. No buildings exist offsite in the vicinity of the Refuge. A wooden fence is located on the eastern boundary along the artichoke field. A disced line is maintained on the Refuge adjacent to the fence.

Most of the Refuge is closed to the public due to the sensitivity of the habitat. However, there are two trails, the River Trail and the Ocean Beach Trail, open to the public (Figure 1). These trails enable visitors to see a variety of habitats and the wildlife that inhabit them.

The River Trail begins at the parking lot, runs north through upland habitat and leads to the south bank of the Salinas River. It continues northwest along the south bank of the River for approximately 1/4 mile where it loops back to the southwest through upland habitat to the Beach Trail. This trail is open for walking, hiking, wildlife observation, and wildlife photography. It is also used by hunters to gain access to the hunt area.

The Ocean Beach Trail begins in the parking lot, winds through upland habitat, skirts the saline pond, and cuts through the coastal dunes to end at the ocean beach. This trail is open for hiking, wildlife observation, wildlife photography, and access to the ocean and ocean beach. The upper beach habitat, except on the designated trail, is closed along the foredune boundary to protect the western snowy plover. In addition, the saline pond, salt marsh, and coastal dunes are closed to visitor use due to the extreme sensitivity of these habitats.

Since parts of the Refuge are open to the public, public use may be impacted for a short duration during fire activities. During prescribed fire activities, certain parts of the Refuge (i.e., trails and area to be burned) would be closed to the public to ensure their safety. Wildland fire suppression and the use of prescribed fire could affect neighboring landowners by altering adjacent habitats and/or potentially escaping onto their properties. However, the escape risk is minimal due to the nature of the adjoining properties. Dune areas along the northern and southern boundaries are sparsely vegetated and would not carry fire under most circumstances. Prescribed fires will be conducted in the grassland habitats of the Refuge. This area is separated from the eastern property by a 15' disced line. In addition, the artichoke plants on the adjacent property are succulent and would not burn. Within the Refuge itself, the judicious, conservative use of prescribed fire will greatly increase the efficiency and effectiveness of grassland/upland management.

WILDLAND FIRE MANAGEMENT SITUATION

HISTORIC ROLE OF FIRE

Pre-settlement Fires

Historical information on natural or anthropogenic fire is not readily available. Fire history does not generally apply directly to wetlands or riparian areas due to the nature of the wetlands.

Post-settlement Fire History

There is no record of wildland fires to date. When contacted, the MCFD said they had not responded to a call at the Refuge in the past 10 years (I. Larkin, pers. comm.). The period of high fire danger is from June 1 through October 31, determined by CDF Monterey-San Benito County Unit. Damage from any small fires that might occur include the potential effects on resident or nesting wildlife depending on the time of year. Generally, damaged areas return to their original condition after one or two years.

Prescribed Fire History

The prescribed fire season at the Refuge is from May to June (I. Loredo, pers. comm). Fires during this period allow non-native weeds to sprout but prevent them from going to seed. Two small prescribed fires were conducted in the Refuge when the property was managed by CA Department of Fish and Game (B. Elliott, pers. comm.). To date, prescribed fire management has not been used on the Refuge by USFWS personnel.

RESPONSIBILITIES

Salinas River NWR does not have on-site fire management staff or any on-site fire suppression equipment. There is a Service fire crew stationed part-time (late spring to early fall) at San Luis NWRC and a limited number of fire qualified personnel stationed at San Francisco Bay NWRC. Both of these sites are approximately 100 miles from the Refuge. Because the unit is an un-staffed satellite Refuge, Refuge personnel presence is limited to periodic surveys. Wildland fires in this area are generally reported by the public and suppressed by firefighters from the Monterey Bay Fire Department before Service staff can respond.

Responsibilities for fire management at Salinas River are shared by: the Salinas River Refuge Manager, Refuge Biologist, SFBNWR Complex Project Leader, and the SLNWR Complex Fire Management Officer (Appendix D). Primary wildland fire management responsibilities are to:

- provide overall management of the Refuge including the fire program,
- ensure collateral duty fire personnel are meeting Service standards,
- conduct prescribed fire activities in support of Refuge habitat management programs,
- establish and maintain appropriate fire-related agreements/contracts,
- monitor results of wildland and prescribed fires,
- update fire management and associated plans (dispatch, training, etc.), call-out lists, and mobilization guidelines, and
- maintain the Refuge fire cache and fire equipment in a ready state.

Agency Administrator/ Project Leader (PL)

- Is the primary line officer responsible for implementation of all Fire Management activities within the Complex and will ensure compliance with Department, Service and Refuge policies.

- Selects the appropriate management responses to wildland fire.

Deputy Project Leader (DPL)

- Coordinates Complex programs to ensure personnel and equipment are made available and used for fire management activities including fire suppression, prescribed burning and fire effects monitoring.
- Ensures that the fire management program has access to Refuge and Complex resources when needed.
- Ensures that Refuge Managers and Complex Staff consider the fire management program during Refuge related planning and implementation.

Refuge Manager (RM)

- Identifies prescribed burn units and biological objectives to Fire Management Officer (FMO) and Prescribed Fire Specialist (PFS), notifies FMO of prescribed fire project constraints, and ensures that Refuge resources are available to accomplish prescribed fire and fire suppression objectives.
- Acts as the primary Refuge Resource Management Specialist during fire management planning and operations.
- Prepares an annual report detailing fire occurrences and prescribed fire activities undertaken in each calendar year. This report will serve as a post-year's fire management activities review, as well as provide documentation for development of a comprehensive fire history record for the Refuge.
- Is responsible for planning, coordinating, and directing preparedness activities including fire training, physical fitness testing and Interagency Fire Qualification System (IFQS) data entry, fire cache and equipment inventory accountability, maintenance, and operation, cooperation with cooperative agencies.

Biologist

- Coordinates through Refuge Managers and Deputy Project Leader to provide biological input for the fire program with the FMO and PFS.
- Ensures fire effects monitoring is being implemented and drafts wildland fire Rehabilitation Plans for Deputy Project Leader.
- Assists in design and implementation of fire effects monitoring, with FMO and PFS.
- Participates, as requested, in prescribed burning and wildland fire suppression.

Zone Fire Management Officer (FMO)

- Responsible for all fire related planning and implementation for the Refuge.
- Integrates biological Refuge objectives into all fire management planning and implementation.
- Solicits program input from the RM and Biologist.
- Supervises prescribed fire planning.
- Coordinates fire related training.
- Coordinates with cooperators to ensure adequate resources are available for fire operational needs.
- Decides when to request overhead or additional firefighting personnel and equipment.

- Is responsible for implementation of this Plan. This responsibility includes coordination and supervision of all prevention, pre-suppression, detection, wildland fire, prescribed fire, suppression, monitoring, and post-fire activities involving Refuge lands.
- Is responsible for preparation of fire reports following the suppression of wildfires and for operations undertaken while conducting prescribed fires.
- Submits budget requests and monitors FIREBASE funds.
- Maintains records for all personnel involved in suppression and prescribed fire activities, detailing the individual's qualifications and certifications for such activities.
- Updates all fire qualifications for entry into the Fire Management Information System.
- Nominates personnel to receive fire-related training, as appropriate.
- Designates the person to serve as Incident Commander (IC) for initial attack purposes. The FMO may assume the position of IC at his/her discretion or designate other personnel to take over that position at his/her discretion.

Prescribed Fire Specialist (PFS)

- Responsible for the planning and implementation of a program, which collects information for the documentation, analysis, and prediction of fire behavior and effects.
- Develops and recommends, plans, and schedules management ignited fire activities for the Refuge.
- Implements and directs burns.
- Plans and develops a program to collect information on the effects and behavior of prescribed fire.
- Plans and directs studies to monitor and analyze fire behavior parameters, then uses these data to support the development of fire plans.
- Plans and directs surveys for the collection, analysis and documentation of data relating to fire effects on biotic and abiotic resources.
- Organizes and performs studies to develop fire management prescriptions for prescribed burns.
- Is responsible for ensuring a cadre of qualified prescribed fire overhead by recommending personnel for training, through both formal in-house and field training assignments.
- Is responsible for record keeping associated with burn planning, fire occurrence reporting and fire weather.
- Identifies areas of fire management requiring research and works with research scientists in the development of project statements to accomplish this research.

Fire Management/Suppression Personnel

- Consist of all Refuge personnel, whether permanent or seasonal, who meet the minimum standard set by the National Wildfire Coordinating Group (NWCG) for firefighters.
- Are fully equipped with proper personal protective equipment, have taken and passed the minimum classroom training, and meet physical fitness standards required.
- Undertake fire management duties as assigned by the Prescribed Fire Burn Boss on each prescribed fire project.
- Are responsible for their personal protective equipment and physical conditioning, qualifying annually with the work capacity test before May 31.

Incident Commander
Incident Commanders (of any level) use strategies and tactics as directed by the Refuge Manager and WFSA where applicable to implement selected objectives on a particular incident. A specific Limited Delegation of Authority (Appendix E) will be provided to each Incident Commander prior to assuming responsibility for an incident. Major duties of the Incident Commander are given in NWCG Fireline Handbook, including:

- Brief subordinates, direct their actions and provide work tools.
- Ensure that safety standards identified in the Fire Orders, the Watch Out Situations, and agency policies are followed at all times.
- Personally scout and communicate with others to be knowledgeable of fire conditions, fire weather, tactical progress, safety concerns and hazards, condition of personnel, and needs for additional resources.
- Order resources to implement the management objectives for the fire.
- Inform appropriate dispatch of current situation and expected needs.
- Coordinate mobilization and demobilization with dispatch and the Collateral FMO.
- Perform administrative duties; i.e., approving work hours, completing fire reports for command period, maintaining property accountability, providing or obtaining medical treatment, and evaluating performance of subordinates.
- Assure aviation safety is maintained to the highest standards.

Initial Attack Teams
Initial attack teams will consist of fully-qualified firefighters and leaders. Teams will be prepared and equipped with hand and power tools as needed and will be dispatched with a day's supply of food and water, so they can continue work for 24 hours without additional support.

Employees participating in any wildland fire activities on Fish and Wildlife Service or cooperator's lands will meet fitness requirements established in PMS 310-1, except where Service-specific fitness requirements apply.

Exceptions to fitness requirements on Initial attack activity are available from the Regional Fire Management Coordinator per guidelines in Chapter 1.5 of the Fire Management Handbook (USFWS 2000a).

INTERAGENCY OPERATIONS
There are no formal cooperative fire agreements in place at this time, however a Memorandum of Understanding is currently being established between the Refuge and the Monterey County Fire Department (MCFD). The MCFD has traditionally responded to wildland fires at the Refuge because of their legal fire protection responsibility to the property surrounding the Refuge. Thus, any wildland fire originating on Refuge lands is considered a threat to their property.

Salinas River NWR will use the Incident Command System (ICS) as a guide for fireline organization. Qualifications for individuals is per DOI Wildland Fire Qualifications and Certification System, part of NIIMS and the National Wildland Fire Coordination Group (NWCG) Prescribed Fire Qualification Guide. Depending on fire complexity, some positions may be filled by the same person.

The County of Monterey Fire Department has the responsibility for preventing, controlling, and extinguishing fire throughout unincorporated portions of the County. The County responds to fires near

the Refuge border because of their protection responsibilities for County property. Any fire starting on Refuge lands would be suppressed by County resources because of their interest in preventing fires from spreading onto their Local Responsibility Area. While no formal agreement is currently in place, the County has expressed a willingness to respond to emergency suppression activities (Appendix F).

Monterey Bay Unified Air Pollution Control District (MBUAPCD) is responsible for all non-point and point source air degradation within their designated area of responsibility. Burn permits and smoke management concerns from prescribed burning on the Refuge must be coordinated through them. Like all air polluction control districts, MBUAPCD has regulatory authority and enforces all District, state and federal laws relating to the emissions of air pollutants (Appendix F).

A listing of key interagency contacts can be found in the Fire Dispatch Plan. The plan is an annual assembly of information required to facilitate a rapid response to a fire report and to coordinate the initial attack. (Appendix D).

There are no formal fire related agreements in place at this time. All agreements at this time are informal.

PROTECTION OF SENSITIVE RESOURCES

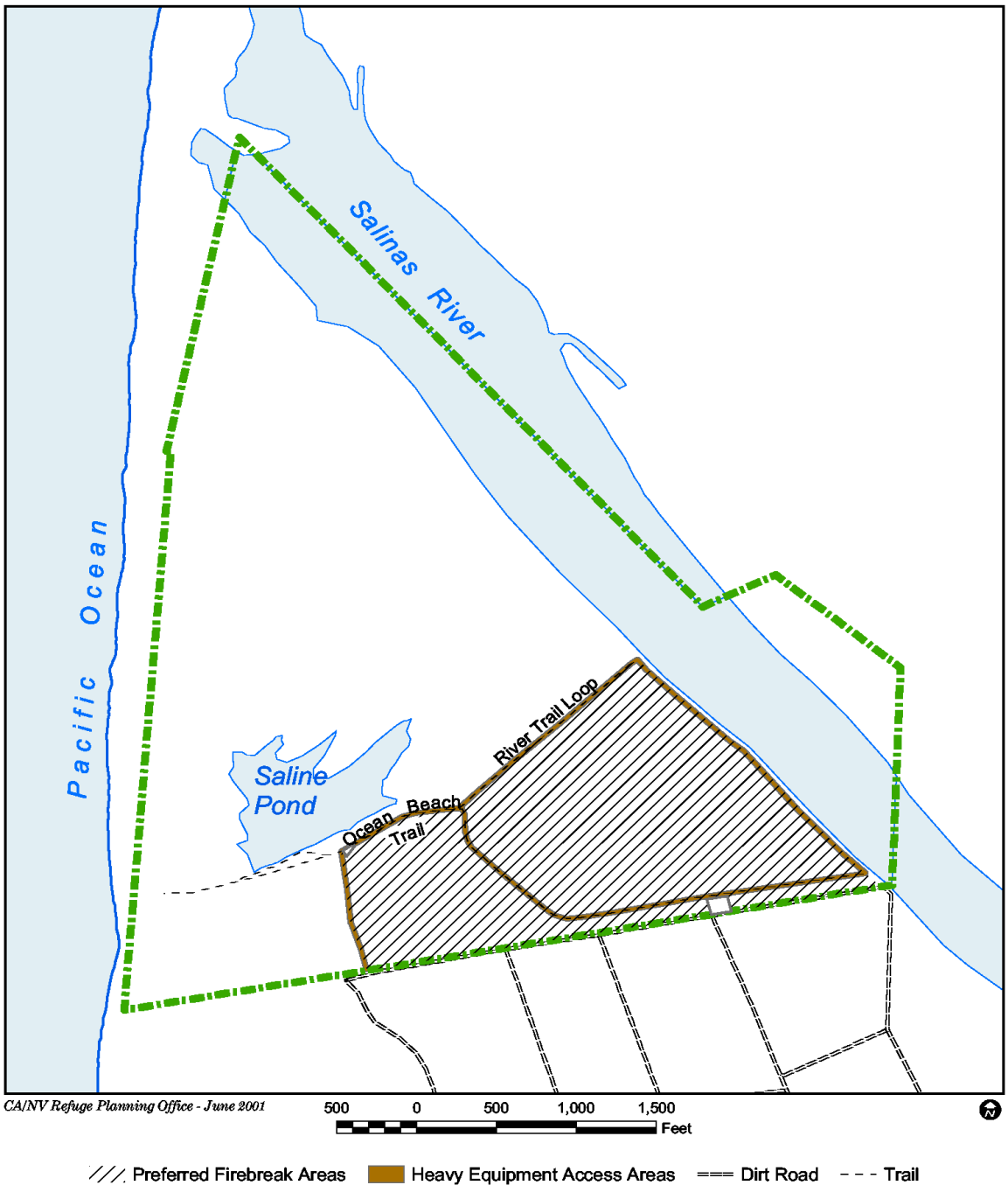
Aggressive attack of all unplanned ignitions with minimum acreage burned is the suppression goal. Heavy equipment shall not be used due to the sensitivity of the habitat, except in cases where life or fire-fighter safety is threatened or when the Refuge Manager determines necessary. Dozer lines should only be constructed, when necessary, in Coyote Scrub/Grassland Habitat, preferably along highlighted established trail lines, but also allowed within the shaded area on map (Figure 2).

The Regional Archaeologist and/or his/her staff will work with fire staff, project leaders, and incident commanders to ensure that cultural resources are protected from fire and fire management activities. The "Request For Cultural Resource Compliance" form (Appendix G) will be used to inform the Regional Archaeologist of impending activities, thereby meeting the regulations and directions governing the protection of cultural resources as outlined in Departmental Manual Part 519, National Historic Preservation Act (NHPA) of 1966, Code of Federal Regulations (36CFR800), the Archaeological Resources Protection Act of 1979, as amended, and the Archaeological and Historic Preservation Act of 1974. The NHPA Section 106 clearance will be followed for any fire management activity that may affect historic properties (cultural resources eligible to the National Register of Historic Places).

Impacts to archaeological resources by fire and suppression resources vary. The four basic sources of damage are (1) fire intensity, (2) duration of heat, (3) heat penetration into soil, and (4) suppression actions. Of the four, the most significant threat is from equipment during line construction for prescribed fires or wildfire holding actions.

Figure 2: Heavy equipment use areas

Figure 2. Heavy equipment use areas



The following actions will be taken to protect archaeological and cultural resources:

Wildland Fires

- Minimum impact fire suppression tactics will be used to the fullest extent possible.
- Resource Advisors will inform Fire Suppression personnel of any areas with cultural resources.
- The Resource Advisor should contact the Regional Archaeologist and /or his/her staff for more detailed information.
- Foam use will be minimized in areas known to harbor surface artifacts.
- Mechanized equipment should not be used in areas of known cultural significance.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Archaeologist using the RCRC.

Prescribed Fires

- The Refuge Fire staff will submit a completed RCRC to the Regional Archaeologist and/or his/her staff as soon as the burn area is identified (i.e., as soon as feasible).
- Upon receipt of the RCRC, the Regional Archaeologist and/or his/her staff will be responsible for consulting with the FMO and evaluating the potential for adverse impacts to cultural resources.
- When necessary, the Regional Archaeologist and/or his/her staff will coordinate with the State Historic Preservation Officer (SHPO). The SHPO has 30 days to respond. The Refuge will consider all SHPO recommendations.
- Mechanized equipment should not be used in areas of known cultural significance.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Archaeologist

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WILDLAND FIRE ACTIVITIES

Fire program management describes the operational procedures necessary to implement fire management at Salinas River NWR. Program management includes: fire prevention, preparedness, emergency preparedness, fire detection, communication, step-up staffing plan, pre-attack plan, fire behavior predictions, fire suppression, minimum impact suppression, minimum impact rehabilitation, documentation, and fire investigation.

All fires not classified as prescribed fires are wildland fires and will be appropriately suppressed. Suppression operations will generally be conducted by the Monterey County Fire Department (MCFD).

Records show that fire season is typically from June 1 to October 31. Depending on the specific weather of any particular year, the seasons may be shorter or longer and, therefore, may start earlier or last longer.

FIRE MANAGEMENT STRATEGIES

All unplanned wildland fires will be suppressed in a prompt, safe, aggressive, and cost-effective manner to produce fast, efficient action with minimum damage to resources using appropriate management strategies. Wildland fires will not be used as a resource management tool.

The following strategies will be employed to meet fire management objectives:

- Suppress all unplanned ignitions in a safe and cost-effective manner consistent with resources and values at risk. Minimum impact strategies and tactics will be used when possible, particularly in areas with high densities of endangered species. However, use of heavy equipment remains an option for control of high intensity fires and fires threatening critical values such as endangered species and private lands.
- Maintain formal and informal cooperative relationships with local fire agencies to provide immediate response to wildfires.
- Conduct all fire-management programs in a manner consistent with applicable laws, policies and regulations.
- Initiate cost-effective fire monitoring which will ascertain if objectives are being met. Monitoring information will also be used to refine burn prescriptions to better achieve objectives.
- Use prescribed fire as a management tool for achieving hazard fuel reductions and resource management objectives. To the extent possible, hazard fuel prescribed fire will be used to accomplish specific objectives established for individual land units. Prescribed fires are fires which are deliberately set to burn under prescribed conditions in order to achieve pre-determined resource management objectives.
- Integrate fire ecology and management themes into future information programs.

Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, resource benefits will not be the primary consideration. Appropriate suppression action will be taken to ensure firefighter safety, public safety, and protection of the resources.

Critical protection areas, such as dune and marsh habitat, will receive priority consideration in fire control planning efforts. In all cases, the primary concern of fire suppression personnel shall be safety, and if needed, all individuals not involved in the suppression effort may be evacuated.

Suppression strategies should be applied so that the equipment and tools used to meet the desired objectives are those that inflict the least impacts upon the natural and cultural resources. Minimum impact suppression strategies will be employed to protect all resources. Natural and artificial barriers will be used as much as possible for containment. When necessary, fire line construction will be conducted in such a way as to minimize long-term impacts to resources.

Vehicle access to normally closed areas of the Refuge, except dune and beach habitat, will be made using existing roads when possible. When off-road travel is determined to be necessary, vehicle access will be allowed in designated areas of the Refuge with approval of the Project Leader or Delegate (Figure 2).

Heavy equipment such as crawlers, tractors, dozers, or graders will not be used within the Refuge boundaries unless their use is necessary to prevent a fire from destroying privately-owned and/or government buildings and historic resources. Heavy equipment will only be used in designated areas (Figure 2). The use of any heavy equipment requires approval from the Refuge Manager or Delegate.

Sites impacted by fire suppression activities or by the fire will be rehabilitated as necessary, based on an approved course of action for each incident.

PREPAREDNESS

Preparedness is the work accomplished prior to fire occurrence to ensure that the appropriate response, as directed by the Fire Management Plan, can be carried out. Preparedness activities include: budget planning, equipment acquisition, equipment maintenance, dispatch (i.e. initial attack, extended, and expanded), equipment inventory, personnel qualifications, and training. The preparedness objective is to have a well trained and equipped fire management organization to manage all fire situations within the Refuge. Preparedness efforts are to be accomplished in the time frames outside the normal fire season dates.

The Fish and Wildlife Service has minimum training requirements for all fire positions. The Service is a member to the National Wildfire Coordinating Group (NWCG) and accepts its standards for interagency operations. There is a required refresher training for all personnel that are involved with wildland fire activities. These requirements are found in the USFWS Fire Management Preparedness and Planning Handbook, Section 1.5; Training, Qualification, and Certification (USFWS 2000b).

The traditional approach to a step-up plan does not work in this situation. Due to the availability of a large number of local fire department resources, it would be a rare situation if Service fire crews were deployed to the Refuge during a step-up situation.

Historical weather analysis

The fire season generally begins with the curing of annual grasses in early June and extends until the first rains in late-October. In general, fire does not apply directly to wetlands or riparian habitats due to the hydrology.

Salinas River NWR does not operate a weather station and does not monitor the weather at the Refuge. Monterey County Fire Department does not have any weather data that reflects the conditions at the Refuge. The closest weather information can be obtained from a hotline provided by the Monterey Peninsula Airport but mentions no specifics for the weather conditions at the Refuge.

Fire Prevention
An active fire prevention program may be conducted in conjunction with other agencies to protect human life and property, and prevent damage to cultural resources or physical facilities.

Firelines are disked by adjacent farm personnel along the eastern one-third of the southern boundary of the Refuge. The Salinas River forms the northeast boundary of the Refuge, and the Pacific Ocean forms the western boundary. The southern boundary abuts agricultural fields of artichokes and other garden-type produce.

A program of internal and external education regarding potential fire danger may be implemented. Visitor contacts, bulletin board materials, and interpretive programs may be used to increase visitor and neighbor awareness of fire hazards. Employees need to relate to the public the beneficial effects of prescribed fires as opposed to unwanted human-caused fires, with emphasis on information, essential to understanding the potential severity of human-caused wildland fires and how to prevent them.

During periods of extreme or prolonged fire danger (Red Flag Warnings), emergency restrictions regarding Refuge operations may become necessary. No heavy machinery, ATV's, lawnmowers, etc. will be permitted in the coyote brush scrub/grassland at these times. Such restrictions, when imposed, will usually be consistent with those implemented by cooperators. The Refuge Manager or FMO will recommend when such restrictions are necessary.

Staffing Priority Levels
There are no fire-funded staff stationed at the Refuge. Fire suppression response is provided by MCFD, therefore MCFD will adjust staffing levels based on current fire danger. Because the Refuge headquarters is located 100 miles from the Refuge, MCFD will be first responders. The Refuge has no facilities located within the boundaries and will not require any closures (except to machinery previously mentioned) during Red Flag Warnings.

Training
Departmental policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). Salinas River NWR will conform strictly to the requirements of the wildland fire management qualification and certification system and USFWS guidelines.

Basic wildland fire training refreshers are offered annually for red-carded firefighters and records kept in a centralized database. Additional training is available from surrounding agencies in pump and engine operation, power saws, firefighter safety, fire weather and fire behavior, helicopter safety and prescribed fire objectives and activities. On-the job training is encouraged and will be conducted at the field level. Whenever appropriate, the use of fire qualification task books will be used to document fire experience of trainees. The FMO will coordinate fire training needs with those of other nearby refuges, cooperating agencies, and the RO.

The Refuge supports the development of individual Incident Command System (ICS) overhead personnel from among qualified and experienced Refuge staff for assignment to overhead teams at the local, regional, and national level.

Fire suppression is an arduous duty. On prescribed fires, personnel may be required to shift from implementation/monitoring activities to suppression. Poor physical condition of crew members can endanger safety and lives during critical situations. Therefore, personnel performing fire management duties will maintain a high level of physical fitness. This requires successful completion of a fitness pack test. Personnel must complete a three mile hike with a 45 pound pack in less than 45 minutes.

Supplies and Equipment

A small, 10-person cache for the Refuge is located at the Complex headquarters in Fremont, two hours from the Refuge. The cache is maintained by the Complex staff and is accessible 24 hours a day. The cache consists of personal protective equipment (e.g. clothing and boots) and fire tools (e.g. shovel and rake).

Additional equipment and supplies are available through cooperators and the interagency cache system. Requests for additional personnel and equipment are made through the Mendocino NF Dispatch. The contact list can be found in the Dispatch plan (Appendix D).

Annual fire readiness requires an inventory of existing cache items. The cache should be capable of outfitting six personnel for wildfire activities and will be inventoried as ready by June 1 of each year.

DETECTION

Most wildland fires are reported by the public to the emergency telephone number 9-1-1. The 9-1-1 dispatchers contact MCFD for suppression response. The Refuge is contacted by MCFD with a report of all wildland fire activities.

The Fire Management Plan does not discriminate between human-caused and lightning caused fire. All wildland fires will be suppressed. Any human-caused fires of suspicious origin (as determined by the Refuge Manager or FMO) will require an investigation and report by law enforcement personnel. For serious human-caused fires, including those involving loss of life, a qualified arson investigator will be requested.

COMMUNICATIONS

There is no open radio communication frequency for Refuge personnel. Instead, staff use a direct connect cellular phone system.

Prescribed fire activities performed by Service personnel use the various NIFC Tactical channels as needed. Normally NIFC Tactical channels 2 (168.200 mhz) and 3 (168.600 mhz) are used depending upon the number of frequencies needed during prescribed burns.

There is currently no common communication link between Service personnel and MCFD.

PRE-ATTACK PLAN

Maps showing locations of water sources, roads, sensitive plant communities, private property, etc will be kept at Refuge headquarters and distributed to Cooperators to facilitate actions that effectively suppress fires while protecting values at risk. The Refuge will use Del Monte Boulevard as the primary firebreak and other arterial crossroads as holding line (Figure 2).

FIRE MANAGEMENT UNITS

The Refuge will be managed as one unit. Although there are four vegetation communities, the overall objective is to restore and maintain the area with native vegetation. Consistent with Service policy, all fires will be managed as either wildland fires or prescribed fires. Suppression strategies, management restrictions, fuels, fire environment and values at risk are similar throughout the Refuge. Thus all lands will be managed as one single fire management unit.

Due to staff limitations, relatively small land management parcels, long response times, valuable resources, and values at risk on neighboring lands, this plan does not recommend wildland fire managed for resource benefit as an option for the unit. Wildland fires will be suppressed using the appropriate suppression response. Prescribed fires will be used to reduce hazardous fuels and to meet resource management objectives.

Vegetation Type

The majority of the vegetation on the Refuge is marsh or grass species which have high rate of fire spread when dry. Small expanses of riparian habitat with grass in the understory have high rates of fire spread in strong winds.

The proposed prescribed fire burn area is within coyote scrub brush/ grassland habitat (Figure 1). There have been no observed federally listed plant species within this habitat. There are native plants that include wild rye, California barley, annual hair grass, and California brome, which were planted by the Watershed Institute for restoration. Currently, intensive hand weeding, weed wacking, and mowing are used to maintain native grassland. Late spring fires, in May and June, will benefit native grasses by reducing nonnative weed seed banks, which have later seed production.

Fuel Types and Fire Behavior

Fuel types at the Refuge are predominately upland grass, seasonal marsh, and riparian woodland-dominated fuel types, Fire Behavior Fuel Models (FBFM)1, 3, and 9. Fuel Model 1 and 3 encompasses approximately 195 acres of the Refuge and have high rates of spread. FBFM 1 has a rate of spread of 275 chains/hr (3.5 mph) and a flame length of 7.7 ft. FBFM has a rate of spread of 259 chains/hr (3.0mph) and a flame length of 20.4 ft. Fuel Model 9 encompasses approximately 20 acres and has a rate of spread of 22 chains/hr and a flame length of 4.8 ft. This small portion of riparian habitat with grass understory would exhibit smoldering and creeping rates due to the mosaic site characteristics unless strong winds are present. Fire behavior in these model types can be simulated with the model BEHAVE.

SUPPRESSION TACTICS

Wildland fires will be suppressed in a prompt, safe, aggressive, and cost-effective manner to produce fast, efficient action with minimum damage to resources. Suppression involves a range of possible actions from initial attack to final suppression. All wildland fires will be suppressed.

Personnel and equipment must be efficiently organized to suppress fire effectively and safely. To this end, the FMO assumes the command function on major or multiple fire situations, setting priorities for the use of available resources, and establishing a suppression organization.

There will be only one Incident Commander responsible through the FMO, Refuge Manager or Delegate. The Incident Commander will designate all overhead positions on fires requiring extended attack.

Suppression Conditions
The typical fire suppression response to a fire at SRNWR would consist of an IC provided by the MCFD and two engines. Water is the primary method for extinguishing fires. Handline is not usually needed for suppression efforts. Foam and/or retardents have not yet been determined to be compatible with Refuge resources.

Aggressive attack of all unplanned ignitions with minimum acreage burned is the goal. Heavy equipment shall not be used due to the sensitivity of the habitat, except in cases where life or fire-fighter safety is threatened or when the Refuge Manager deems it necessary. Safety of personnel and sensitive habitat at risk will determine its use. This decision will be made by the incident commander, in concert with a Refuge Biologist or Manager. Suppression guidelines will be outlined in the MOU with MCFD.

Wildland Fire Situation Analysis
For fires that cannot be contained in one burning period, a WFSA must be prepared (Appendix H). In the case of a wildland fire, the Incident Commander, in conjunction with the FMO, will prepare the WFSA. Approval of the WFSA resides with the Refuge Project Leader.

The purpose of the WFSA is to allow for a consideration of alternatives by which a fire may be controlled. Damages from the fire, suppression costs, safety, and the probable character of suppression actions are all important considerations.

Public safety will require coordination between all Refuge staff and the IC. Notices should be posted to warn visitors, trails may be closed, traffic control will be necessary where smoke crosses roads, etc. Where wildland fires cross roads, the burned area adjacent to the road should be mopped up and dangerous snags felled. Every attempt will be made to use natural and constructed barriers, including changing fuel complexes, in the control of wildland fire. Rehabilitation efforts will concentrate on the damages done by suppression activities rather than on the burned area itself.

Aircraft Operations
Aircraft may be used in all phases of fire management operations. All aircraft must be Office of Aircraft Services (OAS) or Forest Service approved. An OAS Aviation Policy Department Manual will be provided by OAS.

Helicopters may be used for reconnaissance, bucket drops and transportation of personnel and equipment. Natural helispots and parking lots are readily available in most cases. Clearing for new helispots should be avoided where possible. Improved helispots will be rehabilitated following the fire.

As in all fire management activities, safety is a primary consideration. Qualified aviation personnel will be assigned to all flight operations.

REHABILITATION AND RESTORATION

When suppression action is taken, rehabilitation is appropriate. The most effective rehabilitation measure is prevention of impacts through careful planning and the use of minimum impact suppression techniques.

Fire rehabilitation will be as prompt as possible to prevent erosion and spread of non-native plants. This will be developed by the Refuge staff and submitted to the Regional Fire Management Coordinator for review within 90 days of the unplanned ignition being declared out.

Rehabilitation will be initiated by the Incident Commander, FMO, or Refuge Manager. Rehabilitation will be directed toward minimizing or eliminating the effects of the suppression effort and reducing the potential hazards caused by the fire. These actions may include:

1. Backfill control lines, scarify, and seed.
2. Install water bars and construct drain dips on control lines to prevent erosion.
3. Install check dams to reduce erosion potential in drainages.
4. Restore natural ground contours.
5. Remove all flagging, equipment and litter.
6. Consider and plan more extensive rehabilitation or revegetation to restore sensitive impacted areas.

If revegetation or seeding is necessary, only native plant species will be used.

If emergency rehabilitation measures are needed or if rehabilitation is needed to reduce the effects of a wildland fire then the Refuge can request appropriate funding through the Burned Area Emergency Rehabilitation (BAER) fund.

Rehabilitation plans for each fire will be reviewed by the Refuge Manager. A final plan will be submitted to Region for establishing an account. Rehabilitation should be initiated prior to complete demobilization or early the following season.

REQUIRED REPORTING

A DI-1202, fire report, will be filled out and submitted to the Regional Fire Management Officer for input into the Fire Management Information System (FMIS) within 20 days of the fire being declared out. Copies of reports from the Monterey County Fire Department will be obtained and report will be written to summarize the specifics of the fire, actions taken and outcomes from those actions. A formal review will be conducted on all serious injuries and losses of significant resources.

FIRE INVESTIGATION

Fire management personnel will attempt to locate and protect the probable point of origin and record pertinent information required to determine fire cause. They will be alert for possible evidence, protect the scene and report findings to the fireline supervisor.

The Refuge Manager, FMO, or IC may request a fire investigator through the MCFD. Prompt and efficient investigation of all suspicious fires will be carried out. However, fire management personnel should not question suspects or pursue the fire investigation unless they are currently law enforcement commission qualified.

Personnel and services of other agencies may be used to investigate wildland fire arson or fire incidents involving structures. All fire investigations should follow the guidelines outlined in 4.1-2 of the Fire Management Handbook (2000a).

PRESCRIBED FIRE ACTIVITIES

PRESCRIBED BURN PROGRAM OBJECTIVES

Prescribed fire can be a useful tool for restoring and maintaining natural conditions and processes at Salinas River NWR.

The goal of prescribed fire at the Refuge is to maintain between 50% and 75% cover of native grassland composed of at least 90% (by plant cover) grasses and herbs native to the local area within 15 years, within the mosaic of grassland and coastal scrub habitat (Objective 2.2 of Salinas River NWR CCP).

The objectives of prescribed fire are to:

1. Maintain and enhance native grassland with prescribed fire in addition to mowing and herbicide use.
2. Limit extent of nonnative species [e.g. wild radish *(Raphanus sativus)*, hemlock *(Conium maculatum)*, and mustard *(Brassica rapa* ssp.*olifera)*]

Prescribed fires involve the use of fire as a tool to achieve management objectives. Research burning may also be conducted when determined to be necessary for accomplishment of research project objectives. To meet the goals and objectives of prescribed fires on the Refuge, it is important to monitor the grasslands and choose the most appropriate areas and timing to conduct the burns. That is, burns should be conducted in areas that currently support native species, and should be conducted after native grasses have set seed and cured, but before nonnatives have seeded. Follow up is necessary to determine frequency of burning and spot treating. Actions included in the prescribed burn program include: the selection and prioritization of prescribed burns to be carried out during the year, prescribed burn plans, burn prescriptions, burn operations, documentation and reporting, and burn critiques. Measures to ensure the successful implementation of the prescribed fire program are to:

1. Conduct a vigorous prescribed fire program with the highest professional and technological standards;
2. Identify the prescribed burn parameters that are most appropriate for meeting resource management objectives;
3. Efficiently accomplish resource management objectives through the application of prescribed fire;
4. Continually evaluate the prescribed fire program to better meet program goals by refining prescriptions treatments and monitoring methods, and by integrating applicable technical and scientific advancements;
5. Prepare prescribed burn plans with a review by a qualified Prescribed Fire Manager/Prescribed Burn Boss, and approval by the Refuge Manager; and
6. Conduct prescribed burns with an adequate number of qualified personnel to conduct the burn as well as to mop-up.

The Refuge reserves the option to use an interagency team approach for complex burns carried out on the boundaries and close to developed areas or burns of large acreage. The most highly qualified and experienced personnel in the regional interagency community would be requested to serve on this team.

FIRE MANAGEMENT STRATEGIES

Prescribed fire will be used to reduce hazard fuel accumulation, restore fire to fire-dependent ecological communities, improve wildlife habitat, and to maintain cultural/ historic scenes where appropriate. All

prescribed fire activity will comply with applicable Federal, state, and local air quality laws and regulations.

All prescribed fire projects will have a burn plan approved by the Project Leader. Each burn plan will be prepared using a systematic decision-making process, and contain measurable objectives, predetermined prescriptions, and using an approved environmental compliance document. Appropriate NEPA documentation exists for this Fire Management Plan in the Draft CCP/Environmental Assessment. Therefore, additional NEPA documentation will be necessary only for prescribed fire projects not meeting the criteria outlined in this Plan.

Prescribed Fire Burn Plans must include components such as a Go/No/Go Checklist, contingency actions to be taken in the event the prescription is exceeded, and the need for alerting neighbors and appropriate public officials to the timing and the planing of the burn. A burn plan format meeting all required needs is located in Appendix I.

Fire monitoring will be used to evaluate the degree to which burn objectives are accomplished. Monitoring can assist managers in documenting success in achieving overall programmatic objectives and limiting occurrence of undesired effects.

PRESCRIBED FIRE PLANNING

Annual Activities

The FMO will be responsible for completing an annual fire summary report. The report will contain the number of fires by type, acres burned by fuel type, cost summary, personnel employed, and fire effects.

The Refuge Manager, Biologist, and FMO will determine burn unit priorities, timing, and burn plan development schedule by January of each year. Burn Plans will be prepared and submitted for Project Leader review and approval by March. The Burn Plan will be submitted to the Air Quality District by March 30 for smoke management review and authorizing letter.

Prescribed Fire activities will be reviewed annually. Necessary updates or changes to the Fire Management Plan will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Refuge Manager to determine if such alterations warrant a re-approval of the plan.

Prescribed Burn Plan

The Prescribed Burn Boss will conduct a field reconnaissance of the proposed burn location with the FMO, Biologist, and/or Refuge Manager to discuss objectives, special concerns, and gather all necessary information to write the burn plan. After completing the reconnaissance, a qualified Burn Boss will write the prescribed burn plan.

All prescribed fires will have prescribed burn plans. The prescribed burn plan is a site specific action plan describing the purpose, objectives, prescription, and operational procedures needed to prepare and safely conduct the burn. The treatment area, objectives, constraints, and alternatives will be clearly outlined. No burn will be ignited unless all prescriptions of the plan are met. Fires not within those parameters will be suppressed. Prescribed Burn Plans will follow the format contained in Appendix I. Each burn plan will be reviewed by the Refuge Manager, Biologist, FMO, and Burn Boss. The Project

Leader has the authority to approve the burn plan. The term "burn unit" refers to a specific tract of land to which a prescribed burn plan applies.

Strategies and Personnel

Execution of prescribed burns will only be executed by qualified personnel. The Prescribed Burn Boss will fill all required positions to conduct the burn with qualified personnel. All personnel listed in the burn plan must be available for the duration of the burn or the burn will not be initiated. Personnel will meet minimum USFWS fitness and qualifications standards for prescribed burning.

Weather and fuel moisture conditions must be monitored closely in planned burn units to determine when the prescription criteria are met. A belt weather kit may also be utilized to augment monitoring. Fuel moisture samples of 10-, 100-, and 1000-hour down and dead logs (where applicable) and of live plants may be monitored each week and percent moisture contents figured to help determine when the prescription criteria are met.

When all prescription criteria are within the acceptable range, the Prescribed Burn Boss will select an ignition date based on current and predicted weather forecasts. A thorough briefing will be given by the Prescribed Burn Boss and specific assignments and placement of personnel will be discussed. An updated spot weather forecast will be obtained on the day of ignition and all prescription elements will be rechecked to determine if all elements are still within the approved ranges. If all prescription elements are met, a test fire will be ignited to determine on-site fire behavior conditions as affected by current weather. If conditions are not satisfactory, the test fire will be suppressed and the burn will be rescheduled. If conditions are satisfactory the burn will continue as planned.

Specific management needs for the Refuge as a whole and for specific areas will be determined annually. Specific burn objectives, fire frequency rotation, firing methodology, and prescriptions will vary from year to year. Burn plans will be updated to reflect any variations. Project Leader will approve prescribed fire plans.

Based on resource needs, 10 to 40 acres per year will be targeted for burning in coyote brush scrub/grassland habitat only. The burn would occur in May or June, allowing native grasses to drop seed, but prior to nonnatives going to seed. Additional planting of native grasses may be necessary to achieve final objectives. No threatened or endangered species are known to exist in this habitat, but ground nesting birds, such as mallards, have been found in the area. Prescribed burns will initially be used to restore and enhance the native grassland, controlling non-native weeds by burning for several consecutive years. Once non-natives are reduced to a controllable level in an area, fire will then be used for maintenance of the grasslands, requiring only periodic burns.

Depending upon the complexity of the burn, two or more fire crews (3 crew members per crew) from the Central Valley Refuges Zone and 3-4 collateral fire duty personnel from SFBNWRC may be needed to ignite, hold, and mop-up the burn. In addition, personnel and equipment from MCFD shall be available in the event that fire spreads outside Refuge property and into their local responsibility area. A qualified Prescribed Burn Boss Type III or higher will be required to write the Burn Plan and serve as Burn Boss during any planned ignitions

One person with botanical/sampling design expertise will also be needed to conduct pre and post burn monitoring. One person with biological/botanical expertise will be needed to assist in developing site specific prescribed burn plans.

Only qualified personnel will be used to conduct burns on the Refuge. Pre- and post-fire briefings will be conducted on all planned ignitions.

Coordination needed with the following entities:

- Monterey Bay Unified Pollution Control District: Written approval required; Burn Plan needs to be submitted 30 days in advance of planned ignition; day of fire approval required.
- Monterey County Police Department: Needs to be contacted the day of the burn to notify them of potential smoke across roads.
- Monterey County Fire Department: Needs to receive copy of Prescribed Burn Plan 1 month in advance.
- California State Parks, Martin Jefferson & Sons, Robert Scattini, City of Marina, and other adjacent landowners: Adjacent or nearby landowners need to be contacted at least 1 week prior to the burn so that vehicles are moved and employees are aware of the burn.
- Volunteers and personnel from other agencies or organizations that conduct research on the Refuge need to be contacted at least 1 week prior to the burn (Appendix F).

The Refuge will procure burn permits and follow procedures in them. In addition, the Zone Fire Management Officer or an individual qualified at the Prescribed Burn Boss Type III level will write a Burn Plan to be approved by the Project Leader. The guidance and format for writing Burn Plans is found in the Service's Prescribed Fire Management Handbook, Section 2.2. All ignitions require a DI-1202 form to completed and returned to the responsible fire management officer for input into the Fire Management Information System (FMIS) within 20 days after the fire is declared out.

If the prescribed burn escapes the predetermined burn area, all further ignition will be halted except as needed for suppression efforts. Suppression efforts will be initiated, as discussed in the preburn briefing. The FMO will be notified immediately of any control actions on a prescribed burn. If the burn exceeds the initial suppression efforts, the burn will be declared a wildland fire and suppressed using guidelines established in this plan. If a prescribed burn is declared a wildland fire, all personnel must meet NWCG qualifications and fitness levels for wildland fire activities. A WFSA will be completed and additional personnel and resources ordered as determined by the Incident Commander. If the fire continues to burn out of control, additional resources will be called from the local cooperating agencies via the servicing dispatch. A management overhead team may be requested to assume command of the fire.

Recommendations of the Monterey Bay Unified Pollution Control District will be followed which will satisfy the District's criteria for use of the "72-Hour Outlook/48-Hour Decision" forecasting procedure. These may include restrictions on igniting under certain wind speeds/directions, humidity, or other conditions that would cause local air quality to be degraded. Other conditions under which fires will not be ignited include: east wind conditions, Red Flag Warnings /Watches, situations where local fire department resources are over committed to wildland fires in the Bay Area (i.e., Oakland Hills Fire 1991 or Vision -Pt. Reyes Fire 1995). The prescribed fire plan will also identify other "go-no-go" or suppression criteria. Prior to any planned ignitions, Burn Boss will contact MCFD Emergency Communications Center to determine resource availability in case of an escaped burn.

Monitoring and Evaluation

Monitoring of prescribed fires is intended to provide information for quantifying and predicting fire behavior and its ecological effects on refuge resources while building a historical record. Monitoring measures the parameters common to all fires: fuels, topography, weather and fire behavior. In addition,

ecological changes such as species composition and structural changes will be monitored after a fire. This information will be very useful in fine-tuning the prescribed burn program.

All wildland fires will be appropriately suppressed. However, monitoring wildland fires may be appropriate and potentially valuable in mapping and documenting the growth of the fire, measuring on-site weather and fuel loading to provide the fire staff with present and expected fire behavior and effects. During prescribed burns, monitoring can serve as a precursor to invoking suppression action by determining if the fire is in prescription, assessing its overall potential, and determining the effects of the prescribed burn.

During prescribed burning, monitoring should include mapping, weather, site and fuel measurements and direct observation of fire characteristics such as flame length, rate of spread and fire intensity. Operational monitoring provides a check to insure that the fire remains in prescription and serves as a basis for evaluation and comparison of management actions in response to measured, changing fire conditions, and changes such as fuel conditions and species composition.

All fires may be monitored regardless of size. The FMO will establish specific fire information guidelines for each fire to update intelligence about the fire. Highest priority for monitoring will be assigned to large fires or fires which threaten to leave the Refuge.

Short term: BEHAVE predictions will be used to model fire behavior, and a belt weather kit will be used to monitor actual burn day conditions. The Service presently has no fire effects results for the Refuge.

Long term: The response of native and non-native vegetation to the prescribed fire will be monitored. Plant species composition and percent cover will be measured pre and post burn for certain native and weed species of concern.

Monitoring must be done to document and verify that the stated objectives have been met. Plots, photo points, or other methods will be developed to document the results of the burn. These data will be stored for future refinement of prescriptions and to determine the success of the program.

Required Reports

All prescribed burn forms will be completed as outlined by the Prescribed Burn Boss. A monitor will be assigned to collect all predetermined information and complete all necessary forms prior to, during, and after the burn. All records will be archived in the refuge's fire records for future use and reference.

The Prescribed Burn Boss will prepare a final report on the prescribed burn for the Fire Analysis Committee. Information will include a narrative of the burn operation, a determination of whether objectives were met, weather and fire behavior data, map of the burn area, photographs of the burn, number of work hours, and final cost of the burn.

Prescribed Burn Critique

A report detailing the actual burn will accompany any recommendations or changes deemed necessary in the program. This report will be submitted to the Refuge Project Leader. A post-season critique of the fire management program, including the prescribed burn program, will be held each year at the conclusion of the fall fire season.

AIR QUALITY / SMOKE MANAGEMENT GUIDELINES

Air quality is managed by the Monterey Bay Unified Air Pollution District (MBUAPD). Burn permits must be issued to conduct a prescribed burn. The Refuge would obtain a Prescribed Burn Permit each year prescribed burning is conducted. The Refuge would follow all conditions of the permits. MBUAPD is currently in the process of revising fee structure. There has been no determination, yet direction is forthcoming.

The Refuge is located in an area that is classified by EPA and the California State Air Resources Board as "Non-Attainment" for Particulate Matter -10 (PM-10). Close coordination between the Refuge and the MBUAPD is required to meet PM-10 emission requirements if prescribed burning is done .

Specific aspects of a Smoke Management Plan (wind, weather, visibility hazard, and residual smoke problems) would be addressed on project Prescribed Burn Plans prepared for each burn, as required per Title 17 of the State Air Resources Board.

FIRE RESEARCH

The Refuge would collect data and monitor the success or failure of burning under certain conditions required to accomplish objectives of controlling non-native vegetation and restoring riverine and upland sand dune habitat. Weather conditions would be recorded to establish future successful/ideal burning results.

Additional research may be conducted as funds become available.

PUBLIC SAFETY

Salinas River NWR is dedicated to ensuring the safety of each visitor and to all residents and property adjacent to the Refuge's boundary. Therefore, during prescribed burns and wildland fires, the Refuge will be closed to the public.

Firefighter and public safety will always take precedence over property and resource protection during any fire management activity. For public safety, the fire scene and areas determined by the Refuge Manager or Project Leader, will remain clear of unauthorized people. The responsibility for managing public safety lies with the Incident Commander (IC) or Burn Boss for wildland or prescribed fire. Public safety considerations will be included as part of the burn prescription.

Where possible, areas of fire activity will be signed at visitor centers and bulletin boards. Residents adjacent to the Refuge may be notified of any prescribed burn and if any fire poses a threat to burn onto their lands (Appendix F).

During prescribed burns at least one burn team member will have first aid training. A first aid kit will be on-site for prescribed burns as well as wildland fires. The local police, fire, and emergency medical services will be notified prior to the ignition of any prescribed burn. They will also be notified of the location of any wildland fires.

PUBLIC INFORMATION AND EDUCATION

Informing the public is an important part of the fire management program. During a wildfire, the IC is responsible for providing information to the public. Prescribed fire public information would be addressed in the Prescribed Fire Plan and the Environmental Assessment when developed.

Educating the public on the value of fire as a natural process is important to increasing public understanding and support for the fire management program. The Refuge will use the most appropriate and effective means to explain the overall fire and smoke management program. This may include signing, personal contacts, interpretive panels, or media releases. When deemed necessary, interpretive presentations will address the fire management program and explain the role of fire in the environment.

The public information program will be developed as follows:

1. Concepts of the prescribed burn program will be incorporated, as appropriate, in future interpretive panels, and in local publications.
2. During periods when prescribed burns are ignited, handouts will be prepared, posted, and distributed to all visitors.
3. The fire management program may be incorporated into visitor contacts. Particular attention will be given when fires are conspicuous from roads or visitor use areas.
4. News releases will be distributed to the media as appropriate.
5. The public information outlets of neighboring and cooperating agencies and the regional office will be provided with all fire management information.
6. The fire management program will be discussed in informal talks with all employees , volunteers, residents, and neighbors.

Prior to the lighting of any planned ignition, information should be made available to visitors, local residents, and/or the press about what is scheduled to happen and why. On-site information will be provided to alleviate visitor concern about the apparent destruction of resources by fire or the impairment of views due to temporary smoke. This information will include prescribed burn objectives and control techniques, current fire location and behavior, effects caused by the fire, impacts on private and public facilities and services, and restrictions and closures.

As outlined in the prevention section, restrictions may become necessary during Red Flag Warnings, but public use should not be affected.

FIRE CRITIQUES AND ANNUAL PLAN REVIEW

FIRE CRITIQUES

Fire reviews will be documented and filed with the final fire report. The FMO will retain a copy for the Refuge files.

ANNUAL FIRE SUMMARY REPORT

The FMO will be responsible for completing an annual fire summary report. The report will contain the number of fires by type, acres burned by fuel type, cost summary (prescribed burns and wildland fires), personnel utilized, and fire effects.

ANNUAL FIRE MANAGEMENT PLAN REVIEW

The Fire Management Plan will be reviewed annually. Necessary updates or changes will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Refuge Manager to determine if such alterations warrant a re-approval of the plan.

The fire management plan will be updated as major policy decisions are made. At a minimum, this plan will be reviewed once a year by the individual on the Refuge with fire responsibility to maintain the integrity of the plan. Amendments to the fire management plan itself will be made as needed by sending them to the Regional Fire Management Coordinator for concurrence and to be approved by the Regional Director in Portland. Minor changes to the appendices, such as phone number corrections and personnel changes, can be made at the Refuge level and attached to the plan during this yearly review process without involvement of the Regional Office.

CONSULTATION AND COORDINATION

The following agencies, organizations and/or individuals were consulted in preparing this plan.

Roddy Baumann, Prescribed Fire Specialist, Pacific Region, USFWS, Portland, OR

Richard Hadley, Assistant Refuge Supervisor (NV/So. CA), USFWS, Sacramento, CA

Rachel Hurt, Wildlife Biologist, San Francisco Bay NWRC, USFWS, Fremont, CA

Diane Kodama, Wildlife Biologist, Salinas River NWR, USFWS, Fremont, CA

Ivette Loredo, Refuge Manager, Salinas River NWR, USFWS, Fremont, CA

Amanda McAdams, Fire Planner, Pacific Region, USFWS, Portland, OR

Dave Paullin, Klamath/Central Valley Refuge Supervisor,USFWS, Sacramento, CA

Tom Romanello, Assistant Fire Management Officer, Sheldon-Hart NWR, Lakeview, OR.

APPENDICES

APPENDIX A: REFERENCES CITED

Habitat Restoration Group, Inc. 1991. Salinas River Lagoon Management and Enhancement Plan. Administrative Draft. Prepared for Salinas River Lagoon Task Force.

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San Francisco National Wildlife Refuge Complex (SFNWRC). 1998. Draft Public Use Management Plan and Environmental Assessment.

U. S. Army Corps of Engineers. 1999. Inventory Project Report Castroville Amphibious Training Base. Supplemental.

U. S. Fish and Wildlife Service. 1983. California Brown Pelican Recovery Plan.

U. S. Fish and Wildlife Service. 2000a. Fire Management Handbook.

U. S. Fish and Wildlife Service. 2000b. Fire Management Preparedness and Planning Handbook.

Personal Communication:
Larkin, Ian, ECC Captain, MCFD, 8 June 2001.

Loredo, Ivette, Refuge Manager SRNWR, USFWS, 11 June 2001.

Valentine, Nicholas, Archeologist, Museum Specialist, USFWS Region 1, 2000.

APPENDIX B: DEFINITIONS

Agency Administrator. The appropriate level manager having organizational responsibility for management of an administrative unit. May include Director, State Director, District Manager or Field Manager (BLM); Director, Regional Director, Complex Manager or Project Leader (FWS); Director, Regional Director, Park Superintendent, or Unit Manager (NPS), or Director, Office of Trust Responsibility, Area Director, or Superintendent (BIA).

Appropriate Management Action. Specific actions taken to implement a management strategy.

Appropriate Management Response. Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Appropriate Management Strategy. A plan or direction selected by an agency administrator which guide wildland fire management actions intended to meet protection and fire use objectives.

Appropriate Suppression. Selecting and implementing a prudent suppression option to avoid unacceptable impacts and provide for cost-effective action.

Bureau. Bureaus, offices or services of the Department.

Class of Fire (as to size of wildland fires):
Class A - ¼ acre or less.
Class B - more than ¼ but less than 10 acres.
Class C - 10 acres to 100 acres.
Class D - 100 to 300 acres.
Class E - 300 to 1,000 acres.
Class F - 1,000 to 5,000 acres.
Class G - 5,000 acres or more.

Emergency Fire Rehabilitation/Burned Area Emergency Rehabilitation (EFR/BAER). Emergency actions taken during or after wildland fire to stabilize and prevent unacceptable resource degradation or to minimize threats to life or property resulting from the fire. The scope of EFR/BAER projects are unplanned and unpredictable requiring funding on short notice.

Energy Release Component (ERC) A number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. It is generated by the National Fire Danger Rating System, a computer model of fire weather and its effect on fuels. The ERC incorporates thousand hour dead fuel moistures and live fuel moistures; day to day variations are caused by changes in the moisture content of the various fuel classes. The ERC is derived from predictions of (1) the rate of heat release per unit area during flaming combustion and (2) the duration of flaming.

Extended attack. A fire on which initial attack forces are reinforced by additional forces.

Fire Suppression Activity Damage. The damage to lands, resources and facilities directly attributable to the fire suppression effort or activities, including: dozer lines, camps and staging areas, facilities (fences, buildings, bridges, etc.), handlines, and roads.

Fire effects. Any consequences to the vegetation or the environment resulting from fire, whether neutral, detrimental, or beneficial.

Fire intensity. The amount of heat produced by a fire. Usually compared by reference to the length of the flames.

Fire management. All activities related to the prudent management of people and equipment to prevent or suppress wildland fire and to use fire under prescribed conditions to achieve land and resource management objectives.

Fire Management Plan. A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

Fire prescription. A written direction for the use of fire to treat a specific piece of land, including limits and conditions of temperature, humidity, wind direction and speed, fuel moisture, soil moisture, etc., under which a fire will be allowed to burn, generally expressed as acceptable range of the various fire-related indices, and the limit of the area to be burned.

Fuels. Materials that are burned in a fire; primarily grass, surface litter, duff, logs, stumps, brush, foliage, and live trees.

Fuel loadings. Amount of burnable fuel on a site, usually given as tons/acre.

Hazard fuels. Those vegetative fuels which, when ignited, threaten public safety, structures and facilities, cultural resources, natural resources, natural processes, or to permit the spread of wildland fires across administrative boundaries except as authorized by agreement.

Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Maintenance burn. A fire set by agency personnel to remove debris; i.e., leaves from drainage ditches or cuttings from tree pruning. Such a fire does not have a resource management objective.

Natural fire. A fire of natural origin, caused by lightning or volcanic activity.

NFDRS Fuel Model. One of 20 mathematical models used by the National Fire Danger Rating System to predict fire danger. The models were developed by the US Forest Service and are general in nature rather than site specific.

NFFL Fuel Model. One of 13 mathematical models used to predict fire behavior within the conditions of their validity. The models were developed by US Forest Service personnel at the Northern Forest Fire Laboratory, Missoula, Montana.

Prescription. Measurable criteria which guide selection of appropriate management response and actions. Prescription criteria may include safety, public health, environmental, geographic, administrative, social, or legal considerations.

Prescribed Fire. A fire ignited by agency personnel in accord with an approved plan and under prescribed conditions, designed to achieve measurable resource management objectives. Such a fire is designed to produce the intensities and rates of spread needed to achieve one or more planned benefits to natural resources as defined in objectives. Its purpose is to employ fire scientifically to realize maximize net benefits at minimum impact and acceptable cost. A written, approved prescribed fire plan must exist and NEPA requirements must be met prior to ignition. NEPA requirements can be met at the land use or fire management planning level.

Preparedness. Actions taken seasonally in preparation to suppress wildland fires, consisting of hiring and training personnel, making ready vehicles, equipment, and facilities, acquiring supplies, and updating agreements and contracts.

Prevention Activities directed at reducing the number or the intensity of fires that occur, primarily by reducing the risk of human-caused fires.

Rehabilitation (1) Actions to limit the adverse effects of suppression on soils, watershed, or other values, or (2) actions to mitigate adverse effects of a wildland fire on the vegetation-soil complex, watershed, and other damages.

Suppression. A management action intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

Unplanned ignition. A natural fire that is permitted to burn under specific conditions, in certain locations, to achieve defined resource objectives.

Wildfire. An unwanted wildland fire.

Wildland Fire. Any non-structure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Situation Analysis (WFSA). A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

Wildland/urban interface fire A wildland fire that threatens or involves structures.

APPENDIX C: SPECIAL STATUS SPECIES ON THE REFUGE

Common and Scientific Name	*Legal Status*[a] *Federal/BCC/State/CNPS*	*Occurrence at Salinas River NWR*
Plants		
Sandmat manzanita *Arctostaphylos pumila*	–/–/1B	Not reported to occur at the Refuge but suitable habitat present.
Monterey spineflower *Chorizanthe pungens* var. *pungens*	T/–/1B	Occurs on the Refuge; suitable habitat abundant on dunes and species also occurs nearby.
Robust spineflower *Chorizanthe robusta* var. *robusta*	E/–/1B	No populations known to occur at the Refuge; occurs in dunes immediately north and south of Refuge.
Seaside bird's-beak *Cordylanthus rigidus* ssp. *littoralis*	–/E/1B	Not reported to occur at the Refuge; suitable habitat present.
Eastwood's goldenbush *Ericameria fasciculata*	–/–/1B	Not reported to occur at the Refuge; suitable habitat present.
Coast wallflower *Erysimum ammophilum*	–/–/1B	Not reported to occur at the Refuge; suitable habitat present.
Menzies' wallflower *Erysimum menziesii* ssp. *menziesii*	E/E/1B	Probably occurred historically at the Refuge; no populations currently known from the site.
Yadon's wallflower *Erysimum menziesii* ssp. *yadonii*	E/E/1B	A population of this species was located on the Refuge in the 1970s, but was likely extirpated in 1980 by natural disturbance of the central foredune community.
Monterey gilia *Gilia tenuiflora* ssp. *arenaria*	E/T/1B	Occurs on the Refuge and at Salinas River State Beach north of the Refuge.
Tidestrom's lupine *Lupinus tidestromii*	E/E/1B	Not reported to occur at the Refuge; suitable habitat present.
Wildlife		
Smith's blue butterfly *Euphilotes (=Shijimaeoides) enoptes smithi*	E/–	Occurs at the Refuge.
Steelhead *Oncorhynchus mykiss*	T/–	Collected in Salinas River Lagoon in 1963 and 1991. Small numbers likely occur at the Refuge.
Southwestern pond turtle *Clemmys marmorata pallida*	–/SSC	No known occurrences at the Refuge; occurrences have been reported in the vicinity.
Black legless lizard *Anniella pulchra nigra*	–/SSC	Occurs at the Refuge in the central foredune and central dune scrub communities.
Common loon *Gavia immer*	–/SSC	Often forages in the Salinas River Lagoon during winter migration.
American white pelican *Pelecanus erythrorhynchos*	–/SSC	A small flock often forages and roosts in the Salinas River Lagoon from July through March.
California brown pelican *Pelecanus occidentalis*	E/E	Occurs year-round at the Refuge; most common between April and December.
Double-crested cormorant *Phalacrocorax auritus*	–/SSC	Roosts and forages around the Salinas River Lagoon.
White-faced ibis *Plegadis chihi*	-/SSC	Has been observed at the Refuge during fall and winter migrations.
Osprey *Pandion haliaetus*	–/SSC	Often forages at the Refuge during fall and spring migrations.

APPENDIX C: SPECIAL STATUS SPECIES ON THE REFUGE

Common and Scientific Name	*Legal Status*[a] *Federal/BCC/State/CNPS*	*Occurrence at Salinas River NWR*
White-tailed kite *Elanus leucurus*	–/FP	Often forages at the Refuge during winter; known to nest in the vicinity.
Bald eagle *Haliaeetus leucocephalus*	T/E	May forage occasionally at the Salinas River Lagoon during fall, winter, and spring.
Northern harrier *Circus cyaneus*	–/SSC	Commonly forages at the Refuge; may nest onsite.
Sharp-shinned hawk *Accipiter striatus*	–/SSC	Uncommon winter visitor to the area; forages at the Refuge.
Cooper's hawk *Accipiter cooperii*	–/SSC	Uncommon winter visitor to the area; forages at the Refuge.
Golden eagle *Aquila chrysaetos*	PR/SSC, FP	May forage occasionally at the Refuge.
Prairie falcon *Falco mexicanus*	–/R,C/SSC	Uncommon winter visitor to the area; forages at the Refuge.
Merlin *Falco columbarius*	–/SSC	Uncommon winter visitor to the area; forages at the Refuge.
American peregrine falcon *Falco peregrinus anatum*	–/R,C/E	Uncommon winter visitor to the area; forages at the Refuge.
Whimbrel *Numenius phaeopus*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
California clapper rail *Rallus longirostris obsoletus*	E/E/FP	Reported once from the Refuge; no suitable nesting habitat is found onsite.
Greater sandhill crane *Grus canadensis tabida*	–/T	Very rare spring and fall migrant at the Refuge and in the vicinity.
Western snowy plover *Charadrius alexandrinus nivosus*	T/SSC (coastal)	Year-round resident at the Refuge. The beach provides one of the most important breeding areas for this species in the Monterey Bay area.
Mountain plover *Charadrius montanus*	C/R,C/SSC	Rare winter visitor to the Refuge.
Long-billed curlew *Numenius americanus*	–/R,C/SSC	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
Red knot *Calidris canutus*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
Marbled godwit *Limosa fedoa*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
Short-billed dowitcher *Limnodromus griseus*	–/R,C/–	Common in the Salinas River Lagoon and in coastal brackish marsh and northern coastal salt marsh communities at the Refuge.
California gull *Larus californicus*	–/SSC	Very common visitor to the Refuge.
California least tern *Sterna antillarum (=albifrons) browni*	E/E	Historically nested onsite; now an occasional spring migrant.
Elegant tern *Sterna elegans*	--/R,C/SSC	A large local population roosts and forages at the Refuge.
Black skimmer *Rynchops niger*	–/R,C/SSC	Occasionally forages in the Salinas River Lagoon. Potential nesting habitat is present.

APPENDIX C: SPECIAL STATUS SPECIES ON THE REFUGE

Common and Scientific Name	*Legal Status*[a] *Federal/BCC/State/CNPS*	*Occurrence at Salinas River NWR*
Short-eared owl *Asio flammeus*	–/SSC	Suitable nesting and foraging habitat occurs in tall grassland habitat at the Refuge.
Western burrowing owl *Athene cunicularia hypugea*	--/SSC	Rare fall migrant and occasional wintering birds in the vicinity of the Refuge.
Willow flycatcher *Empidonax traillii*	--/E	Rare winter and spring migrant in central coast arroyo willow riparian forest near the Refuge.
Black swift *Cypseloides niger*	–/R,C/SSC	Rare spring and fall migrant through the Refuge.
Loggerhead shrike *Lanius ludovicianus*	–/R,C/SSC	Common resident at the Refuge.
California yellow warbler *Dendroica petechia brewsteri*	–/SSC	May nest in central coast arroyo willow riparian forest near the Refuge.
Purple martin *Progne subis*	–/SSC	Rare spring and late-summer migrant through the Refuge.
Common yellowthroat *Geothlypis trichas sinuosa*	–/C/SSC	May nest in central coast arroyo willow riparian forest near the Refuge.
Song sparrow *Melospiza melodia*	–/C/–	Common resident at the Refuge.
Bank swallow *Riparia riparia*	–/T	Rare spring and summer migrant through the Refuge.
Yellow-breasted chat *Icteria virens*	–/SSC	Rare spring and fall migrant in riparian scrub at the Refuge.
Tricolored blackbird *Agelaius tricolor*	–/R,C/SSC	Occasionally forages at the Refuge.
Southern sea otter *Enhydra lutris nereis*	T/FP	Occasionally observed in offshore areas of the Refuge

APPENDIX C: SPECIAL STATUS SPECIES ON THE REFUGE

Common and Scientific Name	*Legal Status*[a] *Federal/BCC/State/CNPS*	*Occurrence at Salinas River NWR*

[a]Status explanations:

Federal

- E = listed as endangered under the Federal Endangered Species Act.
- T = listed as threatened under the Federal Endangered Species Act.
- PE = proposed for listing as endangered under the Federal Endangered Species Act.
- PR = protected under the Golden Eagle Protection Act.
- PT = proposed for listing as threatened under the Federal Endangered Species Act.
- C = species for which the Service has sufficient information on file regarding biological vulnerability and threat(s) to support issuance of a proposed rule to list.
- – = no listing.

Birds of Conservation Concern(BCC)

Species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973. This is a congressionally mandated list, compiled by USFWS as mandated by the Fish and Wildlife Conservation Act (1988 amendment).

- R = Regional.
- C = South Pacific Coast California.

State

- E = listed as endangered under the California Endangered Species Act.
- T = listed as threatened under the California Endangered Species Act.
- R = listed as rare under the California Native Plant Protection Act. (This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.)
- C = species is a candidate for listing under the California Endangered Species Act.
- SSC = California State species of special concern.
- FP = species is fully protected in California under California Fish and Game Code Section 3511 (birds), 4700 (mammals), or 5050 (reptiles and amphibians).
- – = no listing.

California Native Plant Society

- 1A = List 1A (species presumed extinct in California).
- 1B = List 1B (species rare, threatened, or endangered in California and elsewhere).
- 2 = List 2 (species rare, threatened, or endangered in California but more common elsewhere).
- 3 = List 3 (species about which more information is needed to determine their status).
- 4 = List 4 (species of limited distribution).
- – = no listing.

Sources: California Native Plant Society 2001, California Department of Fish and Game 2002.

APPENDIX D: FIRE DISPATCH PLAN/ CONTACT LIST

When a report of smoke or fire on the Refuge is received, get as much information from the caller or messenger as possible:

Location of smoke or fire?
Location of caller?
Name and telephone number or contact point of the caller or messenger?
Color of smoke?
Size of fire?
Type of fuel (What is burning?)
Character of the fire (active, smoldering, etc.)?
Is anyone fighting the fire? How many personnel? Equipment?
Did they see anyone in the vicinity or vehicles leaving the area?
Is the fire site accessible by a slip-on unit?
What are the weather conditions at the fire?

1. Report to:

   Monterey County Fire Department (408) 647-6208

2. Due to the distance of Salinas River NWR from the Fremont Headquarters, the fire will likely have already been extinguished before Refuge personnel arrive. However, a Refuge law enforcement officer and Refuge firefighter unit should be dispatched for mop-up, fire investigation, and report purposes.

3. If discovered while on the Refuge, call 911 or the County Department at (408) 647-6208 or Refuge Headquarters (510) 792-0222 for assistance.

4. Dispatch Refuge firefighters if the fire is on the Refuge or threatens Refuge property.

5. Notify Refuge Manager Ivette Loredo, Project Leader, on-duty Police Office, and Zone Fire Management Officer (RW Parris - (209) 826-3508).

6. For fires occurring at night or on weekends, the following individuals should be notified in order:

   a. On-call Police Officer: Call Park Police Dispatch (415) 561-5510

      Barry Tarbet (510) 247-3357
      Jon Adamson (510) 782-1154

   b. Refuge Manager
      Ivette Loredo (510) 792-0222 (Cell) 377-5956

   c. Project Leader
      Marge Kolar (510) 792-0222 (Cell) 377-9450

   d. Wildlife Biologist
      Diane Kodama (510) 792-0222 (Cell)377-5695

   e. Zone Fire Management Officer (Acting)

RW Parris (209) 826-3508 (Cell) 209-704-4521

f. Refuge Fire Crew:

Ivette Loredo	510-377-5956
Clyde Morris	510-377-2781
Carmen Leong	510-377-9229
Joelle Buffa	510-377-5958
Joy Albertson	510-377-5693
Art Chan	510-377-3119
Juan Flores	510-377-5891
Mike Parker	510-928-0497
Chris Bandy	510-377-5928

g. Other personnel to be involved if necessary:

Andy Anderson, Regional Fire Management Officer
(503) 231-6175 business or residence (360) 666-5031

Amanda McAdams, Fire Planner, Pacific Region
Regional Office: (503) 872-2756

Pam Ensley, Regional Fire Management Coordinator,
Regional Office: (503) 231-6174 or residence (360) 835-7004

Roddy Baumann, Regional Prescribed Fire Specialist
Regional Office: (503) 231-2075 or (360) 573-9444 residence

Mendicino NF Dispatch
Willows, CA
(888) 663-3479

APPENDIX E: DELEGATION OF AUTHORITY

Salinas River NWR

Delegation of Authority
for

_____ Incident

_____ is assigned as Incident Commander. You have full authority and responsibility for managing the fire suppression activities within the framework of laws, Agency policy, and direction provided in the Wildland Fire Situation Analysis and the Agency Administrator Briefing.

Your primary responsibility is to organize and direct your assigned resources for efficient and effective suppression of the fire. You are accountable to the Agency Administrator or the representatives designated below.

Specific direction for this incident covering management and environmental concerns are:

1. Protection of life and private property is your highest priority task.
2. Give special consideration to firefighter safety, especially with respect to aviation operations, working around dozers, snags, and entrapments. Avoid sensitive environmental areas. When in doubt, sacrifice acres not people in your strategic and tactical decisions.
3. You are authorized to utilize helicopters, chainsaws, portable pumps, fireline explosives, and retardant at Salinas River NWR. You are not authorized to use equipment within the _____.
4. Manage human resources assigned to the fire in a manner that promotes mutual respect and is consistent with the enclosed U.S. Fish & Wildlife Service "Harassment-Free Workplace" policy.
5. Be cost effective; final costs should be no more than 120% of the preferred WFSA alternative.
6. Manage equipment and supplies to ensure losses are within Acceptable Fire Loss/Use Rates.

You should takeover management of the incident on or before _____, _____.

_____ _____

Marge Kolar, Project Leader, Salinas River NWR Date

Delegation of Authority - Guidelines for Mitigating the Effects of Fire Suppression

<u>LINE BUILDING</u>

1. Do not fall snags on the outside of the line unless they are an obvious safety hazard.
2. On the inside of the line, fall only those snags that would reach the fire line should they burn and fall over, or if they are an obvious safety hazard.
3. Don't cut live trees over 12" d.b.h. unless deemed absolutely necessary by the Refuge Manager. Limbing of these trees, as necessary, should be the first choice.

4. Cut brush or small trees flush with the ground if the area is visible from roads.
5. Lop and scatter cut limbs so the depth will not exceed 15 inches.

MOP-UP

1. Extinguish fire in living trees or snags within 200 feet of the fires perimeter with water or dirt. Fell those trees as a last resort.
2. If felling occurs in the vicinity of service roads/trails, cut the stumps flush with the ground.
3. Buck fallen trees across service roads/trails only to the extent necessary to facilitate road/trail passage.

AIR OPERATIONS

1. Consider fixed wing delivery of water vs. standard colored retardant.
2. When possible, use long line slings instead of cutting helispots.

APPENDIX F: NOTIFICATION LIST FOR PRESCRIBED BURNING

County Fire Department
Reno DiTullio, Chief
Monterey County Fire Department
2221 Garden Road
Monterey, CA 93940
(408)647-6208

Monterey Bay Unified Air Pollution Control District (MBUAPCD)
Amy Taketomo, Senior Air Quality Planner
24580 Silver Cloud Ct.
Monterey, CA 93940
(831)647-9411

Gary Page, Point Reyes Bird Observatory, Snowy Plover Monitoring
(415) 868-1221 x23

John and Ricky Warriner, Snowy Plover Monitoring
(831) 722-5589

Martin Jefferson & Sons, Adjacent Landowner
(831) 384-2049

Robert Scattini, Adjacent Landowner
(831) 633-3509 x13

City of Marina
(831) 384-3715

David Dixon, Cal. Dept. of Parks and Recreation
(831) 384-6932

Nikki Nedeff, Big Sur Land Trust
(831) 625-5523

Terry Palmisano, Cal. Dept. of Fish and Game
(831) 649-2890

APPENDIX G: CULTURAL RESOURCE COMPLIANCE

Project Name:					**Program:** (Partners, Refuges, JITW, WSECP, etc.)	
State: CA, ID, HI, NV, OR, WA		**EcoRegion:** CBE, IPE,KCE, NCE			**FWS Unit:** **Org Code:**	
Project Location:	**County**	**Township**	**Range**	**Section**	**FWS Contact:** Name, Tel#, Address	
USGS Quad:					**Date of Request:**	
Total project acres/linear ft/m:		**APE Acres / linear ft/m (if different)**			**Proposed Project Start Date:**	

MAPS Attached	**Check below**		
Copy of portion of USGS Quad with project area marked clearly **(required)**			Project (sketch) map showing Area of Potential Effect with locations of specific ground altering activities **(required)**
Photocopy of aerial photo showing location **(if available)**			Any other project plans, photographs, or drawings that may help CRT in making determination **(if available)**

Directions to Project: (if not obvious)	
Description of Undertaking:	Describe proposed project and means to facilitate (e.g., provide funds to revegetate 1 mile of riparian habitat, restore 250 acres of seasonal wetlands, and construct a 5-acre permanent pond). How is the project designed (e.g., install 2 miles of fence and create approximately 25' of 3' high check dam)?

Area of Potential Effects (APE):	Describe where disturbance of the ground will occur. What are the dimensions of the area to be disturbed? How deep will you excavate? How far apart are fenceposts? What method are you using to plant vegetation? Where will fill be obtained? Where will soil be dumped? What tools or equipment will be used? Are you replacing or repairing a structure? Will you be moving dirt in a relatively undisturbed area? Will the project reach below or beyond the limits of prior land disturbance? Differentiate between areas slated for earth movement vs. areas to be inundated only. Is the area to be inundated different from the area inundated today, in the recent past, or under natural conditions? Provide acres and/or linear ft/m for all elements of the project.
Environmental and Cultural Setting:	Briefly describe the environmental setting of the APE. **A)** What was the natural habitat prior to modifications, reclamation, agriculture, settlement? **B)** What is land-use history? When was it first settled, modified? How deep has it been cultivated, grazed, etc.? **C)** What is land use and habitat today? What natural agents (e.g., sedimentation, vegetation, inundation) or cultural agents (e.g., cultivation) might affect the ability to discover cultural resources? **D)** Do you (or does anybody else) know of cultural resources in or near the project area?

Appendix H: Sample WFSA

WILDLAND FIRE SITUATION ANALYSIS

3.	Jurisdiction: **US Fish and Wildlife Service**	4.	Geographic Area: **Northwest Coordination Center**
5.	Unit: National Wildlife Refuge	6.	WFSA Number of .
7.	Fire Name:	8.	Incident Number:
9.	Accounting Code:		
10.	Date/Time prepared / / @ : .		
11.	Attachments		
	-Complexity Analysis X -Risk Assessment/Analysis X Probability of success Consequences of Failure -Maps -Decision Tree -Fire Behavior Projections X -Calculations of Resource Requirements -Other		

OBJECTIVES AND CONSTRAINTS

•Objectives (Must be specific and measurable) These objectives must be considered in the development of alternatives in III, below. Suppression objectives must relate to the Unit resource management objectives.

- •Safety (These must receive the highest priority)
  - -Public
  - -Firefighter
- •Economic (May include closure, which could impact the public through transportation, communication and resource values)
- •Environmental (e.g. management objectives for wildlife habitat, water quality, etc.)
- •Social (May include local attitudes towards fire that might affect decisions on the fire)
- •Other (e.g. legal or administrative constraints needing consideration such as fire encroaching onto other jurisdictions)

•Constraints (e.g. environmentally and culturally sensitive areas, irreparable damage to resources, and economic constrants)

ALTERNATIVES

	A.	B.	C.
Wildland Fire Strategy	e.g. Allow fire to play a natural role	e.g. Aggressive attack	
Narrative			
Resources Needed Hand Crews Engines Dozers Air Tankers Helicopters			
Final Size			
Est. Contain/ Control Date			
Costs			
Risk Assessment -Probability of success -Consequence of failure			
Complexity			
Attach maps for each alternative			

EVALUATION OF ALTERNATIVES

	A.	B.	C.
Evaluation Process			
Safety Firefighter Aviation Public			
Sum of safety values			
Economic Forage Improvements Recreation Water Wildlife Other			
Sum of economic values			
Environmental Air Visual Fuels T&E Species Other			
Sum of environmental values			
Social Employment Public Concern Cultural Other			
Sum of social values			
Other			

Sum of other values			
TOTAL			

ANALYSIS SUMMARY

	A.	B.	C.
Compliance with Objectives Safety Economic Environmental Social Other			
Pertinent Data Final fire size Complexity Suppression cost Resource values Probability of success			
External/Internal Influences			

VI. DECISION

The Selected Alternative is: .

Rationale:

Agency Administrator's Signature Date/Time

VII. DAILY REVIEW

			PREPAREDNESS LEVEL	INCIDENT PRIORITY	RESOURCE AVAILABILITY	WEATHER FORECAST	FIRE BEHAVIOR PREDICTIONS	WFSA VALID
Date	Time	By						

VIII. FINAL REVIEW

The elements of the selective alternative were met on:

Date Time:

By:

Agency Administrator

APPENDIX I: SAMPLE BURN PLAN

Prescribed Fire Plan

Refuge or Station _____

Unit _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____
Refuge Manager

Reviewed By: _____ Date: _____
Prescribed Fire Burn Boss

Reviewed By:_____ Date: _____
Regional Fire Management Coordinator

Reviewed By: _____ Date: _____
(Others)

The approved Prescribed Fire Plan constitutes the authority to burn, pending approval of Section 7 Consultations, Environmental Assessments, or other required documents. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Prescribed burning conditions established in the plan are firm limits. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported, but personnel will be held accountable for actions taken which are not in compliance with the approved plan.

Approved By: _____ Date: _____

PRESCRIBED FIRE PLAN

Refuge: _____ Refuge Burn Number: _____

Sub Station: _____ Fire Number: _____

Name of Area: _____ Unit No. _____

Acres To Be Burned: _____ Perimeter Of Burn: _____

Legal Description: Lat. ___ Long. ___ T __ R __ S __

County: _____

Is a Section 7 Consultation being forwarded to Fish and Wildlife Enhancement for review? Yes No (circle).

(Page 2 of this PFP should be a refuge base map showing the location of the burn on Fish and Wildlife Service land.)

The Prescribed Fire Burn Boss/Specialist must participate in the development of this plan.

I. GENERAL DESCRIPTION OF BURN UNIT

Physical Features and Vegetation Cover Types (Species, height, density, etc.):

Primary Resource Objectives of Unit (Be specific. These are management goals):

Objectives of Fire (Be specific. These are different than management goals):

Acceptable Range of Results (Area burned vs. unburned, scorch height, percent kill of a species, range of litter removed,

II. PRE-BURN MONITORING

Vegetation Type		Acres	%	FBPS Fuel Model
_____	__ __	_____		
_____	__ __	_____		
_____	__ __	_____		
_____	__ __	_____		
Total	__ __	_____		

Habitat Conditions (Identify with transect numbers if more than one in burn unit.):

Type of Transects:

Photo Documentation (Add enough spaces here to put a pre-burn photo showing the habitat condition or problem you are using fire to change/correct. A photo along your transect may reflect your transect data.):

Other:

III. PLANNING AND ACTIONS

Complexity Analysis Results:

Site preparation (What, when, who & how. Should be done with Burn Boss):

Weather information required (who, what, when, where, how, and how much):

Safety considerations and protection of sensitive features (Adjacent lands, visitors, facilities, terrain, etc., and needed actions. Include buffer and safety zones. Be specific, indicate on a burn unit map. Map should be a USGS quadrangle if possible, so ridges, washes, water, trails, etc. can be identified.)

Special Safety Precautions Needing Attention (Aerial ignition, aircraft, ignition from boat, etc.):

Media Contacts (Radio stations, newspaper, etc., list with telephone numbers):

Special Constraints and Considerations (Should be discussed with Burn Boss):

Communication and Coordination on the Burn (Who will have radios, frequencies to be used, who will coordinate various activities.):

IV. IGNITION, BURNING AND CONTROL

Planned or Proposed Actual

Scheduling: Approx. Date(s) _____ _____

Time of Day _____ _____

	Acceptable Range		
FBPS Fuel Model ____	Low	High	Actual
Temperature			
Relative Humidity			
Wind Speed (20' forecast)			
Wind Speed (mid-flame)			
Cloud Cover (%)			
ENVIRONMENTAL CONDITIONS			
Soil Moisture			
1 hr. Fuel Moisture			
10 hr. FM			
100 hr. FM			
Woody Live Fuel Moisture			
Herb. Live Fuel Moisture			
Litter/Duff Moisture			
FIRE BEHAVIOR			
Type of Fire (H,B,F)			
Rate of Spread			
Fireline Intensity			

Flame Length			
Energy Release Component NFDRS Fuel Model _____			

Cumulative effects of weather and drought on fire behavior:

Ignition Technique (Explain and include on map of burn unit. Use of aerial ignition must be identified in this plan. Last minute changes to use aircraft will not be allowed and will be considered a major change to the plan. This will require a resubmission):

Prescribed Fire Organization (See Section VII, Crew and Equipment Assignments. All personnel and their assignments must be listed. All personnel must be qualified for the positions they will fill.)

Other (If portions of the burn unit must be burned under conditions slightly different than stated above, i.e., a different wind direction to keep smoke off of a highway or off of the neighbors wash, detail here.)

Prescription monitoring (Discuss monitoring procedure and frequency to determine if conditions for the burn are within prescription):

V. SMOKE MANAGEMENT

Make any Smoke Management Plan an attachment.

Permits required (who, when):

Distance and Direction from Smoke Sensitive Area(s):

Necessary Transport Wind Direction, Speed and Mixing Height (Explain how this information will be obtained and used):

Visibility Hazard(s) (Roads, airports, etc.):

Actions to Reduce Visibility Hazard(s):

Residual Smoke Problems (Measures to reduce problem, i.e., rapid and complete mop-up, mop-up of certain fuels, specific fuel moistures, time of day, etc.):

Particulate emissions in Tons/Acre and how calculated (This should be filled in after the burn so more precise acreage figures can be used):

VI. FUNDING AND PERSONNEL

Activity Code: _____

Costs

	Equipment & Supplies	Labor	Overtime	Staff Days	Total Cost
Admin. (planning, permits, etc.)					
Site Preparation					
Ignition & Control					
Travel/Per Diem					
Total					

VII. BURN-DAY ACTIVITIES

Public/Media Contacts on Burn Day (List with telephone numbers):

Crew & Equipment Assignments (List all personnel, equipment needed, and assignments. The following is not an all-inclusive list for what you may need.)

Burn Boss/Manager -

Ignition Specialist -

Ignition Crew -

Holding Specialist -

Holding Crew -

Aircraft Manager -

FWBS -

Dispatcher-

Other -

Crew Briefing Points (Communications, hazards, equipment, water sources, escape fire actions, etc., to be done by Burn Boss. Refer to Safety Considerations in Planning Actions and points listed below):

Ignition Technique (Methods, how, where, who, and sequence. Go over what was submitted in Section IV and any changes needed for the present conditions.) Attach ignition sequencing map if necessary:

Personnel Escape Plan

Special Safety Requirements:

Go-No-Go Checklist:

Holding and Control:

Critical Control Problems:

Water Refill Points:

Other:

Contingency Plan for Escaped Fire (Are there crews standing by to initial attack or will people doing other jobs be called upon to do initial attack, who must be called in case of an escape, what radio frequencies will be used, etc.)

Mop Up and Patrol:

Rehabilitation Needs:

DI 1202 Submission Date:_____

Special Problems:

VIII. CRITIQUE OF BURN

Were burn objectives within acceptable range of results? (Refer to Section I):

What would be done differently to obtain results or get better results?

Was there any deviation from plan? If so, why?

Problems and general comments:

IX. POST-BURN MONITORING

Date:_____ Refuge Burn Number: _____

Length of Time after Burn: _____

Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:

X. FOLLOW-UP EVALUATION

Date: _____ Refuge Burn Number: _____

Length of Time after Burn: _____

Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:

Appendix J. Salinas River NWR Hunting Plan

REFUGE HUNTING PLAN
for
SALINAS RIVER NATIONAL WILDLIFE REFUGE

I. INTRODUCTION

Salinas River National Wildlife Refuge (NWR) is located 11 miles north of Monterey, California where the Salinas River empties into Monterey Bay (Figure 1). The 367-acre Refuge consists of several habitat types and supports large numbers of shorebirds, wading birds, waterfowl, pelicans, gulls, and terns. Several Federally listed threatened or endangered species have been documented on the refuge including the endangered California brown pelican, Smith's blue butterfly, and Monterey gilia as well as the threatened western snowy plover and Monterey spineflower.

Major habitat types include: 1) a 15-acre saline pond with surrounding coastal salt marsh vegetation; 2) grassland and coyote brush scrub, including restored grasslands that were formerly in agricultural production; 3) beach and foredunes which provide feeding, resting, and nesting areas for shorebirds, including the western snowy plover; 4) back dunes, which are characterized by a diversity of native vegetation including coastal buckwheat, yellow bush lupine, lizard tail, and mock heather; 5) and riparian/riverine habitat along an approximately one mile stretch of the Salinas River.

The Refuge was acquired in 1973 when surplus military (U.S. Army and the Coast Guard) property was transferred to the Service. From 1974 to 1991, the Refuge was managed as a Wildlife Management Area under a cooperative agreement with the California Department of Fish and Game (CDFG). In 1991, the Service began managing the area as a National Wildlife Refuge. Salinas River NWR is open to the public. Public uses include wildlife observation and photography, access to surf fishing, and waterfowl hunting. These activities were previously administered by CDFG. Public use facilities on Salinas River NWR are minimal, consisting of a parking area, two maintained trails, and some signs. Improvements to the Refuge's wildlife interpretation are proposed in the 2001 Comprehensive Conservation Plan (CCP); these include interpretive signs and materials, and a docent program.

This area has historically been used for hunting; the majority of the area was hunted for waterfowl and upland game under CDFG management, and military officers hunted the area prior to Service acquisition. The Refuge is now one of only two locations in the local area open for public waterfowl hunting during the season, typically from October through January. The Refuge is a key resource for local waterfowl hunters; the nearest alternative location for public waterfowl hunting is the Moss Landing Wildlife Area, approximately 10 miles to the north. The Refuge, however, is the only local hunting area available to hunters on foot rather than by boat. Other public hunting areas such as the San Luis NWR near the community of Los Banos are located 80 miles or more away. Annual

hunter visitation is estimated to be 140 hunter visits for an average of 6 hours each, totaling 840 activity hours.

II. CONFORMANCE WITH STATUTORY AUTHORITIES

Salinas River NWR was established in 1973 because of its "particular value in carrying out the national migratory bird management program (U.S.C. Sec. 6676). Specific Refuge goals, detailed in the CCP, are to:

1. Protect, restore and enhance populations of migratory birds and other native species and their habitats.

2. Protect and enhance populations of endangered, threatened, and rare species and promote their recovery by restoring and enhancing their natural habitats.

3. Provide opportunities for safe, unique, wildlife-dependent recreation when compatible with other Refuge purposes and goals.

Hunting provides a wildlife-oriented public recreational opportunity, and has been identified in the National Wildlife Refuge Improvement Act of 1997 as a priority public use. Other priority public uses are fishing, wildlife observation, photography, environmental education, and environmental interpretation. As expressed priorities of the refuge system, these uses take precedence over other potential uses in refuge planning and management. The Service strives to provide for the six priority public uses when they are compatible with the purpose of the Refuge.

Migratory bird hunting (waterfowl, coot, and moorhen) will be permitted in accordance with State and Federal regulations and seasons to ensure that it will not interfere with the conservation of wildlife and their habitat.

III. STATEMENT OF OBJECTIVES

A goal of the National Wildlife Refuge System is: To provide an understanding and appreciation of fish and wildlife ecology and man's role in his environment and to provide refuge visitors with high quality, safe, wholesome and enjoyable recreational experiences oriented toward wildlife to the extent these activities are compatible with the purposes for which the refuge was established.

Hunting has been identified as a priority public use for the National Wildlife Refuge System.

IV. ASSESSMENT OF RESOURCE

Pacific Flyway waterbirds migrating along the coast feed and rest on Salinas River as well as the saline pond when it is flooded. Refuge waterfowl populations vary from approximately 500 to 2,000 birds depending on water availability throughout the fall and winter months. Primary species include ruddy, mallard, gadwall, green-wing teal, wigeon, shoveler, and pintail in typical order of abundance. Coots are seasonally abundant with as many as 600 present during the winter months. Common moorhen have been documented, but are not regularly seen.

Waterfowl that use Salinas River NWR are presumably part of a wintering population that also uses Elkhorn Slough and other nearby wetlands. The population of waterfowl using this general area is much larger than the individuals observed using the Refuge at any particular time. This "mobile population" always seems to provide a diverse abundance of waterfowl for other public users to enjoy, especially in the proposed sanctuary area.

V. DESCRIPTION OF HUNTING PROGRAM

A. AREAS OF REFUGE SUPPORTING TARGET SPECIES

All hunted species are present on Salinas River, and when high surf or rains flood the saline pond, many of the hunted species are present there, sometimes in very high numbers.

B. AREAS OPENED

Approximately 80 acres of the Refuge along the Salinas River would be conducive to hunting; hunting will be permitted in an area of approximately 38 acres (2,800 linear feet of riverbank). This is approximately 10% of the 367-acre Refuge. The area available for waterfowl hunting has been reduced to eliminate disturbance to brown pelicans roosting along the Salinas River lagoon by eliminating the hunt area along the northern 800 linear feet of the Salinas River (see figs. 4 and 5 in the CCP). This is the area closest to the river mouth.

C. REGULATIONS

The designated Refuge hunting area is open during established State waterfowl seasons and all applicable State and Federal regulations will be enforced. Species hunted are geese, ducks, coots, and common moorhen. Hunting on the Refuge will be permitted every day throughout the waterfowl season. Hunters will be limited to having no more than 25 shells in their possession while on the Refuge. This will discourage hunters from taking long-shots, thereby reducing disturbance and decreasing the possibility of target misidentification. Hunters may only possess approved nontoxic shot while on the Refuge. Access to the hunting area is

delineated by hunting signs and is accessed by foot only. Hunting dogs are allowed off leash and under voice control for the purpose of retrieving waterfowl from the river. All firearms must remain unloaded until hunters are within the designated hunt area. The Refuge will remain closed to all other forms of hunting or target shooting. Hunting access will not be regulated due to the relatively low demand.

This area will be closely monitored to assess if further regulation may be warranted in the future.

D. PROCEDURES FOR COORDINATION WITH STATE

Hunting will be permitted within the framework of applicable State and Federal regulations. A joint meeting of these two agencies occurs annually to review these regulations. The CDFG will be consulted if any changes are planned in the refuge hunting program.

E. METHODS OF ENFORCEMENT

The Refuge will maintain an active law enforcement presence by Refuge officers and through an agreement with CDFG to ensure public compliance with hunting regulations. The Refuge will increase law enforcement patrols especially during the opening weeks of the season to document hunter use and ensure compliance with Refuge regulations.

F. FUNDING AND MANPOWER REQUIREMENTS

Approximately 35 staff days will be required to monitor and conduct the hunt program at Salinas NWR. This work will include law enforcement patrols during waterfowl season, sign posting and replacement, and responding to public inquiries. The total cost of the program is expected to be approximately $5,000 per year.

VI. MEASURES TAKEN TO AVOID CONFLICTS WITH OTHER OBJECTIVES

A. BIOLOGICAL CONFLICTS

A Comprehensive Section 7 consultation has been conducted in conjunction with the CCP. The hunt area has been reduced in size to provide better protection for brown pelicans in addition to creating sanctuary areas for waterfowl.

Hunters, and other visitors, are not allowed on the dunes where the Smith's blue butterfly, western snowy plover, and threatened and endangered plants occur. In addition, the waterfowl hunting season, which typically opens in October and closes in January, occurs

outside the breeding season for the Smith's blue butterfly and western snowy plover. The lower end of the river, including the sand spits where brown pelicans roost, will be closed to hunting to minimize hunter disturbance to this species. This river portion also will serve as a sanctuary for migratory waterfowl, as will the saline pond when it is flooded.

B. PUBLIC USE CONFLICTS

The majority of non-hunting public use occurs on the beach and saline pond habitats, but there is occasional use of the river bank by birders. However, hunt use on the refuge is relatively low and public use conflicts are expected to be minimal. In addition, numbers of non-hunters visiting the Refuge appear to be higher in the spring and summer. The Refuge will monitor public use and will consider changing to a limited day hunt season in the future if warranted.

C. ADMINISTRATIVE CONFLICTS

Potential conflicts could arise from hunters not familiar with new regulations. Informational signs will be placed at the parking area and along the river, and signs will be posted on both sides of the hunting boundary showing "closed" and "open" areas. A simple one page hunting regulation leaflet with map will be published and dispersed through the mail and on-site. Law enforcement officers may need to spend additional time explaining changes in regulations and management.

VII. CONDUCT OF THE HUNT

A. FEDERAL REGISTER SPECIAL REGULATIONS

The following special regulations are proposed. They will be in place by the 2003-2004 hunt season.

50 CFR 32.24 California (Refuge-specific regulations; migratory game birds.)

Salinas River National Wildlife Refuge.

A. *Hunting of Migratory Game Birds*. Hunting of geese, ducks, coots, and moorhens is permitted on a hunt area along the Salinas River on the Southeast portion of the Refuge, as designated by signs. Hunting is permitted in accordance with State regulations, subject to the following conditions:

A.1. You may possess no more than 25 approved nontoxic shells while on the Refuge.

A.2. Access to the hunt area is by foot traffic only. We do not allow bicycles and other conveyances. Mobility-impaired hunters should consult with the Refuge Manager for allowed conveyances.

A.3. You must keep firearms unloaded until you are within the designated hunt area.

A.4. We allow only dogs engaged in hunting activities on the Refuge and only during the waterfowl season. No other domesticated animals or pets are allowed.

A.5. We do not allow target practice on the Refuge.

B. ANTICIPATED PUBLIC REACTION

The size of the hunt area has been reduced from what was previously allowed, so hunters may object to this restriction. Law enforcement officers, refuge personnel, the news media, and other public information systems will be used to explain the reasons for these restrictions. Anti-hunting individuals and organizations can be expected to voice their concerns regarding hunting of any kind.

C. HUNTER REQUIREMENTS

Hunters must comply with all State and Federal regulations, including a regulation change requiring "approved" non-toxic shot to be used for waterfowl hunting on Salinas River NWR as well as throughout the state.

Appendix K. Response to Comments

STATE OF CALIFORNIA – THE RESOURCES AGENCY GRAY DAVIS, *Governor*

CALIFORNIA COASTAL COMMISSION
CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
(831) 427-4863
HEARING IMPAIRED: (415) 904-5200

January 14, 2002

Mark Pelz
U.S. Fish and Wildlife Service
California/Nevada Refuge Operations Office
2800 Cottage Way, Room W-2606
Sacramento, CA 95825-1846

Subject: ***Salinas River National Wildlife Refuge--Comments Regarding the Draft Comprehensive Conservation Plan and Environmental Assessment.***

Dear Mr. Pelz:

Thank you for the opportunity to review the Salinas River National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment and to offer comments on it. We appreciate the opportunity to submit our comments at such a late date.

1 We support the concept of a Comprehensive Conservation Plan and agree that the proposed Alternative Three appears to be the best way to balance the needs of both wildlife and the public. Our primary concerns are that the Refuge continue to function as both a refuge for wildlife and as a learning opportunity for the public, while at the same time providing public access to and along the shoreline. As such, we offer some specific suggestions regarding parking, beach access, alternative access routing, and hunting area.

2 The Commission staff recognizes that the Salinas River Refuge is federally owned land and, pursuant to Section 304 of the federal Coastal Zone Management Act (CZMA), is excluded from the coastal zone for federal law purposes. However, the CZMA triggers coordination with state coastal agencies if activities on federal land affect land or water uses or natural resources of the coastal zone. The Commission staff believes that the proposed Comprehensive Conservation Plan has the potential to affect two important coastal zone resources, public access to and along the shoreline and environmentally sensitive habitat areas.

Our primary standard of review for the Salinas River NWR is Chapter 3 of the California Coastal Act, which is part of the California Coastal Management Program (CCMP) certified by NOAA pursuant to the requirements of the CZMA. Chapter 3 contains applicable policies for land use and development, including but not limited to sections regarding public access, and protection of wetlands and other environmentally sensitive habitat areas (ESHA's).

In particular, Section 30210 of the California Coastal Act requires, "... maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse." Section 30240(a) states that ESHA "...shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas." This section of the Coastal Act is closely related to Section 30210 because they both seek to protect sensitive habitat areas.

The Salinas River Wildlife Refuge is home to a number of sensitive species, including the California brown pelican, western snowy plover, black legless lizard and the coast wallflower. Much of the refuge comprises a river-mouth lagoon (harboring juvenile steelhead), salt marsh

G:\Central Coast\P & R\MCO\Other\MCO long-term planning comments\Salinas River\Salinas River Nat. Wildlife Refuge\USFW Pelz cmnt re CCP 01.14.02.doc

US Fish and Wildlife Service Response

1. Comment noted.

2. We agree that the proposed plan has the potential to affect coastal resources and uses. As required by the CZMA and its implementing regulations, we have prepared a consistency determination and forwarded it to the California Coastal Commission for concurrence. At a hearing held on April 9, 2002, the Commission concurred with our consistency determination and found the CCP to be fully consistent with the Californai Costal Management Program.

and riparian wetlands, and most spectacularly, the northernmost and possibly least impacted portion of the high Flandrian-era dune complex that characterizes the southern half of the Monterey Bay shoreline. Clearly, the refuge, in terms of the Coastal Act, comprises a particularly valuable ESHA.

Thus, the main Coastal Act issue that the Service and the Commission must address is how to both maximize public access opportunities and at the same time to protect the refuge's ESHA's and wildlife from any significant disruption. Public access at the refuge should be maintained and enhanced in a way that provides nature study and interpretive opportunities that will increase public awareness, understanding and support for the overall conservation mission. Alternative Three appears to appropriately balance access and habitat needs, including an educational component through maintaining a limited trail system and interpretive signs, and protecting ESHA and wildlife by fencing of plover habitat and maintaining the majority of the refuge as a protected area for wildlife use. We do, however, suggest some clarifications with respect to provision of public access. 3

We support the proposal to improve the existing parking lot in order to facilitate public access. However, we would rather see the area covered with gravel than pavement to keep the amount of impervious surfaces at a minimum. 4

Although not explicitly stated, the document implies that the Service intends to maintain public access along the beach. It also recommends securing a lease from the State Lands Commission to manage the beach. Thus, we would suggest that the Plan and the lease explicitly state that the public can continue walking along the beach. 5

However, it is also possible that future plover monitoring will dictate a seasonal closure of the beach in order not to disrupt snowy plover breeding or wintering habitat. If that were to happen, then we would suggest that an alternate route be designated to maintain the continuity of a California Coastal Trail, again in a manner that in manner that does not disrupt the plover's breeding activities. For visitors entering the refuge at the south boundary from the beach the most likely routing would be: to proceed inland along the Beach Trail to the Salinas River, and then along a trail on the River to its mouth, exiting back on to the beach near the Refuge's north boundary. For visitors crossing the river mouth, the opposite routing along the river then the Beach Trail would be used. This would allow visitors to continue along the shoreline, after a short detour, and provide relatively undisturbed breeding areas for the plover. 6

We note that the Refuge boundary extends to the northern River levee in one location. It is possible that an access route may be developed from Highway One to the beach along the northern riverbank since there is no year-round river crossing below the highway. This option should be considered in the Conservation Plan. 7

Regarding the use of the Refuge for hunting, we are concerned that the presence of hunters and the act of hunting may have significant impact on habitat resources of the coastal zone. Alternative Three attempts to reduce impacts by limiting the area where hunting is allowed. We recommend a further adjustment so that only the area northeast of the Beach Trail is open to hunters. An easterly adjustment of the allowable hunting area would also serve to better protect the California brown pelican, which lingers primarily in the seaward end of the lagoon and perhaps could be mistaken for a goose at a distance under conditions of impaired visibility. This adjustment would also reduce potential conflicts with users of the refuge who are not hunting. Specifically, we are concerned for the safety of visitors using the Beach Trail, who could 8

3. Comment noted.

4. We concur that impervious surfaces should be kept to a minimum. The final CCP states that the parking lot will be covered with gravel or another nonpaved surface.

5. Our desire is to continue public access in areas of the refuge where it is compatible with resource protection mandates. In our informal dialog with the State Lands Commission, they have indicated their desire that the public continue to be allowed to walk along the beach. We plan to work with the State Lands Commission to find a solution which balances public access with wildlife and habitat protection.

6. We feel it is premature to commit to a specific routing for the California Coastal Trail through the refuge. However, we would be happy to work with the California Coastal Commission, the Service's Endangered Species Division, and other partners to come up with a routing that preserves existing wildlife and habitat values. A new strategy (3.2.5) was included in the final CCP which expresses our desire to work with the Coastal Commission to develop a routing for the trail.

7. See response to comment 6.

8. We believe that the reduced hunt area proposed in the draft CCP will provide an adequate buffer between the hunters and the California brown pelicans roosting on the island in the Salinas River lagoon. Regarding the safety of visitors using the trails during hunt season, we believe that the existing signs delimiting the hunt area are effective at preventing conflicts with nonhunters. In addition, hunting typically occurs from sunrise to midmorning, before most other refuge users arrive. The majority of hunting occurs at the river bank and the river trail is set back from the bank about 250 feet. Furthermore, the CCP proposes a new orientation kiosk which will also warn refuge visitors about walking in the hunt area.

unwittingly wander into the path of a hunter's fire. Also, to avoid this situation, areas and times where hunting is allowed should be clearly marked.

9 One final point involves River mouth breaching. We have a pending application from Monterey County to periodically breach the Salinas River mouth. It appears from the maps and aerials that breaching and/or the staging for breaching could occur within the Refuge boundary. Thus, it would be appropriate for the Conservation Plan to contain policies that address breaching.

10 We close by reaffirming our support of a Comprehensive Conservation Plan for the Salinas River National Wildlife Refuge, and our endorsement of Alternative Three as the generally most appropriate strategy for this highly sensitive habitat area. Thank you again for giving us the opportunity to comment on the Draft CCP and Environmental Assessment for the Salinas River National Wildlife Refuge. We would be happy to visit the site with you to discuss the ideas in this letter further. We look forward to hearing about the progress of this proposed plan. And we look forward to formally reviewing it when you submit the consistency determination, as discussed in our previous January 2, 2002, letter to you. If you have any questions about the federal consistency process, please contact James Raives at (415) 904-5292.

Sincerely,

Stephanie Mattraw

Stephanie Mattraw
Coastal Program Analyst
Central Coast District Office

CC:
Monterey Bay National Marine Sanctuary
Calif. Dept. of Fish & Game
Calif. Dept. of Parks & Recreation
Monterey County Planning & Bldg. Inspection Dept.
Monterey County Water Resources Agency
Federal Consistency Unit

US Fish and Wildlife Service Response

9. The staging area for, and the actual breaching of, the Salinas River mouth occurs on State lands north of the river. Monterey County closely coordinates the breach with the Service and the California Department of Parks and Recreation.

10. Comment noted.

STATE OF CALIFORNIA -- THE RESOURCES AGENCY GRAY DAVIS, Governor

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

January 2, 2002

Mike Pelz, Planning Team Leader
U.S. Fish and Wildlife Service
California/Nevada Refuge Planning Office
2800 Cottage Way, Room W-1916
Sacramento, CA 95825

Re: Draft Comprehensive Conservation Plan and Environmental Assessment, Salinas River National Wildlife Refuge

Dear Mr. Pelz:

Commission staff appreciates the opportunity to comment on the above-referenced draft Comprehensive Conservation Plan and Environmental Assessment. The proposed plan provides for the management of sensitive species, avian predators, public access to the shoreline and recreational use of the refuge. The purpose of this letter is to inform the Fish and Wildlife Service that the proposed plan initiates activities that affect resources of the coastal zone and it requires a consistency determination pursuant to the requirements of the federal Coastal Zone Management Act (CZMA).[1] Specifically, the Fish and Wildlife Service proposes to manage public use of the refuge in manner that maintains interpretive and passive recreational uses, but reduces consumptive uses, such as hunting. In addition, the plan provides for the management of avian predators. Although the management of these predators focuses primarily on capture and relocation, the plan does provide for lethal removal, if necessary. Finally, the plan recommends negotiations with the State Lands Commission to allow the Service to manage intertidal areas, which would include the management of public use of that area. The activities described in the plan have the potential to affect sensitive species including threatened and endangered species and other sensitive species such as raptors and shrikes. All of these species are likely to move, migrate, or spend part of their lives within the coastal zone (for federal law purposes, federal land is not within the coastal zone), and therefore, are resources of the coastal zone. In addition, the plan provides for the management of public use of the intertidal areas and access and recreational uses of the refuge, and therefore, will affect these coastal uses.

1 The Commission staff supports the management of the refuge in a manner that is most protective of sensitive species. However, the activities described in the plan will affect coastal uses and resources. Therefore, the Commission staff believes that the proposed plan triggers a requirement for a consistency determination pursuant to the CZMA[2] and its implementing regulations.[3] A consistency determination is an

2

[1] 16 USC § 1450 *et seq.*
[2] 16 USC § 1456(c)(1).

US Fish and Wildlife Service Response

1. Comment noted.

2. We agree the proposed plan has the potential to affect coastal resources and uses. As required by the CZMA and its implementing regulations, we have prepared a consistency determination and forwarded it to the California Coastal Commission for concurrence. At a hearing held on April 9, 2002, the Commission concurred with our consistency determination and found the CCP to be fully consistent with the Californai Costal Management Program.

evaluation of the proposed activity's effects on coastal resources or uses and its consistency with the mandatory enforceable policies of the California Coastal Management Program and includes the necessary information to support the federal agency's conclusion.[4] A consistency determination must be submitted to the Commission 90 days prior to final federal approval of the activity, unless the state and the federal agencies agree to an alternate schedule.[5] If the federal agency determines that this activity does not affect coastal uses or resources, it must submit a negative determination 90 days before final federal approval of the activity.[6]

If you have any questions or need assistance preparing a consistency determination, please contact me at (415) 904-5292. Thank you for your cooperation in this matter.

Sincerely,

James R. Raives
Federal Consistency Coordinator

cc: Peter Douglas, Executive Director, California Coastal Commission
Charles Lester, Central Coast District Office, California Coastal Commission
John Dixon, Technical Services Unit, California Coastal Commission

[3] 15 CFR § 930.34(a).
[4] See 15 CFR § 930.39 for a full listing of the information required for a complete consistency determination.
[5] 16 USC § 1456(c)(1) and 15 CFR §930.41(c).
[6] 15 CFR § 930.35(d).

US Fish and Wildlife Service Response

No comments to respond to on this page.

Dear Mr. Pelz:

Thank you for the opportunity to comment on the draft Comprehensive Conservation Plan and Environmental Assessment (CCP/EA) for the Salinas River National Wildlife Refuge (NWR).

1 The California Waterfowl Association (CWA) reviewed the draft CCP/EA and recommends Alternative 1,
2 which would maintain the current 45 acres available for hunting at the Salinas River NWR without any new restrictions. Although we strongly support making the entire 80 acres that are conducive to hunting on the refuge available for that use, we recognize that such an option will not be formally considered. CWA also continues to have serious concerns regarding the other 3 proposed alternatives (Alternatives 2, 3, and 4)
3 which would either restrict or prohibit waterfowl hunting, mostly in an effort to protect listed species. While the U.S. Fish and Wildlife Service's (USFWS) preferred alternative, Alternative 3, would allow hunting on approximately 38 acres, we feel that any proposed reduction in huntable acres would negatively affect hunter participation, as well as the quality of existing hunting opportunities.

As you are aware, the 1997 National Wildlife Refuge System (NWRS) Improvement Act elevated hunting to a "priority use" of the NWRS. Although the USFWS must ensure that hunting is compatible with the purpose and goals of each refuge, such a requirement, in most cases, should not preclude or overly restrict this important use. Most other refuges in California that currently offer waterfowl hunting also well
4 serve the habitat needs of threatened and endangered species, even in non-sanctuary areas. In the case of the Salinas River NWR, where the focus is protecting a roosting area for brown pelicans (*Pelecanus occidentalis californicus*) far outside (300 yards) of the hunting area, disturbance from hunting is minimal and occurs long after (mid-October though late-January) the pelican breeding season. Waterfowl hunting has traditionally occurred in the area for many years, yet brown pelicans continue to successfully utilize habitat offered by the Salinas River NWR.

5 Protecting waterfowl hunting at the Salinas River NWR is important because it represents one of only two public waterfowl hunting venues for local hunters. (The other local waterfowling venue, the Moss Landing Wildlife Area, is limited to boat access only.) Moreover, hunting continues to be restricted throughout
6 California. Although USFWS currently offers a number of high quality hunting opportunities throughout the state, particularly on their waterfowl management areas, access to these areas is difficult because of their high popularity and low hunter quota. Also, costs for hunting on private land are high, and joining a private club is increasingly out of the reach of the average sportsman. Other key factors, such as the continued loss of habitat and farmland, as well as ongoing political efforts to limit firearm use, have recently combined to further restrict hunting here.

7 It is important to also note that revenues generated from hunting historically paid for much of the NWRS, and that hunters continue to generate critical monies for habitat conservation through self-imposed taxes on firearms and ammunition, as well as stamp and license fees. If hunting continues to be restricted, these funds will, at some point, begin to decline. Ultimately, this will negatively impact not only migratory waterfowl, but all of our wildlife resources--including listed species.

8 In summary, our Association recommends that USFWS adopt Alternative 1, which would simply maintain the current limited acreage available for waterfowl hunting. CWA believes that any further restrictions on hunting at the Salinas River NWR would not only unduly limit important recreational opportunities locally without significantly benefiting listed species, but also, over the long term, cumulatively result in fewer dollars and resources available for wildlife.

Sincerely,

Mark Hennelly, Deputy Director of Government Affairs
California Waterfowl Association
4630 Northgate Boulevard, Suite 150
Sacramento, CA 95834
(916) 648-1406

US Fish and Wildlife Service Response

1. Comment noted.

2. Comment noted.

3. We recognize that reducing the hunt area may adversely affect the quantity or quality of the hunting opportunities on the Refuge. However, we must ensure that all public uses of the Refuge are compatible with the purposes for which the Refuge was establish (migratory bird management). Salinas Refuge is an important roosting area for the endangered California brown pelican. In winter, this species roosts on portions of the beach strand, islands in the Salinas River, and the lagoon side of the lagoon-mouth sandspit. Researchers at nearby Moss Landing Wildlife Management Area have found that gunshots closer than 650 yards can flush pelicans from roost sites. The northern end of the current hunt are is 300 yards from the nearest pelican roost site. The northern most seven acres of the hunt area are being eliminated to avoid this disturbance and ensure that the hunt program is compatible with the Refuge purpose.

4. See response to comment 3.

5. We concur that Salinas River Refuge is a unique and important resource to hunters in the Monterey Bay and are committed to maintaining opportunities for hunting that are compatible with Refuge purposes.

6. Comment noted.

7. Comment noted.

8. Comment noted.

Carleton Eyster

624-B Swanton Rd.

Davenport, CA 95017

November 22, 2001

Mark Pelz, Planning Team Leader
U.S. Fish and Wildlife Service
California/Nevada Refuge Planning Office
2800 Cottage Way, Room W-1916
Sacramento, CA 95825

Dear Mr. Pelz,

Thank you for your exhaustive effort in preparing the Draft Comprehensive Conservation Plan and Environmental Assessment for the SRNWR. The following comments refer to the preferred Alternative 3:

1 1) I am concerned about the minimal information presented to Refuge visitors at the northern and southern pedestrian access points along the ocean's shoreline. In Objective 2.2, the plan proposes to minimize human disturbance with "interpretive", "entrance", and "closed area signs". As these highly sensitive areas are regularly used as initial entry onto the Refuge, I feel it is important to provide complete Refuge orientation at these locations, equal or similar to that provided at the primary parking lot access. Adequate orientation will prove even more essential in fall and winter months when symbolic fencing may not be installed to reinforce the closure of sensitive areas, such as the rivermouth.

2 2) In the absence of any formal recreational use surveys, I question the compatibility of hunting along the river with other recreational uses, such as boating, fishing, etc. The designated hunting area is also bordered by actively used agricultural fields.

3 3) The level of funding proposed for ongoing biological monitoring of nesting Snowy Plovers on the Refuge is low. The desired level of monitoring --nest location, nest and chick fate determination, and individual color-banding--is time-intensive work, both on and off site. The 15 year funding allocation for this work, with which other proposed actions (including the Predator Management Plan) are integrated, should be reassessed.

Thank you for your time and consideration.
Sincerely,

Carleton Eyster
Biologist
Point Reyes Bird Observatory

US Fish and Wildlife Service Response

1. In the final CCP, strategy 2.2.4 includes placement of clearer closed area signs at the entrance and the northern and southern beach access points. Interpretive signs are not practical at locations other than the entrance.

2. We disagree, and believe that hunting is compatible with other recreational uses of the Refuge. For a detailed discussion of our rational for reaching this conclusion, see the Compatibility Determination for hunting in Appendix G.

3. We concur that the level of funding proposed in the draft CCP for ongoing monitoring of nesting snowy plovers was low. The level of funding was increased in the final CCP to $12,800 per year (average annual cost) from $2,600 per year in the draft CCP.

100 Woodside Ave.
Santa Cruz, CA 95060
November 3, 2001

Mark Pelz
U.S. Fish and Wildlife Service
California/Nevada Refuge Planning Office
2800 Cottage Way, Room W-1916
Sacramento, CA 95825

Dear Mark Pelz:

SALINAS RIVER NWR DRAFT CCP/EA

The following are comments on the draft CCP/EA for the Salinas River NWR.

- The stated purposes of the plan (page 1) include: detailing management goals and actions for the next 15 years; and documentation providing a basis for budget requests for needs at Salinas River NWR.

  The budget proposal for proposed management (pages 90-91) include the following three management actions, all rated as high priority.

  1. Continue to implement the Monterey Predator Management Program on refuge. Total cost for 15 years of $600,000 ($40,000 per year).

  2. Implement the Refuge's Predator Management Plan to include relocation of selected birds that prey heavily on plover chicks. Total cost for 15 years of $337,000 ($22,000 per year plus $7,000 startup).

  3. Maintain efforts to monitor plover nesting success and band all chicks. Total cost for 15 years of $39,000 ($2,600 per year).

1 The budget proposal for mammal and avian predator management (which is primarily for plovers) for the next 15 years is $937,000. During this 15-year period the budget proposal for monitoring Snowy Plover nesting success and banding all chicks is only $39,000. This budgeted amount for monitoring Snowy Plovers is woefully inadequate and would not provide for obtaining the needed information on the reproductive success of the plover or an assessment of predator management effectiveness.

- Appendix H. Salinas River NWR Avian Predator Management Plan.

2 1. Page "1" under Overview heading: Include crows and ravens as potential target avian predators as both of these species have been documented as having serious impacts on Snowy Plover reproductive success and their numbers appear to be increasing in the region in which the refuge is located.

3 2. The last sentence on page "2" describes the Monterey Integrated Predator Management Program as having been "very successful in increasing snowy plover hatch and fledge rates." This is not the case as the fledge rates were too low to maintain the population. This was the justification for implementing the Avian Predator Management Plan.

US Fish and Wildlife Service Response

1. We concur that the level of funding proposed in the draft CCP for ongoing monitoring of nesting snowy plovers was inadequate. The level of funding was increased in the final CCP to $12,800 per year (average annual cost) from $2,600 per year in the draft CCP.

2. The final CCP and Avian Predator Management Plan have been revised to include crows and ravens as potential target avian predators.

3. The Avian Predator Management Plan has been revised to read, "The program has been very successful in increasing snowy plover hatch rates."

4 3. Page "3" second paragraph: PRBO has also documented kestrel predation on Snowy Plover chicks.

5 4. Page "5" fourth paragraph under Management Plan heading: "Management actions will be carried out by the Santa Cruz Predatory Bird Group or USDA Wildlife Services personnel." Why is this identified as being so restricted as to who can be involved in avian predator management, especially in a document identified as a 15-year management plan?

6 • Provide page numbering for each appendix.

Doug George
[redacted]

US Fish and Wildlife Service Response

4. The Avian Predator Management Plan has been revised to reflect the fact that PRBO has documented kestrel predation on Snowy Plover.

5. In the final Avian Predator Management Plan, this sentence was revised to allow " . . . other such qualified agencies or individuals" to conduct management actions under the direction of the Refuge Manager.

6. Page numbering has been included in all the appendices to the final CCP.

Kriss K. Neuman
PO Box 2707
Aptos, CA 95001

Mark Pelz, Planning Team Leader
U.S. Fish and Wildlife Service
California/Nevada Refuge Planning Office
2800 Cottage Way, Room W-1916
Sacramento, CA 95825

18 November 2001

Dear Mr. Pelz,
Please consider the following comments regarding the Draft Comprehensive Conservation Plan for Salinas River NWR:

1 1) The proposed parking lot improvement in the preferred alternative may increase visitor use of the Refuge not just in winter, but at all times of year, including during the Western Snowy Plover nesting season. The
2 data on current visitor use levels at the Refuge is inadequate. The Refuge will have no basis on which to assess future changes in the level of visitor use unless a more thorough baseline is compiled.

3 1) Common Ravens are not mentioned in the Avian Predator Management Plan. Based on field observations by Point Reyes Bird Observatory, in the last three to five years, the range of the Common Raven in Monterey Bay has expanded to include coastal beach areas. Although no documented instances of raven depredation of Snowy Plover nests have yet occurred at the Refuge, ravens are known to depredate plover nests in northern Santa Cruz County, at Point Reyes Seashore, and in San Francisco Bay. Because ravens are a known threat to Snowy Plovers, control of Common Ravens should be considered as a future management strategy in the Avian PMP within the Salinas NWR CCP.

4 2) The 15 year funding projection for biological monitoring of Snowy Plovers, including nest monitoring and individual color-banding of all hatched chicks, is inadequate. Monitoring plover nesting activity at the Refuge is at least a 1/2 time job (20 hours per week) for seven months and a ¼ time job (10 hours per week) for the remaining 5 months. At a conservative hourly rate of $15.00, 650 hours of work per year equals $9750 per year X 15 years=$146,250. This amount does not account for inflation over the fifteen year period. The Refuge may want to reassess the amount budgeted for this activity.

Thank you for your consideration.
Sincerely,

Kriss Neuman
Biologist
Monterey Bay Snowy Plover Project
Point Reyes Bird Observatory

US Fish and Wildlife Service Response

1. We agree that the proposed parking lot improvement may increase visitor use of the Refuge. However, we believe any increase resulting from parking lot improvements will be small, if any. Several other continuing factors are far more important in limiting the number of visitors to the Refuge, including: the lack of visibility of the Refuge; the frequently poor condition of the unpaved easement access road into the Refuge; the presence of other more accessible coastal access areas within a short distance (Salinas and Marina State Beaches); the relatively long distance between the parking lot and the beach; and the lack of facilities (restrooms, camping, etc).

2. We agree that current visitor use data on the Refuge is inadequate. Several strategies in final CCP will help us gather more accurate visitor use data in the future (2.2.5 - docent program, 3.1.2 - hunting program monitoring, 3.4.1 and 3.4.2 increase law enforcement patrols).

3. The final CCP and Avian Predator Management Plan have been revised to include crows and ravens as potential target avian predators.

4. We concur that the level of funding proposed in the draft CCP for ongoing monitoring of nesting snowy plovers was inadequate. The level of funding was increased in the final CCP to $12,800 per year (average annual cost) from $2,600 per year in the draft CCP.

Michael Parachini
[redacted]
11/21/01 03:21 PM

To: "'FW1PlanningComments@fws.gov'" <FW1PlanningComments@fws.gov>
cc:
Subject: Salinas River NWR

Dear Sirs,

1 I have read the summary of the three proposals for the Salinas River NWR. I am very much in favor of protecting this asset as California can ill afford to loose what little of this type of marsh habitat we have left. While

2 proposal number three sounds very nice It always amazes me how what we think of as improvements very often do not necessarily make things better for the animals that live in the area. My first reaction would be to continue to manage the area as it is currently being done, proposal number one. The existing "limited improvements" may help to naturally control public use which helps the wildlife. If the current use level is damaging the area because of the lack of these improvements then that is something else to consider. However, I do not believe this happening to any great extent. Also

3 with regard to proposal three, I do not like the idea of reducing the hunting area/opportunities by fifteen percent. Historically monies spent and donated by hunters have gone a long way towards habitat preservation.

4 I am not in favor of proposal number two since I feel that it is to restrictive with regard to public use of the area. The public need to be able to experience these places with their seven senses to fully appreciate them. The more people are able to enjoy these refuges the more they will support them. Thank you for taking the time to read my comments on this matter.

Sincerely,

Michael James Parachini
President, Monterey Bay Chapter
Safari Club International.

US Fish and Wildlife Service Response

1. Comment noted.

2. Some current uses are damaging to the Refuge. For example, though most visitors stay on designated trails, some visitors (especially on the beach trail) ignore signs and walk on the dunes. As detailed in Chapter 5, Biological Resources section, this unauthorized use can damage dune habitat and disturb sensitive wildlife. Under the selected plan (Alternative 3), the Service would install new symbolic fencing and interpretive signs along portions of the beach trail in an effort to reduce this unauthorized use.

3. Comment noted.

4. Comment noted.

NORTHERN SALINAS VALLEY
MOSQUITO ABATEMENT DISTRICT
342 Airport Boulevard
Salinas, California 93905-3301

Salinas (831) 422-6438 * Fax: (831) 422-3337
From: Monterey - 373-2483 or Watsonville - 761-2483

October 18, 2001

Mark Pelz, Planning Team Leader
U.S. Fish and Wildlife Service
California/Nevada Refuge Planning Office
2800 Cottage Way, Room W-1916
Sacramento, California 95825

Re: CCP/EA for Salinas River National Wildlife Refuge

Dear Mr. Pelz:

The above referenced document has been reviewed with a great deal of interest. Thank you for the opportunity of participating in this process. It is indeed a thoughtful and noble path on which the U.S. Fish and Wildlife Service is embarking for the Salinas River National Wildlife Refuge. However, it is respectfully suggested that consideration be given to a few points of concern relative to mosquito control on the Salinas River NWR.

The Northern Salinas Valley Mosquito Abatement District (NSVMAD) has been conducting mosquito surveillance and control activities on the property now designated as the Salinas River NWR for over 40 years. This is evidenced by data provided to the U.S. Fish & Wildlife Service to assist in the preparation of the *Draft Comprehensive Conservation Plan and Environmental Assessment*. The mosquito surveillance and control techniques currently employed on this site provide minimal impact on non-target species.

The following data provide an interesting comparison of the potential impact of aerial treatment versus hand treatment of 120 acres.

No comments to respond to on this page.

	Hand Application	Aerial Application
Swath Width	10.0 feet	66 .0 feet
Speed	2.0 mph	55.0 mph
Passes/acre	21.0	3.1
Distanced Walked/acre	4,305.0 feet	0.0 feet
Application Time/acre	24.8 minutes	.16 minutes
Total Application Time	49.6 hours	.33 hours
Number of Footprints	258,300.0	0

1 These numbers would appear to indicate that hand application techniques have a far greater potential for significant impact on non-target species.

Three mosquito species frequent the Refuge in recent years. *Culex tarsalis* (widely regarded as the primary enzootic and epidemic vector of St. Louis and Western Equine Encephalitis viruses in California), *Culiseta inornata* (known vector of Myxomatosis and has been found naturally infected with a California Encephalitis group virus), and *Ochlerotatus washinoi* (has been found naturally infected with a California Encephalitis group virus). Three residential communities (Castroville 3.0 miles; Marina 1.1 miles; Monterey Dunes 1.5 miles) are easily within the known flight ranges of these species.

2 The requirement of "Five day" notification prior to an aerial application may indirectly conflict with the stated goals of the Refuge Plan. Given the Biology of the three known species of mosquitoes found in Salinas River NWR in recent years, delays in larvicidal treatment may necessarily precipitate the use of techniques and materials having a far greater impact on a broader spectrum of non-target species.

1. The use of the pupicidal oil (GB1111) will be required due to an advanced state of metamorphosis. This material is known to impact a broader range of invertebrate species frequenting the air-water interface.

2. Should adult mosquitoes emerge in sufficient numbers to potentially impugn the public health or well being, an adulticiding effort would be necessary. The utilization of Non-thermal Aerosol Generating equipment and techniques have vastly greater potential for impacting non-target insects.

Furthermore, the presence of female mosquitoes seeking bloodmeals may preclude optimum utilization of the area by members of the public as well as individuals carrying out essential research. Protection of the public health or well being is the charge of the NSVMAD.

US Fish and Wildlife Service Response

1. The final CCP and compatibility determination for mosquito control have been revised to show helicopter treatment as the preferred method of control because it minimizes disturbance to wildlife and avoids physical disturbance of sensitive saltmarsh habitat. However, the Service reserves the right to determine whether alternative treatment methods should be used.

2. We recognize that a five-day notification prior to treatment may not be feasible and may result in the need to use materials (pupicides and adultides) which have greater impacts on nontarget species. In light of this, the final CCP and compatibility determination for mosquito control have been revised as follows: (1) Northern Salinas Valley Mosquito Abatement District will be required to notify the Service prior to monitoring/sampling efforts so Refuge staff will be aware that treatment is imminent; (2) Northern Salinas Valley Mosquito Abatement District will be required to give the Service a minimum 24 hour notice prior to treating the Refuge.

Please consider these comments when finalizing the Salinas River NWR *Draft Comprehensive Conservation Plan and Environmental Assessment.* The NSVMAD looks forward to engaging in a cooperative effort with the U.S. Fish and Wildlife Service to meet the challenges set forth in this plan. Should further information be required, please contact this office.

Sincerely,

Peter B. Ghormley
Manager-Zoologist

PBG

US Fish and Wildlife Service Response

No comments to respond to on this page.