

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Sacramento-Yolo Mosquito and Vector Control District Treatment Plan

EA-11-062



**U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California**

August, 2012

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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List of Acronyms and Abbreviations

APE	Area of Potential Effect
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO ₂	Carbon dioxide
CWA	Clean Water Act
DCC	Delta Cross Channel
District	Sacramento-Yolo Mosquito and Vector Control District
EA	Environmental Assessment
EPA	Environmental Protection Agency
FWCA	Fish and Wildlife Coordination Act
ESA	Endangered Species Act
GHG	greenhouse gases
IPM	Integrated Pest Management
ITA	Indian Trust Asset
MBTA	Migratory Bird Treaty Act
mg/m ³	Milligram per cubic meter
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
National Register	National Register of Historic Places
PM _{2.5}	Particulate matter less than 2.5 microns in diameter
PM ₁₀	Particulate matter between 2.5 and 10 microns in diameter
PPM	Parts per million
Reclamation	Bureau of Reclamation
SIP	State Implementation Plan
µg/m ³	Microgram per cubic meter
ULV	Ultra-low volume

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1 Introduction

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) to analyze and document potential direct, indirect and cumulative environmental impacts from the issuance of a permit to access Bureau of Reclamation (Reclamation) property for 10-years to the Sacramento-Yolo Mosquito and Vector Control District (District).

1.1 Background

Reclamation owns property near the town of Locke and Walnut Grove in southern Sacramento County, California, referred to as Delta Meadows (Figure 1). Historic agricultural operations created a network of drainage ditches to drain surface storm water and possible levee seepage from surrounding waterways, including Sacramento River, Delta Cross Channel (DCC) and Snodgrass Slough. In the past, large areas of wetland and riparian habitat have been lost in the general vicinity of the area of effect, as a result of agricultural and urban development. The Delta Meadows property preserves and protects one of the last remaining areas of the northern Sacramento-San Joaquin River Delta that exhibits remnants of the natural conditions that existed prior to Euro-American settlement. The property's waterways, located on the Pacific flyway and influenced by Pacific Ocean tides through the lower Sacramento River, contain permanent and seasonal water areas, as well as adjacent uplands that support a variety of riparian plant and animal life.

The drainage pump was maintained and operated by California State Parks, until approximately 2-years ago. The pump had become inoperable, creating pooled water and dense vegetated growth within the banks and surrounding areas. Any standing water potentially provides breeding habitat for mosquitoes beginning late winter and continuing into the summer months. The pump has a draining capacity of approximately 150 gallons per minute and has since been repaired but due the existing system of drains and culverts standing water still persists and mosquito populations are still elevated.

The Sacramento-Yolo Mosquito and Vector Control District (District) is responsible for controlling mosquitoes in portions of Sacramento and Yolo Counties including the area near the town of Locke and Walnut Grove. The District relies on an integrated pest management strategy and incorporates physical, biological, and chemical control. Methods include water and vegetation management, addition of predatory fish, and the application of insecticides. Nonchemical methods are preferred but chemical applications are used when necessary for public health and safety. Among chemical treatments, adulticides would be used as a last resort.

Mosquito surveillance and control activities focus primarily on *Culex* mosquitoes, such as the western encephalitis mosquito, *Culex tarsalis*. This mosquito can be found throughout California in a wide variety of aquatic sources, and include irrigation, agricultural, and storm water systems. Another species, *Aedes* sp. also can act as a secondary (i.e. bird to mammal) disease vector and are also widespread.

The mosquito life cycle has four stages: egg, larva, pupa, and adult. The first three stages are aquatic and can last approximately 14 days or less (depending on environmental conditions, i.e. temperature). Pregnant female mosquitoes lay their eggs in aquatic environments. Eggs hatch and larvae emerge to feed and develop. Larva will then pupate, and emerge in a few days as an adult. Adults live for about a week to two weeks. It is the female mosquito who takes a blood meal and can be a disease vectors.

1.2 Purpose and Need

There is a need to reduce the mosquito population in order to prevent the potential spread of disease (including St. Louis encephalitis, West Nile virus, and Western equine encephalitis) that the population poses to the public and wildlife (Macedo et al. 2010, California Department of Health Services 2011). The purpose of the Proposed Action is to grant access and accessibility to the District in order to apply mosquito larvicides and adulticides on Reclamation land.

1.3 Scope

This Environmental Assessment (EA) analyzes the potential environmental impacts resulting from the application of larvicides and adulticides between January 1, 2013 and December 31, 2023 in order to manage mosquito populations for a full ten mosquito breeding seasons on Reclamation land. The District has an existing Integrated Pest Management (IPM) Plan that provides overall mosquito abatement procedures (Boyce 2005). This EA analyzes specific components of the IPM Plan and its implementation on Reclamation property for mosquito population control.

1.4 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment of the Proposed Action and No Action Alternative and has determined that there is no potential for direct, indirect, or cumulative effects to the following resources:

- **Cultural Resources:** Cultural Resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

On October 31, 2011 Reclamation's Cultural Resources Branch issued a determination that the Proposed Action has no potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1).

- **Indian Trusts Assets:** Indian trust assets (ITA) are legal interests in assets that are held in trust by the United States Government for federally recognized Indian tribes or individuals. On September 12, 2011 Reclamation's ITA Branch issued the determination that there are no ITA within the Proposed Action area and therefore the proposed action does not have a potential to affect Indian Trust Assets.
- **Indian Sacred Sites:** Executive Order 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. There would be no adverse impacts to Indian Sacred Sites or changes to access to Indian Sacred Sites resulting from the Proposed Action.
- **Environmental Justice:** The February 11, 1994, Executive Order 12898 requiring Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations went into effect. There is not a residential population within the Proposed Action area. There would not be any disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations as the Proposed Action is limited to mosquito abatement within the Proposed Action area.
- **Socioeconomic Resources:** There is a potential benefit for socioeconomic resources resulting from decreased medical costs in adjacent communities associated with mosquito borne disease. There would be no adverse impacts to socioeconomic resources.
- **Air Quality:** Air Quality: Section 176 (C) of the Clean Air Act [CAA] (42 U.S.C. 7506 (C)) requires any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal CAA (42 U.S.C. 7401 [a]) before the action is otherwise approved. The Proposed Action lies within the Sacramento Metropolitan Air Quality Management District. The air basin is in non-attainment for ozone and particulate matter (PM 2.5 and PM 10).

Vegetation would require initial and periodic management along the dirt access roads and ditches. Equipment would include a small Bobcat like tractor and a mid- sized excavator. Reclamation plans to use the tractor to clear a path along dirt and gravel access roads and to cut a path through the trails which are covered in dense growth. Once the path is cut, the excavator would be used to reach into the ditches and clear all growth. The total length of the trails and levee roads is approximately 7,000-feet. Adult control product would be applied to the ground utilizing truck or quad mounted ultra-low volume (ULV) foggers by driving all defined and maintained roadways and perimeter levee roadways.

Comparison between the emission thresholds for federal conformity determinations and estimated emissions indicate that estimated emissions are well below federal conformity thresholds.

- Global Climate: Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). The principal GHG that enter the atmosphere because of human activities are: CO₂, methane, nitrous oxide, and fluorinated gasses (EPA 2011a).

In 2006, the State of California issued the California Global Warming Solutions Act of 2006, widely known as Assembly Bill 32, which requires California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of statewide Greenhouse Gas (GHG) emissions. CARB is further directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. In addition, the Environmental Protection Agency has issued regulatory actions under the Federal Clean Air Act as well as other statutory authorities to address climate change issues (EPA 2011c).

GHG generated by the Proposed Action is expected to be extremely small compared to sources contributing to potential climate change since the emission estimates for CO₂ and CH₄ were well below the Sacramento Metropolitan Air Quality Management District emission thresholds. Accordingly, activities under the Proposed Action would result in below *de minimis* impacts to global climate change.

1.5 Potential Issues

This EA will analyze the affected environment of the Proposed Action and No Action Alternative in order to determine the potential direct, indirect, and cumulative effects to the following resources:

- Water Resources
- Land Use
- Biological Resources

2 Alternatives Including the Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action.

2.1 No Action Alternative

The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison or baseline for determining potential direct, indirect and cumulative impacts to the human environment.

The No Action Alternative for this EA would be the non-approval of access for mosquito control to the District. This alternative would result in an increased risk of mosquito borne disease to both humans and wildlife within range of the mosquito habitat.

2.2 Proposed Action

Reclamation is proposing a 10-year license for access and accessibility to implement the District's IPM Plan, as well as its Mosquito Reducing Best Management Practices (District 2008), at Delta Meadows. Management of mosquito populations on Reclamation land would include the use of biological and/or chemical methods. As a condition of Reclamation's license, annual notification of the intent to conduct biological or chemical mosquito control on Reclamation lands shall be made one month prior to their use, along with the submission of a completed Pesticide Use Proposal form. A monthly report documenting surveillance, monitoring, and control activities by the District shall be submitted to Reclamation

Mosquito Monitoring The District would monitor mosquito populations to determine population estimates and location of infestations, and measures would be implemented. The District's state certified technician would use various sampling and monitoring methods to determine the appropriate measures to control mosquito populations, as described in the IPM Plan, including both biological control(s) and adulticide application.

Biological Control The District would implement various biological control methods including, but not limited to, introducing species such as mosquito fish (*Gambusia affinis*), three spine stickleback (*Gasterosteus aculeatus*), guppies (*Poecilia reticulata*), backswimmers (*Notonectidae* spp.), flatworms (*Platyhelminthes* spp.), etc. into standing water to prey upon larval mosquitoes. The number of individual fish or other species placed into the water would be based upon the judgment of the District's state certified technician.

Larvicide Application Prior to the use of adulticides, the District's state certified technician would apply larvicides to areas infested with larval mosquito populations. Larvicides would be applied by ground methods according to their IPM Plan. The District proposes to apply the following larvicides:

- *Bacillus thuringiensis israelensis* (Bti) (VectoBac 12AS, VectoBac G/GS)
- *Bacillus sphaericus* (VectoLex CG)

- Monomolecular Surface Films (Agnique MMF and/or Agnique MMF G (not available 2012))
- Methoprene (Altosid Briquets, Liquid/Concentrate, Pellets, SBG, and/or XR-G; Metalarv S-PT)
- Spinosad (Natular™ G30 and /or Natular™ XRT)

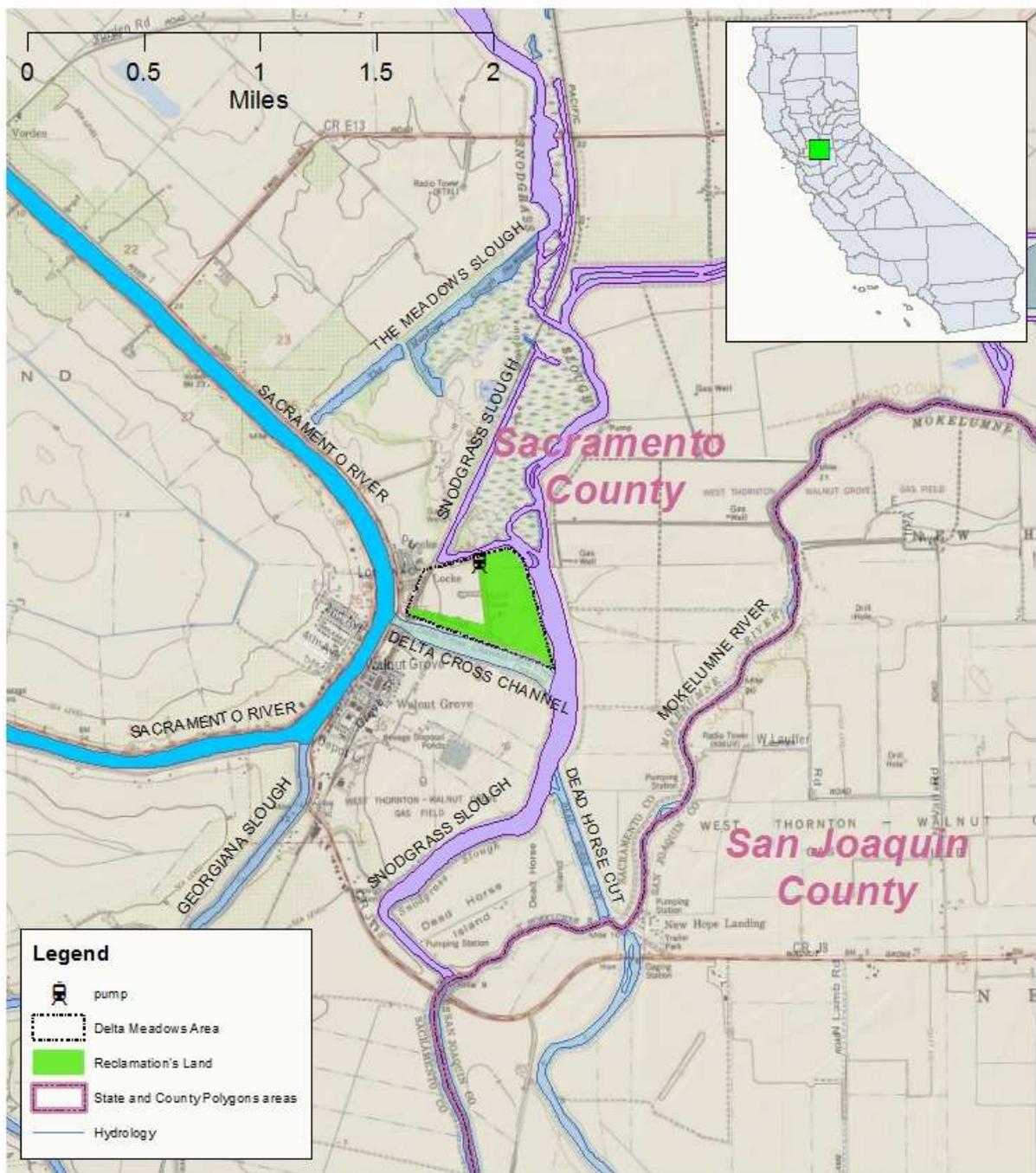
Adulticide Application If chemical treatments are necessary, the following adulticides would be applied to infested areas within the June 1st to September 30th application window as a last resort after all larvicide options have been considered:

- Pyrethrins (ex. Pyroicide 7396™, Evergreen 60-6™, Aquahalt™)
- Pyrethroids (ex. Zenivex® E4 RTU, Anvil® 10+10 ULV)
- If pyrethrins and pyrethroids are not effective an organophosphate (Trumpet -Naled® EC) would be used.

In order to minimize the potential for non-target impacts, the following Environmental Commitments would be implemented:

Table 2-1 Environmental Commitments

Resource	Protection Measure
General	The District shall make annual notifications of the intent to conduct biological or chemical mosquito control on Reclamation lands one month prior to their use, along with the submission of a completed Pesticide Use Proposal form. A monthly report documenting surveillance, monitoring, and control activities by the District shall be submitted to Reclamation.
General	Adulticides would be applied from existing access areas including ditch banks, levee roads and defined roadways by foot, truck, or quad mounted ULV foggers.
General	Mosquito populations would be re-evaluated, and treatments reapplied as necessary.
Water Resources	The application of adulticides containing pyrethrin, pyrethroid, and the organophosphate, Naled, would be subject to the National Pollutant Discharge Elimination System (NPDES) Permit for Vector Control, which authorizes the applications of these pesticides over Waters of the US, including the Sacramento River, Delta Cross Channel, and/or Snodgrass Slough.
Water Resources	The existing NPDES Permit (Water Quality Order No. 2012-0003-DWQ General Permit No. CAG 990004 (Amending Water Quality Order No. 2011-0002-DWQ) is scheduled to expire February 29, 2016. The District is responsible for renewal/re-issuance of the NPDES Permit prior to that date to continue applications. The District is also responsible to comply with any changes in Permit conditions.
Water Resources	Standard safety practices for pesticide storage, mixing, transportation, disposal of containers and unused pesticide, and spill management would be followed. Mixing of chemicals and cleaning of equipment should be done well away from waterways in situations from which runoff would not directly enter waterways. Pesticide mixtures would be stored in leak-proof containers.
Biological Resources	Adulticide application would be restricted to June 1 st through September 30 th when valley elderberry longhorn beetle (VELB) would have already emerged (mid-March to early June about the same time as the elderberry produces flowers) (USFWS Conservation Guidelines for the Valley Elderberry Longhorn Beetle July 1999).
Biological Resources	Fogging would be prohibited when bees are foraging flowering vegetation on Reclamation's Lands. If this is not feasible, fogging would be limited to nighttime treatment to avoid bees.
Biological Resources	The District would adhere to pesticide label instructions and implement any avoidance measures developed during the Endangered Species Act, section 7 consultation. All of these formulations have been approved for use by the U.S. Environmental Protection Agency (EPA), under their Endangered Species Protection Program, to not result in harm to federally protected species or habitat critical to those species' survival (EPA 2000b).



Sacramento-Yolo Mosquito and Vector Control District Abatement

Figure 1. Vicinity of Mosquito Abatement Application for Reclamation's Land Near Sacramento River, Snodgrass Slough, and Delta Cross Channel.



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3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Water Resources

3.1.1 Affected Environment

Surface water resources adjacent to Delta Meadows include the DCC, the Snodgrass Slough, and the Sacramento River. Agricultural operations have created a network of drainage ditches that fill with storm water and levee seepage at Delta Meadows.

In 1950, Reclamation constructed the DCC, located near Walnut Grove, California. The DCC is a controlled diversion channel between the Sacramento River and Snodgrass Slough. The DCC has two 60 foot (ft.) by 30 ft. radial gates designed to regulate approximately 3,500 cubic-ft. per second of water. Water passing through these gates enters the Contra Costa and/or Delta-Mendota Canals. This water can also be delivered to the Sacramento-San Joaquin River Delta for salinity control. The DCC is operated on behalf of Reclamation by the San Luis Delta-Mendota Water Authority in accordance with the State Water Resources Control Board Decision 1641 (Reclamation 2010)

The Snodgrass Slough begins at the confluence of Reclamation District 551 Borrow Canal and the Sacramento Drainage Canal, 0.8 mi south of Lambert Road. The slough spans 6.8 miles south to join North Mokelumne River. The Sacramento River is the largest river in California with headwaters in the Klamath Mountains. The river spans about 400 miles, draining an area of about 27,500 square miles before terminating into the Suisun Bay.

3.1.2 Environmental Consequences

No Action

The No Action Alternative would result in denial of access to the District to monitor mosquitoes, implement biological controls and apply larvicides and adulticides on Reclamation land. Any pooled water would continue to provide breeding habitat for mosquitoes, including those that could potentially transmit disease. There would be no impacts to water resources, as conditions would remain the same as existing conditions.

Proposed Action

The Proposed Action would result in allowing access to the District to monitor mosquitoes, implement biological controls and to apply larvicides and adulticides on Reclamation land as described previously in the Proposed Action Section. Monitoring and surveillance consists of walking or driving to sample sites and would have no impact on water quality. Only pesticides approved for aquatic environments would be permitted and are expected to degrade quickly.

Adulticides are applied as an ULV fog from maintained roadways and perimeter levee roadways minimizing the potential for non-target impacts (Schleier III, J.J., R.K.D. Peterson, P.A. Macedo, and D.A. Brown. 2008). Large volume sprays are not used in adulticide applications. Larvicides are not typically applied where the water would be removed, only to stagnant water that has not been pumped out and no runoff is expected to occur (Weston, D.P., Amweg E.L., Mekebri A., Ogle R.S., and M.J. Lydy. 2006). All applications would be in accordance with Reclamation and National Pollutant Discharge Elimination System (NPDES) requirements and label instructions, as described in Water Quality Order No. 2012-0003-DWQ General Permit No. CAG 990004 Amending Water Quality Order No. 2011-0002-DWQ (Appendix A). As such, there would be no adverse impacts to water resources with this alternative.

Cumulative Impacts

A Categorical Exclusion (11-100) was approved in January 2011 clearing the repair and maintenance of the existing drainage pump and installation of a security cage, the clearing of culverts and ditches up to 100-feet out from the culverts of sediment and vegetation and trimming of trees on and through the “middle,” North/South running road.

A Categorical Exclusion (11-045) was approved in July 2011 to remove vegetation and trash along the landside and waterside of the DCC’s South Levee extending from the edge of County Road to the end of Reclamation’s property line approximately 5,000 feet to the east. Vegetation on the waterside and landside of the South Levee is to be removed by mowing or cutting and disposed offsite. Equipment varies from hand cutting tools to industrial power mowers depending on slope and ground surface conditions. No heavy equipment is used on either sideslopes of the levee. Use of heavy equipment is limited to the existing levee road along the crest of the levee and the service road on the landside toe of the levee.

A Categorical Exclusion (12-012) was approved April 2, 2012 to remove vegetation and trash along the North Levee and the northern portion of Snodgrass Slough Levee. The project will also repair the access roads to the levees. Staging will occur on the access roads of the levees and the new turnaround area once it is created. No vegetation will be removed within 10-feet of the ordinary high water mark.

It was determined that the Proposed Action would not have adverse impacts to water resources with compliance to NPDES requirements. In addition, it was determined that the three projects described above did not involve adverse impacts to water resources. There are no other reasonably foreseeable projects at or near the Proposed Action area that would result in cumulative impacts to water resources. As such, there would be no cumulative impacts to water resources with the Proposed Action.

3.2 Land Use

3.2.1 Affected Environment

Delta Meadows is located near the historic town of Locke and the Delta Meadows River Park, a California Department of Parks and Recreation property closed and fenced off to the public in 2010. However, fishermen can be found frequently along the levee road fishing the DCC from the levee road. Land use in the immediate area includes a transmission tower and appurtenant

structures, built in 1962, and operated and maintained by Transtower Inc. The property includes an equipment building and two residences, fences for protection of the buildings, facilities for the provision of electric power and telephone service, towers, guy anchors and wires, and appurtenances, roads, and a well for domestic water. The largest building is a three-section transmitter building.

The tower is 1,549-feet above ground level including the top-most beacons. Due to the great height of the tower, it is supported by three sets of guy wires, with six concrete anchors in total. There are three inner anchors, with dimensions of 16-feet x 25-feet, located approximately 700-feet from the tower. There are also three outer anchors, with dimensions of 16-feet x 33-feet, located approximately 1,070-feet from the tower. The tower is located in an antenna farm area, which is defined by the Federal Aviation Administration as an area where antenna structures may be grouped to localize their effect on the use of navigable airspace. Four other towers exist in the immediate vicinity.

The Proposed Action area is limited to Reclamation property which is divided from the adjacent State Parks property by a road. There is an access road leading to the tower and buildings from the road dividing the two properties. Approximately 32 acres of State Parks-owned land are leased to Transtower, Inc. Two of the guy wire anchors are located on State Parks land.

Land use beyond the DCC, Sacramento River and Snodgrass Slough includes agricultural and residential.

3.2.2 Environmental Consequences

No Action

There would be no adverse impacts to land use with this alternative.

Proposed Action

The Proposed Action is limited to mosquito monitoring, biological controls and pesticide application and as such would have no adverse impacts to land use.

Cumulative Impacts

Neither the Proposed Action nor the actions described in the preceding Cumulative Impact Section analyzed under Categorical Exclusions 12-012, 11-100 and 11-045, have adverse direct or cumulative impacts to land use. In addition, there are no other reasonably foreseeable projects at or near the Proposed Action area that would result in cumulative impacts to land use. No native or previously untilled lands would be put into production. The Proposed Action would maintain existing land uses and would not contribute to cumulative changes or impacts to land uses or planning. Therefore, there would be no cumulative effects to land use as a result of the Proposed Action.

3.3 Biological Resources

3.3.1 Affected Environment

The area that provides habitat for mosquitoes is land surrounded by waterway and levees on three sides. The western border is bounded by an abandoned railroad grade levee, just east of the

town of Locke in the Delta Meadows State Recreation Area. Another levee that encloses the lands runs from the River Road (Highway 160) eastward along the north bank of the DCC approximately 0.84 miles to its junction with Snodgrass Slough, then northwest along the west bank of Snodgrass slough approximately 0.71 miles and continuing along Snodgrass Slough approximately 0.42 miles southeast to the abandoned railroad grade levee on the west side of Delta Meadows State Recreation Area, then southwest approximately 0.34 miles back to the point of origin (Figure 1).

The lands within the levees vary in elevation, with low lying sites dominated by riparian trees and a thick understory. Higher ground dominated by grassland with interspersed shrubs. Water collects in the low lying forested areas due to precipitation and possibly seepage under levees during periods of high water in the Delta and/or Snodgrass Slough. Effectively, two parcels exist within the area bounded by levees. The eastern portion is demarcated by an earthen roadway that bisects the entire area, extending from the levee bordering the north side of the DCC to the levee bordering the south (west) side of Snodgrass Slough (Figure 1). The eastern parcel and a narrow strip adjacent to the north levee of the DCC extending towards the railroad grade levee for Delta Meadows State Park are lands administered by Reclamation. The lands on the approximate western half are administered by the Delta Meadows State Recreation Area.

Qualified biologists conducted Field visits on October 26, 2011 (J. Lewis 2011, pers. obs.) and February 24, 2012 (N. Gruenhagen, pers. obs.) of the Delta Meadows property. The following observations were made:

- Drainage ditches and ponded water providing suitable habitat for immature stages mosquito development.
- Pockets of elderberry shrubs were located near the north and eastern portion of the levee.
- Habitat at Delta Meadows is riparian in nature; dominated by valley oaks (*Quercus lobata*), cottonwood (*Populus fremontii*), willows (*Salix* spp.). This provides habitat for adult mosquitoes.
- The understory is heavily vegetated with shrubby vegetation dominated by thickets of Himalayan Blackberry (*Rubus armeniacus*) and poison oak (*Toxicodendron diversilobum*).
- The waterside levee has emergent vegetation and overhanging trees, providing shade.

Special-status wildlife species with the potential to occur in the study area were identified through review of existing information, including queries of DFG's CNDDDB and USFWS databases for Poso Thornton, Isleton, Bruceville, and Courtland 7.5-minute USGS quadrangle maps (CNDDDB 2012; USFWS 2012). This information was compiled, in addition to information within Reclamation's files, to determine the likelihood for the occurrence of protected species within the study area (Table 3-1).

Table 3-1 Species Considered

<u>Species</u>	<u>Status¹</u>	<u>Effects²</u>	<u>Occurrence Potential in Study Area³</u>
Amphibians			
California red-legged frog (<i>Rana draytonii</i>)	T	NE	Absent. No individuals or habitat in area of impact.
California tiger salamander, central population (<i>Ambystoma californiense</i>)	T	NE	Absent. No individuals or habitat in area of impact.
Birds			
California clapper rail (<i>Rallus longirostris obsoletus</i>)	E	NE	Absent. No individuals or habitat in area of impact. Restricted to salt or brackish marsh habitat of San Francisco Estuary (USFWS 2010).
Fish			
Central Valley spring-run Chinook salmon (<i>Oncorhynchus tshawytscha</i>)	T, X NMFS	NLAA	Present. Species migrates up the river systems of the Sacramento-San Joaquin Delta from March-July. Seaward migration Nov-May. The Delta Cross Channel is designated as Critical. No natural waterways within the species' range would be affected by the proposed action.
Central Valley steelhead (<i>Oncorhynchus mykiss</i>)	T, X NMFS	NE	Absent. No individuals or habitat in area of impact. No natural waterways within the species' range would be affected by the proposed action. Critical habitat absent from area of effect.
delta smelt (<i>Hypomesus transpacificus</i>)	T, X	NLAA	Possible. Species migrates from San Francisco estuary to spawn in shallow freshwater from April-June. Primary constituent elements absent from the action area. No natural waterways within the species' range would be affected by the proposed action.
green sturgeon (<i>Acipenser medirostris</i>)	T, X NMFS	NLAA	Present. Migrate up Sacramento-San Joaquin Delta to freshwater river systems to spawn from March-July. Critical habitat present in the study area. The study area may provide rearing habitat for juveniles and some adults. No natural waterways within the species' range would be affected by the proposed action.
winter-run Chinook salmon, Sacramento River (<i>Oncorhynchus tshawytscha</i>)	E, X NMFS	NE	Absent. Occurs in mainstem Sacramento River. No individuals or habitat in area of impact. No natural waterways within the species' range would be affected by the proposed action. Critical habitat absent from area of effect.
Invertebrates			
Conservancy fairy shrimp (<i>Branchinecta conservatio</i>)	E	NE	Absent. No individuals or habitat in area of impact.
delta green ground beetle (<i>Elaphrus viridis</i>)	T		Absent. No individuals or habitat in area of impact.

valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	T	NLAA	Possible. There is a report approx. 7-miles northeast of Delta Meadows and suitable habitat present in the area of effect. However, Environmental Protective Measures would be incorporated to protect host plant, elderberry.
vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	T	NE	Absent. No individuals or habitat in area of impact.
vernal pool tadpole shrimp (<i>Lepidurus packardi</i>)	E	NE	Absent. No individuals or habitat in area of impact.
Reptiles			
giant garter snake (<i>Thamnophis gigas</i>)	T	NLAA	Possible. There is a CNDDDB report near Snodgrass Slough and suitable habitat present. Environmental Protective Measures would be incorporated to protect species.
<p>1 Status= Listing of Federally-protected species E: Listed as Endangered NMFS: Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service T: Listed as Threatened X: Critical habitat designated for this species</p> <p>2 Effects = Effect determination NLAA: May effect, not likely to adversely affect NE: No Effect</p> <p>3 Definition Of Occurrence Indicators Present: Species recorded in area and suitable habitat present Possible: Species recorded in area but habitat suboptimal or lacking entirely Absent: Species not recorded in study area and/or habitat requirements not met</p> <p>4 CNDDDB = California Natural Diversity Database 2012</p>			

Migratory Bird Species that may be in or near the area of effect include the Swainson’s hawk, Red-tailed Hawk, Black-shouldered Hawk, Northern Harrier, American Kestrel, White-tailed Kite, Tricolored Blackbird, and Greater Sandhill Crane. Virginia Rails and American Coots are known from the Sacramento River, Delta Cross Channel, and Snodgrass Slough. In addition, the Long-billed Curlew, American Avocet, Killdeer, Great Egret, Great Blue Heron, Black-crowned Night Heron, Green Heron, Belted Kingfisher, and American Bittern may occur in nearby agricultural fields and canals.

Valley Elderberry Longhorn Beetle (VELB) is listed as federally threatened (USFWS 1980). This species is nearly always found on or close to its host plant, elderberry (*Sambucus* species). There are four life stages in the animal’s life: egg, larva, pupa, and adult. Females lay their eggs on the bark of living elderberry shrubs. When the larvae hatch, they burrow into the stems to feed and mature. The larval stage may last up to 2 years, after which the larvae enter the pupal stage and emerges into an adult. Adults are active from March to June, feeding and mating (USFWS 1999a).

The beetle's current distribution is patchy throughout the remaining habitat of the Central Valley from Redding to Bakersfield. Loss and degradation of riparian forests for agriculture and urban development are the primary reasons for the species’ decline (USFWS 2006). There is a 1987

report from Consumnes River, approx. 7-miles northeast of Delta Meadows, and suitable habitat present in the area of effect (element occurrence index 22715; CNDDDB 2012).

Giant Garter Snake (GGS) is listed as threatened (USFWS 1993b). They are endemic to the Sacramento valley wetland habitats; and include freshwater marshes, low-gradient streams, as well as man-made waterways, slough habitats, and adjacent uplands (USFWS 1993b, 1999b). These waterways typically contain cattails and other aquatic vegetation for cover or foraging. Garter snakes are active foragers and feed primarily on small fish, frogs, and tadpoles (Hansen and Brode 1980). Snakes are typically absent from larger rivers and other water bodies that support introduced populations of large predatory fish (Hansen and Brode 1980; Hansen 1988). GGS require water during the active phase of their life cycle in the summer (Paquin et al. 2006). Their active season is between May 1st to Oct. 1st, so during this period is the best time to modify their habitat and will cause the least impact to them. During their dormant season, these snakes will seek shelter from flood waters during the winter months in small mammal burrows and other soil and/or rock crevices during the colder months of winter (i.e., October to April) (Hansen and Brode 1993, USFWS 1993b).

There is one CNDDDB record in the general vicinity from 1992; George Hansen observed an unknown number of GGS near Snodgrass Slough and Meadows Slough (CNDDDB 2012). Upland areas within 200 feet of Snodgrass Slough and Meadows Slough would be considered as upland habitat (this is the distance within which the majority of upland habitat use occurs; Wylie et al. 1997). Snodgrass Slough and Meadows Slough provides permanent aquatic habitat for GGS, however small drainages on-site at Delta Meadows are seasonal and would therefore not be able to maintain populations of prey.

Fish

The DCC gates are operated for water quality and fishery concerns. The gates are closed from February 1 through May 20 for the protection of migrating fish in the Sacramento River. From November through January, the DCC may be closed for up to an additional 45 days to protect out-migrating fish. The gates may also be closed for 14 days during the period of May 21 through June 15. Otherwise, the gates remain open to supply fresh water from Sacramento River across the Delta.

Central Valley Spring-Run Chinook Salmon were listed as threatened by National Marine Fisheries Service (NMFS 2005a). Chinook salmon require cool fresh water during all life states (e.g., low suspended sediment and contaminant loads and other forms of pollution). These anadromous fish prefer deeper and larger streams with vegetative cover providing shade and protection from predation. Central Valley spring-run Chinook salmon enter the Sacramento River from March through July, and spawn in the upper reaches of the river from late August through early October (Fisher 1994). Major spawning streams are Sacramento and San Joaquin Rivers and tributary Central Valley rivers. Adults can migrate rapidly up and downstream, and it is believed this movement occurs predominately during the nighttime hours (NMFS 2009b). Fry emerge from the gravel November to March. Juvenile spring-run emigration downstream varies; they may migrate either as soon as they emerge from the gravel or as yearlings.

This species is absent from the treatment site but adult Chinook salmon are known to use the DCC as a migration pathway. It is possible salmon would be moving through waterways during mosquito chemical control activities (Table 1).

Central Valley Spring-Run Chinook Salmon Critical Habitat was designated for this species by NMFS. The critical habitat boundary includes the Sacramento River and several tributaries, including the DCC (NMFS 2005b). The primary constituent elements (PCE's) considered essential for the conservation of listed Central Valley salmonids (inc. Central Valley spring-run Chinook salmon) are: (1) Freshwater Spawning Sites, (2) Freshwater Rearing Sites, (3) Freshwater Migration Corridors, (4) Estuarine Areas, (5) Nearshore Marine Areas, and (6) Offshore Marine Areas. Each of the PCEs assumes water quantity and quality conditions are met, and provide features important to support growth and development of one or more life stages, and that habitat does not obstruct salmonid movement.

Sacramento River, DCC, and Snodgrass Slough provides Spring-run Chinook salmon rearing and/or migration corridor (PCEs 2-3). These waterways provides natural cover from submerged and overhanging vegetation and adequate flow and suitable water quality needed for migration.

Delta Smelt was federally listed by USFWS as threatened on March 5, 1993 (USFWS 1993a). They are a pelagic fish that inhabits naturally turbid water and use turbid water as a way of hiding from predaceous fish (Moyle 2002). Delta smelt are endemic to the upper San Francisco estuary, and primarily occur in the Suisun Bay, Suisun Marsh, and the Delta (Moyle et al. 1992, CDFG 2005). This small fish spends a large part of their annual life span associated with the freshwater edge of the mixing zone (zone of mixing or entrapment at the saltwater-freshwater interface), where the salinity is approximately 2 grams per liter (equivalent to parts per thousand [ppt]) (Jassby et al. 1995, Bennett 2005). The mixing zone provides a food-rich environment (DWR 2011) and the best survival and growth for delta smelt larvae (Moyle et al. 1992).

Adult delta smelt migrate from the highly productive brackish-water habitat associated with the mixing zone, to spawn in freshwater from April to June (Swanson et al. 2000, Bennett 2005). They spawn in shallow, fresh, or slightly brackish water upstream of the mixing zone, mostly in tidally influenced backwater sloughs and channel edgewater, typically in the Sacramento Deepwater Ship Channel system (USFWS 1995). Eggs laid attach to the substrate and larvae that hatch are planktonic, floating downstream with the water currents until they reach areas of the mixing zone. Delta smelt are typically found in the Suisun Bay in the summer but can occur as far downstream as the San Pablo Bay. Delta smelt have been reported a few miles south of the area and continue to remain south of Walnut Grove (CNDDDB 2012).

Delta Smelt Critical Habitat was designated for delta smelt by USFWS in December 19, 1994 (USFWS 1994). Geographical areas identified are waters and land below the high water mark of the Delta with PCE's pertaining to the delta smelt's four life stages: (1) Spawning Habitat, (2) Larval and Juvenile Transport, (3) Rearing Habitat, and (4) Adult Migration. Habitat conditions surrounding Delta Meadows does meet some of the PCE's. It is possible, although unlikely, Delta smelt may migrate through nearby waterways but DCC and Snodgrass Slough do not provide spawning or rearing habitat.

Green Sturgeon The Southern Distinct Population Segment of Green sturgeon (Green Sturgeon) was federally listed as threatened throughout its range on April 7, 2006 (NMFS 2006). This anadromous species spends most of its life in Pacific coastal marine and estuarine waters from Mexico to Alaska; only returning to large river mainstems to spawn, and rearing in freshwater for only a few years before migrating back to the ocean (Nakamoto et al. 1995, Heublin 2008). They are benthic feeders of invertebrates including shrimp, mollusks, amphipods, and even small fish (Moyle et al. 1992). Like all sturgeons, green sturgeon are large, long lived, late-maturing, and fecund.

The majority of green sturgeon are thought to spawn in the Klamath River, but spawning also occurs in the Sacramento and Rogue rivers (Adams et al. 2002, Beamesderfer et al. 2005). Green sturgeon will migrate up river systems starting in late February to spawn from March through July (NMFS 2006). Spawning occurs in deep, turbulent, mainstem channels over large cobble and rocky substrates with crevices and interstices. Juveniles rear in freshwater and estuarine areas for 1-3 years before dispersing into the ocean. During summer months following spawning, adult green sturgeon will stay in the deep, low gradient reaches of the river and water temperatures are between 15°C and 23°C. When river flows increase and the temperature drops (~ 10°C) in autumn and early winter, sturgeon will then begin to return to the ocean (Benson et al. 2007, Heublin 2008).

Mosquito control activities could occur on Delta Meadows when juvenile green sturgeon rear in freshwater or during the adult migration period, and as such, it is possible they are in the vicinity of Delta Meadows.

Green Sturgeon Critical Habitat was designated for green sturgeon by NMFS and includes the stream channels and waterways in the Delta and the mainstem Sacramento River upstream to Keswick Dam, and the Feather River upstream to the fish barrier dam adjacent to the Feather River Fish Hatchery (NMFS 2009a). Specific PCE's identified in the Delta/Riverine area are (1) Food Resources, (2) Substrate Type or Size, (3) Water Flow, (4) Water Quality, (5) Migratory Corridor, (6) Depth, and (7) Sediment Quality. Both Stations are located within designated green sturgeon critical habitat and some of the constituent conditions are present.

DCC and Snodgrass Slough may provide food resources (invertebrates) for rearing, foraging, and development of green sturgeon (PCE 1). Along the waterside levee, there is aquatic vegetation that could provide refuge and habitat for prey organisms. Water flow regime for normal behavior, growth, and development is met (PCEs 3-4). These waterways also provide a migratory corridor for green sturgeon (PCE 5).

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act require Federal agencies to consult with NMFS on any activity that they fund, permit, or carry out, that may adversely affect any essential fish habitat (EFH). The EFH regulations require Federal agencies obligated to consult on EFH to also provide NMFS with a written assessment of the effects of their actions on EFH (50 CFR 600.920). NMFS is required to provide EFH conservation and enhancement recommendations to the Federal agencies. The statute also requires Federal agencies that receive NMFS conservation recommendations on EFH to provide a detailed written response to NMFS

within 30 days from receipt. The Federal agency's response must detail how the agency intends to avoid, mitigate, or offset the effect of the activity on EFH (Section 305(b)(4)(B)). This includes evaluation of EFH for Central Valley Fall-run Chinook salmon.

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not grant access to the District to implement their IPM Plan at Delta Meadows. Mosquito populations would be left to develop unchecked. This would result in potential large populations of mosquitoes capable of transmitting disease. In addition, there would be no potential impacts to special-listed species (giant garter snake, valley-elderberry longhorn beetle, migratory birds, salmonids, and green sturgeon).

Proposed Action

Mosquito Monitoring Under the Proposed Action, the District would be allowed to monitor and control mosquitoes at Delta Meadows. There would be no work done within the waterways and therefore would have no direct or indirect impact to fish. Monitoring and surveillance activities may trample vegetation (by foot or by vehicle), injuring or flushing wildlife that are present, yet these areas would be accessed through preexisting routes which already have the occasional traffic. The valley elderberry longhorn beetle or its host plant would be avoided. Therefore, monitoring and surveillance would have *No Effect* to wildlife.

Biological Control The typical mosquito control period is from March through October, the drier summer months. Mosquitofish and/or other biocontrol agents would be planted in stagnant ponds that are not connected to waterways and would die out at the end of the season, requiring restock as needed. Therefore, biological control would have *No Effect* to wildlife.

Larvacide Application Larvacides are typically applied to discrete locations (i.e. infested vegetation and/or isolated pools) so as not to contaminate water resources, and indirectly affect aquatic wildlife or other nontarget organisms.

Bacillus thuringiensis israelensis (Bti) and *Bacillus sphaericus* (Bsp) are microbial insect pathogens used to control larval stages of mosquitoes. Bti and Bsp are naturally occurring bacteria that produces a toxin when ingested by insects, causing death. These larvicides have a low impact to the environmental and non-target organisms, including fish (USFWS 1984, EPA 1998). Spinosad is another naturally occurring microbial insecticide with a low environmental impact to non-target organisms (EPA 2007) proposed by the District to control mosquito populations.

Monomolecular Surface Films are made from renewable plant oils that reduce the water surface tension of standing water; suffocating aquatic (larval and pupal) life stages of mosquitoes. Monomolecular film has practically no acute toxicity to nontarget organisms but can cause slight acute fish toxicity (EPA 2000a, USFWS 1984).

Methoprene is an insect growth inhibitor that interferes with the insect being able to develop into the adult stage. Methoprene has moderate acute fish toxicity, slight acute avian toxicity, and practically no acute mammalian toxicity (EPA 2000a, USFWS 1984). These larvacides degrade rapidly in the environment (EPA 2001).

Adverse effects on nontarget wildlife from exposure to larvacides listed above are not expected when applied according to the label instructions. See further discussion regarding special-status species below.

Adulticide Application In the event adulticide applications becomes necessary, the District would utilize pyrethrum-based (pyrethrin and pyrethroid) chemical control, and as a last resort for public health, the organophosphate Naled.

Pyrethrums are broad-spectrum insecticides and are potentially lethal to most insects, including both beneficial insects and pests. However, pyrethrums are inactivated and decomposed by exposure to light and air. Pyrethrum compounds are also toxic to fish but are broken down in water to nontoxic products (Ecotoxnet 1994, EPA 2006a).

The organophosphate, Naled, is a non-systemic, broad-spectrum insecticide, which affects the nervous system of adult mosquitoes and other insects. Naled is a fast acting oral toxic that is also highly to moderately toxic to birds, fish, and aquatic invertebrate species (ETN 1996). Yet, Naled breaks down and dissipates rapidly from the environment is not likely to leach into ground water (EPA 2006b).

Adulticides are typically applied to discrete locations like infested vegetation and/or isolated pools by fogging under controlled conditions such as accounting for downwind deposition and drift, so as not to contaminate water resources, and indirectly affect wildlife or other nontarget organisms (Davis et al. 2007). Based on toxicity studies, when these insecticides are applied according to the label, they are not expected to directly harm mammals, birds, reptiles, and amphibians (NPDES Permit Water Quality Order No. 2012-0003-DWQ General Permit).

The control of mosquito populations may result in temporary reduction of prey for migratory birds or other wildlife; however, the overall invertebrate prey population would not be appreciably reduced. In cases where insecticides would be used, access to these locations would be restricted to existing roads, levees, or access paths. Areas treated with adulticide must avoid a 100-foot buffer of elderberry shrubs. Avoidance and minimization measures have been incorporated into the project description (Table 2-1 and Appendix B) so only the targeted area sprayed would be impacted by the management activities.

Migratory Bird Species, such as the Swainson's hawk, White-tailed Kite, Tricolored Blackbird, and Greater Sandhill Crane, ect., would not be impacted from insecticide control. Applying these larvacides to stagnate water would be essentially nontoxic to birds (EPA 1998, Niemi et al. 1999). In addition, adulticides containing pyrethrums are virtually nontoxic to birds (Schleier III et al. 2008). There would be *No Take* to bird species protected under the Migratory Bird Treaty Act from the Proposed Project for all of the pesticides listed above except for Naled.

Based on acute toxicity data, Naled is moderately to highly toxic to birds. They could be exposed through consumption of insects or plants containing naled residues or through direct exposure during application. Naled rapidly breaks down and is short-lived in the environment,

and therefore prolonged exposure to birds is minimal. Therefore, there would be *No Take* to migratory birds from Naled either directly during adulticide treatment or indirectly from prey items.

Valley Elderberry Longhorn Beetle. There is an abundance of elderberry shrubs mapped along the northeastern border of Delta Meadows, along Snodgrass Slough (N. Gruenhagen pers. obs.). Larvacides would not be applied to elderberry shrubs; therefore, there would be *No Effect* to this species. Areas planned for adulticide application would occur outside of a 100-footwide avoidance buffer of any elderberry shrubs with stems greater than 1-inch in diameter at ground level (USFWS 1999a). Adulticide use would be restricted to June 1st through September 30th, when adults would not be present. For that reason, the proposed action *May Affect but Is Not Likely to Adversely Affect* VELB.

Giant Garter Snake Application of pesticides could be harmful to snakes in upland sites. GGS utilizing these areas could come in contact toxins. Active snakes also may be at risk if they are crossing or basking on an access road while moving vehicles are present. The Delta Meadows site may provide GGS with upland habitat but most likely would be unsuitable due to larger sized trees and dense thickets creating excess shade and a lack of basking sites important for thermoregulation (Hanson and Brode 1980). Other adverse effects would be in the form of harm (such as the risk of a vehicle hitting a snake basking on a road). The incorporation of environmental commitments as listed in Table 2-1 and Appendix B would minimize both the potential for harm, and the potential for injuring or killing a giant garter snake. Therefore, the proposed action *May Affect but Is Not Likely to Adversely Affect* GGS.

Fish

All of the proposed insecticides have varying degrees of toxicity to fish, and therefore could pose an ecological risk if they are exposed. The sensitivity of fish is mainly due to their poor ability to metabolize insecticides (Schleier and Peterson 2011). Pesticides would be applied to stagnate pools or fogged around infested vegetation, but these compounds degrade rapidly into nontoxic and non-persistent metabolites (Ecotoxnet 1994, EPA 2006a, b). In most cases, there would be *No Effect* to fish from pesticide exposure. However, in the unlikely case fish were repeatedly exposed to insecticides while rearing (live juvenile green sturgeon) in Snodgrass Slough or the DCC, the proposed action *May Affect but Is Not Likely to Adversely Affect* salmonids and green sturgeon.

Effects to Essential Fish Habitat

The Project may affect but is not likely to adversely affect species or adversely modify critical habitat or EFH for Chinook salmon. Any disturbances to special-status species would be temporary and during mosquito abatement activities. In addition, conservation measures are incorporated into the Project to avoid and or minimize impacts to plants and wildlife.

Riparian vegetation and other features of the streambank provide habitat for salmonids. Overhanging vegetation and banks moderate local water temperatures and provide shade, direct inputs of food (primarily terrestrial insects), and cover from predators. The abundance of salmonids is often positively associated with the abundance of instream woody material (Bisson et al. 1987, Hartman and Brown 1987, Hicks et al. 1991). These areas are outside of the

treatment area and would not be affected by mosquito control activities. Therefore, the Project would have an insignificant impact to salmonids and EFH.

Cumulative Effects

Cumulative effects from incremental impacts of the Proposed Action, when added to previous Reclamation actions at Delta Meadows (Categorical Exclusions 11-100, 12-012, and 11-045), would not have adverse direct or cumulative impacts to land use.

Existing conditions, such as loss of habitat due to urbanization and expanding agricultural lands that cumulatively impact listed species and their habitats, are expected to occur under either alternative. Granting the District access to Delta Meadows to implement their IPM Plan is not expected to contribute cumulatively to habitat loss or impacts to special-status species, and Delta Meadows would be used consistent with current uses. Therefore, there would be no cumulative adverse impacts to biological resources as a result of the Proposed Action.

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4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft EA between August 6, 2012 and September 6, 2012.

4.2 Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The amendments enacted in 1946 require consultation with the Service and State fish and wildlife agencies “whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license”. Consultation is to be undertaken for the purpose of “preventing the loss of and damage to wildlife resources”.

The Proposed Action does not involve any new impoundment, channel deepening, or other control or modification of a stream or body of water as described in the statute. Therefore, Reclamation has determined that FWCA does not apply to the Proposed Action.

4.3 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation would initiate consultation with Fish and Wildlife Service and National Marine Fisheries Service on effects from the Proposed Action to species. All mosquito management activities at Delta Meadows would be in compliance with the Endangered Species Act. The Project would not commence until consultation is complete.

4.4 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act is designed for taking immediate action to conserve and manage the fishery resources found off the coasts of the United States, and the anadromous species and continental shelf fishery resources of the United States. Consultation with NMFS is required when any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, may adversely affect any essential fish

habitat (EFH). Within the study area, EFH is found in the Delta Cross Channel and Snodgrass Slough. Reclamation would initiate consultation with National Marine Fisheries Service on effects to EFH from the Proposed Action to species. The Project would not commence until consultation is complete.

4.5 Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.)

The MBTA implements various treaties and conventions between the United States and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

Avoidance measures would be implemented for protection of migratory birds and no take is expected to occur from Proposed Action activities.

4.6 Executive Order 11988 – Floodplain Management and Executive Order 11990 – Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. The Proposed Action would not affect either concern.

4.7 Clean Water Act (33 U.S.C. § 1251 et seq.)

Section 401

Section 401 of the Clean Water Act (CWA) (33 U.S.C. § 1311) prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the CWA (33 U.S.C. § 1342 and 1344). If new structures (e.g., treatment plants) are proposed, that would discharge effluent into navigable waters, relevant permits under the CWA would be required for the project applicant(s). Section 401 requires any applicant for an individual U. S. Army Corps of Engineers dredge and fill discharge permit to first obtain certification from the state that the activity associated with dredging or filling will comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

All applications would be in accordance with Reclamation and National Pollutant Discharge Elimination System (NPDES) requirements and label instructions, as described in Water Quality Order No. 2012-0003-DWQ General Permit No. CAG 990004 Amending Water Quality Order

No. 2011-0002-DWQ (Appendix A). As such, there would be no adverse impacts to water resources with this alternative.

Section 404

Section 404 of the CWA authorizes the U. S. Army Corps of Engineers to issue permits to regulate the discharge of “dredged or fill materials into waters of the United States” (33 U.S.C. § 1344).

No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with CWA section 404 and 401 are not required.

5 List of Preparers and Reviewers

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