

28. Public Health and Environmental Hazards

28.1 Introduction

This chapter describes hazardous materials and other environmental hazards, such as wildland fires and mosquito/vector-borne illnesses that present risks to human health or the environment within the Extended, Secondary, and Primary study areas. Descriptions and maps of these three study areas are provided in Chapter 1 Introduction. Other hazards, such as flooding, dam failure, and issues related to public services (e.g., fire protection, law enforcement, emergency services), are addressed in other chapters in this DEIR/EIS.

The regulatory setting for public health and environmental hazards is discussed briefly in this chapter, and is presented in greater detail in Chapter 4 Environmental Compliance and Permit Summary.

This chapter focuses primarily on the Primary Study Area. Potential impacts in the Secondary and Extended study areas were evaluated and discussed qualitatively. Potential local and regional impacts from constructing, operating, and maintaining the alternatives were described and compared to applicable significance thresholds. Mitigation measures are provided for identified significant or potentially significant impacts, where appropriate.

28.2 Environmental Setting/Affected Environment

28.2.1 Extended Study Area

28.2.1.1 Hazardous Materials

Hazardous materials are defined in Section 66260.10, Title 22, of the California Code of Regulations as:

A substance or combination of substances which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious, irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, or disposed of or otherwise managed.

In addition, California Health and Safety Code Section 25501 defines a hazardous material as follows:

Any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. “Hazardous materials” include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or environment.

“Hazardous wastes” are defined in the California Health and Safety Code Section 25141(b) as wastes that:

...because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness [or] pose a substantial present or potential hazard to

human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Hazardous materials contamination throughout the Extended Study Area has resulted from a variety of activities. These activities include the following influences:

- Agriculture operations that include the storage and application of pesticides, herbicides, and fertilizers, and production activities in farming operations
- Urban land uses that generate, store, or transport hazardous materials in the industrial, commercial, and residential setting on both land and water
- Historic mining operations

Potential sources of hazardous material and waste that may exist in the agricultural, urban, and historic mining areas throughout the Extended Study Area may be present in a variety of common contexts, including:

- Petroleum hydrocarbons
- Landfills or solid waste disposals sites
- Volatile organic carbons
- Wastewater and wastewater treatment plants
- Herbicide, insecticides, fungicides, and other pesticides
- Contaminated aggregate (such as mercury-contaminated)
- Underground storage tanks
- Stormwater runoff structures
- Utility poles
- Abandoned mines

Superfund is the name given to the national environmental program that was established to address abandoned hazardous waste sites. It is also the name of the fund established by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended. This law was enacted because of the discovery of toxic waste dumps. California has 94 Superfund sites; there are designated Superfund sites in 26 of the counties included in the Extended Study Area. DTSC oversees the State Superfund sites and also administers the USEPA Brownfields Program. It strives to clean up and redevelop potentially contaminated lands, making it easier for such lands to become functioning parts of their communities. California has 67 Brownfields sites statewide; there are designated Brownfields sites in 11 of the counties included in the Extended Study Area. Refer to Appendix 28A for a list of Superfund and Brownfields sites throughout California (USEPA, 2013).

In addition to the hazardous material contamination issues noted above (agriculture and mining), the following are also areas of concern: quarries, railroads, and private water wells and septic systems.

28.2.1.2 Wildland Fires

Wildland fires pose a hazard to rural and urban development, infrastructure, and natural resources. Numerous factors, such as topography, vegetation characteristics, fuel load, and climate contribute to the degree of fire hazard throughout the State. Based on a review of the California Department of Forestry and Fire Protection's (CAL FIRE) statewide map of fire hazard severity zones, the CVP and SWP service areas within the Extended Study Area include lands designated with a fire hazard severity ranging from moderate

to very high. In general, the service areas located in the lower foothills that surround the Central Valley include lands designated as moderate risk; the service areas located in the San Francisco Bay area and in the adjacent East Bay and coastal counties include lands designated as high risk; and the service areas located in Shasta County, in southern California, and in the higher elevations of Tehama County and the eastside counties include lands designated as very high risk for wildland fire (CAL FIRE, 2007a). All of these areas also include identified communities at risk from wildfire. Communities at risk from wildfire are those located within 1.5 miles of areas of high or very high risk for wildland fire (CAL FIRE, 2001).

28.2.1.3 Mosquitoes, Other Vectors, and Nuisance Problems

Mosquitoes

Several species of mosquitoes are common in California. Each species has a season when it is most active. Depending on the California region, some species may be active during most or all of the year. Each mosquito species has a range of preferred hosts, and most species feed on more than one type of host. Mosquitoes have blood meal hosts that range from reptiles, amphibians, mammals, birds, to humans. Protein from a host's blood is used by the female mosquito to produce eggs.

Mosquitoes carry diseases that afflict humans. They also transmit several diseases and parasites that dogs, birds, and horses are susceptible to. These diseases include protozoan diseases, such as malaria and dog heartworm, and viruses such as West Nile virus and Eastern equine encephalitis¹ (AMCA, 2013).

Mosquito breeding habitat is briefly characterized below to aid in understanding how mosquito-borne diseases are spread. According to a white paper written by the Society of Wetland Scientist (SWS, 2009), female mosquitoes can be classified into two general groups based on their egg-laying and hatching behavior, namely, the floodwater habitat mosquitoes or the permanent aquatic habitat mosquitoes.

Floodwater mosquito eggs are deposited on moist substrate and do not hatch until subsequently inundated. They include mosquitoes in the genera *Aedes*, *Anopheles*, and *Ochlerotatus* that are primarily daytime mosquitoes. These mosquitoes can be significant vectors for diseases.

Permanent aquatic habitat female mosquitoes lay eggs on stagnant warm water surfaces, which hatch after three to five days. Mosquitoes in the genera *Culex*, *Culisteta*, and *Orthopodomyia* are included in this group. Many species in this group are active at dusk and can feed on both humans and livestock. Conditions conducive to permanent aquatic habitat are shallow stagnant ponds with emergent vegetation, standing rain puddles, and poorly drained or flooded agricultural fields.

The mosquito species that are found within the counties that comprise the Extended Study Area are listed in Table 28-1.

Other Vectors and Nuisance Problems

Stinging Insects

Stinging insects, such as bees, yellowjackets, paper wasps, and stinging ants (all found within the Extended Study Area), can cause injury to humans ranging from sharp temporary pain to anaphylaxis shock leading to death. Stinging insects can be divided into social (those that live in colonies) and non-social (Mussen, 2011a). Non-social stinging insects are individual insects that tend to avoid human contact by fleeing. Social stinging insects include the western yellowjacket (*Vespula pennsylvanica*), the

¹ Dengue and yellow fever are also mosquito-vectored diseases; however, they have not been reported in California. Yellow fever occurs only in tropical areas of Africa and the Americas (AMCA, 2013).

German yellowjacket (*Vespula germanica*), the prairie yellowjacket (*Vespula atropilosa*), the European honey bee (*Apis mellifera*), and fire ants (*Solenopsis* spp.). The red imported fire ant (*Solenopsis invicta*) is particularly aggressive and can cause injury and damage to humans, crops, and livestock. Generally, social stinging insects are not aggressive to humans unless perceived as a threat to their nest and foraging activities (Mussen, 2011a and 2011b). In addition, stinging insects are attracted to food sources such as trash receptacles, outdoor cooking areas, and picnic areas.

European honey bees are used by beekeepers in California for honey production and crop pollination although they are non-native to the Americas. Several different subspecies of the European honey bee now exist throughout the United States. The Africanized honey bee² has been in California since 1994 (LACWVCD, 2011). Africanized honey bees have colonized in the Extended Study Area in Kings, Madera, San Luis Obispo, Santa Barbara, and Tulare counties.

Yellowjackets and paper wasps are beneficial insects. Yellowjackets and the European paper wasp are often confused, but have distinct differences. Most of the time, yellowjackets are not aggressive and will not harm humans if they stay out of their way. European paper wasps are more easily provoked than other wasps, and will more readily sting when someone nears their nest. In the summer months, foraging yellowjackets may become a nuisance in parks, campgrounds, and other areas. Paper wasps may become a nuisance when they build a nest on or near homes (SYMVCD, 2011).

Stinging ants are non-native but were found in California in 1997. Since then, they have rapidly spread throughout central and southern California and because of their potential for substantial injury and damage to humans, crops, and livestock, several southern California counties (Riverside, Orange, Los Angeles, and San Diego) have established quarantines to confine further spreading (Jetter et al., 2002).

Ticks, Liver Flukes, and Conenose Bugs

Ticks are small insect-like creatures most often found in naturally vegetated areas. They feed by attaching to animals and humans, sticking their mouthparts into the skin, and sucking blood for up to several days. Ticks can be vectors for disease, particularly Lyme disease. Ticks have four life cycle stages: egg, larva, nymph, and adult. Only the nymph and adult ticks can transmit the bacteria that eventually cause Lyme and other diseases (Lane, 2008).

There are 47 species of ticks in California, but only six species are known to commonly bite humans (Lane, 2008). Although the western black-legged tick (*Ixodes pacificus*) is the only species that carries the bacteria which cause Lyme disease, other diseases can be transmitted by the other human-biting ticks. For example, Rocky Mountain spotted fever can be transmitted by the American dog tick (*Dermacentor variabilis*) and the Rocky Mountain wood tick (*Dermacentor andersoni*). Bacteria causing Colorado tick fever and Tularemia can be transmitted by the Pacific Coast tick (*Dermacentor occidentalis*) (Lane, 1990).

² The Africanized honey bee is a cross-breed of the African honey bee and the European honey bee.

Liver flukes and conenose bugs exist throughout the Extended Study Area. Liver flukes infect mammals (both humans and animals) when the human/animal drinks contaminated water or ingests raw watercress or other aquatic plants that are contaminated with immature parasite larvae. The immature larval flukes migrate through the intestinal wall, the abdominal cavity, and the liver tissue into the bile ducts where they develop into mature adult flukes. The adult flukes lay eggs, which are passed out in the infected human/animal feces. The eggs hatch in fresh water and infect a snail host by penetrating its shell. The eggs develop within the snail and attach to aquatic plants, and the cycle continues (CDC, 2010).

Conenose bugs are also known as kissing bugs. They are a bloodsucking parasite of a wide variety of domestic and wild animals and humans. In California, these bugs are most prevalent in the foothill areas surrounding the Central Valley and in the foothills and desert areas of southern California. The only important species in California is the western bloodsucking conenose (*Triatoma protracta*). It lives in the nests of wood rats, but also flies into homes. The bites are not painful, but can produce an allergic reaction. Typically, bites occur at night while victims are sleeping (Greenberg and Klotz, 2002).

Rodents and Flies

Other vectors transmitting disease in the Extended Study Area include rodents and flies. Hantavirus Cardiopulmonary Syndrome Disease (HCSD) is a potentially fatal disease caused by the Sin Nombre virus, which can be carried by wild rodents. In California, only wild deer mice (*Peromyscus* spp.) carry the Sin Nombre virus. Because these deer mice are present throughout California, the California Department of Public Health routinely tests rodents for the presence of the virus. During 2011, although the virus was present in eight percent of the rodents tested (primarily in San Diego County), no cases of HCSD were reported (CDPH, 2012).

Plague is a bacterial disease caused by the bacterium *Yersinia pestis* and is transmitted by wild rodents. Humans can contract the disease if bitten by the fleas of an infected rodent, or through direct contact with a sick rodent. In California, the most common carriers of plague are ground squirrels, chipmunks, woodrats, and mice. The California Department of Public Health routinely tests rodents for the presence of antibodies to *Yersinia pestis*. During 2012, seven ground squirrels and 28 chipmunks tested positive for the antibodies. No human cases of plague were reported (CDPH, 2013).

Nuisance flies are insects that are annoying or can spread disease. All nuisance flies are of the Order Diptera and are found throughout California. Common nuisance flies include midges, house, deer, and horse flies. Flies become a problem when they congregate on dead animals, feces, or garbage, and then transfer pathogens to humans and animals (CDPH, 2010).

Rattlesnakes

The rattlesnake is California's only native venomous snake. California rattlesnake species include the western rattlesnake (*Crotalus oreganus*) found throughout California (with the exception of the desert), and the following species found in southern California: western diamondback (*Crotalus atrox*), sidewinder (*Crotalus cerastes*), speckled rattlesnake (*Crotalus mitchellii*), red diamond rattlesnake (*Crotalus ruber*), Mojave rattlesnake (*Crotalus scutulatus*), and the Panamint rattlesnake (*Crotalus stephensi*) (CDFG, 2012). In California, rattlesnakes are found from sea level to the inland prairies and desert areas and to the mountains at elevations of more than 10,000 feet (CDFW, 2013).

Most rattlesnakes forage for prey in or near brushy or tall grass areas, rock outcrops, rodent burrows, around and under surface objects, and sometimes in the open. Adults eat live prey, primarily rodents; the young take mostly lizards and young rodents (Salmon, et al., 2004). Rattlesnakes are generally not

aggressive, but will strike when threatened or deliberately provoked. Most snake bites occur on the hands, ankles, or feet when a rattlesnake is handled or accidentally touched by someone walking or climbing. Rattlesnakes cause serious injury to humans on rare occasions. In the United States, out of the approximately 800 rattlesnake bites reported annually, one to two are fatal. Most bites occur between the months of April and October (CDFW, 2013).

Poison Oak

Poison oak (*Toxicodendron diversilobum*), which can take the form of a shrub or climbing vine, is widespread in California and grows in a variety habitats. Direct contact with the oil from poison oak leaves or stems can cause an allergic skin reaction (dermatitis) in humans that typically lasts for 10 days. An allergic reaction can also occur through indirect contact with the plant, such as by touching contaminated clothing or pets. Poison oak is considered to be the most hazardous plant in California due to the number of working hours lost as a result of the dermatitis it causes (DiTomaso and Lanini, 2009).

Giardia and Swimmer's Itch

The vectors that transmit *Giardia* and Swimmer's Itch occur throughout the Extended Study Area. *Giardia* (also known as beaver fever, backpacker disease, and Giardiasis) is caused by the microscopic parasite *Giardia lamblia* and is considered to be one of the most common sources of waterborne illness. The parasite lives in the intestines of warm-blooded animals and is transmitted from host to host when it is ingested. The parasite attaches itself to the host's intestine and causes gastrointestinal symptoms that can last from two weeks to two months. *Giardia* is typically passed to humans when they drink surface water that is contaminated by grazing cattle or game animals (Hairston, No Date).

Swimmer's itch (also called cercarial dermatitis) is a rash that is caused by an allergic reaction to certain parasites (cercaria³) that infect some birds and mammals. The parasites are released from infected snails into fresh and salt water (including lakes, ponds, and oceans). If the parasite comes into contact with a swimmer, it burrows into the skin, causing an allergic reaction and rash. Swimmer's itch occurs more frequently during the summer months (CDC, 2012).

Appendix 28B describes vectors found within California and nuisance problems associated with them.

28.2.2 Secondary Study Area

28.2.2.1 Hazardous Materials

The Secondary Study Area also covers a large and diverse geographical area, and the causes of concern are similar to that described for the Extended Study Area. In addition, the hazardous material contamination issues noted in the Extended Study Area also relate to the Secondary Study Area and are discussed in detail below.

Dredging, Mining, and Mercury

Mercury contamination from the inorganic mercury used in historic gold mines represents a potential risk to human health and the environment. Inorganic mercury is converted by microorganisms in soil and sediments (in air or water) to organic methylmercury, which is a neurotoxin that attacks the central nervous system and causes numerous developmental and other problems. Methylmercury then bioaccumulates⁴ in

³ The free-swimming parasitic larva of a trematode worm.

⁴ The gradual build-up of toxins in an organism at levels higher than those that occur in the surrounding environment.

the food chain. High levels of methylmercury contamination in fish, amphibians, and invertebrates downstream of the hydraulic mines are a consequence of historic mercury use (USGS, 2000).

Mercury was a key element in the California Gold Rush because of its role in separating precious metals, such as gold and silver, from contaminants. The extensive panning activity along California's streams soon exhausted the readily available gold and led to the development of hydraulic mining. Hard rock mining and dredging was also initiated during this period. A significant step in all of these procedures involved the use of large quantities of mercury (UCD, 2010).

To enhance gold recovery from hydraulic mining, hundreds of pounds of liquid mercury were added to riffles and troughs in a typical sluice. The high density of mercury allowed gold and gold-mercury amalgam to sink while sand and gravel passed over the mercury and through the sluice. Large volumes of turbulent water flowing through the sluice caused many of the finer gold and mercury particles to wash through and out of the sluice before they could settle in the mercury-laden riffles. A modification known as an undercurrent reduced this loss. The finer grained particles were diverted to the undercurrent, where gold was amalgamated on mercury-lined copper plates. Most of the mercury remained on the copper plates; however, some was lost to the flowing slurry and was transported to downstream environments (USGS, 2000).

Loss of mercury in the mining process resulted in highly contaminated sediments at mine sites. Elevated mercury concentrations in present-day mine waters and sediments indicate that hundreds to thousands of pounds of mercury remain at each of the many sites affected by hydraulic mining (USGS, 2000).

Hydraulic mines were operated on a large scale from the 1850s to the 1880s in the northern Sierra Nevada region. In 1884, the Sawyer Decision prohibited discharge of mining debris in the Sierra Nevada region, but not in the Klamath-Trinity Mountains where hydraulic mining continued until the 1950s. Underground mining of placer deposits and of hard rock gold-quartz vein deposits produced most of California's gold from the mid-1880s to the early 1900s. Dredging of gold-bearing sediments in the Sierra Nevada foothills has been an important source of gold since the early 1900s (USGS, 2000).

The American, Bear, Yuba, and Feather River watersheds each have been affected by hydraulic mining. In the northwestern Sierra Nevada, the highest average levels of mercury bioaccumulation occur in the Bear River and South Yuba River watersheds (USGS, 2000).

Acid mine drainage is also an issue within the Secondary Study Area. In particular, the Iron Mountain Mine Superfund site in Shasta County continues to cause environmental concern. The Iron Mountain Mine operated within the Spring Creek watershed from the 1860s to the 1960s. The mine extracted iron, silver, gold, copper, zinc, and pyrite. This historic mining activity at the mine fractured the mountain, exposing minerals in the mountain to surface water, rain water, and oxygen. When pyrite is exposed to moisture and oxygen, sulfuric acid forms. The sulfuric acid flows through the mountain and leaches out copper, cadmium, zinc, and other heavy metals. Much of this acidic mine drainage ultimately is channeled into the Spring Creek Reservoir by creeks surrounding the mine. Reclamation periodically releases the stored acid mine drainage into Keswick Reservoir. Planned releases are timed to coincide with the presence of diluting releases of water from Shasta Dam. On occasion, uncontrolled spills and excessive waste releases have occurred when Spring Creek Reservoir reached capacity. Without sufficient dilution, this results in the release of harmful quantities of heavy metals into the Sacramento River. Since 1940, high levels of contamination in the Sacramento River have caused numerous fish kills. The low pH level and the heavy metal contamination from the mine have caused the virtual elimination of aquatic life

in sections of Slickrock Creek, Boulder Creek, and Spring Creek. The continuous release of metals from the mine has contributed to a steady decline in the fisheries population in the Sacramento River (USEPA, 2011).

Quarrying

Quarrying can substantially modify the routing of groundwater recharge, causing water quality degradation. Commonly, the first impact of quarrying is to remove the overlying vegetation and soil. In temperate areas, removing vegetation and soil reduces evapotranspiration and increases the effective rainfall. Unless measures are taken to control runoff and sedimentation, deterioration of groundwater is likely (USGS, 2001).

Engineering activities associated with quarrying can directly change the course of surface water. Sinkholes created by quarrying can intercept surface water flow. Groundwater pumping from quarries changes gaining streams (volume is contributed to by groundwater) to losing streams (volume decreases as it flows downstream), and can drain other nearby surface water features such as ponds and wetlands. Similarly, blasting can modify groundwater flow, which ultimately can modify surface water flow. Discharging quarry water into nearby streams can increase flood recurrence intervals (USGS, 2001).

The risk of groundwater pollution may increase if the direction of groundwater flow is modified. New source areas of recharge may be introduced, and those sources may contain contaminated water. This situation can arise because of groundwater pumping, or can occur if old choked passages are flushed and become operational again (USGS, 2001).

Railroads

Although rail transport is generally considered a safe form of shipment, there are various possibilities for accidents and breakdowns to occur. Trains are heavy, unable to deviate from the track, and require a great distance to stop. Accidents include derailments, head-on collisions with other trains, collisions with road vehicles, and hazardous material spills into waterways. Any train derailment that results in a release or threatened release of contaminants is considered a major hazardous material spill (NTSB, 2010).

Some historic railroad operations involved the use of chemicals that may have resulted in contamination. The most commonly reported contamination along rail lines includes metals, pesticides⁵ (such as lead arsenate), and constituents of oil or fuel (petroleum products). These chemicals have been associated with normal railroad operations and are likely to be found anywhere along the line. An example is arsenic (up to ten times natural background levels) may be present in the soil along a right-of-way from old railroad ties dipped in an arsenic solution, arsenic weed-control sprays, and arsenic-laced slag used as railroad bed fill. Lubricating oil and diesel that dripped from the trains are likely sources of the petroleum product found along the lines. Other sources of contaminants associated with historic railroad operation may include coal ash from engines, creosote from ties, and polynuclear aromatic hydrocarbons (“PAHs”) from the diesel exhaust (CMDEP, 2011).

Agriculture

Agriculture is a major land use in the Secondary Study Area, and a wide variety of crops are grown year-round. Long-term use of agricultural chemicals, including pesticides, herbicides, fertilizers, and crop-specific additives can lead to toxic buildup of residues in the soil (DWR, 2010).

⁵ The application of pesticides consistent with their labeling is excluded from the definition of a “release” under M.G.L. Chapter 21E.

Water Wells and Septic Systems

Communities in rural areas may rely on septic systems and water wells. Failure of septic systems can result in pollution of the soil and groundwater (Marin County, 2005). Abandoned, unsecured, or damaged underground water wells or piping systems can serve as a potential conduit for soil and groundwater contamination (DWR, 2010).

28.2.2.2 Wildland Fires

Similar to that described for the Extended Study Area, wildland fires within the Secondary Study Area also pose a hazard to rural and urban development, infrastructure, and natural resources. Based on a review of CAL FIRE's statewide map of fire hazard severity zones, the lands surrounding the waterbodies included within the Secondary Study Area are designated with a fire hazard severity ranging from moderate to very high. The lands surrounding Trinity Lake, Trinity River, Klamath River, Whiskeytown Lake, Lewiston Lake, Spring Creek, Clear Creek, Shasta Lake, and Keswick Reservoir are designated as very high risk for wildland fire (CAL FIRE, 2007a).

The lands surrounding the Sacramento River downstream of Shasta Dam, the Sutter Bypass, and the Yolo Bypass are largely unzoned for fire hazard, with intermittent areas designated as moderate risk for wildland fire. The lands surrounding Lake Oroville are designated as very high risk, and the lands surrounding the Feather River downstream of Oroville Dam are designated as high risk near the dam, and as moderate risk for the rest of the river. The lands surrounding Folsom Lake are designated as moderate risk for wildland fire, and the American River downstream of Folsom Dam is largely unzoned for fire hazard, with intermittent areas designated as moderate risk for wildland fire (CAL FIRE, 2007a).

The lands surrounding the Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay are mostly unzoned for fire hazard, with intermittent areas designated as moderate or high risk for wildland fire (CAL FIRE, 2007a).

All of these waterbodies are surrounded intermittently by identified communities at risk from wildfire. Numerous identified communities at risk from wildfire are located in the vicinity of Trinity Lake, Shasta Lake, and Lake Oroville (CAL FIRE, 2001).

28.2.2.3 Mosquitoes, Other Vectors, and Nuisance Problems

Because much of the Secondary Study Area is included within the Extended Study Area, the mosquito, other vectors, and nuisance problem concerns for the Extended Study Area are also applicable to the Secondary Study Area. The mosquito species that are found within the counties that comprise the Secondary Study Area are listed in Table 28-2.

**Table 28-2
Distribution of Mosquitoes in Counties that Comprise the Secondary Study Area**

County	Mosquito Species																														
	Aedes		Ochlerotatus							Anopheles					Culex							Culiseta			Others						
	hemiteleus	vexans	hicristatus	dorsalis	fitchii	hexodontus	Increpitus complex	melanimon	nigromaculis	sierrensis	squamiger	sticticus	franciscanus	freeborni	hermsi	occidentalis	punctipennis	apicalis	boharti	erthrothorax	Piapiens/quinque.	reevesi	stigmatosoma	tarsalis	territans	thriambus	incidens	inornata	particeps	Cq. perturbans	Cr. signifera
Del Norte	x		x			x			x			x	x		x	x	x	x	x		x	x	x			x	x	x	x		
Humboldt		x	x	x	x	x			x			x	x		x	x	x	x	x		x	x	x			x	x	x	x		
Marin			x	x		x		x	x	x		x	x		x	x	x	x	x	x	x	x		x		x	x	x			
San Francisco									x						x				x							x	x	x			
San Mateo			x	x		x			x	x		x	x	x	x	x	x	x	x	x	x	x				x	x	x			x
Sonoma			x	x		x	x	x	x	x		x	x		x	x	x	x	x	x		x	x		x	x	x	x			x
Trinity			x		x	x		x	x			x	x			x	x	x				x	x	x		x	x	x	x		
Yuba		x				x	x	x	x		x	x				x	x	x	x	x	x	x	x	x		x	x	x	x	x	x

Note:

See Table 28-1 for 14 additional counties that are located within the Secondary Study Area.

Source: MVCAC, 2003.

28.2.3 Primary Study Area

28.2.3.1 Hazardous Materials

Hazardous material contamination issues noted in the Extended and Secondary study areas may also apply to the Primary Study Area, depending upon proximity. There are no designated Superfund or Brownfields sites located within the Primary Study Area. Hazardous material contamination issues specific to the Primary Study area are discussed below.

Environmental Contamination Assessment Methodology

Assessing environmental contamination within a property can be accomplished through the Phase I Environmental Site Assessment process. Phase I Environmental Site Assessments are performed in conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) E1527-05 standard practice and the requirements set forth in Title 40, Part 312 of the Code of Federal Regulations (CFR).

The purpose of a Phase I Environmental Site Assessment, as specified by ASTM E1527-05 standard practice is to identify “recognized environmental conditions”. This standard defines the term “recognized environmental conditions” as:

“...the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with laws...The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate government agencies” (ASTM, 2005).

The Phase I Environmental Site Assessment process includes information obtained from the following activities: a site reconnaissance, historical review of land use, review of land title records, consultation with local environmental health officials, contact with the land owners, review of available maps and records, and review of federal and State environmental databases (ASTM, 2005).

A review of federal and State databases can be accomplished through an environmental database search. BBL Environmental Information was contracted to conduct a database search for the Primary Study Area. The resulting report identified reported sources of hazardous materials contamination existing within the footprints of Project features.

Only the database portion of the Phase I process was conducted for this DEIR/EIS. A full Phase I Environmental Site Assessment would be conducted prior to property acquisition and would be presumed to be valid for 180 days. After that period, it should not be used without a current investigation of conditions likely to affect recognized environmental conditions on the property, which may have changed materially since the assessment was first conducted (ASTM, 2005).

Database Search Methodology

A record search determines if any reported sources of hazardous materials contamination exists within an approximate minimum search distance (ASTM, 2005). An extensive list of federal, State, and local

regulatory agencies' published databases was reviewed; a complete listing of the records is included in Appendix 28C.

A standard ASTM record search uses a one-mile radial search from the center of a property, but because of the large size and irregular shape of the Primary Study Area, modified search patterns were performed.

To ensure complete coverage of the locations of all of the proposed Primary Study Area Project facilities, the record search was divided into two separate reports: the Sites Reservoir Environmental Record Search Report and the Funks Reservoir/Delevan Pipeline Environmental Record Search Report⁶ (Appendix 28C). All Primary Study Area Project facilities were included in the database record searches, with the exception of the GCID Canal Facilities Modifications.

Database Search Results

The sites identified in the record search reports as having known environmental concerns are discussed below and identified by their respective Environmental Record Search Report map ID number. All other sites with operating permits are included only in the full record search reports (Appendix 28C).

Sites Reservoir and Related Project Facilities

Sixteen records were identified in the Sites Reservoir Report (Appendix 28C), representing 15 separate sites. Ten sites have operating permits. The remaining five sites have environmental concerns and are mentioned below.

Four sites were identified from the Mineral Industry Location System (MILS), a database maintained by the U.S. Bureau of Mines. The MILS covers over 200,000 mineral occurrences, deposits, mines, and processing plants in the U.S. The information is used to support government agencies that have land use planning responsibilities. These agencies look to the Bureau of Mines both for mineral resource assessments and for help identifying and remediating inactive and abandoned mine hazards.

- Map ID 2: An unnamed location and operation, but identified chromium as a commodity. The closest Project facility is the proposed South Bridge west approach road on the west side of the proposed Sites Reservoir. The site is located outside of the proposed Project Buffer.
- Map ID 4: Sandstone Company Quarry, a surface operation producing sand and gravel. The closest Project facility is the proposed Com Road on the eastern border of the proposed Sites Reservoir. The site is located outside of the road right-of-way.
- Map ID 6: McGilvray Quarry, a surface operation producing sand and gravel that is closed. The quarry is located on the eastern border of the proposed Sites Reservoir, between Maxwell Sites Road, the proposed Sulphur Gap Road, and the proposed Com Road. The site is located outside of the road right-of-way.
- Map ID 7: Talbot, an underground operation producing stone. The closest Project facility is the proposed Saddle Dam 6 on the northern border of the proposed Sites Reservoir. This site is located within the proposed Project Buffer.

⁶ Some overlap may occur between the two reports.

One site was identified from the Emergency Response Notification System (ERNS), a national computer database used to store information on unauthorized releases of oil and hazardous substances. There were two incidences where unauthorized releases of oil and hazardous substances occurred at this site.

- Map ID 8: Delevan Compressor Station, located at 5001 Delevan Road in Maxwell, California. On June 24, 2007, 250 gallons of turbine oil were released from a gas turbine onto a concrete structure because of equipment failure. On May 2, 2005, 220 gallons of turbine oil were released into a secondary containment area because of a broken hydraulic pipe. Cleanup was completed. The western end of the proposed Delevan Pipeline and the Terminal Regulating Reservoir (TRR) facilities are located in proximity to this identified site.

Funks Reservoir and Related Project Facilities

Fifty records were identified in the Funks Reservoir and Delevan Pipeline Report (Appendix 28C), representing 46 separate sites. Thirty-six sites are identified as having operating permits. The remaining 10 sites have known environmental concerns, but only three are located within the search boundaries. These three sites are discussed below and identified by their Environmental Record Search Report map ID number.

The following sites were identified from MILS and ERNS, respectively:

- Map ID 2: Compton Landing, an unnamed operation in Colusa, California, lists its commodity as natural gas. The closest Project facilities are the proposed Delevan Pipeline Intake Facilities and Delevan Pipeline Discharge Facility at the eastern end of the proposed Delevan Pipeline.
- Map ID 21: An unnamed site at McDermott and Delevan roads in Delevan, California. A spill of 20 percent aqua ammonia (unknown quantity) occurred into an irrigation canal from an overturned truck. The spill date is unknown. The closest Project facilities are the western portion of the proposed Delevan Pipeline and the TRR facilities.

The site mentioned below was listed in the Toxic Releases database. The California RWQCBs or local Department of Health Services tracks toxic releases to the environment. These lists are known as Unauthorized Releases, Spills, Leaks, Investigations, and Cleanups (SLIC), Non-Tank Releases, Toxics List or similar, depending on the local agency.

- Map ID 16: JR Simplot Soil Builders, located on old Highway 99 at Lenahan Road in Maxwell, California. No additional information regarding type of incident was available. Status is inactive. The nearest Project facility is the proposed Delevan Pipeline.

Numerous permitted Underground Storage Tanks (USTs) were identified in the two record search reports. Three USTs were found within the footprint of the proposed Sites Reservoir. Not all UST locations are known. In addition, there is the possibility of unidentified USTs because of the remote location and history of agricultural activity in the area.

The town of Sites is located within the proposed footprint of Sites Reservoir. Existing residences, outbuildings, and roads are associated with the town. No site reconnaissance was conducted for this analysis to assess the potential hazardous material concerns related to these structures; therefore, further investigation is recommended prior to property acquisition. Hazardous material concerns within the Primary Study Area that were not identified through the BBL record search include septic systems, water

wells, a railroad, a quarry, and agricultural activity. The potential hazards associated with these issues are discussed in Section 28.2.2.1.

Hazardous material concerns within the Primary Study Area not documented in the BBL reports include historic salt mining and oil wells. Salt mining occurred in the Antelope Valley beginning in the 1860s and continued until 1900. In addition, oil was discovered in the spring of 1865 in Colusa County. Several test wells were drilled in the area, but did not prove profitable.

Arsenic is also a hazardous material concern not identified in the BBL reports. High arsenic levels have been found in areas located within the Primary Study Area. Salt Lake, which is located within the northeastern portion of the Sites Reservoir footprint (inundation area), has high arsenic levels. Funks Creek and Stone Corral Creek have levels of arsenic that exceed the California Public Health Goal, but meet the USEPA arsenic rule. Water samples from the T-C Canal and GCID Canal intakes, the Colusa Basin Drain, and from the Sacramento River near Moulton Weir exceed the human toxicity criteria for arsenic.

28.2.3.2 Wildland Fires

Wildland fires within the Primary Study Area pose a hazard to rural development, infrastructure, and natural resources. The lands surrounding the proposed TRR Pipeline, TRR and associated facilities, Delevan Pipeline Electrical Switchyard, Delevan Pipeline, and Delevan Pipeline Intake/Discharge facilities, which are intensively managed agricultural lands, are unzoned for fire hazard. The lands surrounding the locations of the proposed GCID Canal Facilities Modifications are also unzoned for fire hazard. The remaining proposed Project facilities within the Primary Study Area are surrounded by lands designated as moderate risk for wildland fire (CAL FIRE, 2007b).

The identified community at risk for wildfire that is located closest to the defined Primary Study Area is the town of Lodoga (CAL FIRE, 2001).

28.2.3.3 Mosquitoes and Other Vectors

Mosquitoes

Mosquito species found in Glenn and Colusa counties are listed in Table 28-3.

**Table 28-3
Distribution of Mosquitoes in Counties that Comprise the Primary Study Area**

County	Mosquito Species																		
	Aedes	Ochlerotatus						Anopheles			Culex						Culiseta		
	vexans	dorsalis	Increpitus	melanimon	nigromaculis	sierrensis	sticticus	franciscanus	freeborni	punctipennis	apicalis	boharti	erythrothorax	pipiens/quinque	stigmatosoma	tarsalis	thriambus	incidens	inornata
Colusa	x	x	x	x	x	x	x	x	x	x			x	x	x	x		x	x
Glenn	x			x	x	x		x	x		x	x	x	x	x	x	x	x	x

Source: MVCAC, 2003.

Appendix 28B describes these mosquito species, their season of activity, preferred host, and habitat, as well as several mosquito-borne diseases.

Other Vectors and Nuisance Problems

Stinging Insects, Ticks, Liver Flukes, Conenose Bugs, Rodents, Rattlesnakes, Flies, Poison Oak, Giardia, and Swimmer's Itch

The western yellowjacket and the German yellowjacket, as well as the European honeybee, inhabit Glenn and Colusa counties. Stinging ants are also a concern in Glenn and Colusa counties, particularly the red imported fire ant.

The Pacific Coast tick, the American dog tick, and the western black-legged tick inhabit Glenn and Colusa counties (Cavier Jr., 2004; Kiely, 2004). Ticks were incidentally observed during Project field surveys.

As indicated previously, in California, only wild deer mice carry the Sin Nombre virus. Deer mice are present in Glenn and Colusa counties, but of the rodents tested in the fall and winter of 2011, there were no cases of the Sin Nombre virus antibodies present (CDPH, 2012). Deer mice were captured during Project field surveys in annual grassland, oak woodland, riparian, and chaparral habitat.

The California ground squirrel, which as indicated previously can carry plague, was observed during Project field surveys throughout the Primary Study Area in annual grassland and oak woodland habitat.

Western rattlesnakes were also frequently observed during Project field surveys in annual grassland and oak woodland habitats.

All nuisance flies are found throughout California. The olive fruit fly is common in areas where olive trees are abundant, such as in the orchards in Glenn and Colusa counties. Although these flies are not known to transmit disease, they can damage the olive fruit and make it unusable for commercial olive oil and olive production (CDPH, 2010).

Poison oak was observed in the Primary Study area during Project field surveys, typically associated with oak woodland and riparian habitat.

Giardia occurs within Glenn and Colusa counties. During Project field surveys, a beaver dam was observed along Funks Creek immediately downstream of the existing Funks Reservoir. Liver flukes, conenose bugs, and the parasites that cause Swimmer's Itch also occur within Glenn and Colusa counties. Appendix 28B describes these vectors and the nuisance problems associated with them.

28.3 Environmental Impacts/Environmental Consequences

28.3.1 Regulatory Setting

Hazardous materials and other environmental hazards are regulated at the federal, State, and local levels. Provided below is a list of the applicable regulations. These regulations are discussed in detail in Chapter 4 Environmental Compliance and Permit Summary of this DEIR/EIS.

28.3.1.1 Federal Plans, Policies, and Regulations

- Clean Water Act
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as Amended
- Federal Insecticide, Fungicide, and Rodenticide Act of 1996
- Safe Drinking Water Act (Underground Injection Control) of 1974, as Amended
- Hazardous Materials Transportation Act of 1975
- Resource Conservation and Recovery Act of 1976, as Amended

PRELIMINARY – SUBJECT TO CHANGE

- Toxic Substances Control Act of 1976

28.3.1.2 State Plans, Policies, and Regulations

- California Safe Drinking Water Act
- California Hazardous Substances Account Act of 1999
- California Land Reuse and Revitalization Act of 2004
- California Underground Storage Tank Program
- Aboveground Petroleum Storage Act of 2007
- Toxic Injection Well Control Act of 1985
- Safe Drinking Water and Toxics Enforcement Act
- California Hazardous Waste Control Act
- California Integrated Waste Management Board Solid Waste Program
- Hazardous Materials Release Response Plans and Inventory
- State Board Resolution Number 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges
- Mosquito Abatement Act of 1915
- California Health and Safety Code: Division 3, Chapter 1, Article 4, Sections 2040, 2041, 2060-2065 (Mosquito and Vector Control District Law)
- California Government Code: Title 3, Division 2, Part 2, Chapter 8, Article 3, Section 25842.5
- California Mosquito-Borne Virus Surveillance and Response Plan

28.3.1.3 Regional and Local Plans, Policies, and Regulations

- Glenn County General Plan
- Colusa County General Plan

28.3.2 Evaluation Criteria and Significance Thresholds

Significance criteria represent the thresholds that were used to identify whether an impact would be significant. Appendix G of the *CEQA Guidelines* suggests the following evaluation criteria for hazards and hazardous materials:

Would the Project:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

- Be located on a site, which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment?
- Result in a safety hazard for people residing or working in the Project area (for a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport)?
- Result in a safety hazard for people residing or working in the Project area (for a project within the vicinity of a private airstrip)?
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
- Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The evaluation criteria used for this impact analysis represent a combination of the Appendix G criteria and professional judgment that considers current regulations, standards, and/or consultation with agencies, knowledge of the area, and the context and intensity of the environmental effects, as required pursuant to NEPA. For the purposes of this analysis, an alternative would result in a significant impact if it would result in any of the following:

- Create a significant public or environmental hazard from the routine transport, use, or disposal of hazardous materials.
- Create a significant public or environment hazard from the release of hazardous materials into the environment.
- Effects from hazardous emissions or hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- Create a significant hazard to the public or the environment from the Project being located on a listed hazardous materials site.
- Effects on adopted emergency response plan or emergency evacuation plan implementation.
- Expose people or structures to a significant risk of loss, injury, or death from wildland fires.
- Create a safety hazard for people residing or working in the Project area (if located within an airport land use plan, or within two miles of a public airport or public use airport if no plan has been adopted).
- Create a safety hazard for people residing or working in the Project area (if located within the vicinity of a private airstrip).

In addition to addressing the impacts listed above, this chapter also evaluates the public health hazards from mosquitoes, other vectors, and nuisance problems. For the purposes of this analysis, an alternative would result in a significant impact if it would result in any of the following:

PRELIMINARY – SUBJECT TO CHANGE

- Expose people to an increased risk of mosquito-borne or other vector-borne illnesses, or increased exposure to nuisance problems.

28.3.3 Impact Assessment Assumptions and Methodology

28.3.3.1 Assumptions

The following assumptions were made regarding Project-related construction, operation, and maintenance impacts to public health and environmental hazards:

- Direct Project-related construction, operation, and maintenance activities would occur in the Primary Study Area.
- Direct Project-related operational activities would occur in the Secondary Study Area.
- The only direct Project-related construction activity that would occur in the Secondary Study Area is the installation of an additional pump into an existing bay at the Red Bluff Pumping Plant.
- The only direct Project-related maintenance activity that would occur in the Secondary Study Area is the sediment removal and disposal at the two intake locations (i.e., GCID Canal Intake and Red Bluff Pumping Plant).
- No direct Project-related construction or maintenance activities would occur in the Extended Study Area.
- Direct Project-related operational effects that would occur in the Extended Study Area are related to San Luis Reservoir operation; increased reliability of water supply to agricultural, municipal, and industrial water users; and the provision of an alternate Level 4 wildlife refuge water supply. Indirect effects to the operation of certain facilities that are located in the Extended Study Area, and indirect effects to the consequent water deliveries made by those facilities, would occur as a result of implementing the alternatives.
- The existing bank protection located upstream of the proposed Delevan Pipeline Intake/Discharge facilities would continue to be maintained and remain functional.
- No additional channel stabilization, grade control measures, or dredging in the Sacramento River at or upstream of the Delevan Pipeline Intake or Discharge Facilities would be required.

28.3.3.2 Methodology

Hazardous Materials and Wildland Fires

Identification of existing hazardous material contamination at Project facility locations was conducted by reviewing a list of federal, State, and local regulatory agencies' published databases and comparing that information to the Project's footprint.

A review of Fire Hazard Severity Zones (CAL FIRE, 2001, 2007a, and 2007b) was conducted to determine wildland fire safety hazards.

A review of County Zoning Maps (Glenn County, 2006 and Colusa County, 2011) was conducted to determine airport zones within the Primary Study Area.

Mosquitoes, Other Vectors, and Nuisance Problems

The evaluation of potential impacts to the public's health from the possible exposure to mosquitoes or other vectors and their associated ailments, as well as to nuisance problems due to implementation of the Project, was a multi-step process and included the following:

- Determining the types of vector habitats that would be created from the Project facilities
- Determining at which Project facilities the public would have access to those vector habitats, or to habitats that support nuisance species
- Assessing whether the public's exposure to such vector or nuisance species habitats would result in a significant impact

28.3.4 Topics Eliminated from Further Analytical Consideration

Within the Extended and Secondary study areas, no Project-related activities would expose people residing or working in the vicinity of the Project facilities to an aircraft safety hazard because of the distance of existing public airports or private airstrips to the Project facilities. Therefore, potential impacts related to aircraft safety hazards (**Impact Pub Health-7** and **Impact Pub Health-8**) are not discussed further for these two study areas.

Within the Primary Study Area, a public airport is located near the proposed modifications to the GCID Canal Facilities. Potential impacts related to aircraft safety hazards (**Impact Pub Health-7**) are discussed for that Project facility only. There are no private airstrips in the vicinity of the Primary Study Area facilities. Therefore, potential impacts related to private airstrip safety hazards (**Impact Pub Health-8**) are not discussed further for this study area.

28.3.5 Impacts Associated with the No Project/No Action Alternative

28.3.5.1 Hazardous Materials and Wildland Fires

Extended, Secondary, and Primary Study Areas – No Project/No Action Alternative

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, Wildlife Refuge Water Use, San Luis Reservoir, Trinity Lake, Lewiston Lake, Trinity River, Klamath River downstream of the Trinity River, Whiskeytown Lake, Spring Creek, Shasta Lake, Sacramento River, Keswick Reservoir, Clear Creek, Lake Oroville, Thermalito Complex (Thermalito Diversion Pool, Thermalito Forebay, and Thermalito Afterbay), Feather River, Sutter Bypass, Yolo Bypass, Folsom Lake, Lake Natoma, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay

Impact Pub Health-1: Create a Significant Public or Environmental Hazard from the Routine Transport, Use, or Disposal of Hazardous Materials

The No Project/No Action Alternative includes implementation of projects and programs being constructed, or those that have gained approval as of June 2009. The impacts of these projects have already been evaluated on a project-by-project basis, pursuant to CEQA and/or NEPA, and their potential for impacts due to hazardous materials has been addressed in those environmental documents. Therefore, **there would not be a substantial adverse effect** related to the transport, use, or disposal of hazardous materials, when compared to Existing Conditions.

Population growth is expected to occur in California throughout the period of Project analysis (i.e., 100 years), and is included in the assumptions for the No Project/No Action Alternative. A larger

population could be expected to increase the potential for hazardous materials spills/accidents as urban growth moves out into the undeveloped vegetated areas of the state. These impacts that could occur as a result of the increased population would be managed at the local level (e.g., cities and counties) in accordance with those agencies' regulations. Therefore, **there would not be a substantial adverse effect**, when compared to Existing Conditions

In addition, projects considered within the No Project/No Action Alternative are not located within the Primary Study Area and therefore **would not have a substantial adverse effect** related to the transport, use, or disposal of hazardous materials, when compared to Existing Conditions.

Impact Pub Health-2: Create a Significant Public or Environmental Hazard from the Release of Hazardous Materials into the Environment

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to the release of hazardous materials into the environment.

Impact Pub Health-3: Effects from Hazardous Emissions or Hazardous Materials, Substances, or Wastes within 0.25 Mile of an Existing or Proposed School

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to hazardous emissions, materials, substances, or wastes in the vicinity of a school.

Impact Pub Health-4: Create a Significant Hazard to the Public or the Environment from the Project being Located on a Listed Hazardous Materials Site

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to Projects being located on a listed hazardous materials site.

Impact Pub Health-5: Effects on Adopted Emergency Response Plan or Emergency Evacuation Plan Implementation

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to effects on emergency response or evacuation plan implementation.

Impact Pub Health-6: Expose People or Structures to a Significant Risk of Loss, Injury, or Death from Wildland Fires

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to wildland fire risk.

28.3.5.2 Mosquitoes, Other Vectors, and Nuisance Problems

Extended, Secondary, and Primary Study Areas – No Project/No Action Alternative

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, Wildlife Refuge Water Use, San Luis Reservoir, Trinity Lake, Lewiston Lake, Trinity River, Klamath River downstream of the Trinity River, Whiskeytown Lake, Spring Creek, Shasta Lake, Sacramento River, Keswick Reservoir, Clear Creek, Lake Oroville, Thermalito Complex (Thermalito Diversion Pool, Thermalito Forebay, and Thermalito Afterbay), Feather River, Sutter Bypass, Yolo Bypass, Folsom Lake, Lake Natoma, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay

Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems

The No Project/No Action Alternative includes implementation of projects and programs being constructed, or those that have gained approval as of June 2009. The impacts of these projects have already been evaluated on a project-by-project basis, pursuant to CEQA and/or NEPA, and their potential for impacts from mosquitoes, other vectors, and nuisance problems has been addressed in those environmental documents. Therefore, **there would not be a substantial adverse effect** from mosquito or vector populations, habitat, and the spread of mosquito- or vector-borne illnesses, or an exposure to nuisance problems, when compared to Existing Conditions.

Population growth is expected to occur in California throughout the period of Project analysis (i.e., 100 years), and is included in the assumptions for the No Project/No Action Alternative. A larger population and its associated additional residential, commercial, and industrial development could be expected to cause more standing water and other conditions considered favorable to mosquitoes and other vectors, and could create habitat that supports nuisance species.

There are currently many areas within the Extended, Secondary, and Primary study areas where favorable conditions exist for mosquitoes and other vectors. The 1915 Mosquito Abatement Act allowed for communities to form Mosquito and Vector Control Districts, and the subsequent passage of the Mosquito and Vector Control District Law provided the authority to county agencies to implement surveillance and abatement programs to control mosquito and other vector populations. Thus, many counties within the three study areas have extensive mosquito and vector control programs in place. If the No Project/No Action Alternative is implemented, **there would not be a substantial adverse effect** from mosquito or vector populations, habitat, the spread of mosquito- or vector-borne illnesses, or an exposure to nuisance problems when compared to Existing Conditions, because these mosquito and vector control programs are expected to remain in place.

It is possible, however, that private landowners within the three study areas could ignore existing control practices and create conditions (such as stagnant stock ponds) that may cause an increase in mosquito or other vector populations. This increase, in turn, may create new demands on existing mosquito and vector control program resources. In such cases, the local county agencies have the authority to leverage fines on the non-compliant landowners to recover costs of abatement programs on a case-by-case basis (CDPH, 2005). Therefore, **there would not be a substantial adverse effect**, when compared to Existing Conditions.

In addition, projects included in the No Project/No Action Alternative are not located within the Primary Study Area and therefore **would not have a substantial adverse effect** to/from mosquitoes or vector

populations, habitat, and the spread of mosquito- or vector-borne illnesses, or from increased exposure to nuisance problems, when compared to Existing Conditions.

28.3.6 Impacts Associated with Alternative A

28.3.6.1 Hazardous Materials and Wildland Fires

Extended Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Agricultural Water Use, Municipal and Industrial Water Use, Wildlife Refuge Water Use, and San Luis Reservoir

Impact Pub Health-1: Create a Significant Public or Environmental Hazard from the Routine Transport, Use, or Disposal of Hazardous Materials

Because there would be no direct Project-related construction or maintenance occurring in the Extended Study Area, there would be no direct or indirect impacts on public health related to hazardous materials in the Extended Study Area. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Although there are no direct Project-related construction or maintenance activities that would occur in the Extended Study Area, there would be operational activities. Project operations would result in increased water fluctuations at San Luis Reservoir, increased water supply reliability to agriculture, municipal, and industrial users, and an alternate water supply for wildlife refuge use. The increased water level fluctuations at San Luis Reservoir would be within the historic range of the reservoir's fluctuations, and the wildlife refuges would receive water from the Project only as an alternate source. These changes would not be associated with or have an effect on hazardous waste transport, use, or disposal. Similarly, the expected small increase in municipal and industrial water supply reliability would not be expected to affect hazardous waste transport, use, or disposal. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

It is possible that increased agricultural water supply reliability, associated with proposed Project operations, would have the potential to change cropping patterns, such as from annual crops to orchards. This change in cropping patterns could result in differing amounts and types of pesticides used. However, modeling results show that the potential effects of increased water supply reliability would be small, and would not occur on a large enough scale that would be expected to have a substantial effect on pesticide use patterns for agriculture. These Project operations are not expected to create a hazard, resulting in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-2: Create a Significant Public or Environmental Hazard from the Release of Hazardous Materials into the Environment

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to the release of hazardous materials into the environment.

Impact Pub Health-3: Effects from Hazardous Emissions or Hazardous Materials, Substances, or Wastes within 0.25 Mile of an Existing or Proposed School during Project Construction, Operation, or Maintenance

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to hazardous emissions, materials, substances, or wastes in the vicinity of a school.

Impact Pub Health-4: Create a Significant Hazard to the Public or the Environment from the Project being Located on a Listed Hazardous Materials Site

No Project-related construction would occur in the Extended Study Area. Consequently, no listed hazardous materials sites would be affected. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-5: Effects on Adopted Emergency Response Plan or Emergency Evacuation Plan Implementation

There would be no direct Project-related construction or maintenance occurring in the Extended Study Area. Operation at San Luis Reservoir would be modified to accommodate the proposed Project operation, which would result in more frequent and larger surface water elevation fluctuations at the reservoir than currently occurs there. The ability of emergency responders to respond to future emergencies or evacuations is not expected to change from existing conditions as a result of those changes in operations. Increased water supply reliability to agricultural, municipal, and industrial users, as well as an alternate supply of wildlife refuge water, would have no effect on emergency response or evacuation plans. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-6: Expose People or Structures to a Significant Risk of Loss, Injury, or Death from Wildland Fires

Operations at San Luis Reservoir would be modified with implementation of Alternative A, but would not be expected to change any existing wildland fire risk to people and structures at the reservoir. Similarly, increased water supply reliability to agricultural, municipal, and industrial users, as well as an alternate supply of wildlife refuge water, would not change existing wildland fire risk. Operational changes within the Extended Study Area would, therefore, result in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Trinity Lake, Lewiston Lake, Trinity River, Klamath River downstream of the Trinity River, Whiskeytown Lake, Spring Creek, Shasta Lake, Sacramento River, Keswick Reservoir, Clear Creek, Lake Oroville, Thermalito Complex (Thermalito Diversion Pool, Thermalito Forebay, and Thermalito Afterbay), Feather River, Sutter Bypass, Yolo Bypass, Folsom Lake, Lake Natoma, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay

Impact Pub Health-1: Create a Significant Public or Environmental Hazard from the Routine Transport, Use, or Disposal of Hazardous Materials

The only direct Project-related construction that would occur in the Secondary Study Area is the installation of an additional pump into an existing bay at the Red Bluff Pumping Plant. The installation of the pump and its associated operation and maintenance, as well as the maintenance activities at the canal

intakes, would require the use of limited quantities of hazardous materials, such as fuels, oils, grease, and lubricants. Maintenance and repair of the equipment would be completed at the facility site, or the equipment would be transported to nearby facilities.

The only direct Project-related maintenance activity that would occur in the Secondary Study Area is the removal of sediment from the existing canal intakes. Sediment removal has the potential to accidentally release hazardous materials.

The use, storage, handling, or disposal of hazardous materials could result in hazardous releases from equipment or through other means during construction, operation, or maintenance, thereby exposing workers to hazardous materials. There could also be accidental releases of hazardous materials that would contaminate soil or degrade water quality. The potential release of hazardous materials during construction, operation, or maintenance activities would be a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Project operation could affect the flow regime of all of the streams, or the storage conditions of all of the reservoirs, included in the Secondary Study Area. However, the primary hazardous material issue of concern in this study area is the acid mine runoff from the Iron Mountain Mine Superfund site in the Spring Creek watershed. Historical gold mining and associated mercury contamination in the environment are also hazardous material concerns in this area, as well as in the other watersheds within the Secondary Study Area. Project operational modeling indicates no change in Spring Creek Reservoir water levels or releases, or in Spring Creek dilution flows. Because no Project construction would occur in this area, no Project-related soil or sediment disturbance would occur. As a result, the existing risk of soil and sediment contamination would not change from what currently occurs, resulting in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-2: Create a Significant Public or Environmental Hazard from the Release of Hazardous Materials into the Environment

Refer to the **Impact Pub Health-1** discussion. The discussion also applies to the release of hazardous materials into the environment.

Impact Pub Health-3: Effects from Hazardous Emissions or Hazardous Materials, Substances, or Wastes within 0.25 Mile of an Existing or Proposed School

No Project construction, operation, or maintenance activities would occur within 0.25 mile of a school site in the Secondary Study Area, resulting in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-4: Create a Significant Hazard to the Public or the Environment from the Project being Located on a Listed Hazardous Materials Site

No Project construction, operation, or maintenance activities would occur on a site in the Secondary Study Area that is included on any list of hazardous materials sites, including the list compiled pursuant to Government Code Section 65962.5. Therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-5: Effects on Adopted Emergency Response Plan or Emergency Evacuation Plan Implementation

Operational changes in the flow regime or storage conditions of the waterbodies included in the Secondary Study Area would not significantly impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. There would, therefore, be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Installation of the pump at the Red Bluff Pumping Plant would require few vehicles and equipment, and its construction period would be short; therefore, it is not expected to significantly affect emergency response or evacuation procedures in that area. Similarly, its regular and routine maintenance activities are also expected to require few vehicles and take a short time to complete. This would result in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-6: Expose People or Structures to a Significant Risk of Loss, Injury, or Death from Wildland Fires

Operational changes in the flow regime or storage conditions of the waterbodies included in the Secondary Study Area would not be expected to expose people or structures to wildland fires, and would, therefore, have **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Pump installation and its associated operation and maintenance at the Red Bluff Pumping Plant would not be expected to expose people or structures to risks associated with wildland fires because the pump would be installed in an existing developed plant, resulting in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

All Primary Study Area Project Facilities

Impact Pub Health-1: Create a Significant Public or Environmental Hazard from the Routine Transport, Use, or Disposal of Hazardous Materials

Project construction activities at all Primary Study Area Project facility sites have the potential to accidentally release hazardous materials during implementation of Alternative A.

In addition, Project maintenance activities would require the use of hazardous materials, such as fuels, oils, grease, and lubricants. Maintenance and repair of the equipment would be completed at the project facility site, or the equipment would be transported to nearby facilities.

The use, storage, handling, or disposal of hazardous materials could result in hazardous releases from equipment or through other means during Project construction and/or maintenance activities, thereby exposing workers to hazardous materials. There could also be accidental releases of hazardous materials that would contaminate soil or degrade water quality. The potential release of hazardous materials during construction, operation, or maintenance activities would be a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-2: Create a Significant Public or Environmental Hazard from the Release of Hazardous Materials into the Environment

Refer to the Impact **Pub Health-1** discussion. The discussion also applies to the release of hazardous materials into the environment.

Impact Pub Health-3: Effects from Hazardous Emissions or Hazardous Materials, Substances, or Wastes within 0.25 Mile of an Existing or Proposed School

No Project construction, operation, or maintenance activities would occur within 0.25 mile of a school site, resulting in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-4: Create a Significant Hazard to the Public or the Environment from the Project being Located on a Listed Hazardous Materials Site

The results of the agency database review indicate that no Project construction, operation, or maintenance activities would occur on a site that is included on any list of hazardous materials sites, including the list compiled pursuant to Government Code Section 65962.5.

It is possible that not all septic tanks, water wells, underground storage tanks, or other underground storage devices or conveyance systems have been identified on the published databases. These systems are considered as potential conduits for groundwater contamination. It is also possible that not all hazardous spills within the Primary Study Area were reported.

Although there would be no impact due to Project facilities being located on a listed hazardous materials site, there is the potential for Project facilities to be located near unlisted septic tanks, water wells, other underground storage devices, or unreported hazardous spills. Therefore, there would be a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-5: Effects on Adopted Emergency Response Plan or Emergency Evacuation Plan Implementation

Project construction equipment and materials would be transported on local roads to access the proposed Project facilities, with many over-sized Project vehicles traveling on the roads. This may result in a reduction in travel speeds on those roads throughout the Project construction period. In addition, some road closures and detours would be necessary during the Project construction period. This would result in a **potentially significant impact** on emergency and/or evacuation response if an emergency occurred in the vicinity of a Project facility during the Project construction period, when compared to Existing Conditions and the No Project/No Action Alternative.

Project operation is expected to increase traffic on local roads leading to the proposed recreation areas at the proposed Sites Reservoir. Sites Reservoir is expected to generate 360,975 Recreation Visitor Days (RVDs⁷) per year during the operation of Sites Reservoir. Therefore, the expected increased traffic on Maxwell Sites Road and County Roads 68, 69, and D during Project operation (primarily Fridays through Sundays during the recreation season⁸) would result in a **significant impact** on emergency and/or

⁷ An RVD is defined as a recreation visit by one person for part or all of one day.

⁸ The recreation season is typically defined as Memorial Day through Labor Day.

evacuation response at/near existing residences in the vicinity of Sites Reservoir during that time, when compared to Existing Conditions and the No Project/No Action Alternative.

Adding a recreation destination (Sites Reservoir) to the area is expected to increase the number of people in that area during the recreation season. An increase in the number of people in that area has the potential to increase the need for emergency and/or evacuation response, resulting in a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative, although it is acknowledged that Colusa and/or Glenn County may be able to request mutual aid from other jurisdictions, including nearby cities, counties, the California OES, and ultimately, the Federal Emergency Management Agency (FEMA) if a catastrophic event occurred.

In addition, operation and maintenance of all Project facilities would increase traffic on local roads to the individual Project facilities when regular and routine tasks are scheduled to be performed. However, these activities are expected to be performed by a few trained individuals with few vehicles and equipment, resulting in a **less-than-significant impact** on emergency and evacuation response in the areas near Project facilities, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-6: Expose People or Structures to a Significant Risk of Loss, Injury, or Death from Wildland Fires

The vegetation within the Primary Study Area creates an existing risk of fire hazard from natural hazards, such as lightning strikes, or from human activities that occur there. Project construction, operation, and maintenance activities within the Primary Study Area would increase the potential exposure of people, structures, infrastructure, and other resources to a significant risk of loss, injury, or death from fire.

Most of the proposed Project facilities would be constructed in rural undeveloped areas that have trees, grasses, and shrubs. Project construction activities would likely occur during the summer and fall months, which are generally considered a time of high fire hazard in northern California.

Construction workers traveling to the Project facility sites and construction materials being transported to the construction sites would increase the risk of fire hazard along their travel route. Operation of vehicles throughout the area, particularly when vegetation adjacent to roads is dry, can increase the fire potential from accidental combustion (e.g., sparks), hot metal (e.g., tail pipes, motors), or traffic accidents.

Project construction activities at individual Project facility locations would increase the risk of fire hazard at those locations due to the presence of construction and worker vehicles and equipment (i.e., combustion engines), the presence of fuels, lubricants, and other flammable substances at the Project facility sites, and the presence of construction workers at the Project sites, if they smoke when there.

Vegetation clearing that would be required as part of Project construction, both at Project facility sites and within Project disturbance areas, would reduce the overall fuel loading in those areas, thereby reducing the long-term fire hazard. In addition, filling Sites Reservoir, TRR, and Holthouse Reservoir with water would reduce the long-term fire hazard at those locations. However, the presence of the construction vehicles and equipment operating in those areas when the facilities are being constructed would increase the fire hazard risk at the facility sites. Project implementation could also result in additional water supplies being available in the Primary Study Area, which could assist in future firefighting responses.

Operation and maintenance activities at Project facilities would occur on a regular basis, and would require the use of vehicles and equipment (also combustion engines) that would increase the risk of fire hazard at those locations when those activities are being performed.

PRELIMINARY – SUBJECT TO CHANGE

Visitors to the proposed recreation areas at the proposed Sites Reservoir would also increase the risk of fire hazard in those areas. Potential fire sources include campsites, campfires, vehicles, and watercraft.

Therefore, the existing fire hazard risk would be increased during Project construction, operation, and maintenance periods, resulting in a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Impact Pub Health-7: Create a Safety Hazard for People Residing or Working in the Project Area (if Located within an Airport Land Use Plan or within Two Miles of a Public Airport or Public Use Airport if no Plan has been Adopted)

A review of County Zoning Maps (Glenn County, 2006 and Colusa County, 2011) indicated that Project facilities would not be located within designated airport zones. The closest airport to a Project facility is the Willow-Glenn County Airport, located approximately 0.9 mile west of the GCID Canal Railroad Siphon. No Project construction, operation, or maintenance activities would occur within or near a public airport; therefore, there would be **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

28.3.6.2 Mosquitoes, Other Vectors, and Nuisance Problems

Extended Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Agricultural Water Use and Municipal and Industrial Water Use

Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems

Alternative A does not include any construction or subsequent maintenance of Project-related facilities within the Extended Study Area, so there would be **no impact** from increased exposure to nuisance problems, or to/from existing mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses within the Extended Study Area from those activities, when compared to Existing Conditions and the No Project/No Action Alternative.

The operation of Alternative A would result in increased water supply reliability to agricultural, municipal, and industrial uses. However, Alternative A would result in approximately 19,000 fewer acres in agricultural land use, when compared to Existing Conditions, and 2,000 more acres in agricultural land use, when compared to the No Project/No Action Alternative (refer to Chapter 22 Socioeconomics Table 22-27). These changes in agricultural acreage are expected to result in little to no change in exposure to nuisance problems, or in mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses within the Extended Study Area, resulting in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Wildlife Refuge Water Use

Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems

Operational modeling indicates that the amount of Level 4 wildlife refuge water supply would be the same every year with or without the Project. Project operations would provide an alternate source of Level 4 wildlife refuge water in some years, but would not increase its reliability. Therefore, the provision

of an alternate source of Level 4 wildlife refuge water supply would have **no impact** on exposure to nuisance problems, or to/from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses, when compared to Existing Conditions and the No Project/No Action Alternative.

San Luis Reservoir

Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems

San Luis Reservoir currently experiences severe water level fluctuations. Operational modeling for Alternative A, when compared to Existing Conditions and the No Project/No Action Alternative, indicates that operation of the Project would cause San Luis Reservoir water levels to continue to fluctuate, but the fluctuations could be more severe. Water fluctuations within the reservoir can create an environment conducive to mosquito habitat and subsequent mosquito population growth. The Merced County Mosquito Abatement District has established existing mosquito abatement controls for the county. In addition, land uses surrounding the reservoir, including adjacent Pacheco State Park, have an established ecosystem which supports mosquito predators, such as frogs, bats, and birds. In addition to mosquito abatement, other vector controls are in place due to the public recreational use of Pacheco State Park and San Luis Reservoir. Water fluctuations at the reservoir would not be expected to increase exposure to nuisance species. Therefore, the impact resulting from Project operation at this reservoir in the Extended Study Area is considered **less than significant**, when compared to Existing Conditions and the No Project/No Action Alternative.

Secondary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

Trinity Lake, Lewiston Lake, Trinity River, Klamath River Downstream of the Trinity River, Whiskeytown Lake, Spring Creek, Shasta Lake, Sacramento River, Keswick Reservoir, Clear Creek, Lake Oroville, Thermalito Complex (Thermalito Diversion Pool, Thermalito Forebay, and Thermalito Afterbay), Feather River, Sutter Bypass, Yolo Bypass, Folsom Lake, Lake Natoma, American River, Sacramento-San Joaquin Delta, Suisun Bay, San Pablo Bay, and San Francisco Bay

Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems

Installation of an additional pump into an empty bay within the existing Red Bluff Pumping Plant (a developed site) would not affect exposure to nuisance problems or mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses at that location, resulting in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Operation and maintenance of the pump and maintenance of the canal's intakes would occur as part of the operation and maintenance routine that occurs at those facilities, resulting in no change in exposure to nuisance problems, and no change to/from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses from what currently occurs. Therefore, **no impact** would occur as a result of the operation and maintenance of the additional pump, when compared to Existing Conditions and the No Project/No Action Alternative.

No direct Project-related construction or maintenance activity would occur within the Secondary Study Area at the other locations listed above. Therefore, there would be no change in exposure to nuisance

problems, and no change to/from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses at the locations listed above from Project-related construction or maintenance activities, resulting in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Project operation could affect the flow regime of all of the above-listed streams and/or the storage conditions of all of the above-listed reservoirs that are located in the Secondary Study Area. River flows and reservoir water level fluctuations resulting from Alternative A are expected to be within the historic range of operations, resulting in no change in exposure to nuisance problems, and no change to/from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses. This would result in **no impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Primary Study Area – Alternative A

Construction, Operation, and Maintenance Impacts

All Primary Study Area Project Facilities

Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems

Construction sites are generally flat and have the potential to create ponding areas after a rainstorm. Large ponding areas that do not completely dry after three to five days are conducive to mosquito breeding and can contribute to mosquito population growth. In addition, to satisfy NPDES stormwater permit requirements, some construction contractors create drainage ditches and subsequent retention ponds at Project construction sites to prevent stormwater runoff from entering nearby waterbodies. These ponds also have the potential for becoming mosquito breeding grounds, resulting in a **potentially significant impact** at all Project facility construction sites, when compared to Existing Conditions and the No Project/No Action Alternative.

The construction and filling of the three proposed reservoirs (Sites, Holthouse, and the TRR), plus the forebay and afterbay that would be constructed at the Delevan Pipeline Intake Facilities, would create an increase in total surface water area and reservoir shoreline. Increased surface water area would create habitat suitable for mosquito egg deposition. Increased shoreline also would result in favorable mosquito habitat for floodwater mosquitoes, particularly if water levels are expected to fluctuate greatly, as is the case with the Project facilities. Impacts to/from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses at the new reservoirs would result in a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Although surface water fluctuations occur at the existing Funks Reservoir, operation of the proposed expanded reservoir (i.e., Holthouse Reservoir) would result in more varied surface water fluctuations. These fluctuations in water levels can create favorable conditions for floodwater mosquito habitat increasing the potential for mosquito growth. However, there are established mosquito controls in place to abate mosquito growth at Funks Reservoir that would continue to be implemented during Project operation. Therefore, impacts to/from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses at Holthouse Reservoir would result in a **less-than-significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

Site Reservoir is intended for water storage as well as for recreational use. Recreational use would be facilitated by the establishment of up to five recreation areas with hiking trails, picnic areas, camping areas, a swimming area, and boat ramps. Because these recreation areas would be open to the public, mosquito abatement is a priority to decrease the risk of spreading disease. Although existing mosquito abatement controls are in use in Colusa County, the maintenance and operational activities due to the establishment of the Sites Reservoir and associated recreation areas may result in increased impacts to/from mosquito or vector populations, habitat, controls, or the spread of mosquito- or vector-borne illnesses. This would result in a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

In addition to impacts to/from mosquitoes at Sites Reservoir and the recreation areas, impacts from rodents, flies, bees, yellowjackets, and stinging ants, as well as Giardia and Swimmer's Itch may be expected. The recreation areas are proposed to include picnic areas, camping areas, swimming beaches, boat ramps, wildlife viewing vistas, and hiking trails. In many of these areas, food would be eaten, which would attract foraging bees, yellowjackets, stinging ants, flies, and rodents. Over time, these species may develop nests and reproduce within the recreation areas. Recreationists using the swimming areas could potentially be exposed to Giardia, Swimmer's Itch, or liver flukes. Impacts from rodents, flies, bees, yellowjackets, and stinging ants, as well as Giardia and Swimmer's Itch, would require controls to abate health and nuisance problems, and are considered **potentially significant**, when compared to Existing Conditions and the No Project/No Action Alternative.

The location of the proposed Sites Reservoir supports small areas of forested woodlands and large areas of grassland, which provide suitable habitat for rattlesnakes, ticks, conenose bugs and poison oak. These areas would likely be part of the trail system within the recreation areas, exposing recreationists to the potential for being bitten by rattlesnakes, being exposed to poison oak, being bitten by conenose bugs, and being bitten by ticks and potentially contracting Lyme disease or Rocky Mountain spotted fever. This increased risk would result in a **potentially significant impact**, when compared to Existing Conditions and the No Project/No Action Alternative.

28.3.7 Impacts Associated with Alternative B

28.3.7.1 Hazardous Materials and Wildland Fires

Extended and Secondary Study Areas – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B, as they relate to the transport, use, or disposal of hazardous materials (**Impact Pub Health-1**), release of hazardous materials into the environment (**Impact Pub Health-2**), hazardous emissions, materials, substances, or wastes in the vicinity of a school (**Impact Pub Health-3**), projects being located on a listed hazardous materials site (**Impact Pub Health-4**), effects on emergency response or evacuation plan implementation (**Impact Pub Health-5**), and wildland fire risk (**Impact Pub Health-6**) would be the same as described for Alternative A for the Extended and Secondary study areas.

Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

The following Primary Study Area Project facilities are included in both Alternatives A and B. These facilities would require the same construction methods and operation and maintenance activities

regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public and environmental hazards:

- Recreation Areas
- Sites Pumping/Generating Plant
- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard
- Holthouse Reservoir Complex
- Holthouse Reservoir Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR
- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

The remaining Primary Study Area Project facilities have different designs for Alternative B than for Alternative A: The Alternative B Sites Reservoir would be larger than the Alternative A reservoir and would consequently alter the size and location of the dams; the road relocations associated with Alternative B differ from those for Alternative A, mostly due to changes to the saddle dam access roads; the Alternative B design for the Delevan Transmission Line would be much shorter than the Alternative A design; the Alternative B Delevan Pipeline Discharge Facility would replace the Alternative A Delevan Pipeline Intake Facilities; and the area included in the Project Buffer would change because the size of some of the facilities surrounded by the Project Buffer would change. However, these differences in the size of the facility footprint, alignment, or construction disturbance area would not change the type of construction, operation, and maintenance activities that were described for Alternative A. They would, therefore, have the same impact on the transport, use, or disposal of hazardous materials (**Impact Pub Health-1**), release of hazardous materials into the environment (**Impact Pub Health-2**), hazardous emissions, materials, substances, or wastes in the vicinity of a school (**Impact Pub Health-3**), Projects being located on a listed hazardous materials site (**Impact Pub Health-4**), effects on emergency response or evacuation plan implementation (**Impact Pub Health-5**), wildland fire risk (**Impact Pub Health-6**), and aircraft safety hazards (**Impact Pub Health-7**) as described for Alternative A.

28.3.7.2 Mosquitoes, Other Vectors, and Nuisance Problems

Extended and Secondary Study Areas – Alternative B

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative B, as they relate to increased risk of exposure to mosquito- or vector-borne illnesses or to nuisance problems (**Impact Pub Health-9**), would be the same as described for Alternative A for the Extended and Secondary study areas.

Primary Study Area – Alternative B

Construction, Operation, and Maintenance Impacts

The following Project facilities are included in both Alternatives A and B. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public health from mosquitoes, other vectors, and nuisance problems:

- Recreation Areas
- Sites Pumping/Generating Plant
- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard
- Holthouse Reservoir Complex
- Holthouse Reservoir Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR
- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

If Alternative B is implemented, the footprint or construction disturbance area of Sites Reservoir Dams, the Road Relocations and South Bridge, and the Delevan Transmission Line would differ from Alternative A. In addition, the Delevan Pipeline Intake Facilities would be replaced by the Delevan Pipeline Discharge Facility. However, these differences in the size of the footprint or alignment of the construction disturbance area would require the same type of construction, operation, and maintenance activities as was described for Alternative A. They would, therefore, have the same impact to public health from the potential exposure to mosquito or vector populations, habitat, and the spread of mosquito- or vector-borne illnesses, and to exposure to nuisance problems (**Impact Pub Health-9**), within the Primary Study Area as described for Alternative A, with the exclusion of the potential impacts associated with the Delevan Pipeline Intake Facility forebay and afterbay that are included in Alternative A, but not Alternative B. Because Alternative B would not have a forebay and afterbay at that location, potential impacts to mosquito or vector populations, habitat, and the spread of mosquito- or vector-borne illnesses at that location would be less for Alternative B than described for Alternative A.

The boundary of the Project Buffer would be the same for Alternatives A and B, but because the footprints of some of the Project facilities that are surrounded by the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the type of construction, operation, and maintenance activities that were described for Alternative A. It would, therefore, have the same impact to increased risk of exposure to mosquito- or vector-borne illnesses or to nuisance problems (**Impact Pub Health-9**) as described for Alternative A.

PRELIMINARY – SUBJECT TO CHANGE

The differences associated with the larger Alternative B Sites Reservoir and its impacts to public health from mosquitoes, other vectors, and nuisance problems are described below.

Sites Reservoir Inundation Area

Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems

The establishment of the larger capacity Sites Reservoir associated with Alternative B would create more shoreline and increased water surface area, both of which contribute to favorable habitat for mosquitoes and several vectors. These changes would require slightly more mosquito and/or vector abatement resources than for Alternative A, and the operational and maintenance impacts are considered **potentially significant** (i.e., the same as described for Alternative A), when compared to Existing Conditions and the No Project/No Action Alternative.

28.3.8 Impacts Associated with Alternative C

28.3.8.1 Hazardous Materials and Wildland Fires

Extended, Secondary, and Primary Study Areas – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C, as they relate to the transport, use, or disposal of hazardous materials (**Impact Pub Health-1**), release of hazardous materials into the environment (**Impact Pub Health-2**), hazardous emissions, materials, substances, or wastes in the vicinity of a school (**Impact Pub Health-3**), Projects being located on a listed hazardous materials site (**Impact Pub Health-4**), effects on emergency response or evacuation plan implementation (**Impact Pub Health-5**), and wildland fire risk (**Impact Pub Health-6**), would be the same as described for Alternative A for the Extended and Secondary study areas.

Primary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

The following Primary Study Area Project facilities are included in Alternatives A, B, and C. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public and environmental hazards:

- Recreation Areas
- Sites Pumping/Generating Plant
- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard
- Holthouse Reservoir Complex
- Holthouse Reservoir Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR
- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard

- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

The Alternative C design of the Delevan Transmission Line and Delevan Pipeline Intake Facilities is the same as the Alternative A design. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public and environmental hazards as described for Alternative A.

The Alternative C design for the Sites Reservoir Inundation Area and Dams and Road Relocations and South Bridge are the same as the Alternative B design. These facilities would require the same construction, operation, and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public and environmental hazards as described for Alternative B.

The boundary of the Project Buffer is the same for Alternatives A, B, and C, but because the footprints of some of the Project facilities that are included in the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the construction, operation, and maintenance impacts to public and environmental hazards that were described for Alternative A.

28.3.8.2 Mosquitoes, Other Vectors, and Nuisance Problems

Extended and Secondary Study Areas – Alternative C

Construction, Operation, and Maintenance Impacts

The impacts associated with Alternative C, as they relate to increased risk of exposure to mosquito- or vector-borne illnesses or to nuisance problems (**Impact Pub Health-9**), would be the same as described for Alternative A for the Extended and Secondary study areas.

Primary Study Area – Alternative C

Construction, Operation, and Maintenance Impacts

The following Primary Study Area Project facilities are included in Alternatives A, B, and C. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public health from mosquitoes, other vectors, and nuisance problems:

- Recreation Areas
- Sites Pumping/Generating Plant
- Sites Electrical Switchyard
- Tunnel from Sites Pumping/Generating Plant to Sites Reservoir Inlet/Outlet Structure
- Sites Reservoir Inlet/Outlet Structure
- Field Office Maintenance Yard
- Holthouse Reservoir Complex
- Holthouse Electrical Switchyard
- GCID Canal Facilities Modifications
- GCID Canal Connection to the TRR

- TRR
- TRR Pumping/Generating Plant
- TRR Electrical Switchyard
- TRR Pipeline
- TRR Pipeline Road
- Delevan Pipeline
- Delevan Pipeline Electrical Switchyard

The Alternative C design of the Delevan Transmission Line and Delevan Pipeline Intake Facilities is the same as described for Alternative A. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public health from mosquitoes, other vectors, and nuisance problems as described for Alternative A.

The Alternative C design of the Sites Reservoir Inundation Area and Dams and Road Relocations and South Bridge is the same as described for Alternative B. These facilities would require the same construction methods and operation and maintenance activities regardless of alternative, and would, therefore, result in the same construction, operation, and maintenance impacts to public health from mosquitoes, other vectors, and nuisance problems as described for Alternative B.

The boundary of the Project Buffer would be the same for Alternatives A, B, and C, but because the footprints of some of the facilities that are surrounded by the Project Buffer would differ between the alternatives, the acreage of land within the Project Buffer would also differ. However, this difference in the size of the area included within the buffer would not change the construction, operation, and maintenance impacts to public health from mosquitoes, other vectors, and nuisance problems that were described for Alternative A.

28.4 Mitigation Measures

28.4.1 Hazardous Materials and Wildland Fires

Mitigation measures are provided below and summarized in Table 28-4 for the impacts that have been identified as significant or potentially significant.

**Table 28-4
Summary of Mitigation Measures for
NODOS Project Impacts to Public Health from Hazardous Materials and Wildland Fires**

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Pub Health-1: Create a Significant Public or Environmental Hazard from the Routine Transport, Use, or Disposal of Hazardous Materials	All Project facility sites (construction, operation, and maintenance)	Potentially Significant	Mitigation Measure SW Qual-1e: Prepare and Implement a Stormwater Pollution Prevention Plan	Less than Significant
Impact Pub Health-2: Create a Significant Public or Environmental Hazard from the Release of Hazardous Materials into the Environment	All Project facility sites (construction, operation, and maintenance)	Potentially Significant	Mitigation Measure SW Qual-1e: Prepare and Implement a Stormwater Pollution Prevention Plan	Less than Significant

PRELIMINARY – SUBJECT TO CHANGE

**Table 28-4
Summary of Mitigation Measures for
NODOS Project Impacts to Public Health from Hazardous Materials and Wildland Fires**

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Pub Health-4: Create a Significant Hazard to the Public or the Environment from the Project being Located on a Listed Hazardous Materials Site	All Project facility sites (construction,)	Potentially Significant	Mitigation Measure GW Qual-1b: Implement DWR and County Standards for the Proper Abandonment of Wells, Boreholes, and Septic Systems	Less than Significant
			Mitigation Measure Pub Health-4: Dispose of Hazardous Waste Discovered during Project Construction Pursuant to CERCLA Requirements	Less than Significant
Impact Pub Health-5: Effects on Adopted Emergency Response Plan or Emergency Evacuation Plan Implementation	All Project facility sites (construction, operation, and maintenance)	Potentially Significant and Significant	Mitigation Measure Trans-1: Prepare and Implement a Project Operation Traffic Control Plan	Less than Significant
			Mitigation Measure Trans-3: Prepare and Implement a Project Construction Traffic Control Plan	Less than Significant
Impact Pub Health-6: Expose People or Structures to a Significant Risk of Loss, Injury, or Death from Wildland Fires	All Project facility sites (construction, operation, and maintenance)	Potentially Significant	Mitigation Measure Pub Health-6: Develop and Implement a Project Fire Prevention and Suppression Plan and Consult with Fire Protection Agencies	Less than Significant

Notes:

BMPs = Best Management Practices
LOS = Level of Significance

PRELIMINARY – SUBJECT TO CHANGE

Mitigation Measure SW Qual-1e: Prepare and Implement a Stormwater Pollution Prevention Plan

DWR and Reclamation shall prepare and implement a SWPPP that emphasizes proper hazardous materials storage and handling procedures; shall outline spill containment, cleanup, and reporting procedures; and shall limit refueling and other hazardous activities to designated upland areas. Signs prohibiting refueling shall be posted in sensitive areas. Equipment shall be inspected prior to use each day to ensure that hydraulic hoses are tight and in good condition. Other appropriate BMPs, such as use of concrete washout basins and proper waste management, combined with visual observation and water sample collection and analysis, shall be used to prevent discharge of drilling mud and other chemicals associated with construction activities and into receiving waters. Details of these BMPs are described in Section WM-4 of the Construction Site Best Management Practices Manual (Caltrans, 2003).

Mitigation Measure GW Qual-1b: Implement DWR and County Standards for the Proper Abandonment of Wells, Boreholes, and Septic Systems

According to DWR's Water Well Standards (DWR, 2012), a well that is no longer useful (including exploration and test holes) must be destroyed to assure that the existing groundwater quality and proposed Project water quality is protected and preserved for further use, and to eliminate any potential physical hazard. Destruction of a well shall consist of the complete filling of the well in accordance with the procedures described in DWR Water Well Standards Section 23. Permits for well destruction shall also be obtained from the appropriate County agency (Glenn or Colusa).

Any current or historic oil and gas wells detected within the Project facility footprints shall be addressed. Any well types that would be inundated shall be properly sealed and abandoned according to policies and procedures laid out in the California Code of Regulations Title 14 from the Department of Conservation. These wells shall be sealed to ensure that the existing groundwater quality is protected and preserved, and to eliminate any potential physical hazard. Permits for well destruction shall also be obtained from the appropriate County agency (Glenn or Colusa).

Any test holes, boreholes, other potential conduits to groundwater shall also be sealed and destroyed.

Existing septic systems, such as septic tanks, cesspools, and seepage pits, shall be identified and located. These septic systems shall then be properly abandoned and demolished, and, if necessary, removed and disposed of. Destruction of septic systems shall require:

- A licensed septic tank pumper to pump the septic tank. A copy of the receipt for this pumping shall be obtained.
- Abandonment of the tank in accordance with county ordinances, which may include methods such as:
 - Tank removed, then disposed of at a sanitary landfill
 - Tank top removed, tank crushed, then excavation filled with earthen materials to within 12 inches of native surface
 - Tank top removed, bottom perforated, then excavation filled with earthen materials to within 12 inches of native surface

Permits for abandonment and destruction shall also be obtained from the appropriate County (Glenn or Colusa) prior to work.

Mitigation Measure Pub Health-4: Dispose of Hazardous Waste Discovered during Project Construction Pursuant to CERCLA Requirements

If evidence of contaminated materials is encountered during Project construction, construction shall cease immediately and applicable requirements of the Comprehensive Environmental Release Compensation and Liability Act (CERCLA) and the CCR Title 22 regarding the disposal of waste shall be implemented.

Mitigation Measure Trans-1: Prepare and Implement a Project Operation Traffic Control Plan

DWR and Reclamation shall prepare and implement an Operation Traffic Control Plan for the Project. Consultation with Glenn and Colusa counties shall occur to determine what those agencies would require to manage the traffic congestion that is expected to occur as a result of recreationists traveling to Sites Reservoir and its Recreation Areas. It is possible that the Counties may want to wait to do any road improvements until a recreation season (or more) has passed, so that actual recreation visitation and associated traffic congestion on local roadways could be monitored.

Consultation and coordination with Caltrans shall also occur to manage traffic at onramps and offramps from I-5 that would connect to the County roads leading to Sites Reservoir and its Recreation Areas.

Consultation with local fire and sheriff departments shall occur to obtain input regarding maintaining adequate emergency response times and access to properties along the roads that comprise the routes to Sites Reservoir and its Recreation Areas.

The Operation Traffic Control Plan may include, but not be limited to, ideas such as:

- Widening the existing County roads that comprise the primary route to Sites Reservoir and its Recreation Areas, and maintaining such roads
- Signalizing or signage at intersections along the primary route to Sites Reservoir and its Recreation Areas
- Developing alternate routes to Sites Reservoir that would intersect at Maxwell Sites Road and signalizing that intersection
- Providing bus service to Sites Reservoir and its Recreation Areas and providing a Park and Ride Lot at the bus pickup location
- Provisions for maintaining emergency vehicle access (detailed measures to be developed in coordination with the local sheriff and fire departments)
- Provisions to reduce potential school bus delays that may occur as a result of Project recreation visitation traffic (detailed measures to be developed in coordination with the local school district and sheriff departments)
- Directional roadway signage to Sites Reservoir and its Recreation Areas

The Operation Traffic Control Plan shall be prepared in coordination with, and approved by, affected agencies, such as Caltrans, Glenn County, Colusa County, and Maxwell Unified School District.

Mitigation Measure Trans-3: Prepare and Implement a Project Construction Traffic Control Plan

DWR and Reclamation shall prepare and implement a Construction Traffic Control Plan for the Project. The Construction Traffic Control Plan shall include, but would not be limited to, the following measures that are intended to manage:

- Construction-related traffic
- Temporary and/or permanent bus reroutes
- Pavement repairs before and after construction
- Measures to reduce emergency vehicle delay and maintain emergency vehicle access (detailed measures to be developed in coordination with the local sheriff and fire departments)
- Measures to accommodate potential school bus reroutes and reduce potential school bus delays (detailed measures to be developed in coordination with the school district and sheriff departments)
- Construction site parking
- Construction signage

The Construction Traffic Control Plan shall be prepared in coordination with, and approved by, affected agencies, such as Caltrans, Glenn County, Colusa County, and Maxwell Unified School District.

Mitigation Measure Pub Health-6: Develop and Implement a Project Fire Prevention and Suppression Plan and Consult with Fire Protection Agencies

DWR and Reclamation shall include in the construction contract specifications the following requirements. Prior to the start of Project construction, the construction contractor shall coordinate with the fire protection agencies that would serve the Primary Study Area regarding their requirements for preventing and suppressing fires during Project construction, operations, and maintenance. This effort shall include the preparation and implementation of a Project Fire Prevention and Suppression Plan that shall provide requirements that the contractor(s) shall follow while constructing Project facilities. The Plan shall also provide requirements for operation and maintenance activities. The Plan shall include, but shall not be limited to, the following requirements:

- Equip all diesel and/or gasoline-operated engines (stationary and mobile) with spark arresters
- Provide fire-fighting equipment on each piece of heavy equipment and construction vehicle
- Clear equipment service areas, parking areas, and gas and oil storage areas of all flammable material
- Prohibit smoking at Project facility construction sites during fire season, except in barren areas or in an area cleared to mineral soil at least three feet in diameter (CPRC 4423.4). In areas closed to smoking, the permit administrator may approve special areas to be used for smoking. The Contractor shall assign designated smoking areas. Signs shall be posted at Project facility construction sites regarding smoking and fire rules in conspicuous places. Under no circumstances shall smoking be permitted during fire season while workers are operating light or heavy equipment, or walking or working in grass and woodlands.
- Confine welding activities to cleared areas having a minimum specified radius

- Furnish a full water tank truck with fire hose at Project facility sites
- Maintain minimum vegetation clearance distances
- Establish long-term fuel management requirements
- Notify the local fire protection agencies of any fires along roads or within or near the Project facility sites as soon as feasible, after initial control action is taken
- Provide an on-site fire patrol person who shall patrol all Project facility sites during Project construction for the purpose of preventing and detecting fires and taking suppression action where necessary
- Furnish an agreed upon communications system connecting each Project facility construction site with the local fire protection agencies

In addition, DWR and Reclamation shall include into the construction contract specifications the following requirement:

- Prepare a Project-specific Emergency Evacuation Plan that includes a Project-specific contingency plan for fires, and submit the Plan to the agency or agencies with jurisdiction before Project site activities commence.

Implementation of **Mitigation Measures SW Qual-1e, GW Qual-1b, Pub Health-4, Trans-1, Trans-3, and Pub Health-6** would reduce the level of significance of Project impacts from public and environmental hazards to **less than significant**.

28.4.2 Mosquitoes and Other Vectors

Mitigation measures are provided below and summarized in Table 28-5 for the impacts that have been identified as significant or potentially significant.

**Table 28-5
Summary of Mitigation Measures for NODOS Project Impacts to Public Health from Mosquito or Vector Populations, Habitat, and the Spread of Mosquito- or Vector-Borne Illnesses**

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
Impact Pub Health-9: Expose People to an Increased Risk of Mosquito-Borne or Other Vector-Borne Illnesses, or Increased Exposure to Nuisance Problems	All Project facility sites where ponding would occur (construction)	Potentially Significant	Mitigation Measure Pub Health-9a: Develop and Implement a Stormwater Pollution Prevention Plan	Less than Significant

**Table 28-5
Summary of Mitigation Measures for NODOS Project Impacts to Public Health from Mosquito or Vector Populations, Habitat, and the Spread of Mosquito- or Vector-Borne Illnesses**

Impact	Associated Project Facility	LOS Before Mitigation	Mitigation Measure	LOS After Mitigation
	Sites Reservoir, Recreation Areas, Holthouse Reservoir, TRR, and the forebay and afterbay at the Delevan Pipeline Intake Facilities (operation and maintenance)	Potentially Significant	Mitigation Measure Pub Health-9b: Develop and Implement a Mosquito, Vector, and Other Nuisance Problems Control Plan	Less than Significant

Note:

LOS = Level of Significance

Mitigation Measure Pub Health-9a: Develop and Implement a Stormwater Pollution Prevention Plan

The Project construction contractor shall develop and implement a Stormwater Pollution Prevention Plan that includes, but is not limited to, BMPs for minimizing on-site stormwater. In addition, the Plan shall include measures to minimize construction worker exposure to mosquitoes.

Mitigation Measure Pub Health-9b: Develop and Implement a Mosquito, Vector, and Other Nuisance Problems Control Plan

DWR and Reclamation shall prepare and implement a Mosquito, Vector, and Other Nuisance Problems Control Plan for the Project, in consultation with the Glenn County Mosquito and Vector Control District and the Colusa Mosquito Abatement District. This Plan shall include, but not limited to, the following:

- Conduct routine inspection and virus surveillance activities within the Sites Reservoir and its Recreation Areas, as well as the TRR and Holthouse reservoirs, and the forebay/afterbay at the Delevan Pipeline Intake Facility.
- Site managers shall eliminate unnecessary standing water in containers, old tires, or trash receptacles.
- Clean all rain gutters, storm drains, or similar features that could capture water.
- Minimize places where mosquitoes, ticks, rodents, or rattlesnakes may inhabit by removing heavy brush, trimming and pruning landscape shrubs, and mowing grass areas regularly.
- Install bird nesting boxes to encourage birds that feed on mosquitoes, midges and other vectors or nuisance species.
- Stock the reservoirs with fish that feed on mosquito larva and pupa.
- Provide printed materials at each recreation area that informs the recreationists (particularly recreationists using the Sites Reservoir and hikers using the trail system) to protect against mosquito, tick, stinging insect, flea, rattlesnake bites, poison oak, and to minimize exposure to Giardia and Swimmer’s Itch. Such information shall include, but is not limited to, instructions to: (1) wear clothing that covers arms and legs and use a repellent that contains DEET; (2) never go barefoot or

wear sandals when walking through wild areas (wear hiking boots); (3) stick to well-used trails when hiking; (4) avoid tall grass, weeds, and heavy underbrush; (5) never step or put your hands where you cannot see, and avoid wandering around in the dark; (6) step on logs and rocks, never over them, and be especially careful when climbing rocks or gathering firewood; (7) check out stumps or logs before sitting down, and shake out sleeping bags before use; (8) never grab “sticks” or “branches” while swimming in lakes and rivers (rattlesnakes can swim); (9) never hike alone (always have someone with you who can assist in an emergency); (10) never handle a freshly killed snake (it can still inject venom); (11) teach children to respect snakes and to leave them alone; (12) avoid contact with wild rodents and their fleas, especially sick rodents; (13) minimize pet contact with rodents; (14) never camp near animal burrows; (15) never feed rodents; (16) store food and garbage in closed containers; and (17) explain how to identify poison oak and include a photo of poison oak leaves.

- Conduct routine inspections of all pipelines and other water conveyance structures for aboveground leaks that could create standing water. Repair all leaks in a timely manner.
- Provide covered trash receptacles within the recreation areas. Perform timely and frequent emptying of trash receptacles and cleanup of food spillage. Provide signs that encourage recreationists at these areas to cover and store food promptly after eating, and to properly dispose of food packaging and waste. Encourage recreationists to leave the areas as clean as possible to discourage foraging rodents, flies, and biting/stinging insects.
- Conduct routine inspections of property for stinging insect nests and remove them, if necessary, to avoid public health or nuisance issues.
- Promptly remove from property all dead animals, carnage, or animal feces.

Implementation of **Mitigation Measures Pub Health-9a** and **Pub Health-9b** would reduce the level of significance of Project impacts to public health from mosquitoes, other vectors, and nuisance problems to **less than significant**.

28.5 References

- American Mosquito Control Association (AMCA). 2013. Mosquito-Borne Diseases. Available online at: <http://www.mosquito.org/mosquito-borne-diseases>. Accessed February 9, 2012.
- American Society for Testing Materials (ASTM). 2005. Designation E-1527-05 “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Pages 1, 10, 12.
- California Department of Fish and Game (CDFG). 2012. California Rattlesnakes – Some General Information. Wildlife Branch, Nongame Wildlife Program. June.
- California Department of Fish and Wildlife (CDFW). 2013. Information regarding Rattlesnakes in California. <http://www.dfg.ca.gov/news/issues/snake.html>. Accessed June 24, 2013.
- California Department of Forestry and Fire Protection. (CAL FIRE). 2007a. Fire Hazard Severity Zones in State Responsibility Areas Map. CDF Fire and Resource Assessment Program. Sacramento, CA. November 7. <http://frap.cdf.ca.gov/data/frapgismaps/select.asp?theme=5>. Accessed May 18, 2013.

- California Department of Forestry and Fire Protection. (CAL FIRE). 2007b. Colusa County and Glenn County Fire Hazard Severity Zones in SRA Maps. CDF Fire and Resource Assessment Program. Sacramento, CA. November 7. <http://frap.cdf.ca.gov/data/frapgismaps/select.asp?theme=5>. Accessed May 18, 2013.
- California Department of Forestry and Fire Protection. (CAL FIRE). 2001. Communities at Risk From Wildfire Map. CDF Fire and Resource Assessment Program. Sacramento, CA. April 9. <http://frap.cdf.ca.gov/data/frapgismaps/select.asp?theme=5>. Accessed May 18, 2013.
- California Department of Public Health (CDPH), Vector-Borne Disease Section. 2013. California Plague Report, Winter 2012. Pages 1 and 2.
- California Department of Public Health (CDPH), Vector-Borne Disease Section. 2012. California Rodent-borne Disease Report, Winter 2011. Page 1.
- California Department of Public Health (CDPH). 2011. Best Management Practices for Mosquito Control in California. June. Pages 4-19.
- California Department of Public Health (CDPH), Division of Communicable Disease Control. 2010. Nuisance Flies, July 2010. Pages 1-2.
- California Department of Public Health (CDPH), Vector-Borne Disease Section. 2005. Overview of Mosquito Control Practices in California. Page 8.
- California Department of Transportation (Caltrans). 2003. Construction Site Best Management Practice (BMP) Field Manual and Troubleshooting Guide. CTSW-RT-02-007. California Department of Transportation. Sacramento, California.
- California Department of Water Resources (DWR). 2012. California Well Standards. http://www.water.ca.gov/groundwater/well_info_and_other/well_standards.cfm
- California Department of Water Resources (DWR). 2010. Bay Delta Conservation Plan EIR/EIS. BDCP – BECT Review Draft 1 – Interagency Use Only (Administrative Draft Document Subject to Revision). Page 4.20-9.
- Cavier, Jr., Jack. Manager, Glenn County Mosquito and Vector Control District. 2004. Personal communication with Wendy Haydon/CH2M HILL. July 14.
- Centers for Disease Control and Prevention (CDC). 2012. Swimmer’s Itch. <http://www.cdc.gov/parasites/swimmersitch/>. Accessed November 7, 2012. Updated January 10.
- Centers for Disease Control and Prevention (CDC). 2010. Fasciola – Biology. (Liver Fluke). <http://www.cdc.gov/parasites/fasciola/biology.html> and <http://www.cdc.gov/parasites/fasciola/index.html>. Accessed November 7, 2012.
- Colusa County. 2011. Notice of Preparation – Colusa County 2030 General Plan – Draft Program Environmental Impact Report. Page 9. http://www.countyofcolusa.org/archives/39/Colusa%20NOP_Final.pdf
- Commonwealth of Massachusetts Department of Environmental Protection. (CMDEP), 2011. Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails. Available online at: www.mass.gov/dep/cleanup/laws/railtraidoc,

- DiTomaso, J., and W. Lanini. 2009. Poison Oak: Integrated Pest Management for Home Gardeners and Landscape Professionals. UC Statewide Integrated Pest Management Program University of California, Davis, CA. June. Pages 1 and 2.
- Glenn County. 2006. Current Zoning Map – Title 15, Unified Development Code.
http://gcplanupdate.net/document_library/documents/zoning2006_34x44_000.pdf
- Greenberg, L., Entomology, U.C. Riverside and J.H. Klotz, Entomology, U.C. Riverside. 2002. Conenose Bugs. *Pest Notes*, Publication 7455. Revised November.
- Hairston, Jim. Extension Water Quality Scientist. Alabama Cooperative Extension System. No Date. *Giardia: A Common Waterborne Disease*.
<http://www.aces.edu.dept/extcomm/newspaper/feb1b02.html>. Accessed November 7, 2012.
- Jetter, K., J. Hamilton, and J. Koltz. 2002. Red imported fire ants threaten agriculture, wildlife and homes. *California Agriculture* Volume 56, Number 1.
- Kiely, Dan. Operations Supervisor. Colusa County Mosquito Abatement District (CCMAD). 2004. Personal communication with Wendy Haydon/CH2M HILL on July 21.
- Lane, R.S. 2008. Pest Notes: Lyme Disease in California. University of California, Agricultural and Natural Resources, Statewide Integrated Pest Management Program. Publication 7485.
- Lane, R.S. 1990. Seasonal Activities of Two Human-biting Ticks. *California Agriculture* 44(2):23-25. DOI: 10.3733/ca.v044n02p23. March-April 1990.
- Los Angeles County West Vector Control District (LACWVCD). 2011.
- Marin County. 2005. Marin County Wide Plan, Geology, Mineral Resources & Hazardous Materials Technical Background Report. Page 77.
http://www.co.marin.ca.us/depts/cd/main/pdf/planning/Geology_Background_Report.pdf.
- Mosquito and Vector Control Association of California (MVCAC). 2003. Guide to the Common Mosquitoes of California. I – Coastal California, II – The Great Basin and Eastern Sierra, III – Central Valley and Western Sierra, and IV – Southern California.
- Mussen, E.C. 2011a. Pest Notes: Bees and Wasp Stings. University of California, Agricultural and Natural Resources, Statewide Integrated Pest Management Program. Publication 7449.
- Mussen, E.C. 2011b. Pest Notes: Yellowjackets and Other Social Wasps. University of California, Agricultural and Natural Resources, Statewide Integrated Pest Management Program. Publication 7450.
- National Transportation Safety Board (NTSB). 2010.
<http://www.nts.gov/Dockets/Marine/DCA08MM004/389477.pdf>. Accessed May 2010.
- Sacramento-Yolo Mosquito and Vector Control District (SYMVCD). 2011. Yellowjackets and Paper Wasps brochure.
- Society of Wetland Scientists (SWS). 2009. Current Practices in Wetland Management for Mosquito Control.

U.S. Environmental Protection Agency (USEPA). 2013. Pacific Southwest, Region 9, Cleanup Sites in California. Accessed online at <http://www.epa.gov/region9/cleanup/california.html>

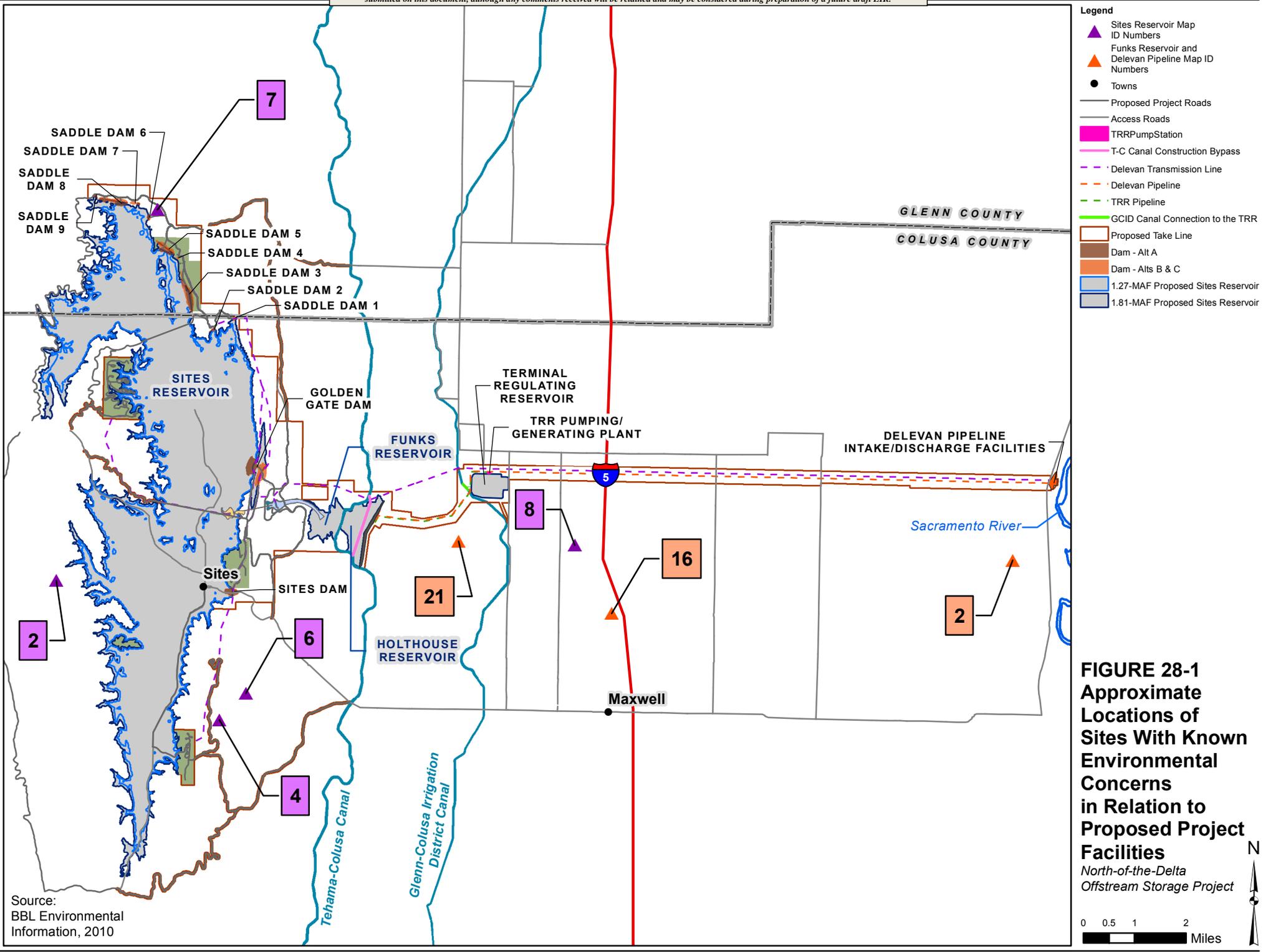
U.S. Environmental Protection Agency (USEPA). 2011. Iron Mountain Mine. <http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/vwsoalphabetic/Iron+Mountain+Mine?OpenDocument>. Page 1.

United States Geological Survey (USGS). 2001. Potential Environmental Impacts of Quarrying Stone in Karst – A Literature Review. USGS Open-File report OF-01-0484. <http://pubs.usgs.gov/of/2001/ofr-01-0484/ofr-01-0484so.pdf>

United States Geological Survey (USGS). 2000. Water Science Center: Mercury Contamination from Historic Gold Mining in California. USGS FACT Sheet FS-061-00. <http://ca.water.usgs.gov/mercury/fs06100.html>. Accessed June 2010.

University of California, Davis (UCD). 2010. Mercury Pollution is a Global Problem. <http://www.ice.ucdavis.edu/hg/hgproblem.html#california>. Accessed May 2010.

Figure



- Legend**
- ▲ Sites Reservoir Map ID Numbers
 - ▲ Funks Reservoir and Delevan Pipeline Map ID Numbers
 - Towns
 - Proposed Project Roads
 - Access Roads
 - TRRPumpStation
 - T-C Canal Construction Bypass
 - Delevan Transmission Line
 - Delevan Pipeline
 - TRR Pipeline
 - GCID Canal Connection to the TRR
 - Proposed Take Line
 - Dam - Alt A
 - Dam - Alts B & C
 - 1.27-MAF Proposed Sites Reservoir
 - 1.81-MAF Proposed Sites Reservoir

FIGURE 28-1
Approximate
Locations of
Sites With Known
Environmental
Concerns
in Relation to
Proposed Project
Facilities
North-of-the-Delta
Offstream Storage Project



Source:
 BBL Environmental
 Information, 2010