

Chapter 9

Hazards and Hazardous Materials

9.1 Environmental Setting

9.1.1 Introduction

This chapter describes the hazards and hazardous materials in the project area. It includes regulatory, regional, and project settings to provide a context for analyzing the effects of the project.

Currently, hazards in the project area are limited to four classes of potential hazards: seismic events, floods, contaminated soil and groundwater, and uncontrolled releases of brines contained in the ponds. Seismic risks are discussed in detail in Chapter 8, "Geology and Soils." Flooding can occur in the project area, as shown by the 1998 Napa River flooding. Hazards related to flood events are discussed in Chapter 3, "Hydrology." Because flooding and seismic hazards have been discussed at length in Chapters 3 and 8, respectively, they are not discussed here.

This chapter addresses potential hazards associated with soil and/or groundwater contamination, other potential human health hazards posed by construction and operations at the site, and uncontrolled releases of brine. Pond 7 contains waste materials, or "bittern," left over after table salt (sodium chloride) was harvested. Bittern has been shown in laboratory studies to have toxic effects on aquatic life (S.R. Hansen and Associates 1993). Uncontrolled releases of highly saline brine and bittern could occur as a result of levee failure. Chapter 4, "Water Quality," provides a more detailed discussion.

The pH of the brine in Pond 8 has dropped to as low as 2.2, based on readings collected by DFG (Huffman pers. comm.). A waste material with a pH of 2.0 or below is classified as a hazardous waste because of the characteristic of corrosivity. If the pH in Pond 8 were to drop below 2.0 at any point during the project, the brine in the pond would be considered corrosive. If the brine were removed and/or declared a waste, it would then be classified as a hazardous waste. As of January 2004, the pH in Pond 8 was normal as a result of the addition of the water control structures.

9.1.2 Regulatory Setting

In California, hazardous materials and hazardous wastes are regulated extensively under federal, state, and local laws and regulations. Laws and regulations pertaining to hazardous materials and wastes are designed to protect human health and the environment. Federal regulations form the minimum thresholds; state and local laws and regulations may be more stringent than federal standards. State and local agencies are responsible for implementing most of the requirements of these laws and regulations. For the purposes of this discussion, the applicable laws and regulations address: (1) hazardous materials transportation; (2) hazardous materials and waste management; and (3) human health protection. In addition to any brines that are defined as hazardous materials or waste under existing regulations, other brines may require special management to ensure protection of human health and the environment.

9.1.2.1 Federal

Hazardous materials, hazardous substances, and hazardous wastes are all regulated under federal law. *Hazardous materials* are defined as “materials that may pose an unreasonable risk to health, safety, and property when transported in commerce” (49 CFR 171.8). Hazardous materials are listed in 49 CFR 172.101, Appendix A. Hazardous materials are regulated by the U.S. Department of Transportation (DOT) and require special handling, packaging, placarding, and manifesting of hazardous materials cargoes. Hazardous material transportation requirements are designed to ensure safe movement of hazardous materials and to ensure that sufficient information is immediately available should an accident occur. DOT regulates hazardous materials transport by truck and rail through the Hazardous Materials Transportation Act (HMTA). Day-to-day management of hazardous materials is governed by various laws, including the Superfund Amendments and Reauthorization Act (SARA) and HMTA. These laws define the requirements for storage of hazardous materials, safe handling practices, and employee training.

Hazardous substances are a subclass of hazardous materials. They are regulated under the CWA; the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, also known as “Superfund”); and SARA. Releases of hazardous substances above certain thresholds may create a threat to human health or the environment. Hazardous wastes are included on the list of hazardous substances. Hazardous wastes, although included in the definition of hazardous materials and hazardous substances, are regulated separately under the Resource Conservation and Recovery Act (RCRA) and Hazardous and Solid Waste Amendments of 1984 (amendments to RCRA).

The statutory definition of *hazardous waste* is those wastes classified as ignitable, corrosive, reactive, or toxic. A material that has a pH value of less than 2 is considered corrosive. A material can be classified as a hazardous waste only after it is generated, i.e., after it has been designated as a waste by its owner. This means that the brines and bittern in the project area could not be classified

as hazardous wastes until they have been designated wastes by their owners (i.e., DFG). Similarly, any contaminated soils, water, or sediments in place in the project area could not be classified as hazardous waste unless they are removed from the ground (once removed, they are considered to have been “generated”). RCRA regulates hazardous waste from the time that the waste is generated through its management, storage, transport, and treatment, until its final disposal. EPA is responsible for implementing this law and can delegate its responsibility under the law to the states.

9.1.2.2 State

California law defines a *hazardous material* as any material that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may pose a present or potential hazard to human health and safety or to the environment if released in the workplace or the environment (California Health and Safety Code Section 25501). A *hazardous waste* is defined as a discarded material of any form (e.g., solid, liquid, gas) that may pose a present or potential hazard to human health and safety or to the environment when improperly treated, stored, transported, or disposed of, or otherwise managed (California Health and Safety Code Section 25117). Hazardous wastes are included in the definition of hazardous materials. Hazardous wastes are regulated under Chapter 6.5 of the state Hazardous Waste Control Health and Safety Law and Title 22 of the California Code of Regulations.

In California, ~~the California Environmental Protection Agency (Cal/EPA)~~ Department of Toxic Substances Control has been authorized by EPA to administer the RCRA program. California’s RCRA program is more stringent than the federal program. ~~California has laws and regulations that cover the generation and storage of hazardous waste.~~ Some of ~~these~~ California’s laws and regulations reinforce the federal regulations, and others impose additional requirements for the transportation, storage, and clean-up of hazardous waste.

Handling and storage of fuels, flammable materials, and common construction-related hazardous materials are governed by California Occupational Safety and Health Administration (Cal/OSHA) standards for storage and fire protection.

9.1.2.3 Local

Local regulation and enforcement of hazardous materials/wastes laws and regulations is through the local county health/hazardous materials departments, also known as certified unified program agencies (CUPAs). CUPAs provide a central permitting and regulatory agency for permits, reporting, and compliance enforcement. The project area encompasses portions of three counties (Napa, Sonoma, and Solano). Thus, local regulations from all of these counties may apply.

9.1.3 Regional Setting

The area surrounding the project site is predominantly agricultural, consisting of vineyards and some grazing areas. One duck club, the Can Duck Club, is located on the project property (at Pond 2); another private duck club is on private property immediately northeast of Ponds 6 and 6A. The former Mare Island Naval Reservation is directly southeast, and Skaggs Island (also a former naval base) is west of the project site. A portion of the property is bounded by SR 37 to the south. The cities of Vallejo and Napa are southeast and northeast of the project area, respectively. The former crystallizer ponds used by Cargill are directly east of Pond 8 on the other side of the Napa River. Residences are located along the Napa River on Edgerley Island immediately east of Pond 8 (Figure 2-2).

Both Mare Island and Skaggs Island are known to have had hazardous substance and petroleum compound releases. Contamination identified at these sites is being investigated and remediated under oversight by EPA and Cal/EPA. Other, smaller hazardous substance release sites are likely to be present in the region; however, no such sites have been identified in the immediate project area. Potential sources of hazardous substance releases in the project area consist of pesticide use at the agricultural areas, lead from birdshot used by the duck clubs, and pesticides associated with former mosquito abatement activities. No known hazardous materials have been identified in the residential areas surrounding the project site.

With regard to the regional setting for the Water Delivery Option, the north bay region is characterized primarily by extensive agricultural and rural land (approximately 51% of the area) and wildlife area (approximately 20% of the area). Other uses include residential, commercial and light industry, public facilities, open space and recreation, and heavy industry. In general, the north bay region does not have any regional hazardous waste contamination problems; however, there are numerous individual known and potential contamination sites, particularly in the more urbanized areas. Such sites include, but are not limited to, gas stations and other facilities with underground or aboveground storage tanks; auto salvage yards; industrial and manufacturing facilities; solid waste management facilities; transportation facilities (vehicular, railroad, marine, and aircraft); and various commercial uses.

9.1.4 Project Setting

No known, documented releases of hazardous materials or substances have occurred within the project area (Wyckoff pers. comm.). The presence of highly concentrated brines and bittern in ponds in the project area poses a potential risk to the environment if these materials are released in an uncontrolled manner. DFG and Cargill have not designated materials on-site as wastes. Continuing deterioration of the levees as a result of wind and wave erosion and scouring could result in a levee breach in the future, leading to an uncontrolled release of

highly saline brines and bittern. As noted in Chapter 7, “Biological Resources—Aquatic Resources,” excess salinity and bittern can have lethal effects on fish.

During the summer months, high evaporation rates lead to a reduction in the volume of water in the ponds. As a result, salts (including bittern salts) may precipitate in the higher salinity ponds. The precipitated salts tend to form a hard crust, reducing the potential for the wind to blow dust and salt from the ponds.

9.1.4.1 Historical Sampling and Analysis

Historical sampling activities in the area of the ponds have been limited to water quality parameters, primarily salinity and pH. Salinity has ranged from a low of 0 to a high of 447 ppt, and pH has ranged from 2.2 to 9.1. A more detailed discussion is provided in Chapter 4, “Water Quality.”

A records search of hazardous waste sites and activities was conducted to help characterize the potential for contamination to exist on or near the proposed construction routes for the Sonoma, CAC, and Napa Pipelines. The results found that very few sites are known to occur along the subject routes (VISTA Information Solutions 2002). Such is not considered unusual given the undeveloped rural nature of much of the area. The results of the records search are presented under “Water Delivery Project Component Area” below.

9.1.4.2 Known Contamination

Napa River Unit

In an effort to characterize the potential impacts of desalination on the receiving waters (i.e., flushing of the brines into Napa Slough, the Napa River, and/or San Pablo Bay), an extensive water- and sediment-testing program was conducted in October and November 2001 (HydroScience Engineers 2002). The sampling program is described in detail in Chapter 4, “Water Quality.”

The results of the testing indicate that organic chemicals (including pesticides, PCBs, dioxins, and semivolatile organic compounds) are encountered only rarely in the project area. When detected, they are present in concentrations well below any hazardous materials thresholds. Detected concentrations of metals were at or near background levels (i.e., comparable to Napa River and Napa Slough sediment concentrations) and also well below any hazardous waste thresholds. Slightly higher concentrations of metals were identified in the ponds with more concentrated brines; this is the result of naturally occurring trace levels of heavy metals being concentrated during the salt-making process.

Water Delivery Project Component Area

As indicated above, a hazardous materials database search was conducted for the construction areas of the two pipelines currently proposed under the Water Delivery Option. Lists of contaminated sites maintained by various local, state, and federal agencies were included in the database review (VISTA Information Solutions 2002). The following summarizes the results of the database review completed for the construction areas of each pipeline.

Sonoma Pipeline

Based on the results of the database review, there were three records found within 0.125 mile of the proposed Sonoma Pipeline alignment (i.e., within a 0.25-mile-wide corridor extending 0.125 mile on each side of the proposed alignment). These sites are recorded as having underground storage tanks (USTs). Two of the sites had leaking underground storage tanks (LUSTs); however, the records are marked as “case closed.” There is one site listed within 0.125–0.25 mile of the pipeline alignment. This site contained an UST that has been removed and two LUSTs. The record shows that the two LUSTs have been listed as “case closed.” Five records were found located within 0.125–0.25 mile of the pipeline alignment. Of these, one is a USGS water well, and the remaining four contained LUSTs that all have been marked as “case closed.”

Nine records, including three duplicates (i.e., only six unique records), in the results of a 2-mile distance search (i.e., extending 1 mile in each direction from the pipeline corridor centerline) were not specifically mapped; however, based on the addresses and descriptions indicated for the subject records, eight of the nine subject records were eliminated from possibly occurring at or near the Sonoma Pipeline.

Two of the eight records are both indicated as being “Caltrans, 1684 Union, Napa.” It is unclear whether “Union” refers to a street or to a specific union location. However, neither is near the pipeline route. There are also no Caltrans facilities at or near the pipeline route. Two other records are both indicated as being “Clos Pegase Reservoir, Napa.” There are no such reservoirs at or near the pipeline route. One other record is indicated as being a UST at “Walsh Vineyards, 2440 Duhig Road, Napa.” The pipeline route is more than 0.25 mile south of Duhig Road; the explanation for the subject record indicates that it was a tank closure and no abatement action was required (implying that no notable contamination occurred). One record is indicated as “Korbel Winery.” Korbel Winery is located in Guerneville, California, which is not located near the Sonoma Pipeline. The remaining two records are simply indicated as “Howard Nunn, Napa, CA” with no description or explanation of any sort of hazardous materials/waste release or contamination. The subject records are found on the North Bay Toxics List published in 1994, but on no other federal, state, or local lists.

One other record is listed as “SRGC Class II WMU.” This facility is categorized as a solid waste site that has had no violations. Since it is uncertain whether this unmapped record is within 2 miles of the proposed alignment, it is included in the existing conditions.

Overall, there was no evidence to suggest that contamination occurs adjacent to the proposed pipeline route.

Napa Pipeline

Segment 1 of the Napa Pipeline has been evaluated previously for hazardous materials along the alignments. Segment 2 is included within the 1-mile radius of the database search for the Sonoma Pipeline. As described above under the Sonoma Pipeline, there was no evidence to suggest that contamination occurs adjacent to the proposed pipeline route.

CAC Pipeline

Based on the results of the database review, there are 26 mapped records of sites within 0.125 mile of the CAC Pipeline alignment. However, 13 of these records are along an area where no construction would occur. Additionally, 17 records, including nine duplicates (i.e., only eight unique records), of listed sites within a mile of the alignment were not specifically mapped because address information was incomplete.

Several records listed as a result of the Sonoma database review also were listed in the search for the CAC Pipeline. “Clos Pegase Reservoir, Napa” was listed; however, there are no reservoirs along the CAC Pipeline route. “Mr. Howard Nunn, Napa, CA” was also listed, but as discussed previously for the Sonoma Pipeline, there is no explanation of hazardous materials/waste release or contamination. “Don Pridmore Son, Napa, CA,” while not found in the CAC Pipeline search, is a similar record to the “Mr. Howard Nunn” record in that there is no evidence of contamination. The record is listed as having a registered aboveground storage tank but is not listed on any local, state, or federal lists. “Caltrans, 1684 Union, Napa, CA” is listed on a state index of properties with hazardous waste. Again, no such address was located in the vicinity of the pipeline. It is unclear whether “Union” refers to a street or to a specific union station. However, neither is near the pipeline route.

Of the remaining four unmapped records, two were listed as “case closed.” Because it is uncertain whether the last two unmapped records are within 0.125 mile of the proposed alignment, they are included in the existing conditions. Therefore, there are a total of 15 sites (13 mapped, two unmapped) along the CAC alignment. Of the 15 records, the most common types of sites recorded are LUST sites. Other types of sites include

- sites on the North Bay Toxic List, the state index of properties with hazardous waste, the EPA Facility Index System, the state equivalent Comprehensive Environmental Response Compensation and Liability Information System list, or the EPA/state spills list;
- water wells;
- state-registered aboveground storage tanks;
- solid waste landfills, incinerators, or transfer stations;
- RCRA-registered small or large generators of hazardous waste; and

- sites with RCRA violation/enforcement action.

9.2 Environmental Impacts and Mitigation Measures

9.2.1 Methodology and Significance Criteria

Potential ecological impacts were assessed by estimating the quantity of hazardous materials brought into the project site as a result of the project and any reductions in such materials resulting from the implementation of each option. The analysis assumes that construction activities in the project site would be conducted in accordance with existing laws and regulations pertaining to management of hazardous materials and wastes during construction.

Potential human health impacts attributable to the presence of hazardous materials and hazardous substances in the project site area were assessed by identifying potential receptors, exposure scenarios, and exposure pathways for each option. Based on the projected activities at the project site, the potential receptors are construction workers and nearby residents. The following exposure scenarios and exposure pathways have been identified:

- ~~Exposure of construction workers to acutely hazardous (corrosive) brine and associated irritant dust during construction. Workers could be exposed through direct (dermal) contact with the brine, through inhalation of vapors and dust, and/or through incidental ingestion of the dust.~~
- *Exposure of construction workers, the public, and the environment to hazardous materials such as fuel, oil, and explosives associated with construction.* Construction activities would include the transporting of construction materials, such as fuel and oils, and the use of explosives. During excavation under the Water Delivery Option, contaminated soil and/or groundwater could be encountered. Workers and the public could be exposed through direct contact or inhalation.
- *Exposure of nearby residents to irritant or contaminated dust during construction.* If dust is generated from the high-salinity and/or bittern ponds during construction, nearby residents could be exposed to irritant dust through inhalation. If any of the ~~pond sediments and/or~~ levee materials are contaminated, residents could be exposed to contaminated dust through inhalation.

Potential impacts on ecological receptors resulting from controlled releases of brines and bittern contemplated under the various project options are described in Chapter 7, “Biological Resources—Aquatic Resources.”

Criteria based on the State CEQA Guidelines were used to determine the significance of hazards/hazardous waste-related impacts. The project would

have a significant impact on the environment related to hazards or hazardous waste if it would

- 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 release of hazardous materials into the environment;
- result in potential exposures exceeding human health criteria as defined in the National Contingency Plan (40 CFR 300 *et seq.*); or
- create a safety hazard because of proximity to an airport.

The potential hazardous materials impacts associated with the project are similar for all options, with the main differences being the intensity of each impact for each option. The impacts are generally associated with (1) construction activities (all construction activities involve the use and transportation of some hazardous materials and the potential generation of irritant dust), (2) levee breaching (use of explosives), and (3) potential accidental releases of bittern or high salinity brines.

9.2.2 No-Project Alternative

9.2.2.1 Impact Haz-1: Potential Release of Bittern or Highly Saline Brines into the Environment as a Result of Uncontrolled Levee Breaching

Under the No-Project Alternative, maintenance of the former salt ponds would be limited by available funding. Thus, levees would continue to deteriorate, and the salinity of the brines in the ponds closed to tidal influence would continue to increase over time. The brines would continue to concentrate because the ability to pump sufficient water into the ponds would be limited by both the funds available to pay for pumping costs and the continuing deterioration of the water conveyance infrastructure. In addition, the make-up water that is available also contains salts for a large portion of the year; therefore, adding make-up water, while minimizing salinity increases in the short term, would result in a long-term increase in salinity.

As a result, the risk of an accidental release of highly saline brines and/or bittern would continue to increase. The potential impact of such a release would depend on the amount and rate of material released, the time of year it is released (i.e., the species present and the water flow and salinity in the river and sloughs), and how quickly the breach could be repaired. As described in Chapter 2, "Site Description and Options," it is likely that at least a week of mobilization would be required before an emergency levee repair could be initiated. This impact is considered significant. This alternative would result in no project being implemented, however; therefore, no mitigation is required.

9.2.2.2 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Construction activities would be limited to the maintenance of the former salt ponds and could include limited levee repairs and repairs to the water conveyance infrastructure. These construction activities would result in fuels and lubricating oils as well as small quantities of maintenance-related chemicals being brought into the project area. Thus, there could be accidental releases of these materials into the environment. The quantities of materials brought into the project area would be relatively small, and any contractors working in the project area would be required to follow all applicable laws and regulations; therefore, this impact is considered less than significant. For this reason, and because this alternative would result in no project being implemented, no mitigation is required.

9.2.2.3 Impact Haz-3: Potential Releases of Irritant Dust from Desiccated Ponds

Most of the ponds would eventually become dry salt flats during a portion of the year. The exception is Pond 7, the bittern pond. Bittern is hygroscopic (will attract water from the moisture in the air) and thus is unlikely to dry out completely. Observations of ponds that have dried out in the past indicate that the salts in the ponds form a hard crust that is resistant to dispersion by the wind (Huffman pers. comm.). Unless this crust is disturbed by significant human activity, such as construction, it is unlikely that desiccation of the ponds would result in the generation of irritant dust. Because construction activities are limited to minor maintenance under the No-Project Alternative, this impact is considered less than significant. For this reason, and because this project would result in no project being implemented, no mitigation is required.

9.2.3 Salinity Reduction Option 1A: Napa River and Napa Slough Discharge

9.2.3.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Conventional construction activities associated with Salinity Reduction Option 1A include improvements to existing water conveyance structures, installation of new water conveyance and control structures, repairs and upgrades to existing levees, and long-term maintenance of levees and water conveyance/control structures for the upper ponds (i.e., the ponds with a long desalination period). Breaching of interior levees with explosives is discussed below.

Conventional construction activities would include transporting construction materials, such as fuels and oils, and the use of heavy machinery. Of particular concern are the construction activities required on the island ponds (Ponds 2, 3, 4/5, and 6/6A) because fuel and other hazardous materials associated with the operation of the machinery would have to be transported through the sloughs, increasing the potential for accidental releases of these materials into the environment. Although any contractors working in the project area would be required to follow all applicable laws and regulations, this impact is considered significant because of the ecological sensitivity of the area. Implementation of Mitigation Measure Haz-1 would reduce this impact to a less-than-significant level.

Improper handling, use, or disposal of hazardous materials and hazardous wastes could also result in unacceptable exposures of construction workers. All contractors would be required to comply with applicable laws and regulations pertaining to worker safety and health. However, this impact is considered significant. Implementation of Mitigation Measure Haz-1 would reduce this impact to a less-than-significant level.

Mitigation Measure Haz-1: Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation

Construction contractors working on the project will be required to provide their employees with enhanced spill prevention and response training, and will be required to have spill response equipment available at the job site, as directed by the project sponsors. Contractors will provide double containment for any hazardous materials or wastes at the job site. Contractors will be prepared to respond to any spill immediately and to fully contain spills in the project area, including any open-water areas.

9.2.3.2 Impact Haz-4: Potential Releases of Residual Hazardous Materials or Constituents from Breaching of Levees

Interior levee breaches for Ponds 4/5 and 6/6A would be accomplished using explosives. Improper handling, placement, or detonation of these explosives could result in residual chemicals being released into the environment. In addition, excessive charge sizes could result in larger breaches than desired, exacerbating releases into the environment. This impact is considered significant. Implementation of Mitigation Measure Haz-2 would reduce this impact to a less-than-significant level.

Mitigation Measure Haz-2: Employ Explosives Experts when Breaching Levees

Only trained experts will be allowed to transport, place, or detonate the explosive charges required for levee breaches. These experts shall be under direct supervision of the project sponsors, and may not be subcontracted as part of the overall construction effort. In addition, the experts retained to perform the explosives work shall be required to prepare a health and safety plan specifically addressing their work and demonstrating that there will be no residual explosive materials. This health and safety plan shall require review and approval before the start of the work by experts hired by the project sponsors.

9.2.3.3 Impact Haz-5: Potential Releases of Irritant Dust as a Result of Construction Activities

At ponds with existing salt crusts, construction activities may result in some of the salt crusts being pulverized by construction equipment. As a result, ~~both on-site construction workers and nearby residents~~ could be exposed to high levels of irritant dust. ~~Potential residential exposures are limited to work at and near Pond 8, where the prevailing winds could transport the dust to nearby residents.~~ This impact is considered significant. Implementation of Mitigation Measures Haz-3 and Haz-4 would reduce this impact to a less-than-significant level.

Mitigation Measure Haz-3: Develop and Implement a Health and Safety Plan

The project sponsors will ensure that a site-specific health and safety plan is developed and implemented by the contractor as part of contract specifications. At a minimum, the contractor's health and safety plan must show how the contractor will comply with the nuisance dust standard set by Cal/OSHA in the immediate work area and at the perimeter of the work area. The contractor will achieve compliance with the nuisance dust standard by taking preventive measures such as watering the disturbed areas or providing respirators. As described in Chapter 11, "Air Quality," the contractor will also be required to comply with most of the BAAQMD's BMPs for dust control.

Mitigation Measure Haz-4: Monitor Perimeter Dust Concentrations during Work on and in the Vicinity of Pond 8

To ensure that residents are protected from exposures to irritant dust while work proceeds in the vicinity of Pond 8, the contractor will perform perimeter monitoring to demonstrate compliance with the nuisance dust standard.

9.2.3.4 Impact Haz-6: Accidental Breaching of Exterior Levees on Highly Saline/Bittern Ponds as a Result of Construction Activities

As described for the No-Project Alternative, there is a potential for releases of highly saline brines and/or bittern into the environment. As part of Salinity Reduction Option 1A, all levees would be carefully inspected and repaired as necessary to ensure that they would maintain their integrity throughout the desalination period. In the unlikely event that the construction contractor accidentally causes an exterior levee breach at a pond containing highly saline brines or bittern, the contractor would immediately use on-site equipment to repair the breach. Because of the low probability of an accidental breach, the likely small breach size, and the ability to implement immediate repairs, this impact is considered less than significant. No mitigation is required.

9.2.4 Salinity Reduction Option 1B: Napa River and Napa Slough Discharge and Breach of Pond 3

Impacts under Salinity Reduction Option 1B are nearly the same as those under Salinity Reduction Option 1A for Impacts Haz-5 and Haz-6. Impacts Haz-2 and Haz-4 are slightly different and are described below.

9.2.4.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Because water control/conveyance structures are not required for Pond 3, conventional construction activities associated with Salinity Reduction Option 1B are less extensive and would occur in fewer areas than under Salinity Reduction Option 1A. Nonetheless, this impact is considered significant. Implementation of Mitigation Measure Haz-1, "Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation," would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.4.2 Impact Haz-4: Potential Releases of Residual Hazardous Materials or Constituents from Breaching of Levees

The potential impact associated with levee breaches is greater under Salinity Reduction Option 1B than under Salinity Reduction Option 1A. In addition to the interior levee breaches required under all salinity reduction options, Salinity

Reduction Option 1B requires an exterior levee breach at Pond 3. Implementation of Mitigation Measure Haz-2, “Employ Explosives Experts when Breaching Levees,” would reduce this impact to a less-than-significant level. This mitigation measure is described under Salinity Reduction Option 1A.

9.2.5 Salinity Reduction Option 1C: Napa River and Napa Slough Discharge with Breaches of Ponds 3 and 4/5

Impacts under Salinity Reduction Option 1C are nearly the same as those under Salinity Reduction Option 1A for Impacts Haz-5 and Haz-6. Impacts Haz-2 and Haz-4 are slightly different and are described below.

9.2.5.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Because water control/conveyance structures are not required for Ponds 3 and 4/5, conventional construction activities associated with Salinity Reduction Option 1C are less extensive and would occur in fewer areas than under Salinity Reduction Option 1A. Nonetheless, this impact is considered significant. Implementation of Mitigation Measure Haz-1, “Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation,” would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.5.2 Impact Haz-4: Potential Releases of Residual Hazardous Materials or Constituents from Breaching of Levees

The potential impact associated with levee breaches is greater under Salinity Reduction Option 1C than under Salinity Reduction Options 1A and 2. In addition to the interior levee breaches required under all salinity reduction options, Salinity Reduction Option 1C requires exterior levee breaches at Ponds 3 and 4/5. Implementation of Mitigation Measure Haz-2, “Employ Explosives Experts when Breaching Levees,” would reduce this impact to a less-than-significant level. This mitigation measure is described under Salinity Reduction Option 1A.

9.2.6 Salinity Reduction Option 2: Napa River and San Pablo Bay Discharge

Impacts under Salinity Reduction Option 2 are nearly the same as those under Salinity Reduction Option 1A for Impacts Haz-4, Haz-5, and Haz-6. Impact Haz-2 is slightly different and is described below.

9.2.6.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Conventional construction activities associated with Salinity Reduction Option 2 are more extensive and would occur in more areas than under Salinity Reduction Option 1A. Thus, this impact is considered significant. Implementation of Mitigation Measure Haz-1, "Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation," would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.7 Water Delivery Option

9.2.7.1 Impact Haz-7: Hazard Resulting from the Routine Transport, Use, or Disposal of Hazardous Materials

Water Delivery Project Component (Sonoma Pipeline)

Operation of the Sonoma Pipeline would not involve the transport, use, or disposal of hazardous materials. Construction of the pipeline would not involve any notable use of hazardous materials; however, in the event that hazardous waste contamination is encountered during pipeline construction, the management of contaminated materials could include excavation and transport for off-site treatment/disposal at an acceptable facility.

As described in greater detail below in Sections 9.2.7.2 and 9.2.7.3, there is the potential for construction along the pipeline routes to encounter subsurface contamination; however, based on existing information, the potential for such contamination to be substantial (i.e., extensive and widespread) is considered to be relatively low. The transport and disposal of hazardous materials/waste would occur only if notable contamination is encountered and such management means are warranted, and would be accomplished in compliance with federal, state, and local safety requirements. In summary, development of the Sonoma Pipeline would not create a hazard through the routine transport, use, or disposal of

hazardous materials. This impact is considered less than significant. No mitigation is required.

Water Delivery Project Component (Napa Pipeline)

The Napa Pipeline similarly would not involve the transport, use, or disposal of hazardous materials during pipeline operations and would not involve any notable use of hazardous materials during construction. The transport and disposal of hazardous materials would occur only if notable contamination is encountered, which is unlikely, as described later in the section. As described above, development of the Napa Pipeline would not create a hazard through the routine transport, use, or disposal of hazardous materials. This impact is considered less than significant. No mitigation is required.

Water Delivery Project Component (CAC Pipeline)

The CAC Pipeline, similar to the Sonoma Pipeline, would not involve the transport, use, or disposal of hazardous materials. Construction of the pipeline would not involve any notable use of hazardous materials; however, if hazardous materials were encountered during construction, removal and transport could occur. Overall, the development of the CAC pipeline would not create a hazard through the routine transport, use, or disposal of hazardous materials. This impact is considered less than significant. No mitigation is required.

Water Delivery Program Component

Exact alignments and construction plans have not yet been determined for the pipelines associated with the Program Component of the Water Delivery Option. It is anticipated, however, that potential impacts related to creating a hazard through routine transport, use, and disposal of hazardous materials impacts would be comparable to those described above for the currently proposed pipelines. The potential for encountering contamination during construction activities may be slightly greater for the potential future pipelines than for the currently proposed pipelines because of the comparatively more urban setting of the future pipelines; however, the extent and frequency of such excavation, transport, and disposal are not expected to be substantial. Moreover, any such activity would be subject to federal, state, and local safety requirements. As such, no significant impacts associated with implementation of the potential future pipelines are expected to occur. This impact is considered less than significant. No mitigation is required.

9.2.7.2 Impact Haz-8: Hazard Created through Reasonably Foreseeable Upset and Accident Conditions Involving Release of Hazardous Materials

Water Delivery Project Component (Sonoma Pipeline)

There is a low potential for construction of the Sonoma Pipeline to encounter subsurface contamination. None of the records from the databases searched (VISTA Information Solutions 2002) suggest that reasonably foreseeable upset and accident conditions exist along the pipeline corridors that could create a notable hazard involving the release of hazardous materials. Once operational, if the pipeline were to leak or break, recycled water could be released to nearby and underlying areas. Even in the unlikely event that a substantial leak or break in the pipeline occurred, recycled water is not a hazardous material. This impact is considered less than significant. No mitigation is required.

Water Delivery Project Component (Napa Pipeline)

Segment 1 of the Napa Pipeline has been evaluated previously for hazards caused by accident conditions involving the release of hazardous materials. Segment 2 is included within the 1-mile radius of the database search for the Sonoma Pipeline. As described above under the Sonoma Pipeline, there is a low potential for construction of the pipeline to encounter subsurface contamination. Once operational, if the pipeline were to leak or break, recycled water could be released to nearby and underlying areas. However, as stated above, recycled water is not a hazardous material. This impact is considered less than significant. No mitigation is required.

Water Delivery Project Component (CAC Pipeline)

In comparison to the Sonoma Pipeline, there is a slightly greater chance that construction of the CAC Pipeline would encounter subsurface contamination, based on the comparatively greater number of hazardous materials sites found in the database search. None of the records found, however, suggests that reasonably foreseeable upset and accident conditions exist along the pipeline corridors that could create a notable hazard involving the release of hazardous materials. This impact is considered less than significant. No mitigation is required.

Should it become necessary to temporarily store contaminated material during construction, a contingency plan would be developed that would include provisions to prevent contaminated runoff. This impact is considered less than significant. No further mitigation is required.

Water Delivery Program Component

Exact alignments and construction methods have not yet been determined for the pipelines associated with the Program Component of the Water Delivery Option. It is possible that construction activities associated with pipeline construction could encounter subsurface contamination. There is not, however, information at this time suggesting that construction and operation of the potential future pipelines would create a significant hazard through reasonably foreseeable upset and accident conditions involving release of hazardous materials. Should contamination be encountered, it would be addressed in accordance with federal, state, and local hazardous waste safety requirements. This impact is considered less than significant. No mitigation is required.

9.2.7.3 Impact Haz-9: Exposures Resulting from Exceeding Human Health Criteria

Water Delivery Project Component

An impact on human health from the operation of the Sonoma Pipeline, CAC Pipeline or the Napa Pipeline is not anticipated, as the quality of the water from the WWTPs is strictly enforced through federal, state, and local laws and regulations.

It is possible that pipeline construction activities could encounter subsurface contamination, posing the potential for workers and the nearby public to be exposed to a health hazard. Based on the results of the database records search and the relative setting for the Sonoma Pipeline and Napa Pipeline, there is no evidence of major contamination or other notable exposure hazards being present along the pipeline route. However, past use of the adjacent railroad line poses the potential for contamination. Additionally, there is the possibility of contamination being encountered during subsurface excavation.

Construction activities, including subsurface excavation, are subject to Cal/OSHA safety requirements that serve to avoid worker exposure to hazards in excess of specified human health criteria and that also provide for the protection of the nearby public. Construction projects typically include the preparation and implementation of a construction safety plan to address the possibility of encountering contamination or other hazards. Construction safety plans typically include details regarding how construction will be performed so as not to expose workers or the public to contamination levels in excess of appropriate permissible exposure levels. Such plans typically identify contingency approaches and construction procedures should contaminated concentrations in excess of permissible exposure levels or an explosion hazard exist in the work area. Compliance with safety plan requirements provides a means to minimize the risk of exposure exceeding human health criteria during construction activities.

Potential impacts of construction of the CAC Pipeline are considered slightly greater than those mentioned above for the Sonoma and Napa Pipelines. The Sonoma and Napa Pipelines hazardous materials records search showed no notable sites along the alignment; however, results of the database search for the CAC Pipeline indicated 15 records (including two unmapped records) of hazardous material sites occurring within 0.125 mile of the CAC Pipeline alignment. Measures necessary to avoid exceeding human health criteria, including observing Cal/OSHA safety standards and preparing a construction safety plan, would be taken as outlined above.

This impact is considered significant. Implementation of Mitigation Measure Haz-5 would reduce this impact to a less-than-significant level.

Mitigation Measure Haz-5: Prepare and Implement a Safety Plan

Before beginning construction activity, each construction contractor will prepare and communicate to all workers who will be on-site a construction safety plan that addresses, among other things, measures to protect workers and the public from unacceptable exposure levels. The specifications of the safety plan will include, but not be limited to, the requirements of Cal/OSHA.

Water Delivery Program Component

Exact alignments and construction methods have not yet been determined for the pipelines associated with the potential Program Component of the Water Delivery Option. It is anticipated, however, that the potential for exposures exceeding human health criteria would be comparable to those described above for the Water Delivery Project Component. This impact is considered significant. Mitigation Measure Haz-5, "Prepare and Implement a Safety Plan," would reduce this impact to a less-than-significant level. This measure is described above.

9.2.7.4 Impact Haz-10: Safety Hazard Resulting from Proximity to an Airport

Water Delivery Project Component (Sonoma Pipeline)

There are no airports in close proximity to the construction area proposed for the Sonoma Pipeline. There would be no safety hazards as a result of construction for this pipeline alignment. Therefore, there would be no impact. No mitigation is required.

Water Delivery Project Component (Napa Pipeline)

The beginning of the proposed Napa Pipeline is located near the Napa County Airport. This segment has been evaluated in a previous CEQA document.

Because the airport is not heavily used, and given the distance of the pipeline construction area to the airport, the Napa Pipeline is not expected to create a hazard for airport operations. This impact is considered less than significant. No mitigation is required.

Water Delivery Project Component (CAC Pipeline)

The proposed CAC Pipeline is located in proximity to the Napa County Airport. The subject airport is not a commercial facility; hence it is not heavily used. Construction of the closest portion of the pipeline to the airport would occur approximately 4,000 feet from the Napa County Airport. Given the nature and operational characteristics of the airport and the relative distance from the pipeline construction area, construction of the CAC Pipeline is not expected to create a hazard for airport operations. Because the pipeline would be underground, this impact is considered less than significant. No mitigation is required.

Water Delivery Program Component

Exact alignments have not yet been determined for the pipelines associated with the Program Component of the Water Delivery Option. However, the Marin County Airport–Gross Field could be potentially in the vicinity of the proposed pipeline from the Novato SD’s WWTP. Also, the Petaluma Municipal Airport could be in the vicinity of the proposed pipeline from the City of Petaluma WWTP. Neither of these airports is heavily used. If an alignment is proposed in the proximity of an airport, it is anticipated that the potential impact would be comparable to those described above for the Water Delivery Project Component. This impact is considered less than significant. No mitigation is required.

9.2.8 Habitat Restoration Option 1: Mixture of Tidal Marsh and Managed Ponds

Impacts associated with the habitat restoration options are similar to those under the salinity reduction options, because the types of activities potentially involving hazardous materials/wastes are similar.

9.2.8.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Conventional construction activities associated with Habitat Restoration Option 1 would include repairs to existing water conveyance structures, removal of existing water conveyance and control structures, repairs to existing levees, and

long-term maintenance of levees and water conveyance/control structures for the ponds that are retained as ponds. No new water control/conveyance structures are anticipated as part of the habitat restoration options (i.e., it is assumed that all necessary water control/conveyance structures would have been installed as part of the salinity reduction effort). Similarly, all levees would have been upgraded as necessary during the salinity reduction phase, so that only maintenance would be required for those levees that are required for the long term. Breaching of exterior levees with explosives (for those ponds opened to substantial tidal action) is discussed below.

Conventional construction activities would include transporting construction materials, such as fuels and oils, and the use of heavy machinery. Of particular concern are the construction activities required on the island ponds (Ponds 2, 3, 4/5, and 6/6A), because fuel and other hazardous materials associated with the operation of the machinery would have to be transported through the sloughs. Construction in these areas would be limited to the removal of existing water control structures (at Pond 6/6A only if that pond is eventually opened to tidal action). Thus, there could be accidental releases of these materials into the environment. Although any contractors working in the project area would be required to follow all applicable laws and regulations, this impact is considered significant because of the ecological sensitivity of the area. Implementation of Mitigation Measure Haz-1, "Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation," would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.8.2 Impact Haz-4: Potential Releases of Residual Hazardous Materials or Constituents from Breaching of Levees

Levee breaches for habitat restoration would be more extensive than levee breaches required during desalination. Under Habitat Restoration Option 1, exterior levee breaches are required for Ponds 3 and 4/5, as well as the levee breaches potentially required for Pond 6/6A. Some of these levee breaches would be located along the Napa River, and others would be located in the less-accessible sloughs. Except where removal of existing water control structures results in a sufficiently large levee breach for habitat restoration purposes, levee breaches would be accomplished using explosives. Improper handling, placement, or detonation of these explosives could result in residual chemicals being released to the environment. In addition, excessive charge sizes could result in larger breaches than desired. This impact is considered significant. Implementation of Mitigation Measure Haz-2, "Employ Explosives Experts when Breaching Levees," would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.9 Habitat Restoration Option 2: Tidal Marsh Emphasis

Impacts under Habitat Restoration Option 2 (Impacts Haz-2 and Haz-4) are slightly different from those under Habitat Restoration Option 1. These impacts are described below.

9.2.9.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Conventional construction activities associated with Habitat Restoration Option 2 are more extensive initially and would occur in more areas than under Habitat Restoration Option 1. Long-term construction activities would be somewhat less extensive, as more ponds would be opened up to substantial tidal action and would not require any long-term maintenance. Conventional construction activities would include creation of a north-south levee across the narrow center portion of Pond 2, in addition to the other activities described for Habitat Restoration Option 1. Thus, this impact is considered significant. Implementation of Mitigation Measure Haz-1, "Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation," would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.9.2 Impact Haz-4: Potential Releases of Residual Hazardous Materials or Constituents from Breaching of Levees

Levee breaches for habitat restoration would be more extensive under Habitat Restoration Option 2 than under Habitat Restoration Option 1. Exterior levee breaches would be required for Ponds 2 (eastern half), 3, 4/5, and 6/6A. Thus, this impact is considered significant. Implementation of Mitigation Measure Haz-2, "Employ Explosives Experts when Breaching Levees," would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.10 Habitat Restoration Option 3: Pond Emphasis

Impacts under Habitat Restoration Option 3 (Impacts Haz-2 and Haz-4) are slightly different from those under Habitat Restoration Option 1. These impacts are described below.

9.2.10.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Conventional construction activities associated with Habitat Restoration Option 3 are less extensive initially and would occur in fewer areas than under Habitat Restoration Options 1 and 2. Long-term construction activities would be more extensive, because more ponds would be retained as ponds and would require long-term maintenance. Thus, this impact is considered significant. Implementation of Mitigation Measure Haz-1, “Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation,” would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.10.2 Impact Haz-4: Potential Releases of Residual Hazardous Materials or Constituents from Breaching of Levees

Levee breaches for habitat restoration would be less extensive under Habitat Restoration Option 3 than under Habitat Restoration Option 1. Exterior levee breaches would be required only for Ponds 3 and 4. Nonetheless, this impact is considered significant. Implementation of Mitigation Measure Haz-2, “Employ Explosives Experts when Breaching Levees,” would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.

9.2.11 Habitat Restoration Option 4: Accelerated Restoration

The impact under Habitat Restoration Option 4 is nearly the same as that under Habitat Restoration Option 1 for Impact Haz-4; Impact Haz-2 is slightly different and is described below.

9.2.11.1 Impact Haz-2: Potential Exposure to and/or Release of Hazardous Materials/Waste Associated with Construction Activities

Conventional construction activities associated with Habitat Restoration Option 4 are considerably more extensive initially and would occur in many more areas than under Habitat Restoration Option 1. The added design features associated with Habitat Restoration Option 4 include filling up to 100 acres of pond area to an elevation near MHHW and significantly increasing the length of starter

channels with berms. This increase in construction effort and duration increases the potential for accidental hazardous materials/wastes exposures and releases. Construction activities would be more intensive than those under Habitat Restoration Option 1. This impact is considered significant. Implementation of Mitigation Measure Haz-1, "Provide Enhanced Spill Prevention and Response Training, and Spill Response Preparation," would reduce this impact to a less-than-significant level. This measure is described under Salinity Reduction Option 1A.