

Appendix A

Hatchery Operations

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This appendix contains site descriptions and operational details for each of the California Department of Fish and Game's (DFG's) 14 trout hatchery facilities and 10 salmon and steelhead hatchery facilities. As described in Chapter 2 of this environmental impact report/environmental impact statement (EIR/EIS), hatchery facilities generally fall into one of four categories: brood stock hatcheries, production hatcheries, rearing annexes, and planting bases. A brood stock hatchery provides facilities to rear, maintain, and harvest adult fish for eggs and milt. A production hatchery receives eggs from brood stock hatcheries, incubates the eggs until the fish hatch, and transfers the fry to raceways or ponds for the rearing process. Rearing annexes receive, feed, and rear the fish while monitoring for disease. Planting bases typically receive fish that are of an appropriate size for stocking, and acclimate them before transferring the fish to stocking locations. Salmon and steelhead hatchery facilities are described as either mitigation or enhancement facilities, with some serving both purposes. Mitigation hatcheries were first constructed to offset the loss of anadromous fish habitat due to dam construction. Enhancement hatcheries produce salmon or steelhead to augment fish populations for harvest.

Sources of Information

The key sources of data and information used in the preparation of this appendix are:

- *5-Year Hatchery Facility Infrastructure Plan (Draft)* (California Department of Fish and Game 2004);
- Hatchery Information System Database (California Department of Fish and Game 2008a); and
- the best management practices (BMP) plans for the hatcheries discussed in this appendix (Mount Shasta Hatchery, Crystal Lake Hatchery, Darrah Springs Hatchery, American River Hatchery, Moccasin Creek Hatchery, Hot Creek Hatchery, Black Rock Rearing Ponds, Fish Springs Hatchery, Mount Whitney Hatchery, San Joaquin Hatchery, Fillmore Hatchery, Mojave River Hatchery, Kern River Planting Base, Silverado Fisheries Base, Iron Gate Hatchery, Mad River Hatchery, Trinity River Hatchery, Feather River Hatchery and the Thermalito Annex, Warm Springs Hatchery and Coyote Valley Fish Facility, Nimbus Hatchery, Mokelumne River Hatchery, and Merced River Hatchery) (California Department of Fish and Game n.d.[a], n.d.[b], 2006, 2007a–2007c, and 2008b–2008q).

Trout Hatcheries

Mount Shasta Hatchery

Location and Size

Mount Shasta Hatchery is located on the west side of the city of Mount Shasta (in Siskiyou County), about 60 miles north of Redding on Interstate 5 (I-5). Established in 1888 as Sisson Hatchery, Mount

Shasta Hatchery is located on Spring Creek, a tributary of the upper Sacramento River. It occupies 30.9 acres of land owned by the State of California.

Facilities and Operations

The following description of Mount Shasta Hatchery facilities and operation is excerpted from the hatchery's plan of Best Management Practices (BMPs) (California Department of Fish and Game 2008b). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this EIR/EIS.

Facility Description

The hatchery initially was constructed in 1888, and in 1975 it modernized all but two earthen ponds to concrete raceways. The fish are reared in eight nursery tanks and six 400-foot-long raceways that use water diverted from Big Springs Creek, which is spring-fed. The hatchery also has two hatchery buildings, four residences, an office, a shop, a vehicle garage, a feed room, and a walk-in freezer room.

Brown, rainbow, and Eagle Lake trout eggs are harvested from November through March. Approximately 16 million eggs are shipped to other facilities, and approximately 2 million eggs are incubated and hatched at Mount Shasta Hatchery for future production and brood stock use. Mount Shasta Hatchery is currently operating under National Pollutant Discharge Elimination System (NPDES) permit CA0004596.

Water Source

The water supply for the hatchery comes from Big Springs Creek. The diversion provides the entire hatchery with 14–20 cubic feet per second (cfs), depending on the season. A distribution box is used to control the flow of water through pipes to the nursery tanks, hatchery buildings, and raceways. The water from the nursery tanks and Hatchery B (described below) is directed through the six raceways and is discharged through the settling ponds at discharge 001, which discharges into Cold Creek. Hatchery E discharge, as well as overflow from the intake settling pond, is directed through Pond 38 at discharge 002, which flows into Browns Pond and eventually into Wagon Creek. Both creeks are tributaries of Lake Siskiyou.

Rearing Facilities

The hatchery is composed of four rearing areas: Hatchery B, Hatchery E, nursery tanks, and raceways.

- **Hatchery B:** Hatchery B contains 120 California standard troughs and two deep tanks for rearing eggs and fish. Eggs are incubated in vertical flow hatching jars, eliminating the need to use chemicals. Fish are reared in Hatchery B from January to September. The hatchery is shut down (no water flow) when the fish are removed.
- **Hatchery E:** Hatchery E contains 132 California standard troughs and two deep tanks for rearing eggs and fish. It also contains 13 vertical stack incubators for egg production. Hatching jars are also used in Hatchery E, as space permits, to reduce the use of chemicals. When Hatchery E is empty, water is piped under the hatchery building to maintain flows through private property with grazing, private impoundments, and other agricultural uses before

entering Cold Creek, approximately 1 mile downstream. When the water does not pass through Hatchery E, it does not flow through Pond 38 but is discharged at discharge 002.

- **Nursery tanks:** Eight nursery tanks 60 feet by 10 feet are used to hold fingerlings and future brood stock. Water is piped from the distribution box to the tanks. One to eight tanks are used all year. Wastewater from the nursery tanks is discharged and reused in the raceways. When the tanks are empty, the tanks are used to control water flow fluctuations in the intake distribution box and intake settling pond.
- **Raceways:** Six raceways (two earthen and four concrete) consisting of four 100-foot ponds are used for production of catchable, subcatchable, and brood stock trout. An average total flow of 6–7 cfs flows through the earthen ponds and then is reused in the four concrete raceways and discharged at discharge 001 after flowing through two parallel settling ponds. Typical hatchery thinning and grading practices are used to maintain healthy fish to reduce chemical use.

Maintenance and Inspection

Hatchery water supply intake diversions and raceway pond effluent discharge pipes are inspected and cleaned daily to ensure overflow is prevented and that water does not bypass the facility. These procedures are included in the fish-feeding and standby personnel duties. Hatchery employees are assigned standby duties on a rotating basis during inclement-weather months, October through April, and as needed throughout the remainder of the year to prevent any screens from plugging or water overflowing from the water intakes.

Storage and Containment

Mount Shasta Hatchery has four separate chemical-storage areas: for paints and gas, for therapeutants and chemicals relating to fish health, for oil and grease, and for cleaning supplies.

Paints and gas are contained in an approved metal storage area for flammable liquids. Paints are contained in their original containers and are properly labeled. Fuel is contained in approved canisters specifically manufactured for gasoline. Any spillage would be contained within the confines of the metal storage unit.

Therapeutants and chemicals related to fish health are kept in a storage area within a building commonly referred to as the “meat room.” Chemicals are stored in their original containers and have labeling consistent with proper handling practices. The storage area floor is concrete, and any spills would be confined to that small area. A blower fan is mounted in the storage area to provide adequate ventilation. Records are kept as required under the NPDES permit for all chemical and drug use, including medicated diets.

Oil and grease are stored within a closed area in the garage. Oil is stored in 1-quart containers, and grease is contained in the 1-pound containers purchased from the manufacturers. The garage floor is concrete, and any spillage would be contained within a small area. Other automotive chemicals may be stored in that area, as well. Waste oil is not stored and is immediately returned to an approved center for recycling.

The separate storage of non-compatible chemicals in appropriate storage units allows leaks and spills to be detected and dealt with while still within containment. It also minimizes the likelihood of an incident precipitated by unwanted chemical reaction that could result in the accidental release of chemicals into the waters of the state.

Fish Programs

Mount Shasta Hatchery is a major brood stock facility but also produces a large number of fish for stocking. The hatchery houses rainbow trout, brown trout, and Eagle Lake trout brood stock and produces and stocks these same fish as well as brook trout. Total annual average production for the past 5 years is 1,652,370 fish. A summary of the past 5 years of fish production is included in Table 2-3, in Chapter 2 of this EIR/EIS.

Eagle Lake trout brood stock is obtained from the Darrah Springs Hatchery (which receives its eggs from the Crystal Lake Hatchery). Rainbow trout brood stock is also obtained from the Darrah Springs Hatchery. Brown trout brood stock is kept at the Mount Shasta Hatchery. The Mount Shasta Hatchery also receives brook trout eggs from the Crystal Lake Hatchery for rearing and eventual stocking. Eggs from Eagle Lake trout, rainbow trout, and brown trout are harvested and annually shipped to production hatcheries throughout the state, including Crystal Lake Hatchery, Darrah Springs Hatchery, Moccasin Creek Hatchery, Fillmore Hatchery, and Mount Whitney Hatchery. Eggs are also shipped out of the state, subject to availability and demand. The fingerling and adult fish reared at the facility are stocked in locations throughout northern and central California. The fish produced at Mount Shasta Hatchery serve a primarily recreational purpose.

Crystal Lake Hatchery

Location and Size

Crystal Lake Hatchery is located on the south shore of Baum Lake, near the town of Cassel, approximately 10 miles east of Burney, in eastern Shasta County. The hatchery was constructed in 1947–1948 on 40 acres of land owned by Pacific Gas and Electric Company (PG&E) and leased by DFG.

Facilities and Operations

The following description of Crystal Lake Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008c). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The hatchery consists of twelve 500-foot raceways that use water from Rock Creek, two 300-foot raceways that use Crystal Lake water, a spawning building, a hatchery/egg-incubation building, an additional small hatchery building (the Davis Building), an office/shop garage building, a truck garage, a storage freezer (meat house) building, a domestic water pump house, public restrooms, three settling ponds for waste control, and multiple bulk-feed storage bins.

Water Source

The water supply for the hatchery comes from Rock Creek Springs and Crystal Lake. Crystal Lake Hatchery receives 12.4 million gallons per day (mgd) of water from Rock Creek Springs, which flows through the Upper Series and Lower Series raceways (described below), as well as the hatchery building. The Upper Series receives water through an aboveground pipeline that then flows through

an aeration tower and continues to the Lower Series. Water flowing through the Upper Series and Lower Series is discharged into two in-line, flow-through settling ponds before flowing into Baum Lake (discharge 001). The smaller, separate Brood Pond Series (described below) receives 4.0 mgd of water directly from Crystal Lake through a canal. After passing through the rearing area, the wastewater discharges to a single in-line, flow-through settling pond prior to discharging into Baum Lake (discharge 002). Crystal Lake Hatchery is currently operating under NPDES permit CA0004588.

Rearing Facilities

The hatchery is composed of three rearing areas: the Upper Series, Lower Series, and Brood Pond Series.

Upper Series: The Upper Series consists of six raceways that each have five 100-foot concrete rearing ponds. After water flows through the Upper Series, it circulates through an aeration tower to boost dissolved oxygen levels and continues to the Lower Series. Each raceway in the Upper Series has two drain systems. The first drain system is piped to a mid-pond aerator, which adds additional oxygen to the water before it is introduced into the Lower Series. The second drain system is a diversion that pipes water directly to the main settling ponds. This system is used during pond cleaning in the Upper Series so wastewater does not travel directly into the Lower Series.

Lower Series: The Lower Series consists of six raceways that each have five 100-foot rearing ponds. Water that runs through the Lower Series discharges into a diversion box, distributing water evenly among two settling ponds before the water makes its way into Baum Lake (discharge 001). It takes approximately 2 hours to clean one 500-foot raceway series. Raceway series using the Crystal Lake water source discharge directly into a separate settling pond, maximizing water quality before entering Baum Lake.

Brood Pond Series: The Brood Pond Series consists of two concrete raceways that each have three 100-foot rearing ponds. After passing through the rearing area, the wastewater discharges to a single in-line, flow-through settling pond prior to discharging into Baum Lake (discharge 002).

All ponds are cleaned on a weekly basis; however, there are occasions when some raceways are cleaned twice a week. Settling ponds are monitored weekly for pond integrity and to ensure they are functioning properly. When the carrying capacity of solids in the settling ponds has been reached, they are dredged out; however, it has been approximately 15 years since the last dredging, and the settling ponds are currently still functioning properly.

Maintenance and Inspection

Hatchery water supply intake diversions and raceway pond effluent discharge pipes are inspected and cleaned daily to ensure prevention of overflow or any water possibly bypassing the facility. Also, settling ponds are checked frequently to ensure they are performing properly. These duties are handled by the fish feeder and any staff assigned to pond cleaning. Inspections are performed weekly on incoming water supply trash screens. If any debris is impeding water passage, the screen is brushed clean. During the spring and fall months, these screens are checked almost daily.

A gauge monitoring the pressure of incoming water from Rock Creek is located in the hatchery building. This pressure gauge is a good indicator if there are any obstructions to the incoming water. It is checked daily and replaced at least once annually to ensure proper working order. The

mechanical trash screen located at Crystal Lake's water supply is cleaned and checked daily for any obstructions. It is serviced semiannually by trained hatchery personnel. A typical service would be a visual inspection for wear of any moving parts and replacing the synthetic lubrication in the gear box with new synthetic oil.

Raceway maintenance is minimal. Weekly cleaning prevents aquatic vegetation from forming on pond walls and on the bottom. When raceways are empty of fish, they are never dried up completely. Water is continually kept flowing through the ponds to prevent any moisture from collecting at the bottom and freezing during winter months. This freezing can cause the smooth concrete layer on the bottom of the ponds to crack and make cleaning more difficult.

Storage and Containment

Crystal Lake Hatchery has four separate chemical-storage areas: for paints and miscellaneous paint materials, for a waste oil containment shed, for oil and grease, and for therapeutants and pesticides.

Paint and miscellaneous paint materials are kept in an approved metal storage area for flammable liquids. Fuel cans are also stored in approved flammable-liquid storage containers. Waste oil and materials are kept in steel drums that are located in an enclosed and locked 6-by-10-by-1.5-foot concrete containment area. Any spills would be contained within the storage area.

Crystal Lake Hatchery has a 500-gallon aboveground A.G.T. Vault fuel tank. The tank is dual-walled to provide containment in the event of any leakage. This vault is inspected weekly for any type of visual leaks or defects. It is usually filled approximately once a month or as needed.

Appropriate signage, placards, and safety equipment are placed at or near the fuel tank. Chemical-storage areas are inspected on a routine basis by hatchery personnel for any deterioration, leakage, or spills. The material safety data sheets (MSDSs) are kept in a binder located in the office. Crystal Lake Hatchery is also inspected routinely by the Shasta County fire marshal and California Department of Industrial Relations, Division of Occupational Safety and Health (known as Cal/OSHA). All related permits are kept up-to-date. The hazardous-materials inventory/business response plan from Shasta County's Department of Resource Management, Environmental Health Division, is updated annually. The hatchery follows the procedures outlined in its injury and illness prevention program to clean up, contain, and report spills of hazardous materials.

Oil is stored in metal bulk dispensing containers or in the manufacturers' quart bottles. Grease, in the manufacturers' 1-pound containers, is stored in a steel cabinet located in the garage. The floor in the garage is concrete, and spill-absorbing materials are used when needed. Waste oil and materials are picked up by a waste-oil recycler as needed. If any hazardous materials need to be disposed of, they will be disposed of through the state hazardous waste program, which collects hazardous waste approximately every 2 years. Any miscellaneous items, such as paint, mineral spirits, and other unwanted materials, are properly packaged and also disposed of at that time. All hatchery personnel have been trained on spill prevention. They have been given instructions on how to respond in the event of a spill to ensure proper cleanup and disposal of any spilled materials. Crystal Lake Hatchery has a safety program in place, and monthly safety meetings are held. The hatchery's injury and illness prevention program and MSDSs are often routine topics at these meetings.

Fish Programs

Crystal Lake Hatchery is a production facility and minor brood hatchery. The hatchery houses rainbow trout, brown trout, brook trout, Chinook salmon, and Eagle Lake trout brood stock and produces and stocks these same fish. The Chinook salmon are reared for stocking in inland waters.

Crystal Lake Hatchery maintains its own brook trout brood stock. Brood stock for brown trout, rainbow trout, and Eagle Lake trout are obtained from the Mount Shasta Hatchery. Eagle Lake trout eggs are taken at Eagle Lake, Pine Creek trap. Chinook eggs are obtained from the Iron Gate Hatchery. Eggs from these fish are harvested and annually shipped to production hatcheries throughout the state, including the Mount Shasta, Darrah Springs, Moccasin Creek, Fish Springs, and Fillmore Hatcheries. Eggs are also shipped out of state, subject to availability and demand. The fingerling and adult fish reared at the facility are stocked in locations throughout northern and central California. The fish produced at Crystal Lake Hatchery serve primarily a recreational purpose. Total annual average production for the past 5 years is 1,563,238 fish. A summary of the past 5 years of fish production is included in Table 2-3, in Chapter 2 of this EIR/EIS.

Darrah Springs Hatchery

Location and Size

Darrah Springs Hatchery is located off State Route (SR) 36, approximately 30 miles east of Red Bluff, near Manton, in Tehama County. Darrah Springs Hatchery is the state's largest hatchery. It is located on 82.6 acres of land owned by the State of California. Darrah Springs Hatchery originally was constructed in 1952 and was modernized from earthen ponds to cement raceways in 1981.

Facilities and Operations

The following description of Darrah Springs Hatchery's facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game n.d.[a]). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Darrah Springs Hatchery produces approximately 775,400 rainbow and Eagle Lake trout annually. Some of these fish are harvested for use as brood stock at the Mount Shasta Hatchery. The fish are reared in one of three natural spring-fed series of ponds that consist of ten 600-foot-long raceways, the Upper Series of four raceways and the Lower Series of six raceways (described below), and a 1,350-foot-long Brood Ponds raceway (described below), using three discharge points. The hatchery also has a hatchery building, public restrooms, a spawning building, an office/garage/shop building, a truck garage, and a storage/freezer building.

No egg harvesting takes place at the facility because all eggs are brought in from other DFG hatcheries. An average of 1.5 million trout eggs are incubated and reared in the hatchery building annually. The hatchery currently operates under NPDES permit CA0004561.

Water Source

The water supply for the hatchery comes from Darrah Springs, the Pacific Power Ditch and some unnamed springs. Darrah Springs supplies water to the hatchery building and Lower Series raceways with an average flow of 18 cfs, and the wastewater is discharged into Darrah Creek (discharge 003). The Pacific Power Ditch supplies an average flow of 11 cfs to the Upper Series raceways at and discharges back into the Pacific Power Ditch (discharge 004), which then discharges into the Coleman Canal. Several unnamed springs supply water to the Brood Ponds, with an average flow of 4 cfs, and discharge into Darrah Creek (discharge 002). All water discharged from the hatchery is tributary to the Coleman Canal.

Rearing Facilities

The hatchery is composed of four rearing areas: Hatchery Building, Brood Ponds, Lower Series, and Upper Series.

Hatchery Building: The Hatchery Building is fed by surface-water diversion from Darrah Springs. The Hatchery Building contains 58 California standard troughs and 30 deep tanks. Trout eggs are incubated and hatched in 54 vertical flow hatch jars. The water flow through the hatch jars can be varied, depending upon the egg lifecycle stage, to keep any fungus from growing on the eggs and killing them. The use of hatch jars eliminates the need for chemical treatment of the fish eggs to prevent disease. Fingerlings are vaccinated with an Ermogen bacterin when fish reach approximately 90–100 fish/pound to protect against enteric red mouth disease prior to movement to outside raceways. All flow-through wastewater from the hatchery building is discharged and reused in the Lower Series raceways.

Brood Ponds: The Brood Ponds rearing area is approximately 450 feet long and can be segregated into three separate rearing ponds. The Brood Ponds flow averages 4cfs, but approximately 75% of the wastewater is pumped to the Lower Series, where it is aerated and reused through the Lower Series. This leaves an average of 1.0 cfs of water from the Brood Ponds being discharged into Darrah Creek discharge 002.

Lower Series: The Lower Series area consists of six raceways. The Lower Series raceways are supplied by several water sources, including a surface-water diversion from Darrah Creek, flow-through wastewater from the Hatchery Building, and water reused from the Brood Ponds. Water from each raceway is circulated through an aeration tower at the raceway midpoint to boost dissolved oxygen levels and then reenters the raceways for the final 300 feet of rearing ponds. The Lower Series raceways area does not have a settling basin; therefore, all flow-through wastewater is discharged directly back into Darrah Creek. Darrah Creek then flows into Ward's Pond, located 0.25 mile downstream of the Lower Series raceways. Flow from Ward's Pond is diverted into the Coleman Canal via the Asbury Pumping Station and Asbury Siphon. During high rain events, overflow from Ward's Pond enters Baldwin Creek, a tributary to Battle Creek. An average of 18 cfs flow-through wastewater is discharged directly back into Darrah Creek.

Upper Series: The Upper Series consists of four raceways. The Upper Series raceways are supplied by a surface-water diversion from the Pacific Power Ditch. An average of 11 cfs of flow-through wastewater is discharged back into the Pacific Power Ditch discharge 004. Water from each raceway is circulated through an aeration tower at the raceway midpoint to boost dissolved oxygen levels and then reenters the raceways for the final 300 feet of rearing ponds. There is no settling basin for

the Upper Series raceways, and all flow-through wastewater is discharged directly back into the Pacific Power Ditch. The Pacific Power Ditch is a tributary to the Coleman Canal.

Maintenance and Inspection

Hatchery water supply intake diversions and raceway pond effluent discharge pipes are inspected and cleaned daily to ensure prevention of overflow and water possibly bypassing the facility. These duties are included in fish-feeding duties and standby personnel duties. Hatchery employees are assigned standby duties on a rotating basis during inclement-weather months, October through April, and as needed throughout the remainder of the year to prevent any screens from plugging or water overflowing from the water intakes.

Slotted aluminum screens are used to separate different fish “lots” (different age groups of fish) and to keep the fish contained within the raceway series. The screens are cleaned of any debris and mortalities several times daily. Ponds are cleaned on a weekly basis, or as needs dictate.

Storage and Containment

The hatchery has four separate chemical-storage units—for oil and grease, for therapeutants and pesticides, for barrel drums of therapeutants, and for paint and associated materials—and an enclosed waste-oil materials containment area.

Oil is stored in metal bulk dispensing containers or in the manufacturers’ quart bottles. Grease is stored in the manufacturers’ 1-pound containers in a closet area of the garage. The floor in the garage area is concrete.

Paint and associated materials are kept in an approved metal storage area for flammable liquids. Fuel cans are also stored in a separate approved flammable-liquids storage container. Waste-oil materials are kept in an enclosed and locked 8-by-10-by-2.5-foot concrete containment area. The hatchery has a 1,000-gallon aboveground ConVault fuel tank. The tank is dual-walled to provide containment in the event of any leakage.

The separate storage of non-compatible chemicals in appropriate storage units allows leaks and spills to be detected and dealt with while still within containment. It also minimizes the likelihood of an incident precipitated by unwanted chemical reaction that could result in the accidental release of chemicals into the waters of the state.

Appropriate signage, placards, and safety equipment are at the fuel tank and chemical-storage units. Formal inspections are conducted on a routine basis by hatchery personnel for deterioration, leakage, or spillage. The MSDSs are kept in two binders located in the crew room. The hatchery is also routinely inspected by the Shasta County fire marshal and Cal/OSHA, and all related permits are kept up-to-date. The hazardous-materials inventory/business response plan for Shasta County Department of Resource Management, Environmental Health Division, is updated annually.

Waste oil and materials are picked up by a waste-oil recycler on an annual basis, or more frequently if necessary. If any hazardous materials are to be disposed of, it has been the practice in the past to dispose of such materials through the state hazardous waste program, which collects hazardous waste approximately every 2 years. At that time, items such as paint, mineral spirits, and other unwanted materials, are properly packaged and disposed of.

Fish Programs

Darrah Springs Hatchery is a production and grow-out facility. The hatchery produces rainbow trout, cutthroat trout, grow-out for Mount Shasta rainbow trout, and Eagle Lake trout brood stock.

Darrah Springs obtains its brood stock for Eagle Lake Trout production from Crystal Lake Hatchery. Brood stock for rainbow trout is obtained from Mount Shasta Hatchery. The fingerling and adult fish reared at the facility are stocked in locations throughout northern and central California. The fish produced at Darrah Springs serve primarily a recreational purpose.

Total annual average production for the past 5 years is 775,404 fish. A summary of the past 5 years of fish production is included in Table 2-3, in Chapter 2 of this EIR/EIS.

American River Hatchery

Location and Size

American River Hatchery is located on the south bank of the American River, approximately 1,000 feet downstream of Nimbus Dam in Sacramento County, 18 miles east of the city of Sacramento. American River Hatchery is located on 20 acres and began operation in 1968.

Facilities and Operations

The following description of American River Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008e). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

American River Hatchery facilities include a hatchery building; rearing raceways; various office, shop, and storage buildings; fish transportation equipment; food-storage facilities; and miscellaneous equipment and supplies. A 7,500-square-foot (150 feet by 50 feet) metal building contains American River Hatchery office and office equipment, an employee break room, restrooms, a utility room, office storage, two equipment and sack-feed storage areas, and a walk-in freezer. American River Hatchery's rearing facilities include an indoor and an outdoor rearing facility. Hatchery vehicles are stored in a 4,500-square-foot (100 feet by 45 feet) metal building equipped with roll-up doors. The building also functions as a storage area for large, bulky equipment and sack fish food. The hatchery is currently operating under NPDES permit CA0004774.

Water Source

Water for American River Hatchery comes from Lake Natoma, a 525-surface-acre afterbay for Folsom Lake. Folsom Dam impounds the south and north forks of the American River and has a drainage area of approximately 1,895 square miles. The American River basin is located east of Sacramento in the Sierra Nevada range. Two intake pipes are located on the south side of Nimbus Dam to provide water for American River Hatchery and Nimbus Hatchery. Water is supplied to American River Hatchery through a 1,415-foot-long, primary, 60-inch concrete pipe and a secondary, 42-inch-diameter, parallel concrete pipe that runs from the south abutment of Nimbus Dam. Both lines are connected through a series of gate valves that allow water to be directed into

three areas as needed: the Terminal Structure, the nearby Nimbus Hatchery, or American River Hatchery.

To minimize the effects of water level fluctuations on flow in the supply line, DFG installed an electronically operated gate at the Terminal Structure. A series of manually operated valves control flow from the Terminal Structure to pipes leading to the rearing ponds, hatchery buildings, and the domestic water supply.

The original contract provides that the U.S. Bureau of Reclamation (Reclamation) would furnish up to 30 cfs of water to the hatchery, although, currently, Reclamation may furnish up to 60 cfs for the operation of both American River Hatchery and Nimbus Hatchery.

Rearing Facilities

The hatchery is composed of two rearing areas: an indoor rearing facility and an outdoor rearing facility.

Indoor rearing facility: The indoor rearing facility includes one 1,500-square-foot (30 feet by 50 feet) metal hatchery building. The hatchery building is furnished with 16 fiberglass deep tanks. Eggs are incubated in up to 16 custom constructed and manufactured egg-hatching jars. Water is supplied to the deep tanks via overhead PVC plumbing and directed into 4-foot-long-by-18-inch-diameter vertically hung PVC pipes filled with plastic “bio barrels” to remove gases (nitrogen) and aerate the water. Water is supplied directly to the hatching jars from the overhead plumbing supply.

Outdoor rearing facility: The outdoor rearing facility includes four 5-foot-by-200-foot-by-42-inch-deep concrete nursery raceways and five pairs of (10 individual) 600-foot-long, 10-foot-wide, 42-inch-deep concrete rearing raceways located on the west side of the American River Hatchery grounds. A flow of approximately 1.5 to 4.5 cfs of water (depending upon the size and number of fish) is typically released from the raceway head tank into each raceway. Maximum flow through all pairs of raceways is estimated to be approximately 47 cfs. Key-ways built into the raceway walls allow each raceway to be divided into individual rearing sections.

Maintenance and Inspection

Hatchery personnel are at the facility premises from 7 a.m. through 4 p.m. every day of the week. Daily inspections of the water intake structure, debris rack and traveling screen, water collection system, rearing facilities, and waste discharge system are conducted by Nimbus Hatchery personnel, and any potential problems are reported to the American River Hatchery manager or appropriate personnel. American River Hatchery personnel are instructed to observe all the facilities during their normal work routine and report any problems or discrepancies.

The water intake structure, traveling screen, intake pipes, and water control structure are inspected and serviced annually by Reclamation personnel. Rearing facility maintenance is conducted when raceways and troughs are empty of fish and water. Maintenance to the hatchery buildings and water supply system is conducted as needed.

Equipment and vehicle maintenance is performed as per the manufacturers’ recommendations, and a maintenance schedule is displayed in the hatchery office.

Maintenance to the wastewater system (pipes, intake and discharge structures, and settling ponds) is performed by Reclamation personnel as needed.

In the hatchery building, the PVC pipe drains and metal debris screens in the deep tanks are cleaned daily or more often if needed. Water depth is adjusted to maintain a higher water depth after eggs hatch, to increase the amount of water in each tank and provide additional rearing space. The bottom of each tank is cleaned (swept) daily by hand, using soft brushes to eliminate debris in the tank.

The raceways are cleaned at least once each week or more often as necessary when fish are present. Debris is carefully “swept” from the upper (upstream) section of the pond toward the lower (downstream) section of the pond, using long-handled brooms. Screens are cleaned with a long-handled brush once daily at a minimum.

The settling ponds and intake and discharge structures are inspected weekly to remove dead or fallen vegetation, check for erosion and channelization, and monitor water and sedimentation levels. Debris is removed from the settling ponds as necessary to ensure proper operation.

Storage and Containment

The hatchery has four separate storage units: one for therapeutants and drugs, one for dry feed, one for bagged food, and an enclosed waste-oil materials containment area.

Used oil and shop rags are disposed of in a 12-by-8-foot metal shed equipped with an Ultra Hard Top P2 Containment System that meets Environmental Protection Agency (EPA) Container Storage Regulation 40 Code of Federal Regulations (CFR) 264.175 and Uniform Fire Code 79.406 located on the Nimbus Hatchery grounds adjacent to American River Hatchery.

Appropriate safety placards are attached to all rooms, lockers, buildings, and sheds as necessary. All personnel are instructed to use absorbents, sweeping, and other dry methods to clean up spills rather than washing spilled material into the storm drain system. Spilled material is disposed of properly, and the use of cleaning products containing hazardous substances is avoided. Wash water is disposed of to landscaped areas or sanitary sewer when possible.

Fish Programs

American River Hatchery is a production and minor brood stock facility. In the past 5 years, the hatchery has produced kokanee salmon; a small number of steelhead; and rainbow, brown, cutthroat, and Eagle Lake trout. No trout or salmon brood stock is kept at American River Hatchery. The major sources of brood stock are Mount Shasta, Mount Whitney, Hot Creek, and Eagle Lake. The fingerling and adult fish reared at the facility are stocked in locations throughout northern and central California. The fish produced at American River Hatchery serve primarily a recreational purpose.

Average annual production for the past 5 years is 1,120,544 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Moccasin Creek Hatchery

Location and Size

Moccasin Creek Hatchery is located between Lake Tahoe and the Yosemite Valley in the town of Moccasin, about 0.25 mile from the junction of SR 49 and SR 120 and about 10 miles southeast of

Sonora (in Tuolumne County). The hatchery is on 25.5 acres of land owned by the City and County of San Francisco and has been operating since 1954.

Facilities and Operations

The following description of Moccasin Creek Hatchery facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2006). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Moccasin Creek Hatchery is composed of the following fish production and administrative infrastructures: eight fish production raceways, a hatchery building (including 88 rearing troughs, six round tanks, and an incubation room), a freezer/feed-storage building, two garages, six feed-storage bins, a bird enclosure, an effluent settling pond, a water distribution tower, a water supply line to the hatchery distribution tower, six redwood circular tanks, eight bridges over raceways, a parking shed, two fuel tanks, a wildlife protection garage, a public restroom, a septic system with lift systems and leach fields, eight employee residences, four residence garages, a domestic water supply pipeline, an abandoned incinerator, roads, and walkways. The hatchery is currently operating under NPDES permit number CA0004804.

Water Source

The water source for the hatchery is Tuolumne River from Hetch Hetchy Reservoir. Water is delivered through the Moccasin Reservoir, the afterbay of Moccasin Power House. The average daily use of water in the flow-through operation is 19 million gallons. The water is piped into the hatchery through a valve sump, and the water is metered with an in-line propeller-type meter as it is delivered. The water enters a distribution sump that allows direction of the water where it is needed, mostly to the rearing ponds. The inflow pipe is approximately 40 feet below the surface of Moccasin Reservoir and has a screen to catch vegetation; the screen is checked at least weekly but more often if warranted, such as in the fall for leaves, or the spring and early summer for aquatic plants. The hatchery has two discharge points. The main discharge is after the settling pond, and the secondary point is downstream of the main point. Only one discharge point is used at a time.

Rearing Facilities

The hatchery has 88 hatchery troughs, six round tanks, and 48 10-by-100-foot rearing ponds.

Maintenance and Inspection

Cleaning rearing ponds is typically done once a week or once every 2 weeks, depending on the stage of development of the fish. To clean a pond, a person enters the pond wearing waders and sweeps the pond from top to bottom of a raceway (six ponds). The cleaning of a raceway can take several hours to reduce stress on downstream fish. A raceway that is being cleaned is not fed. Screens and the space behind screens (wells) are swept out once daily. Head and tail races that are not used to raise fish are cleaned about every month. In order to limit the amount of particulate matter entering the settling pond, only two raceways (12 ponds) maximum are cleaned in any one day. When the hatchery is in use, 4 to 6 months a year, the hatchery troughs are cleaned on a daily basis. There are 88 standard California hatchery troughs in the hatchery building; all are never used at the same

time. A tracking chart is posted; the dates on which ponds are cleaned are entered, and any abnormal pond conditions are noted. Tracking is done to keep staff aware of cleaning needs and frequency. Rearing ponds are inspected daily, as are hatchery troughs when in use.

Storage and Containment

Drugs and chemicals used to treat fish diseases are kept in a locked area, away from potential areas of introduction into effluent discharge. When used, only the amount of product needed to treat for a day is removed from this locked area. This limits the spill potential amount to a much smaller hazard. Feeds are stored in large bulk tanks (six) and in a freezer for sack feeds. Smaller amounts of feeds are removed from these storage areas and fed in daily amounts. Storage areas are secure and away from discharge points. Spill potentials are from the feed truck and would be in small amounts. Any spills of this nature are immediately swept up from raceway roads and are reused, or disposed of by being sent to a landfill.

The hatchery has five storage areas that are used for oil, paint, chemical, drug, and herbicide storage. There are two fuel tanks: one for diesel and one for gasoline. The hatchery has a spill cleanup kit with absorbent booms, and pads that would be deployed to contain and prevent the spread of any spill. The crew has a semiannual walk-through on spill prevention and containment and is able to respond at any time to a spill. If a spill were to occur, once containment was met, the California Department of Transportation (Caltrans), the Governor's Office of Emergency Services, and the California Department of Public Health would be contacted to assist in the cleanup. It should be noted that the hatchery has been in almost continuous operation from 1954 without any history of hazardous spills.

Fish Programs

Moccasin Creek Hatchery is a production and minor brood stock facility. The hatchery produces brook trout, brown trout, cutthroat trout, Eagle Lake trout, and rainbow trout. The fingerling and adult fish reared at the facility are stocked in locations throughout northern and central California. The fish produced at Moccasin Creek Hatchery serve primarily a recreational purpose.

Average annual production for the past 5 years is 1,081,098 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Hot Creek Hatchery

Location and Size

The facility is located approximately 7 miles east of the town of Mammoth Lakes. The hatchery, owned and operated by DFG, lies on 135 acres leased from the Los Angeles Department of Water and Power (LADWP) and 66 acres from the U.S. Department of Agriculture Forest Service (Forest Service), 201 acres total. The hatchery has been in operation since 1931.

Facilities and Operations

The following description of Hot Creek Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008f). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Hot Creek Hatchery, in operation since 1931, currently produces around a quarter million pounds of catchable rainbow trout and 1.25 million fingerling Kamloops rainbow trout, cutthroat trout, and golden trout each year. In addition, the hatchery serves as one of the domestic brood stock facilities for the state, producing approximately 10 million domestic rainbow trout eggs per year. Around 1.75 million wild trout eggs are also brought to, and incubated at, the hatchery each year, including Lahontan cutthroat, golden, and Kamloops rainbow trout.

The hatchery operates solely as a flow through system, with no water currently recirculated. The concrete production raceways consist of four 10-pond, 1,000-foot-long series. Brood stock is reared in two separate concrete series ranging between 400 and 500 feet long. There are two earthen ponds for use in the rearing of selects (future brood stock). The hatchery is currently operating under NPDES permit CA0102776.

Numerous buildings are used for support of hatchery operations, including an office/shop/garage, wood shop, freezer/storage, feed storage, and three structures for additional vehicle and material storage. In addition, there are 13 residential housing units used by hatchery employees, as well as other state personnel.

Water Source

The hatchery is located at the origin of Hot Creek, where four main geothermal springs supply a combined water flow of 16 to 29 cfs at a constant temperature of 12°C to 16°C. All four spring supplies provide good quality water consistently low in total suspended solids (TSS).

Two of the spring supplies, AB and CD, are each channeled into underground pipelines, which run to the production raceways. Each of these water supplies has a grate over each pipeline intake to allow the removal of vegetation and other matter before it reaches the raceways. These grates are inspected and cleaned in order to ensure continual flow several times daily, including at least once during nighttime hours by standby personnel.

The two remaining springs supply the two separate brood stock/hatchery systems. The water from the covered spring ponds is directed to the respective hatchery building via underground pipelines, with all excess flows going to the brood stock series of raceways.

Rearing Facilities

The hatchery is composed of three rearing areas: Raceways, Hatchery I, and Hatchery II.

Raceways: The brood stock raceways consist of four 10-pond, 1,000-foot-long series. Brood stock is reared in two separate concrete series, ranging between 400 and 500 feet long. There are two earthen ponds for use in the rearing of selects (future brood stock).

Hatchery I: Hatchery I is a smaller building containing 24 standard California troughs and four deep tanks and has an egg manifold capable of running 18 vertical flow egg jars.

Hatchery II: Hatchery II houses 16 standard California troughs and 38 deep tanks and has a manifold for 24 jars.

The two hatchery buildings are used for egg incubation, hatching, and fry/fingerling rearing.

Maintenance and Inspection

All production systems and settling ponds are inspected throughout each day and at least once during nighttime hours. Any problems discovered are promptly repaired/dealt with to minimize fish loss and unintentional discharge. All mechanical equipment associated with the hatchery's operation is on a weekly maintenance schedule for inspection, service, oil change, and lube, among other things, to ensure continued function. Weekly maintenance is conducted for all production and wastewater treatment systems to ensure the integrity of all screens and racks and to maintain sufficient water depths for maximum efficiency for the settling ponds.

Storage and Containment

The hatchery maintains separate storage facilities for each class of chemicals kept on site. All chemical containers are inventoried and inspected periodically for signs of leakage or fatigue. All chemical-storage facilities at the hatchery have concrete flooring, to minimize their accidental release into the waters of the state if a spill should occur.

Gasoline and diesel for vehicle usage are stored in separate, 1,000 gallon ConVault storage tanks. One privately operated 1,000-gallon fuel tank is maintained, with a large containment basin surrounding the tank.

Six propane tanks ranging in size from 150 to 12,000 gallons are on site for both facility and residential usage. Tanks and associated lines are maintained and, if necessary, repaired by a contracted propane company. Unused oil, solvents, and other equipment fluids are stored in the heated, locked shop facility. Used oils are contained in metal drums, which are pumped out by a recycle company as needed. Used oil filters are drained and then stored for pickup, as well.

Chemicals used for fish culture purposes, with the exception of salt, are stored in a heated, locked building with numerous windows for potential ventilation. All chemicals stored are in the manufacturers' original containers, clearly labeled. Salt is stored in a separate, covered dry equipment/feed-storage building.

Paint and other associated materials are kept in their original manufacturers' containers in a heated, locked section of another storage building. All containers are organized, as well as clearly labeled to state their contents and application.

Chemicals used in the treatment of the domestic water system are ordered, inventoried, and used by an outside contractor with appropriate water treatment classifications. These chemicals are stored in the building housing the water treatment plant, which is heated and inspected daily.

Appropriate signage, placards, and safety equipment exist at all storage sites. There are fire extinguishers located at all sites, as well as an eyewash station where the aquaculture chemicals are stored and retrieved. In the event of an accidental spill of any chemical fluid, associated absorbents are stored in readily accessible locations, and cleanup procedures as outlined in the hatchery's hazardous materials plan are implemented. There are periodic inspections by both Mono County and Cal/OSHA.

Fish Programs

Hot Creek Hatchery is a major brood stock facility but also produces a large number of fish for stocking. The hatchery houses brown trout, cutthroat trout, Eagle Lake trout, golden trout, and

rainbow trout. Eggs from these fish are harvested and annually shipped to production hatcheries throughout the state, including Mount Shasta Hatchery, Crystal Lake Hatchery, Darrah Springs Hatchery, American River Hatchery, Moccasin Creek Hatchery, Fish Springs Hatchery, Black Rock Rearing Ponds, Mount Whitney Hatchery, Kern River Planting Base, and Fillmore Hatchery. Eggs are also shipped out of state, subject to availability and demand. The fingerling and adult fish reared at the facility are stocked in locations throughout northern and central California.

The fish produced at Hot Creek Hatchery serve primarily a recreational purpose. Because of the presence of New Zealand mud snail in the hatchery facilities, fish stocked from Hot Creek can only be released to waters with known populations of the snail.

Average annual production for the past 5 years is 1,068,693 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Black Rock Rearing Ponds

Location and Size

Black Rock Rearing Ponds is located in Inyo County on the east side of U.S. 395 about 10 miles north of Mount Whitney Hatchery. Black Rock Rearing Ponds lies on 40 acres leased from the LADWP and was constructed in 1964.

Facilities and Operations

The following description of Black Rock Rearing Ponds facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2007a). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The hatchery serves a dual role as both a production and brood stock hatchery. Currently, around 170,000 pounds of catchable rainbow trout are produced, along with 90,000 subcatchable Lahontan cutthroat trout per annum; 300,000 Kamloops rainbow and 100,000 brown trout eggs are taken each year on site and then immediately transferred to Mount Whitney Hatchery for incubation and shipment.

The hatchery operates solely as a flow-through system relying on both diverted supply and well water. The water that supplies the large flow-through earthen rearing pond, Pond I, is diverted from Division Creek. All brood stock are reared in Pond I, where, at the time of spawning, fish are trapped as they attempt to move upstream. Two LADWP wells are available to supply water to both the small hatchery building and the production raceways, which consist of four concrete series, each 500 feet long. Separate diesel, auto-start standby engines provide electrical backup to each well in the event of power outages. Black Rock Rearing Pond is currently operating under NPDES permit CA0102792.

Numerous buildings are used for support of hatchery operations, including a shop/garage, truck garage, and several small buildings for material storage. In addition, there are three residential housing units used by hatchery employees.

Water Source

The hatchery's diversions from Division Creek average around 5.54 mgd. Water temperatures fluctuate seasonally and range from 39°F in the winter to 57°F in the summer. The hatchery also uses two wells. The two wells are maintained by the LADWP, with typically only one used at a time. The primary well, well 351, produces around 10.7 mgd with a year-round temperature of 59°F. The secondary well, well 356, produces around 7.5 mgd, also with a constant temperature of 59°F.

Rearing Facilities

The hatchery is composed of the following rearing areas: four 500-foot-long concrete series; Pond I, where fish are trapped at the time of spawning as they attempt to move upstream; and the hatchery building.

Maintenance and Inspection

All hatchery supply systems, brood ponds, hatchery systems, production ponds, and settling ponds are inspected throughout each day and at least once during nighttime hours. Any problems discovered are promptly repaired/dealt with to minimize fish/egg loss and unintentional discharge. All mechanical equipment associated with the hatchery's operations is on a maintenance schedule for inspection, service, oil change, and lube to ensure continued function.

The production raceways are cleaned on a weekly basis in order to minimize waste buildup and promote fish health. No more than two series are cleaned concurrently, in order to decrease the concentration of solids being discharged into the settling ponds at one time. Samples are collected and tested for TSS twice per quarter during pond cleaning operations.

Storage and Containment

The hatchery maintains separate storage facilities for each class of chemicals kept on site. All chemical containers are inventoried and inspected periodically for signs of leakage or fatigue. All chemical-storage facilities at the hatchery have concrete flooring, in order to minimize their accidental release into the waters of the state if a spill should occur.

There are 500-, 1,000- and 2,500-gallon propane tanks on site for both facility and residential usage. Tanks and associated lines are maintained and, if necessary, repaired by a contracted propane company.

Unused oil, solvents, and other equipment fluids are stored in the heated, locked shop facility. Used oils are contained in metal drums, which are pumped out by a recycle company as needed. Used oil filters are drained and then stored for pickup, as well.

All chemicals used for fish culture purposes, with the exception of salt, are kept in a storage facility. All chemicals stored are in their manufacturers' containers, clearly labeled. Salt is stored on pallets in a separate, covered dry storage building.

Appropriate signage, placards, and safety equipment exist at all storage sites, and fire extinguishers are located throughout the hatchery. In the event of an accidental spill of any chemical fluid, associated absorbents are stored in readily accessible locations. There are periodic inspections by Inyo County and Cal/OSHA, keeping all related permits up-to-date.

Fish Programs

Black Rock Rearing Ponds serves as both a production and brood stock hatchery. The hatchery houses rainbow trout, brown trout, and cutthroat trout. The rainbow and brown trout eggs produced at Black Rock Rearing Ponds are immediately transferred to Mount Whitney Hatchery for incubation and shipment. The hatchery also serves as a rearing facility for rainbow brood stock and holds the fish until they are yearlings. The fish produced at Black Rock Rearing Ponds serve primarily a recreational purpose.

Annual average production totals for the Black Rock Rearing Ponds are included in those for Mount Whitney Hatchery. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Fish Springs Hatchery

Location and Size

Fish Springs Hatchery is located on U.S. 395 on the eastern slope of the Sierra Nevada, approximately 5 miles south of Big Pine, California. The facility was originally built in 1952 and modernized to concrete raceways in 1972. The hatchery sits on 98 acres of land owned by the LADWP.

Facilities and Operations

The following description of Fish Springs Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008g). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The hatchery is composed of the following fish production and administrative infrastructure: six fish production raceways, two nursery tanks, an incubator building, two garages, three water wells, two large storage buildings, six feed bins, a bird enclosure, process water wells, a recirculation pump station, a main aerator, mid-series pumps and aerators, an effluent pond, wastewater drain lines, a maintenance shop, three small storage buildings, a redwood fish rearing tank, a water distribution system, shuttle cars and rails, six residences, garages, a domestic water well with pump, domestic water supply building and system, septic tank, public restrooms, a kiosk, a parking lot, roads, and sidewalks. Fish Springs Hatchery currently operates under NPDES permit CA0102806.

Water Source

The facility water source consists of two large water wells. Well 330 pumps approximately 10 cfs, and well 332 pumps approximately 18 cfs for a total of 28 cfs combined. The water is aerated through the hatchery's main aeration tower prior to gravity feeding into the raceway ponds.

Rearing Facilities

The hatchery is composed of three rearing areas: raceways, nursery tanks, and an incubator building.

The raceways consist of six 1,000-foot concrete raceways, divided into 60 10-foot-by-100-foot ponds separated at 500 feet by a mid-pond pump/aeration system. The water is aerated at the head of the raceway series and gravity-fed to the ponds. The water flows through 500 feet to the mid-pond and then is pumped and re-aerated and gravity-fed to the final 500 feet. From there, the water is gravity-fed into the settling pond area. The settling pond consists of a canal-type area 20 feet wide and 2,000 feet long, which flows over copper plates mounted on 2-inch-by-6-inch dam boards to Fish Springs Creek. The copper plates are an effort to stop the New Zealand mud snail at the hatchery's discharge.

Maintenance and Inspection

Ponds are cleaned on a weekly basis by hand and a mechanical crowder, based on fish size. Cleaning is done from the head of a series to the mid-pond. When all the upper series of ponds are completed, the lower series is done. Fish losses are picked up at all tail screens and throughout all ponds daily as needed. All losses are buried with lime in a designated trench approximately 3 feet wide, 30 feet long, and 15 feet deep. Maintenance on the facility is done biweekly.

Storage and Containment

All chemicals are stored in a designated locked storage building labeled with safety and warning signs. MSDSs of all chemicals are in binders located in the chemical building, the employee break room, and the facility office.

Fish Springs Hatchery has four diesel-fuel storage tanks, consisting of three 500-gallon ConVault tanks with dual walls and spill containment basins used for the standby generators on the production water wells. And there is one 150-gallon ConVault tank used for the standby generator for electrical backup. Fish Springs Hatchery also has two propane tanks. The largest tank is 3,600 gallons and supplies propane for all buildings and residences, and the second tank is approximately 500 gallons and is used for mid-pond backup engines.

Waste oil is stored in a 55-gallon drum mounted on a spill-proof stand to avoid leakage onto the ground. This container is grounded for safety purposes and stored in a locked and vented storage building. Crane Industrial Waste is contracted to remove all waste oil as needed.

Fish Programs

Fish Springs Hatchery is a production facility and is devoted almost entirely to rearing catchable-sized rainbow trout for distribution in the Inyo-Mono area. The hatchery houses rainbow trout and Eagle Lake trout and has also raised and planted small number of brown trout over the past 5 years. The fish produced at Fish Springs Hatchery serve primarily a recreational purpose.

Average annual production for the past 5 years is 921,303 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Mount Whitney Hatchery

Location and Size

Mount Whitney Hatchery is located on the east side of the Sierra Nevada, 1 mile west of U.S. 395 and about 2 miles north of the town of Independence, in Inyo County. The hatchery is on 45 acres of land

owned by the State of California and was constructed in 1916. The hatchery serves as one of the domestic brood stock facilities for the state. Mount Whitney Hatchery was devastated by a mud slide in 2008 and is not currently operational. The hatchery was reopened in May 2009 as an interpretive center only. However, an analysis of the hatchery is included in this EIR/EIS because operations over the past 5 years are being considered, and it is anticipated that the facility will be used again in the future.

Facilities and Operations

The following description of Mount Whitney Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2007b). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The hatchery operates solely as a gravitational flow-through system, with no water recirculated except in emergency situations. The concrete raceways consist of three three-pond, 300-foot-long series. The main building contains an office, three apartments, and the hatchery building, which is used for egg incubation, picking, and shipping. In addition to the facilities listed above, there are numerous buildings used for support of the operation of the hatchery. These include a shop/garage, an open truck garage, a wood shop, a freezer/storage building, a salt garage, and one small building for material storage. In addition, there are eight residential housing units used by hatchery employees and other state personnel. The hatchery is currently operating under NPDES permit CA0102784.

The hatchery produces approximately 10 million Whitney strain rainbow trout eggs per annum and serves as an incubation and shipping facility for around 1 million Kamloops rainbow, 300,000 golden, and 100,000 brown trout eggs each year.

Water Source

The hatchery relies on diversions from both the north and south forks of Oak Creek, which together average around 3.5 mgd. Water temperatures fluctuate seasonally and range from 34°F in the winter to 63°F in the summer. The diverted water from the south fork feeds the hatchery building directly, while north-fork water enters two sediment settling ponds before supplying flows to the brood stock ponds and hatchery building.

There are two available effluent settling ponds, with typically only one used at a time. These lined, earthen ponds are designed to reduce organic deposits before water is discharged back into Oak Creek.

Rearing Facilities

The hatchery is composed of two rearing areas: raceways and the hatchery building.

Raceways: The raceways consists of three three-pond, 300-foot-long series. From the time they are yearlings, brood stock are held in these ponds until their use for egg production is no longer required. The fish are then planted locally into either Haiwee Reservoir or Diaz Lake.

Hatchery building: The hatchery building currently houses 26 standard California troughs and 16 deep tanks and is equipped to operate up to 32 egg jars. The temperature of the water supplying the egg jars can be manipulated using a heater/chiller system to accelerate/delay the incubation period.

Maintenance and Inspection

All hatchery supply systems, brood ponds, hatchery systems, and settling ponds are inspected throughout each day and at least once during nighttime hours. Any problems discovered are promptly repaired/dealt with to minimize fish/egg loss and unintentional discharge. All mechanical equipment associated with the hatchery's operation is on a maintenance schedule for inspection, service, oil change, and lube to ensure continued function.

Complete, accurate records of all hatchery functions, maintenance, and repairs are kept. Hatchery data are kept by computer for all fish and their associated growth, movements, mortality, and locations using the state-designed DFG *Hatchery Inventory System Database*. All expenditures by the hatchery are also tracked using a specialized computer program. Written records are kept for daily work done by hatchery personnel, chemical usage, and all equipment maintenance and repair.

The raceways are cleaned on a monthly basis in order to minimize waste buildup and promote fish health. No more than two series are cleaned concurrently, to decrease the concentration of solids being discharged into the settling ponds at one time. Samples are collected and tested for TSS bi-quarterly during pond cleaning operations. Under the current NPDES permit, no violations for exceeding set TSS levels have occurred.

Storage and Containment

The hatchery maintains separate storage facilities for each class of chemicals kept on site. All chemical containers are inventoried and inspected periodically for signs of leakage or fatigue. All chemical-storage facilities at the hatchery have concrete flooring, in order to minimize their accidental release into the waters of the state, if a spill should occur.

One 300- and a larger 3,000-gallon propane tank are on site for both facility and residential usage. Tanks and associated lines are maintained and, if necessary, repaired by a contracted propane company.

Unused oil, solvents, and other equipment fluids are stored in the heated, locked shop facility. Used oils are contained in metal drums, which are pumped out by a recycle company as needed. Used oil filters are drained and then stored for pickup, as well.

All chemicals used for fish culture purposes, with the exception of salt, are stored in the heated, locked hatchery building. All chemicals stored are in their manufacturers' containers, clearly labeled. Salt is stored on pallets, in a separate, covered, dry storage building.

Paint and other associated materials are kept in their original manufacturers' containers in a heated, locked section of the freezer/storage building. All containers are organized, as well as clearly labeled to state their contents and application.

Fertilizer, pesticides, and herbicides are located in a locked, concrete-floored storage building immediately behind the main building. There is an eyewash station located inside in the event of an accidental facial exposure.

Appropriate signage, placards, and safety equipment exist at all storage sites. There are fire extinguishers located throughout the hatchery. In the event of an accidental spill of any chemical fluid, associated absorbents are stored in readily accessible locations. There are periodic inspections by Inyo County and Cal/OSHA, keeping all related permits up-to-date.

Fish Programs

Mount Whitney Hatchery is a major brood stock facility, but it also produces fish for stocking. The hatchery produces rainbow trout, golden trout, and brown trout, as well as rainbow brood stock.

Eggs from Mount Whitney Hatchery fish are harvested and annually shipped to production hatcheries throughout the state, including American River Hatchery, Moccasin Creek Hatchery, Hot Creek Hatchery, Fish Springs Hatchery, Black Rock Rearing Ponds, Kern River Planting Base, and Fillmore Hatchery. Eggs are also shipped out of state, subject to availability and demand. The hatchery has a capacity of 3 million fingerlings annually that are used to stock the ponds at Fish Springs Hatchery and Black Rock Rearing Ponds. Fingerlings are also reared at Mount Whitney Hatchery for airplane stocking of the high mountain lakes of the Mono-Inyo area. The fish raised at this facility serve primarily a recreational purpose.

Average annual production for the past 5 years is 330,144 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

San Joaquin Hatchery

Location and Size

San Joaquin Hatchery is located in the town of Friant, about 20 miles northeast of Fresno (Fresno County) and 1 mile below Friant Dam. The reservoir behind Friant Dam is called Millerton Lake. The hatchery is on 40 acres of land owned by DFG and was constructed in 1954 with earthen ponds. The hatchery went into full production in 1955 and switched from the earthen ponds to modern concrete raceways in 1975.

Facilities and Operations

The following description of San Joaquin facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008h). Some material has been edited from the original text to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The hatchery is composed of the following fish production and administrative infrastructure: eight fish production raceways with 48 ponds, two brood stock production raceways, the Main Hatchery Building (including 80 troughs, 12 deep tanks, and hatching jars), a secondary hatchery building, a spawning house, a water supply line from Friant Dam, an aeration tower (for water treatment), a freezer/feed/storage building, a loading dock, two garages, a chemical-storage building, a bird enclosure, two settling ponds, NPDES water monitoring wells, two fuel tanks, a parking lot, six residences, a domestic water treatment plant and storage tank, five double garages, restrooms, a butane tank, two office buildings, septic system/pump/leach field, parking lot, and roadways. The hatchery currently operates under NPDES permit CA0004812.

The majority of production is rainbow trout, but the hatchery also produces up to 400,000 kokanee fingerlings, and on certain years the hatchery produces golden trout for air planting (planting by airplane). Brook trout are occasionally raised for specialty waters.

Water Source

Water for the facility comes directly from Friant Dam. There are two valves with pipes coming from the dam, a high valve coming from the Friant/Kern Canal and a lower valve at the base of the dam. The valves can be adjusted to regulate hatchery flow through water temperature, typically between 47°F and 56°F. Water is delivered to the hatchery via an underground pipe and run through an aerator tower to dispel noxious gasses and add oxygen. Water coming into the facility is typically low in hardness, solids, and conductivity.

Rearing Facilities

The hatchery is composed of four rearing areas: raceways, the Main Hatchery Building, the secondary hatchery building, and a spawning house. The raceways use a flow-through in series design with eight 600-foot raceways consisting of six 100-foot ponds each and two 400-foot raceways with four 100-foot ponds each. The Main Hatchery Building includes 80 troughs, 12 deep tanks, and hatching jars.

Maintenance and Inspection

Rearing troughs and deep tanks in the hatchery buildings are cleaned daily for the health of the fish and to minimize buildup. The bottom and sides are cleaned with a brush. Outside rearing ponds are cleaned as needed. The bottom and sides are cleaned with a brush. Outside rearing ponds are cleaned as needed. Ponds with small fish are cleaned by hand with a scraper; larger fish allow use of a mechanical fish crowder to clean the sides and bottom of the raceways.

Fish are inventoried by weight. Several samples are netted out, weighed, counted, and then averaged to find the average weight of the fish. In the hatchery building, the small fish are then hand-weighed in a bucket with water for the entire lot of fish to determine the total number. In the raceways, after the average weight of the fish is determined, the fish are pumped into a truck with a graduated sight glass to give the total weight of the fish.

Storage and Containment

All pesticides and chemicals are stored in a single building marked with placards identifying the contents. Drugs are not stored at the facility but are ordered as needed through a licensed veterinarian. All fish treated with any drug or chemical are held for the FDA-required withdrawal time for that treatment. Gasoline, diesel fuel, and waste oil are stored in approved containers with a concrete catch basin to contain spills.

Fish Programs

San Joaquin Hatchery is a production facility with minor brood stock. The hatchery houses brook trout, cutthroat trout, Eagle Lake trout, golden trout, rainbow trout, and kokanee salmon. The kokanee salmon are reared for stocking in inland waters. The fish produced at San Joaquin Hatchery serve primarily a recreational purpose.

Average annual production for the past 5 years is 1,725,376 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Fillmore Hatchery

Location and Size

Fillmore Hatchery is located on SR 126, about 1 mile east of the town of Fillmore, in Ventura County. The hatchery is on 24 acres of land owned by the State of California and has been in operation since 1940. The construction of the hatchery initially started in 1940 and was completed and dedicated on July 19, 1942. Modernization from earthen ponds to cement raceways started in the early spring of 1967 and was completed in June of 1968. An additional concrete raceway was constructed in 1972.

Facilities and Operations

The following description of Fillmore Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008i). Some material has been edited from the original text to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Fillmore Hatchery produces primarily rainbow trout (see Table 2-3 in Chapter 2 of this EIR/EIS). The fish are reared in four 1,000-foot-long raceways, designated A, B, C, and D, that can be sectioned off into 10 production ponds apiece. The hatchery also has a hatchery building, an office/garage/shop/freezer building, a general storage building, and a hazardous materials storage building.

No egg harvesting takes place at the facility because all eggs are brought in from DFG brood stock hatcheries. An average of 1.3 million trout eggs are incubated and hatched in the hatchery building annually.

Water Source

The water supply for the hatchery is produced from four groundwater wells located on hatchery property. Normally, two of these wells are pumped at a time with the flow varying from 5,700 gpm or 12.7 cfs to 8,100 gpm or 18 cfs. Water is discharged into an outflow pond. From there, water travels through a surface channel approximately 60–70 feet long where it leaves DFG property and enters a commercial watercress field where it is used for irrigation. Agricultural use of the hatchery's discharge water uses nitrogen waste and settles suspended materials. Discharges from the hatchery do not flow into any surface waters; therefore, water released from the hatchery is not subject to waste discharge requirements and an NPDES permit is not required.

Rearing Facilities

The hatchery is composed of two rearing areas: the hatchery building and the raceways.

Hatchery Building: The hatchery building consists of five Heath incubator stacks, four vertical flow hatch jars, and five deep tanks. Trout eggs are incubated and hatched in both Heath incubator stacks and hatch jars. Eggs in the incubators are treated with kiln-dried mill feed salt to control fungus

growth. The water flow through the hatch jars can be varied to prevent any fungus from growing on the eggs and killing them. All flow-through water from the hatchery building is discharged and reused in the lower series of the raceways. The hatchery building's water is supplied by a 6-inch pipeline from either well 5 or well 6, whichever well is online at the time. The hatchery building also can be supplied via a pump with water diverted from the main aeration tower.

Raceways: The raceways are supplied by four wells, designated wells 3, 4, 5, and 6. Wells 3 and 4 are 12 inches in diameter, and wells 5 and 6 are 16 inches in diameter. Two wells are pumped at a time, one each of the 12-inch and the 16-inch, delivering approximately 18 cfs. The upper series of C and D raceways receive approximately six cfs or one-third of total inflow in recirculated water, for a total of 24 cfs. All flow-through water is discharged off site through an overflow weir into a shallow drainage ditch onto adjacent farmland. Water is diverted through a series of ditches and used for flooding of watercress fields and percolates to recharge groundwater resources in the underlying area.

Maintenance and Inspection

Hatchery water supply intake screens, raceway pond discharge screens, and any other screens in the raceways are inspected and cleaned daily to ensure prevention of overflow from the facility. These duties are included in fish-feeding duties and standby personnel duties. Hatchery employees are assigned standby duties on a rotating basis year round to monitor fish, prevent any obstructions from plugging pond screens, check pump alarms, and inspecting general security of the facility.

Perforated and slotted stainless steel screens are used to separate different age groups of fish and to keep the fish contained within the raceway series. The screens are cleaned of any debris and mortalities twice daily or as often as needed. The ponds are cleaned on a weekly basis, or as needs dictate, as fish moving and loading can disturb settled biosolids in the raceways. Pond cleaning frequency promotes good hygiene, contributes to fish health, and minimizes waste discharge.

Storage and Containment

The hatchery has three separate chemical-storage areas: for therapeutic chemicals and pesticides; for oil, grease, and associated materials; and for paint.

Oil is stored in manufacturers' quart containers. Grease is stored in manufacturers' 5-gallon cans. Waste oil is stored in 55-gallon drums that are labeled. Used oil and fuel filters are stored in a 55-gallon drum that is labeled.

The hatchery has two 500-gallon aboveground ConVault diesel-fuel tanks and one 250-gallon aboveground ConVault gasoline fuel tank. The tanks are dual-walled to provide containment in the event of any leakage. There is also a 1,000-gallon aboveground steel gasoline tank situated in a walled containment unit to inhibit any leakage. Fuel cans are stored in approved flammable-liquid storage containers in a designated storage shed.

Paint is stored in the loft area, and inventory is kept to a minimum.

The separate storage of non-compatible chemicals in appropriate storage units and designated areas allows leaks and spills to be detected and dealt with while still within containment. It also minimizes the likelihood of an incident precipitated by unwanted chemical reaction that could result in a hazardous situation.

Fish Programs

Fillmore Hatchery is a production facility that houses rainbow trout, brown trout, and Eagle Lake trout. No egg harvesting takes place at the facility as all eggs are brought in from DFG brood stock hatcheries. An average of 1.3 million trout eggs are incubated and hatched in the hatchery building annually. The fish produced at Fillmore Hatchery serve primarily a recreational purpose.

Average annual production for the past 5 years is 718,359 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Mojave River Hatchery

Location and Size

Mojave River Hatchery is located several miles south of the town of Victorville, about 5 miles east of Interstate 15 (I-15) on the Bear Valley Cutoff, in San Bernardino County, on the edge of the Mojave Desert. The hatchery is on 23 acres of land owned by the State of California and was initially constructed in 1947. In 1974–1975, the hatchery was modernized from earthen ponds to cement raceways.

Facilities and Operations

The following description of Mojave River Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2007c). Some material has been edited from the original text to avoid duplication of information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The hatchery is composed of the following fish production and administrative infrastructure: six fish production raceways with 10 ponds each, a hatchery building (including 16 incubator stacks, a warehouse, a garage, an ice unit, two rearing troughs), two large garages, five water wells, two public restrooms, two storage sheds, five feed-storage bins, five mid-pond water pumps, two recirculation pumps, three aeration units, a bird enclosure, two effluent ponds, a pump house, three pump/well houses, five water wells, a water supply system, seven employee residences with garages, two storage buildings, a parking lot, a restroom, a sewage system, and roadways. The hatchery currently operates under NPDES permit CA0102814.

No egg harvesting takes place at the facility because all eggs are brought in from other DFG hatcheries. An average of 1.5 million trout eggs are incubated and reared in the hatchery building annually.

Water Source

A constant supply of 60°F water is pumped by five wells, two or three of which operate at one time. Typical of well waters, it is low in dissolved oxygen and high in other gases. To correct this imbalance, the water is passed through one or two aerators at the head of the pond series. All water is re-aerated halfway through the hatchery to maintain adequate dissolved oxygen content. When the hatchery building is in use, water is diverted into a small aerator before entering the incubators.

Hatchery effluent is discharged at one point, discharge 001. Water leaving the ponds enters into a series of two settling ponds. From the settling ponds, up to 6 cfs are diverted to an open concrete ditch, approximately 1,500 feet, to a small lake located on Spring Valley Lake property, discharge 002. This lake is used as a water supply for irrigation of the golf course and surrounding landscape. The remainder of the water, between 6.7 and 13.6 cfs from the settling ponds, is discharged across Victor Valley College property and into the Mojave River. The greatest water discharge levels occur between the months of January and June. Water discharge across Victor Valley College property to the Mojave River has created a wet land area, used by avian, terrestrial, and aquatic organisms. Fluctuations in water discharge have no significant impacts in the wet land habitats because of the continuous flow of water and limited fluctuations.

Rearing Facilities

This hatchery has 60 10-foot-by-100-foot concrete ponds arranged in six raceway series.

Maintenance and Inspection

Maintenance performed by crew members includes quarterly water sampling per Order No. R6V-2006-0028, from the Lahontan Regional Water Quality Control Board. A water monitoring log book is kept in the hatchery office.

Any materials or debris removed from the pond screens, roadways, or grounds are disposed of either in the garbage dumpster or collected in the debris burn pile. Debris piles are burned during fall and winter months.

Any unused aquaculture drugs and chemicals are disposed of in an environmentally safe manner according to label guidelines and MSDS guidelines. The hatchery generally does not have unused drugs or chemicals to dispose of because their use would be anticipated, and the amount needed would be calculated for that specific need.

Ponds are cleaned on a weekly basis, or as needs dictate, because fish crowding and loading can disturb settled biosolids in the raceways. The pond cleaning frequency is to minimize waste discharge.

Storage and Containment

Mojave River Hatchery has four separate chemical-storage areas: for oil and grease, for therapeutants and chemicals relating to fish health, for paints and gas, and for non-compatible chemicals.

The hatchery has a storage area for used motor oil in four 50 gallon drums. The floor in the garage area is concrete.

Paint and associated materials are kept in an approved metal storage area for flammable liquids. Fuel cans are also stored in the approved flammable-liquids storage container. The hatchery has two 1,000-gallon aboveground ConVault fuel tanks. The tanks are dual-walled to provide containment in the event of any leakage.

The separate storage of non-compatible chemicals in appropriate storage units allows leaks and spills to be detected and dealt with while still within containment. It also minimizes the likelihood of

an incident precipitated by unwanted chemical reaction that could result in the accidental release of chemicals into the waters of the state.

Fish Programs

Mojave River Hatchery is a production facility that houses rainbow trout, brown trout, and Eagle Lake trout. No egg harvesting takes place at Mojave River Hatchery, as all eggs are brought in from other DFG hatcheries. An average of 1.5 million trout eggs are incubated and reared in the hatchery building annually. Eggs are also shipped out of state, subject to availability and demand. The fish produced at Mojave River Hatchery serve primarily a recreational purpose.

Average annual production for the past 5 years is 762,965 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Kern River Planting Base

Location and Size

Kern River Planting Base is located 50 miles east of Bakersfield and 1.5 miles up the Kern River Canyon from the town of Kernville, in Kern County. The hatchery is on 14 acres of land owned by the Forest Service and has operated since 1928.

Facilities and Operations

The following description of Kern River Planting Base facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008d). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Hatchery facilities include 12 fish holding/rearing ponds, one hatchery building (with troughs and screens), a freezer and shop building, a surface-water supply ditch, a bird exclosure, a flood pump, a garage and tool room, a settling basin (for water supply to fish tanks), a half-mile pipeline, a fish planting tank, a pump/well house, a propane tank, an office building, two residences with garages, a restroom, a visitor center, a museum, two septic tanks, and roadways.

Kern River Planting Base receives deliveries of catchable-sized rainbow trout from San Joaquin Hatchery up to three times a month. These trout are distributed from Kern River Planting Base in Tulare and Kern Counties. One hundred twenty-five thousand (125,000) pounds of fish are planted from this facility annually. Kern River Hatchery also raises 5,000 pounds of fish, from egg to fish, for planting. Currently, this hatchery does not participate in the NPDES because of the low levels of fish production.

Water Source

This facility was constructed in 1942, and the water is delivered by a 36-inch pipeline. This pipeline is one-half mile long, and the water is delivered via a siphon system. When the water reaches the hatchery, it is then moved via a surface ditch to the fish ponds and hatchery building.

The primary water for the hatchery (35 cfs) is allowed through a Federal Energy Regulatory Commission (FERC) agreement, the water is siphoned from the Kern River just below the Kern River powerhouse facility No. 3, it travels about 0.5 mile through a 36-inch pipeline and then enters the ditch on the hatchery property. Once it enters the ditch, the water can be diverted to an overflow ditch that runs parallel to the levee, but the majority of it is used in the ponds and hatchery building mentioned above. After flowing through the facility, it exits through two tubes under the levee.

Rearing Facilities

There are eight 12-foot-by-80-foot ponds (old and cracked) that were built in 1933, four 10-foot-by-40-foot holding ponds that were built in the 1970s, and a small hatchery.

Maintenance and Inspection

The intake siphon is inspected in the morning and afternoon each day for leaves or branches on the intake rack. The supply ditch is inspected each day for any leaks or any signs of a breach. Regular maintenance of production systems and wastewater treatment systems is conducted to ensure their proper function. Fish screens are checked for any areas that fish may escape.

Storage and Containment

Gasoline, diesel fuel, and waste oil are stored in approved containers with a concrete catch basin to contain spills.

Fish Programs

Kern River Planting Base is a planting base and minor brood stock facility. The hatchery houses rainbow trout, Eagle Lake trout, and Kern River rainbow trout and also has brood stock for Kern River rainbow trout. Kern River Planting Base serves a primarily recreational purpose.

Kern River Planting Base stocks approximately 169,400 fish annually. Most of these fish are received from other hatcheries prior to stocking. A summary of the past 5 years of fish production is included in Table 2-3 of this EIR/EIS.

Silverado Fisheries Base

Location and Size

Silverado Fisheries Base is located north of the Napa River near the town of Yountville, in Napa County. Silverado Fisheries Base is located on 3 acres of land and has been in operation since 1948.

Facilities and Operations

The following description of Silverado Fisheries Base facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008j). Some material has been edited from the original text to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The hatchery consists of a small fish hatchery, fish quarantine station, and fish transfer facility. The fish quarantine station is the only one in the state. All fish and eggs received from out of state must be cleared with the pathology department prior to transport. The transfer station (planting base) transports up to 400,000 pounds of catchable trout annually throughout the Bay Area and beyond. Silverado Fisheries Base is not required to maintain an NPDES permit because the facility produces less than 20,000 pounds of aquatic animals per year and feeds less than 5,000 pounds of food during the calendar month of maximum feeding.

Water Source

The facility's water supply is accomplished by means of "gravity flow" from Rector Dam through an 8-inch diameter pipe to the bypass/filter building. The filter is checked weekly during the production season to ensure supply water is free of fish and debris. The water quality is usually good, with the exception of an occasional blend of silt. When silt is observed, the hatchery water is closely monitored for the extent of pollution, which could be harmful to egg and fish health. Approximately 99% of the water leaving the hatchery is directed into a primary settling pond and then a secondary pond (both ponds are approximately 5,600 square feet in surface area combined and about 6 feet deep) and finally into Rector Creek. The remaining 1% is seasonal overflow from the deep trough building to a shallow swale toward the northwest.

Rearing Facilities

Fish rearing and holding structures for this facility consist of two standard raceways (150 feet long, 4 feet deep, and 10 feet wide), two narrow raceways (150 feet long, 4 feet deep, and 5 feet wide), 24 deep troughs (16 feet long, 20 inches deep, and 20 inches wide), and four small aluminum troughs (16 feet long, 6 inches deep, and 16 inches wide). Egg-hatching methods include vertical flow incubators and hatching jars.

Maintenance and Inspection

The deep tanks are flushed and cleaned daily. Raceways used for rearing fingerlings are swept daily as conditions warrant. All hatchery water is derived from a single source in which 99% of the effluent is discharged into Rector Creek, after leaving the two small settling ponds. The remaining 1% is discharged from the deep tank area (seasonal flow) as previously mentioned.

Feed and other byproducts of fish production that eventually accumulate in the settling ponds will break down through biodegradable means. Minor amounts of algae usually encountered at Silverado Fisheries Base are historically of no consequence.

All equipment and accessories involved in production at Silverado Fisheries Base must be thoroughly inspected before and during operation. This is to ensure all fish, in all stages of growth, are receiving proper care in the facility provided.

Storage and Containment

Silverado Fisheries Base has four separate chemical-storage units: for therapeutants, for pesticides, for paint, and for oils and fuels.

Pesticides are kept in a hatchery building cabinet, which is locked when personnel are not present.

Aerosols, paints, and similar materials are kept in a well-ventilated room within the hatchery building.

Oils for all vehicles are purchased in 1-gallon containers to aid in the prevention of excess spillage. Used oils are stored in a specified containment area, in a 5-gallon container, and are recycled in a timely manner. Combustibles and fuels for hatchery equipment and maintenance are stored in 5-gallon containers in a well-ventilated room in the hatchery building.

In addition, five aboveground liquid petroleum gas (LPG) tanks are located at Silverado Fisheries Base, four of which supply three of the residences. The fifth is used for the shop and hatchery.

Fish Programs

Silverado Fisheries Base is primarily a quarantine station and planting base, with a small amount of production annually. The hatchery houses brown trout, rainbow trout, kokanee salmon, Chinook salmon, Coho salmon, lake trout, steelhead trout, and Eagle Lake trout. The Silverado Fisheries Base provides fish for stocking across most of central California. The fish stocked from Silverado Fisheries Base are primarily for recreational purposes.

Average annual production for the past 5 years is 988,294 fish. A summary of the past 5 years of fish production is included in Table 2-3 in Chapter 2 of this EIR/EIS.

Salmon and Steelhead Hatcheries

Iron Gate Hatchery

Location and Size

Iron Gate Hatchery is located just below Iron Gate Dam in Siskiyou County on the Klamath River. The spawning/trapping facility was initially constructed in 1962, with the addition of raceways, a hatchery building, and an office/shop building in 1966. The hatchery is currently owned by PacifiCorp of Portland, Oregon, and operated by DFG.

Facilities and Operations

The following description of Iron Gate Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008k). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Iron Gate Hatchery facilities consist of eight 400-ft. raceways, a hatchery building, a spawning building, an office/shop building, an auxiliary fish ladder, freezer, shop/garage, and two settling ponds for waste treatment. The hatchery operates with a gravity-fed, flow-through system that has five discharge points into the Klamath River. The hatchery water allotment is 50 cfs. The spawning facility discharges through the main ladder (discharge 001) and steelhead return line (discharge 002). An overflow line drains excess water from the aeration tower (discharge 003). The hatchery facility has a discharge at the raceway rearing ponds tailrace (discharge 005) and two flow-through

settling ponds for hatchery effluent treatment, which converge to a single discharge point (discharge 006). The hatchery is currently operated under NPDES permit CA 0006688. DFG and PacifiCorp are listed jointly as dischargers.

Water Source

The hatchery obtains its water supply from Iron Gate Reservoir. Two subsurface influent points are valve-regulated at a depth of 17 feet and 70 feet to adjust water temperature at the hatchery. Water is gravity-fed from the dam via a 30-inch penstock, reducing to 24 inches, and then passes through an aeration tower. Flows through the hatchery facilities range from 9.4 mgd to 34.9 mgd. Additional water is discharged at the spawning facility and the aeration overflow system. No treatment of influent water is performed except for aeration through the tower. Hatchery flow is monitored by PacifiCorp at the Iron Gate Dam control room.

Rearing Facilities

Iron Gate Hatchery rearing facilities consist of eight 400-foot raceways, a hatchery building, and a spawning building.

Hatchery building: The hatchery building is where fish eggs are transported after water hardening. They are measured and put into incubator trays, where they are left until hatch-out. Eyed eggs are put through a bounce picker to sort live eggs from dead eggs. Live eggs are then re-measured back into incubators typically at 100 ounces of eyed eggs/tray.

Spawning building: The spawning building is where eggs are collected and fertilized during the spawning process. Adult Chinook salmon are anesthetized in a tank with DC electrical current. Green adults are put in holding tanks until they are ripe. The fish are not fed while they are in the holding tanks. Ripe adults are euthanized and arranged on a spawning table for efficient handling. Females are cut open to release the eggs. The eggs are fertilized, rinsed, and disinfected (iodophor: 125 milliliters in a 5-gallon bucket) during water hardening. Adult Coho salmon are anesthetized with carbon dioxide (CO₂) and handled much in the same way as Chinook salmon. Unmarked adult Coho salmon are returned to the river alive via discharge 002. Steelhead are anesthetized with CO₂ and air spawned using small needles inserted into the abdomen cavity and a small amount of air pressure gently forces the eggs out of the female.

Raceways: The eight raceways at Iron Gate Hatchery are of typical hatchery construction. Each raceway is divided into four 100-foot sections that constitute one pond. Slots are integrated in the pond walls at 100-foot intervals to accommodate screens and eight 2-inch-by-6-inch-by-5-foot check boards that maintain a water level of 23 inches in depth. The first pond of each raceway contains a slot at the 50-foot interval to accept a screen that will confine fry to one half of a pond. At the end of each raceway is a contiguous tail race that collects effluent from all the raceways. The tail race is constructed in such a manner that effluent can be discharged directly to the Klamath River or diverted to the settling ponds above discharge 006. Plates are raised in the tail race to divert discharged water to the settling ponds any time cleaning activities are conducted.

Maintenance and Inspection

Frequent pond cleaning is an integral part of hatchery management practices to maintain fish health and to reduce excessive loading of the settling ponds with waste materials at any given period. Food wastes, metabolic wastes, naturally occurring silt, and algae must be removed by hatchery

personnel at regular intervals. If staffing and operational needs allow, Iron Gate Hatchery will clean no more than two raceways (each up to 400 feet of potential cleaning requirements) or three raceways (each up to 200 feet of potential cleaning requirements) per day. This will reduce concentrations of cleaning wastes going to the settling ponds for treatment on any given day. Feed and other byproducts of fish production that eventually accumulate into the settling ponds will break down through biodegradable means.

The settling ponds have not been dredged, but routine maintenance to clean weeds from the banks is an ongoing project.

Storage and Containment

Iron Gate Hatchery has an aboveground ConVault double-walled storage tank that contains 800 gallons of gasoline and 200 gallons of diesel for road and off-road use. There is appropriate signage, bumper posts, and a fuel shutoff switch in case of an emergency in order to minimize the risk of fuel entering receiving waters. Their inspections are a major element of maintaining the fuel-storage facilities in good working order and minimizing the potential for fuel to enter receiving waters.

Commercial distributors fill the aboveground fuel-storage tanks on a periodic basis. A hatchery staff member monitors the refilling to prevent overfilling. All outlets on tank trucks are inspected for leaks prior to and after filling storage tanks to prevent leaks in transit. The discharge valve on the source vehicle is closed before disconnecting the transfer hose. Any fuel left in the transfer hose after fueling is collected to prevent spills.

The fuel-storage tank fill pipes are located inside spill containment structures. All valves that permit direct outward flow of fuel are securely locked in the closed position when not in operation. The starter control for the fuel pumps is locked in the off position when the pumps are not operating. These procedures are designed to prevent the accidental release of fuel and minimize the risk of fuel entering receiving waters.

Flammable materials are stored in the “gas and equipment storage shed,” with various mechanized gardening tools, in their original containers or containers approved for their contents. Drums and containers are stored on catch basins to contain any spillage.

Small quantities of lubricants, paints, herbicides, and solvents are kept in flammable-storage containers in the shop, storage area, and hatchery building for ongoing use. A spill prevention, control, and countermeasure (SPCC) plan is being developed for Iron Gate Hatchery at the time of this publication. PacifiCorp and Iron Gate Hatchery recycle any materials that can be reused at several recycling centers. Spills are contained by absorbent pads, wood shavings, or fish food to prevent contamination of receiving waters of the United States. Disposal is commensurate with the materials to be discarded. PacifiCorp picks up Iron Gate Hatchery batteries, aerosol cans, and florescent lights. Oil is recycled at an authorized center.

Fish Programs

Iron Gate Hatchery is a mitigation hatchery for the Iron Gate Dam. The mitigating agency is PacifiCorp/Scottish Power. The hatchery houses Chinook salmon, coho salmon, and steelhead.

The brood stock for this facility is taken directly from fish returning to the hatchery. The majority of Iron Gate Hatchery fish are released directly into the Klamath River from the hatchery. On occasion, fish are trucked downstream, usually to support testing of trapping equipment.

Average annual production for the past 5 years is 6,465,011 fish. A summary of the past 5 years of fish production is included in Table 2-6 in Chapter 2 of this EIR/EIS.

Mad River Hatchery

Location and Size

Mad River Hatchery is an enhancement hatchery located at the end of Hatchery Road off SR 299, about 2 miles south of the town of Blue Lakes, in Humboldt County. Construction of Mad River Hatchery began in 1969, and the facility went into operation in February 1971. The facility was closed in March 2004 and reopened in December 2004 under a memorandum of agreement with DFG and a nonprofit group called The Friends of the Mad River Fish Hatchery. In 2005, operational funding was provided by the USFWS under a Sport Fish Restoration Act program grant and by DFG. As a result, The Friends of the Mad River Fish Hatchery concluded their MOA in 2007. DFG HIFF and Sport Fishing Restoration Act funds continue to fund Mad River Hatchery.

Facilities and Operations

The following description of Mad River Hatchery facilities and operation is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008I). Some material has been edited from the original text to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Mad River Hatchery is owned and operated by DFG. Funds for the acquisition of the grounds were supplied by the federal Wildlife Restoration Projects Fund and the federal Anadromous Fish Conservation Act. Construction funds were supplied by Wildlife Conservation Board's 1964 Recreation Bond Act and the Anadromous Fish Conservation Act. Construction of Mad River Hatchery began in 1969, and the facility went into operation in February 1971. The facility includes 10 600-foot-long rearing ponds; a fish ladder; a hatchery spawning and incubation building; an administrative building that includes an office, a shop, a warehouse, and a garage; an electric control building; a backup generator/well control building; two settling basins for waste discharge; an aerator tower; a battery of eight gravity-flow coarse rock and oyster shell filters; and a freezer with an 80,000-pound capacity. Also on the grounds are four three-bedroom, two-bath residences for permanent employees. Visitor facilities include public restrooms, bulletin boards, several picnic areas with tables, and a handicapped access ramp to the river.

The Mad River Hatchery was originally designed to produce Chinook salmon, Coho salmon, steelhead, and rainbow trout. At present, the hatchery is only producing steelhead and rainbow trout due to reduced operating funds.

Water Source

The hatchery uses water from 18 wells located on the property. The well field is located adjacent to the Mad River at the northwest corner of the hatchery complex. The wells range in depth from 38 feet to 75 feet, and each has an individual flow capacity between 300 and 800 gpm.

Mad River Hatchery is unique in that it operates on reconditioned water that is recirculated. The total water requirement is 7.5 mgd, of which only 10% is supplemental well water, which is added

to the system. Conceptually, 80%–90% of the rearing pond tail water is recirculated, and the remaining 10%–20% is released to the settling ponds.

The well water is pumped directly into a main sump and then is pumped through an aeration tower by up to three 10-cfs (4.488-gpm) pumps. Water flows by gravity from the aeration tower through ultraviolet light and the rearing ponds. If necessary, water can be wasted at the midpoint of each rearing pond series. Water at the tailrace (or midpoint) of each rearing pond flows directly through the biological filter beds and back into the main sump. Water supply for the hatchery building is supplied from wells to a secondary pump by one of four available pumps into the hatchery building.

Rearing Facilities

Mad River Hatchery rearing facilities include ten 600-foot-long rearing ponds and a hatchery spawning and incubation building.

Maintenance and Inspection

All pond ultraviolet systems, pumps and alarms, wells, filters, and discharge points in use are checked for proper operation on a daily basis. The standby generator fluid levels, bird wire operation, and compressors are checked on a weekly basis. On a monthly basis, alarm and backup-generator batteries are checked for proper charge and electrolyte levels, pumps in use are lubricated, fire extinguishers and eyewash stations are checked and initialed, and backup-generator fuel levels are recorded.

Storage and Containment

The hatchery has three aboveground fuel tanks. One tank contains diesel fuel for a standby generator and is a dual-walled tank providing secondary containment in the event of a leak in the primary tank. The other two are propane tanks for supply to the four hatchery residences, forklift fuel refill, and supply to the main office building.

There is appropriate signage, placards, spill kits, and safety equipment at all fuel tanks and chemical-storage units. The tanks are frequently checked by facility personnel during operating hours. Formal inspections are conducted weekly by observing the outside of each tank for signs of deterioration, leaks, or accumulation of oil inside secondary containment. Personnel also inspect tank supports and the foundations.

Commercial distributors fill the aboveground fuel-storage tanks on a periodic basis. A hatchery staff member monitors the refilling to ensure the appropriate amount of fuel it can hold, to prevent overfilling. All outlets on tank trucks are inspected for leaks prior to and after filling storage tanks to prevent leaks in transit. The discharge valve on the source vehicle is closed before disconnecting the transfer hose. Any fuel left in the transfer hose after fueling is collected to prevent spills. The fuel-storage tank fill pipes are located inside spill-containment structures. All valves that permit direct outward flow of fuel are securely locked in the closed position when not in operation. These procedures are designed to prevent the accidental release of fuel and minimize the risk of fuel entering the receiving waters.

The hatchery has two separate chemical-storage units composed of separate vaults. One is for grease, gasoline, paint, and associated materials, and the other is for therapeutants and pesticides. Every effort is made to minimize the volume and duration of waste chemical storage.

There are two approved storage cabinets for flammable liquids on site, where fuel cans and paint are stored.

Fish Programs

The Mad River Hatchery is an enhancement facility for coastal steelhead trout. The Hatchery was constructed to produce fish that would augment natural production and support recreational and commercial fisheries of salmonids in the Northern California coastal area. The Mad River Hatchery also raises small numbers of Chinook salmon, Coho salmon, cutthroat trout, and rainbow trout for release to inland waters.

It is now the only existing steelhead hatchery managed by the DFG with a primary purpose of enhancement. The fish are released in the March-to-May period.

Average annual production of steelhead trout for the past 5 years is 203,943 fish. Average annual production of other fish for the past 5 years is 122,153 fish. Summaries of the past 5 years of fish production are included in Tables 2-3 and 2-6 in Chapter 2 of this EIR/EIS.

Trinity River Hatchery

Location and Size

Trinity River Hatchery is located just below Lewiston Dam on Hatchery Drive in Lewiston, Trinity County. The hatchery is owned by the U.S. Bureau of Reclamation (Reclamation) and operated by DFG. The facility was initially constructed in 1963 and underwent modernization beginning in 1985.

The Trinity River Hatchery is a mitigation facility constructed by Reclamation in 1962 and 1963 as mitigation for the construction of Trinity Dam and Lewiston Dam. Both Trinity Dam/Trinity Lake and Lewiston Dam/Lake are part of the Central Valley Project, which diverts water from the Trinity River (as well as the Sacramento River and San Joaquin River watersheds) to irrigate the Central Valley.

Facilities and Operations

The following description of Trinity River Hatchery facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008m). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Trinity River Hatchery includes 40 200-foot-long concrete raceways, one fish ladder, a spawning building that includes six outdoor holding tanks, a hatchery building, an office/shop, a cold-storage building, a settling pond for waste treatment, and two large storage buildings. The facility is currently operated under NPDES permit CA0006696. DFG and Reclamation are listed jointly as dischargers.

Water Source

The hatchery uses water from Lewiston Reservoir, a surface-water source with TSS levels generally less than 1.5 milligrams/liter. The reservoir acts as a settling basin with outlets far from reservoir littoral zones, so the hatchery water supply contains very little rotted aquatic vegetation or woody debris. The source water is piped from the reservoir directly to a circular-shaped aerator, so there is no opportunity for aquatic vegetation growth in the distribution system or for fish to escape from the hatchery into the reservoir.

Rearing Facilities

Trinity River Hatchery rearing facilities include 40 200-foot-long concrete raceways, a spawning building that includes six outdoor holding tanks, and a hatchery building.

The raceways are enclosed by fencing and an overhead bird exclosure to prevent avian predators from eating the fish. This benefits waste management by reducing mortality associated with the stress of being harassed by predators. Predator exclusion also may reduce the incidence of disease at the facility. Healthy fish feed most efficiently, reducing the amount of uneaten feed in the raceways.

Fish crowding and loading can disturb settled biosolids in the raceways, so raceways are typically cleaned the day prior to crowding and loading. Occasionally, raceways are cleaned immediately before crowding and loading as need dictates. During cleaning, flow is routed to the settling pond to prevent unnecessary discharge of this material.

The roadways between the raceways are paved, allowing windblown feed that falls outside the raceways to be periodically swept up and put in trash bins. Trinity River Hatchery's solid waste and trash is disposed of on a weekly basis and hauled to the Trinity County Solid Waste transfer station. This keeps the material out of the river. The elevation of the raceway walls is about 2 feet above the roadway, preventing nearly all unwanted matter from entering the raceways.

Maintenance and Inspection

When the hatchery troughs, deep tanks, and raceways are in production, one to three employees are assigned to feed and clean production systems. Employees assigned these tasks spend each day all day in contact with the production systems. Any damage would be observed almost immediately and reported to the lead person.

The settling pond is observed each day during the normal course of duties. If a pond wall were to fail, it would be obvious.

The concrete raceways need very little maintenance.

The settling pond is maintained as needed. The only maintenance issue is plant growth in and around the settling pond. Aquatic plant growth, historically, can exist for many years before it becomes a problem. Plant growth around the settling pond is controlled by regular mowing and weed eating.

Storage and Containment

The hatchery does not have any aboveground or belowground fuel-storage tanks. All fuel is purchased off site at gas stations for each individual vehicle. Fuel that is needed for small engines

(i.e., a forklift, a tractor, lawn mowers, weed eaters, and other gas-operated tools) is kept in approved 2- and 5-gallon containers and kept in an approved storage and containment unit for hazardous and flammable materials.

There is appropriate signage, placards, spill kits, and safety equipment at all storage and containment units. The units are frequently checked by facility personnel during operating hours. Formal inspections are conducted weekly by observing the outside of each unit for signs of deterioration, leaks, or accumulation of oil inside secondary containment. Personnel also inspect unit supports and the foundations.

The hatchery has four separate storage areas: for fuel, motor oil, and oil-based paints, which are kept in the approved storage unit for hazardous and flammable materials; for powder chemicals (potassium permanganate), which are kept in a locked storage cabinet in the salt room; for PVP iodine containers, which are kept in the salt room; and for a waste oil container, which is kept in the tractor building. There are secondary containment catch basins for the hazardous- and flammable-materials storage unit, the PVP iodine barrels, and the waste oil container. All storage units are ventilated and kept locked when not in use. Every effort is made to minimize the volume and duration of waste oil storage.

There are two approved flammable-liquid storage cabinets on site, where flammable liquids such as solvents, cutting oils, paint thinners, and automotive fluids such as brake and power steering fluid are stored.

The separate storage of non-compatible chemicals in appropriate storage units allows leaks and spills to be detected and dealt with while still within containment. It also minimizes the likelihood of an incident precipitated by unwanted chemical reaction that could result in the accidental release of chemicals into the river.

Fish Programs

The Trinity River Hatchery is a mitigation hatchery constructed by Reclamation as mitigation for the loss of access to upstream spawning habitat that occurred following the construction of Trinity Dam and Lewiston Dam. The Trinity River Hatchery supports Chinook and Coho salmon and steelhead programs.

Average annual production for the past 5 years is 5,730,317 fish. A summary of the past 5 years of fish production is included in Table 2-6 in Chapter 2 of this EIR/EIS.

The normal release schedule for Trinity River Hatchery fish is as follows:

- Yearling steelhead: March 15 to May 1, volitional release from the hatchery at seven per pound.
- Yearling Coho salmon: March 15 to May 1, volitional release from the hatchery at 10–20 per pound.
- Chinook salmon smolts: June 1 to 15, volitional release from the hatchery at 50–90 per pound.
- Chinook salmon yearlings: October 1 to 15, volitional release from the hatchery at 10–12 per pound.

Feather River Hatchery

Location and Size

Feather River Hatchery is located near Oroville, on the north side of the Feather River, 4 miles downstream from the Oroville Dam. The facility was constructed in 1967 as mitigation for the loss of salmon and steelhead habitat associated with the construction of Oroville Dam on the Feather River.

Facilities and Operations

The following description of Feather River Hatchery facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game n.d.[b]). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Feather River Hatchery includes raceways, tanks, a fish ladder, two hatchery buildings, a freezer, an aeration tower, an ultraviolet treatment building, sheds/outside storage buildings, settling ponds, and two office buildings. The facility is currently operated under NPDES permit CA0004570.

Water Source

A 54-inch pipe transports water from the Thermalito Diversion Dam to the hatchery. The water is piped directly to an aeration tower with several chambers that provide water to different areas of the hatchery. The chambers have several screens to minimize debris entering the water supply. This design is considered a flow-through system.

The water is monitored by a continuous flow meter. The meter is maintained and operated by the California Department of Water Resources (DWR).

An estimated minimum of 25.8 mgd (40 cfs), up to a maximum of 47.3 mgd (74 cfs), of flow-through wastewater from the fish hatchery discharges to two settling basins (approximately 300 feet long by 30 feet wide and 15 feet deep) located near an embankment on the Feather River. The two settling basins are constructed with overflow pipes, which are capable of discharging directly to the Feather River (discharges 001 and 002). However, no direct discharges have occurred from discharges 001 or 002 since completion of the settling basins in 1984 because the basins are constructed in permeable gravels, resulting in the percolation of wastewater through the settling basins into the Feather River seepage.

Rearing Facilities

Feather River Hatchery rearing facilities include eight 600-foot raceways; two 300-foot raceways; one 2,750-foot rearing channel; a hatchery building with 132 stacks, with 16 trays in each stack; a hatchery building with eight stacks, with eight trays in each stack; and eight deep tanks.

Maintenance and Inspection

Feather River Hatchery is a flow-through system, and there are no main pumps in the system. As for wastewater, the hatchery is tied to the City of Oroville septic system. The only pump in the system is

the one that pumps the water from the hatchery building into the settling pond. The pump has a warning light that is attached to a float, which provides the hatchery personnel with a warning in case of a pump malfunction and before there is a discharge to the river. The DWR provides maintenance for the facility, which includes the hatchery building pump.

The DWR is responsible for the maintenance of the facility. Any problems outside its normal routine are reported to the DWR. The meters (conductivity, pH, turbidity, and dissolved oxygen) that are used to measure water quality parameters are calibrated by the DFG Water Pollution Control Laboratory once a year.

Raceways are cleaned two to three times per week. An employee uses water flow and a pond broom to sweep excess food and feces to the end of the raceway, at which point water flow carries solids to the hatchery's settling ponds. The rearing area consists of a channel that is 20 feet wide and almost half a mile long and 10 raceways. Eight of the raceways are 600 feet long and 10 feet wide, with a set of dam boards and screens every 200 feet. Two raceways are 10 feet wide and 300 feet long, with screens and dam boards every 100 feet. Operational needs may dictate more screens and dam boards. To assist in the movement of solids in the raceways, one or two dam boards are removed to increase the flow. At the end of the cleaning process, boards are reinstalled for normal operation.

Storage and Containment

All chemicals for the facility are stored in chemical sheds in accordance with the hatchery's local county ordinance.

Fish Programs

The Feather River Hatchery is a mitigation hatchery constructed by the DWR as mitigation for the loss of habitat upstream of Oroville Dam. It produces Chinook salmon and steelhead. The facility also serves an enhancement purpose. Some of the Chinook salmon reared at Feather River Hatchery are intended for enhancement of recreational and commercial harvest. Coho are also reared for the coldwater inland salmon program for Lake Oroville. The facility is the only Central Valley hatchery that rears spring-run Chinook salmon.

Average annual production for the past 5 years is 11,034,830 fish. A summary of the past 5 years of fish production is included in Table 2-6 in Chapter 2 of this EIR/EIS.

The normal Feather River Hatchery release schedule is as follows:

- spring-run Chinook salmon smolts: April to July, released to San Pablo Bay at 40–60 per pound;
- fall-run Chinook salmon smolts: April 1 to July, released to San Pablo Bay and the Sacramento–San Joaquin River Delta at 40–60 per pound;
- fall-run Chinook salmon smolts (Salmon Stamp Program): April to July, released to San Pablo Bay at 30 per pound; and
- steelhead yearlings: January to February, released in the Feather River near Gridley at four per pound.

Thermalito Annex

Location and Size

The Feather River Hatchery Thermalito Annex is located near Richvale, west of Oroville. The facility was constructed by the DWR in 1984, and it is currently operated by the DFG. It supports both the mitigation and enhancement functions of the Feather River Hatchery.

Facilities and Operations

The following description of the Thermalito Annex facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game n.d.[b]). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The facility consists of a permanent residential mobile home for a full-time caretaker, a domestic wastewater holding tank, an office and maintenance building, a small freezer, an aeration tower for the water supply, and four parallel concrete raceways (approximately 600 feet long). The annex is currently operating under NPDES permit CA0082350.

Water Source

The raw water is pumped by five groundwater wells operated by the DWR. Groundwater is pumped to an aeration tower and piped to the four raceway head works. The flow meters have been installed by the DWR, and flows are recorded daily.

Rearing Facilities

Thermalito Annex rearing facilities include four 600-foot-long raceways.

Maintenance and Inspection

The DWR maintains the five wells that provide water to the facility. The fish and wildlife technician checks the flows every day to make sure the wells are providing enough flow to the facility. The DWR is responsible for the maintenance of the facility. Any problems outside its normal routine are reported to DWR. The meters (conductivity, pH, turbidity, and dissolved oxygen) used to measure water quality parameters are calibrated by the DFG Water Pollution Control Laboratory once a year.

Storage and Containment

All therapeutants are stored according to label directions. MSDSs for all chemicals used at the facility are kept in the shop. Records are kept as required under the NPDES permit for all chemical and drug usage, including medicated diets.

Fish Programs

The Thermalito Annex receives and rears Chinook salmon fry that are hatched at Feather River Hatchery. It also is supported by funding from commercial salmon trollers. Fry are hatched at Feather River Hatchery and transported to the facility by tanker truck. Fry are reared at the facility

for only 4 to 6 months, typically January through June. Sometimes fingerlings are transported back to the main hatchery. The Thermalito Annex produces approximately 67,650 to 78,650 pounds of Chinook salmon annually. Occasionally, a small number of steelhead and Coho are reared for the inland program from September to November. The facility is closed the remainder of the year.

Warm Springs Hatchery

Location and Size

Warm Springs Hatchery is located just below Warm Springs Dam on Lake Sonoma approximately 14 miles above the confluence of Dry Creek with the Russian River at an elevation of 322 feet. Warm Springs Hatchery began operation in 1980 and is designed to produce a maximum of 161,300 pounds of salmonid fish annually. Warm Springs Hatchery is owned by the U.S. Army Corps of Engineers (USACE) and operated by DFG. Warm Springs Hatchery also operates the Coyote Valley Fish Facility for imprinting steelhead destined for release in the Russian River. It is located upstream on the east branch of the Russian River near the town of Ukiah.

Facilities and Operations

The following description of Warm Springs Hatchery facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008n). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

The facility was originally constructed with an aeration pond, eight covered flow-through concrete raceways (ponds 1–8), a fish ladder, a nursery area with 14 start tanks, six adult holding ponds, and a settling pond. The original eight raceways are 78 feet long and 9 feet wide and have a water depth of 30 inches. These original raceways have the ability to receive treated, gravity, or chilled water. The facility was expanded in 1990 to include an additional 12 covered flow-through concrete raceways (ponds 9–20) and four additional start tanks. The new raceways are 65 feet long and 9 feet wide and have a water depth of 36 inches. These raceways are only capable of receiving gravity-fed water from the aeration pond. Each of the 20 raceways has a single discharge point, which drains into the settling pond. The grounds also include the hatchery building, with an accompanying spawning area, an office, a shop, a freezer, a storage area, and a garage. The second floor of the hatchery building is primarily a viewing area for the adjacent visitor center operated by the USACE. The hatchery is currently operating under NPDES permit CA0024350.

Water Source

Warm Springs Hatchery uses water from Lake Sonoma that is low in TSS and also feeds Dry Creek. Water for Warm Springs Hatchery is directed to the hatchery via a 30-inch pipeline within the hatchery intake structure situated at the outlet works of Warm Springs Dam. The water is gravity-fed from the dam to the stilling basin in the outlet works at the base of the dam. Water can be drawn from three different levels in the dam to control the hatchery rearing temperature, which is kept between 50°F and 54°F. The water is then gravity-fed from the dam outlet works to the aeration pond through an underground pipeline. Two sluice gates located in the dam outlet works control how much water is released and the fill level of the aeration pond.

The aeration pond stores water where it is aerated by five floating aerators that run continuously. The aerators help to remove unwanted gases in the water and to increase the dissolved oxygen levels to above 9 milligrams/liter. Water is capable of exiting the aeration pond and being diverted to five locations: water treatment facilities; new raceways (ponds 9–20); the fish ladder; adult holding ponds; and circular and start tanks.

Rearing Facilities

Warm Springs Hatchery rearing facilities include 20 concrete raceways, a nursery area with 18 start tanks, six adult holding ponds, a hatchery building, and an accompanying spawning area.

Maintenance and Inspection

Typically, the concrete raceways at Warm Springs Hatchery and the Coyote Valley Fish Facility require very little maintenance. The raceways at Warm Springs Hatchery are cleaned daily when in use and are inspected at that time for damage. Raceways at the Coyote Valley Fish Facility are also cleaned and inspected daily when in use. The pond head and tail screens are inspected daily for damage that could result in the release of fish. All pumps, filters, and waterways at Warm Springs Hatchery are observed daily, and any damage that is found is reported immediately. Water lines at the Coyote Valley Fish Facility are inspected daily when the facility is in operation.

If repairs are needed to any part of the production system, every effort is made to complete the repairs as quickly as possible. Proper operation of the entire production system is crucial to the successful rearing of fish. To help avoid unnecessary repairs, monthly maintenance is conducted at Warm Springs Hatchery on all pumps, filters, and other equipment that is crucial to operation. The raceways at Warm Springs Hatchery and the Coyote Valley Fish Facility are allowed to dry out annually and are then cleaned out with a pressure washer. The settling pond at Warm Springs Hatchery typically requires very little maintenance; however, sometimes it is necessary to remove vegetation and woody debris that accumulate at the discharge point in order to ensure proper drainage. The only maintenance required of the settling pond at the Coyote Valley Fish Facility is to remove built-up solids after the fish have been released each year.

The troughs and raceways at Warm Springs Hatchery are flushed daily to remove unused feed, fish waste products, and dead fish from the rearing environment. Circular tanks are cleaned once a week. All effluent water is released through a discharge point at the tail portion of each raceway into the settling pond at Warm Springs Hatchery. This system consists of an earthen (settling) pond that captures the waste flushed from the raceways. Wastewater directed to the settling pond originates from five sources at Warm Springs Hatchery: floor drains within the hatchery, pressure filters' back flush water, fry start tanks, production raceways, and start tanks and circular tanks.

Storage and Containment

Pesticides and non-aerosol paints are kept in a locked storage room at Warm Springs Hatchery that is designed for that purpose. The room has mechanical ventilation and explosion-proof lighting. Aerosol paints and materials are kept in a fireproof cabinet located within the Warm Springs Hatchery building. A fireproof cabinet located in the hatchery building is used for the storage of lubricants and solvents.

Oils are kept in two locations at Warm Springs Hatchery, either in a fireproof cabinet near the oil-containment area or in the oil-containment area. The oil-containment area is designed to store large

quantities of new oils and for the safe storage of used oils until they can be recycled. It is built with a lip around the edge and is above grade to contain any spills that might occur. The construction also helps to prevent oil from leaching into the ground from any leaks.

Warm Springs Hatchery has three aboveground fuel tanks. Two contain unleaded gasoline, and one contains diesel fuel. All three tanks are double-walled, concrete-lined, and enclosed in ventilated outbuildings. In addition to the aboveground fuel-storage tanks, gasoline and diesel are also stored in a fireproof cabinet located in the garage. The gasoline is used for handheld weed eaters, chainsaws, and leaf blowers, and the diesel is for use in the generator in an emergency. The Coyote Valley Fish Facility has one fireproof cabinet that is used for the storage of oil and gasoline.

In addition, two aboveground LPG tanks are located at Warm Springs Hatchery. One of these is a supply tank for two of the six residences, and the other one is used to dispense LPG for use in the forklifts.

Fish Programs

Warm Springs Hatchery is a mitigation hatchery for the loss of habitat resulting from the construction of the Warm Springs Dam. The mitigating agencies are the USACE and the Sonoma County Water Agency. The hatchery has reared coho salmon, Chinook salmon, and steelhead in the past. In recent years, only coho salmon and steelhead have been reared at the facility.

Stocking of fish reared at Warm Springs Hatchery occurs in a variety of ways. Steelhead are reared to yearling size (four per pound) and either trucked to a spot on Dry Creek below the hatchery for release or trucked to the Coyote Valley Fish Facility for holding and imprinting prior to release into the east branch of the Russian River just upstream of its confluence with the main stem of the Russian River. Steelhead are typically released in the December–April time period. Coho salmon are reared at Warm Springs Hatchery and then trucked downstream to small Russian River tributary streams for release, also in the December–April time period.

Average annual production for the past 5 years is 521,130 fish. A summary of the past 5 years of fish production is included in Table 2-6 in Chapter 2 of this EIR/EIS.

Nimbus Hatchery

Location and Size

Nimbus Hatchery is located adjacent to the American River approximately 18 miles east of the town of Sacramento, downstream of Nimbus Dam. Nimbus Hatchery was built by Reclamation and has been in operation since 1955.

Facilities and Operations

The following description of Nimbus Hatchery facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008o). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Nimbus Hatchery facilities include a fish weir; a fish ladder; gathering and holding ponds; hatchery buildings; rearing ponds; various office, shop, and storage buildings; fish transportation equipment; food-storage facilities; and miscellaneous equipment and supplies. The hatchery currently operates under NPDES permit CA0004774.

A fish ladder provides access for upstream migrating fish from the river to Nimbus Hatchery's Spawning Building. Upstream migrating fish are diverted into the ladder by the fish weir at the south side (left bank) and ascend approximately 10 feet in vertical elevation between the river bed and the holding ponds. (Note that the weir is removed after the Chinook salmon season and is not needed to take steelhead into the hatchery. Additionally, Reclamation and DFG are preparing a joint EIR/EIS to look at replacing the fish weir or extending the fish ladder for fish to enter at the south side of Nimbus Shoal, at the base of Nimbus Dam.) The fish ladder is 502 feet long and contains pools 30 feet wide, 16 feet long, and 5 feet deep. At the top of the ladder, migrating fish pass through a trap consisting of vertically hung swinging pipes. Fish are unable to pass downstream through the trap and are held upstream of the trap prior to inspection and sorting in a 60-foot-long-by-12-foot-wide gathering tank. The fish ladder is opened after river temperatures are at or below 60°F and are expected to remain at that temperature or lower. Generally, this occurs in late October about 6 weeks after the fish weir is installed. The fish ladder remains open to fish through approximately April 1.

Fish enter the gathering tank through the fish trap. An electric-/hydraulic-operated mechanical fish crowder can be moved to the far end of the gathering tank, and a weir lowered to the bottom of the tank, and then slowly moved forward to push the fish toward Nimbus Hatchery's Building 2. Fish are pushed through a hatch into the gathering tank and into a lift basket contained within the dope tank and electro anesthesia compartment.

Adjacent to the fish ladder and Building 2 are four concrete holding ponds. Each pond is 100 feet long, 14 feet wide, and 6 feet deep, and each pond is capable of holding approximately 800 adult salmon or steelhead. Fish are transported to holding ponds via tubes from the spawning deck located in Building 2. Fish can be pushed from the holding ponds into the gathering tank with a gasoline/hydraulic mechanically operated fish crowder.

Water Source

Water for Nimbus Hatchery comes from Lake Natoma, a 525-surface-acre afterbay for Folsom Lake. Folsom Dam impounds the south and north forks of the American River and has a drainage area of approximately 1,895 square miles. The American River basin is located east of Sacramento in the Sierra Nevada range.

Folsom Lake was originally authorized in 1944 as a 355,000-acre-foot flood-control unit and reauthorized in 1949 as a 1 million-acre-foot multiple-purpose facility. The USACE constructed Folsom Dam and transferred it to Reclamation for coordinated operation as an integral part of the Central Valley Project. Construction of the dam began in October 1948 and was completed in May 1956; however, water storage began in earlier February 1955. The dam is a concrete gravity dam 340 feet high and 1,400 feet long. The main section is flanked by two earth fill wing dams. The right wing dam is 6,700 feet long and 145 feet high, and the left wing dam is 2,100 feet long and 145 feet high. In addition to the main section and wing dams, there is one auxiliary dam and eight smaller earth fill dikes.

Rearing Facilities

Nimbus Hatchery rearing facilities include two hatchery buildings, six outdoor raceways, miscellaneous equipment, and several metal buildings.

Hatchery Building 1: Hatchery Building 1 is a 13,000-square-foot (130-foot-by-100-foot) sheet-metal building and is the original hatchery building. This building houses 68 fiberglass deep tanks similar to those described for Hatchery Building 2, below. Water is supplied to the deep tanks via overhead PVC plumbing and directed into 4-foot-long-by-18-inch-diameter vertically hung PVC filled with plastic bio barrels to remove gases (nitrogen) and aerate the water.

Hatchery Building 2: Hatchery Building 2 is an 8,000-square-foot (100-foot-by-80-foot) sheet-metal building with a concrete floor. It was constructed in 1992 to enhance Nimbus Hatchery capabilities. The building includes a small laboratory and the spawning deck for inspecting, sorting, and spawning fish; an area for processing eggs; and egg-incubation facilities. Egg-incubation facilities in Building 2 include 12 fiberglass deep tanks. Each deep tank is 20 feet long, 4 feet wide, and 30 inches deep and capable of holding approximately 1,500 gallons. Each tank is capable of holding a total of 16 Nimbus Hatchery–modified commercial Eagar hatching jars or 16 Nimbus Hatchery–constructed PVC egg-hatching jars. Each hatching jar is capable of holding approximately 800 ounces of eggs. The egg-hatching facilities also include 36 16-tray vertical incubators with a capacity of approximately 10,000 eggs per tray. Water for the jars and incubators is supplied through overhead PVC plumbing.

Raceways: The raceways consist of three pairs of concrete rearing ponds (six total), also called raceways, located on the east side of the hatchery grounds. Each raceway is 400 feet long, 10 feet wide, and 42 inches deep. A flow of approximately 1.5 to 3.5 cfs of water (depending upon the size and number of fish) is typically released from the rearing pond head tank into each raceway. Maximum flow through all pairs of raceways is estimated to be approximately 27 cfs. Key-ways built into the raceway wall allow each raceway to be divided into up to seven individual rearing areas. Water enters the raceway head tank from an underground distribution conduit, and the rate of flow can be adjusted with a 24-inch gate valve. Water is passed over a perforated metal plate to capture unwanted debris prior to entering the raceway. The dissolved oxygen in the raceway effluent ranges from 7.0 milligrams/liter to 12.2 milligrams/liter, depending on the time of year, the numbers of fish being raised, and the water being released from Folsom Dam. Splash boards at the bottom end of each raceway pond create a 3-foot fall into the concrete pipe. The turbulence this creates exposes the water to the air to increase dissolved oxygen levels in the water. After passing through the raceway, water enters a collection area and is transported via an underground 10-inch-diameter steel pipe to a pair of settling ponds located approximately 1,700 feet downstream of Nimbus Hatchery grounds on the south side (left bank) of the river.

Other rearing facility buildings, equipment and tools include:

- a 1,600-square-foot metal side building that contains the Nimbus Hatchery office and office equipment, an employee break room, and public restrooms;
- a 10,000-square-foot processing building with three entrance doors and a 10-foot-by-10-foot roll-up door, used for storing miscellaneous equipment and supplies, and employee lockers;
- an 825-square-foot metal-sided freezer building that provides cold-storage facilities for semi-moist fish food, fish carcasses, ice, and code-wire tagged fish heads;

- a 5,600-square-foot building with four oversized roll-up doors to provide storage for large equipment and vehicles;
- a 450-square-foot building with one 10-foot-by-10-foot roll-up door to provide storage for lawn equipment and tools;
- a 750-square-foot building for small equipment, paint, fuel, and miscellaneous tool storage with a single 10-foot-by-10-foot roll-up door;
- a 2,600-square-foot auto and metal shop building with two 10-foot-by-12-foot roll-up doors and a single entrance door;
- miscellaneous tools (the hatchery's inventory of miscellaneous equipment includes various power and hand tools and small equipment used for maintenance and construction projects associated with hatchery operations).

Maintenance and Inspection

Hatchery personnel are located on the facility premises from 7 a.m. through 3:30 p.m. every day of the week. Daily inspections of the water intake structure, debris rack and traveling screen, water collection system, rearing facilities, and waste-discharge system are conducted by hatchery personnel. In addition, personnel are instructed to observe all the facilities during their normal work routine and report any problems or discrepancies.

The water intake structure, traveling screen, intake pipes, and water control structure are inspected and serviced annually by Reclamation personnel. Rearing facility maintenance is conducted annually during periods when fish are not present. Routine maintenance to the hatchery buildings and spawning and rearing facilities is generally conducted during the months of July through September. Equipment and vehicle maintenance is performed as per manufacturers' recommendations, and a maintenance schedule is displayed in the office. Maintenance to the wastewater system (pipes, intake and discharge structures, and settling ponds) is performed by Reclamation personnel as needed.

Storage and Containment

Nimbus Hatchery has the storage facilities and practices listed below.

- A 750-square-foot metal building with a cement floor and a single 10-foot-by-10-foot roll-up door is used for storing small equipment, paint, fuel, and miscellaneous tools.
- A 450-square-foot metal building with a cement floor and one 10-foot-by-10-foot roll-up door stores lawn equipment and fertilizer. No pesticides are stored at the facility, and all pest-control work is contracted through a private pest-control company.
- A 5,600-square-foot metal building (garage) with a cement floor and four oversized roll-up doors is used for large-equipment storage.
- Dry feed is purchased in bulk and stored in large outdoor feed bins that keep it dry.
- Bagged frozen food is kept in a locked walk-in freezer.
- Therapeutants and drugs are stored in a dedicated locked chemical room or storage locker located in Hatchery Building 1.

- Hydrogen peroxide (H₂O₂) is stored in a locked and approved Securall safety-storage chemical-containment building approved by Sacramento County for chemical storage.
- Used oil and shop rags are stored in a 12-foot-by-8-foot metal shed equipped with an Ultra Hard Top P2 Containment System that meets EPA Container Storage Regulation 40 CFR 264.175 and Uniform Fire Code 79.406. Propane and LPG bottles are also stored in locked protective metal cages in this shed.
- Appropriate safety placards are attached to all rooms, lockers, buildings, and sheds.
- All personnel are instructed to use absorbents, sweeping, and other dry cleanup methods to clean up spills rather than washing spilled material into the storm-drain system. Spilled material is disposed of properly, and the use of cleaning products containing hazardous substances is avoided. Wash water is disposed of to landscaped areas or sanitary sewers when possible.

Fish Programs

Nimbus Hatchery is a mitigation hatchery for the loss of habitat resulting from the construction of Folsom and Nimbus Dams. The mitigating agency is Reclamation. Only Chinook salmon and steelhead are propagated. The fish raised at Nimbus Hatchery are released primarily to waters downstream of the hatchery, in the Sacramento River and San Pablo Bay. Currently, steelhead are released in the January–February time period in the Sacramento River near Garcia Bend. These fish are released primarily as yearlings at four per pound. The Chinook salmon are released primarily as fingerlings in May and June at 40 to 60 per pound in the Carquinez Strait at the head of San Pablo Bay.

Average annual production for the past 5 years is 4,329,134 fish. A summary of the past 5 years of fish production is included in Table 2-6 in Chapter 2 of this EIR/EIS.

Mokelumne River Hatchery

Location and Size

Mokelumne River Hatchery is located on North McIntire Road in Clements, San Joaquin County. It is owned by East Bay Municipal Utility District (EBMUD) and operated by DFG. The facility was initially constructed in 1964 and was rebuilt in 2001. The Mokelumne River Hatchery was built as mitigation for construction of Camanche Dam.

Facilities and Operations

The following description of Mokelumne River Hatchery facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008p). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Mokelumne River Hatchery facilities include twenty 300-foot-long raceways, two fish ladders, a hatchery spawning and incubation building, an office/shop/freezer building, a pump station for raceway cleaning wastes, a settling pond for waste treatment, and a large storage building. The facility is located on the south bank of the Mokelumne River immediately downstream of Camanche

Dam. The hatchery is currently operating under NPDES permit CA0004791. DFG and the EBMUD are listed jointly as dischargers.

Water Source

The hatchery uses water from Camanche Reservoir, a surface-water source with TSS levels generally less than 5.9 milligrams/liter. The reservoir acts as a settling basin with outlets far from reservoir littoral zones, so the hatchery water supply contains very little rooted aquatic vegetation or woody debris. The source water is piped from the reservoir directly to packed column aerators at the head of each raceway and rearing trough or to sand filters upstream of the incubators, so there is no opportunity for aquatic vegetation growth in the distribution system or for fish to escape from the hatchery into the reservoir.

Rearing Facilities

Mokelumne River Hatchery rearing facilities include 20 raceways and a hatchery spawning and incubation building.

Maintenance and Inspection

When the start tanks and raceways are in production, one to two employees are assigned to feed and clean production systems. The employee assigned these tasks spends all day in contact with the production systems. Any damage would be observed almost immediately and reported to the lead person.

The raceway wastewater pump station has an overflow feature that shunts water to discharge 001 if the treatment system pump is not in operation. The pump station cannot cause a spill event. The pump station is turned on when cleaning occurs, and if it fails, repairs will be made. The settling ponds are observed each day during the normal hatchery operations. If a pond wall fails, it would be obvious.

Storage and Containment

The hatchery has four separate chemical-storage units composed of separate vaults: one for oil and grease, one for therapeutants and pesticides, one for paint and associated materials, and a waste-chemical shed. There is secondary containment for the oil vault, the chemical/pesticide vault, and the waste-chemical shed. The floor in the paint vault is concrete, and the paint-container size is limited to 5 gallons or less. All storage units are ventilated and kept locked when not in use. Every effort is made to minimize the volume and duration of waste-chemical storage.

The hatchery has two aboveground fuel tanks, both installed new in 2001. They are dual-walled tanks providing secondary containment in the event of a leak in the primary tank. One tank contains diesel fuel for a standby generator, and the other is a truck fill station with a compartment for diesel and another for gasoline. There are two approved flammable-liquid storage cabinets on site where fuel cans are stored.

The separate storage of non-compatible chemicals in appropriate storage units allows leaks and spills to be detected and dealt with while still within containment. It also minimizes the likelihood of an incident precipitated by unwanted chemical reaction that could result in the accidental release of chemicals into the river.

Fish Programs

Mokelumne River Hatchery is an enhancement facility and mitigation hatchery. The mitigation is for the loss of habitat resulting from the construction of the Camanche Dam. The enhancement program is supported by commercial salmon trollers. The mitigating agency is EBMUD. The hatchery rears Chinook salmon and steelhead. Mokelumne River Hatchery receives its steelhead brood stock from Feather River Hatchery or from adults returning to the hatchery. The Chinook salmon brood stock is of Central Valley origin.

Average annual production for the past 5 years is 5,351,901 fish. A summary of the past 5 years of fish production is included in Table 2-6 in Chapter 2 of this EIR/EIS.

The normal Mokelumne River Hatchery release schedule is as follows:

- fall-run Chinook salmon smolts: May to July, released to San Pablo Bay at 40–60 per pound; and
- steelhead yearlings: January to February, released to the lower Mokelumne River at four per pound.

Merced River Hatchery

Location and Size

Merced River Hatchery is located immediately downstream of Crocker-Huffman Dam, on the Merced River (tributary to the San Joaquin River) near the town of Snelling, in Merced County, about 15 miles northeast of Merced. Merced River Hatchery is on 10 acres of land owned by the Merced Irrigation District (the original mitigating agency). The hatchery has been in operation since 1970.

Facilities and Operations

The following description of Merced River Hatchery facilities and operations is excerpted from the hatchery's plan of BMPs (California Department of Fish and Game 2008q). Some material has been edited to avoid duplicating information obtained from other sources and presented in other sections of this hatchery description.

Facility Description

Incoming water is taken from the Merced River at the Crocker-Hoffman Dam and is distributed through the facility, which includes a hatchery building, two raceways, a spawning channel, a fish ladder, and a full flow-settling basin. The hatchery also has a permanent hatchery building, 12 nursery tanks, and a spawning building. The adult salmon trapping facility, located in the fish ladder of the spawning channel, consists of a fyke trap entrance, a holding pen, and a hydraulic basket hoist. The adjoining spawning building houses an anesthetic tank with hydraulic basket hoist, a sorting table, and a spawning table. The hatchery also has a freezer, a water supply line, a generator, an effluent settling pond, a domestic water well and building, an office/shop building, one residence with a carport, a septic tank, and a leach field.

The facility may be inactive all or part of the time from June through early November. Discharges from the facility occur through outfall 001 from the 561,000-gallon settling basin to the Merced River or occasionally from outfall 002, a direct discharge from either raceway, bypassing the settling

basin, when fish are released to the Merced River. The hatchery currently operates under NPDES permit CA0080055.

Water Source

Merced River Hatchery's water supply is derived from the Merced River. The Merced River is ponded by the Crocker-Huffman Dam, a flow-through forebay for Merced Irrigation District's main irrigation canal. Water is diverted through a 24-inch pipe at the Crocker-Huffman Dam and conveyed to the hatchery raceways via a 20-inch-diameter pipeline. The hatchery building receives its water from a 12-inch-diameter line that is off the main 24-inch line. Water flows for both raceways and the hatchery building are controlled by gate valves. Except during periods of fish release directly from raceways to the Merced River, all flow through the facility passes through the settling basin before discharge to the river.

Rearing Facilities

Rearing facilities at the Merced River Hatchery include two raceways, a hatchery building, 12 nursery tanks, and a spawning building.

Raceways: The raceways consist of two 500-foot-long concrete raceways that are each five 100-foot ponds. A bird enclosure was constructed to control predation by fish eating birds. Ultraviolet units were placed at the water inlet of each raceway and into the water supply line to the hatchery building. A new water line was installed from the Crocker-Huffman Dam that enables a more consistent flow to the raceways and an increased volume to the hatchery building.

Hatchery building: The hatchery building houses 14 double stacks of Heath-type incubator trays and hatch jars capable of incubating and hatching approximately 3 million Chinook salmon eggs.

Nursery tanks: There are two nursery tanks with the capability of rearing approximately 100,000 swim-up size salmon each and 10 tanks that will hold 90,000 fingerlings each. The tanks are located adjacent to the hatchery building.

Spawning building: The spawning building houses an anesthetic tank with a hydraulic basket hoist, a sorting table, and a spawning table.

Maintenance and Inspection

When the nursery tanks and raceways are in production, one to two employees are assigned to feed and clean the production systems. Employee assigned these tasks spend all day in contact with the production systems. Any damage would be observed almost immediately and reported to a manager and repaired.

The settling pond is observed daily during the normal course of operations. A pond wall or levee failure would be evident. Routine inspections of the settling pond are conducted to ensure its proper function.

Storage and Containment

Merced River Hatchery stores a minimal amount of drugs used for fish aquaculture in a locked closet in the hatchery building. MSDSs are posted with all drugs and chemicals used at the hatchery. Chemicals for therapeutic aquaculture treatments are prescribed by DFG pathologists and

countersigned by the department veterinarian. A container of absorbent materials is stored at the work site in the hatchery building in case of a spill.

A container of absorbent materials is stored in the spawning building in case of spillage of chemicals used during the spawning procedure. Spills are immediately contained according to MSDS labels and disposed at a properly designated hazardous-materials site. MSDSs are posted for each chemical stored and used.

Sacked fish feed is stored in a locked building. Large spillage is swept up, cleaned of debris, and reused. Small spills are disposed of in the local landfill.

There are no pesticides stored at the hatchery.

There are several herbicides used at the hatchery. These are stored in a signed lockup storage area. A container of absorbent materials is stored at this work site in case of a spill. Spills are immediately contained according to MSDS labels and disposed at a properly designated hazardous-materials site.

Fish Programs

Merced River Hatchery is a conservation facility and mitigation hatchery. The mitigating agency is the Merced Irrigation District. The hatchery houses only Chinook salmon. The hatchery produces fall Chinook fingerlings from brood stock taken from adult fish returning to the hatchery or trapped in the lower sections of the river.

Most of Merced River Hatchery's fish are released volitionally from the hatchery in the April-to-June timeframe at 70 to 90 per pound.

Average annual production for the past 5 years is 972,344 fish. A summary of the past 5 years of fish production is included in Table 2-6 in Chapter 2 of this EIR/EIS.

References Cited

Printed References

- California Department of Fish and Game. No date (a). *Best Management Practices Plan: California Department of Fish and Game—Darrah Springs Fish Hatchery*. Prepared by Fish Hatchery Manager II Kevin Ceccato and Fish Hatchery Manager I George Parker. Paynes Creek, CA.
- . No date (b). Feather River Hatchery/Thermalito Annex best management practices plan. Prepared by Anna Kastner. Oroville, CA.
- . 2004. *5-Year Hatchery Facility Infrastructure Plan (Draft)*. Sacramento, CA.
- . 2006. Best management practices plan—Moccasin Creek State Fish Hatchery. November. Facility manager: Tom Grove. Moccasin, CA.
- . 2007a. *Best Management Practices Plan: State of California Department of Fish and Game—Black Rock Fish Hatchery*. February. Prepared by Fish Hatchery Manager II Robert Wakefield. Independence, CA.

- . 2007b. *Best Management Practices Plan: State of California Department of Fish and Game—Mount Whitney Fish Hatchery*. February. Prepared by Fish Hatchery Manager II Robert Wakefield. Independence, CA.
- . 2007c. *Best Management Practices Plan: California Department of Fish and Game—Mojave River Fish Hatchery*. May. Prepared by Fish Hatchery Manager II Gary Williams and Fish Hatchery Manager I Robert Diaz. Victorville, CA.
- . 2008a. Hatchery Information System Database. December. Sacramento, CA.
- . 2008b. *Best Management Practices Plan: California Department of Fish and Game—Mount Shasta Fish Hatchery*. Prepared by Fish Hatchery Manager II James R. Adams. Mount Shasta, CA.
- . 2008c. *Best Management Practices Plan (BMP)—Crystal Lake Hatchery*. September. Prepared by Shane Overton. Crystal Lake, CA.
- . 2008d. *BMP Plan Kern River Fish Hatchery*. October. Facility manager: Marvin Waters. Kernville, CA.
- . 2008e. *Best Management Practices Plan: California Department of Fish & Game—American River Trout Hatchery*. September. Prepared by Dennis Lee, supervising biologist, retired. Rancho Cordova, CA.
- . 2008f. *Best Management Practices Plan: State of California Department of Fish and Game—Hot Creek Hatchery*. June. Prepared by Fish Hatchery Manager Vern Carr. Mammoth Lakes, CA.
- . 2008g. *Best Management Practices Plan: California Department of Fish and Game—Fish Springs Hatchery*. September. Prepared by Fish Hatchery Manager I Lawrence R. Precht. Big Pine, CA.
- . 2008h. *BMP Plan San Joaquin Hatchery*. August. Facility manager: Greg Paape. Assistant Manager Ron Samra. Friant, CA.
- . 2008i. *Best Management Practices Plan: California Department of Fish and Game—Fillmore Fish Hatchery*. June. Prepared by Fish Hatchery Manager II Kenneth Robledo and Fish Hatchery Manager I Edward Toves. Fillmore, CA.
- . 2008j. *Best Management Practices Plan—Silverado Fisheries Base*. November. Prepared by Bobbie Howard. Yountville, CA.
- . 2008k. *Iron Gate Hatchery: Best Management Practices Plan*. September. Prepared by Fish Hatchery Manager II Kim Rushton. Hornbrook, CA.
- . 2008l. *Best Management Practices Plan—Mad River Fish Hatchery*. September. Prepared by Fish Hatchery Manager I Jerry Ayres. Arcata, CA.
- . 2008m. *Trinity River Hatchery: Best Management Practices Plan*. September. Prepared by Laird E. Marshall Jr. Lewiston, CA.
- . 2008n. *Best Management Practices Plan—Warm Springs Salmon and Steelhead Hatchery and Coyote Valley Fish Facility*. July. Prepared by Brett Wilson. Geyserville, CA.

- . 2008o. *Best Management Practices Plan: California Department of Fish & Game—Nimbus Fish Hatchery*. September. Prepared by Dennis Lee, supervising biologist, retired. Rancho Cordova, CA.
- . 2008p. *Best Management Practices Plan—Mokelumne River Fish Hatchery*. June. Prepared by Robert Anderson. Clements, CA.
- . 2008q. *Best Management Plan—Merced River Hatchery*. August. Facility manager: Mike Cozart. Snelling, CA.