United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
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Ventura, California 93003

IN REPLY REFER TO:
08EVEN00-2016-F-0523

December 20, 2016

Douglas E. Eberhardt, Manager
Infrastructure Section, Region IX
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105-3901

Subject: Biological Opinion for Pure Water Monterey Groundwater Replenishment Project, Monterey County, California

Dear Mr. Eberhardt:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the U.S. Environmental Protection Agency's (EPA) proposed funding of the Monterey Regional Water Pollution Control Agency (MRWPCA) to construct the Pure Water Monterey Groundwater Replenishment Project (Project) and its effects on the federally threatened California red-legged frog (*Rana draytonii*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*) and the federally endangered Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Per agreements between EPA, the State Water Resources Control Board, and the U.S. Army Corps of Engineers (Corps), EPA is acting as the Federal lead action agency for the section 7 consultation process for the Project; however, the Corps will also be considering an authorization under Nationwide Permit 12 (and potentially Nationwide Permit 13) for compliance with the Clean Water Act Section 404 and, potentially, an authorization under Section 10 of the Rivers and Harbors Act. This Biological Opinion addresses the proposed Federal actions of both the EPA and the Corps. We received your May 13, 2016, request for formal consultation on May 18, 2016. No critical habitat for the California red-legged frog or Monterey spineflower occurs within the Project area and therefore none would be affected. No critical habitat has been designated for the Monterey gilia and therefore none would be affected.

You determined that the Project is likely to adversely affect the California red-legged frog and Monterey spineflower and requested formal consultation on those species. You also determined that the Project has potential to adversely affect the Monterey gilia, pending botanical surveys of a portion of the project area that had not yet been surveyed at the time of your request. We received results of the relevant botanical surveys on June 23, 2016, and a minor revision of those results on August 16, 2016 (Johnson in litt. 2016), from Matthew Johnson of Denise Duffy and Associates (consultant to MRWPCA). Those results indicate that adverse effects to the Monterey gilia are likely and we have therefore addressed that species in this biological opinion.

You determined that the Project is not likely to adversely affect the tricolored blackbird (*Agelaius tricolor*). We have received a petition to list this species, but it currently has no status under the Act and therefore no consultation under the Act is required. We appreciate the measures that you and MRWPCA have proposed to protect this species and other migratory birds.

We have based this biological opinion on information that accompanied your May 13, 2016, request for consultation, including a biological assessment (Denise Duffy and Associates 2016), and other information from our files. We can make available a complete record of this consultation at the Ventura Fish and Wildlife Office.

Consultation History

We received your request for consultation on May 18, 2016. We received the aforementioned botanical survey results on June 23, 2016, and August 16, 2016, which completed the information needed to initiate consultation.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Salinas Pump Station Diversion

Construction

Construction activities at this site would include demolition, excavation, site grading and installation of new junction structures, new meter vault or flow measurement structures and short pipeline segments. Existing pump stations operations would be ongoing during construction due to the uninterruptible nature of conveyance of wastewater (and in some cases, stormwater flows). For this reason, temporary shunts of various waters may be necessary to maintain the collection and conveyance of waters to treatment facilities. Construction may occur up to 24 hours per day, 7 days per week due to the necessity of managing wastewater flows; however, major construction of new facilities would be limited to daytime hours. Approximately 0.75 acre would be temporarily disturbed (several discrete trenches and pits) and up to 0.25 acre of new impervious surfaces would be added to the site. The majority of permanent facilities would be subsurface. The site would be under construction for up to five months. Key construction components are:

- Open excavation within the existing facility for new cast-in-place vaults around existing pipelines.

- New pipelines installed by open excavation connecting the new vaults.

Operations and Maintenance

The Salinas Pump Station Diversion site is adjacent to and north of the existing Salinas Pump Station within the City's Treatment Plant 1 site (also called, TP1), and would be maintained by the same MRWPCA operations staff as currently operate the pump station. No additional employee site visits would be required at the Salinas Pump Station site. The facility would operate continually using automated flow metering, gates and valves. Operations would consist of seasonally adjusting the diversion settings to direct flows to the Pump Station or to the Salinas Treatment Facility. Gates and valves would be exercised annually if not operated more frequently. Installed flow meters would require periodic inspection and calibration on a less-than-annual frequency. Power usage at the site would be incidental to the existing pump station and would only be needed for supervisory control and data acquisition (SCADA) and metering and controls for the gates and valves. No ongoing materials delivery or solid waste generation would occur.

Salinas Treatment Facility Storage and Recovery

Construction

The majority of the construction activity for the Salinas Treatment Facility Storage and Recovery Facilities would occur within the existing 281-acre Salinas Treatment Facility site. New pipelines from Pond 3 (the western-most pond at the Salinas Treatment Facility) and the aeration basin to the return pump station, including pre-cast concrete manholes, would be constructed within the existing unpaved access road and parallel to the existing pipelines. A new lift station would be constructed at Pond 3 to return water to the return pump station. This new lift station would be constructed adjacent to the existing City of Salinas irrigation transfer station in Pond 3. If the work for the new lift station in Pond 3 must be performed while it is full, sheet piling and dewatering equipment would be required. The return pump station would be located near the existing influent pump station at the east end of the site. Return pump station and pipelines construction would include trenching and installation of new pipelines, new pump and lift station, new pumps/pump motors, electrical facilities, valve vaults and flow meter, requiring equipment delivery trucks, loaders, compactors, and backhoes.

The recovery or return pipeline from the Salinas Treatment Facility to the Salinas Pump Station Diversion site would be constructed inside the existing 33-inch influent pipeline, which has been abandoned in place. Installing a new pipeline inside the existing pipeline would require excavating access pits every 600-ft to 800-ft along the existing alignment, cutting into the existing pipe, pulling the new assembled pipe into the existing pipe and connecting the new pipe segments before closing the pit. The work area at each pit would be up to 20-ft wide, approximately 60-ft long and up to 10-feet deep. The width of construction disturbance at each pit could be up to 50 feet, but typically only 30 to 40 feet. Equipment would include equipment delivery trucks, loaders, backhoes, pipe cutting and welding equipment, pipeline fusing equipment (if fusible pipe is used), and pipeline pulling equipment. If work must occur in an existing street, jack-hammering and paving equipment would be required for demolition and repairing the site. The following are key aspects of construction of these facilities:

- *Recovery Pump Station*: Open excavation within the existing facility, new pump station wet well adjacent to the existing pump station at the east end of the site.
- *Recovery Pipeline*: Existing 33-inch pipeline would be slip-lined with a new 18-inch pipe and open excavation for sending/receiving pits at each end and every 600-800 feet along the pipeline. Pits would be located in either the existing pump station sites, within existing road rights-of-way or under agricultural land, depending on the stationing. Pipeline starts at the existing Salinas Industrial Wastewater Treatment Facility pump station, located on South Davis Road and follows a straight line to the Salinas Treatment Plant 1 (TP1) site, located on Hitchcock Road.
- Pond 3 pump station and inlet structure: Open excavation within the existing facility, adding a new wet well and inlet structure at the west end of treatment pond #3.
- Pipeline from Pond 3: Open excavation within the access road along the north side of treatment ponds 1, 2 and 3 at the existing Salinas Treatment Facility for installation of a new pipeline that would connect the Pond 3 pump station and the recovery pump station.

Operations and Maintenance

The new storage and recovery facilities at the Salinas Treatment Facility would be managed by the same number of staff that currently operates the Salinas Treatment Facility. During the storage season (November to April), the return pumps would not be operated. The Salinas Treatment Facility aeration pond would continue to operate as it currently does. Volumes in Ponds 1, 2, and 3 would be monitored. If inflows exceed the storage capacity, some flows would be diverted to the existing drying beds, or adjustments may be made at the Salinas Pump Station Diversion to send some agricultural wash water to the Regional Treatment Plant. The return pumps at the Salinas Treatment Facility and the Pond 3 lift station would be inspected during the storage season, and routine mechanical services would be scheduled during this season. Trucks with lifting equipment would be required to pull the pumps out of the wet wells for maintenance.

During the return pumping season (June to October), the return pump station would operate during the period of off-peak electrical rates, at flow rates up to 5 million gallons per day (mgd), depending upon the daily volume of new agricultural wash water diverted directly to the Salinas Pump Station. The pumping rate may be reduced during the peak hours of agricultural wash water flows. Stored water in Pond 3 would be conveyed to the return pump station. At the end of this season, the Salinas Treatment Facility ponds would be empty or nearly empty, allowing maintenance to be performed, if needed, on the gates, valves, overflow structures, pump stations and levee banks.

Reclamation Ditch Diversion

Construction

Construction of the Reclamation Ditch diversion would include minor grading, installation of a wet well/diversion structure, modification of an existing sanitary sewer manhole and a short

pipeline from the existing manhole to the new pump station. The work would disturb approximately 0.15 acre of land, including up to 0.02 acre of waters of the U.S. within Reclamation Ditch banks and channel bottom (no potentially jurisdictional wetlands were delineated at the site). The channel carries flow year-round, so a temporary coffer dam would be required above and below the site, with a small diversion pump to convey existing channel flows past the project construction area. The temporary coffer dams would consist of waterproof tarps or membranes wrapped around gravel fill material, which would be removed when the work is completed.

The new pump station wet well, intake structure and pipelines would be constructed using open-trench excavation. The construction excavation may be as large as 40-feet long by 10-feet wide. Due to the steepness of the banks and depth of the excavation, a tracked, long-arm excavator would be required. The below-grade components may use pre-cast concrete structures, so that the underground work would take less than a week to complete. Once the excavations are closed, the channel protection (concrete or riprap) may be installed and the temporary cofferdams and by-pass pumping system removed. The pumps and controls would be installed in the wet well and valve vault using a large excavator or crane.

During the period the channel is blocked with temporary cofferdams, the work may proceed 7 days a week to minimize the impact and duration. Electrical power used during construction may come from a temporary electrical service by Pacific Gas and Electric (PG&E), from permanent electrical service by PG&E if installed in advance of the site work, or from portable generators. The by-pass pumps would need to operate until the in-channel work is complete, so power would be required 24-hours a day. The site is in an industrial area, so there are no nearby residents to be disturbed by the noise at night. Key aspects of the construction of this facility include the following:

- Open excavation to install new intake structure, new wet well and new pipeline to connect to existing sanitary sewer main.
- New pump station would be constructed approximately 60 feet from the receiving sanitary sewer manhole.
- Site is highly disturbed by the adjacent railroad, construction of the Davis Road overpass, construction of the Salinas sanitary sewer siphon and realignment of the Reclamation Ditch. The Reclamation Ditch is maintained as a trapezoidal channel.

Operations and Maintenance

The Reclamation Ditch Pump Station would be configured to operate autonomously, based upon diversion and by-pass flow settings. A system operator would visit the site at most once per day to check for alarms and vandalism, and to visually inspect the intake screen for clogging. The Reclamation Ditch is assumed to require one employee visit per day at most (two one-way trips). Approximately once per month an operator would need to access the channel bottom to physically clear vegetation or debris from the intake screen. The pumps would require annual

inspection and servicing, using a lift truck to remove the pumps from the wet well. The flow meters would require inspection and calibration less than once per year.

Blanco Drain Diversion

Construction

Construction of the Blanco Drain Diversion would include minor grading, installation of a new wet well/diversion structure, installation of a new force main by open trench and by trenchless methods. The work would temporarily disturb approximately 0.15 acre of land at the pump station, including up to 0.02 acre of waters of the U.S. within Blanco Drain banks and channel bottom, and approximately 5 acres along the pipeline alignment including the excavation pits for constructing the pipeline under the Salinas River. The channel carries flow year-round, so a temporary coffer dam would be required above the construction site, with a small diversion pump to convey existing channel flows past the project site and the existing slide gate downstream of the adjacent Monterey County Water Resources Agency pump station. The temporary coffer dam would consist of waterproof tarps or membrane wrapped around gravel fill material, which would be removed when the work is completed. West of the river crossing and south of the existing Monterey Regional Waste Management District landfill site, the new force main would intersect the existing MRWPCA Salinas Interceptor. The new Blanco Drain source water force main would connect to the existing Salinas Interceptor to carry the water to the Regional Treatment Plant headworks. A hydraulic analysis of the Salinas Interceptor will be conducted during final design to determine the feasibility of the upstream connection from the Blanco Drain source water force main.

The new pump station wet well, intake structure, and on-site pipelines would be constructed using open-trench excavation. The construction excavation may be as large as 40-feet long by 10-feet wide. Due to the steepness of the banks and depth of the excavation, a tracked, long-arm excavator would be required. The below-grade components may use pre-cast concrete structures, so that the underground work would take less than a week to complete. Once the excavations are closed, channel protection (concrete or riprap) may be installed and the temporary cofferdam and by-pass pumping system removed. The concrete deck, pumps and controls would be installed in the wet well and valve vault and hydropneumatic tank installed using a tracked excavator or crane. Some cast-in-place concrete work is expected, requiring concrete trucks accessing the site.

During the period the channel is blocked with temporary cofferdams, the work may proceed 7 days a week to minimize the impact and duration. A portion of the new pipeline must be installed using trenchless methods. That work may require 24-hour operations during the drilling phase. A portion of the pipeline would be installed within the existing Regional Treatment Plant site. That work may be performed at night to minimize impacts to plant operations.

The force main pipeline must cross under the Salinas River[1]. This work would be performed using a trenchless method, referred to as "horizontal directional drilling". Trenchless construction would require work areas approximately 40-ft by 60-ft on each side of the river. Horizontal directional drilling is a trenchless technology where a drill bit fitted with a transmitter is guided from the drilling machine. The drill bit uses a fluid "mud" to lubricate, loosen and carry the drilled soil from the hole. The intent of this pipeline construction method is to stay far enough below the river bottom to avoid having the "mud" find a fissure in the soil, which would create a connection to the river above (called a "frac-out"). If a frac-out occurs, the mud, which is a highly caustic material, could spill into the aquatic resource and indirectly impact species dependent upon the resource.

The rest of the pipeline may be installed using open-trench methods. The final portion of the pipeline would cross the existing Regional Treatment Plant site and may require limited bore and jack construction to cross existing utilities which must remain in-service.

Surface water by-pass pumps at the Blanco Drain site would need to operate until the in-channel work is complete, so power would be required 24-hours a day.

Key construction aspects of the Diversion Pump Station component include the following:

- Open excavation to install new intake structure, new wet well, and new pipeline.
- New pump station would be constructed adjacent to the existing Monterey County Water Resources Agency pump station.
- The Blanco Drain is maintained as a trapezoidal channel.

Key construction aspects of the Blanco Drain Force Main and Gravity Pipeline include the following:

- Open excavation to install the majority of the new pipeline. The segment crossing the Salinas River would be installed using trenchless methods (directional drilling), with sending/receiving pits on either side.
- The pipeline would start at the new pump station and follow the farm road on the west bank of the Blanco Drain to the point the pipeline crosses the Salinas River. On the south side of the river, the pipeline would run north-west and then south-west under existing farm roads, then cross a portion of Monterey Regional Waste Management District landfill, and finally a portion of the MRWPCA Regional Treatment Plant to the point it joins the existing Salinas Interceptor pipeline.

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[1] The HDD operation will require both a sending and receiving pit to complete the connection under the Salinas River. The project proponents and engineers have designed the location of these pits (and all other HDD cosntruction staging and activities that might result in physical impacts) to avoid riparian habitat associated with the Salinas River.

Operations and Maintenance

The Blanco Drain Pump Station, like the Reclamation Ditch Pump Stations, would be configured to operate autonomously based upon diversion settings. A system operator would visit the site once a day to check for alarms and vandalism and to visually inspect the intake screen for clogging. The site is adjacent to the Monterey County Water Resources Agency's Blanco Drain Pump Station, and may require separate visits by operators from the two agencies or the two agencies can enter into an agreement for shared maintenance responsibilities. Approximately once per month an operator would need to access the channel bottom to physically clear vegetation or debris from the intake screen. The pumps would require annual inspection and servicing, using a lift truck to remove the pumps from the wet well. The new station flow meter would require inspection and calibration at a less-than-annual frequency. The pipeline valves would be inspected and exercised once per year. Any above-grade air-release valves would be inspected quarterly, requiring a system operator to drive the pipeline alignment.

Treatment Facilities at the Regional Treatment Plant

Advanced Water Treatment Facility

Construction

Construction workers would access the proposed Advanced Water Treatment (AWT) Facility site via Charles Benson Road and existing access roads serving the Regional Treatment Plant. Construction activities would include grading, cutting, laying, and welding pipelines and pipe connections; pouring concrete footings for foundations, tanks, and other support equipment; constructing walls and roofs; assembling and installing major advanced treatment process components; installing piping, pumps, storage tanks, and electrical equipment; testing and commissioning facilities; and finish work such as paving, landscaping, and fencing the perimeter of the site. Construction equipment would include excavators, backhoes, graders, pavers, rollers, bulldozers, concrete trucks, flatbed trucks, boom trucks and/or cranes, forklifts, welding equipment, dump trucks, air compressors, and generators. Mechanical components of the pretreatment, membrane filtration systems, reverse osmosis, advanced oxidation, and post-treatment facilities would be prefabricated and delivered to the site for installation. Approximately 3.5 acres would be disturbed during construction. Construction activities related to the AWT Facility are expected to occur over 18 months, plus three months for testing and start-up. Key aspects of AWT Facility construction include:

- The new AWT Facility would be installed using open excavation within the existing MRWPCA Regional Treatment Plant. The 3.5-acre site is currently a mix of paved and unpaved areas.
- Portions of the work would include cast-in-place concrete structures around existing pipelines.

Operations and Maintenance

Regional Treatment Plant secondary effluent would include a treated mixture of the source waters and would be drawn from a new diversion structure on an existing main pipeline. Pumping facilities would be controlled remotely through the AWT SCADA system. The AWT Facility would operate at an overall water recovery rate of 81 percent.[2] Waste residuals would include backwash from the biological filtration system (if included), backwash and cleaning wastes from the membrane filtration treatment system and concentrate and cleaning wastes from the reverse osmosis system. Cleaning wastes from each system would be neutralized and returned to the head of the Regional Treatment Plant, along with backwash waste residuals from the membrane treatment system. Reverse osmosis concentrate would be discharged through a new brine mixing structure to the existing Regional Treatment Plant ocean outfall. The AWT Facility would target an annual production rate of up to 3,700 acre-feet per year (AFY), requiring an average annual reverse osmosis feed supply of 4,568 AFY and producing waste residuals (reverse osmosis concentrate) of 868 AFY, which would be discharged to the ocean through the existing MRWPCA ocean outfall along with other wastewater that is not recycled.

Salinas Valley Reclamation Plant Modifications

Construction

Modification of the existing Salinas Valley Reclamation Plant would primarily occur within the existing 16-acre plant site. Internal modifications would be made to the existing reclamation plant, which includes a mix of concrete structures, paved, and unpaved areas. A new pipeline would be installed under the existing recycled water storage pond using open excavation, and the existing inlet and outlet structures would be modified, to allow seasonal delivery of recycled water without using the storage pond. Installation of motorized sluice gates in the chlorine contact basins, installation of a motorized sluice gate and platform at the entrance of the storage pond, installation of a pipeline between the entrance and exit structures within the storage pond, and motorizing the existing sluice gate at the exit of the storage pond would all be implemented within the existing Salinas Valley Reclamation Plant. Construction activities would include cutting, laying, and welding pipelines and pipe connections; pouring concrete footings for foundations, and other support equipment; installing piping, sluice gates and electrical equipment; testing and commissioning facilities; and finish work such as repairing the existing storage pond lining. Construction equipment would include excavators, backhoes, concrete trucks, flatbed trucks, boom trucks and/or cranes, forklifts, welding equipment, dump trucks, air compressors, temporary tanks and generators. Construction activities related to the Salinas Valley Reclamation Plant Modifications are expected to occur over 12 months. Any work requiring a full system shut-down would occur during the winter months when irrigation demands for recycled water are lowest.

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[2] This recovery rate does not include the filter backwash flows routed through the Regional Treatment Plant, as these flows would be recycled through the plant and return as source water, thus not decreasing the system recovery.

Operations and Maintenance

Operation of the modified facility would be similar to the current operational method. During the peak irrigation season, the plant would operate at full capacity with both chlorine contact basins used for disinfection and the 80 acre-foot pond used for tertiary-treated product water storage. During the off-peak, low demand months, normal low flow (5 to 8 mgd) volumes would be sent to the plant, one or two coagulation/flocculation tanks would be used, between one and three filters would be active, and only one chlorine contact tank would be used for disinfection, while the other tank would provide product water storage. When the tertiary-treated product water fills the storage basin, the flow to the Salinas Valley Reclamation Plant could be reduced or stopped until additional water is needed.

Operation of the system year-round would increase the time required for system maintenance, because portions of the treatment train would remain in operation as compared to the current winter shut-down. These operations occur year-round within the overall MRWPCA facility, so this increased maintenance window should not affect the overall daily level of maintenance effort.

Product Water Pipeline

Construction

Workers would install approximately 10 miles of Product Water pipelines primarily within existing roads and infrastructure easements. Pipeline installation would generally progress by 250 feet per day within or along roadways. For some pipelines in open (undeveloped) areas, work could progress at up to 400 feet per day. Progress at intersections or major utility crossings may be slower. Most pipeline segments would be installed using conventional open-trench technology; however, where it is not feasible or desirable to perform open-cut trenching, trenchless methods would be used.

Typical construction equipment for pipeline installation would include flatbed trucks, backhoes, excavators, pipe cutting and welding equipment, haul trucks for spoils transport, trucks for materials delivery, compaction equipment, Baker tanks, pickup trucks, arc welding machines, generators, air compressors, cranes, drill rigs, and skip loaders. Pipeline segments would typically be delivered and installed in 6- to 40-foot-long sections. Soil removed from trenches and pits would be stockpiled and reused, to the extent feasible, or hauled away for offsite disposal.

Under typical circumstances, the width of the disturbance corridor for pipeline construction would vary from 50 to 100 feet, depending on the size of the pipe being installed. Trenchless technologies could require wider corridors at entry and exit pits. Pipeline installation would be ongoing throughout the entire 18-month construction period for the Proposed Action, with multiple pipe segments being installed simultaneously. Pipeline installation would be sequenced to minimize land use disturbance and disruption to the extent possible. The following describes key components of construction of the pipeline:

- The pipeline would start at the AWT Facility and proceed to the southern boundary of the MRWPCA Regional Treatment Plant under existing roads and pavements.

- The pipeline would proceed south across undeveloped lands owned by Marina Coast Water District and the Armstrong Ranch to the City of Marina. The alignment follows existing farm roads.

- The pipeline follows street rights of way through Marina: Crescent Avenue, Carmel Avenue, Vaughn Avenue, Reindollar Avenue, California Avenue/5th Avenue, and connects to an existing pipeline segment, previously installed in Inter-Garrison Road (3rd Street) and 5th Avenue on the CSUMB Campus

- The pipeline construction resumes at 5th Avenue at A Street, and proceeds southwest under unpaved roads within CSUMB to General Jim Moore Boulevard (GJM Blvd). It would then proceed south in GJM Blvd to Normandy Road, where it connects to an existing recycled water pipeline.

- The final pipeline segment would connect the recycled water main in GJM Blvd to the injection well field.

Open-Trench Construction
For pipeline segments to be installed using open-trench methods, the construction sequence would typically include clearing and grading the ground surface along the pipeline alignments; excavating the trench; preparing and installing pipeline sections; installing vaults, manhole risers, manifolds, and other pipeline components; backfilling the trench with non-expansive fills; restoring preconstruction contours; and revegetating or paving the pipeline alignments, as appropriate. A conventional backhoe, excavator, or other mechanized equipment would be used to excavate trenches. The typical trench width would be 6 feet; however, vaults, manhole risers, and other pipeline components could require wider excavations. In addition, much of the project construction area is underlain by sandy soils that may require a laid-back trench cross-section due to considerations such as duration of construction, efficiency, and safety. In these cases, trench widths may be up to 12 feet. Work crews would install trench boxes or shoring or would lay back and bench the slopes to stabilize the pipeline trenches and prevent the walls from collapsing during construction. After excavating the trenches, the contractor would line the trench with pipe bedding (sand or other appropriate material shaped to support the pipeline). Construction workers would then place pipe sections (and pipeline components, where applicable) into the trench, connect the sections together by welding or other applicable joining methods as trenching proceeds, and then backfill the trench. Most pipeline segments would have 4 to 5 feet of cover. Open-trench construction would generally proceed at a rate of about 150 to 250 feet per day. Steel plates would be placed over trenches to maintain access to private driveways or public recreation areas. Some pipeline installation would require construction in existing roadways and could result in temporary lane closures or detours.

Trenchless Technologies
Where it is not feasible or desirable to perform open-cut trenching, trenchless methods such as jack-and-bore, drill-and-burst, horizontal directional drilling, and/or micro-tunneling would be employed. Pipeline segments located within heavily congested underground utility areas would likely be installed using horizontal directional drilling or micro-tunneling. Jack-and-bore methods would also be used for pipeline segments that cross beneath highways, major roadways, or drainages.

Jack-and-Bore and Micro-tunneling Methods The jack-and-bore and micro-tunneling methods entail excavating an entry pit and receiving pit at either end of the pipe segment. A horizontal boring machine or auger is used to drill a hole, and a hydraulic jack is used to push a casing through the hole to the opposite pit. As the boring proceeds, a steel casing is jacked into the hole and pipe is installed in the casing.

Drill-and-Burst Method The drill-and-burst method involves drilling a small pilot hole at the desired depth through a substrate, and then pulling increasingly larger reamers multiple times through the pilot hole until the hole reaches the desired diameter. The pipe is then installed through the drilled hole.

Horizontal Directional Drilling Horizontal directional drilling requires the excavation of a pit on either end of the pipe alignment. A surface-launched drilling rig is used to drill a small horizontal boring at the desired depth between the two pits. The boring is filled with drilling fluids and enlarged by a back reamer or hole opener to the required diameter. The pipeline is then pulled into position through the boring. Entry and receiving pits would range in size depending on the length of the crossing, but typically would have dimensions of approximately 50 by 50 feet.

Operations and Maintenance

The pipelines could operate continuously for up to 24 hours a day. General operations and maintenance activities associated with pipelines would include annual inspections of the cathodic protection system and replacement of sacrificial anodes when necessary; inspection of valve vaults for leakage; testing, exercising and servicing of valves; vegetation maintenance along rights-of-way; and repairs of minor leaks in buried pipeline joints or segments. Above-grade surge tanks would require periodic inspection (once every five years) and recoating (once every twenty years).

Product Water Booster Pump Station

Construction

Two pump stations would be constructed: the AWT Product Water Pump Station (at the site of the AWT Facility described above) and the Booster Pump Station. Construction crews would prepare the pump station sites by removing vegetation and grading the sites to create a level work area. Construction activities would include excavations for wet wells, installing shoring

and forms, pouring concrete footing for foundations; assembling and installing piping, pumps, and electrical equipment; constructing concrete enclosures and roofs; and finish work such as paving, landscaping, and fencing the perimeter of the pump station sites. Construction access would be provided via existing access roads and roadways.

The AWT Product Water Pump Station would be constructed on a new concrete pad adjacent to the new product water stabilization facilities at the Regional Treatment Plant. It is assumed that the entire 3.5-acre AWT Facility site could be disturbed during project construction activities. Construction of either Booster Pump Station would result in approximately 2,400 square feet of temporary disturbance and permanent facility (including driveways and fenced areas). The new booster pump station and associated pipelines would be installed using open excavation methods. The building foundation and pump wells would be cast in place. The booster pump station is located at the existing City of Marina Corporation Yard in a paved area.

Operations and Maintenance

The proposed booster pump station could operate continuously for up to 24 hours a day. Although pump stations would typically be operated remotely via SCADA, facility operators would conduct routine visits to the pump station sites approximately once daily to monitor operations, conduct general maintenance activities, and service the pumps. Above-grade surge tanks would require periodic inspection (once every five years) and recoating (once every twenty years).

Injection Well Facilities

Construction

The following are key aspects of the Injection Well Facilities construction activity. More details follow this summary:

- All of the injection well facilities would be installed by open excavation, except the wells themselves which would be by conventional rotary drilling. Above-grade facilities would have cast-in-place concrete floors or pads.

- The Injection Well Facilities site is located in an area previously used as small arms ranges when Fort Ord was as active base. The well clusters would be located along the southeast boundary of the parcel, which borders with the Bureau of Land Management's Fort Ord National Monument.

- The pipelines and conduits would be installed under existing unpaved roads or would follow another alignment within the Injection Well Facilities site generally following the same alignment, but modified as needed to follow the topography as requested by the City of Seaside. Conduits would also be installed along General Jim Moore Blvd and/or Eucalyptus Road to reach the existing PG&E service.

- A single percolation pond for well backwash water is proposed, to be located between the second and third well cluster, adjacent to the access road and pipeline corridor.

- Groundwater monitoring wells would be installed along existing unpaved roads.

Well Construction
Installation of any of the wells (deep injection, vadose zone and monitoring wells) typically follows a three-step process: drilling and logging, installation, and testing and equipping. The deep injection well would be drilled with rotary drilling methods. The method would be customized to minimize borehole impacts from drilling fluids and may incorporate air rotary methods or specialized drilling fluids (such as polymers). Cuttings from the borehole would be laid on the ground and logged by a California Certified Hydrogeologist. The direct rotary drilling method would likely be used for the monitoring wells. The deep injection well design would incorporate 18-inch to 20-inch diameter production casing and a wire-wrap stainless steel screen. Mechanical and pumping techniques would be used to develop the well after installation. Both constant discharge and constant injection testing for approximately eight hours would be completed in the injection well following well drilling. A 400-horsepower, variable speed pump would be installed at proposed deep injection well for back-flushing.

Back-flush Pipeline Facilities Construction
The back-flush facilities at the Injection Well Facilities site would include a flow meter, a back-flush pump and 400-horsepower motor, and an electrical cabinet, monitoring and SCADA. A main electrical power supply/transformer and motor control building would be built for PG&E power supply. In addition to incidental power requirements (instrumentation and monitoring equipment, site lighting, etc.), major power supply would be required to drive only one injection pump motor at a time. To construct the back-flush pipeline and basin, the contractor would excavate pipe trenches, retain the spoilage on site, import and install bedding material, and lay pipe, backfill & compact trench.

Estimated construction time for this component is approximately 4 months. The temporary construction area along the alignment of the 14-inch diameter back-flush water pipeline would be approximately 25 to 50 feet wide, for its approximate 3,000-foot length. Hence, the ground surface disturbance area would be between 1.75 and 3.5 acres. The construction area width is to provide space for a backhoe, trucks for hauling excess soil material, and imported bedding material. The depth of the pipeline trench would be approximately five feet to allow for bedding of the pipe and about three to four feet of cover material.

Pump Motor Control/Electrical Conveyance Construction
The following activities would be required to construct the pump motor control and electrical conveyance facilities:

- Excavation, spoils handling, import and install bedding material, building foundation, trench, place concrete, backfill & compact trench, finish concrete floor of electrical building.
- Install exterior electrical control cabinets on the paved area at the four clusters of vadose and deep injection wells.
- For electrical buildings, construct block walls, doors, louvers, roof and appurtenances, then interior finishes, lighting and HVAC; and electrical equipment and wiring.

The estimated construction period for these facilities is approximately 6 months. The temporary construction area would be approximately 25 to 50 feet wide within the alignment of the 14-inch diameter back-flush water pipeline, which is approximately 3,000 feet long. There would be no additional surface disturbance for construction of electrical conduits beyond that for the 14-inch back-flush water pipeline, described in the previous section. Construction activities would include a buried electrical power conduit and instrumentation conduits, all of which would be underground and encased in a concrete duct-bank, which would run in parallel and near the 14-inch back-flush pipeline. The depth of the duct-bank trench would be approximately 4.5 to 5 feet to allow for about 3 feet of cover material. The electrical control building that would house the SCADA transmission equipment would be approximately 16 feet by 24 feet. Its foundation construction would be slab-on-grade; hence, excavation would be only about 3 feet deep. The construction surface area would be about 600 square feet.

Operations and Maintenance

Injection wells and associated electrical and mechanical systems would operate 24 hour per day, 7 days per week throughout the year, although it is unlikely that all eight wells would be actively injecting at the same time for any length of time. Operations and maintenance staff would visit the Injection Well Facilities site most likely once daily Monday through Friday nearly every week. In addition to operation and maintenance of the wells, the workers would inspect above ground valves and appurtenances to assure they are properly functioning and to conduct and monitor the back-flush operations.

Based on the experience of the Water Management District in the operation of its nearby Aquifer Storage and Recovery (ASR) wells, back-flushing of each injection well would occur for about four hours weekly and would require discharge of the back-flush water to the percolation basin. The Water Management District conducts manual back-flushing and visual checks and field-tests the back-flush water discharge to confirm adequate flushing time has been provided. At nearby ASR wells, backflush basins percolate water from the back-flushing operations of a single well very quickly (on the order of approximately one day). Approximately once per year, a disking machine would be used to scarify the bottom of the backflush basin to increase/restore the percolation rate.

Avoidance and Minimization Measures

MRWPCA has proposed an extensive series of avoidance and minimization measures to limit the proposed action's adverse effects on natural resources, which are detailed in the biological assessment. Those measures relevant to federally listed species addressed in this biological opinion are presented here. It should be noted that measures for the federally endangered tidewater goby (*Eucyclogobius newberryi*), including surveys and relocation, are described in the biological assessment. However, the project has been modified since those measures were proposed such that the project will have no effect to this species and no relocations are now proposed.

Implement Construction Best Management Practices The following best management practices shall be implemented during all identified phases of construction (i.e., pre-, during, and post-) to reduce impacts to special-status plant and wildlife species:

1. A qualified biologist must conduct an Employee Education Program for the construction crew prior to any construction activities. A qualified biologist must meet with the construction crew at the onset of construction at the site to educate the construction crew on the following: a) the appropriate access route(s) in and out of the construction area and project boundaries; b) the special-status species that may be present; c) the specific mitigation measures that will be incorporated into the construction effort; d) the general provisions and protections afforded by the Service and CDFW; and e) the proper procedures if a special-status species is encountered within the site.

2. Trees and vegetation not planned for removal or trimming shall be protected prior to and during construction to the maximum extent possible through the use of exclusionary fencing, such as hay bales for herbaceous and shrubby vegetation, and protective wood barriers for trees. Only certified weed-free straw shall be used, to avoid the introduction of non-native, invasive species. A biological monitor shall supervise the installation of protective fencing and monitor at least once per week until construction is complete to ensure that the protective fencing remains intact.

3. Protective fencing shall be placed prior to and during construction to keep construction equipment and personnel from impacting vegetation outside of work limits. A biological monitor shall supervise the installation of protective fencing and monitor at least once per week until construction is complete to ensure that the protective fencing remains intact.

4. Following construction, disturbed areas shall be restored to pre-construction contours to the maximum extent possible and revegetated using locally-occurring native species and native erosion control seed mix, per the recommendations of a qualified biologist.

5. Grading, excavating, and other activities that involve substantial soil disturbance shall be planned and carried out in consultation with a qualified hydrologist, engineer, or erosion control specialist, and shall utilize standard erosion control techniques to minimize erosion and sedimentation to native vegetation (pre-, during, and post-construction).

6. No firearms shall be allowed on the construction sites at any time.

7. All food-related and other trash shall be disposed of in closed containers and removed from the project area at least once a week during the construction period, or more often if trash is attracting avian or mammalian predators. Construction personnel shall not feed or otherwise attract wildlife to the area.

8. To protect against spills and fluids leaking from equipment, the project proponent shall require that the construction contractor maintains an on-site spill plan and on-site spill containment measures that can be easily accessed.
9. Refueling or maintaining vehicles and equipment should only occur within a specified staging area that is at least 100 feet from a waterbody (including riparian and wetland habitat) and that has sufficient management measures that will prevent fluids or other construction materials including water from being transported into waters of the state. Measures shall include confined concrete washout areas, straw wattles placed around stockpiled materials, and plastic sheets to cover materials to prevent their transport by wind or rain into surface waters.

Implement Construction-Phase Monitoring The project proponents shall retain a qualified biologist to monitor all ground disturbing construction activities (i.e., vegetation removal, grading, excavation, or similar activities) to protect any special-status species encountered. Any handling and relocation protocols of special-status wildlife species shall be determined in coordination with the Service and CDFW prior to any ground disturbing activities, and conducted by a qualified biologist, approved under this biological opinion and holding an appropriate scientific collection permit. After ground disturbing project activities are complete, the qualified biologist shall train an individual from the construction crew to act as the on-site construction biological monitor. The construction biological monitor shall be the contact for any special-status wildlife species encounters, shall conduct daily inspections of equipment and materials stored on site and any holes or trenches prior to the commencement of work, and shall ensure that all installed fencing stays in place throughout the construction period. The qualified biologist shall then conduct regular scheduled and unscheduled visits to ensure the construction biological monitor is satisfactorily implementing all appropriate mitigation protocols. Both the qualified biologist and the construction biological monitor shall have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. The qualified biologist and the construction monitor shall complete a daily log summarizing activities and environmental compliance throughout the duration of the project. The log shall also include any special-status wildlife species observed and relocated.

Prepare and Implement Rare Plant Restoration Plan to Mitigate Impacts to Monterey Spineflowers (and Other Sensitive Plant Species) Where They Occur Outside the Former Fort Ord) Consultation between the Service and the U.S. Army on disposal of lands of the former Fort Ord included development of a habitat management plan (Corps 1997), which addresses conservation of relevant listed plant species. The proposed action will comply with the habitat management plan to address adverse effects to the Monterey spineflower and Monterey gilia where they occur on former Fort Ord lands. The proposed action would also have adverse effects to Monterey spineflower outside of the former Fort Ord. The following minimization measures will address those impacts:

Impacts to rare plant species individuals shall be avoided through project design and modification, to the extent feasible while taking into consideration other site and engineering constraints. If avoidance is not possible, the species shall be replaced at a 1:1 ratio for area of impact through preservation, restoration, or combination of both. A Rare Plant Restoration Plan shall be prepared and implemented by a qualified biologist. The plan shall include, but is not limited to, the following:

1. A detailed description of on-site and/or off-site mitigation areas, salvage of seed and/or soil bank, plant salvage, seeding and planting specifications, including, if appropriate, increased planting ratio to ensure the applicable success ratio. Specifically, seed shall be collected from the on-site individuals that would be impacted and grown in a local greenhouse, and then transplanted within the mitigation area. Plants shall be transplanted while they are young seedlings in order to develop a good root system. Alternatively, the mitigation area may be broadcast seeded in fall; however, if this method is used, some seed shall be retained in the event that the seeding fails to produce viable plants and contingency measures need to be employed.

2. A description of a 3-year monitoring program, including specific methods of vegetation monitoring, data collection and analysis, restoration goals and objectives, success criteria, adaptive management if the criteria are not met, reporting protocols, and a funding mechanism.

The mitigation area shall be preserved in perpetuity through a conservation easement or other legally enforceable land preservation agreement. Exclusionary fencing shall be installed around the mitigation area to prevent disturbance until success criteria have been met.

Avoid or Minimize Impacts to California Red-Legged Frog[3]

1. The MRWPCA shall annually submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project construction activities at the component site would begin until the MRWPCA receives confirmation from the Service that the biologist(s) is qualified to conduct the work.
2. A Service-approved biologist shall survey work sites 48 hours prior to the onset of construction activities. If California red-legged frog, tadpoles, or eggs are found, the approved biologist shall determine the closest appropriate relocation site. The approved biologist shall be allowed sufficient time to move the California red-legged frog, tadpoles or eggs from the work site before work activities begin. Only Service-approved biologists shall participate in activities associated with the capture, handling, and moving of California red-legged frogs.
3. Before any construction activities begin on the project component site, a Service-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project construction activities may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.
4. A Service-approved biologist shall be present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and disturbance of habitat have been completed. After this time, the biologist shall designate a person to monitor onsite compliance with all minimization measures and any future staff training. The Service-approved biologist shall ensure that this individual receives training in the identification of California red-legged frogs. The monitor and the Service-approved biologist shall have the authority to stop work if California red-legged frogs are in harm's way.
5. The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas to the extent practicable.
6. Work activities shall be completed between April 1 and November 1, to the extent practicable. Should the project proponent demonstrate a need to conduct activities

[3] Minimization measures for California red-legged frog would be implemented at the Blanco Drain diversion site and its associated source water pipeline, where the species is most likely to be encountered, as described in the Condition (Status) of the Species in the Action Area section, below.

outside this period, the project proponent may conduct such activities after obtaining Service approval (applies to Blanco Drain site only).

7. If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than five millimeters (mm) to prevent California red-legged frogs from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to the substrate.
8. The Declining Amphibian Populations Task Force's Fieldwork Code of Practice shall be followed to minimize the possible spread of chytrid fungus or other amphibian pathogens and parasites (Appendix A).

Frac-Out Plan: The project proponents in coordination with the contractor shall prepare and implement a Frac-Out Plan to avoid or reduce accidental impacts resulting from horizontal directional drilling (HDD) beneath the Salinas River. The Frac-Out Plan shall address spill prevention, containment, and clean-up methodology in the event of a frac-out. The proposed HDD component of the Blanco Drain diversion shall be designed and conducted to minimize the risk of spills and frac-out events. The Frac-Out Plan shall be prepared and submitted to the Service, California Department of Fish and Wildlife, National Marine Fisheries Service, and the Regional Water Quality Control Board prior to commencement of HDD activities for the Blanco Drain Diversion construction. The following are contents of a Frac-Out Plan:

- Project description, including details of the HDD design and operations
- Site description and existing conditions
- Potential modes of HDD failure and HDD failure prevention and mitigation
- Frac-out prevention measures (including for example, geotechnical investigations, planning for appropriate depths based on those investigations, presence of a qualified engineer during drilling to monitor the drilling process, live adjustments to the pace of drill advancement to ensure sufficient time for cutting and fluid circulation and to prevent or minimize plugging, maintaining the minimum drilling pressure necessary to maintain fluid circulation, etc.)
- Monitoring requirements (for example, monitoring pump pressure circulation rate, ground surface and surface water inspection, advancing the drill only during daytime hours, on-site biological resource monitoring by a qualified biologist)
- Response to accidental frac-out (including stopping drilling, permitting agency notification, surveying the area, containing the frac-out material, contacting the project biological monitor to identify and relocate species potentially in the area, turbidity

monitoring, procedures for clean-up and mitigation of hazardous waste spill materials, preparation of documentation of the event, etc.)

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATIONS

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species" (50 CFR 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide conditions of the California red-legged frog, Monterey spineflower, and Monterey gilia, the factors responsible for those conditions, and their survival and recovery needs; (2) the Environmental Baseline, which analyzes the conditions of the California red-legged frog, Monterey spineflower, and Monterey gilia in the action area, the factors responsible for those conditions, and the relationship of the action area to the survival and recovery of California red-legged frog, Monterey spineflower, and Monterey gilia; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the California red-legged frog, Monterey spineflower, and Monterey gilia; and (4) the Cumulative Effects, which evaluates the effects of future, non-Federal activities, that are reasonably certain to occur in the action area, on the California red-legged frog, Monterey spineflower, and Monterey gilia.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the current status of the California red-legged frog, Monterey spineflower, and Monterey gilia, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to reduce appreciably the likelihood of both the survival and recovery of the California red-legged frog, Monterey spineflower, and Monterey gilia in the wild by reducing the reproduction, numbers, and distribution of these species.

STATUS OF THE SPECIES

California red-legged frog

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 FR 25813). The Service has published a recovery plan (Service 2002).

The historical range of the California red-legged frog extended coastally from southern Mendocino County and inland from the vicinity of Redding, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985; Storer 1925). The California

red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Historically, this species was found throughout the Central Valley and Sierra Nevada foothills. Four additional occurrences have been recorded in the Sierra Nevada foothills since listing, bringing the total to five extant populations, compared to approximately 26 historical records (71 FR 19244). Currently, California red-legged frogs are only known from 3 disjunct regions in 26 California counties and 1 disjunct region in Baja California, Mexico (Fidenci 2004; R. Smith and D. Krofta, in litt. 2005 as cited in Service 2011).

California red-legged frogs have been found at elevations that range from sea level to about 5,000 feet. In the Sierra Nevada Mountains, California red-legged frogs typically occur below 4,000 feet and occurrences above this elevation are atypical for the subspecies (71 FR 19244).

The California red-legged frog uses a variety of habitat types, including various aquatic systems, riparian, and upland habitats. The diet of California red-legged frogs is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food item of adults. Vertebrates, such as Pacific chorus frogs (*Pseudacris regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Feeding activity occurs along the shoreline and on the surface of the water. Hayes and Tennant (1985) found juveniles to be active diurnally and nocturnally, whereas adults were largely nocturnal.

California red-legged frogs breed from November through March; earlier breeding has been recorded in southern localities (Storer 1925). Males appear at breeding sites from 2 to 4 weeks before females (Storer 1925). Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water (Hayes and Miyamoto 1984). Egg masses contain about 2,000 to 5,000 moderate-sized, dark reddish brown eggs (Storer 1925; Jennings and Hayes 1985). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925; Wright and Wright 1949). Sexual maturity can be attained at 2 years of age by males and 3 years of age by females (Jennings and Hayes 1985); adults may live 8 to 10 years (Jennings et al. 1992) although the average life span is considered to be much lower. The California red-legged frog is a relatively large aquatic frog ranging from 1.5 to 5 inches from the tip of the snout to the vent (Stebbins 1985).

California red-legged frogs breed in aquatic habitats. Larvae, juveniles and adults have been collected from streams, creeks, ponds, marshes, plunge pools and backwaters within streams, dune ponds, lagoons, and estuaries. California red-legged frogs frequently breed in artificial impoundments, such as stock ponds, if conditions are appropriate. Although California red-legged frogs successfully breed in streams and riparian systems, high spring flows and cold temperatures in streams often make these sites risky environments for eggs and tadpoles. The importance of riparian vegetation for this species is not well understood. When riparian vegetation is present, California red-legged frogs spend considerable time resting and feeding in it; the moisture and cover provided by the riparian plant community likely provide good foraging

habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding.

Juvenile and adult California red-legged frogs may disperse long distances from breeding sites throughout the year. They can be encountered living within streams at distances exceeding 1.8 miles from the nearest breeding site, and have been found up to 400 feet from water in adjacent dense riparian vegetation (Bulger et. al 2003). During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. Bulger et al. (2003) found marked California red-legged frogs in Santa Cruz County making overland movements of up to 2 miles over the course of a wet season. These individual frogs were observed to make long-distance movements that are straight-line, point to point migrations over variable upland terrain rather than using riparian corridors for movement between habitats. For the California red-legged frog, suitable habitat is potentially all aquatic and riparian areas within the range of the species and includes any landscape features that provide cover and moisture (61 FR 25813).

Habitat loss and alteration, combined with over-exploitation and introduction of exotic predators, were important factors in the decline of the California red-legged frog in the early to mid-1900s. Continuing threats to the California red-legged frog include direct habitat loss due to stream alteration and loss of aquatic habitat, indirect effects of expanding urbanization, competition or predation from non-native species including the bullfrogs (*Rana catesbeiana*), catfish (*Ictalurus* spp.), bass (*Micropterus* spp.), mosquito fish (*Gambusia affinis*), red swamp crayfish (*Procambarus clarkii*), and signal crayfish (*Pacifastacus leniusculus*). Chytrid fungus (*Batrachochytrium dendrobatidis*) is a waterborne fungus that can decimate amphibian populations, and is considered a threat to California red-legged frog populations.

Recovery of the California Red-legged Frog

The recovery plan for the California red-legged frog identifies eight recovery units (Service 2002), which are based on the assumption that various regional areas of the species' range are essential to its survival and recovery. The status of this species is considered within the smaller scale of recovery units as opposed to the overall range. These recovery units are delineated by major watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the range of the California red-legged frog. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit.

Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long-term viability within existing populations. This management strategy will allow for the recolonization of habitat within and

adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

Monterey Spineflower

The Monterey spineflower was listed as a federally threatened subspecies on February 4, 1994 (59 FR 5499), and 11,055 acres of critical habitat were designated on January 9, 2008 (73 FR 1525). Information contained in this account was obtained primarily from the Monterey Spineflower (*Chorizanthe pungens* var. *pungens*) 5-Year Review (Service 2009).

Monterey spineflower is a prostrate annual species in the buckwheat family (Polygonaceae). It has long, somewhat wiry branching stems supporting aggregates of small white to pinkish flowers. Seeds typically germinate after the onset of winter rains and plants can be found above ground as early as December (Fox et al. 2006). Flowering occurs from late March to June, depending on weather patterns, and seed is dispersed in mid-summer.

At the time of listing, Monterey spineflower in the Monterey Bay area was known from scattered populations along the immediate coast, in the Prunedale Hills at Manzanita Park, in the coastal and inland areas of former Fort Ord, and from historical collections described as east of Watsonville and near Mission Soledad in the Salinas Valley. Since its listing, additional populations of Monterey spineflower have been discovered in the Prunedale Hills of Monterey County and interior areas of Santa Cruz County.

Monterey spineflower is currently known to be extant in southern Santa Cruz and northern Monterey Counties. The distribution of Monterey spineflower extends from Santa Cruz County south along the Monterey Bay to the Monterey Peninsula. Two historical collections were made farther south, in southern Monterey County in 1935 and in northern San Luis Obispo County in 1842. The CNDDB lists 29 extant occurrences of Monterey spineflower in this range (CNDDB 2013). Populations also occur inland in Monterey County in the Prunedale Hills and at former Fort Ord. One population has also been located in the Soledad area of the Salinas Valley (Reveal and Hardham 1989, CNDDB 2013).

As an annual species, Monterey spineflower responds strongly to annual precipitation patterns and amounts, resulting in large fluctuations in the population of plants visible above-ground from year to year. Many populations support large numbers of individuals (thousands or tens of thousands of plants) scattered in openings among the dominant perennial vegetation (CNDDB 2013).

Researchers recently investigated the phylogenetic relationships of various members of the genus *Chorizanthe*, subsection *Pungentes*, including Monterey spineflower (Brinegar 2006, Baron and Brinegar 2007, Brinegar and Baron 2008). Results from the first phase of the molecular study, using ribosomal DNA internal transcribed spacer (ITS) sequencing, indicate that Monterey spineflower and robust spineflower appear to be more closely related to one another than to the

other subspecific taxa in the *C. pungens* and *C. robusta* complex. In a second phase of analysis, researchers sequenced chloroplast DNA to determine if it was possible to further differentiate Monterey spineflower from robust spineflower based on these genetic techniques. Results indicated that: (1) there is a general agreement between the results of the ITS sequencing and the DNA phylogenies for the *C. pungens/C. robusta* complex, while results for the other *Pungentes* taxa are often inconsistent with their position in the ITS-based phylogeny; (2) there is a general biogeographical pattern to this phylogeny with regard to the *C. pungens/C. robusta* complex; and (3) there is genetic diversity between populations of Monterey spineflower. While the researchers suggest that a taxonomic revision of the *Pungentes* complex may be in order, no changes are being proposed at this time (S. Baron, botanic consultant, in litt. 2008).

Monterey spineflower readily grows where suitable sandy substrates occur and, like other *Chorizanthe* species, where competition with other plant species is minimal (Harding Lawson Associates 2000; Reveal 2001). Studies of the soil requirements and shade tolerances of a related taxon, Scotts Valley spineflower (*Chorizanthe pungens* var. *hartwegiana*), concluded that this taxon is restricted to openings in sandy soils primarily due to its intolerance of shade produced by competing vegetation, rather than its restriction to the specific soil type (McGraw and Levin 1998).

Where Monterey spineflower occurs within native plant communities, along the coast as well as at more interior sites, it occupies microhabitats found between shrubs where there is little cover from other herbaceous species. In coastal dune scrub, shifts in habitat composition caused by patterns of dune mobilization that create openings suitable for Monterey spineflower are followed by stabilization and successional trends that result in increased vegetation cover over time (Barbour and Johnson 1988). Accordingly, over time there are shifts in the distribution and size of individual colonies of Monterey spineflower found in the gaps between shrub vegetation.

Human-caused disturbances, such as scraping of roads and firebreaks, can reduce the competition from other herbaceous species and consequently provide favorable conditions for Monterey spineflower, as long as competition from other plant species remains minimal. This has been observed at former Fort Ord, where Monterey spineflower occurs along the margins of dirt roads and trails and where it has colonized disturbances created by military training (Corps 1992, BLM 2003). However, such activities also promote the spread and establishment of nonnative species, can bury the seedbank of Monterey spineflower, and do not result in the cycling of nutrients and soil microbial changes that are associated with some large-scale natural disturbances, such as fires (Stylinski and Allen 1999, Keeley and Keeley 1989).

The primary threats to the Monterey spineflower identified at the time of listing were development for human uses, recreation, and encroachment of invasive nonnative species into its habitat. While these are still occurring and diminishing occurrences of Monterey spineflower, other lands that support this taxon have been purchased by conservation-oriented organizations and are preserved (e.g., Long Valley in the Prunedale Hills) or have the potential for long-term preservation (e.g., Caltrans lands). Within its range, numerous occurrences are on lands being

restored or enhanced (e.g., State Beaches, Naval Post-Graduate School) or are planned for restoration and enhancement (e.g., former Fort Ord). A primary component of these programs is the removal of nonnative invasive species that compete with Monterey spineflower. Monterey spineflower appears able to recolonize sites where nonnative species have been removed (Service 2009).

Recovery of Monterey Spineflower

The Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan (Service 1998a) outlines recovery criteria for Monterey spineflower. Monterey spineflower can be considered for delisting when the following criteria have been met:

1. The Fort Ord disposal and reuse process has led the management agencies to develop, fund, and implement permanent protection plans for the species' habitat including permanent iceplant suppression programs; and

2. Beach-dune occurrences on State Park and private lands throughout its current range from Santa Cruz to the Monterey Peninsula are covered under a permanent protection plan. Plans to conserve roughly 60 percent of Fort Ord appear sufficient for recovery of the interior occurrence. A reassessment would be made should plans call for conservation of less habitat. Existing management along the coast at the State Parks units needs to be supplemented with protection and management on private lands (management to be determined after a thorough analysis of the beach populations).

Monterey Gilia

Monterey gilia was listed as a federally endangered subspecies on June 22, 1992 (57 FR 27848). Critical habitat has not been designated for this subspecies. Information contained in this account was obtained primarily from the Monterey gilia (*Gilia tenuiflora* ssp. *arenaria*) 5-Year Review: Summary and Evaluation (Service 2008).

Monterey gilia is an annual herbaceous plant in the phlox family (Polemoniaceae), endemic to the Monterey Bay and Peninsula dune complexes. Individual plants are less than 7 inches tall, with a basal rosette of leaves and white and purple funnel-shaped flowers. Fifteen known natural occurrences are distributed in discontinuous populations from Spanish Bay on the Monterey Peninsula north to Moss Landing. Monterey gilia is typically associated with sandy soils of dune scrub, coastal sage scrub, and maritime chaparral vegetation types in the coastal dunes of Monterey County, California. The species is thought to be primarily self-pollinating based on its stamens not protruding from the flower, no observations of pollinators, and very viable seed (Service 1998).

There are likely 24 currently extant occurrences of Monterey gilia; 7 occurrences were known at the time the subspecies was listed. Since listing, 11 additional inland occurrences of Monterey gilia have been located, 12 coastal occurrences have been located, and 5 occurrences have likely been extirpated. One occurrence was extirpated prior to listing. Although these inland occurrences may constitute a range extension from what was known at the time of listing, the overall range of the taxon is still limited. It is unclear as to where the range of the subspecies *Gilia tenuiflora* ssp. *arenaria* ends and the range of *Gilia tenuiflora* ssp. *tenuiflora* begins. There is an additional possibility that some cross-breeding is occurring on the boundary between these subspecies. Genetic analyses should be undertaken to confirm the range extents within this species.

The primary threats to Monterey gilia are habitat destruction due to development and an increase in cover by invasive, nonnative plant species (which inhibits its ability to germinate and colonize). The interior sites are generally more at risk than coastal populations. The coastal populations of Monterey gilia on State Park lands are relatively more protected than interior sites at this time, although nonnative plant control is required at virtually all sites and repeated out-plantings have been necessary to maintain numbers and expand population areas. Because invasive species are a concern throughout the Monterey Bay region, it is likely that they pose a threat to Monterey gilia on private parcels in this area as well; however, little information is available regarding the status of occurrences on private lands along the coast.

The status of Monterey gilia since the time of listing has likely improved at some sites by virtue of current or planned management for conservation. Along the coast, acquisition of one private parcel by Big Sur Land Trust and management activities within the State Park units have been a benefit to the long-term conservation of the taxon. At inland sites, the current and future transfer of lands from former Fort Ord to the University of California and Bureau of Land Management will also potentially benefit the long-term conservation of the taxon; however, planned losses of habitat along the western edge of former Fort Ord via land transfers to local agencies for development, and likely future development of other private lands along the coast, will likely result in direct losses of populations, secondary impacts to a portion of the remaining populations, and increased fragmentation of remaining habitat (particularly between the coastal and inland populations). For all remaining populations, both coastal and inland, threats due to invasive species will persist and will likely require management in perpetuity (Bossard et al. 2000).

Recovery of Monterey Gilia

The immediate objective of the Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan (Service 1998) is to minimize the threats to the species and the habitats upon which they depend. The plan's primary objective is to delist taxa covered by the plan in a minimum of 20 years. This recovery plan includes recovery criteria for Monterey gilia.

Monterey gilia can be considered for delisting when habitat throughout its range in the Monterey Bay Dunes from Moss Landing to about Sand City, and from dunes in and near Asilomar State Park on the Monterey Peninsula, is protected from encroachment of non-native species, recreational activity (including off-road vehicles and horses), and development; restored to native vegetation at proper densities to allow natural colonization; monitored sufficiently to assure that local threats are spotted promptly; and has enough plants at enough locations within the protected vegetation to reasonably assure the viability of the species. Specific numbers at each location can be found in the recovery plan for the species.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 Code of Federal Regulations 402.02). The action area for this biological opinion is dispersed through northwestern Monterey County, from just north of the Salinas River, south through the cities of Marina and Seaside to the former Fort Ord, and east to the city of Salinas. The Project consists of diversion sites, pump stations, treatment facilities, and injection wells, which are connected by a series of new or existing pipelines (see biological assessment, Figure 3, map series, for details). Much of the action area is in existing developed or highly disturbed (e.g., row crop agriculture) areas. Individual project components are discussed in greater detail in the next subsection.

Habitat Characteristics of the Action Area

The Blanco Drain diversion would be constructed just north of the Salinas River and its associated source water pipeline would be directionally drilled under the Salinas River and the adjacent riparian corridor. Existing aquatic, ruderal, agricultural, and developed areas would be affected during construction of the diversion pump station; effects to aquatic habitat would be limited to Blanco Drain (an open ditch carrying agricultural runoff to the Salinas River) itself. Ruderal, agricultural, and developed areas and non-native grassland habitats would be affected during construction of the associated source water pipeline. California red-legged frogs have been observed at the Salinas River near the proposed Blanco Drain diversion and could occur within the portion of the Action Area where the diversion and its associated pipeline would be constructed (Denise Duffy and Associates 2016).

New treatment facilities would be constructed at the existing Regional Treatment Plant. Habitat at this location includes existing developed and ruderal areas and non-native grassland. The Salinas River is to the north and east of the Regional Treatment Plant and the proposed Blanco Drain diversion would be across the River to the east. California red-legged frogs have been observed in the Salinas River near the Regional Treatment Plant and could occur within the treatment facilities portion of the Action Area (Denise Duffy and Associates 2016).

The proposed project water line would run south, through the eastern sides of the cities of Marina and Seaside, from the Regional Treatment Plant to the proposed injection well facilities. The product line runs primarily through existing developed, agricultural, and ruderal areas plus sections of non-native grassland and maritime chaparral habitats. Portions of the product line route totaling 0.1 acre are occupied by the Monterey spineflower (Denise Duffy and Associates 2016). There is a small potential for the California red-legged frog to move through the product water line route, especially in the northern portion of the line where it would exit the Regional Treatment Plant.

The injection well facilities site is on designated development parcels within the former Fort Ord and is composed primarily of Maritime chaparral plus ruderal and developed areas (mostly existing roads) and a small area of oak woodland. Approximately 0.2 acre of this portion of the Action Area is occupied by the Monterey spineflower; 0.09 occupied acre plus additional scattered individuals were found in 2016 surveys (Johnson, in litt. 2016) and an additional 0.1 acre was found occupied in earlier surveys (Denise Duffy and Associates 2016). Approximately 0.003 acre of this portion of the Action Area is occupied by the Monterey gilia; 2016 surveys revealed a total of 87 individuals (Johnson, in litt. 2016).

Other proposed facilities (including the Reclamation Ditch Diversion, the source water pipeline from and modifications to the existing Salinas Treatment Facility Storage and Recovery Ponds, and the Salinas Pump Station Diversion) would be constructed in existing developed or intensive agricultural areas near the city of Salinas. There is a small potential for California red-legged frogs to move through these areas from the Salinas River, but there are no known localities of the species within 2 miles of these portions of the Action Area (CNDDB 2016).

Previous Consultations in the Action Area

We have consulted several times with the U.S. Army on cleanup and re-use of the former Fort Ord and its effects on listed species (Service 2015 and references therein). The planning process for re-use of the former Fort Ord included designating some parcels for development and others as habitat reserves and corridors that would contribute to conservation of listed and sensitive species, including the Monterey spineflower and Monterey gilia (Corps 1997). The injection well site is on parcels within the former Fort Ord that have been designated for development. Our analyses of base re-use assumed that Monterey spineflower and Monterey gilia occurrences within designated development parcels would be lost and we determined that such loss would not jeopardize either species.

A search of our files did not reveal any consultations addressing portions of the Action Area outside the former Fort Ord.

Condition (Status) of the Species in the Action Area

California Red-legged Frog

California red-legged frogs have not been observed immediately within the Action Area. However, the species has been observed along the Salinas River near the proposed Blanco Drain diversion site and the existing Regional Treatment Plant and may move through the Action Area from the Salinas River.

Monterey Spineflower

Monterey spineflower was documented during botanical surveys of the Action Area (Denise Duffy and Associates 2016, Johnson in litt. 2016). Approximately 0.1 acre of occupied habitat occurs within the product water pipeline route (outside the former Fort Ord) and approximately 0.2 acre occurs within the injection well site (within the former Fort Ord). Surveys only reveal adult plants and there is potential that additional habitat within the Action Area is occupied by seed of the Monterey spineflower. It is not possible to quantify areas where seed may be present, but adult plants have not been observed. However, if such areas exist, we presume them to be small because the Action Area is primarily in developed and intensive agricultural uses.

Monterey Gilia

Monterey gilia was documented during botanical surveys of the Action Area (Johnson in litt. 2016). Approximately 0.003 acre of the injection well site is occupied by the Monterey gilia and 2016 surveys revealed a total of 87 individuals. Surveys only reveal adult plants and there is potential that additional habitat within the Action Area is occupied by seed of the Monterey gilia. It is not possible to quantify areas where seed may be present, but adult plants have not been observed. However, if such areas exist, we presume them to be small because the Action Area is primarily in developed and intensive agricultural uses.

Recovery

California Red-legged Frog

The Action Area is within Recovery Unit 5 (Central Coast) and overlaps the southern end of Recovery Core Area 19 (Watsonville Slough-Elkhorn Slough; Salinas River-Pajaro River)[4] for

[4] Recovery core area 19 is named inconsistently in the California red-legged frog recovery plan (Service 2002). The map on page 51 names it as "Watsonville Slough-Elkhorn Slough" while the text on page 55 names it as "Salinas River-Pajaro River". The mapping on page 51 and the text on page 55 are both correct and some or all of all four drainages are encompassed within the core area; only the names are inconsistent.

the California red-legged frog (Service 2002). Core area 19 was designated because it is currently occupied by the species, provides connectivity between occupied areas, and is inhabited by a stable population that may provide dispersing individuals that colonize other areas.

Monterey Spineflower

The former Fort Ord is discussed for Monterey spineflower recovery in the Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan (Service 1998). Service (1998) indicates that the proposed conservation strategy (Corps 1997) for base re-use appears adequate to conserve the interior occurrences of the Monterey spineflower. Service (1998) also indicates that coverage of beach and dune populations of the Monterey spineflower, on California State Parks and private land, under a permanent management plan is necessary for recovery of the species (i.e., implementation of conservation actions on the former Fort Ord is necessary, but not sufficient, to achieve recovery of the species as a whole). All occurrences of Monterey spineflower within the Action Area are at interior locations.

Monterey Gilia

The former Fort Ord is discussed for Monterey gilia recovery in the Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan (Service 1998). Specifically, management of Fort Ord (CNDDB occurrence number 20 as mentioned on page 92) to support 10,000 to 40,000 individual plants is identified as a recovery criterion. All occurrences of Monterey gilia within the Action Area are at the former Fort Ord.

EFFECTS OF THE ACTION

Effects of the Proposed Action on the California Red-legged Frog

Direct impacts to adults and sub-adults of the California red-legged may include injury or mortality from being crushed by earth moving equipment, construction debris, and worker foot traffic. These impacts will be reduced by minimizing and clearly demarcating the boundaries of the project areas and equipment access routes. Scheduling work outside of the rainy season in the Blanco Drain area (the portion of the Action Area where the species is most likely to be found) to avoid times when California red-legged frogs are most likely to move overland would further reduce these effects. Although some aquatic habitat would be affected at the diversion sites, we do not expect this habitat to be occupied by eggs or larvae and therefore do not expect these life stages to be affected.

The capture and handling of California red-legged frogs to move them from a work area may result in injury or mortality. Mortality may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat. Improper handling, containment, or transport of individuals would be reduced or prevented by use of a Service-

approved biologist. California red-legged frogs may attempt to return to the capture site. California red-legged frogs attempting to return to capture sites are likely to be more susceptible to predation, exposure to the elements, and vehicle strikes if they attempt to return to the original capture site. Overall, relocation is intended to reduce the risk of injury or mortality from the direct effects described above.

Construction activities, including noise and vibration, may cause California red-legged frogs to temporarily abandon habitat adjacent to work areas. This disturbance may increase the potential for predation and desiccation when California red-legged frogs leave shelter sites.

Trash left during or after project activities could attract predators to work sites, which could, in turn, prey on California red-legged frogs. For example, raccoons are attracted to trash and also prey opportunistically on California red-legged frogs. This potential impact will be reduced or avoided by careful control of waste products at all work sites.

Chytridiomycosis is an infectious disease that affects amphibians worldwide, and is caused by the chytrid fungus. Chytrid fungus is a water-borne fungus that can be spread through direct contact between aquatic animals and by a spore that can move short distances through the water. The fungus only attacks the parts of a frog's skin that have keratin (thickened skin), such as the mouthparts of tadpoles and the tougher parts of adults' skin, such as the toes. The fungus can decimate amphibian populations, causing fungal dermatitis which usually results in death in 1 to 2 weeks, but not before infected animals may have spread the fungal spores to other ponds and streams. Once a pond or waterway has become infected with chytrid fungus, the fungus stays in the water for an undetermined amount of time. Chytrid fungus could be spread if infected California red-legged frogs are relocated and introduced into areas with healthy California red-legged frogs. It is also possible during the relocation of California red-legged frogs that infected equipment or clothing could introduce chytrid fungus into areas where it did not previously occur. The proposal to implement the fieldwork code of practice developed by the Declining Amphibian Populations Task Force should reduce the potential for movement of chytrid fungus.

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade aquatic or upland habitat to a degree where California red-legged frogs are adversely affected or killed. The potential for this impact to occur will be reduced by the proposal to require all refueling, maintenance, and staging of equipment and vehicles to occur at least 100 feet from riparian habitat or water bodies and not in a location from where a spill would drain directly toward aquatic habitat.

Workers may intentionally or unintentionally disturb, injure, or kill California red-legged frogs. The potential for this impact to occur will be reduced by the proposal to conduct pre-construction training informing workers of the presence and protected status of this species and the measures that are being implemented to protect it during project activities.

Work in streams or in floodplains could cause unusually high levels of siltation downstream. This siltation could alter the quality of habitat to the extent that use by individuals of the species is precluded. Implementing best management practices and reducing the area to be disturbed to the minimum necessary, as proposed by MRWPCA, will likely assist in reducing the amount of sediment that is washed downstream, as a result of project activities.

Directional drilling could introduce caustic mud into the Salinas River if a frac-out occurs. Such mud could kill California red-legged frogs or degrade their habitat. Proposed measures to reduce the likelihood of a frac-out and to respond to one if it occurs, should reduce the likelihood or severity of these effects.

Effects of the Proposed Action on the Monterey Spineflower

All of the habitat occupied by Monterey spineflower within the Action Area (approximately 0.3 acre and possibly additional undetected acreage occupied by seed) could be disturbed or destroyed by trenching and construction activities. MRWPCA will avoid these effects, if they determine that avoidance is feasible when considering other constraints. If avoidance is not considered feasible, then the known occupied habitat outside the former Fort Ord (0.1 acre) will be replaced at a minimum 1:1 ratio through implementation of a rare plant restoration plan. We consider adverse effects to Monterey spineflower within designated development parcels on the former Fort Ord adequately minimized through the planning process for base re-use (Corps 1997) and replacement of occupied habitat there is not proposed.

Effects of the Proposed Action on the Monterey Gilia

All of the habitat occupied by Monterey Gilia within the Action Area (approximately 0.003 acre and possibly additional undetected acreage occupied by seed) could be disturbed or destroyed by trenching and construction activities. All of the known occupied habitat for Monterey Gilia within the Action Area is within designated development parcels on the former Fort Ord. We consider adverse effects to Monterey gilia within designated development parcels on the former Fort Ord adequately minimized through the planning process for base re-use (Corps 1997) and replacement of occupied habitat there is not proposed.

Effects on Recovery of the California Red-legged Frog

We do not expect that the proposed action would substantially affect recovery of the California red-legged frog. At worst, the project may result in mortality of a few individuals, which we do not expect would have long-term effects to recovery. We do not expect that the population stability of the species within or the habitat connectivity across recovery core area 19 would be affected.

Effects on Recovery of the Monterey Spineflower

We do not expect that the proposed action would substantially affect recovery of the Monterey Spineflower. At worst, the proposed action could result in loss of approximately 0.3 acre of known occupied habitat plus unquantified but presumably small additional acreage occupied by seed. These small effects would be further reduced by proposed measures to avoid destruction of occupied habitat, if determined feasible, and to replace the up to 0.1 acre of occupied habitat that could be destroyed outside the former Fort Ord. Furthermore, the occupied habitat that may be destroyed within the former Fort Ord occurs on designated development parcels and is not considered essential to recovery of the species (Corps 1997, Service 1998).

Effects on Recovery of the Monterey Gilia

We do not expect that the proposed action would substantially affect recovery of the Monterey Gilia. At worst, the proposed action could result in loss of approximately 0.003 acre of known occupied habitat plus unquantified but presumably small additional acreage occupied by seed. All of the known occupied habitat that may be destroyed is within the former Fort Ord and occurs on designated development parcels not considered essential to recovery of the species (Corps 1997). The Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan (Service 1998) indicates that management of the former Fort Ord to support 10,000 to 40,000 individual plants is necessary for recovery of the species. Because Monterey gilia is an annual plant that persists as seed and the number of individual adult plants varies from year to year, we do not know the exact number of individuals that could be destroyed due to the proposed action. However, the best available information is from 2016 surveys, which located only 87 individuals. We do not expect the loss of such a small area of habitat and number of individuals to affect the potential for the former Fort Ord to support the 10,000 to 40,000 individual plants considered necessary for recovery of the species.

Summary of Effects

California Red-legged Frog

The proposed action may result in mortality of a few adult or juvenile California red-legged frogs. We expect minimal effects to the quality of California red-legged frog habitat because most of the proposed action would be implemented in existing developed or highly disturbed areas. We expect little to no long-term effect to the local population of California red-legged frogs. We do not expect that the proposed action would have substantial effects to the population stability of the species within or the habitat connectivity across recovery core area 19.

Monterey Spineflower

We expect that the proposed action would result in destruction of up to 0.3 acre of known occupied Monterey spineflower habitat and possibly additional habitat occupied by seed. At

least 0.1 acre of this habitat would either be avoided or replaced. Habitat that would not necessarily be either avoided or replaced occurs within designated development parcels of the former Fort Ord and is not considered essential to conservation of the species (Corps1997, Service 1998). We do not expect that the small amount of habitat destruction and mortality likely due to the proposed action would have substantial effects to recovery of the species.

Monterey Gilia

We expect that the proposed action would result in destruction of up to 0.003 acre of known occupied Monterey gilia habitat and possibly additional habitat occupied by seed. Based on 2016 surveys, we estimate that approximately 87 adult plants may be killed, but because Monterey gilia is an annual, the number of adult plants present during project construction may vary from this estimate. All of the known occupied habitat for this species within the Action Area is on designated development parcels of the former Fort Ord and is not considered essential to conservation of the species (Corps 1997). We do not expect that the small amount of habitat destruction and mortality likely due to the proposed action would have substantial effects to recovery of the species.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. We do not consider future Federal actions that are unrelated to the proposed action in this section because they require separate consultation pursuant to section 7 of the Act. We are not aware of any non-Federal activities that are reasonably certain to occur in the action area.

CONCLUSION

The regulatory definition of "to jeopardize the continued existence of the species" focuses on assessing the effects of the proposed action on the reproduction, numbers, and distribution, and their effect on the survival and recovery of the species being considered in the biological opinion. For that reason, we have used those aspects of the California red-legged frog's, Monterey spineflower's, and Monterey gilia's statuses as the basis to assess the overall effect of the proposed action on the species.

California Red-legged Frog

Reproduction

We expect no effects on reproduction of the California red-legged frog.

Numbers

There is potential for the proposed action to result in mortality of adult or juvenile California red-legged frogs. However, we expect such mortality events to occur very rarely, if at all, during project implementation. We do not expect such a small reduction in numbers to appreciably reduce the likelihood of both the survival and recovery of the California red-legged frog.

Distribution

We do not expect the proposed action to affect the distribution of the California red-legged frog.

Recovery

We do not expect that the proposed action would substantially affect recovery of the California red-legged frog. At worst, the project may result in mortality of a few individuals, which we do not expect would have long-term effects to recovery. We do not expect that the population stability of the species within or the habitat connectivity across recovery core area 19 would be affected.

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog.

Monterey Spineflower

Reproduction

We expect no effects on reproduction of the Monterey spineflower.

Numbers

We expect that the proposed action will result in mortality of an unknown number of Monterey spineflowers due to the destruction of up to 0.3 acre of known occupied habitat and potentially additional habitat occupied by seed. However, because the amount of habitat to be destroyed is small, and at least 0.1 of the 0.3 acre would either be avoided or replaced, we do not expect this loss of individuals to have substantial effects on the species. Therefore, even though the

proposed action is expected to kill Monterey spineflowers, we do not expect this mortality to have long-term population-level effects that would reduce appreciably the likelihood of both the survival and recovery of the Monterey spineflower.

Distribution

The proposed action could cause a small reduction in the distribution of the Monterey spineflower due to the destruction of up to 0.3 acre of known occupied habitat and potentially additional habitat occupied by seed. However, we expect all such effects to be small and localized, such that the likelihood of both the survival and recovery of the Monterey spineflower would not be appreciably reduced.

Recovery

All known Monterey spineflower habitat that would be destroyed by the proposed action would either be replaced (outside the former Fort Ord) or has already been determined non-essential to recovery of the species (inside the former Fort Ord). Therefore, we do not expect the proposed action to appreciably reduce the likelihood of recovery of the Monterey spineflower.

After reviewing the current status of the Monterey spineflower, the environmental baseline for the action area, the effects of the proposed Project, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Monterey spineflower.

Monterey Gilia

Reproduction

We expect no effects on reproduction of the Monterey gilia.

Numbers

We expect that the proposed action will result in mortality of an unknown number (best estimated at 87) of Monterey gilias due to the destruction of up to 0.003 acre of known occupied habitat and potentially additional habitat occupied by seed. However, because the amount of habitat to be destroyed is small, we do not expect this loss of individuals to have substantial effects on the species. Therefore, even though the proposed action is expected to kill Monterey gilias, we do not expect this mortality to have long-term population-level effects that would reduce appreciably the likelihood of both the survival and recovery of the Monterey gilia.

Distribution

The proposed action could cause a small reduction in the distribution of the Monterey gilia due to the destruction of up to 0.003 acre of known occupied habitat and potentially additional habitat occupied by seed. However, we expect all such effects to be small and localized, such that the likelihood of both the survival and recovery of the Monterey gilia would not be appreciably reduced.

Recovery

All known Monterey gilia habitat that would be destroyed by the proposed action is within designated development parcels at the former Fort Ord, which were determined (Corps 1997) to be non-essential to conservation of the species. We do not expect that the small loss of habitat and individuals that may occur due to the proposed action would preclude the former Fort Ord from being managed to meet recovery criteria. Therefore, we do not expect the proposed action to appreciably reduce the likelihood of recovery of the Monterey gilia.

After reviewing the current status of the Monterey gilia, the environmental baseline for the action area, the effects of the proposed Project, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the Monterey gilia.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened wildlife species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

In June 2015, the Service finalized new regulations implementing the incidental take provisions of section 7(a)(2) of the Act. The new regulations also clarify the standard regarding when the Service formulates an Incidental Take Statement [50 CFR 402.14(g)(7)], from "...if such take may occur" to "...if such take is reasonably certain to occur." This is not a new standard, but

merely a clarification and codification of the applicable standard that the Service has been using and is consistent with case law. The standard does not require a guarantee that take will result; only that the Service establishes a rational basis for a finding of take. The Service continues to rely on the best available scientific and commercial data, as well as professional judgment, in reaching these determinations and resolving uncertainties or information gaps.

The measures described below are non-discretionary, and must be undertaken by the EPA or made binding conditions of any grant or permit issued to the MRWPCA, as appropriate, for the exemption in section 7(o)(2) to apply. The EPA has a continuing duty to regulate the activity covered by this incidental take statement. If the EPA (1) fails to assume and implement the terms and conditions or (2) fails to require the MRWPCA to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the EPA must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

We anticipate that some California red-legged frogs could be taken as a result of the proposed action. We expect the incidental take to be in the forms of harassment, capture, injury, or mortality. California red-legged frogs may be injured or killed if they are struck by heavy equipment, construction debris, or worker foot traffic. California red-legged frogs would be captured and moved out of harm's way if they are found within work areas. California red-legged frogs may be harassed if they are disturbed by construction activities or siltation of aquatic habitat to the extent that they abandon their normal sheltering behaviors and become more vulnerable to predation or desiccation as a result.

We cannot quantify the precise number of California red-legged frogs that may be taken as a result of the actions that the EPA has proposed because California red-legged frogs move over time. The number of individuals present, their behaviors, and their location within the action area varies daily and seasonally. The protective measures proposed by the EPA are likely to prevent mortality or injury of most individuals. In addition, finding a dead or injured California red-legged frog may be unlikely, especially in a case where it is predated.

Consequently, we are unable to reasonably anticipate the actual number of California red-legged frogs that would be taken by the proposed project; however, we must provide a level at which formal consultation would have to be reinitiated. The Environmental Baseline and Effects Analysis sections of this biological opinion indicate that adverse effects to California red-legged frogs would likely be low given the nature of the proposed activities, and we, therefore, anticipate that take of California red-legged frogs would also be low. We also recognize that for every California red-legged frog found dead or injured, other individuals may be killed or injured that are not detected, so when we determine an appropriate take level we are anticipating that the actual take would be higher and we set the number below that level.

Similarly, for estimating the number of California red-legged frogs that would be taken by capture, we cannot predict how many may be encountered for reasons stated earlier. While the benefits of relocation (i.e., minimizing mortality) outweigh the risk of capture, we must provide a limit for take by capture at which consultation would be reinitiated because high rates of capture may indicate that some important information about the species in the action area was not apparent (e.g., it is much more abundant than thought). Conversely, because capture and relocation can be highly variable, depending upon the species and the timing of the activity, we do not anticipate a number so low that reinitiation would be triggered before the effects of the activity were greater than what we determined in the Effects Analysis.

Therefore, if 3 California red-legged frogs are found dead or wounded or if 10 are captured and relocated, EPA must contact our office immediately to reinitiate formal consultation. Project activities that are likely to cause additional take should cease during this review period because the exemption provided under section 7(o)(2) would lapse and any additional take would not be exempt from the section 9 prohibitions.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species; however, limited protection of listed plants is provided at section 9(a)(2) to the extent that the Act prohibits the removal and reduction to possession of federally listed plants from areas under Federal jurisdiction, the malicious damage or destruction of such plants on areas under Federal jurisdiction, and the destruction of listed plants on non-Federal areas in violation of State law or regulation or in the course of a violation of a State criminal trespass law.

REASONABLE AND PRUDENT MEASURE

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the impacts of the incidental take of the California red-legged frog:

1) Take of California red-legged frogs must be minimized by using qualified individuals and procedures to monitor, capture, and relocate California red-legged frogs.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the EPA must comply with the following terms and conditions, which implement the reasonable and prudent measure described above and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implements reasonable and prudent measure 1:

a) Only qualified biologists(s), approved by the Service under the auspices of this biological opinion, may conduct the proposed monitoring and minimization measures for the California red-legged frog. The EPA must request our approval of any

biologist they wish to employ for activities with the California red-legged frog. The request must be in writing and received at least 30 days prior to the initiation of activities. Please note that use of qualified biologists was proposed by MRWPCA and this term and condition merely clarifies procedures for their approval by the Service.

b) A Service-approved biologist must determine an appropriate relocation site(s) for any California red-legged frogs that must be removed from construction areas. The proposed site should include appropriate sheltering habitat and be far enough from construction areas to minimize disturbance due to noise, but close enough to minimize the likelihood of spreading chytrid fungus. The EPA must submit the proposed relocation site(s) to the Service for approval at least 10 days prior to the initiation of activities.

REPORTING REQUIREMENTS

Pursuant to 50 CFR 402.14(i)(3), the EPA must report the progress of the action and its impact on the species to the Service as specified in this incidental take statement. A report must be submitted to the Service's Ventura Fish and Wildlife Office (2493 Portola Road, Suite B; Ventura, California 93003) within 60 days following completion of construction. This report will include: 1) the results of the surveys and monitoring proposed by the EPA; 2) a detailed discussion of any incidental take observed and the circumstances under which it occurred; 3) a summary of how the terms and conditions of this biological opinion and the protective measures proposed by the EPA worked; and, 4) any suggestions of how these measures could be revised to improve conservation of California red-legged frogs while facilitating compliance with the Act.

DISPOSITION OF DEAD OR INJURED SPECIMENS

As part of this incidental take statement and pursuant to 50 CFR 402.14(i)(1)(v), upon locating a dead or injured California red-legged frog initial notification within 3 working days of its finding must be made by telephone and in writing to the Ventura Fish and Wildlife Office (805-644-1766). The report must include the date, time, location of the carcass, a photograph, cause of death or injury, if known, and any other pertinent information.

The EPA must take care in handling injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. The EPA must transport injured animals to a qualified veterinarian. Should any treated California red-legged frogs survive, the EPA must contact the Service regarding the final disposition of the animal(s).

The remains of any dead California red-legged frogs must be placed with the California Academy of Sciences Herpetology Department (Contact: Jens Vindum, Senior Collections

Manager, California Academy of Sciences Herpetology Department (herpetology@calacademy.org), 55 Music Concourse Drive, San Francisco, California 94118).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

1) EPA and MRWPCA should revegetate appropriate areas of the project site with native vegetation that includes Monterey spineflower and Monterey gilia.

2) EPA and MRWPCA should investigate opportunities to construct new or secure management of existing pond(s) to provide California red-legged frog breeding habitat in the vicinity of the Blanco Drain diversion site. The species is known to use the Salinas River riparian corridor in this area, but the River may provide poor breeding habitat.

The Service requests notification of the implementation of any conservation recommendations so we may be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the exemption issued pursuant to section 7(o)(2) may have lapsed and any further take could be a violation of section 4(d) or 9. Consequently, we recommend that any operations causing such take cease pending reinitiation.

If you have any questions about this biological opinion, please contact Jacob Martin of my staff at (831) 768-6953, or by electronic mail at Jacob_Martin@fws.gov.

Sincerely,

Stephen P. Henry
Field Supervisor

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Appendix A:The Declining Amphibian Populations Task Force Fieldwork Code of Practice

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each work site.

2. Boots, nets, traps, and other types of equipment used in the aquatic environment should then be scrubbed with 70 percent ethanol solution and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond, wetland, or riparian area.

3. In remote locations, clean all equipment with 70 percent ethanol or a bleach solution, and rinse with sterile water upon return to the lab or "base camp." Elsewhere, when washing-machine facilities are available, remove nets from poles and wash in a protective mesh laundry bag with bleach on the "delicates" cycle.

4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable vinyl[5] gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean them as directed above and store separately at the end of each field day.

5. When amphibians are collected, ensure that animals from different sites are kept separately and take great care to avoid indirect contact (e.g., via handling, reuse of containers) between them or with other captive animals. Isolation from unsterilized plants or soils which have been taken from other sites is also essential. Always use disinfected and disposable husbandry equipment.

6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.

7. Used cleaning materials and fluids should be disposed of safely and, if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

The Fieldwork Code of Practice has been produced by the Declining Amphibian Populations Task Force with valuable assistance from Begona Arano, Andrew Cunningham, Tom Langton, Jamie Reaser, and Stan Sessions.For further information on this Code, or on the Declining Amphibian Populations Task Force, contact John Wilkinson, Biology Department, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK, e-mail: DAPTF@open.ac.uk.

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[5] Do not use latex gloves as latex is toxic to amphibians.