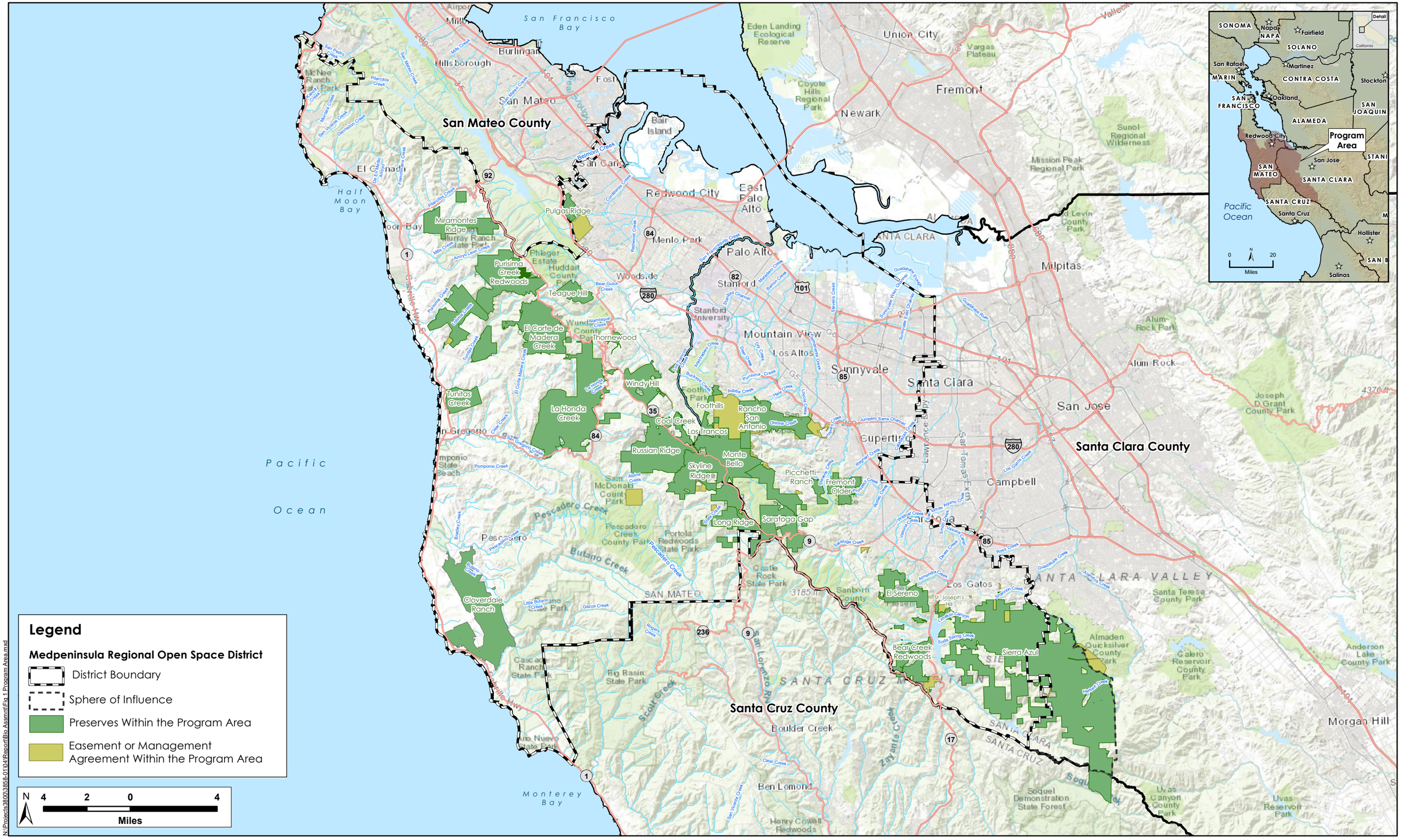

H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 1-1. Program Area
Midpeninsula Regional Open Space District - Open Space Maintenance and Restoration Program
April 2024

Table 1. Program Best Management Practices

BMP Number	BMP Title	BMP Description
General Avoidance and Minimization Measures		
GEN-1	Staging and Access	▪ Staging, access, and parking areas will be located outside of sensitive habitats to the extent feasible. Where feasible, staging areas will be located 30 feet from the top of bank or on the outboard side of pond levees. Vegetation removal shall be limited to the minimum amount necessary to provide access. ▪ All staging shall occur on adjacent access roads or previously disturbed areas. Soil and riprap shall be staged in areas that have been previously disturbed (i.e., service road, turn-outs, etc.).
GEN-2	Minimize Area of Disturbance and Site Maintenance	▪ Areas of disturbance will be limited to the smallest footprint necessary and a single access pathway, where feasible. For maintenance activities near waterways or other sensitive habitat, the designated work area shall be clearly identified in the field using highly visible material, and work will not be conducted outside this area. ▪ Keep excavated soil and materials on the site where they will not collect into the street or get transported to storm drains or nearby water bodies by rainfall or runoff in order to avoid deleterious effects to fish, wildlife, and beneficial uses. ▪ Transfer excavated materials to dump trucks on the site.
GEN-3	Construction Entrances and Perimeter	▪ Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site. ▪ Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking. ▪ When in-channel work is required, where available use existing ingress or egress points or perform work from the top of the stream banks.
GEN-4	Salvage/Reuse of Plant and Woody Material	▪ Large wood or weed-free topsoil displaced by Program activities may be stockpiled for use during site restoration. Native vegetation displaced by Program activities will be stockpiled if it would be useful during site restoration. ▪ Stockpiled material shall not be placed over riparian or wetland vegetation. Stockpiled material shall not be placed in areas where it could enter the stream, riparian or wetland areas. ▪ To the extent feasible, all other woody material that is not re-usable should be disposed at a composting facility or left at a suitable location to decompose naturally.

BMP Number	BMP Title	BMP Description
GEN-5	Hazardous Materials Storage/ Disposal	▪ Any hazardous or toxic materials that could be deleterious to aquatic life that could be washed into State waters or its tributaries will be contained in watertight containers or removed from the project site. ▪ Use biodegradable chainsaw bar oil. ▪ Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state, and federal regulations. ▪ Store hazardous materials and wastes in watertight containers, store in appropriate secondary containment, and cover them at the end of every workday or during wet weather or when rain is forecast. ▪ Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours. ▪ Arrange for appropriate disposal of all hazardous wastes. ▪ Cleanup of all pesticide and adjuvant containers will be triple rinsed with clean water at an approved site, and the rinse water will be disposed of by placing it in the batch tank for application. Used containers will be punctured on the top and bottom to render them unusable, unless said containers are part of a manufacturer's container recycling program, in which case the manufacturer's instructions will be followed, and disposed of at an appropriate facility. Disposal of all pesticides will follow label requirements and local waste disposal regulations.
GEN-6	Spill Prevention and Control	▪ Keep spill cleanup materials (rags, absorbents, etc.) available at the construction site at all times. ▪ Inspect vehicles and equipment frequently for and repair leaks. Vehicle and equipment operators should inspect beneath all vehicles that have been parked more than 15 minutes before they leave the work area. Use drip pans to catch leaks until repairs are made. ▪ Clean up spills or leaks and any contaminated soil immediately, and dispose of cleanup materials properly. ▪ Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags). ▪ Sweep up spilled dry materials immediately. Do not try to wash them away with water or bury them. If water must be used, Midpen or its contractor shall collect the water and spilled fluids and dispose of it as hazardous waste. ▪ Clean up spills on dirt areas by digging up and properly disposing of contaminated soil. ▪ If a pesticide is spilled, immediately contact one of Midpen's qualified first responders with Hazardous Waste Operations and Emergency Response (HAZWOPER) training.

BMP Number	BMP Title	BMP Description
		▪ Small spills (less than 18 inches in diameter) including small quantities of oil, gasoline, paint or other materials should be controlled by a qualified first responder (Midpen staff has several) and do not necessarily require an emergency response team. Medium spills (greater than 18 inches but less than 6 feet in diameter) are typically controlled by the first responder (Midpen staff) but police or fire department Hazardous Materials (HAZMAT) teams may be called based on conditions. Report significant spills (larger than 6 feet in diameter and any "running" spill) immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill, contact the San Mateo County Environmental Health Services Division, or other emergency office (e.g., local fire or police department) as warranted, immediately and document the spill using the spill documentation form. Alternatively, 1) dial 911, the local emergency response number, 2) the National Response Center at (800) 424-8802; or 2) call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours). As appropriate, contact other agencies including California Occupational Safety and Health Administration or the Regional Water Quality Control Board. All chemical spills shall be reported as soon as possible to the emergency site contact.
GEN-7	Waste Management	▪ Cover waste disposal containers securely at the end of every workday and during wet weather. ▪ Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on a project site. ▪ Ensure that portable toilets have a secondary containment plan (e.g., a containment pan). ▪ Clean or replace portable toilets and inspect them frequently for leaks and spills. ▪ Dispose of all wastes and debris properly. Inorganic waste removed and dewatered waste material will be compiled at a material staging yard and taken to a permitted landfill, approved upland sediment disposal site, or at an approved reuse site in accordance with applicable State and federal regulations. Organic debris removed will be distributed in upland areas similar to the surroundings of where the material was removed from. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, pipe, etc.). ▪ All raw construction materials and wastes will be removed from project sites following the completion of maintenance activities. Food-contaminated wastes generated during work shall be removed on a daily basis to avoid attracting predators to project sites. All temporary fences, barriers, and/or flagging shall be completely removed from project sites and properly disposed of upon completion of maintenance activities. ▪ Midpen or its contractor will not dump any litter or construction debris within the project area. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site. ▪ Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.

BMP Number	BMP Title	BMP Description
GEN-8	Vehicle Maintenance and Parking	▪ All vehicles must stay on designated roads paved and unpaved, and if it is necessary for a vehicle to travel off the designated road (paved or 2-track unpaved), a monitor will precede the vehicle to clear wildlife from the pathway of the vehicle. ▪ Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage. ▪ Perform major maintenance, repair jobs, and vehicle and equipment washing off site. ▪ Conduct vehicle and equipment cleaning at appropriate maintenance yards and ensure that rinse water does not run into gutters, streets, storm drains, or surface waters. ▪ Keep an ample supply of spill clean-up materials near fueling sites and vehicle maintenance and hazardous materials/hazardous waste storage areas. Inventory clean-up materials monthly and restock as needed. ▪ Post proper fueling and spill clean-up instructions at fueling areas. Never leave the area while equipment is being filled. ▪ Recycle or dispose of fluids as hazardous waste. ▪ Do not clean vehicle or equipment on-site using soaps, solvents, degreasers, steam cleaning equipment, etc. ▪ Perform vehicle and mobile equipment steam cleaning, pressure washing or degreasing only over a containment designed to collect any generated wash water. Collect wash water and properly dispose of wastewater.
GEN-9	Equipment Maintenance & Fueling	▪ Staging and storage areas for equipment, materials, fuels, lubricants and solvents shall be located away from the wetted areas. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip-pans. ▪ Any equipment or vehicles driven and/or operated adjacent to a Water of the State and/or U.S. will be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life, wildlife or riparian habitat. Vehicles must be moved away from the watercourse prior to refueling and lubrication. ▪ Refueling of equipment will be conducted at least 150 feet away from streams and other waterbodies using heavy-gauge tarps made of chemically resistant polypropylene or other impervious material with vertical sides for spill containment. These containment tarps will be set up under the equipment prior to servicing or refueling. Once the work is completed, the tarp and its contents must be immediately removed from the property and all contaminants properly disposed of off-site. Standard operating procedures will be implemented immediately in case of fuel spillage. ▪ All vehicles entering the site will carry a functional fire extinguisher.

BMP Number	BMP Title	BMP Description
		▪ Equipment should not be stored in areas that will potentially drain to watercourses or drainage facilities. If equipment must be stored in areas with the potential to generate runoff, drip pans, berms, gravel bags, or absorbent booms should be employed to contain any leaks or spills. ▪ In the event of a spill, follow procedures outlined in BMP GEN-6.
GEN-10	Paving and Asphalt Work	▪ Avoid paving and seal coating in wet weather or when rain is in the forecast, to prevent materials that have not cured from contacting stormwater runoff. ▪ Cover adjacent storm drain inlets and manholes when applying seal coat, tack coat, slurry seal or fog seal; and when saw cutting asphalt or concrete. ▪ Collect and recycle or appropriate dispose of excess abrasive gravel or sand. Do not sweep this material into gutters. ▪ Do not use water to wash down fresh asphalt concrete pavement. ▪ Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system. ▪ Shovel, absorb or vacuum saw-cut slurry and dispose of all waste as soon as work is complete in one location or at the end of the workday. ▪ If sawcut slurry enters a catch basin, clean it up immediately.
GEN-11	Concrete, Grout and Mortar Application	▪ Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff and wind. ▪ Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage. ▪ When washing exposed aggregate, prevent wash water from entering storm drains. Block any inlets and vacuum gutters, hose wash water onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.
GEN-12	Exclude Concrete from Channel	▪ For Program activities that involve concrete pouring, Midpen shall ensure that poured concrete be excluded from the wetted channel for a period of 30 days after it is poured. During that time, the poured concrete shall be kept moist, and runoff from the concrete shall not be allowed to enter a stream. Containment structures should be installed to control the placement of wet concrete and to prevent it from entering the channel outside of those structures.

BMP Number	BMP Title	BMP Description
		▪ Commercial sealants may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is dry. ▪ No dry concrete shall be placed on the banks or in a location where it could be carried into the channel by wind or runoff.
GEN-13	Concrete Washout Facilities	▪ Concrete washout facilities should be established for Program activities that require on-site preparation and use of Portland cement concrete, asphalt concrete or cement mortar, establish concrete washout facilities. These facilities capture wash water, concrete and aggregate flushed from concrete mixers, chutes, etc. Concrete washouts may be contained settling basins dug into the ground, raised and contained structures, trailers, etc. They are also applicable for projects that require equipment washouts. ▪ An appropriate area for the washout must be identified at least 50 feet away from watercourses and storm drains in case of accidental breaching. The storage capacity of the basin must be sized correctly for the job. <u>Construction Guidelines:</u> ▪ The location of the concrete washout should be clearly labeled and all employees should be educated about proper concrete disposal. ▪ Avoid mixing excess amounts of fresh concrete or cement mortar on-site. ▪ Wash out concrete mixers only in designated washout areas where the water will flow into temporary sealed basins or onto stockpiles of aggregate base or sand. Use as little water as possible to reduce hardening and evaporation time of waste products. ▪ Construct a basin large enough to contain all liquid and waste concrete materials generated during washout procedures. A minimum basin size is 9 feet x 9 feet and 2 feet deep. Plastic liner materials shall be a minimum of 60-mil polyethylene sheeting free of holes and defects. ▪ Recycle washout by pumping back into mixers for reuse when possible. <u>BMP Maintenance:</u> ▪ The concrete washout should be checked frequently to ensure proper use and effectiveness. ▪ At 75% capacity, the washout must be cleaned or new facilities must be constructed and ready for use. <u>BMP Removal:</u> ▪ The hardened concrete and materials related to the washout must be broken up, removed, and disposed of in accordance with local regulations.

BMP Number	BMP Title	BMP Description
		▪ Area disturbed by the concrete washout must be repaired.
GEN-14	Painting and Paint Removal	▪ Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream. ▪ For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain. ▪ For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste. ▪ Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash. ▪ Chemical paint stripping residue and chips and dust from marine type paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.
GEN-15	Dust Management Controls	Midpen will implement the Bay Area Air Quality Management District (BAAQMD) Basic Dust Control Measures. Current measures stipulated by the BAAQMD Guidelines include the following: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph). 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
GEN-16	Site Stabilization	Earthwork will be completed as quickly as possible, and where practical, site restoration will occur immediately following Program activities. If site restoration involves planting, such activities may commence in late fall or early winter during the onset of rainy season.

BMP Number	BMP Title	BMP Description
		▪ Bare soil surfaces resulting from maintenance and/or construction activities shall be covered with suitable erosion controls (seed or plant vegetation, fabrics, hydroseeding, mulch, etc.): – Within 12 hours of any break in work unless Program activities will resume within 7 days. – No later than 3 days following the disturbance during the rainy season (approximately October through April). – No later than 7 days following the disturbance during the dry season (approximately May through September). – Every effort shall be made to immediately cover bare soil surfaces resulting from maintenance and/or construction activities prior to storms.
GEN-17	Fire Prevention	▪ All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors. ▪ During the high fire danger period (May 1–November 30), work crews will: 1. Have appropriate fire suppression equipment available at the work site. 2. Keep flammable materials, including flammable vegetation slash, at least 10 feet away from any equipment that could produce a spark, fire, or flame. 3. Not use portable tools powered by gasoline-fueled internal combustion engines within 25 feet of any flammable materials unless a round-point shovel or fire extinguisher is within immediate reach of the work crew (no more 25 feet away from the work area). In high risk fire areas, operations involving mechanical equipment including flailing, masticating, disking, grading in heavy brush, operating a mower or brush cutter equipped with metal blades, welding, grinding, etc. or any other operation that could start a fire within or adjacent to any wildland areas will be conducted using the following protocols: ▪ Whenever possible, high risk activities in wildland areas will be conducted outside of the high fire danger period (May 1 through November 30). The high fire risk areas will be mowed early in the day when the fire risk is lower. ▪ No high-risk activities will occur within a red flag area during a red flag event or within 24 hours of a predicted red flag event as determined by the National Weather Service (*National Weather Service Monterey Office Website: http://www.wrh.noaa.gov/mtr/*) ▪ Before beginning high-risk activities, weather conditions will be monitored. Weather samples will be taken every 2 hours if the ambient temperature is below 80 degrees Fahrenheit. Weather samples will be taken hourly if ambient temperature is at or over 80 degrees Fahrenheit. If one of the following conditions occurs and the ambient temperature is at or over 80 degrees Fahrenheit, operations will be delayed or if one of these conditions occur while running equipment, all operations will cease immediately.

BMP Number	BMP Title	BMP Description
		– RH (relative humidity) is at 30 percent or lower. – Sustained wind speeds reach 10 mph or higher. ▪ If ambient temperature is at or over 95 degrees Fahrenheit, all high-risk activities will cease. ▪ Maintenance staff will also assess the surrounding wildland fire risk conditions and make a judgment regarding what would be threatened if a fire was started. Maintenance staff may choose to stop activity at a lower threshold than described above if it is determined to be a risk to life or property. ▪ If a fire district within Midpen boundaries recommends a moratorium on mowing due to conditions, Midpen will not mow within their jurisdiction unless Midpen has coordinated with the fire district and staff are operating within Midpen guidelines. <u>C. Operation</u> 1. Be aware of risks related to driving and parking in tall, dry grass—particularly with catalytic converters. 2. Have an "Action Plan" in mind if a fire starts and have an "Escape Plan" if it gets beyond your ability to control with suppression equipment on-hand. Plan how to communicate with nearby coworkers or others threatened by fire. 3. If possible, plan mowing operations so that prevailing wind will blow over areas that have already been mowed. If a fire starts, it will initially burn in mowed grass with a better chance of stopping the fire early. 4. Before starting *high-risk* operations using tractor mowers on District roads, a non-divertible pumper-equipped pickup will be assigned to the operation. An observer that is familiar with pumper operations; vehicle radio; must staff the truck. The employee acting as spotter will be in close proximity to *high-risk* operation. 5. Any deviation from having a pumper truck and spotter on site must be approved by Area Manager. 6. When operating a hand mower or small riding mower, staff must have one round point shovel with an overall length of at least forty-six (46) inches backpack pump water-type fire extinguisher available in the immediate area. 7. When on or near a wildland and operating stationary power equipment such as a generator, motor, welder, cutting torch, grinder or similar device from which a spark, fire, or flame may originate, all of the following are required (re: Public Resource Code (PRC) 4427): a. Clear away all flammable material around the area for a distance of 10 feet. b. Have one round point shovel with an overall length of at least forty-six (46) inches backpack pump water-type fire extinguisher available in the immediate area. 8. When operating chainsaws and other portable gas-powered tools in a wildland, one of the following is required for use within 25 feet of the area (re: PRC 4431):

BMP Number	BMP Title	BMP Description
		a. One round point shovel with an overall length of at least forty-six (46) inches or a fire extinguisher appropriate to provide fire control for the area and conditions. <u>D. Fueling</u> 1. When fueling equipment, allow it to cool where there is no flammable vegetation that can be ignited by the hot exhaust, preferably in a dirt area. 2. See Safety Manual Chapter 1.7.00 regarding fire prevention requirements and Sections 1.6.5.4 to 1.6.5.7 regarding safe fueling of equipment.
GEN-18	Project Completion by End of Work Period	No project shall be initiated unless there is high confidence it can be completed, including installation of any erosion and drainage control features, before the appropriate end of the work windows designated in BMP BIO-21, Salmonid Protection Measures. After September 15 of each year, projects that have not been started, or are still underway, or meet the conditions in BMP BIO-21 shall be evaluated to ensure they can be completed before the end of the applicable seasonal work window. Program activities in streams that support anadromy will occur beginning June 15. Program activities will be at least 50% complete by October 15 of any year, and will be completed by October 31 or before the first significant rainfall occurs. Those projects unlikely to be completed before the end of the seasonal work windows will not be started or will be winterized to be completed in the following year.
GEN-19	Avoid Inclement Weather	▪ The Midpen Project Manager will monitor the seventy-two-hour forecast from the National Weather Service (http://www.nws.noaa.gov and https://www.accuweather.com). When there is a forecast of more than 40% chance of rain, or at the onset of unanticipated precipitation, the Project Manager shall remove all equipment from the creek zone, shall implement erosion and sediment control measures, and all Program activities shall cease. ▪ No earth work shall occur during a dry out period of 24 hours after there has been ¼ inch or more of precipitation. ▪ If, in the opinion of Midpen, conditions arise or change, in such a manner as to be considered deleterious to the stream or wildlife, project activities shall cease until corrective measures are taken.
GEN-20	Aquatic Resource Protection Measures	▪ No equipment shall be operated within the active creek (i.e., wetted channel) except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3).

BMP Number	BMP Title	BMP Description
		▪ Surveys for special-status species and monitors will normally not be required for small scale pond maintenance activities using hand tools and fewer than five persons per one half acre. Activities including mechanical dredging, excavating, and bulldozing for shoring up earthen berms or leveling spillways will require pre-activity visual surveys as well as monitoring during the activities. All pond repair and maintenance activity proposals involving mechanized equipment and associated monitoring proposals must be approved by the U.S. Fish and Wildlife Service (USFWS) prior to implementation. Surveys and monitors during the pond repair and maintenance activities will only be conducted by federal and state permitted biologists in accordance with their permits, or by monitors approved to work under the direction of permitted biologists.
GEN-21	Staged Materials Management and Excavation Ramps	▪ Midpen or their contractor will visually check all construction materials (bridges, pipes, culverts) for the presence of wildlife sheltering within them prior to the materials being moved and placed in their proper locations. ▪ Building materials or equipment will not be stored where they could be washed into the water or where they will cover aquatic or riparian vegetation. ▪ Open trenches or pits, at the end of each workday, will incorporate an escape ramp at each end of the open trench to allow any animals that may have become entrapped in the trench to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees. ▪ Building materials and/or construction equipment shall not be stockpiled or stored where they could be washed into the water or where they will cover aquatic or riparian vegetation.
GEN-22	Spoils Management	Spoils will not be placed where it could enter the stream, riparian or wetland areas. Spoil shall not be placed over riparian or wetland vegetation, unless approved by the Midpen Natural Resources Department.
GEN-23	Vegetation and Tree Removal and Retention	▪ Native soils, rock, gravel, vegetation, and vegetation will be retained to the extent feasible. Avoid removing/thinning the canopy layer in mature, established forests and woodlands to maximize shading (thereby promoting shade and related increased moisture under the canopy level) and increase resistance to non-native plant invasion. ▪ Vegetation will not be removed or intentionally damaged beyond the construction corridor or intended vegetation management area. ▪ Hand tools (e.g., trimmer, chain saw, etc.) will be used to trim vegetation to the extent necessary to gain access to the work sites. No bulldozers, backhoes, or other heavy equipment will be used to remove vegetation along streambanks or within the stream unless submitted to California Department of Fish and Wildlife (CDFW) during annual project notifications.

BMP Number	BMP Title	BMP Description
		▪ The disturbance or removal of vegetation will be restricted to the minimum necessary to complete maintenance activities. Precautions shall be taken to avoid other damage to vegetation by people or equipment. Branches and/or limbs overhanging the trails and channel and impacting trail access and water flows shall be properly pruned. Trees may be removed from natural channels if and only if they are below ordinary high water mark (OHWM) and they are restricting the capacity of the channel and they are causing erosion or flooding. Any trees which will be cut are to be cut at ground level and the root mass left in place to maintain bank stability. ▪ Woody and herbaceous plants, fallen trees, or trunks or limbs lodged in the bed or bank of stream channels causing flow restriction will be cut off at the bed or bank invert with small tools and removed with winch and cable or other equipment operated from top of bank. Root structures will not to be disturbed. ▪ Embedded pieces of large woody material or stumps that potentially serve as basking sites or that encourage pool formation shall be left in place if it does not obstruct the flow of water and there is adequate flood flow capacity. Objects embedded/anchored in the bank, such as tree stumps, shall not be removed during periods of heavy flow if removal would result in release of sediment into the channel. However, protruding objects that could capture additional debris and result in obstruction of the channel (e.g., the branches and trunk of a downed tree) may be trimmed. If an embedded object must be removed to prevent a debris jam, BMPs EC-1 and SWQ-3 will be used to prevent the release of sediment into the channel, and the bank shall be reseeded, revegetated, mulched and/or covered with erosion-control fabric following removal. ▪ The following measures would be implemented for tree removal in riparian areas: – Prior to removal, Midpen will conduct all necessary biological surveys in compliance with regulatory permits. – No living trees, shrubs, vegetation, or woody material greater than 6 inches dbh will be removed from within a stream. – All trees that provide canopy cover along the stream will be replanted with native species, unless they are removed for fuels treatment within an overstocked forest, as determined by a qualified ecologist, identified by CALFIRE, or identified as an Ecosystem Resiliency treatment area in the Wildland Fire Resiliency Program. Any trees not providing canopy cover of the stream do not need to be replanted. Native trees less than 6 inches dbh will not be replaced unless native regeneration is not occurring. – 75% of the existing canopy will be maintained over a stream at all times. – Non-native tree removal will not require replanting if the site is regenerating native vegetation.

BMP Number	BMP Title	BMP Description
GEN-24	Vegetation Management with Prescribed Burns	1. All burnings will be conducted according to prescriptions in the vegetation management plan, and burn developed specifically for the project by the California Department of Forestry and Fire Protection (CAL FIRE), or as otherwise described in the forthcoming Wildland Fire Resiliency Program. The fire will be ignited only if the conditions are within the parameters specified in the burn plan. Smoke dispersal, emergency response, safety, and contingency planning are addressed in the burn plan. Other habitat management activities (i.e., invasive plant removal and cattle grazing) may occur year-round if prescriptions are not likely to adversely affect San Francisco garter snake (SFGS) or California red-legged frog (CRLF). 2. All participants in the burn will be briefed on the endangered species potentially present, where they would likely be found, and who to contact if one is sighted. This briefing will be performed by the Resource Advisor, who is a biologist or cultural resource specialist with fire training. Resource Advisor will work with the ignition teams, and be a part of any ignition sequence planning. Resource Advisors will be in radio contact with either the Ignition Specialist or the Incident Commander directly to ensure quick communication and decision-making regarding the safety of sensitive wildlife. 3. No more than 350 acres (141.6 hectares) of habitat will be manipulated by prescribed fire per treatment period. An average 20-foot (6.1-meter) buffer will be established around all ponds prior to conducting prescribed burns, depending on the vegetative cover. Those shorelines with vegetation that provide cover for the snake will provide the greatest buffer, while those shore-lines without adequate vegetative cover will be given less buffer. These buffer areas may be managed using other habitat management techniques following each burn (e.g., cattle grazing), but are to remain completely undisturbed during prescribed fire events. Every reasonable attempt will be made to maintain 1/4 to 1/2 acre (0.1 to 0.2 hectare) of unburned area for every 10 acres (4 hectares) of burned habitat (i.e., 4 to 8 acres of refugia habitat are needed for a 160-acre burn, and 9 to 18 acres are needed for a 350-acre burn). When feasible, refugia areas will be conserved randomly throughout the treatment area, especially in areas with known populations of SFGS and CRLF. These refugia areas may be naturally occurring areas such as rock formations, ponds and other wetland/riparian areas, areas with a high density of burrows, and other areas not prone to burn, or these areas may be created and maintained using hand tools or water to create fire-breaks or wet-lines.

BMP Number	BMP Title	BMP Description
		4. No more than 24 hours prior to conducting prescribed fires, visual surveys will be conducted by walking transects throughout the proposed burn area in an attempt to locate individual SFGS and CRLF. A trained biologist or biological monitor will capture, transfer, and release in a safe area any SFGS and CRLF deemed to be in danger of being harmed by the prescribed fire activities. If SFGS or CRLF are located during the pre-treatment surveys but escape capture, an area approximately 50 feet (15 meters) in diameter around the individual will be protected from the burn. If necessary, individual SFGS may be held in captivity in a pillowcase for less than 24 hours and may later be released near the point of capture after the burn has been completed. The number of SFGS and CRLF encountered and transferred to safe areas or held in captivity during treatment will be reported to USFWS, and each individual SFGS will be photographed for use in identification. 5. All vehicles involved with the site-specific burn will be retained in a prearranged, marked parking area in a clearing as close to the main road as possible. At least one monitor will ensure wildlife is clear from the parking area while vehicles are arriving and leaving. All vehicles must stay on designated roads, and if it is necessary for a vehicle to travel off the designated main road, a monitor will precede the vehicle to clear wildlife from the pathway of the vehicle. Only biological monitors specifically authorized by the USFWS and CDFW to handle SFGS or CRLF (normally these will be individuals holding a federal recovery permit for the species) will be allowed to handle, transport, and relocate individuals of these species. 6. Below ground temperature monitoring will be conducted during the burn to monitor air temperatures in San Francisco garter snake refugia. One or more biologists or biological monitors will place "hobo thermocouples" (ground temperature monitoring devices) in rodent burrows throughout the burn area to monitor changes in temperature in the burrows as fire moves across the landscape. The knowledge gained will be useful in determining how to conduct future prescribed fires in San Francisco garter snake habitat in a manner that will minimize potential effects to the species. 7. Immediately following each prescribed fire, the permittee will search the affected post-treatment area to identify dead or injured individuals of all vertebrate taxa. Dead SFGS and CRLF will be salvaged and deposited at an approved repository. Injured individuals will be handled only by a permittee authorized to capture and handle SFGS and CRLF. Medical assistance will be provided to injured animals by a certified wildlife veterinarian familiar with amphibian and reptile care. 8. Ignition will be completed in less than three hours. The fine fuels should be consumed quickly and most coyote brush and grass thatch are expected to bum down within one hour after ignition. Some minor smokes may be evident for one day following the burn. Spot checks of the plot will be conducted until all smokes are out.

BMP Number	BMP Title	BMP Description
		9. A pond located to the northeast of the former Wool Ranch has been designated for fire use. Emergency response plans that identify designated water sources for fire use are being developed for all Midpen Preserves. Existing hydrants or fire storage tanks will be targeted first, and ponds that are known to support California red-legged frogs and other protected species will be utilized as a last resort in emergency situations. Midpen currently provides a patrol map book to fire agencies that has all water sources including water storage tanks mapped. In addition, Midpen Natural Resources staff maintains fire training in order to function as resource advisors to the Incident Commander in the event of a large wildland fire. If an emergency situation necessitates the use of water from a CRLF-occupied pond, a striker pump and intake hose may be used to draw water from one of the small wetland ponds in the burn area to fill engines or back pumps. The intake hose will be screened with 1/4-inch mesh to prevent intake of California red-legged frogs. The burn plan details the use of lake and ocean water to fill helicopter buckets to aid suppression efforts. If a helicopter bucket is used, it will draft from the center of the pond, to prevent uptake of California red-legged frogs that may potentially be present. 10. Within San Francisco garter snake habitat, post-burn monitoring will be conducted as part of the project and will include (1) vegetative response to the burn, (2) wildlife response to the burn, and (3) fire behavior and burn conditions. Because the burn is intended to enhance San Francisco garter snake habitat, the monitoring emphasis for vegetation and wildlife will be on the wildlife and habitat features that are considered to be necessary to support San Francisco garter snakes. The variables measured for San Francisco garter snake response to habitat are pre- and post-burn data on the (1) pre- and post-burn vegetation community in the burn area in order to determine vegetative response to the burn and (2) the frequency of valley pocket gopher (*Thomomys bottae*) burrows and other burrows. As part of its standard post-fire evaluation CALFIRE will provide an analysis of the burn, including how the fire responded to weather and other burn conditions, and percent coverage of the burn within the boundaries of the burn area. Beginning immediately after the burn the frequency (number) of rodent burrows will be measured during the vegetation transect monitoring. Vegetation monitoring will include the establishment of four transects within and three transects outside of the burn area for comparative analysis. Transects will be randomly established in burned and unburned areas and each transect will measure 50 meters in length. A meter-square plot will be established at five-meter intervals along the transects. Vegetative composition and percent cover for all plant species will be recorded for each plot. Transects sampling will take place prior to the burn and at least once per year after the burn for three years. Response of native and non-native grasses and coyote brush to the burn will be of particular interest. Data collected before, during, and after the burn, and the observations made during the evaluation of the burn will be compiled into a report within one year following the burn. Upon completion, the report will be submitted to USFWS.

BMP Number	BMP Title	BMP Description
GEN-25	Vegetation Management with Livestock	▪ Livestock will be used for vegetation management to avoid the use of chemical herbicides, to control invasive vegetation, and promote the growth of native vegetation. Where livestock is used in association with a specific routine maintenance project, vegetation removal will not exceed 2,000 square feet (0.05 acres) in size, 150 adjacent linear feet, or the minimum necessary to complete the operation, whichever is less, and livestock will be managed and prohibited from creating or worsening existing erosion and sedimentation to flowing stream channels. ▪ Monitor and protect ponds that provide habitat for special-status species, depending on the vegetative cover. Those shorelines with vegetation that provide cover for special-status species will provide the greatest buffer, while those shore-lines without adequate vegetative cover will be given less buffer. ▪ Monitor forage utilization and distribution by grazing animals to assure appropriate amounts of residual dry matter (RDM) remain on the ground to achieve desired resource management objectives. In the course of RDM monitoring, evaluate and report on wildland fire fuel levels that may result in an increased risk of wildland fire. ▪ Manage access to existing water features and where needed supply supplemental drinking water through stock ponds and water troughs to preserve clean water for livestock, protect water quality, and enhance habitat for wildlife.
GEN-26	Non-native Plant Removal and Herbicide Management	▪ Focus vegetation biomass reduction on non-native vegetation and avoid damaging native grasses, and mature shrublands and forests wherever possible. Where active treatment is needed, seek to break the vertical fuel ladder connection between the ground and the canopy layer, and create some horizontal physical separation between plants where possible. Prioritize projects where invasive plant removal alone can result in fire-safe landscapes. ▪ Implement fuel management projects with low impact tools and methods such as hand cutting and pruning rather than vegetation removal or soil disturbance with hand methods or machines. ▪ Prioritize leaving forest duff and organic soil layers undisturbed in all fuel management actions. ▪ For invasive pest management and hazardous fuel reduction activities: 1. Prior to conducting non-native (e.g., pampas grass) and native (e.g., cattail, cocklebur) plant removal or treatments (e.g., spraying with herbicide or fungicide, cutting, pulling, digging out), the permittee will make every reasonable attempt to ensure that SFGS and CRLF are not hidden within the plant or the residual plant matter to be treated. 2. All invasive plant and animal work will be done in accordance with the Midpen's other and Best Management Practices identified in the Midpen Integrated Pest Management Program.

BMP Number	BMP Title	BMP Description
		3. No burrow fumigants will be used. Only pesticides that are part of the Midpen Integrated Pest Management Program will be used, and only if they are used in accordance with the guidelines on the label and if they comply with the restrictions listed in the critical habitat designation. ▪ Midpen will choose site-specific strategies and times of treatment that provide the best combination of protecting preserve resources, human health, and non-target organisms and that are efficient and cost-effective in controlling the target invasive species. Direct the control method narrowly at the target organism to avoid broad impacts on the ecosystem. Modify control methods over time as site conditions and treatment techniques change. Use pesticides only where alternative methods are known to be ineffective. Apply pesticides in an environmentally safe manner. Take all reasonable precautions to protect the environment, the health and safety of employees, adjacent lands and preserve visitors. ▪ Midpen will comply with BMPs and other mandatory measures to protect sensitive resources and employee and public health during pesticide application. All appropriate laws and regulations pertaining to the use of pesticides and safety standards for employees and the public, as governed by the U.S. Environmental Protection Agency (USEPA), the California Department of Pesticide Regulation, and local jurisdictions will be followed. All applications will adhere to label directions for application rates and methods, storage, transportation, mixing, and container disposal. Midpen staff will coordinate with the County Agricultural Commissioners, and all required licenses and permits will be obtained prior to pesticide application. ▪ All pesticides will be implemented consistent with Pest Control Recommendations prepared annually by a licensed Pest Control Advisor. ▪ Midpen will maintain a minimum 30-foot buffer around special-status species habitats and a 15-foot buffer around all other aquatic and riparian habitats when applying pesticides, unless specially requested to work closer. ▪ All vegetation management activities that could result in the runoff of pesticides that are not registered for aquatic use into waters of the State and/or U.S. will be avoided. Only pesticides and adjuvants registered for aquatic use will be applied to aquatic areas or within the banks of channels. ▪ Only pesticides and adjuvants registered for aquatic use will be applied to aquatic areas or within the banks of channels. All conditions of the herbicide label will be followed. ▪ Surfactants and other adjuvants will be used and applied consistent with the District's Pest Control Recommendations. ▪ Avoid pesticide drift by not applying pesticides under windy conditions in close proximity to special-status species or their habitat, and by using plastic shields around target weeds and pests, ground-based applicators, low tank pressures and spray nozzles adjusted for larger droplet sizes and to limit the spray area.

BMP Number	BMP Title	BMP Description
		▪ Pesticide application will cease when weather parameters exceed label specifications, when wind at site of application exceeds 7 miles per hour, or when precipitation (rain) occurs or is forecasted with greater than a 40 percent probability in the next 24-hour period to prevent sediment and pesticides from entering the water via surface runoff. ▪ None of the following activities will be undertaken in aquatic or riparian areas: mixing, loading and storage of pesticides; rinsing of equipment and pesticide containers. All activities will take place at least 300 feet from aquatic or riparian areas. ▪ Refilling of pesticides will be required to occur at least 300 feet way from any body of water in a contained area and include a secondary containment plan. Any transfer or mixing on the ground shall be within containment pans or over tarps. ▪ A 30-foot buffer will also be maintained when applying pesticides unless previously approved by the regulatory agencies. ▪ Midpen staff, contractors, and tenants will undergo annual pesticide safety training. Pesticide applicators will have or work under the direction of a person with a Qualified Applicator License (QAL) or Qualified Applicator Certificate (QAC). Contractors and grazing and agricultural tenants may apply approved herbicides after review and approval by Midpen and under the direction of QAL/QAC field supervisors. ▪ Appropriate non-toxic colorants or dyes will be added to the pesticide mixture to determine treated areas and prevent over-spraying. ▪ The following general application parameters will be employed during pesticide application: – Spray nozzles will be configured to produce a relatively large droplet size; – Low nozzle pressures (30-70 pounds per square inch) will be observed; – Spray nozzles will be kept within 24 inches of vegetation during spraying; ▪ Signs will be posted notifying the public, employees, and contractors of the use of pesticides. The signs will consist of the following information: signal word, product name, and manufacturer; active ingredient; USEPA registration number; target pest; preserve name; treatment location in preserve; date and time of application; date which notification sign may be removed; and contact person with telephone number. Signs will generally be posted 24 hours before the start of treatment and notification will remain in place for 72 hours after treatment ceases, in compliance Midpen's Integrated Pest Management Program.

BMP Number	BMP Title	BMP Description
GEN-27	Snags	To the maximum amount practicable, individual dead or dying trees shall be retained, with modification if appropriate, as snags. This measure should not be considered to apply in areas where removal is warranted to control spread of a disease or for human safety purposes.
GEN-28	Culvert Replacement	▪ The following alternatives and structure types should be considered in order of preference: 1. Streambed simulation strategies - bottomless arch, embedded culvert design, or ford 2. Non-embedded culvert - this is often referred to as a hydraulic design, associated with more traditional culvert design approaches limited to low slopes for fish passage 3. Baffled culvert, or structure designed with a fishway - for steeper slopes. If a segment of stream channel where a crossing is proposed is in an active salmonid spawning area then only full span bridges or streambed simulations are acceptable. ▪ Replacement of any existing concrete, wood, plastic (ABS, HDPE etc.) or metal pipe culvert up to 48 inches inner diameter (unless authorized to be a larger diameter by CDFW) with the following restrictions: 1. Work will be done only when the channel is dry, except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). 2. The new culvert will typically be as large as or larger than the existing culvert unless the original culvert was oversized or a natural obstruction such as bedrock is encountered. For anything other than an ephemeral drainage, the culvert will be sized where feasible to convey a 100-year flow or cover the entire channel width. 3. Total earthwork will be limited to the extent necessary at each project to complete the work, and will not exceed 80 cubic yards per culvert. 4. The new culvert will be installed at or below grade.
GEN-29	Culvert Maintenance	▪ Culverts with recurring blockages are cleaned annually, regardless of the amount of blockage. Sediment, vegetation or debris will be removed using hand tools in creeks supporting salmonids, unless other methodology is submitted to CDFW in writing during annual project notifications. Sediment, vegetation or debris will be removed with mechanized equipment in creeks that do not provide habitat for salmonids where hand removal is infeasible. ▪ Culverts that are more than 1/3 blocked may be cleaned at any time, even during periods when the channel is wet, with the following restrictions: 1. Up to 32 cubic yards of material may be removed, using hand tools only, under any conditions.

BMP Number	BMP Title	BMP Description
		2. Removal of amounts greater than 32 cubic yards requires that the channel be dewatered first and heavy equipment may be used with written approval from CDFW. 3. The total cumulative area of disturbance will not exceed 150 feet of channel or 2,000 square feet of area, whichever is less. 4. After completion of the work, the disturbed area will immediately be treated with erosion control materials BMPs sufficient to control turbidity and sediment loss. 5. Nearby perched or otherwise unstable fill may be removed as well, up to 10 cubic yards. 6. No Coho salmon are present.
GEN-30	Culvert Removal and/or Replacement with Rolling Dips or Fords	▪ If the channel was created by the original emplacement of the culvert, any number may be removed. ▪ Culvert replacements will be installed at or below stream grade. Align the slope and gradient of replacement culverts that will discharge to a ditch, creek, or channel consistent with the direction of the receiving water course.
GEN-31	New Culvert Installation (non-stream crossings)	▪ The following alternatives and structure types should be considered in order of preference: 1. Streambed simulation strategies - bottomless arch, embedded culvert design, or ford 2. Non-embedded culvert - this is often referred to as a hydraulic design, associated with more traditional culvert design approaches limited to low slopes for fish passage 3. Baffled culvert, or structure designed with a fishway - for steeper slopes. If a segment of stream channel where a crossing is proposed is in an active salmonid spawning area then only full span bridges or streambed simulations are acceptable. ▪ Design new culverts to blend in with the surrounding environment and to not interfere with the movement of fish. ▪ Design and install new culverts in fish bearing streams to provide sufficient depth and velocity of water for passage of native fish and other native aquatic species during high and low flow conditions. ▪ Outside of stream crossings, new culverts may be installed to maintain existing roads and trails with the following restrictions: 1. New culverts will not be installed in streams but will be limited to engineered drainage ditches associated with roads and trails.

BMP Number	BMP Title	BMP Description
		2. If an existing road or trail has an inadequately drained inboard ditch (excessive length between existing ditch relief culverts or dips), new ditch relief culverts (where rolling dips would be insufficient) may be placed as directed by the project engineer to adequately convey stormwater and reduce sediment to downstream watercourses.
GEN-32	Bridge and Puncheon Replacement	▪ Removal, or replacement of any size bridge (including puncheons) in the same location, on any trail or road, where no channel entry is necessary, no work is proposed to in-channel abutments or supports and vegetation removal is limited to no more than a six (6) foot buffer around the existing bridge structure and to trimming of no more than 20% of any individual tree canopy within that six-foot buffer. ▪ Bridge replacement (not in the same location, such as higher on the bank or upstream/downstream) will be allowable if it reduces overall habitat impacts and/or removes the bridge completely from the stream bed, bank or channel (for example, a bridge for which the current bridge or footings are located below the OHWM) made longer to be placed above the OHWM. ▪ Removal, or replacement of any size bridge in the same location, with limited channel entry to place fabric or other devices to catch debris or place falsework, with the following restrictions: 1. Work may only occur when the channel is dry, except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). 2. Only very limited modifications to the channel surfaces are proposed. 'Very limited' means movement of rocks less than 8 inches in size, less than two hand shovels of earth, footprints and indentations caused by equipment and structures. Any modifications to correctly place falsework will occur to the falsework rather than the channel. 3. Vegetation removal is limited to no more than a six (6) foot buffer around the existing bridge structure and to trimming of no more than 20% of any individual tree canopy within that buffer. ▪ Removal, or replacement of smaller bridges (up to six [6] feet width) on trails, as long as work is completed when the channel is dry or during periods of low flow (for perennial streams) and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). The bridge will be supported on mudsills or abutments placed outside of the channel.
GEN-33	Bridge and Puncheon Repair and Maintenance	Repair and maintenance of bridge (including puncheon) parts and grading for drainage correction on the approaches will implement the following conditions: 1. All work shall be done from the bridge or by workers standing in the channel or on a ladder in the channel.

BMP Number	BMP Title	BMP Description
		2. A net or other device (e.g., diaper, underlayment) shall be attached to the underside of the bridge to catch any debris falling from bridge. 3. Pressure treated lumber shall be sealed and coated off-site. Sealants shall be approved by Midpen Natural Resources Department prior to their incorporation into the bridge. Tread material shall not be pressure treated to prevent leaching and breakdown of pressure treated materials into the waterway. 4. Only minor saw work and drilling shall occur; the primary work shall occur off site. 5. Grading on the approaches is limited to a maximum of five (5) cubic yards per bridge. This amount is not cumulative with the culvert replacement standard of five (5) cubic yards.
GEN-34	Ford and Swale (including Drain Lenses and Causeways) Replacement	Full replacement of existing fords or repair/maintenance by replacing rock and removing sediment and woody debris with the following restrictions: 1. No use of chemicals, concrete, mortar or other sealants or adhesives. 2. This category applies only to narrow width trails and emergency vehicle/multi-use trails where the drainage does not support salmonids. 3. The ford is not on an intermittent or perennial drainage or, if it is, the ford has been confirmed by CDFW to not be considered a barrier to the movement of aquatic organisms. 4. Vegetation removal is limited to no more than a five-foot buffer around the existing ford and to trimming of no more than 20% of any individual tree canopy within the five-foot buffer only. 5. All work shall be done when the channel is dry, except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3).

BMP Number	BMP Title	BMP Description
Biological Resource Measures		
BIO-1	Environmental Awareness Training	Prior to commencing maintenance activities in a given year, all participating maintenance personnel will attend a worker environmental awareness training program. The training will include a brief review of special-status species, sensitive habitats, and other sensitive resources that may exist in the project area, including species identification, habitat requirements, procedures to follow when encountering any species in the work area, and the legal status and protection of each relevant species, penalties for take, work restrictions, as well as locations of sensitive biological resources. The training will include materials concerning the following topics: sensitive resources, resource avoidance, permit conditions, and possible consequences for violations of State or federal environmental laws. The training will cover the maintenance activity's conservation measures, environmental permits, and regulatory compliance requirements, as well as the roles and authority of the monitors and biologist(s). It will include printed material (with photos of San Francisco garter snake and California red-legged frog) and an oral training session by a qualified biologist or biological monitor.
BIO-2	Biological Monitor	▪ A **qualified biologist** is an individual who has a minimum of five (5) years of academic training and professional experience in biological sciences and related resource management activities, with a minimum of two survey seasons years (e.g., two seasons during the blooming season of sensitive plants) conducting surveys for each species that may be present within the Project area. ▪ A **biological monitor** is an individual who has academic and professional experience in biological sciences and related resource management activities, experience with construction-level biological monitoring, be able to recognize species that may be present within the Project area, and be familiar with the habits and behavior of those species. ▪ The biological monitor(s) or qualified biologist(s) shall have the responsibility and authority of stopping the proposed project if any crews or personnel are not complying with regulatory permit conditions. The biological monitor or qualified biologist will possess necessary agency approvals and/or regulatory permits required for project work, dependent on the location and potential to encounter special-status species, prior to the initiation of Program activities. The biological monitor or qualified biologist will have stop-work authority over Program activities to avoid take or impacts to special-status species or protected biological resources. ▪ To maintain safety and limit any chance of take or habitat disturbance, a simple system of hand signals will be established for the monitors, truck drivers, equipment operators, and field personnel to use during habitat enhancement and related activities.

BMP Number	BMP Title	BMP Description
BIO-3	Work Area Designation	Prior to Program activities in suitable habitat for special-status species, a biological monitor or qualified biologist shall clearly mark/flag or erect temporary construction fencing to designate the work area and to delineate the areas that shall be avoided. The boundaries shall be inspected on a regular basis to ensure that work has remained within the marked boundaries. If one or more boundary(ies) has/have been violated, work shall cease until the Midpen Project Manager has taken action to ensure there is no recurrence of the trespass. Flagging and/or temporary construction fencing shall be removed immediately after the completion of construction work.
BIO-4	Special-Status Plant Species Avoidance Measures	This measure includes, but is not limited to, Mt. Hamilton fountain thistle (MHFT), western leatherwood (WL), Loma Prieta hoita (LPH), San Francisco popcorn flower, Santa Clara Valley dudleya, and Congdon's tarplant (CT). The following rare plant avoidance measures will be implemented within riparian habitat or Waters of the State and/or U.S. and within one-quarter (1/4) mile of a known rare plant occurrence, or within suitable rare plant habitat but where rare plants are not known to occur: ▪ Prior to the start of Program activities, a qualified biologist will conduct protocol level surveys for sensitive plant species. For information on special status plant survey methodology visit: – https://cnps.org/wp-content/uploads/2018/03/cnps_survey_guidelines.pdf – https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline – https://www.fws.gov/ventura/docs/species/protocols/botanicalinventories.pdf ▪ If at any time MHFT, LW, LPH, popcorn flowers, CT or other rare plant species is found, it will be flagged for avoidance and site-specific avoidance buffers, developed through coordination with CDFW, will be implemented. Rare plants and associated buffer zones shall be avoided during Program activities. ▪ If at any time, MHFT, LW, LPH, CT, or popcorn flower cannot be avoided, Program activities will not be conducted until Midpen coordinates with CDFW and mitigation plan is agreed upon.
BIO-5	Sensitive Natural Communities	Sensitive Natural Communities of plants occur throughout Midpen's lands, but are not well mapped as distinct areas from other vegetation types, and some are too small of scale to accurately map. Many of Midpen's activities will have no effect on the communities (such as grading an existing road). The following measure will take place before vegetation projects covered by the program occur: ▪ During treatment of vegetation within a CDFW designated sensitive natural community, treatments will be implemented to maintain the membership rules of the natural community. Characteristic species will be preferentially retained over other species to maintain the structure and composition consistent with current membership rules for the subject community based on the Manual of California Vegetation Online."

BMP Number	BMP Title	BMP Description
BIO-6	Invasive Plant Material Management and Disposal	▪ All staff, contractors, and volunteer crew leaders will be properly trained to prevent spreading weeds and pests to other sites. Midpen staff will appropriately maintain facilities where tools, equipment, and vehicles are stored free from invasive plants. Midpen staff will inspect rental equipment and project materials (especially soil, rock, erosion control material, and seed) to confirm as much possible that they are free of invasive plant material before their use at a worksite. ▪ All personnel working in infested areas will take appropriate precautions to not carry or spread weed seed outside of the infested area. Such precautions will consist of, as necessary based on site conditions, cleaning of soil and plant materials from tools, equipment, shoes, clothing, or vehicles before entering or leaving the site. ▪ Develop and implement an employee and contractor training program; include aquatic invasive plant identification and cleaning protocols for clothing, tools, vehicles, and boats. Prevent the spread of plant fragments (roots, stems) of certain species that can produce new plants in ditches, canals, and streams. ▪ Construction equipment will arrive at project sites clean and free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species. Invasive weed species occurring within locations of construction clearing and grubbing shall be flagged for removal by the biological monitor or qualified biologist. These species, along with associated duff and topsoil, as appropriate, shall be disposed of by the contractor. These materials shall not be allowed to be integrated with other onsite topsoil materials intended for salvage and replacement. ▪ Target control of invasive species that rank high in the IPM prioritization matrix ▪ When transporting invasive plant material offsite for disposal, the plant material will be contained in enclosed bins, heavy-duty bags, or a securely covered truck bed. All vehicles used to transport invasive plant material will be cleaned after each use. ▪ Suitable onsite disposal areas shall be identified to prevent the spread of weed seeds. Invasive plant material shall be rendered nonviable when being retained onsite. Midpen staff shall desiccate or decompose plant material until it is nonviable (partially decomposed, very slimy, or brittle). Depending on the type of plant, disposed plant material can be left out in the open as long as roots are not in contact with moist soil, or can be covered with a tarp to prevent material from blowing or washing away. Midpen staff will monitor all sites where invasive plant material is disposed onsite and treat any newly emerged invasive plants. ▪ Inspect recreational facilities (e.g., parking lots, trails, visitor centers) that experience high visitor use often during target invasive plant flowering and seed production times.

BMP Number	BMP Title	BMP Description
BIO-7	Sudden Oak Death and Plant Pathogen Control	▪ All personnel working in infested areas will take appropriate precautions to not carry or sudden oak death (SOD)-associated spores or other plant pathogens outside of the infested area. Such precautions will consist of, as necessary based on site conditions, cleaning of soil and plant materials from tools, equipment, shoes, clothing, or vehicles before entering or leaving the site. ▪ Track the effects of sudden oak death (Phytophthora sp.) (SOD) disease (mapping dead oaks as staffing and budgeting permit), and share this information with the California Oak Mortality Task Force (www.suddenoakdeath.org) as staffing and funding allow. ▪ Removal of California bay trees or their branches within 15 feet of the trunks of high value oaks. Ongoing research at Midpen and other locations in the state are evaluating whether bay removal is effective for managing larger stands or forests infested with SOD or to prevent or slow down the spread of SOD. This option is costly and requires regular maintenance and monitoring and, therefore, is implemented in limited areas. ▪ For individual high value oaks such as very large mature oaks near picnic facilities, consider spot treatment of individual oaks with pest control sprays (e.g., Agri-FosTM) intended to reduce potential for SOD infection.
BIO-8	Non-Native Animal Control	▪ Midpen will attempt to trap non-native turtles and remove them in compliance with CDFW when they share habitat with protected, native species. Midpen will attempt to trap restricted turtles and remove them in compliance with CDFW regulation. ▪ Midpen will continue to capture feral pigs using baited traps and employ humane euthanasia in compliance with CDFW regulations and the Animal Welfare Act. ▪ Midpen will employ public education signage and/or brochures to prevent the intentional release of non-native or feral animals on Midpen lands and feeding of wildlife. Education can be an important tool for Midpen in preventing pets from being intentionally released onto Midpen lands. Public outreach and judiciously placed educational materials such as signs and brochures in Midpen preserves may be a useful strategy to curb intentional releases of animals. ▪ Midpen will continue eradication efforts of non-native fish and bullfrogs compliant with CDFW regulations and the Animal Welfare Act. Eradication of invasive animals (e.g., non-native fish, bullfrogs) by shooting, trapping, or gigging for the purpose of reducing predation on or competition with CRLF, must be authorized in writing by the Sacramento USFWS Office prior to conducting removal activities. Shooting, trapping, and gigging of aquatic species will be conducted only by a qualified biologist with experience in the identification of frog and turtle species. Inadvertently trapped California red-legged frogs will be released immediately upon discovery.

BMP Number	BMP Title	BMP Description
		▪ Prohibit contractors, consultants, staff and tenants from feeding feral domestic pets on Midpen property. Develop education programs to encourage the public not to feed wildlife or feral animals on Midpen property. ▪ Ensure outside garbage cans and dumpsters have tight-fitting lids to prevent foraging on human food waste. This is especially important in public gathering areas in parks and open spaces. Cans with domed lids and self-closing, hinged lids are preferred in these outside areas. ▪ Store native seeds, hay, and other vegetation-based materials that can attract animals in properly sealed containers or designated sealed storage facilities. ▪ Store all food properly, in containers with tight fitting lids, or in the refrigerator or freezer. ▪ Do not leave pet food in open bowls overnight. Wash pet food bowls immediately after feeding
BIO-9	General Wildlife Protection Measures	▪ Biological monitors will check for any reptiles, amphibians, or other animals under vehicles and equipment parked for more than 30 minutes. ▪ Vehicles traveling to and from the project sites off of established ranch roads must travel slowly (5 mph) and be preceded by a monitor to ensure that wildlife will not be run over by the passing vehicle. Vehicle monitors need not be trained biologists. ▪ Midpen generally limits the use of exclusion fencing for special-status species to limit habitat disruption and entrapment potential. Midpen more commonly uses exclusion fencing around stockpiled materials or directional fencing to move wildlife away from the worksite. Midpen rarely fences a full work site. ▪ Biological monitors/biological handlers will monitor sites for special-status species and if handling is permitted/authorized, they may relocate the special-status species or halt/modify work to avoid the special-status species as it passed through the active work site. ▪ If a fence is used and if special-status species are found in routine maintenance activity sites using large equipment to remove sediment, they will be excluded from the project site. USFWS and/or CDFW-approved exclusion fencing shall be installed around the sediment removal sites, staging areas and any areas where fill may be dumped. After installation of the fence barrier, a biological monitor or qualified biologist shall inspect the project work area daily, staging and stockpiling areas prior to the commencement of activities. Exclusion fencing will be placed, at a minimum, around the immediate work area where machinery will be operating. During activities involving mechanized equipment, biological monitors will maintain exclusion fencing and evaluate work performed during pond activities. Monitors are required to temporarily stop any work that they believe may harm the San Francisco garter snake or California red-legged frog. Work will not resume until a satisfactory method is agreed upon to minimize take of the snake or frog.

BMP Number	BMP Title	BMP Description
		▪ If the biological monitor or qualified biologist determines that sensitive species are not within the work area, equipment or materials may be moved onto the work site and Program activities may commence under the observation of the biological monitor.
BIO-10	Special-status Species Reporting	▪ Information on new localities for special-status species (e.g., SFGS, CRLF, Loma Prieta hoita) will be reported to the Sacramento USFWS Office and the California Natural Diversity Database (CNDDB) annually. ▪ Any incidental capture, injury or mortality of a federally or state listed species, with the exception of "fully protected" species which are not to be harassed, pursuant to the conditions of federal and State permit conditions shall be recorded and reported in the annual report submitted to the applicable agencies.
BIO-11	San Francisco Garter Snake Protection Measures	▪ Within riparian habitat or Waters of the State and/or U.S. and one (1) mile of a known SFGS occurrence: 1. Program activities will be conducted consistent with permit terms and conditions of the current versions of the USFWS Recovery Permit Number: TE225974-2 and CDFW Memorandum of Understanding "Research and Recovery of San Francisco Garter Snake and California Tiger Salamander". ▪ In suitable habitat where SFGS has not been documented: 1. A biological awareness training will be provided by a qualified biologist or biological monitor to all persons prior to beginning work. A biological monitor shall remain onsite in sensitive areas identified during the pre-survey. If at any time a SFGS is observed, work shall stop immediately until a biological monitor is contacted. Biological monitor(s) and/or qualified biologist(s) shall remain on the project site while initial ground disturbing activities are being conducted, after which biological monitor(s) and/or qualified biologists shall be on-call while Program activities are being conducted at these sites. 2. Vegetation Removal by Mechanized Equipment. For vegetation removal on berms around ponds or other areas within or adjacent to wetted/perennial aquatic sites, if vegetation is too tall or dense to allow adequate detection of SFGS, one of two approaches will be used to minimize the potential for impacts to individuals: – Vegetation will be mown with the blade set at least 6 inches above the ground. A qualified biologist or biological monitor will walk ahead of the mower to look for SFGS and will ensure that no impacts to individuals occur. – Vegetation will initially be cut down to three (3) inches by hand tools (weedwhacker, etc.). Once the ground is visible, a visual survey for SFGS will be conducted by a qualified biologist or biological monitor. If no sensitive species are found in the area, removal of vegetation may continue by mowing or mechanized equipment very slowly with a biological monitor walking in front of the equipment present to observe.

BMP Number	BMP Title	BMP Description
		3. If vegetation is short or sparse enough that any SFGS present can be detected by the qualified biologist biological monitor without the need for removal of vegetation by hand tools, mowing can proceed after the biologist/monitor has thoroughly surveyed the areas to be mown. If a SFGS is observed, all activities shall cease and Midpen will coordinate with CDFW immediately. Prior to the start of work, areas will be identified by the biological monitor-in-charge and approved by the USFWS and CDFW as acceptable locations to which SFGS may be relocated if these species are encountered within a work area. Relocation areas will be a minimum of 500 feet from the boundary of any work area and will not include staging areas or roads. No SFGS will be removed from the site or maintained in captivity overnight without prior notification and written approval by the USFWS and CDFW unless the animal is in need of emergency medical assistance. Medical assistance will be provided to injured animals by a certified wildlife veterinarian familiar with amphibian and reptile care. When transporting individual SFGS, precautions will be taken to ensure that the animals are not over-stressed and are maintained in safety. Such measures include keeping animals in a cool, dark, and safe location (snake bag for SFGS), providing adequate hydration, maintaining a stable cool temperature to avoid over-heating, keeping animals isolated to prevent them from harming one another, and ensuring holding tanks or bags are kept clean to prevent the spread of any diseases. 4. If feasible, mowing will not be conducted during the most active periods for SFGS (mid-March to mid-June and September-October) in areas where SFGS are known to occur. 5. No Stockpiling of Vegetation. Vegetation removed shall be placed directly into a disposal vehicle and removed from the site. Vegetation shall not be piled on the ground unless it is later transferred, piece by piece, under the direct supervision of the biological monitor or qualified biologist or is going to remain on site for erosion control or slash and not be moved or disturbed. ▪ All practicable measures will be taken to avoid killing or injuring SFGS during habitat enhancement activities. Any project-related, human caused injuries to SFGS will be reported to CDFW and USFWS.

BMP Number	BMP Title	BMP Description
		▪ No more than 24 hours prior to conducting pond enhancement activities, visual surveys will be conducted by walking at least a 50-foot buffer area around the pond in an attempt to locate individual SFGS. A trained and permitted biologist will capture, transfer, and release in a safe area any SFGS deemed to be in danger of being harmed by the prescribed enhancement activities. If a SFGS is located during the pre-treatment surveys but escapes capture, the area where the snake was lost will be marked by flag and a 50-foot (15 meter) radius will be actively patrolled during the work. If necessary, individual SFGS may be held in captivity in a pillowcase for less than 24 hours and may later be released near the point of capture after the work has been completed. After the pre-treatment survey, an avoidance strategy will be devised and presented to all individuals involved in the pond enhancement prior to starting any activities. The number of SFGS encountered and transferred to safe areas or held in captivity during treatment will be reported to USFWS, and each individual snake will be photographed for use in identification. ▪ The minimum number of qualified biological monitors required at each pond site will be determined in advance by a qualified biologist based on pond size, the amount and complexity of work to be performed, and the equipment to be used. This number of monitors will be approved by USFWS prior to the start of any work. ▪ Corridors for travel of vehicles and heavy machinery to the pond site will be established at least 24 hours in advance of the proposed work. Corridors that are not established marked improved roads (paved or unpaved) require special consideration for use by any vehicle. During the use of these off-road corridors by vehicles and machinery, a monitor will proceed directly before the vehicle or machinery to ensure all SFGS and observable wildlife is cleared from the pathway of the oncoming vehicle. Monitors will signal vehicles to stop if a SFGS is on the pathway, and will allow the animal to clear the pathway by its own direction. Any handling of the garter snake must only be done by a qualified permitted individual. Measures will be taken to minimize the number of vehicles allowed on the property. All vehicles involved with the site-specific work that are not transported to the work site will be retained in a prearranged, marked parking area in a clearing as close to the main road as possible. At least one monitor will ensure wildlife is clear from the parking area while vehicles are arriving and leaving. All vehicles must stay on designated roads.

BMP Number	BMP Title	BMP Description
BIO-12	California Red-Legged Frog Protection Measures	<u>General Measures</u> ▪ Handling of CRLF will be done by permitted and qualified biologists or biological monitors in an expedient manner with minimal harm to the individuals being handled. Handling of CRLF will be done with wet hands. The hands and arms of all workers handling CRLF will be free of lotions, creams, sunscreen, oils, ointment, insect repellent, or any other material that may harm CRLF. Larval CRLF will not be handled out of the water for longer than 30 seconds unless rewetted, and will not be retained for longer than 5 minutes for processing. If captured CRLF exhibit signs of distress (e.g., lack of response to stimuli or erratic behavior), they will be immediately released at the point of capture. All captured CRLF will be released at the point of capture unless that location puts them in imminent danger, in which case they will be placed in a nearby refugium sufficient to protect them. The number of CRLF to be captured is no more than 30 adults per habitat location per year. No egg masses may be disturbed or injured in any manner for any activity authorized in the USFWS take permit. Amplexing pairs of CRLF will not be captured, handled, or disturbed. The permittee will disinfect sampling and field gear to minimize the spread of pathogens as follows: 1. Sampling and field gear will be disinfected after exiting one aquatic habitat and before entering the next aquatic habitat unless the waters are hydrologically connected to one another. 2. All organic matter will be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water or potentially contaminated sediments. These items will then be rinsed with clean water before leaving each study site. 3. Boots, nets, traps, hands, etc., will be scrubbed with a bleach solution (0.5 to 1.0 cup per 1.0 gallon of water), Quat-128™ (1:60), or a 3 to 6 percent sodium hypochlorite solution and thoroughly rinsed clean with water between study sites. Equipment will be rinsed clean with water between study sites. Cleaning equipment in the immediate vicinity of aquatic habitats will be avoided (e.g., clean in an area at least 100 feet from aquatic features). Care will be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat. 4. Used cleaning materials (liquids, etc.) will be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves will be retained for safe disposal in sealed bags. 5. CRLF will not be removed from the wild and held in captivity for any reason unless prior written approval is acquired by the appropriate USFWS Office or unless the severity of an injury to the CRLF obviates immediate care. Animals will be transported according to accepted methods, in moist cloth bags or in terrarium with moisture gel or non-cellulose sponge to minimize desiccation.

		Holdings where California Red-Legged Frogs have a Lower Density/Lower Frequency of Occurrence (Tier 2A) For maintenance activities that occur within preserves, easements, and management areas with a lower density/lower frequency of occurrence of California red-legged frogs, Midpen will implement the Tier 2A BMPs described below to avoid and minimize impacts on individual California red-legged frogs. Tier 2A BMPs ▪ Biological awareness training shall be provided to all maintenance personnel prior to beginning work. ▪ During all work, Midpen maintenance personnel (who are well-trained on the biology of California red-legged frogs, appropriate avoidance measures, and procedures to follow when they are encountered) will keep an eye out for California red-legged frogs and contact the Midpen biologist immediately if a California red-legged frog, or an individual that could potentially be a California red-legged frog, is observed. ▪ If an animal believed to be a California red-legged frog is detected during maintenance activities, those activities that could potentially affect the animal will cease until the frog is confirmed to have left the work area on its own, or until a qualified biologist or biological monitor visits the site to determine whether it is a California red-legged frog and whether it is in harm's way from the activity. If so, avoidance and minimization measures will then be implemented as described below for Tier 2B activities below, and Midpen will re-evaluate the likelihood of occurrence of California red-legged frogs in the work area vicinity for future Program activities. Any project-related, human-caused injuries to California red-legged frogs will be reported to USFWS and CDFW. Holdings where California Red-Legged Frogs have a Higher Density/Higher Frequency of Occurrence (Tier 2A, Tier 2B, or Tier 3) ▪ For preserves, easements, and management areas with a higher density/higher frequency of occurrence of California red-legged frogs, as shown on Figure 1 or based on updated mapping by Midpen, Midpen will identify streams, waterbodies, riparian habitats, and other features that support perennial water (e.g., wetlands, seeps, and spring boxes) within the maintenance activity work area and a surrounding buffer of 100 feet during the desktop audit and field review described under Impact Tiers above. Areas within 100 feet of perennial water will be identified as areas where California red-legged frogs are most likely to occur during the dry season. ▪ Midpen will then determine if the proposed maintenance activity is likely to result in take of California red-legged frogs, if frogs are present within the work area. For instance, if the activity consists of hand work or is located entirely within developed areas (e.g., roads and buildings) where no cover for California red-legged frogs is present, the likelihood of take of California red-legged frogs would be very low, even within 100 feet of perennial water. ▪ If (1) the proposed maintenance activity is not located within 100 feet of perennial water, or (2) the activity is located within 100 feet of perennial water but is not likely to result in take of California red-legged frogs, Midpen will implement the Tier 2A BMPs described above. ▪ If (1) the proposed maintenance activity is located in upland areas within 100 feet of perennial water, wet areas, or

BMP Number	BMP Title	BMP Description
		riparian vegetation; (2) no wet areas, riparian vegetation, or refugia for California red-legged frogs (e.g., woody debris and burrows) are present within the work area; and (3) no take of individuals is anticipated due to the proposed activities, Midpen will implement the Tier 2B BMPs described below. ▪ If (1) the proposed maintenance activity is located in wet areas or riparian areas, or in upland areas within 100 feet of these areas; (2) refugia for California red-legged frogs are present in the work area; and/or (3) take of California red-legged frog individuals may occur due to the proposed activities, Midpen will implement the Tier 3 BMPs described below. <u>Tier 2B BMPs</u> ▪ Prior to and within 48 hours of the planned start of Program activities, a focused survey for California red-legged frogs using an agency-approved protocol will be conducted by a qualified biologist or biological monitor to determine if they are in the area. ▪ A biological awareness training shall be provided to all persons prior to beginning work. This training will include a discussion of all practicable measures to be taken to avoid killing or injuring any life stage of California red-legged frogs during Program activities. ▪ Based on the results of the desktop audit and field visit, Midpen's biologist will determine if a qualified biologist or biological monitor is needed to monitor some (e.g., initial ground disturbance) or all activities. Regardless of whether a biologist is present, during all work, Midpen maintenance personnel (who are well-trained on the biology of California red-legged frogs, appropriate avoidance measures, and procedures to follow when they are encountered) will keep an eye out for California red-legged frogs and contact the Midpen biologist immediately if a California red-legged frog, or an individual that could potentially be a California red-legged frog, is observed. ▪ Midpen generally limits the use of exclusion fencing for special-status species to limit habitat impacts. However, if Midpen's biologist determines that the benefits of installing wildlife exclusion fencing around the work area (i.e., in terms of reducing the potential for take of individuals and/or reducing the need for a full-time biological monitor) outweigh any impacts on habitat, exclusion fencing will be installed around the work area prior to the initiation of maintenance. ▪ Any vehicle parked on-site for more than 15 minutes will be inspected by the biological monitor, qualified biologist, or a trained member of the work crew before it is moved to ensure that a California red-legged frog has not moved under the vehicle. Any parking areas must also be checked in advance by the biological monitor, qualified biologist, or trained crew member.

BMP Number	BMP Title	BMP Description
		▪ For vegetation removal on berms around ponds or other areas within or adjacent to wetted/perennial aquatic sites, if vegetation is too tall or dense to allow adequate detection of frogs, one of two approaches will be used to minimize the potential for impacts to individuals: – Vegetation will be mown with the blade set at least 6 inches above the ground. A qualified biologist or biological monitor will walk ahead of the mower to look for red-legged frogs and will move any detected frogs out of harm's way. – Vegetation will be initially cut down to three (3) inches by hand tools (weedwhacker, etc.). Once the ground is visible, a visual survey for California red-legged frogs will be conducted by a qualified biologist or biological monitor. If no sensitive species are found in the area, removal of vegetation may continue by mowing or mechanized equipment with a biological monitor present to observe. ▪ If vegetation is short or sparse enough that any frogs present can be detected by the qualified biologist or biological monitor without the need for removal of vegetation by hand tools, mowing can proceed after the biologist/monitor has thoroughly surveyed the areas to be mown. ▪ Vegetation removed shall be placed directly into a disposal vehicle and removed from the site. Vegetation shall not be piled on the ground unless it is later transferred, piece by piece, under the direct supervision of the biological monitor or qualified biologist or is going to remain on site for erosion control or slash and not be moved or disturbed. ▪ Soil shall not be stockpiled on the ground unless it is on a paved surface or staging area where there are not burrows.

		▪ General Avoidance if a California Red-legged Frog Enters the Project Area: – All work that may harm the frog shall stop until the animal is confirmed to have left on its own, or until personnel approved by USFWS under Midpen's 10(a)(1)(A) or any other project-specific approval (e.g., if a qualified consultant is assisting Midpen and is approved by USFWS to relocate California red-legged frogs for Program activities) has captured the individual. Midpen will coordinate with USFWS and CDFW prior to the start of work to identify acceptable relocation sites if California red-legged frogs are encountered within a work area. No California red-legged frogs will be held in captivity overnight without prior notification and written approval by the USFWS and CDFW unless the animal is in need of emergency medical assistance. Medical assistance will be provided to injured animals by a certified wildlife veterinarian familiar with amphibian and reptile care. When transporting individual California red-legged frogs, precautions will be taken to ensure that the animals are not over-stressed and are maintained in safety. Such measures include keeping animals in a cool, dark, and safe location (e.g., a terrarium), providing adequate hydration, maintaining a stable cool temperature to avoid over-heating, keeping animals isolated to prevent them from harming one another, and ensuring holding tanks or bags are kept clean to prevent the spread of any diseases. – All practicable measures will be taken to avoid killing or injuring any life stage of California red-legged frogs during work activities. – The biological monitor and/or qualified biologist shall have the authority to halt work activities that may affect California red-legged frog adults, tadpoles or egg masses until they can be moved out of harm's way. – Any project-related, human-caused injuries to California red-legged frogs will be reported to USFWS and CDFW. <u>Tier 3 BMPs</u> ▪ Prior to and within 48 hours of the planned start of Program activities, a focused survey for California red-legged frogs using an agency-approved protocol will be conducted by a qualified biologist or biological monitor to determine if they are in the area. ▪ A biological awareness training shall be provided to all persons prior to beginning work. This training will include a discussion of all practicable measures to be taken to avoid killing or injuring any life stage of California red-legged frogs during Program activities. ▪ A biological monitor or qualified biologist will be on the project site while Program activities are being conducted. ▪ Midpen generally limits the use of exclusion fencing for special-status species in order to limit habitat impacts. However, if Midpen's biologist determines that the benefits of installing wildlife exclusion fencing around the work area (i.e., in terms of reducing the potential for take of individuals and) outweigh any impacts on habitat, exclusion fencing will be installed around the work area prior to the initiation of maintenance. For example, California red-legged frogs will typically be excluded from the project site prior to Program activities at sites involving the use of

BMP Number	BMP Title	BMP Description
		large equipment for sediment removal. USFWS and CDFW-approved exclusion fencing will be installed around the sediment removal site, staging areas, and any areas where fill may be dumped. After installation of the fence barrier, a biological monitor or qualified biologist will inspect the project work area, staging and stockpiling areas daily prior to the commencement of activities. If the biological monitor or qualified biologist determines that California red-legged frogs are not within the work area, equipment or materials may be moved into the project site and Program activities may commence under the observation of the biological monitor. ▪ Any vehicle parked on site for more than 15 minutes will be inspected by the biological monitor or qualified biologist before it is moved to ensure that a California red-legged frog has not moved under the vehicle. Any parking areas must be checked in advance by the biological monitor or qualified biologist. ▪ For vegetation removal on berms or other sites, vegetation will be cut down to three (3) inches by hand tools (weedwhacker, etc.). Once the ground is visible, a visual survey for California red-legged frogs will be conducted. If no sensitive species are found in the area, removal of vegetation may continue by mowing or mechanized equipment very slowly with a biological monitor walking in front of the equipment to observe. California red-legged frogs can be relocated only if a person is permitted by the USFWS to handle the species. ▪ Vegetation removed shall be placed directly into a disposal vehicle and removed from the site. Vegetation shall not be piled on the ground unless it is later transferred, piece by piece, under the direct supervision of the biological monitor or qualified biologist or is going to remain on site for erosion control or slash and not be moved or disturbed. ▪ Soil shall not be stockpiled on the ground unless it is on a paved surface or staging area where there are not burrows. ▪ California Red-Legged Frog Measures for Work in Ponds – During the focused pre-activity survey within 48 hours of the planned start of Program activities, the pond will be sampled by a qualified biologist to ensure that all California red-legged frogs from that pond are in the post metamorphic stage and will be minimally affected by draining the pond. If a California red-legged frog is located during the pre-treatment surveys but escapes capture, the area where the frog was lost will be marked by flag and a 50-foot (15 meter) radius will be actively patrolled during the work. After the pre-project survey, an avoidance strategy will be devised and presented to all individuals involved in the pond enhancement prior to starting any activities. The number of California red-legged frogs encountered and transferred to safe areas or held in captivity by a permitted and qualified biologist during treatment will be reported to the Sacramento USFWS Office and CDFW.

BMP Number	BMP Title	BMP Description
		– The minimum number of qualified biological monitors required at each pond site will be determined in advance by a qualified biologist based on pond size, the amount and complexity of work to be performed, and the equipment to be used. – Corridors for travel of vehicles and heavy machinery to the pond site will be established at least 24 hours in advance of the proposed work. Corridors that are not established marked improved roads (paved or unpaved) require special consideration for use by any vehicle. During the use of these off-road corridors by vehicles and machinery, a monitor will proceed directly before the vehicle or machinery to ensure all California red-legged frogs and observable wildlife are cleared from the pathway of the oncoming vehicle. Monitors will signal vehicles to stop if a California red-legged frog is on the pathway, and will allow the animal to clear the pathway by its own direction. Any handling of the red-legged frog must only be done by a qualified permitted individual. Measures will be taken to minimize the number of vehicles allowed on the property. All vehicles involved with the site-specific work that are not transported to the work site will be retained in a prearranged, marked parking area in a clearing as close to the main road as possible. At least one monitor will ensure wildlife is clear from the parking area while vehicles are arriving and leaving. All vehicles must stay on designated roads. – Seasonal Work Period in Ponds. If California red-legged frogs are found in the pond and water is present in the pond, sediment removal and berm or outfall repair activities will be performed from August 15 to November 1. Midpen will coordinate with USFWS and CDFW prior to dredging or de-watering activities. Sediment will be removed from ponds by hand to the extent feasible. Sediment removal from ponds will occur as soon as the ponds are dry (if prior to August 15). – Vegetation Removal at Ponds. If California red-legged frogs are found, tule and emergent vegetation will be removed by hand when feasible. If mechanized equipment is used, one or more biological monitors or qualified biologists will be onsite monitoring the scoop bucket while scooping and watching each load unload. Midpen will coordinate with USFWS and CDFW during the annual project notification process regarding anticipated mechanized equipment use for vegetation removal at ponds. In areas where egg masses are known, Midpen and contractor personnel will not enter the channel/pond to avoid dislodging egg masses (except as noted in the following bullet to salvage egg masses for purposes unrelated to Program activities). Trimming activities shall be performed from the banks, if possible.

BMP Number	BMP Title	BMP Description
		– Inspection for Egg Masses. In work areas containing emergent vegetation (e.g., tules, cattails), vegetation will be inspected for California red-legged frog egg masses prior to Program activities. If work cannot be postponed, a buffer of vegetation at least ten (10) feet in diameter shall be left around any egg masses found. Midpen will keep a record of sites where egg masses are found and conduct vegetation removal at these sites prior to November 1 in subsequent years. In the course of monitoring associated with the activities, if egg masses are observed in ponds or wetted areas that are going to dry naturally before tadpoles develop (as determined by a qualified biologist), emergency salvage of egg masses by the qualified biologist is permitted to relocate egg masses into deeper waters that will not be affected by the proposed activities. USFWS shall be notified of the emergency salvage per the terms of the recovery permit. ▪ General Avoidance if a California Red-legged Frog Enters the Project Area: – All work that may harm the frog shall stop until the animal is confirmed to have left on its own, or until personnel approved by USFWS under Midpen's 10(a)(1)(A) or any other project-specific approval (e.g., if a qualified consultant is assisting Midpen and is approved by USFWS to relocate California red-legged frogs for Program activities) has captured the individual. Midpen will coordinate with USFWS and CDFW prior to the start of work to identify acceptable relocation sites if California red-legged frogs are encountered within a work area. No California red-legged frogs will be held in captivity overnight without prior notification and written approval by the USFWS and CDFW unless the animal is in need of emergency medical assistance. Medical assistance will be provided to injured animals by a certified wildlife veterinarian familiar with amphibian and reptile care. When transporting individual California red-legged frogs, precautions will be taken to ensure that the animals are not over-stressed and are maintained in safety. Such measures include keeping animals in a cool, dark, and safe location (e.g., a terrarium), providing adequate hydration, maintaining a stable cool temperature to avoid over-heating, keeping animals isolated to prevent them from harming one another, and ensuring holding tanks or bags are kept clean to prevent the spread of any diseases. – All practicable measures will be taken to avoid killing or injuring any life stage of California red-legged frogs during work activities. – The biological monitor and/or qualified biologist shall have the authority to halt work activities that may affect California red-legged frog adults, tadpoles or egg masses until they can be moved out of harm's way. – Any project-related, human-caused injuries to California red-legged frogs will be reported to USFWS and CDFW.

BMP Number	BMP Title	BMP Description
BIO-13	Foothill Yellow-Legged Frog Protection Measures	If foothill yellow-legged frog (FYLF) enters the project area, all work shall stop in that area until the animal leaves on its own. Midpen will coordinate with CDFW to develop site appropriate avoidance measures that will be implemented prior to resumption of Program activities at that location.
BIO-14	Western Pond Turtle Protection Measures	Within riparian habitat or Waters of the State and/or U.S. and one (1) mile of a known western pond turtle (WPT) occurrence: 1. Prior to and within 48 hours of the planned start of Program activities, a focused survey for WPT and WPT nests will be conducted by a qualified biologist or biological monitor to determine if they are in the area. In the event WPT are found in the project area, Midpen will exercise measures to avoid direct injury to WPT as well as avoid areas where they are observed to occur. If a WPT is observed, it shall be left alone to move out of the area on its own. If it does not move on its own, it can be relocated to a safe location at least 100 meters (m) distant from the project location. Relocation areas will be of suitable habitat, on shallow banks with slow moving water and will be far enough away so as not to be affected by Program activities. If a WPT nest is found, all activities will cease and Midpen will coordinate with CDFW to develop site appropriate avoidance and minimization measures.
BIO-15	California Giant Salamander, Santa Cruz Black Salamander Protection Measures	▪ In suitable habitat where Santa Cruz black salamander (SCBS) and/or California giant salamander (CGS) are known to occur: 1. A biological awareness training provided by a qualified biologist or biological monitor will be provided prior to starting work. 2. A qualified biologist and biological monitor will be available and on-call for the duration of the project. 3. A biological monitor will be present onsite when working within or immediately adjacent to wetted areas including stream channels, seeps, and springs. 4. For SCBS only, a biological monitor is also required in areas of talus slopes or areas having human stacked rocks and other suitable materials acting as talus. 5. The biologist and/or biological monitor has the authority to stop work at any time. 6. Dismantling of talus and human-stacked rocks and other suitable materials acting as artificial talus will be avoided and minimized whenever possible. If removal is required to meet project objectives, these materials will be dismantled by hand whenever possible. 7. Whenever possible individual SCBS and CGS shall be allowed to leave the area on their own.

BMP Number	BMP Title	BMP Description
		8. Individual SCBS or CGS (not with eggs) that are in harm's way or do not leave the work site on their own may be relocated by a qualified biologist or biological monitor to predetermined sites located outside of the work area but within the same subwatershed. 9. Work in wetted areas, talus slopes, or human stacked rocks or other suitable materials acting as artificial talus should be completed prior to July to avoid displacement of SCBS females laying eggs and attending to clutches. 10. If heavy equipment is required to remove talus, human stacked rocks or other suitable materials acting as artificial talus, this will be done in the presence of a qualified biological monitor. 11. If at any time, SCBS or CGS eggs are found, the area shall be flagged for avoidance. If the area cannot be avoided to meet project objectives, Midpen will coordinate with CDFW to determine the best course of action. ▪ In all other areas of suitable habitat for SCBS and CGS: 1. A pre-survey of the project site is required prior to starting work. If no SCBS or CGS are observed, work may proceed. 2. If an individual SCBS or CGS are observed at any time, all project work shall stop and the biologist and/or biological monitor will be notified and the above measures will be implemented.
BIO-16	San Francisco Dusky-footed Woodrat and Nest Protection Measures	▪ Projects occurring in suitable San Francisco dusky-footed woodrat (SFDFW) habitat, prior to project implementation, a qualified biologist or biological monitor shall survey the site for evidence of nesting SFDFW (i.e., large stick nests). ▪ Any SFDFW and/or nest that are found within project boundaries, will implement the measures listed below: 1. In natural areas: – All SFDFW nests will be flagged in the field and delineated on project site maps. In all instances, every effort should be made to avoid impacts to SFDFW nests. Avoidance, even with a small buffer area is considered preferable to relocation. Avoidance buffers of a minimum of 3-10 feet shall be implemented, flagged where appropriate, and avoided during project implementation. As evaluated by the project biologist, where appropriate to minimize impacts from Program activities, fencing will be installed around the nest and include the buffer area. Whenever possible, materials associated with an individual SFDFW nest will be left in place.

BMP Number	BMP Title	BMP Description
		– All SFDFW nests that cannot be avoided by Program activities (i.e., will require relocation), a qualified biologist shall live trap to determine if the nest is in use. Trapping activities should occur prior to April and after mid-July each year to prevent impacts to SFDFW rearing young or young SFDFW s. If a nest is found to be unoccupied or not in use for 3 full days (2 nights of trapping), then it may be removed. The nest shall be relocated or a pile of replacement sticks shall be placed outside of the project footprint for future colonization or re-use. If a lactating female is trapped, Program activities shall be postponed until young have become independent. Trapped SFDFW may be kept in captivity by a qualified biologist for the minimal time necessary until their nests are relocated to suitable habitat outside of the project footprint. The qualified biologist will complete and submit a CNDDB form to CDFW for any SFDFW trapped. Once trapped, nests shall be torn down and rebuilt surrounding a log-based structure, an inverted wooden planter, or similar structure that is slightly buried into the ground and has at least one entrance and exit hole. Cached food and nest material encountered shall be placed within the new structure during nest rebuilding. Whenever possible, the structure shall be "over-built" by adding larger branches for predator protection to create an area for the individual to safely emerge outside of the nest. One or more persons shall remain outside the release structure for up to 10 minutes to mimic a predator. Trapped woodrats should be released into the reconstructed nest by plugging the individual into the shelter using loose dirt over the entrance. Relocated SFDFW nests will be monitored (visual and/or wildlife camera) for one year following relocation, and the biologist will submit a monitoring report to CDFW. 2. In non-natural areas (e.g., structures, abandoned vehicles, human debris piles): – If individuals cannot be live-trapped consistently (especially if there is a risk to human health) and/or there is a lack of woody materials for nest reconstruction, live trapping is not required. Work at these locations must occur prior to April and after mid-July to prevent impacts to SFDFW rearing young. If SFDFW is observed, work at the location shall cease until the individual leaves the area on its own. If the SFDFW does not leave the area, work shall continue to cease at the location and the qualified biologist will be notified. If nests are present that cannot be trapped or removed, woody debris piles that look like woodrat houses can be constructed to provide opportunities for sheltering and colonization by displaced SFDFW under the direction of the qualified biologist or onsite biological monitor. Nest replacement ratios will be determined based on the number of SFDFW and/or nests observed, as well as the size and number of undisturbed nests in the surrounding area.

BMP Number	BMP Title	BMP Description
BIO-17	Migratory Bird Nest Protection Measures (excludes Marbled Murrelet)	▪ To avoid potential impacts to tree or shrub-nesting birds, any trimming or pruning of trees or shrubs will be conducted during the time period of September 1 to February 14 unless a preconstruction nesting bird survey has been conducted by a qualified biologist or biological monitor. Work will be done during the non-breeding season whenever possible. The bird nesting seasons are defined as follows: 1. March 15 to August 30 for smaller bird species such as passerines; and 2. February 15 to August 30 for raptors. 3. Earlier surveys may be needed for specific species such as owls, hummingbirds, herons and egrets and/or other species if nesting activity shifts due to climate change. ▪ If Program activities are scheduled during the nesting season of raptors and/or migratory birds, a focused survey for active nests of such birds will be conducted by the qualified biologist or biological monitor within 15 days prior to the beginning of project-related activities. Surveys will be conducted in all suitable habitat located at project sites and in staging and storage areas. The minimum survey radii surrounding the work area shall be the following: 1. 250 feet for passerines; 2. 500 feet for other small raptors such as accipiters; 3. 1,000 feet for larger raptors such as buteos and eagles. The bird survey methodology and the results of the survey shall be submitted to the CDFW prior to commencement of Program activities. ▪ If an active nest (i.e., a nest having eggs or chicks present, or a nest that adult birds have staked a territory and are displaying, constructing a nest, or are repairing an old nest) is found and work cannot be postponed, Midpen will designate active nest sites as “Ecologically Sensitive Areas” and protected (while occupied) during Program activities with the establishment of flagging or a fence barrier surrounding the nest site. No trees or shrubs that contain active bird nests will be disturbed until all eggs have hatched, and young have fully fledged (are no longer being fed by the adults, and have completely left the nest site). No habitat removal or modification shall occur within the Ecologically Sensitive Area fenced nest zone even if the nest continues to be active beyond the typical nesting season for the species, until the young have fully fledged and will no longer be adversely affected by the project. The minimum distances of the protective buffers surrounding each identified nest site will be the following, with some considerations depending on nest location and substrate: 1. 500 feet for large raptors such as buteos; 2. 250 feet for small raptors such as accipiters;

<table>
<tr><th>BMP Number</th><th>BMP Title</th><th>BMP Description</th></tr>
<tr><td></td><td></td><td>3. 250 feet for passerines; and
4. 1,000 feet for eagles.
A biological monitor or qualified biologist will monitor the behavior of the birds (adults and young, when present) at the nest site to ensure that they are not disturbed by project-related activities. Nest monitoring will continue during project-related construction work until the young have fully fledged, are no longer being fed by the parents and have left the nest site and surrounding area, as determined by a biological monitor. If a protective buffer must be modified, Midpen will coordinate with the CDFW and/or the USFWS as appropriate prior to resumption of Program activities.
▪ If a lapse in project-related work of 15 days or longer occurs, another focused survey will be conducted before project work is reinitiated.</td></tr>
<tr><td>BIO-18</td><td>Marbled Murrelet Nest Protection Measures</td><td>In areas within the range of marbled murrelet (MAMU) habitat as identified in the Midpen 2007 maps, Midpen will conduct a survey of habitats within ¼-mile of the project area for trees that meet the Pacific Seabird Group definition of potential MAMU nesting trees. If such trees are present within 300 feet of the project area or if a MAMU nest is detected, Midpen will coordinate with CDFW and USFWS before proceeding. If habitat trees are present within ¼-mile of the project site but are greater than 300 feet from the work area, Midpen will implement the following conditions:
▪ Work within the project area shall be confined to the period of September 16 to March 23. If maintenance activities cannot be conducted during this seasonal work period, Midpen will coordinate with CDFW and USFWS during the February 1 notification and implement the following conditions:
1. If construction activities occur during the marbled murrelet breeding season (March 24 to September 15), seasonal disturbance minimization buffers as listed in the table below and in the October 28, 2020 document, Revised Transmittal of Guidance: Estimation of the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California (table below), shall be followed:
<table>
<tr><th></th><th colspan="4">Anticipated Action Generated Sound Level (decibels [dB])2</th></tr>
<tr><th>Existing Pre-Project (Ambient) Sound Level1</th><th>Moderate (71-80 dB)</th><th>High (81-90 dB)</th><th>Very High (91-100 dB)</th><th>Extreme (101-110 dB)</th></tr>
<tr><td>Natural Ambient (<=50 dB)[3]</td><td>165</td><td>500</td><td>1,320</td><td>1,320</td></tr>
<tr><td>Very Low (51-60 dB)</td><td>0</td><td>330</td><td>825</td><td>1,320</td></tr>
</table>
</td></tr>
</table>

BMP Number	BMP Title	BMP Description

Low (61-70 dB)	0	165	825	1,320
Moderate (71-80 dB)	0	165	330	1,320
High (81-90 dB)	0	165	165	500

1. Existing (ambient) sound level includes all natural and human-induced sounds occurring at the project site prior to the proposed action, and are not causally related to the proposed action.
2. Action-generated sound levels are given in decibels (dB) experienced by a receiver, when measured at 15.2 m from the sound source.
3. "Natural Ambient" refers to sound levels generally experienced in habitats not substantially influenced by human activities.

Midpen will conduct a sound level monitoring study to determine level of ambient and construction activity noise anticipated during construction activities to calculate seasonal disturbance minimization buffer widths. Disturbance distances listed in the table above apply to noise generating activities that are not within 2 hours of sunrise or sunset; project generated noise impacts will be calculated accordingly. Midpen will provide a description of methods and results of the study to USFWS and CDFW to coordinate site-specific avoidance measures 30 days prior to commencement of Program activities at the applicable location(s). In order to alert work crews to their presence, marbled murrelet seasonal disturbance buffers, as determined by the sound study and table above, shall be flagged in the field where they enter the project area. If Midpen chooses not to conduct the sound study, no maintenance activities shall occur within 0.25-mile of potential nest trees during the marbled murrelet breeding season (March 24 to September 15).

2. If noise generating construction activity takes place during the breeding season (March 24 to September 15) within suitable Redwood and Redwood/Douglas-fir forests, construction activities will be restricted to 2 hours after sunrise to 2 hours before sunset to minimize disturbance of potential nesting MAMU using forest habitat as a travel corridor between inland nesting and coastal habitat.
3. Midpen or its contractor will not conduct Program activities within a visual line-of-sight distance of 40 m or less from a suitable nest tree as designated by a qualified biologist or biological monitor. Additionally, Midpen or its contractors will not conduct Program activities within a visual line-of-site distance of 100 meters or less from a known or active nest tree confirmed by a qualified biologist.

BMP Number	BMP Title	BMP Description
		If MAMU protocol level surveys are conducted and do not indicate that the habitat is occupied by MAMU, the seasonal and distance work restrictions may be lifted with approval from CDFW and USFWS. Protocol level survey procedures and information can be found at: http://www.pacificseabirdgroup.org/publications/PSG_TechPub2_MAMU_ISP.pdf. If Midpen chooses to conduct marbled murrelet protocol level surveys, Midpen will coordinate with CDFW and USFWS regarding the survey stations to ensure all contiguous suitable habitat is covered and good visuals of the sky and nearby flyways, if present, are provided. If marbled murrelet protocol level surveys are conducted, Midpen will submit the report consistent with *Methods for Surveying Marbled Murrelets in Forests: A Revised Protocol for Land Management and Research*.
BIO-19	Bay Checkerspot Butterfly and Santa Clara Valley Dudleya Protection Measures	▪ For all ponds and wetland, creeks and rivers, prescribed fire and property clean up and building removal, sites will be pre-surveyed by a qualified botanist for Santa Clara Valley dudleya and Bay checkerspot butterfly host plants prior to implementing recovery actions. In certain cases, prescribed fire may be used to enhance a native species or to control nonnative species, but site-specific recommendations will be made based on the species composition and the objectives for the site. ▪ All prescribed grazing areas within Midpen have been mapped for sensitive status plant species and there are not currently any federally or State-listed plants within grazed properties. To ensure no newly listed species or previously undiscovered species are present, Midpen rangeland ecologist will perform annual monitoring and reporting to agencies. ▪ For all roads and trail maintenance activities, grassland areas will be surveyed by a qualified botanist for sensitive status plant species every 3 years. Woodland, hardwood, shrub and scrub, and forested areas will be mapped by a qualified botanist every 5 years. ▪ All areas having known occurrences of Santa Clara Valley dudleya or Bay checkerspot butterfly host plants for which recovery actions are proposed will be surveyed prior to treatment. Listed and host plants will be avoided either through timed activities (for example mowing after annuals set seed) or flagging individual plants for avoidance. In any areas in which host plants cannot be avoided, seed will be collected and the area reseeded under approvals from the USFWS and CDFW. ▪ Prior to conducting any manual, mechanical, or chemical IPM treatment in serpentine habitats, surveys will be conducted for dwarf plantain (*Plantago erecta*), purple owl's clover (*Castilleja densiflora*), and exserted paintbrush (*Castilleja exserta*) during the appropriate blooming period, and host plants containing eggs, larva, or pupa of Bay checkerspot butterfly will not be treated.

BMP Number	BMP Title	BMP Description
BIO-20	Bat Colony Protection Measures	▪ In areas of suitable habitat, preconstruction surveys are required for the following bat species: – Pallid Bat (*Antrozous pallidus*) – Townsend's Big-eared Bat (*Corynorhinus townsendii*) – Bat surveys should take place during the April 15 through August 31 maternity roost season whenever possible. Surveys may also take place between February 16 and April 14, or between September 1 and November 15. Findings during spring and fall surveys may indicate that a second summer survey is necessary ▪ Bats generally breed April through August; no building or tree work (over 16 inch dbh) is allowable during this time if surveys determine that special status bats or maternity roosts are present ▪ Bats may go into a deep torpor period November 16 through February 15; no building or tree work (over 16inch dbh) is allowable during this time if surveys determine that special status bats or hibernaculum roosts are present ▪ If individual nonbreeding and non-special status bats are present, a qualified biologist may be retained to remove the bats and work may proceed year round ▪ If maternity roosting or special status bat species are present at any time, no work is allowed without first excluding and providing alternate roost site(s), or identifying suitable nearby existing roosting sites, outside of the breeding season ▪ Alternate roost site(s) must be determined by District Natural Resources staff or a consulting biologist and submitted to CDFW before installation ▪ Whenever possible alternative roost site(s) will be provided 6 months to 1 year prior to the removal of maternity roosting habitat to allow bats adequate time to discover the new locations ▪ Alternative roost site(s) shall be monitored for occupancy by a qualified biologist within one year of installation ▪ Contractors, Midpen staff, and others working in areas known to support maternity roost site(s) and/or special status bat species will be provided biological awareness training by a qualified biologist prior to the commencement of work *Mitigation for impacts to maternity roost(s) and special status bat species:* Buildings and Other Human Structures: To mitigate for demolition activities, fumigation, or other activities that involve the removal or disturbance of roosting bats in buildings, bridges, outbuildings, dilapidated structures, old vehicles (buses, trailers etc.), or other human created structures (including debris piles):

BMP Number	BMP Title	BMP Description
		▪ If signs of bats are evident and removal or disturbance of bats is necessary, a qualified biologist will conduct surveys for roosting bats prior to beginning work. Surveys will consist of daytime pedestrian surveys to look for visual signs of bats (e.g., guano), and if determined necessary, evening emergence surveys to note the presence or absence of bats. If evidence of bat roosting is found, the number and species of roosting bats will be determined. If congregations of more than five bats are found within a single human-made structure during the maternity roosting season it may be assumed that the colony constitutes a maternity roost and the location will be recorded in the District's wildlife database. If no evidence of bat roosts is found, then no further study will be required. Bat detectors and/or infrared detectors may be used to supplement survey efforts, but are not required. ▪ When bat roosting sites are located in buildings, exclusion of bats from the building will occur outside of the April through August nursery season. ▪ If roosts of special-status bats are determined to be present and must be removed, a bat exclusion plan will be prepared and submitted to CDFW. The exclusion plan will describe the method of exclusion, which may include the use of one-way doors at roost entrances (bats may leave but not re-enter), or sealing roost entrances when the site can be confirmed by a bat expert to contain no bats. No bats will be excluded until the plan is approved by CDFW and alternative roosting habitat is approved. The bats will be excluded from the roosting site before the site is disturbed or modified in any way. <u>Tree Removal:</u> ▪ Avoid removal of trees greater than sixteen inches dbh during the April through August nursery season whenever possible. ▪ If removal of trees greater than sixteen inches dbh during the nursery season cannot be avoided, a qualified biologist will conduct surveys for roosting bats where suitable large trees are to be removed. Surveys will consist of daytime pedestrian surveys to look for visual signs of bats (e.g., guano), and if determined necessary, evening emergence surveys to note the presence or absence of bats. If evidence of roosting bats is found, the number and species of roosting bats will be determined. If no evidence of bat roosts is found, then no further study will be required. Bat detectors and/or infrared detectors may be used to supplement survey efforts, but are not required.

BMP Number	BMP Title	BMP Description
		▪ If roosts of special-status bats are determined to be present and must be removed during the April through August nursery season, a bat exclusion plan shall be prepared and submitted to CDFW. The exclusion plan will describe the method of exclusion, which may include the use of one-way doors at roost entrances (bats may leave but not re-enter), or sealing roost entrances when the site can be confirmed by a bat expert to contain no bats. The use of sonic bat deterrents may also be allowed when called for by a qualified biologist. No bats will be excluded until the plan is approved by CDFW and alternative roosting habitat is approved. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young). The bats will be excluded from the roosting site before the site is disturbed, closed or modified in any way. When possible, alternative roosting sites will be provided 6 months to a year prior to the removal of existing roosts. Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost site, the structures may be removed or sealed. <u>Work in or adjacent to areas known to support special status bats and/or maternity roosts:</u> ▪ Whenever possible work shall take place outside of the April through August nursing season. ▪ Natural Resources staff shall provide and/or consult with qualified biologists having knowledge specific to the bat species present at the site. Species specific noise tolerance levels (including high frequency noise) shall be established for work taking place within a determined buffer around the maternity roost. All equipment working within the site during the nursing season must be tested for high frequency noise outputs prior to use on the site. If equipment is determined to produce any noise that is expected to cause bats to abandon a maternity roost it will not be used on the site within the biologist established buffer during the nursing season. <u>Relocation of bat boxes:</u> ▪ Relocation requires the approval of the Natural Resources department and may be performed by a qualified biologist. ▪ Bat boxes may be relocated between mid-September to mid-October, or from mid-February to mid-March (during warm periods outside of the nursing season). Bat boxes may be relocated outside of these recommended time periods with sign off from a qualified biologist. ▪ Relocation of boxes that support special status bat species requires notification to CDFW before implementation.

BMP Number	BMP Title	BMP Description
		▪ If a bat box is determined to be unoccupied by a qualified biologist, it may be relocated at any time without modification. If occupied, a one-way door shall be installed on the entrance/exit of the bat box, preferably during a warm period when bats are likely to be active. The one-way door shall remain in place for a period of 3-7 days. After this period, a qualified biologist shall arrive on site and check the box for occupancy. If the box is still occupied then the one-way door shall remain in place for an additional 3-7 days. Once the box is determined to be unoccupied then it may be relocated with direction from Natural Resources or a qualified biologist to a nearby suitable habitat. The new location will be recorded and added to the Districts' Geographic Information System (GIS) database. The one-way door shall then be removed to allow bats to access the box. Relocated bat boxes shall be monitored for occupancy by a qualified biologist within one year of installation.
BIO-21	Salmonid (Coho and Steelhead) Protection Measures	▪ Dewatering will not occur in stream reaches where known occurrences of Coho salmon exist. Midpen will coordinate with USFWS and CDFW in the event that dewatering such a stream reach becomes necessary. ▪ Seasonal Work Period for Salmonids: Work within and around NOAA designated critical habitat for steelhead and Coho salmon streams that provide habitat for salmonids shall be limited to June 15 to October 31. Revegetation activities are not confined to this period. ▪ Alternative Seasonal Work Period. Work within and around creeks that do not provide habitat for salmonids and reaches that are 1,000 feet or more upstream of discharge points which do not discharge directly into such drainages will be limited to April 15 to October 31, or is permissible from November 1 to April 14 under the following conditions: 1. Work will not occur until the site has received no rainfall for a period of 10 days and there is no rain in the forecast for a period of 7 or more days, and work requires no greater than 5 days to complete. 2. Work started during this period must be at least 50% complete within 2.5 days of beginning work. 3. Winterization materials must be on hand and installed if unanticipated rainfall begins (defined as 0.5 inches of rain in a 24-hour period). 4. Corrective actions are allowable year-round for the following situations: – To correct improperly installed and/or unauthorized work on Midpen lands that occurred during the same calendar year that result in sediment delivery. – To correct damage from winter storms that threatens access to homes, ponds, water systems, and other critical infrastructure.

BMP Number	BMP Title	BMP Description
BIO-22	Biological Monitoring for Stranded Aquatic Life	▪ For all projects within watercourses that are known to support or have the potential to support threatened and/or endangered species, a qualified biologist or biological monitor shall conduct a pre-construction survey. ▪ A biological monitor or qualified biologist will check daily for stranded aquatic life as the water level in the dewatering area drops. All reasonable efforts will be made to capture and move all stranded aquatic life observed in the dewatered areas. Capture methods may include fish landing nets, dip nets, buckets and by hand. Captured aquatic life will be released immediately in the closest body of water adjacent to the work site. This measure does not allow for the take or disturbance of any state or federally listed species. ▪ Any aquatic nonnative invasive species found will be disposed of properly and will not be placed back into the creek where work is being conducted or any other drainages, creeks or streams. The Midpen Project Manager will send a list to CDFW of species found and the location they were found after completion of Program activities.
BIO-23	Large Woody Material Management	Large Woody Material management and removal will be undertaken only as a last resort to mitigate ongoing or imminent damage. Large wood is defined as logs with a diameter of 6 inches or greater and a length of 10 feet or longer, rootwads and stumps. Locations will be assessed for sensitive species prior to beginning any work at the site. Smaller pieces of large woody material shall be removed to above the OHWM of the channel, and will be stacked or spread for terrestrial habitat
BIO-24	Riparian Avoidance	▪ Riparian trees shall be protected from damage to the greatest extent possible during repair and replacement. ▪ Vegetation management activities will not adversely impact the riparian zone, shade, canopy coverage, or habitat.
BIO-25	Riparian Restoration	▪ **Restoration Area.** Where feasible, restoration will take place in the same Preserve and preferably on the same waterway or watershed and adhere to the conditions below. Planting or seeding of riparian vegetation may be done at any time provided there is no erosion and sedimentation that may cause an adverse impact to water quality. ▪ **Tree Replacement**. In suitable areas, trees shall be replaced at the following ratios (replacement trees to removed trees) to mitigate for permanent net loss of habitat and canopy cover: 1. For non-native trees that provide canopy cover to the creek: 1:1 (compensation to impact) ratio 2. For native trees: 2:1 ratio unless approved otherwise by CDFW. In certain areas where regeneration will occur or overcrowding is an issue, a 1:1 ratio is acceptable. ▪ **Re-vegetation Ratio**. In suitable areas, other vegetation shall be replaced with the following ratios: wetlands, 1:1; general riparian vegetation, 3:1; sycamore alluvial woodland or other rare habitat types: 5:1; other general habitat types, 1:1.

BMP Number	BMP Title	BMP Description
		▪ **Native Species for Re-vegetation**. Replacement trees and vegetation will be local native species adapted to the lighting, soil and hydrological conditions at the replanting site, except in cases where non-native trees are considered culturally significant. In these areas, non-native trees may be replaced with the same species of non-native tree to preserve the cultural landscape in ongoing maintenance to prevent the spread of the non-native is provided. If replanting within the work area is infeasible due to lack of space, slope steepness or other physical constraints, replacement trees and vegetation may be planted at an alternate location along the stream corridor. Vegetation will be replaced by December 31 of the year impacts occur in a location that is not subject to future maintenance or construction work. ▪ **Re-vegetation Plan**. Where active restoration is warranted, Midpen will submit a re-vegetation plan to CDFW with the annual February notification. The plan will describe the project site and vegetative community, including the conditions warranting active re-vegetation. Proposed restoration measures will be described, including location, number, size and type of replacement plantings, installation specifications and irrigation specifications if warranted. ▪ **Re-vegetation Survivorship**. Any re-vegetation plan will include success criteria specific to the circumstance. The re-vegetation effort will replace or improve on the habitat value of the impacted area in a reasonable amount of time. The term 'Reasonable amount of time' means a return to the pre-project baseline in approximately the same period of time that the pre-existing habitat took to establish naturally. For habitats where this is not feasible (such as oak woodland), success criteria should focus on attributes that will provide a reasonable assurance that the re-vegetation will eventually result in the required replacement value. These attributes could include plant vigor, establishment of minimal species diversity, cover, lack of limiting factors and others. ▪ **Re-vegetation Success Criteria**. For every project where habitat is removed, whether active re-vegetation is removed or not, the annual February notification should provide an estimate of the time necessary to re-establish the baseline habitat value lost. Midpen will monitor the site for that period (as modified by CDFW where warranted). If the site reaches the pre-project habitat baseline prior to the end of the projected monitoring period and keeps that habitat value for two consecutive years, Midpen can request CDFW to waive further monitoring. For sites requiring longer terms to reasonably reach a pre-project baseline and which are clearly doing well and therefore can reasonably be considered likely to reach the site habitat goals (such as oak woodland or redwood forest), Midpen can request CDFW to reduce or end the monitoring after five years.

BMP Number	BMP Title	BMP Description
		▪ **Re-vegetation Remediation**. If re-vegetation success criteria requirements do not meet established goals, Midpen is responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve these requirements. All plants that die within the monitoring period will be replaced during the fall the year the plant was determined to have failed, or as soon as replacement nursery stock can be grown, on site seed collected, or whichever propagation method is most effective, as necessary to satisfy success criteria. Replacement plants will be monitored with the same goal as initial planting until habitat goals are met. If the problem(s) is/are larger in scope, are likely to recur and cannot be corrected, Midpen will coordinate with CDFW to develop a modified plan for the site. ▪ **Sedimentation**. Primary sedimentation control will be provided by implementation of the best management practices under *Sediment/Water Quality Control* and *Erosion Control*. For any project where erosion and sedimentation cannot be completely controlled by these measures (such as clearing a plugged culvert in a live channel), additional measures will be implemented, as necessary. Midpen will identify any projects where this condition occurred during the preceding calendar year and estimate the amount of sediment that bypassed protective measures, if any. To compensate, as part of the annual February notification, Midpen will propose sufficient erosion control projects to halt chronic sedimentation from other sources of a similar or greater amount. This annual quantity of erosion control projects will be determined through coordinate between Midpen and CDFW.
Cultural Resources Measures		
CUL-1	Review Sensitivity Maps	During the early phases of Annual Work Plan development, for all locations where ground-disturbing activities are proposed where excavation would be required beyond the facility's as-built design or otherwise reach previously undisturbed soils beyond existing engineered depths or extent, Midpen will review the Cultural Sensitivity Maps (Appendix C of the Open Space Maintenance and Restoration Program Manual [Manual]). If the foregoing conditions are not applicable to the maintenance activity being performed, only BMP CUL-5 and CUL-6 will be required. Based on the location of projects, and whether or not excavation or ground disturbance will occur beyond existing engineered depths or extent, BMPs CUL-2 through CUL-4 shall be implemented as follows: ▪ High Sensitivity: BMPs CUL-2, CUL-3, and CUL-4 ▪ Moderate Sensitivity: BMP CUL-2 and CUL-3 ▪ Low Sensitivity: BMPs CUL-2 through CUL- 4 not required ▪ Unknown Sensitivity: BMP CUL-2 and CUL-3

BMP Number	BMP Title	BMP Description
		▪ BMPs CUL-6 is applicable to all ground-disturbing activities in natural channels or native soils, regardless of the sensitivity level of the work area.
CUL-2	Record Search and Field Inventory for Highly or Moderately Sensitive Areas, and Areas of Unknown Sensitivity	▪ Midpen will retain a qualified cultural resources specialist to conduct a review and evaluation of locations that involve soil disturbance/excavation in natural channels or native soils identified as Highly to Moderately Sensitive to determine the potential for these activities to affect significant cultural resources. ▪ The initial evaluation will be based on a review of archival information maintained by Midpen. If there is no information in Midpen's archives that indicates Midpen ever received comprehensive cultural resources data on the project area, or that the project area has previously ever been subject to pedestrian archaeological survey, the qualified cultural resources specialist will request a record search by the Northwest Information Center (NWIC) of the California Historical Resources Information System to cover the project area and on a 0.25-mile search radius. This initial archival review will be completed by the professional archaeologist who will be able to view confidential site location data and literature to arrive at a preliminary sensitivity determination. ▪ It is recommended that Midpen conduct a review of the Sacred Lands Inventory of the Native American Heritage Commission (NAHC) and due diligence outreach with individuals identified by the NAHC and/or local historical societies or groups. This outreach would involve sending a letter with a request for pertinent information about cultural resources within the project area and to identify any concerns. This outreach is in addition to notification under PRC 21080.3.1 (i.e., CUL-3), and may be appropriate for projects that would not otherwise require Assembly Bill 52 notification. Such outreach is also encouraged under Section 106 implementing regulations at 36 Code of Federal Regulations (CFR) 800.4(a)(3) for identification of historic properties. ▪ The qualified archaeologist will conduct field inventory of the project area to determine the presence/absence of surface cultural materials. The results, along with any mitigation and/or management recommendations, will be presented to Midpen in an appropriate report format that includes any necessary maps, figures, and correspondence with interested parties. The report will also include a summary of the records search and archival research data, and pertinent geoarchaeological overviews and studies, and regional research designs, as appropriate. ▪ A summary table indicating appropriate management actions (e.g., monitoring during construction, presence/absence testing for subsurface resources, and data recovery) will be developed for each project work area reviewed. ▪ The maintenance activities will be implemented to avoid significant impacts to cultural resources, if possible.

BMP Number	BMP Title	BMP Description
		▪ **EXCEPTIONS:** After the Midpen archival search, NWIC record search, and NAHC sacred lands search have been conducted, the qualified archaeologist may determine that a field review is not necessary under the following circumstances: – Locales that have previously been subject to cultural resource studies where no previously identified cultural resources or historical resources were documented. – Locales that have previously been subject to cultural resources studies, but identified cultural resources have been determined by a qualified archaeologist/resource specialist as not eligible for listing in the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP). – A short report would be required to document the decision not to conduct a field study.
CUL-3	Consult with Native American Tribes	Midpen, as the lead California Environmental Quality Act (CEQA) agency, has notified Native American tribes about the Program according to PRC 21080.3.1 (also referred to as Assembly Bill 52); *only Native American tribes that have previously requested notification from Midpen pursuant to PRC 21080.3.1(b) require notification*. For tribes that request consultation under PRC 21080.3.1(b)(2), Midpen will consult with those tribes pursuant to PRC 21080.3.2 for projects in areas of high, moderate, and unknown sensitivity.
CUL-4	Construction Monitoring	▪ Midpen will retain a qualified archaeologist to be present on-site during ground-disturbing activities within areas identified as highly sensitive for cultural areas unless the qualified archaeologist determines otherwise after the field inventory conducted under CUL-2. Similarly, after conducting the field study under CUL-2, the qualified archaeologist may determine that areas originally identified as moderately sensitive for cultural resources warrant monitoring during construction. The reasons for conducting monitoring in areas initially considered of moderate sensitivity would be discussed in the inventory report. ▪ The qualified archaeologist will have the authority to stop work if cultural resources are discovered. ▪ If any cultural resources are discovered during construction monitoring, BMP CUL-7 would be implemented as appropriate.
CUL-5	Conduct Pre-Maintenance Educational Training	At the beginning of each maintenance season, and in concert with implementing BMP BIO-1, as well as before conducting activities subject to BMP CUL-2 through BMP CUL-5, all maintenance personnel will participate in an educational training session conducted by a qualified cultural resources specialist. This training will include instruction on how to identify historic and prehistoric resources that may be encountered, and will describe the appropriate protocol to be followed if resources are discovered during maintenance work.

BMP Number	BMP Title	BMP Description
CUL-6	Address Discovery of Cultural Remains	Unanticipated discoveries of cultural and paleontological resources may occur during maintenance construction activities. Examples of prehistoric Native American cultural remains are obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or significant areas of tool-making debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period artifacts may include stone, concrete, or adobe footings, foundations, and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. Paleontological resources are fossilized remains of plants and animals. Work will be restricted or stopped in areas where remains or artifacts are found until proper protocols are met, as described below. <u>Protocol for treatment of prehistoric or historic cultural resources, or human remains:</u> 1. Work at the location of the find will halt immediately within 50 feet of the find. A "no work" zone will be established utilizing appropriate flagging to delineate the boundary of this zone, which will measure at least 50 feet in all directions from the find. 2. Midpen will retain the services of a consulting archaeologist, who will visit the discovery site as soon as practicable and perform minor hand excavation to describe the archaeological resources present and assess the amount of disturbance. 3. The consulting archaeologist will provide to Midpen and U.S. Army Corps of Engineers (USACE), at a minimum, written and digital-photographic documentation of all observed materials, utilizing the CRHR and NRHP guidelines for evaluating archaeological resources. Based on the assessment, Midpen and USACE will identify the CEQA and Section 106 cultural resources compliance procedures to be implemented. 4. If the consulting archaeologist determines that the find appears not to meet the CRHR or NRHP criteria of significance, and a USACE archaeologist concurs with the consulting archaeologist's conclusions, construction may continue while monitored by the consulting archaeologist. The authorized Program work will resume at the discovery site only after Midpen has retained a consulting archaeologist to monitor and the Program Manager has received notification from USACE allowing work to continue. 5. If the find appears significant, avoidance of additional impacts is the preferred alternative. The consulting archaeologist will determine if adverse impacts to the resources can be avoided.

BMP Number	BMP Title	BMP Description
		6. Where avoidance is not practical (e.g., maintenance activities cannot be deferred or must be completed to satisfy the Program objective), Midpen will develop an action plan (also known as a data recovery plan) and submit it to USACE within 48 hours of determining that maintenance activities cannot be deferred. The action plan will be submitted by email to the appropriate archeological/cultural resources contact at the USACE. The action plan is equivalent to a data recovery plan. It will be prepared in accordance with the current professional standards and state guidelines for reporting the results of the work, and will describe the services of a Native American consultant, if appropriate, and a proposal for curation of cultural materials recovered from a non-grave context. 7. The recovery effort will be documented in a report prepared by the consulting archaeologist in accordance with current archaeological standards. Any non-grave artifacts will be placed with an appropriate repository. 8. In the event of discovery of human remains (or if a find consists of bones suspected to be human), the field crew supervisor will take immediate steps to secure and protect such remains from vandalism during periods when work crews are absent.) 9. The maintenance crew supervisor will immediately notify the San Mateo County Coroner and provide any information that identifies the remains as Native American. If the remains are determined to be those of a prehistoric Native American or a Native American from the ethnographic period, the Coroner will contact NAHC within 24 hours of being notified about the remains. NAHC will designate and notify a most likely descendant (MLD) within 24 hours. The MLD will have 48 hours to consult and provide recommendations for the treatment or disposition, with proper dignity, of the human remains and grave goods. 10. Preservation in situ is the preferred option for human remains. Human remains will be preserved in situ if continuation of the maintenance work, as determined by the consulting archaeologist and MLD, will not cause further damage to the remains. The remains and artifacts will be documented, the find location carefully backfilled (with protective geo-fabric if desirable), and the information recorded in Midpen Program files. 11. If human remains or cultural items are exposed during maintenance that cannot be protected from further damage, they will be exhumed by the consulting archaeologist at the discretion of the MLD and reburied, with the concurrence of the MLD, in a place mutually agreed upon by all parties.
Geology/Paleontological Resources Measures		
GEO-1	Address Discovery of Paleontological Resources	<u>Protocol for treatment of paleontological resources:</u> 1. Work at the location of the find will halt immediately within 50 feet of the find. A “no work” zone will be established utilizing appropriate flagging to delineate the boundary of this zone, which will measure at least 50 feet in all directions from the find.

BMP Number	BMP Title	BMP Description
		2. Midpen will retain the services of a consulting paleontologist who meets the Society for Vertebrate Paleontology's criteria for a "qualified professional paleontologist" (Society of Vertebrate Paleontology 1995). The consulting paleontologist will follow the Society for Vertebrate Paleontology's guidelines for treatment of the find. Treatment may include preparation and recovery of fossil materials for donation to an appropriate museum or university collection, and may include preparation of a report describing the find. Midpen will be responsible for ensuring that the paleontologist's recommendations are implemented.
Erosion Control Measures		
EC-1	General Erosion Control Measures	▪ All exposed soils within a project site will be stabilized immediately following the completion of earthmoving activities to prevent erosion into the stream channel. Erosion control BMPs, such as silt fences, certified weed-free straw hay bales, gravel or rock lined ditches, water check bars, certified weed-free wattles, forest duff or mulches, and broadcasted certified weed-free straw will be used as necessary (Refer to Appendix D of the Manual for detailed descriptions of erosion control BMPs). Erosion control fabrics will be constructed of biodegradable materials, such as coir or jute. Erosion control products will not contain monofilament material. The effectiveness of erosion control BMPs will be monitored during and after each storm event. Modifications, repairs and improvements to erosion control BMPs shall be made as needed to protect water quality. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. ▪ Soil accumulated behind erosion control features will be removed promptly to an erosionally safe location and controlled for erosion. Erosion control measures will be monitored following significant storm events and modifications, repairs, and improvements to erosion controls measures will be made whenever they are needed. ▪ Erosion control measures will be utilized throughout all phases of operation where sediment runoff from exposed slopes threatens to enter Waters of the State and/or U.S. This may require the construction at the toe of the slope below the construction site, of silt catch basins, silt fencing, certified weed free straw bale dikes, or other siltation barriers. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter a stream.
EC-2	Slope or Bank Stabilization	▪ Implement bio-compatible bank stabilization methods such as brush layering (live cut branches interspersed between layers of soil wrapped in natural geotextile materials with branches in alternative crisscrossing or overlapping pattern), brush mattresses, and live siltation to stabilize slopes and banks where feasible. The finished slopes should be seeded with native seed and mulched with a biodegradable tackifier.

BMP Number	BMP Title	BMP Description
		▪ Riprap of proper size and weight to withstand high water flows, where necessary, will be set below grade and keyed into the bank such that it is above the OHWM to the extent feasible. Work will be confined to the damaged or failed sections and immediate adjacent bank area affected by the damage failure. No more than 40% of bank repairs in a given year will use "hard" or impervious structure design. Incorporate rootwad revetments, live stakes, and pole planting at suitable locations to encourage vegetation growth over rip-rap where feasible. The following measures will be implemented during Program activities. 1. Streambank areas receiving rock slope protection will be back-filled with appropriate native or clean imported topsoil. The topsoil will fill some portions of the voids in the rock slope protection above the normal high water mark and provide a substrate for revegetation efforts. This work will be done manually using hand tools and power tools such as a toter or mule for single-track trail environments or an excavator or dump truck when needed for multiuse trails or roads. 2. Other bank stabilization measures that may be employed include broadcast and hydro-seeding, riparian vegetation planting, slopes armored with rocks or sandbags staked with live willow and other bioengineering techniques such as willow staking, live willow pole drains, vegetated crib walls, log or rock weirs. 3. Riparian trees will be protected from damage to the greatest extent possible during repair and replacement.
EC-3	Road and Trail Drainage Maintenance	▪ Minimize fine sediment contributions from roads, cutbanks, and ditches through seasonal closures and installing a variety of surface drainage techniques including berm removal, road surface shaping (outsloping, insloping, or crowning), rolling dips, ditch relief culverts, water bars, and other measures to disperse road surface runoff and reduce or eliminate sediment delivery to streams. ▪ Implement "live pole drains" where feasible to prevent landslides, unstable slopes, and slumping. ▪ Cleaning roadside/trailside ditches will be limited to no more than 10 cubic yards of soil per 100-yard length of road/trail and allows associated vegetation removal. ▪ Sloughs and berms may be occasionally removed (every 3-5 years) from trails and roads, but material removed will not exceed 5 cubic yards per 100-yard length of trail and 10 cubic yards per 100-yard length of road. ▪ Up to two (2) cubic yards of accumulated sediment will be removed from rolling dips per 100-yard length of road/trail that is located within a drainage subject to CDFW jurisdiction. ▪ In the event of a landslide, up to five (5) cubic yards per event or up to two (2) cubic yards under any conditions will be removed per the following conditions: 1. Up to 2 cubic yards of material may be removed, using hand tools only, under any conditions.

BMP Number	BMP Title	BMP Description
		2. Removal of amounts greater than 2 cubic yards requires that the channel be dewatered first and heavy equipment may be used if submitted to CDFW in writing through annual notification process with written approval from CDFW and where no Coho salmon are present. 3. The total area of disturbance shall not exceed 150 feet of channel or 2,000 square feet of area, whichever is less. 4. The disturbed area shall immediately be treated with erosion control materials sufficient to control turbidity. 5. Nearby perched or otherwise unstable fill shall be removed as well, up to 5 cubic yards.
EC-4	Road and Trail Minor Relocation	<u>Narrow-width Trails:</u> ▪ The new location will be no more than 400 feet upslope or downslope of the existing location. ▪ New crossings shall be free span bridges in creeks providing salmonid habitat or free span bridges or mortar or concrete free fords in creek without salmonid habitat. ▪ Vegetation removal is limited to no more than a six (6) foot buffer around the new crossing and to trimming of no more than 20% of any individual tree canopy in that six-foot buffer. Vegetation removal shall be limited to the minimum amount necessary to provide access. ▪ All work will be done when the work area is dry and the work period is outside the rainy season. ▪ Work must be completed during the appropriate fish and aquatic habitat avoidance times (BMP DW-2). <u>Other Trails and Roads:</u> ▪ The new location must be no more than 400 feet upslope or downslope of the existing location ▪ The total amount of earthwork will not exceed 75 cubic yards per year. ▪ New crossings shall be free span bridges in creeks providing salmonid habitat or free span bridges or mortar or concrete free fords in creeks without salmonid habitat. ▪ All work is to be done when the work area is dry, during the appropriate fish and aquatic habitat avoidance times (BMP DW-2). When work will be done within or around perennial streams or during wet weather years in which the channel does not dry, work will be scheduled during periods of low flow and will adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). ▪ Vegetation removal is limited to no more than a five-foot buffer around the new crossing and to trimming of no more than 20% of any individual tree canopy with the five-foot buffer.

BMP Number	BMP Title	BMP Description
EC-5	Revegetation of Disturbed Areas	Disturbed areas shall be re-vegetated according to Midpen's BMPs for Revegetation (Refer to Appendix E for detailed descriptions) and will use native plants whenever possible. If locally collected native plants are not available, sterile revegetation plants shall be used (e.g., cereal barley, Regreen, Trios). Disturbed areas shall be protected with correctly installed erosion control measures (e.g., jute, certified weed free straw, coconut fiber, or coir logs). Materials containing monofilament or plastic shall not be used.
Sediment/Water Quality Control Measures		
SWQ-1	Water Body Protection Measures	▪ Midpen will divert any flow at the project around the active maintenance site in a nonerosive manner. ▪ Limit work activities outside of a stream channel to the extent feasible to minimize stream disturbance and turbidity. ▪ If work within an inundated water body is necessary, conduct applicable dewater procedures to minimize water body disturbance and turbidity. ▪ During Program activities, silt control measures will be used during all phases of the project to prevent silt or earthen fill from entering the aquatic environment. In addition, exposed or disturbed areas within the project site will be stabilized to the greatest extent possible. ▪ BMPs will be used on temporarily stockpiled excavated sediment prior to disposal or reuse to protect water quality and beneficial uses. The excavated sediment may be stockpiled onsite so that it can be loaded into trucks for off-site disposal within three (3) working days. The excavated sediment may also be temporarily stockpiled at an off-site location so that runoff, sediment, or decant water from the excavated materials will not contact waters of the State and/or U.S. ▪ Implement a debris catchment system (e.g., nets, tarping) during bridge work to avoid the introduction of materials into a water way.
SWQ-2	Turbidity Monitoring	▪ When working within wet channels there will be a designated water quality monitor to monitor and document turbidity entering and exiting the work site. ▪ During Program activities in wetted stream channels or other aquatic habitat, Midpen or their contractor will monitor turbidity levels up and downstream of the project area before and during Program activities, and shall keep a log of turbidity data. Maintenance activities will not result in increases in turbidity of the stream of more than 20 percent of upstream sampling locations, as measured visually or by Nephelometric turbidity units (NTUs) as approved by the Regional Water Quality Control Board Waste Discharge Requirements and Water Quality Certification covering the project.

BMP Number	BMP Title	BMP Description
		▪ Upon Midpen's determination that turbidity/siltation levels resulting from project-related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation will be halted until effective approved control devices are installed or abatement procedures are initiated.
SWQ-3	Sediment Filtering Measures	Midpen or their contractor will deploy silt curtains or other appropriate silt filtering devices, such as straw bales, around the excavation site to prevent heavily silted water from impacting areas around the project area. The silt curtain or silt filtering devices shall be maintained throughout all phases of the excavation and construction activities.
Dewatering Measure		
DW-1	Stream/Aquatic Habitat Isolation	▪ If repair activities affect the active channel, the work area shall be isolated from flowing stream segments using silt fences, wattles, and/or cofferdams and restored to pre-project conditions after maintenance is complete. All stream diversions shall be closely maintained and monitored. Pumped diversions shall be continuously monitored (24-hours). Upon completion of work in diverted channels, the stream diversion shall be removed and flow shall be re-directed through the new culvert or back into the original stream channel. ▪ Stream or aquatic habitat diversion systems will maintain as much instream or aquatic habitat connectivity as possible to allow for movement of aquatic organisms. Diversion will be conducted such that water at the downstream end does not scour the channel bed or banks. Coffer dams, if used, will be constructed upstream and downstream of the work area as close as practicable to the work site. Coffer dams shall be constructed of a non-erodible material which does not contain soil or fine sediment and shall be constructed with clean gravel and bags, and may be sealed with sheet plastic. All materials shall be removed from the stream or aquatic habitat upon project completion. Normal flows shall be restored to the affected stream immediately upon completion of work at that location. Coffer dams and the stream diversion system will remain in place and functional throughout the construction period. If, the coffer dams or stream diversion fail, they shall be repaired immediately. ▪ During dewatering of the channel, the decrease in water surface elevation (WSE) shall be controlled such that WSE does not change at a rate that increases turbidity to the creek that could be deleterious to aquatic life and the likelihood of stranding aquatic life up- and downstream of the creek. Flows shall be provided to downstream reaches during all times the natural flow would have supported aquatic life. Said flows shall be sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion.
DW-2	Pond Dewatering	When pond draining is required, work will occur between August 15 and November 1, prior to the beginning of California red-legged frog breeding season.
DW-3	Pumps	All pump intakes will be fitted with ¼ inch mesh screens to prevent aquatic species injury, mortality, or impingement.

Impact Tier Categories to Classify Potential Effects

The Program uses a tiered approach for addressing potential effects on special-status species and habitats. The tiered approach considers past occurrences or observations of species at or near the site, the general or regional suitability for species and habitats around the site, and the specific resource conditions at the maintenance site to support potential species and habitats, and the specific conditions (e.g., time of day, season) when the maintenance activity will occur to determine the potential for take of individuals. This approach is intended to help both Midpen and regulatory agency staff identify resource and site sensitivity and thereby prioritize impact avoidance and minimization measures and/or BMPs and mitigation needs. The Program includes the following tiers:

- **Tier 1 (No Effect)–** There is no potential for a special-status species to be present in the area at any time. Tier 1 is appropriate if the biologist determines that Program activities would occur in creek reaches inaccessible to special-status fish or, for terrestrial special-status species other than birds, in areas where no suitable breeding habitat is present and there is no connectivity between the site and known or potential breeding habitat (so that non-breeding individuals can also be presumed to be absent). Because foraging or roosting birds could easily fly away before being impacted by Program activities, the implementation of Program activities in non-breeding habitat for special-status bird species would also be considered a Tier 1 because such activities would not result in impacts on individuals that rise to the level of "take".

- **Tier 2 –** A special-status species could occur at a site, but take will not occur. Tier 2 is applicable if the biologist determines that one or more special-status species are known to occur or could possibly occur on-site either because (1) suitable breeding habitat is present, or (2) for terrestrial species and fish, suitable non-breeding habitat is present and there is connectivity between the work site and suitable breeding habitat.

    - **Tier 2A (Not Likely to Adversely Affect)** – The activity will not result in take of special-status species based on the location and timing of work; although a special-status species could occur at the location at times, none would be present when the work will occur.

    - **Tier 2B (Not Likely to Adversely Affect for individuals, but may be considered Likely to Adversely Affect if permanent habitat impacts occur)** – This activity will not result in take of special-status species with implementation of BMPs (such as pre-activity surveys, exclusion of individuals from the site, and/or implementation of non-disturbance buffers around active nests of special-status birds). Some Tier 2B activities may result in a permanent loss of habitat.

- **Tier 3 (Likely to Adversely Affect)** –The activity may result in take of special-status species, even with implementation of BMPs. Tier 3 is applicable if the biologist determines that (1) special-status species are known to occur or may occur on site either because suitable breeding habitat is present or suitable non-breeding habitat with connectivity between the site and suitable breeding habitat is present; (2) special-status species may be present at the time of day/season in which the Program activity occurs; and (3) special-status species cannot be effectively excluded from the work area, pre-activity surveys cannot definitively determine the absence of the species, and/or "take" in the form of permanent loss of habitat cannot be avoided.

Table 5. Estimated USACE Disturbance Per Activity Type

Type of Activity	Estimated Typical USACE Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year	Annual Disturbance Estimate	5-Year Program Disturbance Estimate
Culvert repair/replacement	120 SF	25	3,000 SF	15,000 SF
	10 CY		250 CY	1,250 CY
	50 LF		1,250 LF	6,250 LF
Bridge repair/maintenance (railing, decking, minor abutment or armoring)	50 LF	5	250 LF	1,250 LF
	2 CY		10 CY	50 CY
	100 SF		500 SF	2,500 SF
Road and trail ditch clearing and installation	150 LF	5	750 LF	3,750 LF
	5 CY		25 CY	125 CY
	600 SF		3,000 SF	15,000 SF
Fords/ swales replacement, repair, and maintenance	100 LF	2	200 LF	1,000 LF
	10 CY		20 CY	100 CY
	600 SF		1,200 SF	6,000 SF
Sediment removal from channels (e.g., from landslides, road failures, or slip-outs)	40 LF	10	400 LF	2,000 LF
	200 SF		2,000 SF	10,000 SF

Type of Activity	Estimated Typical USACE Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year	Annual Disturbance Estimate	5-Year Program Disturbance Estimate
	4 CY		40 CY	200 CY
Sediment removal from culverts, crossings, and other drainage features	100 LF	6	600 LF	3,000 LF
	8 CY		48 CY	240 CY
Streambank Stabilization	60 LF	2	120 LF	600 LF
	300 SF		600 SF	3,000 SF
	10 CY		20 CY	100 CY
Trail bridge replacements	25 LF	2	50 LF	250 LF
	50 SF		100 SF	500 SF
	10 CY		20 CY	100CY
New trail and trail bridges	50 LF	2	100 LF	500 LF
	300SF		600 SF	3,000 SF
	10 CY		20 CY	100 CY
Vehicle bridge replacement	3,000 SF	1	3,000 SF	15,000 SF

Type of Activity	Estimated Typical USACE Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year	Annual Disturbance Estimate	5-Year Program Disturbance Estimate
	25 CY		25CY	125 CY
Pond reconstruction	12,000 SF	1	12,000 SF	60,000 SF
Pond Inlet/Outlet pipe or spillway overflow modification[1]	300 LF	1	300 LF	1,500 LF
	2,000 SF		2,000 SF	10,000 SF
Sediment removal from ponds	900 CY	2	1,800 CY	9,000 CY
	0.40 acre		1 acre	5 acres
Pond vegetation removal	1,000 SF	4	4,000 SF	20,000 SF
Pond berm stabilization	200 LF	1	200 LF	1,000 LF
	400 CY		400 CY	2,000 CY
Structure demolitions/ removal in riparian areas	100 SF	4	400 SF	2,000 SF

[1] Note that many of these activities are typically aboveground maintenance. Midpen conducts these activities for maintenance or for restoration purposes. These activities may be duplicative to other pond activities listed above and below.

Type of Activity	Estimated Typical USACE Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year	Annual Disturbance Estimate	5-Year Program Disturbance Estimate
Stream crossing removal and restoration of natural channel	2,000 SF	4	8,000 SFF	40,000 SF

United States Department of the Interior
FISH AND WILDLIFE SERVICE
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In Reply Refer to:
2023-0044378-S7-001

March 15, 2023

Regulatory Division Chief
Attn: Frances Malamud-Roam
Department of the Army
San Francisco District, Corps of Engineers
450 Golden Gate Avenue
San Francisco, California 94102
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Subject: Formal Consultation on the Midpeninsula Regional Open Space District Open Space Maintenance and Restoration Program (U.S. Army Corps of Engineers File No. 2019-00146) in San Mateo, Santa Clara, and Santa Cruz Counties, California.

Dear Regulatory Division Chief:

This letter is in response to the U.S. Army Corps of Engineers' (Corps) November 24, 2021, request for initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Midpeninsula Regional Open Space District (Midpen) Open Space Maintenance and Restoration Program (Program) in San Mateo, Santa Clara, and Santa Cruz Counties, California. Your request was received by the Service on November 24, 2021. At issue are the Program's effects on the federally listed as threatened California red-legged frog (*Rana draytonii*) and its critical habitat, threatened Central California Distinct Population Segment of the California tiger salamander (*Ambystoma californiense*, California tiger salamander), endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and threatened marbled murrelet (*Brachyrampus marmoratus*). Critical habitat has been designated for the California tiger salamander and marbled murrelet, but none occurs in the project area. This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq*.) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The federal action on which we are consulting is the Corps issuing a permit to Midpen pursuant to Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 et seq.), to implement the Program in San Mateo, Santa Clara, and Santa Cruz Counties, California. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect and is likely to adversely affect the California red-legged frog and its critical habitat, California tiger salamander, and San Francisco garter snake, and that the proposed project may affect, and is not likely to adversely affect the marbled murrelet.

In considering your request, we based our evaluation on the following:

1) The November 24, 2021, initiation letter from the Corps;

2) The Midpen Open Space Maintenance and Restoration Program Biological Assessment (biological assessment) dated April 21, 2021; and

3) Other information available to the Service.

The Service concurs that the proposed project is not likely to adversely affect marbled murrelet. The effects on the marbled murrelet will be insignificant and discountable due to work period restrictions, surveys for nest trees and nesting marbled murrelets, and the implementation of seasonal disturbance minimization buffers to avoid adverse effects to the marbled murrelet.

The remainder of this document provides our biological opinion on the effects of the proposed project on the California red-legged frog and its critical habitat, California tiger salamander, and San Francisco garter snake.

This biological opinion is effective for a period of five (5) calendar years from the date of its issuance and can be extended if deemed appropriate by both agencies. The Service will review this consultation, as appropriate, to ensure that its application is consistent with the intended criteria.

Consultation History

May 21, 2019:	H. T. Harvey & Associates (H. T. Harvey) had a preliminary discussion with the Service regarding the Program.
June 3, 2019:	Midpen, Horizon Water and Environment, and H. T. Harvey staff met with the Service to discuss federally listed species within the Program area and the desire for the Program to be self-mitigating.
August 28, 2020:	The Service received a memo from H. T. Harvey describing Midpen's proposed approach for having incidental take of federally listed species from Program activities covered under the Act.
September 10, 2020:	H. T. Harvey had a phone conversation with the Service regarding coverage for incidental take of federally listed species.
October 13, 2020:	Midpen, Horizon Water and Environment, and H. T. Harvey staff had a conference call with the Service regarding the incidental take coverage mechanism (Recovery Permit vs. Section 7) for Program activities.
November 5, 2020:	Midpen emailed the Service a revised version of Midpen's activity table, indicating Midpen's proposed approach for having Program activities covered by the Recovery Permit vs. Section 7 consultation.
November 30, 2020:	Midpen, Horizon Water and Environment, and H. T. Harvey staff met with the Service to review a table prepared by the Midpen team detailing which activities Midpen anticipates being covered under Section 7 versus the Recovery Permit.

January 22, 2021: The Service indicated in an email to Midpen, Horizon Water and Environment, and H. T. Harvey staff that Program-related fuels management and structural demolition in riparian areas would be covered under Midpen's Recovery Permit.

November 24, 2021: The Service received the initiation of consultation letter from the Corps.

September 29, 2022: Midpen, Horizon Water and Environment, and H. T. Harvey & Associates staff met with the Service to discuss the Program and biological assessment. The Service requested additional information about estimated impacts to species habitat.

October 7, 2022: The Service received a memo from H. T. Harvey & Associates summarizing the acreage of Program effects on species habitat.

BIOLOGICAL OPINION

Description of the Proposed Action

The Program area currently consists of over 64,000 acres of protected open space in the Counties of San Mateo, Santa Clara, and Santa Cruz. Most of these lands are located in 26 preserves (Table 1) within either the Skyline region or Foothills region. However, the Ravenswood Open Space Preserve (OSP) and Stevens Creek Nature Study Area, as well as similar areas along the edge of San Francisco Bay and along the immediate Pacific Ocean shoreline (e.g., west of Highway 1) are not included in the Program area.

Table 1. Existing Midpen Preserves

Preserve	Size (acres)	Miles of Existing Trail	Grazing	Foothill or Skyline Region	County/ Community
Bear Creek Redwoods	1,437	7.2	No	Foothill	Los Gatos
Coal Creek	508	3.7	No	Skyline	Palo Alto Foothills
El Corte de Madera Creek	2,906	34.8	No	Skyline	Redwood City
El Sereno	1,430	6.5	No	Foothill	Los Gatos/ Monte Sereno
Foothills	212	0.2	No	Skyline	Palo Alto/ Los Altos
Fremont Older	739	12.1	No	Foothill	Cupertino
La Honda Creek	6,144	10.6	Yes	Skyline	Redwood City
Long Ridge	2,226	14.1	No	Skyline	La Honda
Los Trancos	274	6	No	Skyline	Los Altos
Miramontes Ridge	1,716	--	No	Skyline	Half Moon Bay
Monte Bello	3,537	18	No	Skyline	Palo Alto/ Los Altos
Picchetti Ranch	308	3.1	No	Foothill	Cupertino
Pulgas Ridge	366	6.2	No	Foothill	San Carlos
Purisima Creek Redwoods	4,798	28.9	Yes	Skyline	Half Moon Bay
Rancho San Antonio	3,988	25.2	No	Foothill	Los Altos Hills

Preserve	Size (acres)	Miles of Existing Trail	Grazing	Foothill or Skyline Region	County/ Community
Ravenswood	374	1.3	No	Foothill	East Palo Alto
Russian Ridge	3,491	13.1	Yes	Skyline	Redwood City
Saratoga Gap	1,613	1.4	No	Skyline	Santa Clara County
Sierra Azul	18,939	25.8	No	Foothill	San Jose
Skyline Ridge	2,143	12.4	Yes	Skyline	La Honda
St. Joseph's Hill	270	4.2	No	Foothill	Los Gatos
Stevens Creek	55	0.7	No	Foothill	Mountain View
Teague Hill	626	.2	No	Skyline	Woodside
Thornewood	167	1.6	No	Skyline	Woodside
Tunitas Creek	1,660	--	Yes	Skyline	San Mateo County
Windy Hill	1,414	13.6	No	Skyline	Portola Valley

The Program area contains over 900 culverts, 150 trail bridges, 25 vehicle bridges, 230 miles of streams (excluding many unmapped seasonal drainages and tributaries), 100 waterbodies, 115 miles of single-track maintained unpaved trails, and 230 miles of maintained roads (including paved, unpaved seasonal, and unpaved all-season) that require maintenance of varying degrees and on varying schedules.

Midpen's preserve system is always expanding. Midpen acquires several hundred acres across multiple properties each year and sometimes thousands of contiguous acres at once from private landowners. Newly acquired properties often come with a number of environmental issues needing attention, including:

- permitted and unpermitted structures built in sensitive environmental areas,
- unpermitted ponds or water diversions,
- invasive species,
- poorly designed and maintained roads, and
- generally degraded infrastructure and disturbed and/or degraded habitat.

Urgent items such as road repairs, removal of invasive species, or other critical natural resources issues must be addressed rapidly and would be addressed as part of this Program. Larger scale projects on new lands take longer to fund and develop and therefore fit well with an individual permit process and are not a subject of this proposed Program.

The Program includes all activities described in Midpen's Manual (Midpen 2021), which is incorporated by reference into this project description. The majority of Midpen's proposed Program activities benefit listed species and their habitats, consistent with Midpen's mission statement. Table 2 provides a summary of activities that are covered by the Program, which includes: (1) routine maintenance activities; (2) small-scale facility improvements and new low

intensity/small footprint facilities; and (3) restoration and enhancement projects. Facility improvements and new facility projects will be included in the Program when they are necessary to maintain preserve facilities and amenities in good condition and can simultaneously reduce the threat of, or correct degradation of, natural environments, particularly where sensitive species will benefit. Refer to Sections 3.4 and 3.6 of the biological assessment for further details of Program activities.

Table 2. Summary of Program Activities by Facility or Feature

Facility or Feature	Typical Examples of Activity Type
Routine Maintenance Activities	
Water supply structures	Spring box and/or water tank maintenance or replacement
	Water line replacement, extensions, or realignments
	Instream diversion intake clearing
Roads	Grading and shaping (may include rocking)
	Culvert repair and replacement
	Removal of asbestos from culverts and other structures
	Sediment and debris removal at inboard ditches and stream crossings (including culvert inlets, outlets, and rocked fords)
	Fords and swales repair and replacement (including new culverts in place of fords)
	Bank stabilization
	Repair of gabion rock or riprap
	Road brushing/mowing
	Vegetation management
	Minor relocation of road segments (unpaved) to correct resource concerns (e.g. erosion, rutting)
	Installation of new roadside and trailside ditch relief culverts at non-stream crossings
	Repair and replacement of driveways
Bridges	Replace decking and handrails
	Minor structural repairs
	Repair and fortify bridge abutments
	Sediment and debris removal
	Addition of surface material to puncheons
	Vegetation management/removal
	Bridge removal or replacement (e.g., increasing span to outside OHWM)
	Removal of lead paint
Roadside/trailside ditches	Replace culverts and ditches
	Replace and repair fords
	Sediment and debris removal
	Vegetation management
	Cleaning ditches
Trails	Grading and shaping
	Culvert repair and replacement
	Repair and replace fords and swales (including with new culverts)
	Bank stabilization
	Repair of gabion rock or riprap

Facility or Feature	Typical Examples of Activity Type
Other Midpen Parks and Open Space features (picnic or rest areas, natural areas, rangeland, staging areas, parking lots, tenant structures, field offices, etc.)	Trail brushing/mowing
	Vegetation management
	Minor relocation
	Sediment and debris removal at channel/trail crossings
	Fire fuel management (e.g. manual, mechanical, grazing, and chemical) for disc lines and fuel breaks
	Maintenance/clearing of defensive space buffers around buildings, staging areas, roads, trails, and use areas
New Facilities and Improvements	
Bridges	Bridge relocation or new installation to reduce resource/water quality impacts
Interpretive facilities and signage	Installation of new low-intensity, small-footprint interpretative facilities and signage at existing preserves
Utilities	Maintenance of septic, telephone, telecommunications, and other utilities etc.
Trails	Reroute existing unpaved trails and provide new trail connections and public access, and single-track trail resurfacing for Americans with Disabilities Act (ADA) compliance
Existing buildings and structures	Repair existing structures to provide habitat for wildlife species
Water infrastructure	Install or replace or remove degraded water infrastructure facilities
Restoration and Enhancement Activities	
Removal of in-stream infrastructure (i.e., impoundments) and collapsed structures (i.e., bridges or culverts) or upsizing of culverts	Creation of aquatic habitat and/or improvement of fisheries habitat, flows, sediment transport
Native vegetation plantings and seeding	Habitat enhancement
Traditional ecological knowledge practices (indigenous stewardship)	Plant gathering, seed collection, and plantings
Wildlife friendly spring box/troughs	Habitat enhancement and prevents wildlife entrapment
Pond and stream restoration	Improve ponds and streams to restore aquatic habitat
Treatment of invasive species	Habitat enhancement
Exclusion fencing	Habitat enhancement to exclude cattle and protect species
Prescribed burns	Habitat enhancement, fuels management, and cultural fire
Conservation grazing	Fuels and species/grassland management
Road decommissioning	Restored hydrology and watershed processes
Well decommissioning	Entrapment hazard removal and water quality protection
Structural demolitions in riparian or other sensitive areas	Habitat enhancement

Midpen has developed self-imposing work limits per activity type to limit the extent of impacts associated with Program activities. The site, annual, and 5-year Program work limits per activity

type are provided in Appendix A (enclosed). The values in Appendix A are estimates and may be revised as Midpen acquires new lands and builds new facilities.

Conservation Measures

The Program uses a tiered approach to address potential effects on federally listed species and habitats, primarily for the purpose of determining when, where, and for what activities avoidance and minimization measures are necessary to minimize potential take of federally listed species. The tiered approach considers past occurrences or observations of federally listed species at or near the site, the general or regional suitability for federally listed species and habitats around the site, the specific resource conditions at the maintenance site to support potential listed species and habitats, and the specific conditions (e.g., time of day, season) when the maintenance activity will occur to determine the potential for take of individuals. This approach is intended to help identify resource and site sensitivity and thereby prioritize impact avoidance and minimization measures and/or Best Management Practices (BMPs) and mitigation needs. The tiering classification may vary from species to species at each location depending upon site-specific conditions. Midpen will classify the Program activity at the site according to one of the following tiers:

- **Tier 1 (No Effect)** – There is no potential for a federally listed species to be present in the maintenance area at any time. For California red-legged frog, California tiger salamander, and San Francisco garter snake, Tier 1 is appropriate if the biologist determines that Program activities would occur in areas where no suitable breeding habitat is present and there is no connectivity between the site and known or potential breeding habitat (so that non-breeding individuals can also be presumed to be absent). No qualified biologist or biological monitor would need to conduct pre-activity surveys or be present during the performance of Tier 1 activities.

- **Tier 2** – A federally listed species could occur, at least at times, at a site, but take will not occur. Tier 2 is applicable if the biologist determines that one or more federally listed species are known to occur or could possibly occur on-site either because (1) suitable breeding habitat is present, or (2) suitable non-breeding habitat is present and there is connectivity between the work site and suitable breeding habitat.

    - **Tier 2A (Not Likely to Adversely Affect)** – The activity will not result in take of federally listed species based on the location and timing of work; although a federally listed species could occur at the location at times, none would be present when the work will occur. For example, California red-legged frogs could potentially occur in numerous work areas during nighttime, wet-season dispersal but are not expected to occur more than 100 feet from aquatic and wetland habitats during daytime, dry-season activities. Pre-activity surveys and monitoring by a qualified biologist or biological monitor are not required for this tier, though either may be conducted (e.g., they may pre-check a work location and/or monitor as a precautionary measure). Examples are dry-season, daytime brushing, minor facility improvements, mowing, or pesticide application consisting of spot-application. During all work, Midpen's trained personnel will look out for federally listed species and contact the Midpen biologist immediately if any animal that could potentially be a federally listed species is observed. If any such individual is encountered, maintenance activities that could potentially affect the species will cease until the species is confirmed to have left the work area on its

own, or until a qualified biologist or biological monitor visits the site to determine whether it is a federally listed species and whether it is in harm's way from the activity. If so, avoidance and minimization measures will then be implemented as described below for Tier 2B activities.

- **Tier 2B (Not Likely to Adversely Affect for individuals but may be considered Likely to Adversely Affect if permanent habitat impacts occur)** – This activity will not result in take of individuals of federally listed species with implementation of BMPs, such as pre-activity surveys, exclusion of individuals from the site, and/or implementation of non-disturbance buffers around active nests of marbled murrelets. Such BMPs would be implemented or overseen as necessary by a qualified biologist or biological monitor. Depending on the sensitivity of the work area and the likelihood that individuals may move into the work area after the pre-activity surveys are conducted, some of these activities may require a biological monitor. Though a qualified biologist would not necessarily be on-site, they would be assigned to each project and would determine when pre-activity surveys and monitoring are necessary and would oversee any avoidance and minimization measures implemented by biological monitors. In addition, as discussed for Tier 2A, trained Midpen maintenance personnel will look out for federally listed species and contact the Midpen biologist immediately if any animal that could potentially be a federally listed species is observed.

  Some Tier 2B activities may result in a permanent loss of habitat. If permanent habitat loss occurs in holdings where federally listed species occur in higher densities and/or with a higher frequency of occurrence, the determination for that activity would be "Likely to Adversely Affect". Permanent habitat loss in holdings where federally listed species occur in lower densities and/or with a lower frequency of occurrence and temporary habitat loss in any holding would be considered Not Likely to Adversely Affect the species.

- **Tier 3 (Likely to Adversely Affect)** – The activity may result in take of federally listed species, even with implementation of BMPs. Tier 3 is applicable if the biologist determines that (1) federally listed species are known to occur or may occur on-site either because suitable breeding habitat is present or suitable non-breeding habitat with connectivity between the site and suitable breeding habitat is present; (2) the federally listed species may be present at the time of day/season in which the Program activity occurs; and (3) federally listed species cannot be effectively excluded from the work area, pre-activity surveys cannot definitively determine the absence of the species, and/or "take" in the form of permanent loss of habitat cannot be avoided. An example Tier 3 project might include pond maintenance activities in California red-legged frog habitat. For these types of activities, Midpen anticipates that BMPs, avoidance and minimization measures, and possibly an on-site qualified biologist would be needed to minimize construction-related effects and avoid adverse effects. Compensatory mitigation may be needed to offset permanent effects on sensitive species and/or habitat.

The proposed tiering categories and approach are useful primarily for determining the appropriate BMPs and the appropriate type of monitor who would assist with take avoidance and minimization (as described in the next paragraph). However, on rare occasions, it is possible that a Tier 2A or 2B activity could result in take, such as if a monitor present during a Tier 2A or 2B

activity observes a listed species that will not move out of the work area on its own and needs to physically relocate the individual. Any such take would be reported to the Service and the California Department of Fish and Wildlife (Department), and in such an instance, Midpen would immediately switch from implementing the existing (Tier 2A or 2B) BMPs and begin implementing Tier 3 BMPs. Therefore, the tiering classifications are not intended to be definitive categories of activities for which take would or would not occur, but rather useful for planning purposes.

The level of qualifications for the monitor is dependent upon the tiering level for a project. Appendix B (enclosed) summarizes the level of qualifications and the sites or situations of when that level of monitor would be required. For Tier 1 projects, no monitor would be required to conduct pre-activity surveys or to be present during the performance of Tier 1 activities. Tier 2A projects do not require pre-activity surveys or monitoring, though either may be conducted by a biological monitor trainee, biological monitor, or wildlife handler. Tier 2B projects do not require a qualified/professional biologist to be on-site, but they would be assigned to each project and would oversee pre-activity surveys and monitoring implemented by a qualified biological monitor. Tier 3 projects would require a qualified/professional biologist to be on-site during activities.

The BMPs in Appendix C (enclosed) will be implemented for all maintenance activities as appropriate and include general avoidance and minimization practices as well as conservation measures focused on biological resources and habitat protection, erosion control, sediment and water quality control, and dewatering. These BMPs reflect current recommended practices. The BMPs in Appendix C are intended to be a living document that will be periodically updated to reflect new BMP technologies and maintenance techniques.

Compensatory Mitigation

Most proposed Program activities will benefit listed species and their habitats, and Program objectives include ensuring that the Program has a net benefit on listed species. Annual mitigation will be identified and implemented as necessary to address any potential impacts, including the need for any compensatory action. Program activities will be notified annually with mitigation needs also identified.

To compensate for impacts associated with Program activities, Midpen may conduct on-site or off-site mitigation approaches. In general, Midpen prioritizes on-site mitigation in locations that provide suitable habitat to restore the type of habitat that was impacted by the activity in the same vicinity or stream reach of where the disturbance occurred. However, in some locations, off-site mitigation is a more suitable option due to the lack of suitable habitat in the surrounding area, re-planting in an already overstocked area, or the availability of higher priority areas that would provide better habitat quality for species. Refer to Section 3.6.5 of the biological assessment for further details on the mitigation approaches that may be utilized by Midpen.

Agency Notification

Midpen will prepare an annual notification report summarizing proposed Program activities for the year and submit to the Service prior to April 1st each year for review. The notification report will summarize anticipated impacts on federally listed species and their habitats, and will describe avoidance and minimization measures, BMPs, and restoration/enhancement projects (or mitigation) that would be implemented to avoid or reduce the Program's potential impacts to

federally listed species and their habitats. Upon receipt of the notification report, the Service will review the material and notify Midpen that the proposed activities, avoidance and minimization measures, and proposed compensation or mitigation are appropriate to be covered by this biological opinion.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." For the proposed project, the action area encompasses the approximately 64,000 acres of land owned or managed by Midpen displayed in Table 1 as well as the lands immediately adjacent that may be indirectly affected.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the 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 considers the effects of the proposed federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the action area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines all consequences to listed species that are caused by the proposed federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of the listed species.

Analytical Framework for the Adverse Modification Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to destroy or to adversely modify designated critical habitat. A final rule revising the regulatory definition of "destruction or adverse modification" (DAM) was published on August 27, 2019 (84 FR 44976). The final rule became effective on October 28, 2019. The revised definition states:

> "*Destruction or adverse modification* means a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species."

The DAM analysis in this biological opinion relies on four components: (1) the *Status of Critical Habitat*, which describes the current rangewide condition of the critical habitat in terms of the

key components (i.e., essential habitat features, primary constituent elements, or physical and biological features) that provide for the conservation of the listed species, the factors responsible for that condition, and the intended value of the critical habitat overall for the conservation/recovery of the listed species; (2) the *Environmental Baseline*, which analyzes the current condition of the critical habitat in the action area without the consequences to designated critical habitat caused by the proposed action, the factors responsible for that condition, and the value of the critical habitat in the action area for the conservation/recovery of the listed species; (3) the *Effects of the Action*, which determines all consequences to designated critical habitat that are caused by the proposed federal action on the key components of critical habitat that provide for the conservation of the listed species, and how those impacts are likely to influence the conservation value of the affected critical habitat; and (4) *Cumulative Effects*, which evaluate the effects of future non-federal activities that are reasonably certain to occur in the action area on the key components of critical habitat that provide for the conservation of the listed species and how those impacts are likely to influence the conservation value of the affected critical habitat. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of critical habitat, the Service formulates its opinion as to whether the action is likely to destroy or adversely modify designated critical habitat. The Service's opinion evaluates whether the action is likely to impair or preclude the capacity of critical habitat in the action area to serve its intended conservation function to an extent that appreciably diminishes the rangewide value of critical habitat for the conservation of the listed species. The key to making that finding is understanding the value (i.e., the role) of the critical habitat in the action area for the conservation/recovery of the listed species based on the *Environmental Baseline* analysis.

Status of the Species

California red-legged frog

For the most recent comprehensive assessment of the California red-legged frog's range-wide status, please refer to the species' 2022 *5-Year Review* (Service 2022). No change in the species' listing status was recommended in this *5-Year Review*. Threats evaluated during that review and discussed in the final document have continued to act on the species since the December 2022 *5-Year Review* was finalized, with loss of habitat being the most significant effect. While there have been continued losses of California red-legged frog habitat throughout the various recovery units, including the proposed Program area, to date no project has proposed a level of effects for which the Service has issued a Biological Opinion of jeopardy for the species.

California tiger salamander

For the most recent comprehensive assessment of the California tiger salamander's range-wide status, please refer to the species' 2014 *5-Year Review* (Service 2014). No change in the species' listing status was recommended in this *5-Year Review*. Threats evaluated during that review and discussed in the final document have continued to act on the species since the October 2014 *5-Year Review* was finalized, with loss of habitat being the most significant effect. While there have been continued losses of California tiger salamander habitat throughout the various recovery units, including the proposed Program area, to date no project has proposed a level of effects for which the Service has issued a Biological Opinion of jeopardy for the species.

San Francisco garter snake

For the most recent comprehensive assessment of the San Francisco garter snake's range-wide status, please refer to the species' 2020 *5-year Review* (Service 2020). No change in the species' listing status was recommended in this *5-year Review*. Threats evaluated during that review and discussed in the final document have continued to act on the species since the May 2020 *5-year Review* was finalized, with loss of habitat being the most significant effect. While there have been continued losses of San Francisco garter snake habitat throughout the species' range, including the proposed Program area, to date no project has proposed a level of effects for which the Service has issued a Biological Opinion of jeopardy for the species.

Status of Critical Habitat

The Service designated critical habitat for the California red-legged frog on April 13, 2006 (71 FR 19244) (Service 2006) and a revised designation to the critical habitat was published on March 17, 2010 (75 FR 12816) (Service 2010). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer et al. 2010).

The primary constituent elements (PCEs) defined for the California red-legged frog were derived from its biological needs. The area designated as revised critical habitat provides aquatic habitat for breeding and non-breeding activities and upland habitat for shelter, foraging, predator avoidance, and dispersal across its range. The PCEs and, therefore, the resulting physical and biological features essential for the conservation of the species were determined from studies of California red-legged frog ecology. Based on the above needs and our current knowledge of the life history, biology, and ecology of the species, and the habitat requirements for sustaining the essential life-history functions of the species, the Service determined that the PCEs essential to the conservation of the California red-legged frog are:

> PCE 1: Aquatic Breeding Habitat. Standing bodies of fresh water (with salinities less than 7.0 parts per thousand), including: natural and manmade (e.g., stock) ponds, slow-moving streams, or pools within streams, and other ephemeral or permanent water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years.
>
> PCE 2: Non-Breeding Aquatic Habitat. Freshwater and wetted riparian habitats, as described above, that may not hold water long enough for the subspecies to hatch and complete its aquatic life cycle but that do provide for shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frogs. Other wetland habitats that would be considered to meet these elements include but are not limited to: plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period.
>
> PCE 3: Upland Habitat. Upland areas adjacent to or surrounding breeding and non-breeding aquatic and riparian habitat up to a distance of 1 mile in most cases and comprised of various vegetational series such as grasslands, woodlands, wetland, or riparian plant species that provide the frog shelter, forage, and predator avoidance. Upland features are also essential in that they are needed to maintain the hydrologic, geographic, topographic, ecological, and edaphic features that support and surround the wetland or riparian habitat. These upland features contribute to the filling and drying of the wetland or riparian habitat and are responsible for maintaining suitable periods of

> pool inundation for larval frogs and tl1eir food sources, and provide breeding, non-breeding, feeding, and sheltering habitat for juvenile and adult frogs (e.g., shelter, shade, moisture, cooler temperatures, a prey base, foraging opportunities, and areas for predator avoidance). Upland habitat should include structural features such as boulders, rocks and organic debris (e.g., downed trees, logs), as well as small mammal burrows and moist leaf litter.
>
> PCE 4: Dispersal Habitat. Accessible upland or riparian dispersal habitat within designated units and between occupied locations within a minimum of 1 mile of each other that allow for movement between such sites. Dispersal habitat includes various natural habitats and altered habitats such as agricultural fields, which do not contain barriers (e.g., heavily traveled road without bridges or culverts) to dispersal. Dispersal habitat does not include moderate to high-density urban or industrial developments with large expanses of asphalt or concrete, nor does it include large reservoirs over 50 acres in size, or other areas that do not contain those features identified in PCEs 1, 2, or 3 as essential to the conservation of the subspecies.

With the revised designation of critical habitat, the Service intended to conserve the geographic areas containing the physical and biological features that are essential to the conservation of the species, through the identification of the appropriate quantity and spatial arrangement of the PCEs sufficient to support the life-history functions of the species.

Environmental Baseline

Environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present impacts of all federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

California red-legged frog

California red-legged frogs are widespread in suitable habitat within the Program area and occur in several Midpen preserves. The California Natural Diversity Database (Diversity Database) maps numerous records of California red-legged frogs within the Program area (Diversity Database 2022). In addition, Midpen has been monitoring California red-legged frogs and their breeding habitats in its preserves since 2009 and has compiled a database of California red-legged frog records throughout many of its preserves. Monitoring work associated with Midpen’s construction activities has also generated data on the occurrence of California red-legged frogs within the Program area.

Midpen’s monitoring data and observations indicate that California red-legged frogs are unlikely to occur in (a) densely forested, upper-watershed areas where the only waterbodies are ephemeral or intermittent streams or very cool, high-gradient perennial streams, or (b) upland areas away from water sources during the dry season. For instance, a population of California red-legged frogs is known to breed and occur in La Honda OSP, which supports 26 stock ponds,

dozens of springs, willow-alder-dominated riparian areas, and large, open grassland communities. However, California red-legged frogs have not been documented breeding or occurring in El Corte de Madera OSP during 16 years of maintenance activities along 25 miles of roads and trails in the summer months, even though perennial streams are present within this preserve. El Corte de Madera OSP is located within 1 mile of La Honda OSP, but is almost entirely vegetated with Douglas fir, coast redwood, and other hardwood trees, and does not support open grasslands or ponds.

The majority of Midpen's preserves that drain to San Francisco Bay have been affected by loss of suitable breeding habitat and populations of bullfrogs sustained by nearby reservoirs. Although these preserves are located within the range of the California red-legged frog, and remnant breeding populations of California red-legged frogs may be present in nearby (i.e., within 1.0 mile) ponds, streams, and/or reservoirs, red-legged frogs are rarely, if ever, encountered within these preserves. For instance, Sierra Azul OSP has warm perennial streams that provide suitable breeding habitat for California red-legged frogs, but few ponds or wetlands. The last recorded observation of California red-legged frogs from this preserve was in 2000, despite extensive biological monitoring throughout the preserve (Diversity Database 2022). As a result, California red-legged frogs are considered to occur within this preserve only in very low densities and/or infrequently.

Based on California red-legged frog occurrence data from the Diversity Database and Midpen, as well as habitat mapping data within Midpen's preserves showing the locations of streams and waterbodies (which provide breeding, foraging, and dispersal habitat for California red-legged frogs) and coniferous and hardwood forests (where Midpen's data indicate that California red-legged frogs are unlikely to occur, especially during the dry season), the likelihood of occurrence of California red-legged frogs within Midpen's preserves, easements, and management areas are identified as follows:

- **Absent.** California red-legged frogs are not known or expected to occur in the preserve. The preserve is isolated from nearby populations of the species by major roadways and development, and California red-legged frogs are considered extirpated from the area.

- **Lower Density/Lower Frequency of Occurrence.** The preserve is located within the range of the California red-legged frog, but there are no known recent breeding occurrences within or adjacent to the preserve, records of the species are limited to infrequent encounters of nonbreeding individuals (e.g., along roads), California red-legged frogs have not been detected during years of monitoring work by Midpen, and/or the preserve is predominantly vegetated by dense coniferous and/or hardwood forest (within which California red-legged frogs are not expected to occur regularly, especially during the dry season). California red-legged frogs may be present in these preserves in low densities and are primarily expected to occur during the wet season when individuals are dispersing across the landscape.

- **Higher Density/Higher Frequency of Occurrence.** California red-legged frogs are known to occur in the preserve or in nearby areas, one or more known breeding ponds is present within the preserve or in nearby areas, the preserve supports one or more streams or waterbodies that provide potential breeding habitat, and/or the preserve supports suitable upland habitat in close proximity to breeding areas nearby. California red-legged frogs are expected to be present in these preserves in higher densities and may be encountered year-round.

Refer to Figure 5 in the biological assessment for a map of the broad-level likelihood of California red-legged frog occurrence within the Program area. This figure is a living document intended to be updated as Midpen obtains new information about California red-legged frog distribution within its holdings.

California red-legged frog Critical Habitat

Designated critical habitat units SNM-1 (Cahill Ridge) and SNM-2 (Pescadero) overlap the Program area, and Miramontes Ridge OSP, a portion of Purisima Creek Redwoods OSP, Tunitas Creek OSP, El Corte de Madera Creek OSP, La Honda Creek OSP, a portion of Windy Hill OSP, Russian Ridge OSP, Skyline Ridge OSP, a portion of Long Ridge OSP, and several Midpen's easements/management areas are located within designated critical habitat.

The portions of Units SNM-1 and SNM-2 that overlap the Program area contain all the features that are essential for the conservation of the species (Primary Constituent Elements 1-4) (Service 2010). The 2010 Critical Habitat designation identifies that the physical and biological features essential to the conservation of California red-legged frog in SNM-1 and SNM-2 may require special management considerations or protection due to development and nonnative invasive plants, which may alter aquatic and upland habitats and thereby result in the direct or indirect loss of egg masses or adults. The critical habitat ruling also states that special management considerations and protections within SNM-1 and SNM-2 may be warranted due to continued threats to the species and its habitat.

California tiger salamander

The California tiger salamander occurs widely in Santa Clara County, and southeastern San Mateo County represents the northernmost limit of the species' range on the San Francisco Peninsula. The species is currently not known to occur in any Midpen preserves (Service 2005). A population of California tiger salamanders is known to occur within the Program area at Lagunita in Palo Alto, and a dispersing individual from this population was detected in San Mateo County just west of San Francisquito Creek in 2002 (Diversity Database 2022). However, urban development limits the potential for California tiger salamanders from this population to disperse surrounding areas. No Program activities are proposed at Lagunita, or in areas close enough to Lagunita to affect individuals (including dispersants) from this population.

A population of California tiger salamanders is also known to occur at Calero County Park and Santa Teresa Hills, approximately 1.8 miles west of the Program area (Diversity Database 2022). Potentially suitable habitat also exists in Almaden Quicksilver County Park, which is located in between these known occurrences and Sierra Azul OSP. If California tiger salamanders occur on Midpen lands, they are most likely to occur along the northeastern edge of Sierra Azul OSP adjacent to Almaden Quicksilver County Park, where some potentially suitable upland habitat exists. No known ponds that provide suitable breeding habitat for California tiger salamanders are present in northeastern Sierra Azul OSP; thus, only nonbreeding dispersants are expected to occur on Midpen lands.

San Francisco garter snake

The San Francisco garter snake occurs on the San Francisco Peninsula from just north of the San Francisco–San Mateo County line south to approximately the San Mateo–Santa Cruz County line. West of the crest of the Santa Cruz Mountains within the Program Area, the San Francisco

garter snake is found in a few localized areas along the coast. East of the crest, it is found from the City of South San Francisco and the San Francisco airport, south to Crystal Springs Reservoir (Stanford University 2012). An intergrade zone composed of hybrids between the San Francisco garter snake and red-sided garter snake (*Thamnophis sirtalis sirtalis*) occurs from Palo Alto north to the Pulgas region near Upper Crystal Springs Reservoir (Barry 1994).

San Francisco garter snakes have been historically documented in four Midpen preserves: Tunitas Creek, Russian Ridge, Skyline Ridge, and Long Ridge OSP (Service 2016). The only Preserve with confirmed presence at this time is Russian Ridge OSP. Midpen has implemented a San Francisco garter snake habitat management plan for the 1,047-acre Mindego Ranch (part of Russian Ridge OSP) to encourage the recovery of the species by improving habitat conditions for the San Francisco garter snake as well as the California red-legged frog, a primary food source for the San Francisco garter snake. San Francisco garter snakes are also found on the Cloverdale property, currently owned by the Peninsula Open Space Trust, and which Midpen intends to purchase in the coming years.

Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

Program implementation will result in direct benefits on habitat for federally listed species by planting native vegetation to enhance and restore upland, wetland, and riparian areas; creating new features such as wetlands and off-channel pools to expand aquatic habitats; decommissioning existing infrastructure (e.g., old roads and culverts) to restore habitats; removing nonnative invasive plants; maintaining high-quality grasslands using grazing and fuel management practices; and reducing sediment accumulation in ponds and streams and removing debris. These benefits will outweigh the minor adverse effects on federal listed species and their habitat that will result from Program activities.

California red-legged frog

Potential direct effects on the California red-legged frog as a result of Program activities include injury or mortality of individuals by equipment, vehicle traffic, and worker foot traffic. Adult California red-legged frogs may also be crushed in their burrows by the passage of heavy equipment or trapped and suffocated. In addition, California red-legged frogs may be injured or killed during prescribed burns. California red-legged frogs that are found during pre-activity surveys and relocated to suitable habitat outside of the activity area may be subjected to physiological stress and greater risk of predation. Program activities may also result in the temporary loss of habitat value within the work area (e.g., due to physical prevention of California red-legged frogs from reaching an area). Avoidance and minimization measures will be utilized to reduce potential adverse effects to the California red-legged frog, including the use of seasonal work windows, use of biological monitors, pre-construction surveys, environmental awareness training, covering all trenches or pits at the end of each day, and use of a Service-approved biologist for all handling of California red-legged frogs (BMPs GEN-18, GEN-19, GEN-21, GEN-24, BIO-1, BIO-2, BIO-9, BIO-11).

Work activities, including noise and vibration, may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation, and may interfere with predator detection, resulting in a decrease in time spent foraging. Additionally, increases in human concentration and activity near suitable habitat may result in an increase in native and non-native predators that are attracted to trash left in the activity area. Implementing BMPs to reduce the area to be disturbed to the minimum necessary and manage waste at the work site will lower the potential for fleeing and reduce the number of predators on site as a result of Program activities (BMPs GEN-2, GEN-7).

Temporary dewatering of creeks, ponds, or wetlands may harm or kill California red-legged frog adults, larvae, and eggs if they are not relocated to suitable habitat. Tadpoles may be injured or killed if entrained by pump or water diversion intakes. In addition, seasonal movements (i.e., breeding, aestivation) and/or daily movements may be temporarily affected because of dewatering or disturbance of non-instream habitat. BMPs that minimize dewatering impacts on habitat, conduct dewatering outside of the California red-legged frog breeding season, screen pump intakes, and manage nonnative aquatic species will reduce potential adverse effects to the California red-legged frog (BMPs DW-1, DW-2, DW-3, BIO-8).

Equipment and boots of maintenance personnel could introduce or spread pathogens such as Bd, which can result in impairment of health, and even mortality, of amphibians. Cleaning equipment and boots between study sites and using gloves when handling individuals at sites with known or suspected disease problems will limit the spread of pathogens as a result of Program activities (BMPs BIO-6, BIO-7, BIO-11).

The loss of riparian vegetation on stream banks may result in indirect effects due to an increase in erosion and sedimentation. Facility maintenance activities may temporarily result in increased turbidity within and downstream from the footprint of the activities due to mobilization of fine sediments. Increased turbidity may impair the health of eggs or larvae and make detection of predators and prey more difficult. Implementing BMPs for erosion and sediment control and reducing the area to be disturbed to the minimum necessary will decrease the amount of sediment that is washed downstream as a result of Program activities (BMPs GEN-2, GEN-3, GEN-16, EC-1, EC-2, EC-3, EC-4, EC-5, SWQ-1, SWQ-2, SWQ-3)

Any replacement of natural or armored banks that provide refugia for California red-legged frogs or their prey, with banks that provide no such refugia (e.g., concrete crib walls or sacked concrete) could result in the loss of upland refugia in the form of crevices, cavities, or small mammal burrows. Such effects could also result in the displacement of invertebrates that serve as a food source for California red-legged frogs. Replacement of natural banks would also preclude the re-establishment of riparian vegetation that provides cover and food for California red-legged frogs and their prey. Conversely, replacement of “hard” bank substrates with “softer” substrates, which could also potentially occur under the Program, would enhance California red-legged frog habitat by increasing the availability of riparian vegetation and small mammal burrows to California red-legged frogs.

Herbicides that may be used to remove vegetation could have sublethal or lethal effects to the California red-legged frog if runoff occurs into aquatic features or they are used at the wrong time or at a dosage harmful to the species. These herbicides could also have indirect effects, such as a reduction in the availability of food items (e.g., invertebrates) and in the suitability of habitat (e.g., reduction in abundance of aquatic and terrestrial plants). In addition, petrochemicals, hydraulic fluids, and solvents that are spilled or leaked from construction vehicles or equipment

may kill individuals at any life stage. Implementing BMPs to ensure the proper handling, storage, and disposal of hazardous materials and waste will minimize adverse effects on California red-legged frogs (BMPs GEN-5, GEN-6, GEN-7, GEN-8, GEN-9, GEN-11, GEN-13, GEN-14, GEN-26).

Effects of Program activities on California red-legged frog habitat, and on the species, will be relatively low proportionally. Approximately 9,535 acres (14.9 percent) of the 64,000 acres in the Program area for California red-legged frog would be temporarily or permanently affected by activities in the five-year period (Table 3). While this is an overestimation of the proportion of habitat affected (because not all of the Program area is habitat and the affected area may not be suitable habitat), the proportion affected would still be a small percentage.

BMPs will be implemented for all activities; however, Midpen will adjust its strategy for implementation of California red-legged frog BMPs based on the impact tier assigned to each activity, as discussed in the *Conservation Measures*.

Existing breeding ponds will be maintained as high-quality habitat through the management of vegetation, sediment, and invasive animals such as nonnative fish and bullfrogs, and new breeding ponds will be created. New large woody materials and native riparian vegetation will be installed to provide upland refugia and dispersal habitat. As a result of these and other restoration and enhancement measures, the Program will increase the value of existing aquatic and upland habitats for California red-legged frogs, in addition to creating new habitats in the Program area.

Table 3. Estimated Acreage of Program Effects to Potential California Red-legged Frog Habitat

Activity Type	Estimate of Maximum Annual Effects (ac)	Estimate of Maximum Five-Year Effects (ac)
Culvert, bridge, channel, pond, and other maintenance	1	5
Vegetation management	1,850	9,280
Road and trail maintenance	30	130
New small-scale facilities improvements	10	40
Restoration and enhancement projects	20	80
Total	**1,911**	**9,535**

California red-legged frog Critical Habitat

The action area contains designated critical habitat for the California red-legged frog, and some Program areas are located within critical habitat. The PCEs of critical habitat for the California red-legged frog that are present in the action area, and the effects of the Program on these PCEs are summarized in Table 4.

Program activities will result in both adverse and beneficial effects on PCEs of designated critical habitat for the California red-legged frog. Implementation of BMPs will avoid or minimize the majority of temporary impacts on these PCEs, and the Program will result in a net benefit to designated critical habitat for California red-legged frogs by protecting, enhancing, and

managing aquatic breeding habitat, aquatic nonbreeding habitat, upland habitat, and dispersal habitat for the species.

Table 4. Effects of the Program on Primary Constituent Elements of California Red-legged Frog Critical Habitat

PCE	Program Potential Effects
Aquatic breeding habitat	Program activities may adversely affect water quality in potential breeding habitat and remove instream vegetation that could potentially provide substrate for attachment of red-legged frog egg masses. However, implementation of BMPs GEN-1, 2, 3, 5, 6, 9, 12, 14, 19, 20, 23, 26, 28, 29, 30, 32, 33, and 34; EC-1 through EC-5; and SWQ-1 through SWQ-3 will minimize the potential for these adverse effects.
Aquatic non-breeding habitat	Program activities may adversely affect water quality and vegetative cover in non-breeding aquatic habitat by removing instream vegetation that is causing a reduction in conveyance capacity, but which also provides escape cover for red-legged frogs. Replacement of natural banks with hardscape would preclude the re-establishment of riparian vegetation that provides cover and food for red-legged frogs and their prey. Conversely, replacement of "hard" bank substrates with "softer" substrates, which could also potentially occur under the Program, would enhance habitat by increasing the availability of riparian vegetation and small mammal burrows. However, implementation of BMPs GEN-1, 2, 3, 5, 6, 9, 12, 14, 19, 20, 23, 26, 28, 29, 30, 32, 33, and 34; EC-1 through EC-5; and SWQ-1 through SWQ-3 will minimize the potential for these adverse effects.
Upland habitat	Program activities may adversely affect upland habitat by reducing the availability of refugia due to addition of hardscape (e.g., for bank stabilization) and compaction of crevices/holes by the passage of heavy construction equipment. However, implementation of BMPs GEN-1 2, 5, 6, 8, 16, 23, 25, 26, and 27; and EC-1, 4, and 5 will minimize the potential for these adverse effects.
Dispersal habitat	Daily movements throughout individuals' home ranges may be temporarily affected during maintenance activities because of disturbance. Such activities may also result in the temporary loss of habitat value within the maintenance area (e.g., due to physical prevention of frogs from reaching an area). Seasonal movements may also be affected depending on the timing and duration of maintenance activities. Loss of small mammal burrows in work areas (e.g., due to addition of hardscape or compaction of crevices/holes by the passage of heavy construction equipment) will reduce the availability of upland refugia in dispersal habitat to some extent. However, implementation of BMPs GEN-1 2, 3, 5, 6, 8, 9, 12, 14, 16, 18, 19, 20, 23, 25, 26, 27, 28, 29, 30, 32, 33, and 34; EC-1 through EC-5; and SWQ-1 through SWQ-3 will minimize the potential for these adverse effects.

California tiger salamander

Only Program activities in the northeastern portion of Sierra Azul OSP have the potential to adversely affect the California tiger salamander or its habitat. Very low numbers of nonbreeding individuals may be present in wetlands within the northeastern portion of Sierra Azul OSP, or in uplands used for access to Program maintenance activities. No potential breeding habitat for this species will be affected by Program activities.

Potential direct effects on the California tiger salamander as a result of Program activities include injury or mortality of individuals by equipment, vehicle traffic, and worker foot traffic. Adult California tiger salamanders may also be crushed in their burrows by the passage of heavy equipment or trapped and suffocated. In addition, California tiger salamanders may be injured or killed during prescribed burns. California tiger salamanders that are found during pre-activity surveys and relocated to suitable habitat outside of the activity area may be subjected to physiological stress and greater risk of predation. Program activities may also result in the temporary loss of habitat value within the work area (e.g., due to physical prevention of California tiger salamanders from reaching an area). Avoidance and minimization measures will be utilized to reduce potential adverse effects to the California tiger salamander, including the use of seasonal work windows, use of biological monitors, pre-construction surveys, environmental awareness training, covering all trenches or pits at the end of each day, and use of a Service-approved biologist for all handling of California tiger salamanders (BMPs GEN-1, GEN-2, GEN-18, GEN-19, GEN-21, GEN-24, BIO-1, BIO-2, BIO-9, BIO-25).

Work activities, including noise and vibration, may cause individuals to move out of refugia, exposing them to a greater risk of predation or desiccation, and may interfere with predator detection, resulting in a decrease in time spent foraging. Additionally, increases in human concentration and activity near suitable habitat may result in an increase in native and non-native predators that are attracted to trash left in the activity area. Implementing BMPs to reduce the area to be disturbed to the minimum necessary and manage waste at the work site will lower the potential for fleeing and reduce the number of predators on site as a result of Program activities (BMPs GEN-2, GEN-7).

Temporary dewatering of creeks, ponds, or wetlands may harm or kill California tiger salamander adults, larvae, and eggs if they are not relocated to suitable habitat. Tadpoles may be injured or killed if entrained by pump or water diversion intakes. In addition, seasonal movements (i.e., breeding, aestivation) and/or daily movements may be temporarily affected because of dewatering or disturbance of non-instream habitat. BMPs that minimize dewatering impacts on habitat, conduct dewatering outside of the California tiger salamander breeding season, screen pump intakes, and manage nonnative aquatic species will reduce potential adverse effects to the California tiger salamander (BMPs DW-1, DW-2, DW-3, BIO-8).

Equipment and boots of maintenance personnel could introduce or spread pathogens such as Bd. Cleaning equipment and boots between study sites and using gloves when handling individuals at sites with known or suspected disease problems will limit the spread of pathogens as a result of Program activities (BMPs BIO-6, BIO-7, BIO-25).

The loss of riparian vegetation on stream banks may result in indirect effects due to an increase in erosion and sedimentation. Facility maintenance activities may temporarily result in increased turbidity within and downstream from the footprint of the activities due to mobilization of fine sediments. Increased turbidity may impair the health of eggs or larvae and make detection of predators and prey more difficult. Implementing BMPs for erosion and sediment control and reducing the area to be disturbed to the minimum necessary will decrease the amount of sediment that is washed downstream as a result of Program activities (BMPs GEN-2, GEN-3, GEN-16, EC-1, EC-2, EC-3, EC-4, EC-5, SWQ-1, SWQ-2, SWQ-3)

Any replacement of natural or armored banks that provide refugia for California tiger salamanders or their prey, with banks that provide no such refugia (e.g., concrete crib walls or sacked concrete) could result in the loss of upland refugia in the form of crevices, cavities, or

small mammal burrows. Such effects could also result in the displacement of invertebrates that serve as a food source for California tiger salamanders. Replacement of natural banks would also preclude the re-establishment of riparian vegetation that provides cover and food for California tiger salamanders and their prey. Conversely, replacement of "hard" bank substrates with "softer" substrates, which could also potentially occur under the Program, would enhance California tiger salamander habitat by increasing the availability of riparian vegetation and small mammal burrows to California tiger salamanders.

Herbicides that may be used to remove vegetation could have sublethal or lethal effects to the California tiger salamander if runoff occurs into aquatic features or they are used at the wrong time or at a dosage harmful to the species. These herbicides could also have indirect effects, such as a reduction in the availability of food items (e.g., invertebrates) and in the suitability of habitat (e.g., reduction in abundance of aquatic and terrestrial plants). In addition, petrochemicals, hydraulic fluids, and solvents that are spilled or leaked from construction vehicles or equipment may kill individuals at any life stage. Implementing BMPs to ensure the proper handling, storage, and disposal of hazardous materials and waste will minimize adverse effects on California tiger salamanders (BMPs GEN-5, GEN-6, GEN-7, GEN-8, GEN-9, GEN-11, GEN-13, GEN-14, GEN-26).

BMPs will be implemented for all activities; however, Midpen will adjust its strategy for implementation of California tiger salamander BMPs based on the impact tier assigned to each activity, as discussed in the *Conservation Measures*.

San Francisco garter snake

Potential direct effects on the San Francisco garter snake as a result of Program activities include injury or mortality of individuals by equipment, vehicle traffic, and worker foot traffic. Individuals may also be crushed in their burrows by the passage of heavy equipment or trapped and suffocated. In addition, San Francisco garter snakes may be injured or killed during prescribed burns. San Francisco garter snakes that are found during pre-activity surveys and relocated to suitable habitat outside of the activity area may be subjected to physiological stress and greater risk of predation. Program activities may also result in the temporary loss of habitat value within the work area (e.g., due to physical prevention of San Francisco garter snakes from reaching an area). Avoidance and minimization measures will be utilized to reduce potential adverse effects to the San Francisco garter snake, including the use of seasonal work windows, use of biological monitors, pre-construction surveys, environmental awareness training, covering all trenches or pits at the end of each day, and use of a Service-approved biologist for all handling of San Francisco garter snakes (BMPs GEN-1, GEN-2, GEN-18, GEN-19, GEN-21, GEN-24, BIO-1, BIO-2, BIO-9, BIO-10).

Work activities, including noise and vibration, may cause individuals to move out of refugia areas, exposing them to a greater risk of predation or desiccation, and may interfere with predator detection, resulting in a decrease in time spent foraging. Additionally, increases in human concentration and activity near suitable habitat may result in an increase in native and non-native predators that are attracted to trash left in the activity area. Implementing BMPs to reduce the area to be disturbed to the minimum necessary and manage waste at the work site will lower the potential for fleeing and reduce the number of predators on site as a result of Program activities (BMPs GEN-2, GEN-7).

Temporary dewatering of creeks, ponds, or wetlands may harm or kill San Francisco garter snakes. In addition, seasonal movements (i.e., breeding, aestivation) and/or daily movements throughout their home range may be temporarily affected because of dewatering or disturbance of non-instream habitat. BMPs that minimize dewatering impacts on habitat, screen pump intakes, and manage nonnative aquatic species will reduce potential adverse effects to the San Francisco garter snake (BMPs DW-1, DW-2, DW-3, BIO-8).

Equipment and boots of maintenance personnel could introduce or spread pathogens. Cleaning equipment and boots between study sites and using gloves when handling individuals at sites with known or suspected disease problems will limit the spread of pathogens as a result of Program activities (BMPs BIO-6, BIO-7, BIO-10).

The loss of riparian vegetation on stream banks may result in indirect effects due to an increase in erosion and sedimentation. Facility maintenance activities may temporarily result in increased turbidity within and downstream from the footprint of the activities due to mobilization of fine sediments. Increased turbidity may impair the health of San Francisco garter snakes and make detection of predators and prey more difficult. Implementing BMPs for erosion and sediment control and reducing the area to be disturbed to the minimum necessary will decrease the amount of sediment that is washed downstream as a result of Program activities (BMPs GEN-2, GEN-3, GEN-16, EC-1, EC-2, EC-3, EC-4, EC-5, SWQ-1, SWQ-2, SWQ-3)

Any replacement of natural or armored banks that provide refugia for San Francisco garter snakes or their prey, with banks that provide no such refugia (e.g., concrete crib walls or sacked concrete) could result in the loss of upland refugia in the form of crevices, cavities, or small mammal burrows. Replacement of natural banks would also preclude the re-establishment of riparian vegetation that provides cover and food for San Francisco garter snakes and their prey. Conversely, replacement of “hard” bank substrates with “softer” substrates, which could also potentially occur under the Program, would enhance San Francisco garter snake habitat by increasing the availability of riparian vegetation and small mammal burrows to San Francisco garter snakes.

Herbicides that may be used to remove vegetation could have sublethal or lethal effects to the San Francisco garter snake if runoff occurs into aquatic features or they are used at the wrong time or at a dosage harmful to the species. These herbicides could also have indirect effects, such as a reduction in the availability of food items (e.g., California red-legged frog and Pacific tree frog) and in the suitability of habitat (e.g., reduction in abundance of aquatic and terrestrial plants). In addition, petrochemicals, hydraulic fluids, and solvents that are spilled or leaked from construction vehicles or equipment may kill individuals. Implementing BMPs to ensure the proper handling, storage, and disposal of hazardous materials and waste will minimize adverse effects on San Francisco garter snakes (BMPs GEN-5, GEN-6, GEN-7, GEN-8, GEN-9, GEN-11, GEN-13, GEN-14, GEN-26).

BMPs will be implemented for all activities; however, Midpen will adjust its strategy for implementation of San Francisco garter snake BMPs based on the impact tier assigned to each activity, as discussed in the *Conservation Measures*.

Existing ponds will be maintained as high-quality habitat for the San Francisco garter snake through the management of vegetation, sediment, and invasive animals such as nonnative fish and bullfrogs, and new breeding ponds will be created. New large woody materials and native riparian vegetation will be installed to provide upland refugia and dispersal habitat. As a result of

these and other restoration and enhancement measures, the Program will increase the value of existing aquatic and upland habitats for San Francisco garter snakes, in addition to creating new habitats in the Program area.

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. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. During this consultation, the Service did not identify any future non-federal actions that are reasonably certain to occur in the action area of the proposed project.

Conclusion

After reviewing the current status of the California red-legged frog, California tiger salamander, and San Francisco garter snake, the environmental baseline for the action area, the effects of the proposed Midpen Open Space Maintenance and Restoration Program, and the cumulative effects, it is the Service's biological opinion that the Midpen Open Space Maintenance and Restoration Program, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog, California tiger salamander, or San Francisco garter snake. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following:

1) Adverse effects to the California red-legged frog, California tiger salamander, and San Francisco garter snake will be reduced by implementation of the described *Conservation Measures* and *Compensatory Mitigation*;

2) The degradation of aquatic habitat for the California red-legged frog, California tiger salamander, and San Francisco garter snake will be minimized through the implementation of water quality BMPs;

3) The handling and relocation of California red-legged frogs, California tiger salamanders, and San Francisco garter snakes as a conservation measure is not anticipated to substantially increase their risk of mortality or substantially interfere with their foraging, sheltering, and breeding activities; and

4) Program implementation will have a net benefit to California red-legged frogs, California tiger salamanders, and San Francisco garter snakes by enhancing and restoring habitat for the species.

After reviewing the current status of designated critical habitat for the California red-legged frog, the environmental baseline for the action area, the effects of the proposed Midpen Open Space Maintenance and Restoration Program, and the cumulative effects, it is the Service's biological opinion that the Midpen Open Space Maintenance and Restoration Program, as proposed, is not likely to destroy or to adversely modify designated critical habitat. The Service reached this conclusion because the project-related effects to the designated critical habitat, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will

not rise to the level of precluding the function of the California red-legged frog critical habitat to serve its intended conservation role for the species based on the following:

1) The effects to California red-legged frog critical habitat are small and discrete, relative to the entire area designated, and are not expected to appreciably diminish the value of the critical habitat or prevent it from sustaining its role in the conservation of the California red-legged frog; and

2) Primary constituent elements for the California red-legged frog Critical Habitat Units SNM-1 and SNM-2 will remain intact and will be protected and enhanced by Program implementation, maintaining their ability to continue conservation and recovery of California red-legged frogs.

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 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. Harass is defined by Service regulations at 50 CFR 17.3 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 behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including 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 intended as part 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.

The measures described below are non-discretionary and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant 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. In order to monitor the impact of incidental take, the Corps 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)].

Amount or Extent of Take

California red-legged frog

The Service anticipates that incidental take of California red-legged frogs will be difficult to detect due to its life history and ecology. Specifically, California red-legged frogs can be difficult to locate due to their cryptic appearance and finding a dead or injured individual is unlikely due to their relatively small size. Losses of California red-legged frogs may also be difficult to

quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. There is a risk of harm, injury, and mortality as a result of the proposed activities, and temporary loss/degradation of suitable habitat. However, proper implementation of all measures should be effective in minimizing incidental take due to harm, injury, or mortality. Therefore, the Service anticipates that all California red-legged frogs within the action area will be subject to incidental take in the form of non-lethal harm and capture over the five-year period (2023-2027). The Service also anticipates that no more than three (3) California red-legged frog individuals per year and a maximum of fifteen (15) California red-legged frog individuals over five years would be killed or injured as a result of project-related activities and would be detected by biological monitors.

Upon implementation of the following reasonable and prudent measures, incidental take of California red-legged frogs associated with the Midpen Open Space Maintenance and Restoration Program will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

California tiger salamander

The Service anticipates that incidental take of California tiger salamanders will be difficult to detect due to its life history and ecology. Specifically, California tiger salamanders can be difficult to locate due to their cryptic appearance and finding a dead or injured individual is unlikely due to their relatively small size. Losses of California tiger salamanders may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. There is a risk of harm, injury, and mortality as a result of the proposed activities, and temporary loss/degradation of suitable habitat. However, proper implementation of all measures should be effective in minimizing incidental take due to harm, injury, or mortality. Therefore, the Service anticipates that all California tiger salamanders within the action area will be subject to incidental take in the form of non-lethal harm and capture. The Service also anticipates that no more than one (1) California tiger salamander individual per year and a maximum of five (5) California tiger salamander individuals over five years would be killed or injured as a result of project-related activities and would be detected by biological monitors.

Upon implementation of the following reasonable and prudent measures, incidental take of California tiger salamanders associated with the Midpen Open Space Maintenance and Restoration Program will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

San Francisco garter snake

The Service anticipates that incidental take of San Francisco garter snakes will be difficult to detect due to their relatively small size. The project footprint includes vegetative cover, rocks, and debris which provide cover for the San Francisco garter snake. Furthermore, finding an injured or dead San Francisco garter snake is unlikely due to their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger or indistinguishable amongst the disturbed soil and debris. Losses of the San Francisco garter snake may also be difficult to quantify due to seasonal/annual fluctuations in their numbers due to environmental or human-caused disturbances. Therefore, the Service anticipates that all San Francisco garter snakes within the action area will be subject to incidental take in the form of non-lethal harm and capture. The Service also anticipates that no more than one (1) San

Francisco garter snake per year and a maximum of five (5) San Francisco garter snakes over five years would be killed or injured as a result of project-related activities and would be detected by biological monitors.

Upon implementation of the following reasonable and prudent measures, incidental take of California red-legged frogs associated with the Midpen Open Space Maintenance and Restoration Program will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the California red-legged frog, California tiger salamander, and San Francisco garter snake resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the California red-legged frog, California tiger salamander, and San Francisco garter snake:

1) All conservation measures, as described in the biological assessment and restated here in the *Description of the Proposed Action* section of this biological opinion, shall be fully implemented and adhered to. Further, this reasonable and prudent measure shall be supplemented by the terms and conditions below.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

1. The Corps or the applicant shall include full implementation and adherence to the conservation measures as a condition of any permit or contract issued for the project.

2. The Corps or the applicant shall require that all personnel associated with this project are made aware of the conservation measures and the responsibility to implement them fully.

3. If requested, the applicant shall ensure the Service or their authorized agents can examine the action area for compliance with the *Description of the Proposed Action*, *Conservation Measures*, and *Terms and Conditions* of this biological opinion before, during, or after project completion.

Monitoring:

1. The Corps or the applicant shall immediately contact the Service's Sacramento Fish and Wildlife Office (Sacramento Office) at (916) 414-6623 to report direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harm, injury, or death occurs. If the encounter occurs after normal working

hours, the Corps shall contact the Sacramento Office at the earliest possible opportunity the next working day. When injured or killed individuals of the listed species are found, the Corps shall follow the steps outlined in the *Salvage and Disposition of Individuals* section below.

2. For those components of the action that will require the capture and relocation of any listed species, the Corps or the applicant shall immediately contact the Sacramento Office at (916) 414-6623 to report the action. If capture and relocation need to occur after normal working hours, the Corps shall contact the Sacramento Office at the earliest possible opportunity the next working day.

3. For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, the Corps or the applicant shall provide a precise accounting of the total acreage of habitat impacted to the Service after completion of construction.

4. The Corps or the applicant shall provide annual reports to the Service summarizing the projects done that year by the Program, including but not limited to: a summary of encounters with listed species, including specific date and location descriptions, acres of habitat degraded by habitat type, and acres of mitigation completed for each project.

Salvage and Disposition of Individuals

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Coast Bay Division Supervisor at the Sacramento Office at (916) 414-6623.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs federal agencies to utilize 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. The Service recommends the following actions:

1) Observations of listed species should be submitted to the California Natural Diversity Database (https://wildlife.ca.gov/Data/CNDDB) within sixty days of observation.

2) The Corps through the applicant should assist the Service in implementing recovery actions identified in the *Recovery Plan for the California Red-legged frog (Rana aurora draytonii)* (Service 2002).

3) The Corps through the applicant should assist the Service in implementing recovery actions identified in the *Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (Ambystoma californiense)* (Service 2017).

4) The Corps through the applicant should assist the Service in implementing recovery actions identified in the *Recovery Plan for the San Francisco Garter Snake (Thamnophis sirtalis tetrataenia)* (Service 1985).

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the Midpen Open Space Maintenance and Restoration Program. As provided in 50 CFR §402.16(a), reinitiation of consultation is required and shall be requested by the federal agency or by the Service where discretionary federal involvement or control over the action has been retained or is authorized by law, and:

1) If the amount or extent of taking specified in the incidental take statement is exceeded;

2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or written concurrence, or

4) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Stephanie Levins, Senior Fish and Wildlife Biologist (stephanie_levins@fws.gov) or Ryan Olah, Coast Bay Division Supervisor (ryan_olah@fws.gov), at the letterhead address or at (916) 414-6623.

Sincerely,

Michael Fris
Field Supervisor

Enclosure

ec:
Bridget Lillis, Horizon Water and Environmental, Oakland, California
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Steve Rottenborn, H. T. Harvey & Associates, Los Gatos, California
Julie Andersen, Midpeninsula Regional Open Space District
U.S. Army Corps of Engineers, San Francisco, California

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APPENDIX A

Type of Activity	Limits per site (linear feet [LF]; square feet [SF]; cubic yards [CY])	Average Number of sites per year	Maximum Number of Sites Per Year	Annual limits	5-Year Program limits	Estimated Typical Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year
Culvert, Bridge, Channel, Pond and Other Maintenance							
Culvert repair/replacement	150 LF, 3,000 SF	25	50	20,000 SF	60,000 SF	1,500 SF	25
	100 CY culvert replacement			5,000 CY	25,000 CY	50 CY	
	10 CY culvert repair			7,500 LF	15,000 LF	90 LF	
Bridge repair/maintenance (railing, decking, minor abutment or armoring)	100 LF; work area is limited to 25 LF upstream/downstream of site	5	10	400 LF	2,500 LF	50 LF; 1,500 SF	5
	5 CY (grading primarily on approach)			20 CY	100 CY	2 CY	
Road and trail ditch clearing and installation	30 CY of sediment and debris removal for every 300 LF; 500 LF	15	50	9,000 LF	45,000 LF	150 LF; 5 CY; 600 SF	5
Fords/ swales replacement, repair, and maintenance	200 LF	2	6	2,000 LF; 5,000 SF	10,000 LF	100 LF; 600 SF	2
	20 CY			120 CY	600 CY	10 CY	
Annual pre-rainstorm preparation and clearing (i.e., hand shovel clearing of fords, rolling dips, ditches, culverts, etc.)	5 CY	100	200	100 CY	500 CY	1 CY	50
Sediment removal from channels (e.g., from landslides, road failures, or slip-outs)	100 LF	10	20	1,000 LF for all sediment removal sites	1,000 LF	40 LF	10
	4,000 SF			Dewatering limit of 1,000 LF for all sites.	20,000 SF	200 SF	
	10 CY			100 CY	1,000 CY	4 CY	
Sediment removal from culverts, crossings, and other drainage features	150 LF Dewatering limit 300 LF	3 sites in an average hydrologic year (based on average seasonal precipitation)	8	23,000 LF; 12,000 SF	15,000 LF; 48,000 SF	100 LF	3

Type of Activity	Limits per site (linear feet [LF]; square feet [SF]; cubic yards [CY])	Average Number of sites per year	Maximum Number of Sites Per Year	Annual limits	5-Year Program limits	Estimated Typical Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year
	10 CY	8 sites in a wet hydrologic year		200 CY	1,000 CY	8 CY	
Streambank Stabilization	100 LF; 1,000 SF	2 projects in an average hydrologic year	4	200 LF	1,000 LF	60 LF; 600 SF	2
		4 projects in wet hydrologic year		400 LF	2,000 LF		
Water supply structure maintenance (instream)	Vegetation removal is limited to 30 to 100 ft buffer; 4 CY removed per site	2	4	500 SF	2,500 SF	100 SF	2
Minor maintenance activities (i.e., repair of fences, gates, signage, and trash rack clearing)	200 SF	3	6	1,000 SF	5,000 SF	80 SF	1
	4 CY			20 CY	100 CY	1 CY	
Vegetation Management Activities							
Riparian or pond adjacent tree removal (inclusive of all Program activities)	Trees between 6" dbh and 24" dbh. No trees greater than 24"dbh would be removed (unless for public safety reasons).	12 trees	36 trees	30 trees	150 trees	750 SF (assumes 30-inch diameter canopy)	12
Tree trimming/pruning (inclusive of all Program activities)	No more than 25% of individual tree canopy would be trimmed/pruned	300 trees	750 trees	750 trees	3,750 trees	500 SF	75
Non-native vegetation removal	4 acres of treatment per site Typical site involves 15% cover over 8 acres	300 acres	450 acres	450 acres	2,250 acres	2,000 SF	35
Vegetation management along roads/trails	Typically, 10 feet on either side of a road or 3 feet along a trail. Steeper side slopes in chaparral and hardwood forest may call for a 10-foot buffer along a road.	230 miles of road/trail	350 miles of road and trail; 665 acres	774 acres	3,870 acres	720 SF (assumed 60-feet along riparian areas with 12-foot treatment area)	50

Type of Activity	Limits per site (linear feet [LF]; square feet [SF]; cubic yards [CY])	Average Number of sites per year	Maximum Number of Sites Per Year	Annual limits	5-Year Program limits	Estimated Typical Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year
Fuels management along roads and trails	Typically 100-foot shaded fuel break and 100-foot lighter fuels treatment beyond in each area every 5 years.	8 sites	12 sites, approximately 1 mile per project	80 acres 12 miles of roads	400 acres 60 miles of roads	*See ecosystem resiliency; all Fuels treatments in jurisdictional areas will follow Resiliency treatments.	2 to 4
Vegetation management around open space facilities (i.e., for defensible space)	100-foot buffer around each building, 15,000 SF	100 sites, 35 acres[1]	150 buildings	50 acres	250 acres	50 SF	10
Ecosystem Resiliency Fuel Treatments	TBD	10	20	500 acres	2,500 acres	720 SF	2 to 4 fuel sites and 2 to 4 ecosystem resiliency sites
Road and Trail Maintenance							
Paved road surface maintenance (major work)	10,000 LF	2	4	20,000 LF	60,000 LF	500 LF (adjacent to ditches)	1
Minor paved road repair (potholes, tack oil, small subgrade failures)	300 SF 200 LF	5	10	3,000 SF 2,000 LF	15,000 SF 10,000 LF	10 LF (adjacent to ditches)	1
Unpaved road surface maintenance (major sites more than 1,000 LF)	20,000 LF 100 CY	15	30	75,000 LF	375,000 LF	1,000 LF	12
Trail maintenance repair (major sites more than 1,000 LF)	20,000 LF 100 CY	10	15	25,000 LF	125,000 LF	600 LF	8
Road relocation	500 LF	1	2	1,000 LF	5,000 LF	60 LF	1
	10,000 SF			20,000 SF	100,000 SF	850 SF	
	1,500 CY			2,500 CY	12,500 CY	-	
Trail reroutes	500 LF	0	2	1,000 LF	5,000 LF	80 LF	0

[1] These numbers may increase as Midpen acquires new lands and constructs new trails and other facilities.

Type of Activity	Limits per site (linear feet [LF]; square feet [SF]; cubic yards [CY])	Average Number of sites per year	Maximum Number of Sites Per Year	Annual limits	5-Year Program limits	Estimated Typical Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year
	3,000 SF			4,000 SF	20,000 SF	1,500 SF	
	200 CY			200 CY	1,000 CY	40 CY	
Roadway/trail slip-outs and slide repairs	250 LF	5	10 (or 20 sites in a wet hydrologic year)	2,500 LF	12,500 LF	100 LF	3
	4,000 SF			40,000 SF	200,000 SF	2,000 SF	
	100 CY			1,000 CY	5,000 CY	20 CY	
New Small-Scale Facilities Improvements							
New trails and roads construction							
Trail bridge replacements	100 LF	2	4	200 LF	10,000 LF	50 LF	2
	2,000 SF			4,000 SF	20,000 SF	500 SF	
	20 CY			40 CY	200 CY	15 CY	
New trail and trail bridges	100 LF	2	4	400 LF	2,000 LF	100 LF	2
	2,000 SF			8,000 SF	40,000 SF	1,500 SF	
	50 CY			200 CY	1,000 CY	25 CY	
New trail (uplands)	5,800 LF	2	4	10,000 LF	50,000 LF	100 LF	2
	45,000 SF			90,000 SF	450,000 SF	1,500 SF	
	800 CY			16,000 CY	80,000 CY	25 CY	
Vehicle bridge replacement	200 LF	1	2	200 LF	1,000 LF	3,000 SF	1
	4,000 SF			4,000 SF	20,000 SF		
	200 CY			200 CY	1,000 CY		
New Conservation Grazing Infrastructure							
Water lines	6,000 LF	2	4	18,000 LF	90,000 LF	20 SF	1
	60,000 SF			180,000 SF	900,000 SF		
	330 CY			1,000 CY	5,000 CY		
Spring box	200 LF	2	4	400 LF	2,000 LF	30 SF	2
	100 SF			200 SF	1,000 SF		

Type of Activity	Limits per site (linear feet [LF]; square feet [SF]; cubic yards [CY])	Average Number of sites per year	Maximum Number of Sites Per Year	Annual limits	5-Year Program limits	Estimated Typical Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year
	10 CY			20 CY	1000 CY		
Tanks, troughs	200 LF	2	4	8,000 LF		10 SF	1
	300 SF			1,200 SF			
	10 CY			40 CY			
Pond diversion	200 LF	0	2	200 LF		50 SF	0
	100 SF			100 SF			
	10 CY			10 CY			
Building Repairs, Utilities, and Other Misc.							
Electrical, plumbing, or other utility lines	1,000 LF	2	2	1,000 LF	5,000 LF	100 SF	0
	6,000 SF			6,000 SF	30,000 SF		
	55 CY			55 CY	275 CY		
Septic line repair	1,000 LF	2	2	2,000 LF,	10,000 LF	400 SF	0
	6,000 SF			6,000 SF	30,000 SF		
	10 CY			10 CY	50 CY		
New Interpretive Facilities/ Signage	50 LF	2	2	100 LF	500 LF	50 SF	1
	100 SF			200 SF	1,000 SF		
	5 CY			10 CY	50 CY		
Existing building and structure repairs	200 LF	5	10	1,000LF	5,000 LF	50 SF	0
	100 SF			500 SF	25,000 SF		
	10 CY			50 CY	250 CY		
Safe wildlife passages	200 LF	1 large and 2 small	1 large and 8 small	400 LF	20,000 LF	200 LF	1
	1,200 SF			2,500 SF	12,500 SF	1,200 SF	
	100 CY			200 CY	1,000 CY	100 CY	
Restoration and Enhancement Projects							
Pond reconstruction	20,000 SF	1	2	20,000 SF	100,000 SF	12,000 SF	1

Type of Activity	Limits per site (linear feet [LF]; square feet [SF]; cubic yards [CY])	Average Number of sites per year	Maximum Number of Sites Per Year	Annual limits	5-Year Program limits	Estimated Typical Jurisdictional Disturbance Per Project	Estimated Typical Jurisdictional Sites Per Year
	1,200 CY			1,200 CY	6,000 CY		
Pond Inlet/Outlet pipe or spillway overflow modification[2]	300LF	1	1	300 LF	1,500 LF	300 LF	1
	2,000 SF			2,000 SF	10,000 SF	2000 SF	
	200 CY			200 CY	1,000 CY	-	
Sediment removal from ponds	600 CY	2	4	1,800 CY 1 acre	9,000 CY 5 acres	900CY, 0.40acres.	2
Pond vegetation removal	2,500 SF	4	6	10,000 SF	50,000 SF	1,000 SF	4
	150 CY			600 CY	3,000 CY		
Pond berm stabilization	200 LF/berm	1	3	600 LF	3,000 LF	200LF/400CY	1
Structure demolitions/ removal in riparian areas	400 CY/berm	4	8	1,200 CY	6,000 CY	1,500 SF	4
In channel debris removal (i.e., removal of tires)	100 LF	2	6	400 LF	2,000 LF	100 SF	2
	3,000 SF			12,000 SF	60,000 SF		
	150 CY			600 CY	3,000 CY		
Road decommissioning	10,000 LF	1	4	20,000 LF	100,000 LF	2,000 SF	1
	160,000 SF			300,000 SF	1,500,000		
	10,000 CY			20,000 CY	100,000 CY		
Stream crossing removal and restoration of natural channel	150 LF	4	12	1,000 LF	5,000 LF	2,000 SF	4
	4,000 SF			24,000 SF	120,000 SF		
	300 CY			1,800 CY	9,000 CY		
Traditional ecological knowledge practices (indigenous stewardship)	24,000 SF	6	12	300,000 SF	1,500,000 SF	100 SF	0

[2] Note that many of these activities are typically aboveground maintenance. Midpen conducts these activities for maintenance or for restoration purposes. These activities may be duplicative to other pond activities listed above and below.

APPENDIX B

Table 5. Summary of Midpen's Qualified Biologist/Monitor Requirements

Tier	Level of Qualification of Monitor	Qualified Sites/Situations*	Duties
Tier 1: No Effect	No qualified biologist or biological monitor required.	No suitable breeding habitat is present and there is no connectivity between the site and known or potential breeding habitat.	None
Tier 2A: Not Likely to Adversely Affect	A qualified biologist or biological monitor will provide an environmental training session. No on-site biological monitor is required.	A federally listed species could occur, but take will not occur. Examples: • For CRLF, daytime, dry-season activities more than 100 feet from aquatic habitats • For CTS, activities in suitable upland habitat where no refugia (e.g., burrows) are present. • For SFGS, activities in suitable habitat but far from areas where the species has been documented.	• Provide environmental training session • Midpen personnel will look for individuals during the activity • Required to call Natural Resource staff for assistance in the unlikely event that federally listed species is discovered
Tier 2B: Not Likely to Adversely Affect for individuals (may be considered Likely to Adversely Affect if permanent habitat impacts occur)	A qualified biologist would be assigned to the project. An on-site biological monitor is not necessarily required.	A federally listed species could occur, but take will be avoided with BMPs. Examples: • For CRLF, work in suitable breeding habitat or dry-season work within 100 feet of suitable breeding habitat, with monitoring and other relevant BMPs • For CTS, activities in aquatic habitat, within 100 feet of aquatic habitat, or in uplands with refugia (e.g., burrows), with monitoring and other relevant BMPs • For MAMU, activities within 300 feet of suitable nesting habitat, but during the nonbreeding season or following surveys with negative results • For SFGS, activities in suitable habitat where the species has been documented, with monitoring and other relevant BMPs	• Provide biological awareness training • Oversee BMP implementation • Conduct pre-activity surveys • Report all federally listed species observations, survey results, and project monitoring efforts/results to Natural Resource staff • Point of contact with regulatory agencies

Tier 3: Likely to Adversely Affect	A qualified biologist would be assigned to the project. An on-site biological monitor is not necessarily required.	Take may occur even with the implementation of BMPs. Examples: • Individual CTS, CRLF, or SFGS are encountered and handled by the biologist • For CRLF, work in suitable breeding habitat or dry-season work within 100 feet of suitable breeding habitat • For CTS, activities in aquatic habitat, within 100 feet of aquatic habitat, or in uplands with refugia (e.g., burrows) • For SFGS, activities in suitable habitat where the species has been documented	• Provide biological awareness training • Conduct pre-activity surveys • Oversee BMP implementation • Monitor all work activities • Relocate federally listed species (when appropriate) • Report all federally listed species observations, survey results, and project monitoring efforts/results to Natural Resource staff • Point of contact with regulatory agencies

* CTS = California tiger salamander; CRLF = California red-legged frog; SFGS = San Francisco garter snake; MAMU = marbled murrelet

APPENDIX C

BMP Number	BMP Title	BMP Description
General Avoidance and Minimization Measures		
GEN-1	Staging and Access	• Staging, access, and parking areas will be located outside of sensitive habitats to the extent feasible. Where feasible, staging areas will be located 30 feet from the top of bank or on the outboard side of pond levees. Vegetation removal shall be limited to the minimum amount necessary to provide access. • All staging shall occur on adjacent access roads or previously disturbed areas. Soil and riprap shall be staged in areas that have been previously disturbed (i.e., service road, turn-outs, etc.).
GEN-2	Minimize Area of Disturbance and Site Maintenance	• Areas of disturbance will be limited to the smallest footprint necessary and a single access pathway, where feasible. For maintenance activities near waterways or other sensitive habitat, the designated work area shall be clearly identified in the field using highly visible material, and work will not be conducted outside this area. • Keep excavated soil and materials on the site where they will not collect into the street or get transported to storm drains or nearby water bodies by rainfall or runoff in order to avoid deleterious effects to fish, wildlife, and beneficial uses. • Transfer excavated materials to dump trucks on the site.
GEN-3	Construction Entrances and Perimeter	• Establish and maintain effective perimeter controls and stabilize all construction entrances and exits to sufficiently control erosion and sediment discharges from site and tracking off site. • Sweep or vacuum any street tracking immediately and secure sediment source to prevent further tracking. Never hose down streets to clean up tracking. • When in-channel work is required, where available use existing ingress or egress points or perform work from the top of the stream banks.
GEN -4	Salvage/Reuse of Plant and Woody Material	• Large wood or weed-free topsoil displaced by Program activities may be stockpiled for use during site restoration. Native vegetation displaced by Program activities will be stockpiled if it would be useful during site restoration. • Stockpiled material shall not be placed over riparian or wetland vegetation. Stockpiled material shall not be placed in areas where it could enter the stream, riparian or wetland areas. • To the extent feasible, all other woody material that is not re-usable should be disposed at a composting facility or left at a suitable location to decompose naturally.
GEN-5	Hazardous Materials Storage/ Disposal	• Any hazardous or toxic materials that could be deleterious to aquatic life that could be washed into State waters or its tributaries will be contained in water tight containers or removed from the project site. • Use biodegradable chainsaw bar oil. • Label all hazardous materials and hazardous wastes (such as pesticides, paints, thinners, solvents, fuel, oil, and antifreeze) in accordance with city, county, state, and federal regulations. • Store hazardous materials and wastes in water tight containers, store in appropriate secondary containment, and

BMP Number	BMP Title	BMP Description
		cover them at the end of every work day or during wet weather or when rain is forecast. • Follow manufacturer's application instructions for hazardous materials and be careful not to use more than necessary. Do not apply chemicals outdoors when rain is forecast within 24 hours. • Arrange for appropriate disposal of all hazardous wastes. • Cleanup of all pesticide and adjuvant containers will be triple rinsed with clean water at an approved site, and the rinsate will be disposed of by placing it in the batch tank for application. Used containers will be punctured on the top and bottom to render them unusable, unless said containers are part of a manufacturer's container recycling program, in which case the manufacturer's instructions will be followed, and disposed of at an appropriate facility. Disposal of all pesticides will follow label requirements and local waste disposal regulations.
GEN-6	Spill Prevention and Control	• Keep spill cleanup materials (rags, absorbents, etc.) available at the construction site at all times. • Inspect vehicles and equipment frequently for and repair leaks. Vehicle and equipment operators should inspect beneath all vehicles that have been parked more than 15 minutes before they leave the work area. Use drip pans to catch leaks until repairs are made. • Clean up spills or leaks and any contaminated soil immediately, and dispose of cleanup materials properly. • Do not hose down surfaces where fluids have spilled. Use dry cleanup methods (absorbent materials, cat litter, and/or rags). • Sweep up spilled dry materials immediately. Do not try to wash them away with water or bury them. If water must be used, Midpen or its contractor shall collect the water and spilled fluids and dispose of it as hazardous waste. • Clean up spills on dirt areas by digging up and properly disposing of contaminated soil. • If a pesticide is spilled, immediately contact one of Midpen's qualified first responders with Hazardous Waste Operations and Emergency Response (HAZWOPER) training. • Small spills (less than 18 inches in diameter) including small quantities of oil, gasoline, paint or other materials should be controlled by a qualified first responder (Midpen staff has several) and do not necessarily require an emergency response team. Medium spills (greater than 18 inches but less than 6 feet in diameter) are typically controlled by the first responder (Midpen staff) but police or fire department HAZMAT teams may be called based on conditions. Report significant spills (larger than 6 feet in diameter and any "running" spill) immediately. You are required by law to report all significant releases of hazardous materials, including oil. To report a spill, contact the San Mateo County Environmental Health Services Division, or other emergency office (e.g., local fire or police department) as warranted, immediately and document the spill using the spill documentation form. Alternatively, 1) dial 911, the local emergency response number, 2) the National Response Center at (800) 424-8802; or 2) call the Governor's Office of Emergency Services Warning Center, (800) 852-7550 (24 hours). As appropriate, contact other agencies including California Occupational Safety and Health Administration or the Regional Water Quality Control Board. All chemical spills shall be reported as soon as possible to the emergency site contact.
GEN-7	Waste	• Cover waste disposal containers securely at the end of every work day and during wet weather.

BMP Number	BMP Title	BMP Description
	Management	• Check waste disposal containers frequently for leaks and to make sure they are not overfilled. Never hose down a dumpster on a project site. • Ensure that portable toilets have a secondary containment plan (e.g., a containment pan). • Clean or replace portable toilets and inspect them frequently for leaks and spills. • Dispose of all wastes and debris properly. Inorganic waste removed and dewatered waste material will be compiled at a material staging yard and taken to a permitted landfill, approved upland sediment disposal site, or at an approved reuse site in accordance with applicable State and federal regulations. Organic debris removed will be distributed in upland areas similar to the surroundings of where the material was removed from. Recycle materials and wastes that can be recycled (such as asphalt, concrete, aggregate base materials, wood, pipe, etc.). • All raw construction materials and wastes will be removed from project sites following the completion of maintenance activities. Food-contaminated wastes generated during work shall be removed on a daily basis to avoid attracting predators to project sites. All temporary fences, barriers, and/or flagging shall be completely removed from project sites and properly disposed of upon completion of maintenance activities. • Midpen or its contractor will not dump any litter or construction debris within the project area. All such debris and waste shall be picked up daily and properly disposed of at an appropriate site. • Dispose of liquid residues from paints, thinners, solvents, glues, and cleaning fluids as hazardous waste.
GEN-8	Vehicle Maintenance and Parking	• All vehicles must stay on designated roads paved and unpaved, and if it is necessary for a vehicle to travel off the designated road (paved or 2-track unpaved), a monitor will precede the vehicle to clear wildlife from the pathway of the vehicle. • Designate an area, fitted with appropriate BMPs, for vehicle and equipment parking and storage. • Perform major maintenance, repair jobs, and vehicle and equipment washing off site. • Conduct vehicle and equipment cleaning at appropriate maintenance yards and ensure that rinse water does not run into gutters, streets, storm drains, or surface waters. • Keep an ample supply of spill clean-up materials near fueling, vehicle maintenance and hazardous materials/hazardous waste storage areas. Inventory clean-up materials monthly and restock as needed. • Post proper fueling and spill clean-up instructions at fueling areas. Never leave the area while equipment is being filled. • Recycle or dispose of fluids as hazardous waste. • Do not clean vehicle or equipment on-site using soaps, solvents, degreasers, steam cleaning equipment, etc. • Perform vehicle and mobile equipment steam cleaning, pressure washing or degreasing only over a containment designed to collect any generated wash water. Collect wash water and properly dispose of wastewater.
GEN-9	Equipment Maintenance &	• Staging and storage areas for equipment, materials, fuels, lubricants and solvents shall be located away from the wetted areas. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or

BMP Number	BMP Title	BMP Description
	Fueling	adjacent to the creek shall be positioned over drip-pans. • Any equipment or vehicles driven and/or operated adjacent to a Water of the State and/or U.S. will be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life, wildlife or riparian habitat. Vehicles must be moved away from the watercourse prior to refueling and lubrication. • Refueling of equipment will be conducted at least 150 feet away from streams and other waterbodies using heavy-gauge tarps made of chemically resistant polypropylene or other impervious material with vertical sides for spill containment. These containment tarps will be set up under the equipment prior to servicing or refueling. Once the work is completed, the tarp and its contents must be immediately removed from the property and all contaminants properly disposed of off-site. Standard operating procedures will be implemented immediately in case of fuel spillage. • All vehicles entering the site will carry a functional fire extinguisher. • Equipment should not be stored in areas that will potentially drain to watercourses or drainage facilities. If equipment must be stored in areas with the potential to generate runoff, drip pans, berms, gravel bags, or absorbent booms should be employed to contain any leaks or spills. In the event of a spill, follow procedures outlined in BMP GEN-6.
GEN-10	Paving and Asphalt Work	• Avoid paving and seal coating in wet weather or when rain is in the forecast, to prevent materials that have not cured from contacting stormwater runoff. • Cover adjacent storm drain inlets and manholes when applying seal coat, tack coat, slurry seal or fog seal; and when saw cutting asphalt or concrete. • Collect and recycle or appropriate dispose of excess abrasive gravel or sand. Do not sweep this material into gutters. • Do not use water to wash down fresh asphalt concrete pavement. • Use filter fabric, catch basin inlet filters, or gravel bags to keep slurry out of the storm drain system. • Shovel, absorb or vacuum saw-cut slurry and dispose of all waste as soon as work is complete in one location or at the end of the work day. • If sawcut slurry enters a catch basin, clean it up immediately.
GEN-11	Concrete, Grout and Mortar Application	• Store concrete, grout, and mortar away from storm drains or waterways, and on pallets under cover to protect them from rain, runoff and wind. • Wash out concrete equipment/trucks offsite or in a designated washout area, where the water will flow into a temporary waste pit, and in a manner that will prevent leaching into the underlying soil or onto surrounding areas. Let concrete harden and dispose of as garbage. • When washing exposed aggregate, prevent washwater from entering storm drains. Block any inlets and vacuum gutters, hose washwater onto dirt areas, or drain onto a bermed surface to be pumped and disposed of properly.

BMP Number	BMP Title	BMP Description
GEN-12	Exclude Concrete from Channel	• For Program activities that involve concrete pouring, Midpen shall ensure that poured concrete be excluded from the wetted channel for a period of 30 days after it is poured. During that time, the poured concrete shall be kept moist, and runoff from the concrete shall not be allowed to enter a stream. Containment structures should be installed to control the placement of wet concrete and to prevent it from entering the channel outside of those structures. • Commercial sealants may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is dry. • No dry concrete shall be placed on the banks or in a location where it could be carried into the channel by wind or runoff.
GEN-13	Concrete Washout Facilities	• Concrete washout facilities should be established for Program activities that require on-site preparation and use of Portland cement concrete, asphalt concrete or cement mortar, establish concrete washout facilities. These facilities capture wash water, concrete and aggregate flushed from concrete mixers, chutes, etc. Concrete washouts may be contained settling basins dug into the ground, raised and contained structures, trailers, etc. They are also applicable for projects that require equipment washouts. • An appropriate area for the washout must be identified at least 50 feet away from watercourses and storm drains in case of accidental breaching. The storage capacity of the basin must be sized correctly for the job. <u>Construction Guidelines:</u> • The location of the concrete washout should be clearly labeled and all employees should be educated about proper concrete disposal. • Avoid mixing excess amounts of fresh concrete or cement mortar on-site. • Wash out concrete mixers only in designated washout areas where the water will flow into temporary sealed basins or onto stockpiles of aggregate base or sand. Use as little water as possible to reduce hardening and evaporation time of waste products. • Construct a basin large enough to contain all liquid and waste concrete materials generated during washout procedures. A minimum basin size is 9 feet x 9 feet and 2 feet deep. Plastic liner materials shall be a minimum of 60-mil polyethylene sheeting free of holes and defects. • Recycle washout by pumping back into mixers for reuse when possible. <u>BMP Maintenance:</u> • The concrete washout should be checked frequently to ensure proper use and effectiveness. • At 75% capacity, the washout must be cleaned or new facilities must be constructed and ready for use. <u>BMP Removal:</u> • The hardened concrete and materials related to the washout must be broken up, removed, and disposed of in accordance to local regulations.

BMP Number	BMP Title	BMP Description
		• Area disturbed by the concrete washout must be repaired.
GEN-14	Painting and Paint Removal	• Never clean brushes or rinse paint containers into a street, gutter, storm drain, or stream. • For water-based paints, paint out brushes to the extent possible, and rinse into a drain that goes to the sanitary sewer. Never pour paint down a storm drain. • For oil-based paints, paint out brushes to the extent possible and clean with thinner or solvent in a proper container. Filter and reuse thinners and solvents. Dispose of excess liquids as hazardous waste. • Paint chips and dust from non-hazardous dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash. • Chemical paint stripping residue and chips and dust from marine type paints or paints containing lead, mercury, or tributyltin must be disposed of as hazardous waste. Lead based paint removal requires a state-certified contractor.
GEN-15	Dust Management Controls	Midpen will implement the Bay Area Air Quality Management District (BAAQMD) Basic Dust Control Measures. Current measures stipulated by the BAAQMD Guidelines include the following: 1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. 2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered. 3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited. 4. All vehicle speeds on unpaved roads shall be limited to 15 mph. 5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. 6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points. 7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
GEN-16	Site Stabilization	Earthwork will be completed as quickly as possible, and where practical, site restoration will occur immediately following Program activities. If site restoration involves planting, such activities may commence in late fall or early winter during the onset of rainy season. Bare soil surfaces resulting from maintenance and/or construction activities shall be covered with suitable erosion controls (seed or plant vegetation, fabrics, hydroseeding, mulch, etc.): • Within 12 hours of any break in work unless Program activities will resume within 7 days. • No later than 3 days following the disturbance during the rainy season (approximately October through April). • No later than 7 days following the disturbance during the dry season (approximately May through September).

BMP Number	BMP Title	BMP Description
		• Every effort shall be made to immediately cover bare soil surfaces resulting from maintenance and/or construction activities prior to storms.
GEN-17	Fire Prevention	• All earthmoving and portable equipment with internal combustion engines will be equipped with spark arrestors. • During the high fire danger period (May 1–November 30), work crews will: 1. Have appropriate fire suppression equipment available at the work site. 2. Keep flammable materials, including flammable vegetation slash, at least 10 feet away from any equipment that could produce a spark, fire, or flame. 3. Not use portable tools powered by gasoline-fueled internal combustion engines within 25 feet of any flammable materials unless a round-point shovel or fire extinguisher is within immediate reach of the work crew (no more 25 feet away from the work area). In high risk fire areas, operations involving mechanical equipment including flailing, masticating, disking, grading in heavy brush, operating a mower or brush cutter equipped with metal blades, welding, grinding, etc. or any other operation that could start a fire within or adjacent to any wildland areas will be conducted using the following protocols: • Whenever possible, high risk activities in wildland areas will be conducted outside of the high fire danger period (May 1 through November 30). The high fire risk areas will be mowed early in the day when the fire risk is lower. • No high-risk activities will occur within a red flag area during a red flag event or within 24 hours of a predicted red flag event as determined by the National Weather Service (*National Weather Service Monterey Office Website: http://www.wrh.noaa.gov/mtr/)* • Before beginning high-risk activities, weather conditions will be monitored. Weather samples will be taken every 2 hours if the ambient temperature is below 80 degrees Fahrenheit. Weather samples will be taken hourly if ambient temperature is at or over 80 degrees Fahrenheit. If one of the following conditions occurs and the ambient temperature is at or over 80 degrees Fahrenheit, operations will be delayed or if one of these conditions occur while running equipment, all operations will cease immediately. – RH (relative humidity) is at 30 percent or lower. – Sustained wind speeds reach 10 mph or higher. • If ambient temperature is at or over 95 degrees Fahrenheit, all high-risk activities will cease. • Maintenance staff will also assess the surrounding wildland fire risk conditions and make a judgment regarding what would be threatened if a fire was started. Maintenance staff may choose to stop activity at a lower threshold than described above if it is determined to be a risk to life or property. • If a fire district within Midpen boundaries recommends a moratorium on mowing due to conditions, Midpen will not mow within their jurisdiction unless Midpen has coordinated with the fire district and staff are operating within Midpen guidelines. <u>C. Operation</u>

BMP Number	BMP Title	BMP Description
		1. Be aware of risks related to driving and parking in tall, dry grass—particularly with catalytic converters. 2. Have an "Action Plan" in mind if a fire starts and have an "Escape Plan" if it gets beyond your ability to control with suppression equipment on-hand. Plan how to communicate with nearby coworkers or others threatened by fire. 3. If possible plan mowing operations so that prevailing wind will blow over areas that have already been mowed. If a fire starts, it will initially burn in mowed grass with a better chance of stopping the fire early. 4. Before starting high-risk operations using tractor mowers on District roads, a non-divertible pumper-equipped pickup will be assigned to the operation. An observer that is familiar with pumper operations; vehicle radio; must staff the truck. .. The employee acting as spotter will be in close proximity to high-risk operation. a) Any deviation from having a pumper truck and spotter on site must be approved by Area Manager. 5. When operating a hand mower or small riding mower, staff must have one round point shovel with an overall length of at least forty-six (46) inches backpack pump water-type fire extinguisher available in the immediate area. 6. When on or near a wildland and operating stationary power equipment such as a generator, motor, welder, cutting torch, grinder or similar device from which a spark, fire, or flame may originate, all of the following are required (re: PRC 4427): – Clear away all flammable material around the area for a distance of 10 feet. – Have one round point shovel with an overall length of at least forty-six (46) inches backpack pump water-type fire extinguisher available in the immediate area. 7. When operating chainsaws and other portable gas-powered tools in a wildland, one of the following is required for use within 25 feet of the area (re: PRC 4431): One round point shovel with an overall length of at least forty-six (46) inches or a fire extinguisher appropriate to provide fire control for the area and conditions. <u>D. Fueling</u> 1. When fueling equipment, allow it to cool where there is no flammable vegetation that can be ignited by the hot exhaust, preferably in a dirt area. 2. See Safety Manual Chapter 1.7.00 regarding fire prevention requirements and Sections 1.6.5.4 to 1.6.5.7 regarding safe fueling of equipment.
GEN-18	Project Completion by End of Work Period	No project shall be initiated unless there is high confidence it can be completed, including installation of any erosion and drainage control features, before the appropriate end of the work windows designated in BMP BIO-20, Salmonid Protection Measures. After September 15 of each year, projects that have not been started, or are still underway, or meet the conditions in BMP BIO-20 shall be evaluated to ensure they can be completed before the end of the applicable seasonal work window. Program activities in streams that support anadromy will occur beginning June 15. Program activities will be at least 50% complete by October 15 of any year, and will be completed by October 31 or

BMP Number	BMP Title	BMP Description
		before the first significant rainfall occurs. Those projects unlikely to be completed before the end of the seasonal work windows will not be started or will be winterized to be completed in the following year.
GEN-19	Avoid Inclement Weather	• The Midpen Project Manager will monitor the seventy-two-hour forecast from the National Weather Service (http://www.nws.noaa.gov and https://www.accuweather.com). When there is a forecast of more than 40% chance of rain, or at the onset of unanticipated precipitation, the Project Manager shall remove all equipment from the creek zone, shall implement erosion and sediment control measures, and all Program activities shall cease. • No earth work shall occur during a dry out period of 24 hours after there has been ¼ inch or more of precipitation. • If, in the opinion of Midpen, conditions arise or change, in such a manner as to be considered deleterious to the stream or wildlife, project activities shall cease until corrective measures are taken.
GEN-20	Aquatic Resource Protection Measures	• No equipment shall be operated within the active creek (i.e., wetted channel) except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). • Surveys for special-status species and monitors will normally not be required for small scale pond maintenance activities using hand tools and fewer than five persons per one half acre. Activities including mechanical dredging, excavating, and bulldozing for shoring up earthen berms or leveling spillways will require pre-activity visual surveys as well as monitoring during the activities. All pond repair and maintenance activity proposals involving mechanized equipment and associated monitoring proposals must be approved by the USFWS prior to implementation. Surveys and monitors during the pond repair and maintenance activities will only be conducted by federal and state permitted biologists in accordance with their permits, or by monitors approved to work under the direction of permitted biologists.
GEN-21	Staged Materials Management and Excavation Ramps	• Midpen or their contractor will visually check all construction materials (bridges, pipes, culverts) for the presence of wildlife sheltering within them prior to the materials being moved and placed in their proper locations. • Building materials or equipment will not be stored where they could be washed into the water or where they will cover aquatic or riparian vegetation. • Open trenches or pits, at the end of each work day, will incorporate an escape ramp at each end of the open trench to allow any animals that may have become entrapped in the trench to climb out overnight. The ramp may be constructed of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees. • Building materials and/or construction equipment shall not be stockpiled or stored where they could be washed into the water or where they will cover aquatic or riparian vegetation.
GEN-22	Spoils Management	Spoils will not be placed where it could enter the stream, riparian or wetland areas. Spoil shall not be placed over riparian or wetland vegetation, unless approved by the Midpen Natural Resources Department.
GEN-23	Vegetation and Tree Removal and	• Native soils, rock, gravel, vegetation, and vegetation will be retained to the extent feasible. Avoid removing/thinning the canopy layer in mature, established forests and woodlands to maximize shading (thereby

BMP Number	BMP Title	BMP Description
	Retention	promoting shade and related increased moisture under the canopy level) and increase resistance to non-native plant invasion. • Vegetation will not be removed or intentionally damaged beyond the construction corridor or intended vegetation management area. • Hand tools (e.g., trimmer, chain saw, etc.) will be used to trim vegetation to the extent necessary to gain access to the work sites. No bulldozers, backhoes, or other heavy equipment will be used to remove vegetation along streambanks or within the stream unless submitted to CDFW during annual project notifications. • The disturbance or removal of vegetation will be restricted to the minimum necessary to complete maintenance activities. Precautions shall be taken to avoid other damage to vegetation by people or equipment. Branches and/or limbs overhanging the trails and channel and impacting trail access and water flows shall be properly pruned. Trees may be removed from natural channels if and only if they are below ordinary high water mark (OHWM) and they are restricting the capacity of the channel and they are causing erosion or flooding. Any trees which will be cut are to be cut at ground level and the root mass left in place to maintain bank stability. • Woody and herbaceous plants, fallen trees, or trunks or limbs lodged in the bed or bank of stream channels causing flow restriction will be cut off at the bed or bank invert with small tools and removed with winch and cable or other equipment operated from top of bank. Root structures will not to be disturbed. • Embedded pieces of large woody material or stumps that potentially serve as basking sites or that encourage pool formation shall be left in place if it does not obstruct the flow of water and there is adequate flood flow capacity. Objects embedded/anchored in the bank, such as tree stumps, shall not be removed during periods of heavy flow if removal would result in release of sediment into the channel. However, protruding objects that could capture additional debris and result in obstruction of the channel (e.g., the branches and trunk of a downed tree) may be trimmed. If an embedded object must be removed to prevent a debris jam, BMPs EC-1 and SWQ-3 will be used to prevent the release of sediment into the channel, and the bank shall be reseeded, revegetated, mulched and/or covered with erosion-control fabric following removal. • The following measures would be implemented for tree removal in riparian areas: o Prior to removal, Midpen will conduct all necessary biological surveys in compliance with regulatory permits. o No trees, shrubs, vegetation, or woody material greater than 6 inches dbh will be removed from within a stream. o All trees that provide canopy cover along the stream will be replanted with native species. Any trees not providing canopy cover of the stream do not need to be replanted. Natives trees less than 6 inches dbh will not be replaced unless native regeneration is not occurring. o 80% of the existing canopy will be maintained over a stream at all times. o Non-native tree removal will not require replanting if the site is regenerating native vegetation. Trees

BMP Number	BMP Title	BMP Description
		within 10 feet of an existing road will not be replaced unless native regeneration is not occurring.
GEN-24	Vegetation Management with Prescribed Burns	1. All burning will be conducted according to prescription, the vegetation management plan, and burn developed specifically for the project by the California Department of Forestry and Fire Protection (CAL FIRE). The fire will be ignited only if the conditions are within the parameters specified in the burn plan. Smoke dispersal, emergency response, safety, and contingency planning are addressed in the burn plan. Other habitat management activities (i.e., invasive plant removal and cattle grazing) may occur year-round if prescriptions are not likely to adversely affect San Francisco garter snake (SFGS) or California red-legged frog (CRLF). 2. All participants in the burn will be briefed on the endangered species potentially present, where they would likely be found, and who to contact if one is sighted. This briefing will be performed by the Resource Advisor, who is a biologist or cultural resource specialist with fire training. Resource Advisor will work with the ignition teams, and be a part of any ignition sequence planning. Resource Advisors will be in radio contact with either the Ignition Specialist or the Incident Commander directly to ensure quick communication and decision-making regarding the safety of sensitive wildlife. 3. No more than 350 acres (141.6 hectares) of habitat will be manipulated by prescribed fire per treatment period. An average 20-foot (6.1-meter) buffer will be established around all ponds prior to conducting prescribed burns, depending on the vegetative cover. Those shorelines with vegetation that provide cover for the snake will provide the greatest buffer, while those shore-lines without adequate vegetative cover will be given less buffer. These buffer areas may be managed using other habitat management techniques following each burn (e.g., cattle grazing), but are to remain completely undisturbed during prescribed fire events. Every reasonable attempt will be made to maintain 1/4 to 1/2 acre (0.1 to 0.2 hectare) of unburned area for every 10 acres (4 hectares) of burned habitat (i.e., 4 to 8 acres of retreat habitat are needed for a 160-acre burn, and 9 to 18 acres are needed for a 350 acre burn). Retreat areas will be conserved randomly throughout the treatment area, especially in areas with known populations of SFGS and CRLF. These retreat areas may be naturally occurring areas such as rock formations, ponds and other wetland/riparian areas, areas with a high density of burrows, and other areas not prone to burn, or these areas may be created and maintained using hand tools or water to create fire-breaks or wet-lines. 4. No more than 24 hours prior to conducting prescribed fires, visual surveys will be conducted by walking transects throughout the proposed burn area in an attempt to locate individual SFGS and CRLF. A trained biologist or biological monitor will capture, transfer, and release in a safe area any SFGS and CRLF deemed to be in danger of being harmed by the prescribed fire activities. If SFGS or CRLF are located during the pre-treatment surveys but escape capture, an area approximately 50 feet (15 meters) in diameter around the individual will be protected from the burn. If necessary, individual SFGS may be held in captivity in a pillowcase for less than 24 hours and may later be released near the point of capture after the burn has been

BMP Number	BMP Title	BMP Description
		completed. The number of SFGS and CRLF encountered and transferred to safe areas or held in captivity during treatment will be reported to USFWS, and each individual SFGS will be photographed for use in identification. 5. All vehicles involved with the site-specific burn will be retained in a prearranged, marked parking area in a clearing as close to the main road as possible. At least one monitor will ensure wildlife is clear from the parking area while vehicles are arriving and leaving. All vehicles must stay on designated roads, and if it is necessary for a vehicle to travel off the designated main road, a monitor will precede the vehicle to clear wildlife from the pathway of the vehicle. Only biological monitors specifically authorized by the USFWS and CDFW to handle SFGS or CRLF (normally these will be individuals holding a federal recovery permit for the species) will be allowed to handle, transport, and relocate individuals of these species. 6. Below ground temperature monitoring will be conducted during the burn to monitor air temperatures in San Francisco garter snake refugia. One or more biologists or biological monitors will place "hobo thermocouples" (ground temperature monitoring devices) in rodent burrows throughout the burn area to monitor changes in temperature in the burrows as fire moves across the landscape. The knowledge gained will be useful in determining how to conduct future prescribed fires in San Francisco garter snake habitat in a manner that will minimize potential effects to the species. 7. Immediately following each prescribed fire, the permittee will search the affected post-treatment area to identify dead or injured individuals of all vertebrate taxa. Dead SFGS and CRLF will be salvaged and deposited at an approved repository. Injured individuals will be handled only by a permittee authorized to capture and handle SFGS and CRLF. Medical assistance will be provided to injured animals by a certified wildlife veterinarian familiar with amphibian and reptile care. 8. Ignition will be completed in less than three hours. The fine fuels should be consumed quickly and most coyote brush and grass thatch are expected to bum down within one hour after ignition. Some minor smokes may be evident for one day following the burn. Spot checks of the plot will be conducted until all smokes are out. 9. A pond located to the northeast of the former Wool Ranch has been designated for fire use. Emergency response plans that identify designated water sources for fire use are being developed for all Midpen Preserves. Existing hydrants or fire storage tanks will be targeted first, and ponds that are known to support California red-legged frogs and other protected species will be utilized as a last resort in emergency situations. Midpen currently provides a patrol map book to fire agencies that has all water sources including water storage tanks mapped. In addition, Midpen Natural Resources staff maintains fire training in order to function as resource advisors to the Incident Commander in the event of a large wildland fire. If an emergency situation necessitates the use of water from a CRLF-occupied pond, a striker pump and intake hose may be used to draw water from one of the small wetland ponds in the burn area to fill engines or back pumps. The intake hose will be screened with 1/4-inch mesh to prevent intake of California red-legged frogs. The burn plan details the use of lake and

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		ocean water to fill helicopter buckets to aid suppression efforts. If a helicopter bucket is used, it will draft from the center of the pond, to prevent uptake of California red-legged frogs that may potentially be present. 10. Within San Francisco garter snake habitat, post-burn monitoring will be conducted as part of the project and will include (1) vegetative response to the burn, (2) wildlife response to the burn, and (3) fire behavior and burn conditions. Because the burn is intended to enhance San Francisco garter snake habitat, the monitoring emphasis for vegetation and wildlife will be on the wildlife and habitat features that are considered to be necessary to support San Francisco garter snakes. The variables measured for San Francisco garter snake response to habitat are pre- and post-burn data on the (1) pre- and post-burn vegetation community in the burn area in order to determine vegetative response to the burn and (2) the frequency of valley pocket gopher (*Thomomys bottae*) burrows and other burrows. As part of its standard post-fire evaluation Calfire will provide an analysis of the burn, including how the fire responded to weather and other burn conditions, and percent coverage of the burn within the boundaries of the burn area. Beginning immediately after the burn the frequency (number) of rodent burrows will be measured during the vegetation transect monitoring. Vegetation monitoring will include the establishment of four transects within and three transects outside of the burn area for comparative analysis. Transects will be randomly established in burned and unburned areas and each transect will measure 50 meters in length. A meter-square plot will be established at five-meter intervals along the transects. Vegetative composition and percent cover for all plant species will be recorded for each plot. Transects sampling will take place prior to the burn and at least once per year after the burn for three years. Response of native and non-native grasses and coyote brush to the burn will be of particular interest. Data collected before, during, and after the burn, and the observations made during the evaluation of the burn will be compiled into a report within one year following the burn. Upon completion, the report will be submitted to USFWS.
GEN-25	Vegetation Management with Livestock	• Livestock will be used for vegetation management to avoid the use of chemical herbicides, to control invasive vegetation, and promote the growth of native vegetation. Where livestock is used in association with a specific routine maintenance project, vegetation removal will not exceed 2,000 square feet (0.05 acres) in size, 150 adjacent linear feet, or the minimum necessary to complete the operation, whichever is less, and livestock will be managed and prohibited from creating or worsening existing erosion and sedimentation to flowing stream channels. • Monitor and protect ponds that provide habitat for special-status species, depending on the vegetative cover. Those shorelines with vegetation that provide cover for special-status species will provide the greatest buffer, while those shore-lines without adequate vegetative cover will be given less buffer. • Monitor forage utilization and distribution by grazing animals to assure appropriate amounts of residual dry matter (RDM) remain on the ground to achieve desired resource management objectives. In the course of RDM monitoring, evaluate and report on wildland fire fuel levels that may result in an increased risk of wildland fire. • Manage access to existing water features and where needed supply supplemental drinking water through stock

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		ponds and water troughs to preserve clean water for livestock, protect water quality, and enhance habitat for wildlife.
GEN-26	Non-native Plant Removal and Herbicide Management	• Focus vegetation biomass reduction on non-native vegetation and avoid damaging native grasses, and mature shrublands and forests wherever possible. Where active treatment is needed, seek to break the vertical fuel ladder connection between the ground and the canopy layer, and create some horizontal physical separation between plants where possible. Prioritize projects where invasive plant removal alone can result in fire-safe landscapes. • Implement fuel management projects with low impact tools and methods such as hand cutting and pruning rather than vegetation removal or soil disturbance with hand methods or machines. • Prioritize leaving forest duff and organic soil layers undisturbed in all fuel management actions. • For invasive pest management and hazardous fuel reduction activities: 1. Prior to conducting non-native (e.g., pampas grass) and native (e.g., cattail, cocklebur) plant removal or treatments (e.g., spraying with herbicide or fungicide, cutting, pulling, digging out), the permittee will make every reasonable attempt to ensure that SFGS and CRLF are not hidden within the plant or the residual plant matter to be treated. 2. All invasive plant and animal work will be done in accordance with the Midpen's other and Best Management Practices identified in the Midpen Integrated Pest Management Program. 3. No burrow fumigants will be used. Only pesticides that are part of the Midpen Integrated Pest Management Program will be used, and only if they are used in accordance with the guidelines on the label and if they comply with the restrictions listed in the critical habitat designation. • Midpen will choose site-specific strategies and times of treatment that provide the best combination of protecting preserve resources, human health, and non-target organisms and that are efficient and cost-effective in controlling the target invasive species. Direct the control method narrowly at the target organism to avoid broad impacts on the ecosystem. Modify control methods over time as site conditions and treatment techniques change. Use pesticides only where alternative methods are known to be ineffective. Apply pesticides in an environmentally safe manner. Take all reasonable precautions to protect the environment, the health and safety of employees, adjacent lands and preserve visitors. • Midpen will comply with BMPs and other mandatory measures to protect sensitive resources and employee and public health during pesticide application. All appropriate laws and regulations pertaining to the use of pesticides and safety standards for employees and the public, as governed by the U.S. Environmental Protection Agency, the California Department of Pesticide Regulation, and local jurisdictions will be followed. All applications will adhere to label directions for application rates and methods, storage, transportation, mixing, and container disposal. Midpen staff will coordinate with the County Agricultural Commissioners, and all required licenses and permits will be obtained prior to pesticide application. • All pesticides will be implemented consistent with Pest Control Recommendations prepared annually by a licensed

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		Pest Control Advisor. • Midpen will maintain a minimum 30-foot buffer around special-status species habitats and a 15-foot buffer around all other aquatic and riparian habitats when applying pesticides, unless specially requested to work closer. • All vegetation management activities that could result in the runoff of pesticides that are not registered for aquatic use into waters of the State and/or U.S. will be avoided. Only pesticides and adjuvants registered for aquatic use will be applied to aquatic areas or within the banks of channels. • Only pesticides and adjuvants registered for aquatic use will be applied to aquatic areas or within the banks of channels. All conditions of the herbicide label will be followed. • Surfactants and other adjuvants will be used and applied consistent with the District's Pest Control Recommendations. • Avoid pesticide drift by not applying pesticides under windy conditions in close proximity to special-status species or their habitat, and by using plastic shields around target weeds and pests, ground-based applicators, low tank pressures and spray nozzles adjusted for larger droplet sizes and to limit the spray area. • Pesticide application will cease when weather parameters exceed label specifications, when wind at site of application exceeds 7 miles per hour, or when precipitation (rain) occurs or is forecasted with greater than a 40 percent probability in the next 24- 24 hour period to prevent sediment and pesticides from entering the water via surface runoff. • None of the following activities will be undertaken in aquatic or riparian areas: mixing, loading and storage of pesticides; rinsing of equipment and pesticide containers. All activities will take place at least 300 feet from aquatic or riparian areas. • Refilling of pesticides will be required to occur at least 300 feet way from any body of water in a contained area and include a secondary containment plan. Any transfer or mixing on the ground shall be within containment pans or over tarps. • A 30-foot buffer will also be maintained when applying pesticides unless previously approved by the regulatory agencies. • Midpen staff, contractors, and tenants will undergo annual pesticide safety training. Pesticide applicators will have or work under the direction of a person with a Qualified Applicator License (QAL) or Qualified Applicator Certificate (QAC). Contractors and grazing and agricultural tenants may apply approved herbicides after review and approval by Midpen and under the direction of QAL/QAC field supervisors. • Appropriate non-toxic colorants or dyes will be added to the pesticide mixture to determine treated areas and prevent over-spraying. • The following general application parameters will be employed during pesticide application: • Spray nozzles will be configured to produce a relatively large droplet size; • Low nozzle pressures (30-70 pounds per square inch) will be observed;

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		• Spray nozzles will be kept within 24 inches of vegetation during spraying; • Signs will be posted notifying the public, employees, and contractors of the use of pesticides. The signs will consist of the following information: signal word, product name, and manufacturer; active ingredient; EPA registration number; target pest; preserve name; treatment location in preserve; date and time of application; date which notification sign may be removed; and contact person with telephone number. Signs will generally be posted 24 hours before the start of treatment and notification will remain in place for 72 hours after treatment ceases, in compliance Midpen's Integrated Pest Management Program.
GEN-27	Snags	To the maximum amount practicable, individual dead or dying trees shall be retained, with modification if appropriate, as snags. This measure should not be considered to apply in areas where removal is warranted to control spread of a disease or for human safety purposes.
GEN-28	Culvert Replacement	• The following alternatives and structure types should be considered in order of preference: 1. Streambed simulation strategies - bottomless arch, embedded culvert design, or ford 2. Non-embedded culvert - this is often referred to as a hydraulic design, associated with more traditional culvert design approaches limited to low slopes for fish passage 3. Baffled culvert, or structure designed with a fishway - for steeper slopes. If a segment of stream channel where a crossing is proposed is in an active salmonid spawning area then only full span bridges or streambed simulations are acceptable. • Replacement of any existing concrete, wood, plastic (ABS, HDPE etc.) or metal pipe culvert up to 48 inches inner diameter (unless authorized to be a larger diameter by CDFW) with the following restrictions: 1. Work will be done only when the channel is dry, except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). 2. The new culvert will typically be as large as or larger than the existing culvert unless the original culvert was oversized or a natural obstruction such as bedrock is encountered. For anything other than an ephemeral drainage, the culvert will be sized where feasible to convey a 100-year flow or cover the entire channel width. 3. Total earthwork will be limited to the extent necessary at each project to complete the work, and will not exceed 80 cubic yards per culvert. 4. The new culvert will be installed at or below grade.
GEN-29	Culvert Maintenance	• Culverts with recurring blockages are cleaned annually, regardless of the amount of blockage. Sediment, vegetation or debris will be removed using hand tools in creeks supporting salmonids, unless other methodology is submitted to CDFW in writing during annual project notifications. Sediment, vegetation or debris will be removed with mechanized equipment in creeks that do not provide habitat for salmonids where hand removal is infeasible. • Culverts that are more than 1/3 blocked may be cleaned at any time, even during periods when the channel is wet, with the following restrictions:

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		1. Up to 32 cubic yards of material may be removed, using hand tools only, under any conditions. 2. Removal of amounts greater than 32 cubic yards requires that the channel be dewatered first and heavy equipment may be used with written approval from CDFW. 3. The total cumulative area of disturbance will not exceed 150 feet of channel or 2,000 square feet of area, whichever is less. 4. After completion of the work, the disturbed area will immediately be treated with erosion control materials Best Management Practices (BMPs) sufficient to control turbidity and sediment loss. 5. Nearby perched or otherwise unstable fill may be removed as well, up to 10 cubic yards. 6. No Coho salmon are present.
GEN-30	Culvert Removal and/or Replacement with Rolling Dips or Fords	• If the channel was created by the original emplacement of the culvert, any number may be removed. • Culverts replacements will be installed at or below stream grade. Align the slope and gradient of replacement culverts that will discharge to a ditch, creek, or channel consistent with the direction of the receiving water course.
GEN-31	New Culvert Installation (non-stream crossings)	• The following alternatives and structure types should be considered in order of preference: 1. Streambed simulation strategies - bottomless arch, embedded culvert design, or ford 2. Non-embedded culvert - this is often referred to as a hydraulic design, associated with more traditional culvert design approaches limited to low slopes for fish passage 3. Baffled culvert, or structure designed with a fishway - for steeper slopes. If a segment of stream channel where a crossing is proposed is in an active salmonid spawning area then only full span bridges or streambed simulations are acceptable. • Design new culverts to blend in with the surrounding environment and to not interfere with the movement of fish. • Design and install new culverts in fish bearing streams to provide sufficient depth and velocity of water for passage of native fish and other native aquatic species during high and low flow conditions. • Outside of stream crossings, new culverts may be installed to maintain existing roads and trails with the following restrictions: 1. New culverts will not be installed in streams but will be limited to engineered drainage ditches associated with roads and trails. 2. If an existing road or trail has an inadequately drained inboard ditch (excessive length between existing ditch relief culverts or dips), new ditch relief culverts (where rolling dips would be insufficient) may be placed as directed by the project engineer to adequately convey stormwater and reduce sediment to downstream watercourses.
GEN-32	Bridge and Puncheon	• Removal, or replacement of any size bridge (including puncheons) in the same location, on any trail or road, where no channel entry is necessary, no work is proposed to in-channel abutments or supports and vegetation removal is

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	Replacement	limited to no more than a six (6) foot buffer around the existing bridge structure and to trimming of no more than 20% of any individual tree canopy within that six-foot buffer. • Bridge replacement (not in the same location, such as higher on the bank or upstream/downstream) will be allowable if it reduces overall habitat impacts and/or removes the bridge completely from the stream bed, bank or channel (for example, a bridge for which the current bridge or footings are located below the ordinary high water mark [OHWM]) made longer to be placed above the OHWM. • Removal, or replacement of any size bridge in the same location, with limited channel entry to place fabric or other devices to catch debris or place falsework, with the following restrictions: 1. Work may only occur when the channel is dry, except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). 2. Only very limited modifications to the channel surfaces are proposed. 'Very limited' means movement of rocks less than 8 inches in size, less than two hand shovels of earth, footprints and indentations caused by equipment and structures. Any modifications to correctly place falsework will occur to the falsework rather than the channel. 3. Vegetation removal is limited to no more than a six (6) foot buffer around the existing bridge structure and to trimming of no more than 20% of any individual tree canopy within that buffer. • Removal, or replacement of smaller bridges (up to six [6] feet width) on trails, as long as work is completed when the channel is dry or during periods of low flow (for perennial streams) and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). The bridge will be supported on mudsills or abutments placed outside of the channel.
GEN-33	Bridge and Puncheon Repair and Maintenance	Repair and maintenance of bridge (including puncheon) parts and grading for drainage correction on the approaches will implement the following conditions: 1. All work shall be done from the bridge or by workers standing in the channel or on a ladder in the channel. 2. A net or other device (e.g., diaper, underlayment) shall be attached to the underside of the bridge to catch any debris falling from bridge. 3. Pressure treated lumber shall be sealed and coated off-site. Sealants shall be approved by Midpen Natural Resources Department prior to their incorporation into the bridge. Tread material shall not be pressure treated to prevent leaching and breakdown of pressure treated materials into the waterway. 4. Only minor saw work and drilling shall occur; the primary work shall occur off site. 5. Grading on the approaches is limited to a maximum of five (5) cubic yards per bridge. This amount is not cumulative with the culvert replacement standard of five (5) cubic yards.
GEN-34	Ford and Swale (including Drain Lenses and	Full replacement of existing fords or repair/maintenance by replacing rock and removing sediment and woody debris with the following restrictions: 1. No use of chemicals, concrete, mortar or other sealants or adhesives.

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	Causeways) Replacement	2. This category applies only to narrow width trails and emergency vehicle/multi-use trails where the drainage does not support salmonids. 3. The ford is not on an intermittent or perennial drainage or, if it is, the ford has been confirmed by CDFW to not be considered a barrier to the movement of aquatic organisms. 4. Vegetation removal is limited to no more than a five-foot buffer around the existing ford and to trimming of no more than 20% of any individual tree canopy within the five-foot buffer only. 5. All work shall be done when the channel is dry, except in perennial streams or during wet weather years in which the channel does not dry. In these instances, work will be scheduled during periods of low flow and must adhere to the dewatering BMPs (DW-1, DW-2, and DW-3).
Biological Resource Measures		
BIO-1	Environmental Awareness Training	Prior to commencing maintenance activities in a given year, all participating maintenance personnel will attend a worker environmental awareness training program. The training will include a brief review of special-status species, sensitive habitats, and other sensitive resources that may exist in the project area, including species identification, habitat requirements, procedures to follow when encountering any species in the work area, and the legal status and protection of each relevant species, penalties for take, work restrictions, as well as locations of sensitive biological resources. The training will include materials concerning the following topics: sensitive resources, resource avoidance, permit conditions, and possible consequences for violations of State or federal environmental laws. The training will cover the maintenance activity's conservation measures, environmental permits, and regulatory compliance requirements, as well as the roles and authority of the monitors and biologist(s). It will include printed material (with photos of San Francisco garter snake and California red-legged frog) and an oral training session by a qualified biologist or biological monitor.
BIO-2	Biological Monitor	• A **qualified biologist** is an individual who has a minimum of five (5) years of academic training and professional experience in biological sciences and related resource management activities, with a minimum of two survey seasons years (e.g., two seasons during the blooming season of sensitive plants) conducting surveys for each species that may be present within the Project area. • A **biological monitor** is an individual who has academic and professional experience in biological sciences and related resource management activities, experience with construction-level biological monitoring, be able to recognize species that may be present within the Project area, and be familiar with the habits and behavior of those species. • The biological monitor(s) or qualified biologist(s) shall have the responsibility and authority of stopping the proposed project if any crews or personnel are not complying with regulatory permit conditions. The biological monitor or qualified biologist will possess necessary agency approvals and/or regulatory permits required for project work, dependent on the location and potential to encounter special-status species, prior to the initiation of Program activities. The biological monitor or qualified biologist will have stop-work authority over Program

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		activities to avoid take or impacts to special-status species or protected biological resources. • To maintain safety and limit any chance of take or habitat disturbance, a simple system of hand signals will be established for the monitors, truck drivers, equipment operators, and field personnel to use during habitat enhancement and related activities.
BIO-3	Work Area Designation	Prior to Program activities in suitable habitat for special-status species, a biological monitor or qualified biologist shall clearly mark/flag or erect temporary construction fencing to designate the work area and to delineate the areas that shall be avoided. The boundaries shall be inspected on a regular basis to ensure that work has remained within the marked boundaries. If one or more boundary(ies) has/have been violated, work shall cease until the Midpen Project Manager has taken action to ensure there is no recurrence of the trespass. Flagging and/or temporary construction fencing shall be removed immediately after the completion of construction work.
BIO-4	Special-Status Plant Species Avoidance Measures	This measure includes, but is not limited to, Mt. Hamilton fountain thistle (MHFT), western leatherwood (WL), Loma Prieta hoita (LPH), San Francisco popcorn flower, Santa Clara Valley dudleya, and Congdon's tarplant (CT). The following rare plant avoidance measures will be implemented within riparian habitat or Waters of the State and/or U.S. and within one-quarter (1/4) mile of a known rare plant occurrence, or within suitable rare plant habitat but where rare plants are not known to occur: • Prior to the start of Program activities, a qualified biologist will conduct protocol level surveys for sensitive plant species during the peak blooming period. For information on special status plant survey methodology visit: www.wildlife.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf • If at any time MHFT, LW, LPH, popcorn flowers, CT or other rare plant species is found, it will be flagged for avoidance and site-specific avoidance buffers, developed through coordination with CDFW, will be implemented. Rare plants and associated buffer zones shall be avoided during Program activities. • If at any time, MHFT, LW, LPH, CT, or popcorn flower cannot be avoided, Program activities will not be conducted until Midpen coordinates with CDFW and mitigation plan is agreed upon.
BIO-5	Invasive Plant Material Management and Disposal	• All staff, contractors, and volunteer crew leaders will be properly trained to prevent spreading weeds and pests to other sites. Midpen staff will appropriately maintain facilities where tools, equipment, and vehicles are stored free from invasive plants. Midpen staff will inspect rental equipment and project materials (especially soil, rock, erosion control material, and seed) to confirm as much possible that they are free of invasive plant material before their use at a worksite. • All personnel working in infested areas will take appropriate precautions to not carry or spread weed seed outside of the infested area. Such precautions will consist of, as necessary based on site conditions, cleaning of soil and plant materials from tools, equipment, shoes, clothing, or vehicles before entering or leaving the site. • Develop and implement an employee and contractor training program; include aquatic invasive plant identification and cleaning protocols for clothing, tools, vehicles, and boats. Prevent the spread of plant fragments (roots, stems)

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		of certain species that can produce new plants in ditches, canals, and streams. • Construction equipment will arrive at project sites clean and free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species. Invasive weed species occurring within locations of construction clearing and grubbing shall be flagged for removal by the biological monitor or qualified biologist. These species, along with associated duff and topsoil, as appropriate, shall be disposed of by the contractor. These materials shall not be allowed to be integrated with other onsite topsoil materials intended for salvage and replacement. • Target control of invasive species that rank high in the IPM prioritization matrix • When transporting invasive plant material offsite for disposal, the plant material will be contained in enclosed bins, heavy-duty bags, or a securely covered truck bed. All vehicles used to transport invasive plant material will be cleaned after each use. • Suitable onsite disposal areas shall be identified to prevent the spread of weed seeds. Invasive plant material shall be rendered nonviable when being retained onsite. Midpen staff shall desiccate or decompose plant material until it is nonviable (partially decomposed, very slimy, or brittle). Depending on the type of plant, disposed plant material can be left out in the open as long as roots are not in contact with moist soil, or can be covered with a tarp to prevent material from blowing or washing away. Midpen staff will monitor all sites where invasive plant material is disposed onsite and treat any newly emerged invasive plants. • Inspect recreational facilities (e.g., parking lots, trails, visitor centers) that experience high visitor use often during target invasive plant flowering and seed production times.
BIO-6	Sudden Oak Death and Plant Pathogen Control	• All personnel working in infested areas will take appropriate precautions to not carry or sudden oak death (SOD)-associated spores or other plant pathogens outside of the infested area. Such precautions will consist of, as necessary based on site conditions, cleaning of soil and plant materials from tools, equipment, shoes, clothing, or vehicles before entering or leaving the site. • Track the effects of sudden oak death (*Phytophthora* sp.) (SOD) disease (mapping dead oaks as staffing and budgeting permit), and share this information with the California Oak Mortality Task Force (www.suddenoakdeath.org) as staffing and funding allow. • Removal of California bay trees or their branches within 15 feet of the trunks of high value oaks. Ongoing research at Midpen and other locations in the state are evaluating whether bay removal is effective for managing larger stands or forests infested with SOD or to prevent or slow down the spread of SOD. This option is costly and requires regular maintenance and monitoring and, therefore, is implemented in limited areas. • For individual high value oaks such as very large mature oaks near picnic facilities, consider spot treatment of individual oaks with pest control sprays (e.g., Agri-Fos™) intended to reduce potential for SOD infection.
BIO-7	Non-Native Animal Control	• Midpen will attempt to trap non-native turtles and remove them in compliance with CDFW when they share habitat with protected, native species. Midpen will attempt to trap restricted turtles and remove them in compliance with CDFW regulation.

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		• Midpen will continue to capture feral pigs using baited traps and employ humane euthanasia in compliance with CDFW regulations and the Animal Welfare Act. • Midpen will employ public education signage and/or brochures to prevent the intentional release of non-native or feral animals on Midpen lands and feeding of wildlife. Education can be an important tool for Midpen in preventing pets from being intentionally released onto Midpen lands. Public outreach and judiciously placed educational materials such as signs and brochures in Midpen preserves may be a useful strategy to curb intentional releases of animals. • Midpen will continue eradication efforts of non-native fish and bullfrogs compliant with CDFW regulations and the Animal Welfare Act. Eradication of invasive animals (e.g. non-native fish, bullfrogs) by shooting, trapping, or gigging for the purpose of reducing predation on or competition with CRLF, must be authorized in writing by the Sacramento USFWS Office prior to conducting removal activities. Shooting, trapping, and gigging of aquatic species will be conducted only by a qualified biologist with experience in the identification of frog and turtle species. Inadvertently trapped California red-legged frogs will be released immediately upon discovery. • Prohibit contractors, consultants, staff and tenants from feeding feral domestic pets on Midpen property. Develop education programs to encourage the public not to feed wildlife or feral animals on Midpen property. • Ensure outside garbage cans and dumpsters have tight-fitting lids to prevent foraging on human food waste. This is especially important in public gathering areas in parks and open spaces. Cans with domed lids and self-closing, hinged lids are preferred in these outside areas. • Store native seeds, hay, and other vegetation-based materials that can attract animals in properly sealed containers or designated sealed storage facilities. • Store all food properly, in containers with tight fitting lids, or in the refrigerator or freezer. • Do not leave pet food in open bowls overnight. Wash pet food bowls immediately after feeding
BIO-8	General Wildlife Protection Measures	• Biological monitors will check for any reptiles, amphibians, or other animals under vehicles and equipment parked for more than 30 minutes. • Vehicles traveling to and from the project sites off of established ranch roads must travel slowly (5 mph) and be preceded by a monitor to ensure that wildlife will not be run over by the passing vehicle. Vehicle monitors need not be trained biologists. • Midpen generally limits the use of exclusion fencing for special-status species to limit habitat disruption and entrapment potential. Midpen more commonly uses exclusion fencing around stockpiled materials or directional fencing to move wildlife away from the worksite. Midpen rarely fences a full work site. • Biological monitors/biological handlers will monitor sites for special-status species and if handling is permitted/authorized, they may relocate the special-status species or halt/modify work to avoid the special-status species as it passed through the active work site. • If a fence is used and if special-status species are found in routine maintenance activity sites using large equipment

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		to remove sediment, they will be excluded from the project site. USFWS and/or CDFW-approved exclusion fencing shall be installed around the sediment removal sites, staging areas and any areas where fill may be dumped. After installation of the fence barrier, a biological monitor or qualified biologist shall inspect the project work area daily, staging and stockpiling areas prior to the commencement of activities. Exclusion fencing will be placed, at a minimum, around the immediate work area where machinery will be operating. During activities involving mechanized equipment, biological monitors will maintain exclusion fencing and evaluate work performed during pond activities. Monitors are required to temporarily stop any work that they believe may harm the San Francisco garter snake or California red-legged frog. Work will not resume until a satisfactory method is agreed upon to minimize take of the snake or frog. • If the biological monitor or qualified biologist determines that sensitive species are not within the work area, equipment or materials may be moved onto the work site and Program activities may commence under the observation of the biological monitor.
BIO-9	Special-status Species Reporting	• Information on new localities for special-status species (e.g., SFGS, CRLF, Loma Prieta hoita) will be immediately reported to the Sacramento USFWS Office and the California Natural Diversity Database (CNDDB) within 3 working days of their discovery. • Any incidental capture, injury or mortality of a federally or state listed species, with the exception of "fully protected" species which are not to be harassed, pursuant to the conditions of federal and State permit conditions shall be recorded and reported in the annual report submitted to the applicable agencies.
BIO-10	San Francisco Garter Snake Protection Measures	**Holdings where San Francisco Garter Snakes are Absent (Tier 1)** All activities that occur in locations more than 1.0 mile from a known San Francisco garter snake occurrence are classified as Tier 1 activities for the San Francisco garter snake. These activities will have no effect on individual San Francisco garter snakes regardless of location of the activity (e.g., near or far from perennial water). No species-specific BMPs are needed to avoid and minimize impacts of Program activities on individual San Francisco garter snakes at these locations. **Holdings where San Francisco Garter Snakes May Occur (Tiers 2A, 2B, and 3)** For maintenance activities that occur within 1.0 mile of a known San Francisco garter snake occurrence, Midpen will determine if the proposed maintenance activity is likely to result in take of San Francisco garter snakes, if snakes are present within the work area. For instance, if the activity consists of hand work or is located entirely within developed areas (e.g., roads and buildings) where no cover for San Francisco garter snakes is present, the likelihood of take of San Francisco garter snakes would be very low, even within 100 feet of perennial water. Midpen will then determine whether to implement the Tier 2A, 2b, or 3 approach as follows: • **Tier 2A** – applicable if Program activities occur within 1.0 mile of a known San Francisco garter snake occurrence, but more than 100 feet from streams, ponds, wetlands, and riparian habitats (other than those with dense forest

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		cover) during the dry season. Tier 2A is also applicable if the activity is located within 100 feet of perennial water and/or will occur during the wet season, but is a type of activity that is not likely to result in take of San Francisco garter snakes. In this case, Midpen would implement the Tier 2A BMPs described below for the California red-legged frog, applying them instead (or in addition) to the San Francisco garter snake. • **Tier 2B** – applicable if Program activities occur within 1.0 mile of a known San Francisco garter snake occurrence, and (a) within 100 feet of streams, ponds, wetlands, and riparian habitats (other than those with dense forest cover) and/or (b) during the wet season, but ifand implementation of BMPs such as pre-activity surveys and monitoring would avoid impacts to individual garter snakes. In this case, Midpen would implement the Tier 2B BMPs described below for the California red-legged frog, applying them instead (or in addition) to the San Francisco garter snake. • **Tier 3** – applicable if Program activities occur within 1.0 mile of a known San Francisco garter snake occurrence, and could potentially impact individuals, such as involving extensive vegetation or ground disturbance in or near streams, ponds, wetlands, or riparian habitats (other than those with dense forest cover). In this case, Midpen would implement the Tier 3 BMPs described below for the California red-legged frog, applying them instead (or in addition) to San Francisco garter snakes.
BIO-11	California Red-Legged Frog Protection Measures	**General Measures** • Handling of CRLF will be done by permitted and qualified biologists/biological monitors in an expedient manner with minimal harm to the individuals being handled. Handling of CRLF will be done with wet hands. The hands and arms of all workers handling CRLF will be free of lotions, creams, sunscreen, oils, ointment, insect repellent, or any other material that may harm CRLF. Larval CRLF will not be handled out of the water for longer than 30 seconds unless rewetted, and will not be retained for longer than 5 minutes for processing. If captured CRLF exhibit signs of distress (e.g., lack of response to stimuli or erratic behavior), they will be immediately released at the point of capture. All captured CRLF will be released at the point of capture unless that location puts them in imminent danger, in which case they will be placed in a nearby refugium sufficient to protect them. The number of CRLF to be captured is no more than 30 adults per habitat location per year. No egg masses may be disturbed or injured in any manner for any activity authorized in the USFWS take permit. Amplexing pairs of CRLF will not be captured, handled, or disturbed. The permittee will disinfect sampling and field gear to minimize the spread of pathogens as follows: 1. Sampling and field gear will be disinfected after exiting one aquatic habitat and before entering the next aquatic habitat, unless the waters are hydrologically connected to one another. 2. All organic matter will be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water or potentially contaminated sediments. These items will then be rinsed with clean water before leaving each study site.

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		3. Boots, nets, traps, hands, etc., will be scrubbed with a bleach solution (0.5 to 1.0 cup per 1.0 gallon of water), Quat-128™ (1:60), or a 3 to 6 percent sodium hypochlorite solution and thoroughly rinsed clean with water between study sites. Equipment will be rinsed clean with water between study sites. Cleaning equipment in the immediate vicinity of aquatic habitats will be avoided (e.g., clean in an area at least 100 feet from aquatic features). Care will be taken so that all traces of the disinfectant are removed before entering the next aquatic habitat. 4. Used cleaning materials (liquids, etc.) will be disposed of safely, and if necessary, taken back to the lab for proper disposal. Used disposable gloves will be retained for safe disposal in sealed bags. 5. When working at sites with known or suspected disease problems, disposable gloves will be worn and changed between handling each animal. Gloves will be wetted with water from the site or distilled water prior to handling any amphibians. Gloves will be removed by turning inside out with hands cleaned using a hand cleaner and water rinse to minimize cross-contamination. • CRLF will not be removed from the wild and held in captivity for any reason unless prior written approval is acquired by the appropriate USFWS Office or unless the severity of an injury to the CRLF obviates immediate care. Animals will be transported according to accepted methods, in moist cloth bags or in terrarium with moisture gel or non-cellulose sponge to minimize desiccation. **Holdings where California Red-Legged Frogs are Absent (Tier 1)** All activities that occur in holdings where California red-legged frogs are determined to be absent are classified as Tier 1 activities for the California red-legged frog, and these activities will have no effect on individual California red-legged frogs regardless of location of the activity (e.g., near or far from perennial water) or time of year the work occurs. No species-specific BMPs are needed to avoid and minimize impacts of Program activities on individual California red-legged frogs within these holdings. **Holdings where California Red-Legged Frogs have a Lower Density/Lower Frequency of Occurrence (Tier 2A)** For maintenance activities that occur within preserves, easements, and management areas with a lower density/lower frequency of occurrence of California red-legged frogs (as discussed in Section 5.1.4.1 of the Program's Biological Assessment or based on updated mapping by Midpen), Midpen will implement the Tier 2A BMPs described below to avoid and minimize impacts on individual California red-legged frogs. **Tier 2A BMPs** • Biological awareness training shall be provided to all maintenance personnel prior to beginning work. • During all work, Midpen maintenance personnel (who are well-trained on the biology of California red-legged frogs, appropriate avoidance measures, and procedures to follow when they are encountered) will keep an eye out for California red-legged frogs and contact the Midpen biologist immediately if a California red-legged frog, or an individual that could potentially be a California red-legged frog, is observed.

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		• If an animal believed to be a California red-legged frog is detected during maintenance activities, those activities that could potentially affect the animal will cease until the frog is confirmed to have left the work area on its own, or until a qualified biologist or biological monitor visits the site to determine whether it is a California red-legged frog and whether it is in harm's way from the activity. If so, avoidance and minimization measures will then be implemented as described for Tier 2B activities below, and Midpen will re-evaluate the likelihood of occurrence of California red-legged frogs in the work area vicinity for future Program activities. Any project-related, human-caused injuries to California red-legged frogs will be immediately reported to USFWS and CDFW.
		Holdings where California Red-Legged Frogs have a Higher Density/Higher Frequency of Occurrence (Tier 2A, Tier 2B, or Tier 3)
		For preserves, easements, and management areas with a higher density/higher frequency of occurrence of California red-legged frogs, as discussed in Section 5.1.4.1 of the Program's Biological Assessment or based on updated mapping by Midpen, Midpen will identify streams, waterbodies, riparian habitats, and other features that support perennial water (e.g., wetlands, seeps, and spring boxes) within the maintenance activity work area and a surrounding buffer of 100 feet during the desktop audit and field review described under Impact Tiers above. Areas within 100 feet of perennial water will be identified as areas where California red-legged frogs are most likely to occur during the dry season.
		Midpen will then determine if the proposed maintenance activity is likely to result in take of California red-legged frogs, if frogs are present within the work area. For instance, if the activity consists of hand work or is located entirely within developed areas (e.g., roads and buildings) where no cover for California red-legged frogs is present, the likelihood of take of California red-legged frogs would be very low, even within 100 feet of perennial water.
		If (1) the proposed maintenance activity is not located within 100 feet of perennial water, or (2) the activity is located within 100 feet of perennial water but is not likely to result in take of California red-legged frogs, Midpen will implement the Tier 2A BMPs described above.
		If (1) the proposed maintenance activity is located in upland areas within 100 feet of perennial water, wet areas, or riparian vegetation; (2) no wet areas, riparian vegetation, or refugia for California red-legged frogs (e.g., woody debris and burrows) are present within the work area; and (3) no take of individuals is anticipated due to the proposed activities, Midpen will implement the Tier 2B BMPs described below.
		If (1) the proposed maintenance activity is located in wet areas or riparian areas, or in upland areas within 100 feet of these areas; (2) refugia for California red-legged frogs are present in the work area; and/or (3) take of California red-legged frog individuals may occur due to the proposed activities, Midpen will implement the Tier 3 BMPs described below.
		Tier 2B BMPs
		• Prior to and within 24 hours of the planned start of Program activities, a focused survey for California red-legged frogs using an agency-approved protocol will be conducted by a qualified biologist or biological monitor to determine if they are in the area.

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		• A biological awareness training shall be provided to all persons prior to beginning work. This training will include a discussion of all practicable measures to be taken to avoid killing or injuring any life stage of California red-legged frogs during Program activities. • Based on the results of the desktop audit and field visit, Midpen's biologist will determine if a qualified biologist or biological monitor is needed to monitor some (e.g., initial ground disturbance) or all activities. Regardless of whether a biologist is present, during all work, Midpen maintenance personnel (who are well-trained on the biology of California red-legged frogs, appropriate avoidance measures, and procedures to follow when they are encountered) will keep an eye out for California red-legged frogs and contact the Midpen biologist immediately if a California red-legged frog, or an individual that could potentially be a California red-legged frog, is observed. • Midpen generally limits the use of exclusion fencing for special-status species to limit habitat impacts. However, if Midpen's biologist determines that the benefits of installing wildlife exclusion fencing around the work area (i.e., in terms of reducing the potential for take of individuals and/or reducing the need for a full-time biological monitor) outweigh any impacts on habitat, exclusion fencing will be installed around the work area prior to the initiation of maintenance. • Any vehicle parked on-site for more than 15 minutes will be inspected by the biological monitor, qualified biologist, or a trained member of the work crew before it is moved to ensure that a California red-legged frog has not moved under the vehicle. Any parking areas must also be checked in advance by the biological monitor, qualified biologist, or trained crew member. • For vegetation removal on berms or other sites, vegetation will be cut down to three (3) inches by hand tools (weedwhacker, etc.). Once the ground is visible, a visual survey for California red-legged frogs will be conducted by a qualified biologist or biological monitor. If no sensitive species are found in the area, removal of vegetation may continue by mowing or mechanized equipment very slowly with a biological monitor walking in front of the equipment to observe. • Vegetation removed shall be placed directly into a disposal vehicle and removed from the site. Vegetation shall not be piled on the ground unless it is later transferred, piece by piece, under the direct supervision of the biological monitor or qualified biologist or is going to remain on site for erosion control or slash and not be moved or disturbed. • Soil shall not be stockpiled on the ground unless it is on a paved surface or staging area where there aren't burrows. • General Avoidance if a California Red-legged Frog Enters the Project Area: o All work that may harm the frog shall stop until the animal is confirmed to have left on its own, or until personnel approved by USFWS under Midpen's 10(a)(1)(A) or any other project-specific approval (e.g., if a qualified consultant is assisting Midpen and is approved by USFWS to relocate California red-legged frogs for Program activities) has captured the individual. Midpen will coordinate with USFWS and CDFW prior to the start of work to identify acceptable relocation sites if California red-legged frogs are

BMP Number	BMP Title	BMP Description
		encountered within a work area. No California red-legged frogs will be held in captivity overnight without prior notification and written approval by the USFWS and CDFW unless the animal is in need of emergency medical assistance. Medical assistance will be provided to injured animals by a certified wildlife veterinarian familiar with amphibian and reptile care. When transporting individual California red-legged frogs, precautions will be taken to ensure that the animals are not over-stressed and are maintained in safety. Such measures include: keeping animals in a cool, dark, and safe location (e.g., a terrarium), providing adequate hydration, maintaining a stable cool temperature to avoid over-heating, keeping animals isolated to prevent them from harming one another, and ensuring holding tanks or bags are kept clean to prevent the spread of any diseases. o All practicable measures will be taken to avoid killing or injuring any life stage of California red-legged frogs during work activities. o The biological monitor and/or qualified biologist shall have the authority to halt work activities that may affect California red-legged frog adults, tadpoles or egg masses until they can be moved out of harm's way. o Any project-related, human-caused injuries to California red-legged frogs will be immediately reported to USFWS and CDFW. **Tier 3 BMPs** • Prior to and within 24 hours of the planned start of Program activities, a focused survey for California red-legged frogs using an agency-approved protocol will be conducted by a qualified biologist or biological monitor to determine if they are in the area. • A biological awareness training shall be provided to all persons prior to beginning work. This training will include a discussion of all practicable measures to be taken to avoid killing or injuring any life stage of California red-legged frogs during Program activities. • A biological monitor or qualified biologist will be on the project site while Program activities are being conducted. • Midpen generally limits the use of exclusion fencing for special-status species in order to limit habitat impacts. However, if Midpen's biologist determines that the benefits of installing wildlife exclusion fencing around the work area (i.e., in terms of reducing the potential for take of individuals and) outweigh any impacts on habitat, exclusion fencing will be installed around the work area prior to the initiation of maintenance. For example, California red-legged frogs will typically be excluded from the project site prior to Program activities at sites involving the use of large equipment for sediment removal. USFWS and CDFW-approved exclusion fencing will be installed around the sediment removal site, staging areas, and any areas where fill may be dumped. After installation of the fence barrier, a biological monitor or qualified biologist will inspect the project work area, staging and stockpiling areas daily prior to the commencement of activities. If the biological monitor or qualified biologist determines that California red-legged frogs are not within the work area, equipment or materials may be

BMP Number	BMP Title	BMP Description
		moved into the project site and Program activities may commence under the observation of the biological monitor. • Any vehicle parked on site for more than 15 minutes will be inspected by the biological monitor or qualified biologist before it is moved to ensure that a California red-legged frog has not moved under the vehicle. Any parking areas must be checked in advance by the biological monitor or qualified biologist. • For vegetation removal on berms or other sites, vegetation will be cut down to three (3) inches by hand tools (weedwhacker, etc.). Once the ground is visible, a visual survey for California red-legged frogs will be conducted. If no sensitive species are found in the area, removal of vegetation may continue by mowing or mechanized equipment very slowly with a biological monitor walking in front of the equipment to observe. California red-legged frogs can be relocated only if a person is permitted by the USFWS to handle the species. • Vegetation removed shall be placed directly into a disposal vehicle and removed from the site. Vegetation shall not be piled on the ground unless it is later transferred, piece by piece, under the direct supervision of the biological monitor or qualified biologist or is going to remain on site for erosion control or slash and not be moved or disturbed. • Soil shall not be stockpiled on the ground unless it is on a paved surface or staging area where there aren't burrows. • California Red-Legged Frog Measures for Work in Ponds o No more than 24 hours of the planned start of Program activities, visual surveys will be conducted by walking at least a 50-foot buffer area around the pond in an attempt to locate individual California red-legged frogs. If a California red-legged frog is located during the survey but escapes capture, the area where the frog was lost will be marked by flag and a 50-foot (15 meter) radius will be actively patrolled during the work. After the pre-project survey, an avoidance strategy will be devised and presented to all individuals involved in the maintenance activity prior to starting any activities. The number of California red-legged frogs encountered and transferred to safe areas or held in captivity by a permitted and qualified biologist will be reported to the USFWS and CDFW. o The minimum number of qualified biological monitors required at each pond site will be determined in advance by a permitted biological consultant based on pond size, the amount and complexity of work to be performed, and the equipment to be used. o Corridors for travel of vehicles and heavy machinery to the pond site will be established at least 24 hours in advance of the proposed work. Corridors that are not established marked improved roads (paved or unpaved) require special consideration for use by any vehicle. During the use of these off-road corridors by vehicles and machinery, a monitor will proceed directly before the vehicle or machinery to ensure all California red-legged frogs and observable wildlife are cleared from the pathway of the oncoming vehicle. Monitors will signal vehicles to stop if a California red-legged frog is on the pathway, and will allow the animal to clear the pathway by its own direction. Any handling of the red-legged frog must only be done by a qualified permitted individual. Measures will be taken to minimize the number of vehicles allowed on the property. All vehicles

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		involved with the site-specific work that are not transported to the work site will be retained in a prearranged, marked parking area in a clearing as close to the main road as possible. At least one monitor will ensure wildlife is clear from the parking area while vehicles are arriving and leaving. All vehicles must stay on designated roads. o Seasonal Work Period in Ponds. If California red-legged frogs are found in the pond and water is present in the pond, sediment removal and berm or outfall repair activities will be performed from August 15 to November 1. Midpen will coordinate with USFWS and CDFW prior to dredging or de-watering activities. Sediment will be removed from ponds by hand to the extent feasible. Sediment removal from ponds will occur as soon as the ponds are dry (if prior to August 15). o Vegetation Removal at Ponds. If California red-legged frogs are found, tule and emergent vegetation will be removed by hand when feasible. If mechanized equipment is used, one or more biological monitors or qualified biologists will be onsite monitoring the scoop bucket while scooping and watching each load unload. Midpen will coordinate with USFWS and CDFW during the annual project notification process regarding anticipated mechanized equipment use for vegetation removal at ponds. In areas where egg masses are known, Midpen and contractor personnel will not enter the channel/pond to avoid dislodging egg masses except to conduct emergency salvage for the purpose of ensuring the survival of the egg mass (not for the purpose of continuing work). Trimming activities shall be performed from the banks, if possible. o Inspection for Egg Masses. In work areas containing emergent vegetation (e.g., tules, cattails), vegetation will be inspected for California red-legged frog egg masses prior to Program activities. If work cannot be postponed, a buffer of vegetation at least ten (10) feet in diameter shall be left around any egg masses found. Midpen will keep a record of sites where egg masses are found and conduct vegetation removal at these sites prior to November 1 in subsequent years. In the course of monitoring associated with the activities, if egg masses are observed in ponds or wetted areas that are going to dry naturally before tadpoles develop (as determined by a qualified biologist), emergency salvage of egg masses by the qualified biologist is permitted to relocate egg masses into deeper waters that will not be affected by the proposed activities. USFWS shall be notified of the emergency salvage per the terms of the recovery permit. • General Avoidance if a California Red-legged Frog Enters the Project Area: o All work that may harm the frog shall stop until the animal is confirmed to have left on its own, or until personnel approved by USFWS under Midpen's 10(a)(1)(A) or any other project-specific approval (e.g., if a qualified consultant is assisting Midpen and is approved by USFWS to relocate California red-legged frogs for Program activities) has captured the individual. Midpen will coordinate with USFWS and CDFW prior to the start of work to identify acceptable relocation sites if California red-legged frogs are encountered within a work area. No California red-legged frogs will be held in captivity overnight without prior notification and written approval by the USFWS and CDFW unless the animal is in need of emergency medical assistance. Medical

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		assistance will be provided to injured animals by a certified wildlife veterinarian familiar with amphibian and reptile care. When transporting individual California red-legged frogs, precautions will be taken to ensure that the animals are not over-stressed and are maintained in safety. Such measures include: keeping animals in a cool, dark, and safe location (e.g., a terrarium), providing adequate hydration, maintaining a stable cool temperature to avoid over-heating, keeping animals isolated to prevent them from harming one another, and ensuring holding tanks or bags are kept clean to prevent the spread of any diseases. o All practicable measures will be taken to avoid killing or injuring any life stage of California red-legged frogs during work activities. o The biological monitor and/or qualified biologist shall have the authority to halt work activities that may affect California red-legged frog adults, tadpoles or egg masses until they can be moved out of harm's way. • Any project-related, human-caused injuries to California red-legged frogs will be immediately reported to USFWS and CDFW.
BIO-12	Foothill Yellow-Legged Frog Protection Measures	If foothill yellow-legged frog (FYLF) enters the project area, all work shall stop in that area until the animal leaves on its own. Midpen will coordinate with CDFW to develop site appropriate avoidance measures that will be implemented prior to resumption of Program activities at that location.
BIO-13	Western Pond Turtle Protection Measures	Within riparian habitat or Waters of the State and/or U.S. and one (1) mile of a known western pond turtle (WPT) occurrence: 1. Prior to and within 48 hours of the planned start of Program activities, a focused survey for WPT and WPT nests will be conducted by a qualified biologist or biological monitor to determine if they are in the area. In the event WPT are found in the project area, Midpen will exercise measures to avoid direct injury to WPT as well as avoid areas where they are observed to occur. If a WPT is observed, it shall be left alone to move out of the area on its own. If it does not move on its own, it can be relocated to a safe location at least 100 meters (m) distant from the project location. Relocation areas will be of suitable habitat, on shallow banks with slow moving water and will be far enough away so as not to be affected by Program activities. If a WPT nest is found, all activities will cease and Midpen will coordinate with CDFW to develop site appropriate avoidance and minimization measures.
BIO-14	California Giant Salamander, Santa Cruz Black Salamander Protection Measures	• In suitable habitat where Santa Cruz black salamander (SCBS) and/or California giant salamander (CGS) are known to occur: 1. A biological awareness training provided by a qualified biologist or biological monitor will be provided prior to starting work. 2. A qualified biologist and biological monitor will be available and on-call for the duration of the project. 3. A biological monitor will be present onsite when working within or immediately adjacent to wetted areas

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		including stream channels, seeps, and springs. 4. For SCBS only, a biological monitor is also required in areas of talus slopes or areas having human stacked rocks and other suitable materials acting as talus. 5. The biologist and/or biological monitor has the authority to stop work at any time. 6. Dismantling of talus and human-stacked rocks and other suitable materials acting as artificial talus will be avoided and minimized whenever possible. If removal is required to meet project objectives, these materials will be dismantled by hand whenever possible. 7. Whenever possible individual SCBS and CGS shall be allowed to leave the area on their own. 8. Individual SCBS or CGS (not with eggs) that are in harm's way or do not leave the work site on their own may be relocated by a qualified biologist or biological monitor to predetermined sites located outside of the work area but within the same subwatershed. 9. Work in wetted areas, talus slopes, or human stacked rocks or other suitable materials acting as artificial talus should be completed prior to July to avoid displacement of SCBS females laying eggs and attending to clutches. 10. If heavy equipment is required to remove talus, human stacked rocks or other suitable materials acting as artificial talus, this will be done in the presence of a qualified biological monitor. 11. If at any time, SCBS or CGS eggs are found, the area shall be flagged for avoidance. If the area cannot be avoided to meet project objectives, Midpen will coordinate with CDFW to determine the best course of action. • In all other areas of suitable habitat for SCBS and CGS: 1. A pre-survey of the project site is required prior to starting work. If no SCBS or CGS are observed, work may proceed. 2. If an individual SCBS or CGS are observed at any time, all project work shall stop and the biologist and/or biological monitor will be notified and the above measures will be implemented.
BIO-15	San Francisco Dusky-footed Woodrat and Nest Protection Measures	• Projects occurring in suitable San Francisco dusky-footed woodrat (SFDFW) habitat, prior to project implementation, a qualified biologist or biological monitor shall survey the site for evidence of nesting SFDFW (i.e., large stick nests). • Any SFDFW and/or nest that are found within project boundaries, will implement the measures listed below: 1. In natural areas: – All SFDFW nests will be flagged in the field and delineated on project site maps. In all instances, every effort should be made to avoid impacts to SFDFW nests. Avoidance, even with a small buffer area is considered preferable to relocation. Avoidance buffers of a minimum of 3-10 feet shall be implemented, flagged where appropriate, and avoided during project implementation. As evaluated by the project biologist, where appropriate to minimize impacts from Program activities, fencing will be installed around the nest and include the buffer area. Whenever possible, materials associated with an individual SFDFW nest will be left in place.

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		– All SFDFW nests that cannot be avoided by Program activities (i.e. will require relocation), a qualified biologist shall live trap to determine if the nest is in use. Trapping activities should occur prior to April and after mid-July each year to prevent impacts to SFDFW rearing young or young SFDFW s. If a nest is found to be unoccupied or not in use for 3 full days (2 nights of trapping), then it may be removed. The nest shall be relocated or a pile of replacement sticks shall be placed outside of the project footprint for future colonization or re-use. If a lactating female is trapped, Program activities shall be postponed until young have become independent. Trapped SFDFW may be kept in captivity by a qualified biologist for the minimal time necessary until their nests are relocated to suitable habitat outside of the project footprint. The qualified biologist will complete and submit a CNDDB form to CDFW for any SFDFW trapped. Once trapped, nests shall be torn down and rebuilt surrounding a log-based structure, an inverted wooden planter, or similar structure that is slightly buried into the ground and has at least one entrance and exit hole. Cached food and nest material encountered shall be placed within the new structure during nest rebuilding. Whenever possible, the structure shall be "over-built" by adding larger branches for predator protection to create an area for the individual to safely emerge outside of the nest. One or more persons shall remain outside the release structure for up to 10 minutes to mimic a predator. Trapped woodrats should be released into the reconstructed nest by plugging the individual into the shelter using loose dirt over the entrance. Relocated SFDFW nests will be monitored (visual and/or wildlife camera) for one year following relocation, and the biologist will submit a monitoring report to CDFW. 2. In non-natural areas (e.g., structures, abandoned vehicles, human debris piles): – If individuals cannot be live-trapped consistently (especially if there is a risk to human health) and/or there is a lack of woody materials for nest reconstruction, live trapping is not required. Work at these locations must occur prior to April and after mid-July to prevent impacts to SFDFW rearing young. If SFDFW is observed, work at the location shall cease until the individual leaves the area on its own. If the SFDFW does not leave the area, work shall continue to cease at the location and the qualified biologist will be notified. If nests are present that cannot be trapped or removed, woody debris piles that look like woodrat houses can be constructed to provide opportunities for sheltering and colonization by displaced SFDFW under the direction of the qualified biologist or onsite biological monitor. Nest replacement ratios will be determined based on the number of SFDFW and/or nests observed, as well as the size and number of undisturbed nests in the surrounding area.
BIO-16	Migratory Bird Nest Protection Measures (excludes Marbled Murrelet)	• To avoid potential impacts to tree or shrub-nesting birds, any trimming or pruning of trees or shrubs will be conducted during the time period of September 1 to February 14 unless a preconstruction nesting bird survey has been conducted by a qualified biologist or biological monitor. Work will be done during the non-breeding season whenever possible. The bird nesting seasons are defined as follows: 1. March 15 to August 30 for smaller bird species such as passerines; and

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		2. February 15 to August 30 for raptors. 3. Earlier surveys may be needed for specific species such as owls, hummingbirds, herons and egrets and/or other species if nesting activity shifts due to climate change. • If Program activities are scheduled during the nesting season of raptors and/or migratory birds, a focused survey for active nests of such birds will be conducted by the qualified biologist or biological monitor within 15 days prior to the beginning of project-related activities. Surveys will be conducted in all suitable habitat located at project sites and in staging and storage areas. The minimum survey radii surrounding the work area shall be the following: 1. 250 feet for passerines; 2. 500 feet for other small raptors such as accipiters; 3. 1,000 feet for larger raptors such as buteos and eagles. The bird survey methodology and the results of the survey shall be submitted to the CDFW prior to commencement of Program activities. • If an active nest (i.e., a nest having eggs or chicks present, or a nest that adult birds have staked a territory and are displaying, constructing a nest, or are repairing an old nest) is found and work cannot be postponed, Midpen will designate active nest sites as "Ecologically Sensitive Areas" and protected (while occupied) during Program activities with the establishment of flagging or a fence barrier surrounding the nest site. No trees or shrubs that contain active bird nests will be disturbed until all eggs have hatched, and young have fully fledged (are no longer being fed by the adults, and have completely left the nest site). No habitat removal or modification shall occur within the Ecologically Sensitive Area fenced nest zone even if the nest continues to be active beyond the typical nesting season for the species, until the young have fully fledged and will no longer be adversely affected by the project. The minimum distances of the protective buffers surrounding each identified nest site will be the following, with some considerations depending on nest location and substrate: 1. 500 feet for large raptors such as buteos; 2. 250 feet for small raptors such as accipiters; 3. 250 feet for passerines; and 4. 1,000 feet for eagles. A biological monitor or qualified biologist will monitor the behavior of the birds (adults and young, when present) at the nest site to ensure that they are not disturbed by project-related activities. Nest monitoring will continue during project-related construction work until the young have fully fledged, are no longer being fed by the parents and have left the nest site and surrounding area, as determined by a biological monitor. If a protective buffer must be modified, Midpen will coordinate with the CDFW and/or the USFWS as appropriate prior to resumption of Program activities. • If a lapse in project-related work of 15 days or longer occurs, another focused survey will be conducted before project work is reinitiated.

BMP Number	BMP Title	BMP Description
BIO-17	Marbled Murrelet Nest Protection Measures	**Holdings where Marbled Murrelets are Absent (Tier 1)** All activities that occur at least 0.25 mile outside the nesting range of the marbled murrelet (as discussed in Section 5.4.4 below) are classified as Tier 1 activities for the marbled murrelet, and these activities will have no effect on individual marbled murrelets. No species-specific BMPs are needed to avoid and minimize impacts of Program activities on individual marbled murrelets at these locations. For preserves, easements, and management areas located within 0.25 mile of the nesting range of the marbled murrelet, Midpen will conduct a field survey and/or desktop review of areas within 0.25 mile of the project area for trees that meet the Pacific Seabird Group definition of potential marbled murrelet nesting trees and/or known marbled murrelet nest locations. If no suitable nest trees or known nest locations are present within 0.25 mile feet of the project area, the activity will be classified as Tier 1 for that location. **Holdings where Marbled Murrelets May Be Present (Tier 2A or Tier 2B)** For preserves, easements, and management areas located within 0.25 mile of the nesting range of the marbled murrelet, Midpen will conduct a field survey and/or desktop review of areas within 0.25 mile of the project area for trees that meet the Pacific Seabird Group definition of potential marbled murrelet nesting trees and/or known marbled murrelet nest locations. If suitable nest trees or known nest locations are present within 0.25 mile of the project area or if a marbled murrelet nest is detected, Midpen will implement the Tier 2A BMP described below (i.e., avoidance of the nesting season) to avoid impacts on nesting marbled murrelets. If Program activities will occur within 0.25 mile of suitable nesting trees for marbled murrelets or known marbled murrelet nest locations during the nesting season, Midpen will implement the Tier 2B BMPs described below to avoid and minimize impacts on nesting marbled murrelets. Because these BMPs will avoid impacts on individual marbled murrelets that may be nesting near Program work areas, no activities classified as Tier Tier 3 for marbled murrelets will occur under the Program. **Tier 2A BMP** • Work within the project area shall be confined to the period of September 15 to November 1 to the extent feasible. If maintenance activities cannot be conducted during this seasonal work period, Midpen will coordinate with CDFW and USFWS during the February 1 notification and implement the Tier 2B BMPs below. **Tier 2B BMPs** • If construction activities occur during the marbled murrelet breeding season (March 24 to September 15), seasonal disturbance minimization buffers as listed in the table below and in the July 26, 2006 document, *Estimation of the Effects of Auditory and Visual Disturbance to Northern Spotted Owls and Marbled Murrelets in Northwestern California* (table below), shall be followed: Anticipated Action Generated Sound Level (decibels [dB])[2]

BMP Number	BMP Title	BMP Description

Existing Pre-Project (Ambient) Sound Level[1]	Moderate (71-80 dB)	High (81-90 dB)	Very High (91-100 dB)	Extreme (101-110 dB)
Natural Ambient (<=50 dB)[3]	165	500	1,320	1,320
Very Low (51-60 dB)	40	330	825	1,320
Low (61-70 dB)	40	165	825	1,320
Moderate (71-80 dB)	40	165	330	1,320
High (81-90 dB)	40	165	165	500

[1] Existing (ambient) sound level includes all natural and human-induced sounds occurring at the project site prior to the proposed action, and are not causally related to the proposed action.
[2] Action-generated sound levels are given in decibels (dB) experienced by a receiver, when measured at 15.2 m from the sound source.
[3] "Natural Ambient" refers to sound levels generally experienced in habitats not substantially influenced by human activities.

Midpen will conduct a sound level monitoring study to determine level of ambient and construction activity noise anticipated during construction activities to calculate seasonal disturbance minimization buffer widths. Midpen will provide a description of methods and results of the study to USFWS and CDFW to coordinate site-specific avoidance measures 30 days prior to commencement of Program activities at the applicable location(s). In order to alert work crews to their presence, marbled murrelet seasonal disturbance buffers, as determined by the sound study and table above, shall be flagged in the field where they enter the project area. If Midpen chooses not to conduct the sound study, no maintenance activities shall occur within 0.25-mile of potential nest trees during the marbled murrelet breeding season (March 24 to September 15).

- If noise generating construction activity takes place during the breeding season (March 24 to September 15) within suitable redwood and redwood/Douglas-fir forests, construction activities will be restricted to 2 hours after sunrise to 2 hours before sunset to minimize disturbance of potential nesting marbled murrelets using forest habitat as a travel corridor between inland nesting and coastal habitat.
- Midpen or its contractor will not conduct Program activities within a visual line-of-sight distance of 40 meters or less from a suitable nest tree as designated by a qualified biologist or biological monitor.

If marbled murrelet protocol level surveys are conducted and do not indicate that the habitat is occupied by marbled murrelets, the seasonal and distance work restrictions may be lifted with approval from CDFW and

BMP Number	BMP Title	BMP Description
		USFWS. Protocol level survey procedures and information can be found at: http://www.pacificseabirdgroup.org/publications/PSG_TechPub2_MAMU_ISP.pdf. If Midpen chooses to conduct marbled murrelet protocol level surveys, Midpen will coordinate with CDFW and USFWS regarding the survey stations to ensure all contiguous suitable habitat is covered and good visuals of the sky and nearby flyways, if present, are provided. If marbled murrelet protocol level surveys are conducted, Midpen will submit the report consistent with *Methods for Surveying Marbled Murrelets in Forests: A Revised Protocol for Land Management and Research*.
BIO-18	Bay Checkerspot Butterfly and Santa Clara Valley Dudleya Protection Measures	• For all ponds and wetland, creeks and rivers, prescribed fire and property clean up and building removal, sites will be pre-surveyed by a qualified botanist for Santa Clara Valley dudleya and Bay checkerspot butterfly host plants prior to implementing recovery actions. In certain cases, prescribed fire may be used to enhance a native species or to control nonnative species, but site-specific recommendations will be made based on the species composition and the objectives for the site. • All prescribed grazing areas within Midpen have been mapped for sensitive status plant species and there are not currently any federally or State-listed plants within grazed properties. To ensure no newly listed species or previously undiscovered species are present, Midpen rangeland ecologist will perform annual monitoring and reporting to agencies. • For all roads and trail maintenance activities, grassland areas will be surveyed by a qualified botanist for sensitive status plant species every 3 years. Woodland, hardwood, shrub and scrub, and forested areas will be mapped by a qualified botanist every 5 years. • All areas having known occurrences of Santa Clara Valley dudleya or Bay checkerspot butterfly host plants for which recovery actions are proposed will be surveyed prior to treatment. Listed and host plants will be avoided either through timed activities (for example mowing after annuals set seed) or flagging individual plants for avoidance. In any areas in which host plants cannot be avoided, seed will be collected and the area reseeded under approvals from the USFWS and CDFW. • Prior to conducting any manual, mechanical, or chemical IPM treatment in serpentine habitats, surveys will be conducted for dwarf plantain (*Plantago erecta*), purple owl's clover (*Castilleja densiflora*), and exserted paintbrush (*Castilleja exserta*) during the appropriate blooming period, and host plants containing eggs, larva, or pupa of Bay checkerspot butterfly will not be treated.
BIO-19	Bat Colony Protection Measures	• In areas of suitable habitat, preconstruction surveys are required for the following bat species: – Pallid Bat (*Antrozous pallidus*) – Townsend's Big-eared Bat (*Corynorhinus townsendii*) • Bat surveys should take place during the April 15 through August 31 maternity roost season whenever possible. Surveys may also take place between February 16 and April 14, or between September 1 and November 15. Findings during spring and fall surveys may indicate that a second summer survey is necessary

BMP Number	BMP Title	BMP Description
		• Bats generally breed April through Aug, no building or tree work (over 16" dbh) is allowable during this time if surveys determine that special status bats or maternity roosts are present • Bats may go into a deep torpor period November 16 through February 15, no building or tree work (over 16" dbh) is allowable during this time if surveys determine that special status bats or hibernaculum roosts are present • If individual non breeding and non-special status bats are present, a qualified biologist may be retained to remove the bats and work may proceed year round • If maternity roosting or special status bat species are present at any time, no work is allowed without first excluding and providing alternate roost site(s), or identifying suitable nearby existing roosting sites, outside of the breeding season • Alternate roost site(s) must be determined by District Natural Resources staff or a consulting biologist and submitted to California Department of Fish and Wildlife before installation • Whenever possible alternative roost site(s) will be provided 6 months to 1 year prior to the removal of maternity roosting habitat to allow bats adequate time to discover the new locations • Alternative roost site(s) shall be monitored for occupancy by a qualified biologist within one year of installation • Contractors, Midpen staff, and others working in areas known to support maternity roost site(s) and/or special status bat species will be provided biological awareness training by a qualified biologist prior to the commencement of work *Mitigation for impacts to maternity roost(s) and special status bat species:* Buildings and Other Human Structures: • To mitigate for demolition activities, fumigation, or other activities that involve the removal or disturbance of roosting bats in buildings, bridges, outbuildings, dilapidated structures, old vehicles (buses, trailers etc.), or other human created structures (including debris piles): • If signs of bats are evident and removal or disturbance of bats is necessary, a qualified biologist will conduct surveys for roosting bats prior to beginning work. Surveys will consist of daytime pedestrian surveys to look for visual signs of bats (e.g., guano), and if determined necessary, evening emergence surveys to note the presence or absence of bats. If evidence of bat roosting is found, the number and species of roosting bats will be determined. If congregations of more than five bats are found within a single human-made structure during the maternity roosting season it may be assumed that the colony constitutes a maternity roost and the location will be recorded in the District's wildlife database. If no evidence of bat roosts is found, then no further study will be required. Bat detectors and/or infrared detectors may be used to supplement survey efforts, but are not required. • When bat roosting sites are located in buildings, exclusion of bats from the building will occur outside of the April through August nursery season. • If roosts of special-status bats are determined to be present and must be removed, a bat exclusion plan will be prepared and submitted to CDFW. The exclusion plan will describe the method of exclusion, which may include

BMP Number	BMP Title	BMP Description
		the use of one-way doors at roost entrances (bats may leave but not re-enter), or sealing roost entrances when the site can be confirmed by a bat expert to contain no bats. No bats will be excluded until the plan is approved by CDFW and alternative roosting habitat is approved. The bats will be excluded from the roosting site before the site is disturbed or modified in any way. <u>Tree Removal:</u> • Avoid removal of trees greater than sixteen inches dbh during the April through August nursery season whenever possible. • If removal of trees greater than sixteen inches dbh during the nursery season cannot be avoided, a qualified biologist will conduct surveys for roosting bats where suitable large trees are to be removed. Surveys will consist of daytime pedestrian surveys to look for visual signs of bats (e.g., guano), and if determined necessary, evening emergence surveys to note the presence or absence of bats. If evidence of roosting bats is found, the number and species of roosting bats will be determined. If no evidence of bat roosts is found, then no further study will be required. Bat detectors and/or infrared detectors may be used to supplement survey efforts, but are not required. • If roosts of special-status bats are determined to be present and must be removed during the April through August nursery season, a bat exclusion plan shall be prepared and submitted to CDFW. The exclusion plan will describe the method of exclusion, which may include the use of one-way doors at roost entrances (bats may leave but not re-enter), or sealing roost entrances when the site can be confirmed by a bat expert to contain no bats. The use of sonic bat deterrents may also be allowed when called for by a qualified biologist. No bats will be excluded until the plan is approved by CDFW and alternative roosting habitat is approved. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young). The bats will be excluded from the roosting site before the site is disturbed, closed or modified in any way. When possible, alternative roosting sites will be provided 6 months to a year prior to the removal of existing roosts. Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost site, the structures may be removed or sealed. <u>Work in or adjacent to areas known to support special status bats and/or maternity roosts:</u> • Whenever possible work shall take place outside of the April through August nursing season. • Natural Resources staff shall provide and/or consult with qualified biologists having knowledge specific to the bat species present at the site. Species specific noise tolerance levels (including high frequency noise) shall be established for work taking place within a determined buffer around the maternity roost. All equipment working within the site during the nursing season must be tested for high frequency noise outputs prior to use on the site. If equipment is determined to produce any noise that is expected to cause bats to abandon a maternity roost it will not be used on the site within the biologist established buffer during the nursing season. <u>Relocation of bat boxes:</u> • Relocation requires the approval of the Natural Resources department and may be performed by a qualified

BMP Number	BMP Title	BMP Description
		biologist. • Bat boxes may be relocated between mid-September to mid-October, or from mid-February to mid-March (during warm periods outside of the nursing season). Bat boxes may be relocated outside of these recommended time periods with sign off from a qualified biologist. • Relocation of boxes that support special status bat species requires notification to CDFW before implementation. • If a bat box is determined to be unoccupied by a qualified biologist, it may be relocated at any time without modification. If occupied, a one way door shall be installed on the entrance/exit of the bat box, preferably during a warm period when bats are likely to be active. The one way door shall remain in place for a period of 3-7 days. After this period a qualified biologist shall arrive on site and check the box for occupancy. If the box is still occupied then the one way door shall remain in place for an additional 3-7 days. Once the box is determined to be unoccupied then it may be relocated with direction from Natural Resources or a qualified biologist to a nearby suitable habitat. The new location will be recorded and added to the Districts' GIS database. The one way door shall then be removed to allow bats to access the box. Relocated bat boxes shall be monitored for occupancy by a qualified biologist within one year of installation.
BIO-20	Salmonid (Coho and Steelhead) Protection Measures	• Dewatering will not occur in stream reaches where known occurrences of Coho salmon exist. Midpen will coordinate with USFWS and CDFW in the event that dewatering such a stream reach becomes necessary. • Seasonal Work Period for Salmonids: Work within and around NOAA designated critical habitat for steelhead and Coho salmon streams that provide habitat for salmonids shall be limited to June 15 to October 31. Revegetation activities are not confined to this period. • Alternative Seasonal Work Period. Work within and around creeks that do not provide habitat for salmonids and reaches that are 1,000 feet or more upstream of discharge points which do not discharge directly into such drainages will be limited to April 15 to October 31, or is permissible from November 1 to April 14 under the following conditions: 1. Work will not occur until the site has received no rainfall for a period of 10 days and there is no rain in the forecast for a period of 7 or more days, and work requires no greater than 5 days to complete. 2. Work started during this period must be at least 50% complete within 2.5 days of beginning work. 3. Winterization materials must be on hand and installed if unanticipated rainfall begins (defined as 0.5 inches of rain in a 24-hour period). 4. Corrective actions are allowable year-round for the following situations: – To correct improperly installed and/or unauthorized work on Midpen lands that occurred during the same calendar year that result in sediment delivery. – To correct damage from winter storms that threatens access to homes, ponds, water systems, and other critical infrastructure.
BIO-21	Biological	• For all projects within watercourses that are known to support or have the potential to support threatened and/or

BMP Number	BMP Title	BMP Description
	Monitoring for Stranded Aquatic Life	endangered species, a qualified biologist or biological monitor shall conduct a pre-construction survey. • A biological monitor or qualified biologist will check daily for stranded aquatic life as the water level in the dewatering area drops. All reasonable efforts will be made to capture and move all stranded aquatic life observed in the dewatered areas. Capture methods may include fish landing nets, dip nets, buckets and by hand. Captured aquatic life will be released immediately in the closest body of water adjacent to the work site. This measure does not allow for the take or disturbance of any state or federally listed species. • Any aquatic nonnative invasive species found will be disposed of properly and will not be placed back into the creek where work is being conducted or any other drainages, creeks or streams. The Midpen Project Manager will send a list to CDFW of species found and the location they were found after completion of Program activities.
BIO-22	Large Woody Material Management	Large Woody Material management and removal will be undertaken only as a last resort to mitigate ongoing or imminent damage. Large wood is defined as logs with a diameter of 6 inches or greater and a length of 10 feet or longer, rootwads and stumps. Locations will be assessed for sensitive species prior to beginning any work at the site. Smaller pieces of large woody material shall be removed to above the OHWM of the channel, and will be stacked or spread for terrestrial habitat
BIO-23	Riparian Avoidance	Riparian trees shall be protected from damage to the greatest extent possible during repair and replacement. Vegetation management activities will not adversely impact the riparian zone, shade, canopy coverage, or habitat.
BIO-24	Riparian Restoration	• **Restoration Area.** Where feasible, restoration will take place in the same Preserve and preferably on the same waterway or watershed and adhere to the conditions below. Planting or seeding of riparian vegetation may be done at any time provided there is no erosion and sedimentation that may cause an adverse impact to water quality. • **Tree Replacement.** In suitable areas, trees shall be replaced at the following ratios (replacement trees to removed trees) to mitigate for permanent net loss of habitat and canopy cover: 1. For non-native trees that provide canopy cover to the creek: 1:1 (compensation to impact) ratio 2. For native trees: 2:1 ratio unless approved otherwise by CDFW. In certain areas where regeneration will occur or overcrowding is an issue, a 1:1 ratio is acceptable. • **Re-vegetation Ratio.** In suitable areas, other vegetation shall be replaced with the following ratios: wetlands, 1:1; general riparian vegetation, 3:1; sycamore alluvial woodland or other rare habitat types: 5:1; other general habitat types, 1:1. • **Native Species for Re-vegetation.** Replacement trees and vegetation will be local native species adapted to the lighting, soil and hydrological conditions at the replanting site, except in cases where non-native trees are considered culturally significant. In these areas, non-native trees may be replaced with the same species of non-native tree to preserve the cultural landscape in ongoing maintenance to prevent the spread of the non-native is provided. If replanting within the work area is infeasible due to lack of space, slope steepness or other physical constraints, replacement trees and vegetation may be planted at an alternate location along the stream corridor. Vegetation will be replaced by December 31 of the year impacts occur in a location that is not subject to future

BMP Number	BMP Title	BMP Description
		maintenance or construction work. • **Re-vegetation Plan.** Where active restoration is warranted, Midpen will submit a re-vegetation plan to CDFW with the annual February notification. The plan will describe the project site and vegetative community, including the conditions warranting active re-vegetation. Proposed restoration measures will be described, including location, number, size and type of replacement plantings, installation specifications and irrigation specifications if warranted. • **Re-vegetation Survivorship.** Any re-vegetation plan will include success criteria specific to the circumstance. The re-vegetation effort will replace or improve on the habitat value of the impacted area in a reasonable amount of time. The term 'Reasonable amount of time' means a return to the pre-project baseline in approximately the same period of time that the pre-existing habitat took to establish naturally. For habitats where this is not feasible (such as oak woodland), success criteria should focus on attributes that will provide a reasonable assurance that the re-vegetation will eventually result in the required replacement value. These attributes could include plant vigor, establishment of minimal species diversity, cover, lack of limiting factors and others. • **Re-vegetation Success Criteria.** For every project where habitat is removed, whether active re-vegetation is removed or not, the annual February notification should provide an estimate of the time necessary to re-establish the baseline habitat value lost. Midpen will monitor the site for that period (as modified by CDFW where warranted). If the site reaches the pre-project habitat baseline prior to the end of the projected monitoring period and keeps that habitat value for two consecutive years, Midpen can request CDFW to waive further monitoring. For sites requiring longer terms to reasonably reach a pre-project baseline and which are clearly doing well and therefore can reasonably be considered likely to reach the site habitat goals (such as oak woodland or redwood forest), Midpen can request CDFW to reduce or end the monitoring after five years. • **Re-vegetation Remediation.** If re-vegetation success criteria requirements do not meet established goals, Midpen is responsible for replacement planting, additional watering, weeding, invasive exotic eradication, or any other practice, to achieve these requirements. All plants that die within the monitoring period will be replaced during the fall the year the plant was determined to have failed, or as soon as replacement nursery stock can be grown, on site seed collected, or whichever propagation method is most effective, as necessary to satisfy success criteria. Replacement plants will be monitored with the same goal as initial planting until habitat goals are met. If the problem(s) is/are larger in scope, are likely to recur and cannot be corrected, Midpen will coordinate with CDFW to develop a modified plan for the site. • **Sedimentation.** Primary sedimentation control will be provided by implementation of the best management practices under *Sediment/Water Quality Control* and *Erosion Control*. For any project where erosion and sedimentation cannot be completely controlled by these measures (such as clearing a plugged culvert in a live channel), additional measures will be implemented as necessary. Midpen will identify any projects where this condition occurred during the preceding calendar year and estimate the amount of sediment that bypassed

BMP Number	BMP Title	BMP Description
		protective measures, if any. To compensate, as part of the annual February notification, Midpen will propose sufficient erosion control projects to halt chronic sedimentation from other sources of a similar or greater amount. This annual quantity of erosion control projects will be determined through coordinate between Midpen and CDFW.
BIO-25	California Tiger Salamander Protection Measures	In the limited area in which the California tiger salamander might occur (i.e., in the northeastern portion of Sierra Azul OSP), the measures described for California red-legged frog above will be implemented for California tiger salamander as well. In addition, the CDFW will be included in any agency coordination, as well as the USFWS, for issues involving the California tiger salamander. **Holdings where California Tiger Salamanders are Absent (Tier 1)** All activities that occur in holdings where California tiger salamanders are determined to be absent are classified as Tier 1 activities for the California tiger salamander, and these activities will have no effect on individual California tiger salamanders or their habitat regardless of location of the activity or time of year the work occurs. No species-specific BMPs are needed to avoid and minimize impacts of Program activities on individual California tiger salamanders within these holdings. **Holdings where California Tiger Salamanders May Occur (Tiers 2A, 2B, and 3)** California tiger salamanders are not currently known to occur in any Midpen holdings, and they have only a very low potential to occur within Midpen's preserves, easements, and management areas (as discussed in Section 5.2.4 or based on updated mapping by Midpen). In the limited areas where California tiger salamanders can potentially occur, Midpen will determine if the proposed maintenance activity is likely to result in take of California tiger salamanders, if tiger salamanders are present within the work area. For instance, if the activity consists of hand work or is located entirely within developed areas (e.g., roads and buildings) where no cover for California tiger salamanders is present, the likelihood of take of tiger salamanders would be very low. Midpen will then determine whether to implement the Tier 2A, 2b2B, or 3 approach as follows: • **Tier 2A** – applicable if Program activities occur in the limited areas where California tiger salamanders could potentially occur, but (a) the activities occur in uplands during the dry season and during the day, and (b) the activities either would not result in ground disturbance or occur in areas where no burrows or other potential salamander refugia are located in areas where ground disturbance would occur. Tier 2A is also applicable if Program activities occur in wetlands, during the wet season, and/or at night, but are types of activities that are not likely to result in take of California tiger salamanders. In this case, Midpen would implement the Tier 2A BMPs described above for the California red-legged frog, applying them instead (or in addition) to California tiger salamanders. • **Tier 2B** – applicable if Program activities occur in the limited areas where California tiger salamanders could potentially occur and either (a) either occur in wetlands, during the wet season, and/or at night; and/or (b) would

BMP Number	BMP Title	BMP Description
		result in ground disturbanceno burrows or other potential salamander refugia are located in areas where ground disturbance would occur, ; and but if(c) implementation of BMPs such as pre-activity surveys and monitoring would avoid impacts to individual salamanders. In this case, Midpen would implement the Tier 2B BMPs described above for the California red-legged frog, applying them instead (or in addition) to California tiger salamanders. • **Tier 3** – applicable if Program activities occur in the limited areas where California tiger salamanders could potentially occur and could potentially impact individuals, such as disturbing burrows or other potential upland refugia and/or necessitating relocation of individuals. In this case, Midpen would implement the Tier 3 BMPs described above for the California red-legged frog, applying them instead (or in addition) to California tiger salamanders.
Erosion Control Measures		
EC-1	General Erosion Control Measures	• All exposed soils within a project site will be stabilized immediately following the completion of earthmoving activities to prevent erosion into the stream channel. Erosion control BMPs, such as silt fences, certified weed-free straw hay bales, gravel or rock lined ditches, water check bars, certified weed-free wattles, forest duff or mulches, and broadcasted certified weed-free straw will be used as necessary. Erosion control fabrics will be constructed of biodegradable materials, such as coir or jute. Erosion control products will not contain monofilament material. The effectiveness of erosion control BMPs will be monitored during and after each storm event. Modifications, repairs and improvements to erosion control BMPs shall be made as needed to protect water quality. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. • Soil accumulated behind erosion control features will be removed promptly to an erosionally safe location and controlled for erosion. Erosion control measures will be monitored following significant storm events and modifications, repairs, and improvements to erosion controls measures will be made whenever they are needed • Erosion control measures will be utilized throughout all phases of operation where sediment runoff from exposed slopes threatens to enter Waters of the State and/or U.S. This may require the construction at the toe of the slope below the construction site, of silt catch basins, silt fencing, certified weed free straw bale dikes, or other siltation barriers. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter a stream.
EC-2	Slope or Bank Stabilization	• Implement bio-compatible bank stabilization methods such as brushlayering (live cut branches interspersed between layers of soil wrapped in natural geotextile materials with branches in alternative crisscrossing or overlapping pattern), brush mattresses, and live siltation to stabilize slopes and banks where feasible. The finished slopes should be seeded with native seed and mulched with a biodegradable tackifier. • Riprap of proper size and weight to withstand high water flows, where necessary, will be set below grade and keyed into the bank such that it is above the OHWM to the extent feasible. Work will be confined to the damaged or failed sections and immediate adjacent bank area affected by the damage failure. No more than 40% of bank

BMP Number	BMP Title	BMP Description
		repairs in a given year will use "hard" or impervious structure design. Incorporate rootwad revetments, live stakes, and pole planting at suitable locations to encourage vegetation growth over rip-rap where feasible. The following measures will be implemented during Program activities. 1. Streambank areas receiving rock slope protection will be back-filled with appropriate native or clean imported topsoil. The topsoil will fill some portions of the voids in the rock slope protection above the normal high water mark and provide a substrate for revegetation efforts. This work will be done manually using hand tools and power tools such as a toter or mule for single-track trail environments or an excavator or dump truck when needed for multiuse trails or roads. 2. Other bank stabilization measures that may be employed include broadcast and hydro-seeding, riparian vegetation planting, slopes armored with rocks or sandbags staked with live willow and other bioengineering techniques such as willow staking, live willow pole drains, vegetated crib walls, log or rock weirs. 3. Riparian trees will be protected from damage to the greatest extent possible during repair and replacement.
EC-3	Road and Trail Drainage Maintenance	• Minimize fine sediment contributions from roads, cutbanks, and ditches through seasonal closures and installing a variety of surface drainage techniques including berm removal, road surface shaping (outsloping, insloping, or crowning), rolling dips, ditch relief culverts, water bars, and other measures to disperse road surface runoff and reduce or eliminate sediment delivery to streams. • Implement "live pole drains" where feasible to prevent landslides, unstable slopes, and slumping. • Cleaning roadside/trailside ditches will be limited to no more than 10 cubic yards of soil per 100-yard length of road/trail and allows associated vegetation removal. • Sloughs and berms may be occasionally removed (every 3-5 years) from trails and roads, but material removed will not exceed 5 cubic yards per 100-yard length of trail and 10 cubic yards per 100-yard length of road. • Up to two (2) cubic yards of accumulated sediment will be removed from rolling dips per 100-yard length of road/trail that is located within a drainage subject to CDFW jurisdiction. • In the event of a landslide, up to five (5) cubic yards per event or up to two (2) cubic yards under any conditions will be removed per the following conditions: 1. Up to 2 cubic yards of material may be removed, using hand tools only, under any conditions. 2. Removal of amounts greater than 2 cubic yards requires that the channel be dewatered first and heavy equipment may be used if submitted to CDFW in writing through annual notification process with written approval from CDFW and where no Coho salmon are present. 3. The total area of disturbance shall not exceed 150 feet of channel or 2,000 square feet of area, whichever is less. 4. The disturbed area shall immediately be treated with erosion control materials sufficient to control turbidity. 5. Nearby perched or otherwise unstable fill shall be removed as well, up to 5 cubic yards.
EC-4	Road and Trail	<u>Narrow-width Trails:</u>

BMP Number	BMP Title	BMP Description
	Minor Relocation	• The new location will be no more than 400' upslope or downslope of the existing location. • New crossings shall be freespan bridges in creeks providing salmonid habitat or freespan bridges or mortar or concrete free fords in creek without salmonid habitat. • Vegetation removal is limited to no more than a six (6) foot buffer around the new crossing and to trimming of no more than 20% of any individual tree canopy in that six-foot buffer. Vegetation removal shall be limited to the minimum amount necessary to provide access. • All work will be done when the work area is dry and the work period is outside the rainy season. • Work must be completed during the appropriate fish and aquatic habitat avoidance times (BMP DW-2). <u>Other Trails and Roads:</u> • The new location must be no more than 400' upslope or downslope of the existing location • The total amount of earthwork will not exceed 75 cubic yards per year. • New crossings shall be freespan bridges in creeks providing salmonid habitat or freespan bridges or mortar or concrete free fords in creeks without salmonid habitat. • All work is to be done when the work area is dry, during the appropriate fish and aquatic habitat avoidance times (BMP DW-2). When work will be done within or around perennial streams or during wet weather years in which the channel does not dry, work will be scheduled during periods of low flow and will adhere to the dewatering BMPs (DW-1, DW-2, and DW-3). • Vegetation removal is limited to no more than a five-foot buffer around the new crossing and to trimming of no more than 20% of any individual tree canopy with the five-foot buffer.
EC-5	Revegetation of Disturbed Areas	Disturbed areas shall be re-vegetated according to Midpen's BMPs for Revegetation and will use native plants whenever possible. If locally collected native plants are not available, sterile revegetation plants shall be used (e.g. cereal barley, Regreen, Trios). Disturbed areas shall be protected with correctly installed erosion control measures (e.g. jute, certified weed free straw, coconut fiber, or coir logs). Materials containing monofilament or plastic shall not be used.
Sediment/Water Quality Control Measures		
SWQ-1	Water Body Protection Measures	• Midpen will divert any flow at the project around the active maintenance site in a nonerosive manner. • Limit work activities outside of a stream channel to the extent feasible to minimize stream disturbance and turbidity. • If work within an inundated water body is necessary, conduct applicable dewater procedures to minimize water body disturbance and turbidity. • During Program activities, silt control measures will be used during all phases of the project to prevent silt or earthen fill from entering the aquatic environment. In addition, exposed or disturbed areas within the project site will be stabilized to the greatest extent possible.

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		• BMPs will be used on temporarily stockpiled excavated sediment prior to disposal or reuse to protect water quality and beneficial uses. The excavated sediment may be stockpiled onsite so that it can be loaded into trucks for off-site disposal within three (3) working days. The excavated sediment may also be temporarily stockpiled at an off-site location so that runoff, sediment, or decant water from the excavated materials will not contact waters of the State and/or U.S. • Implement a debris catchment system (e.g., nets, tarping) during bridge work to avoid the introduction of materials into a water way.
SWQ-2	Turbidity Monitoring	• When working within wet channels there will be a designated water quality monitor to monitor and document turbidity entering and exiting the work site. • During Program activities in wetted stream channels or other aquatic habitat, Midpen or their contractor will monitor turbidity levels up and downstream of the project area before and during Program activities, and shall keep a log of turbidity data. Maintenance activities will not result in increases in turbidity of the stream of more than 20 percent of upstream sampling locations, as measured visually or by Nephelometric turbidity units (NTU) as approved by the Regional Water Quality Control Board Waste Discharge Requirements and Water Quality Certification covering the project. • Upon Midpen's determination that turbidity/siltation levels resulting from project-related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation will be halted until effective approved control devices are installed or abatement procedures are initiated.
SWQ-3	Sediment Filtering Measures	Midpen or their contractor will deploy silt curtains or other appropriate silt filtering devices, such as straw bales, around the excavation site to prevent heavily silted water from impacting areas around the project area. The silt curtain or silt filtering devices shall be maintained throughout all phases of the excavation and construction activities.
Dewatering Measures		
DW-1	Stream/Aquatic Habitat Isolation	• If repair activities affect the active channel, the work area shall be isolated from flowing stream segments using silt fences, wattles, and/or cofferdams and restored to pre-project conditions after maintenance is complete. All stream diversions shall be closely maintained and monitored. Pumped diversions shall be continuously monitored (24-hours). Upon completion of work in diverted channels, the stream diversion shall be removed and flow shall be re-directed through the new culvert or back into the original stream channel. • Stream or aquatic habitat diversion systems will maintain as much instream or aquatic habitat connectivity as possible to allow for movement of aquatic organisms. Diversion will be conducted such that water at the downstream end does not scour the channel bed or banks. Coffer dams, if used, will be constructed upstream and downstream of the work area as close as practicable to the work site. Coffer dams shall be constructed of a non-erodible material which does not contain soil or fine sediment and shall be constructed with clean gravel and bags, and may be sealed with sheet plastic. All materials shall be removed from the stream or aquatic habitat upon project completion. Normal flows shall be restored to the affected stream immediately upon completion of work at

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		that location. Coffer dams and the stream diversion system will remain in place and functional throughout the construction period. If, the coffer dams or stream diversion fail, they shall be repaired immediately. • During dewatering of the channel, the decrease in water surface elevation (WSE) shall be controlled such that WSE does not change at a rate that increases turbidity to the creek that could be deleterious to aquatic life and the likelihood of stranding aquatic life up- and downstream of the creek. Flows shall be provided to downstream reaches during all times the natural flow would have supported aquatic life. Said flows shall be sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion.
DW-2	Pond Dewatering	When pond draining is required, work will occur between August 15 and November 1, prior to the beginning of California red-legged frog breeding season.
DW-3	Pumps	All pump intakes will be fitted with ¼ inch mesh screens to prevent aquatic species injury, mortality, or impingement.