MITIGATION MONITORING AND REPORTING PROGRAM

Record No.:	**2016-016100ENV**	*Block/Lot:*	Various
Project Title:	**Address NA / SFPUC Southern Skyline Boulevard Ridge Trail Extension Project**	*Lot Size:*	Various
		Project Sponsor:	San Francisco Public Utilities Commission – (415) 551-4525
BPA Nos:	Not Applicable		
Zoning:	RM Resource Management District R-E Residential Estates District	*Lead Agency:*	San Francisco Planning Department
		Staff Contact:	Timothy Johnston – (628) 652-7569

The table below indicates when compliance with each mitigation measure must occur. Some mitigation measures span multiple phases. Substantive descriptions of each mitigation measure's requirements, along with details of their applicability among the various project sites and variants, are provided on the following pages in the Mitigation Monitoring and Reporting Program.

Adopted Mitigation Measure	Period of Compliance			Compliance with MM Completed?
	Prior to the start of Construction*	During Construction**	Post-Construction or Operational	
Project Mitigation Measure M-CU-1: Accidental Discovery of Archaeological Resources and Human Remains	X	X		
Project Mitigation Measure M-TR-5a: Installation of Signage			X	
Project Mitigation Measure M-TR-5b: Construction of a Pedestrian/Bicycle/Equestrian Bridge or Roundabout	X	X	X	
Project Mitigation Measure M-NO-1: Construction Noise Reduction	X	X		
Project Mitigation Measure M-AQ-1a: Tier 4 Engines for Selected Equipment	X	X		
Project Mitigation Measure M-AQ-1b: Bay Area Air Quality Management District Basic Construction Measures	X	X		
Project Mitigation Measure M-BI-1a: Avoidance Measures for Special-Status Plant Species	X	X		
Project Mitigation Measure M-BI-1b: Minimization Measures for Special-Status Plant Species and their Habitat	X	X		
Project Mitigation Measure M-BI-1c: Revegetation Plan	X	X	X	
Project Mitigation Measure M-BI-1d: Worker Environmental Training	X	X		

Adopted Mitigation Measure	Period of Compliance			Compliance with MM Completed?
	Prior to the start of Construction*	During Construction**	Post-Construction or Operational	
Project Mitigation Measure M-BI-2a: Avoidance and Minimization Measures for Special-Status Reptiles and Amphibians	X	X		
Project Mitigation Measure M-BI-2b: Avoidance and Mitigation for Host Plants of Listed Butterfly Species	X	X	X	
Project Mitigation Measure M-BI-2c: Avoidance and Minimization Measures for Dusky-footed Woodrat and American Badger	X	X		
Project Mitigation Measure M-BI-2d: Measures to Minimize Disturbance to Nesting Bird Species	X	X		
Project Mitigation Measure M-BI-2e: Avoidance and Mitigation Measures for Special-Status Bats and Maternity Roosts	X	X		
Project Mitigation Measure M-BI-3: Minimizing, Monitoring, and Compensatory Replacement for Impacts on Sensitive Natural Communities	X	X	X	
Project Mitigation Measure M-BI-4: Operational Measures to Protect Sensitive Plant Species	X		X	
Project Mitigation Measure M-BI-5a: Protection of Special-Status Wildlife during Operations	X		X	
Project Mitigation Measure M-BI-5b: Additional Biological Protections for Unsupervised Access	X		X	
Project Mitigation Measure M-BI-5c: Mitigation for Permanent Upland Impacts on Special-Status Reptiles and Amphibians	X		X	
Project Mitigation Measure M-BI-7a: Measures to Reduce Spread of Invasive Plants	X	X	X	
Project Mitigation Measure M-BI-7b: Measures to Limit the Spread of *Phytophthora* spp. (including Sudden Oak Death)	X	X	X	
Project Mitigation Measure M-BI-7c: Measures to Monitor and Prevent Further Spread of *Phytophthora* spp. Pathogens	X	X	X	
Project Mitigation Measure M-HZ-5: Fire Safety During Construction	X	X		
Project Mitigation Measure M-HZ-8: Fire Management Plan	X		X	
Project Mitigation Measure M-TCR-1: Tribal Cultural Resources Preservation Plan and/or Interpretive Program	X	X		

NOTES:

* Prior to any ground disturbing activities at the project site.

** Construction is broadly defined to include any physical activities associated with construction of a development project including, but not limited to: site preparation, clearing, demolition, excavation, shoring, foundation installation, and building construction.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
CULTURAL RESOURCES				
Project Mitigation Measure M-CU-1: Accidental Discovery of Archaeological Resources and Human Remains *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants; and ground-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8.*				
The following mitigation measure is required to avoid any potential adverse effect from the project on accidentally discovered buried archeological resources as defined in CEQA Guidelines section 15064.5(a) and (c). The SFPUC shall distribute the San Francisco Planning Department archeological resource "ALERT" sheet to the project prime contractor; to any project subcontractor (including demolition, excavation, grading, foundation, pile driving, etc. firms); or utilities firm involved in soils disturbing activities within the project site. Prior to any soils disturbing activities being undertaken each contractor is responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile drivers, supervisory personnel, etc. The SFPUC shall provide the Environmental Review Officer with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) to the review officer confirming that all field personnel have received copies of the ALERT sheet. Should any indication of an archeological resource be encountered during any soils disturbing activity of the project or during project operation, the project head foreman and/or SFPUC shall immediately notify the review officer and shall immediately suspend any soils disturbing activities in the vicinity of the discovery until the review officer has determined what additional measures should be undertaken. If the review officer determines that an archeological resource may be present within the project site, the SFPUC shall retain the services of an archeological consultant from the pool of qualified archeological consultants maintained by the planning department archeologist. The archeological consultant shall advise the review officer as to whether the discovery is an archeological resource, retains sufficient integrity, and is of potential scientific/historical/cultural significance. If an archeological resource is present, the archeological consultant shall identify and evaluate the archeological resource. The archeological consultant shall make a recommendation as to what action, if any, is warranted. Based on this information, the review officer may require, if warranted, specific additional measures to be implemented by the project sponsor.	1. SFPUC EMB 2. SFPUC CM Team 3. SFPUC CM Team 4. SFPUC CM Team (Archaeologist) 5. SFPUC CM Team (Archaeologist) 6. SFPUC CM Team (Archaeologist)	1. Design 2. Construction 3. Construction 4. Construction 5. Construction 6. Construction	1. SFPUC BEM 2. SFPUC BEM and ERO 3. SFPUC BEM and ERO 4. SFPUC BEM and ERO 5. SFPUC BEM and ERO 6. SFPUC BEM and ERO	1. Ensure contract documents include measures applicable to accidental discoveries of archeological resources and human remains. 2. Ensure that all project personnel attend environmental training prior to beginning work, receive "ALERT" sheet, and sign the training sign-in sheet. Maintain file of signature sheets and signed affidavit for submittal to ERO. 3. Monitor to ensure that the contractor implements measures in contract documents, report noncompliance, and ensure corrective action. Ensure that all potential discoveries are reported as required. In the event of a potential discovery, ensure contractor suspends activities in the vicinity, and mobilize a qualified archaeological consultant. Qualified archaeological consultant to evaluate the find and advise ERO as to the significance of the discovery.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
CULTURAL RESOURCES (CONT.)				
Measures might include preservation in situ of the archeological resource; an archeological monitoring program; or an archeological testing program. If an archeological monitoring program or archeological testing program is required, it shall be consistent with the Environmental Planning division guidelines for such programs. The review officer may also require that the SFPUC immediately implement a site security program if the archeological resource is at risk from vandalism, looting, or other damaging actions. The project archeological consultant shall prepare a final archeological resources report that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a separate removable insert within the report. The project archeological consultant shall send copies of the draft archeological resources report to the review officer for review and approval. Once approved by the review officer, the project archeological consultant shall distribute copies of the final archeological resources report as follows: (1) California Archeological Site Survey Northwest Information Center shall receive one copy, with a copy of the transmittal of the archeological resources report to the Northwest Information Center sent to the review officer; (2) the Environmental Planning division of the planning department shall receive one bound copy, one unbound copy and one unlocked, searchable PDF copy on CD along with copies of any formal site recordation forms (California Department of Parks and Recreation 523 series) and/or documentation of nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest or interpretive value, the review officer may require a different final report content, format, and distribution than that presented above. The treatment of human remains and of associated or unassociated funerary objects discovered during any soils disturbing activity shall comply with applicable state and federal laws. This shall include immediate notification of the Coroner of the County of San Mateo and in the event of the coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission who shall appoint a Most Likely Descendant (Public Resources Code section 5097.98). The archeological consultant, SFPUC, Environmental Review Officer, and Most				4. Ensure that the project archeological consultant submits a FARR to the ERO if resources are identified on site. The FARR shall evaluate the historical significance of any discovered archeological resource and describe the methods employed in the archaeological monitoring/data recovery program(s) undertaken. Copies of the FARR shall be distributed as outlined in the mitigation measure. 5. If potential human remains are encountered, mobilize a qualified archaeological consultant to confirm existence of human remains. If human remains are confirmed, perform required coordination and notifications.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
CULTURAL RESOURCES (CONT.)				
Likely Descendant shall have up to but not beyond six days after the discovery to make all reasonable efforts to develop an agreement for the treatment of human remains and associated or unassociated funerary objects with appropriate dignity (CEQA Guidelines section 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. Nothing in existing state regulations or in this mitigation measure compels the SFPUC and the review officer to accept recommendations of a Most Likely Descendant. The archeological consultant shall retain possession of any Native American human remains and associated or unassociated burial objects until completion of any scientific analyses of the human remains or objects as specified in the treatment agreement if such as agreement has been made or, otherwise, as determined by the archeological consultant and the review officer.				
TRANSPORTATION AND CIRCULATION				
Project Mitigation Measure M-TR-5a: Installation of Signage *Applies to operation of the proposed access program and variants 2 and 3.*				
The SFPUC shall install signs stating, "Do Not Cross" and "End of Fifield-Cahill Ridge Trail" or "End of Southern Skyline Ridge Trail" at the southern terminus of the existing Fifield-Cahill ridge trail and at the northern terminus of the proposed southern skyline ridge trail. The SFPUC shall also request that Caltrans install two-hour time limit signs in the vista point parking lot adjacent to the southern skyline ridge trailhead parking lot and "No Parking" signage along both sides of S.R. 35 at regular intervals from the S.R. 92/S.R. 35 intersection to the south approximately 500 feet.	1. SFPUC CM Team 2. SFPUC CM Team	1. Construction 2. Operation	1. SFPUC EMB and BEM 2. SFPUC BEM	1. Develop and post signage 2. Coordinate with Caltrans regarding parking limitation signs.
Project Mitigation Measure M-TR-5b: Construction of a Pedestrian/Bicycle/Equestrian Bridge or Roundabout *Applies to operation of the proposed access program and variants 2 and 3.*				
The SFPUC shall work with Caltrans to formulate and execute an agreement on the design, funding, and construction of either a grade-separated crossing or roundabout to reduce potentially hazardous conditions for trail user access across S.R. 92 near its intersections with S.R. 35 and Lifemark Road. The two options, as further described below based on preliminary evaluations conducted to-date, are conceptual, meaning that specific design elements may change.	1. SFPUC EMB 2. SF EP and SFPUC PMB 3. SF EP and SFPUC BEM 4. SF EP and SFPUC PMB	1. Design 2. Preconstruction 3. Preconstruction 4. Preconstruction, construction, and Operation.	1. SFPUC BEM 2. SF EP and SFPUC PMB 3. SF EP and SFPUC BEM 4. SF EP and SFPUC PMB	1. Ensure contract documents include requirement to construct pedestrian/bicycle/ equestrian bridge. 2. Consult with Caltrans regarding feasibility and funding of pedestrian/bicycle/equestrian bridge.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
TRANSPORTATION AND CIRCULATION (CONT.)				
Bridge – The grade-separated crossing shall consist of an elevated pedestrian, bicycle, and equestrian bridge over S.R. 92 at the east leg of the intersection with S.R. 35. The bridge will connect to a high point on the north side of S.R. 92, use a spiral ramp on the south side of S.R. 92, and provide a full grade-separated connection that does not require any modifications to the S.R. 92/S.R. 35 intersection. The bridge piers will be constructed within the Caltrans right-of-way, outside of the travel lanes. *Roundabout* – The roundabout shall accommodate traffic flow among the S.R. 92 intersections with S.R. 35 and Lifemark Road (e.g., dual roundabout design). The SFPUC shall construct an at-grade crosswalk located at a safe point of pedestrian, cyclist, and equestrian passage at the roundabout (e.g., near the middle of the two roundabouts, where the distance between the opposing travel lanes is smallest). The roundabout shall be accompanied by signage installed adjacent to both the eastbound and westbound roadway approaches to the crosswalk to alert drivers of its presence. The crosswalk shall be marked with reflective, high-contrast pavement striping and pedestrian/cyclist/ equestrian trail crossing signs. The roundabout design shall be subject to Caltrans' review and approval, including for conformance with applicable state operations and safety design standards and best practices. The agreement shall also provide for the construction of new sidewalks connecting the selected crossing improvement (i.e., bridge or roundabout) to the existing adjacent Bay Area Ridge Trail segment along Lifemark Road to the north, and the southern skyline ridge trail trailhead and parking area approximately 300 feet to the south. Considering that transportation safety has long been and will continue to be a challenge at the subject intersections independent of the project, SFPUC's financial contribution in the agreement shall be roughly proportional to the project's impact. The selected crossing option (i.e., bridge or roundabout) shall be constructed prior to opening the Fifield-Cahill ridge trail to unsupervised public access (if southern skyline ridge trail is constructed) and prior to opening the southern skyline ridge trail to unsupervised public access.	5. SFPUC BEM	5. Construction and Operation	5. SFPUC BEM	3. Coordinate with Caltrans to conduct separate CEQA process fully analyzing and disclosing environmental impacts of pedestrian/bicycle/equestrian bridge. 4. Coordinate with Caltrans in the implementation and funding of pedestrian/bicycle/equestrian bridge. 5. Monitor to ensure pedestrian/ bicycle/equestrian bridge is constructed and operational prior to opening the southern skyline ridge trail, universal access loop trail, or Fifield-Cahill ridge trail to unsupervised public access.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
NOISE AND VIBRATION				
Project Mitigation Measure M-NO-1: Construction Noise Reduction *Applies to construction of the northernmost portion of the southern skyline ridge trail and southernmost restroom along the southern skyline ridge trail under the proposed access program and all variants; and noise-generating activities associated with Mitigation Measure M-TR-5b.*				
The SFPUC shall incorporate the following practices into the construction contract agreement documents, which the construction contractor shall implement: • Post signs onsite pertaining to permitted construction days and hours and complaint procedures and who to notify in the event of a problem, with telephone numbers listed; • At least two weeks prior to commencement of construction, provide notice of impending construction and construction schedule to sensitive receptors located within 500 feet of the northernmost 2 miles of the proposed southern skyline ridge trail, parking lot, and restroom construction, and the site of the Fifield-Cahill ridge trail parking lot; • Limit construction activity to the exempted hours (7 a.m. to 6 p.m. on weekdays; 9 a.m. to 5 p.m. on weekends) of the San Mateo County Code chapter 4.88; • To the extent that it does not extend the overall schedule, select "quiet" construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures); • Locate stationary equipment, material stockpiles, and vehicle staging areas as far as practicable from sensitive receptors; • Avoid placing stationary noise-generating equipment (e.g., generators, compressors) within noise-sensitive buffer areas (measured at 200 feet) from immediately adjacent neighbors; • Ensure all construction equipment is in good working order and mufflers are inspected for proper functionality; • Prohibit unnecessary idling of equipment and engines; • To the extent that it does not extend the overall schedule, limit the simultaneous operation of multiple pieces of construction equipment close to noise-sensitive land uses; and • Use noise-reducing barriers or enclosures around stationary equipment when within 200 feet of receptors sufficient to achieve a 10-dBA reduction in noise levels.	1. SFPUC EMB 2. SFPUC CM Team 3. SFPUC CM Team	1. Design 2. Construction 3. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM	1. Ensure contract documents include construction noise reduction requirements. 2. Monitor to ensure contractor is implementing construction noise reduction measures. Report noncompliance and ensure corrective action. 3. Post signs specifying construction timing and complaint procedures.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
AIR QUALITY				
Project Mitigation Measure M-AQ-1a: Tier 4 Engines for Selected Equipment *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants; and implementation of Mitigation Measure M-TR-5b.*				
A. Engine Requirements. • All excavators, bulldozers, and scrapers used in project construction shall have engines that meet the U.S. EPA or California Air Resources Board Tier 4 off-road emission standards. If engines that comply with Tier 4 off-road emission standards are not commercially available, then the project sponsor shall provide the next cleanest piece of off-road equipment as provided by the step-down schedules in Table M-AQ-1-1. The project sponsor shall submit documentation to the ERO of the following: 1) evidence that the Tier 4 equipment is not commercially available, identification of the compliance alternative in Table M-AQ-1-1 to be implemented, and analysis demonstrating that the compliance alternative would not exceed the significance threshold for NOx of an average of 54 lbs/day. *B. Waivers.* • The ERO may waive the equipment requirements of subsection (A) if: a particular piece of off-road equipment is technically not feasible; the equipment would not produce desired emissions reduction due to expected operating modes; installation of the equipment would create a safety hazard or impaired visibility for the operator; or, there is a compelling emergency need to use other off-road equipment. If the ERO grants the waiver, the contractor must use the next cleanest piece of off-road equipment with alternative fueling, according to table M-AQ-1-1, below. • The ERO may waive the equipment requirements of subsection A if: a particular piece of off-road equipment with an engine meeting Tier 4 emission standards is not regionally available to the satisfaction of the ERO. If seeking a waiver from this requirement, the project sponsor must demonstrate to the satisfaction of the ERO that the average daily emissions of NOx from project construction sources does not exceed a total of 54 pounds per day. • Use of renewable diesel is only required for equipment that does not meet the Tier 4 engine specification. With respect to renewable diesel, "commercially available" shall mean the availability taking into consideration factors such as: (a) critical path timing of construction; (b) geographic proximity of fuel source to the project site; and (c) cost of renewable diesel is within 10 percent of Ultra Low Sulfur Diesel #2 market price.	1. SFPUC EMB 2. SFPUC CM Team 3. SFPUC CM Team	1. Design 2. Construction 3. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM and ERO	1. Ensure contract documents include Tier 4 engine requirements. 2. Monitor to ensure the contractor complies with Tier 4 engine requirements or next cleanest off-road equipment. Report noncompliance and ensure corrective action. 3. Obtain waiver as per mitigation measure, if needed.

<table>
<tr><th rowspan="2">Adopted Mitigation Measures</th><th colspan="4">MONITORING AND REPORTING PROGRAM</th></tr>
<tr><th>Implementation Responsibility</th><th>Mitigation Schedule</th><th>Monitoring / Reporting Responsibility</th><th>Monitoring Actions / Completion Criteria</th></tr>
<tr><td colspan="5">AIR QUALITY (CONT.)</td></tr>
<tr><td>• The project sponsor shall maintain records concerning its efforts to comply with this requirement.
TABLE M-AQ-1-1
OFF-ROAD EQUIPMENT COMPLIANCE STEP-DOWN SCHEDULE
<table>
<tr><th>Compliance Alternative</th><th>Engine Emission Standard</th><th>Emissions Control</th></tr>
<tr><td>1</td><td>Tier 3</td><td>Use renewable diesel</td></tr>
<tr><td>2</td><td>Tier 2</td><td>Use renewable diesel</td></tr>
</table>
How to use the table: If the Tier 4 emissions standards cannot be met for each piece of off-road equipment, then the project sponsors would need to meet Compliance Alternative 1. Should the project sponsors not be able to supply off-road equipment meeting Compliance Alternative 1, then Compliance Alternative 2 would need to be met.
SOURCE: California Air Resources Board, 2016</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">Project Mitigation Measure M-AQ-1b: Bay Area Air Quality Management District Basic Construction Measures
Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants; and implementation of Mitigation Measure M-TR-5b.</td></tr>
<tr><td>To limit dust, criteria pollutants, and precursor emissions associated with project construction, the following Bay Area air district-recommended Basic Construction Measures shall be included in all construction contract specifications for the project:
• All exposed surfaces exclusive of trail areas (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
• All haul trucks transporting soil, sand, or other loose material off site shall be covered.
• 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.
• All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
• All paving 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.
• Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure in title 13, section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.</td><td>1. SFPUC EMB
2. SFPUC CM Team
3. SFPUC CM Team
4. SFPUC CM Team</td><td>1. Design
2. Construction
3. Construction
4. Construction</td><td>1. SFPUC BEM
2. SFPUC BEM
3. SFPUC BEM
4. SFPUC BEM</td><td>1. Ensure contract documents include Bay Area Air Quality Management District Basic Construction Measures.
2. Monitor to ensure the contractor implements the Bay Area Air Quality Management District Basic Construction Measures. Report noncompliance and ensure corrective action.
3. Post signs for construction workers at all access points regarding idling time restrictions.
4. Post publicly visible sign at the project site entrance specifying SFPUC contact information for dust complaints. Respond to complaints with corrective action.</td></tr>
</table>

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
AIR QUALITY (CONT.)				
• All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. Post a publicly visible sign at the project site entrance with the telephone number and person to contact at the SFPUC regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Bay Area Air Quality Management District's phone number shall also be visible to ensure compliance with applicable regulations.				
BIOLOGICAL RESOURCES				
Project Mitigation Measure M-BI-1a: Avoidance Measures for Special-Status Plant Species *Applies to construction of the universal access loop trail, four-car parking area, and Cemetery Gate and Portola Gate boundary fencing along Fifield-Cahill ridge trail; construction of the southern skyline ridge trail fence; operation of the Fifield-Cahill ridge trail under access program variants 2 and 3; and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within unsurveyed areas and areas with potential to contain special-status plants.*				
• Prior to initial ground-disturbing activities in the project area, a qualified botanist shall conduct a special-status plant survey in accordance with the California Department of Fish and Wildlife protocol. The survey shall cover all unsurveyed portions of the project area that might be affected by the project to identify special-status plants and sensitive natural communities. • Surveys shall be timed to ensure detection of all potentially occurring special-status plant species. If any special-status species are found within the project footprint, the plants shall be avoided by re-routing the project component to ensure that no work would affect the special-status plant species and by establishing a no-disturbance buffer around the species. The fence shall be located away from any identified special-status plant population. If special-status plant populations are found along the Fifield and Cahill service roads, the SFPUC shall install signage and protective fencing (such as split rail) to protect the population during construction. • If avoidance of special-status plants is not feasible, other options as recommended by a qualified botanist, including transplanting or reseeding in suitable habitat, shall be implemented according to the revegetation plan (M-BI-1c).	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC BEM (qualified botanist) 4. SFPUC CM Team 5. SFPUC CM Team (qualified botanist) 6. SFPUC BEM (qualified botanist)	1. Design 2. Design 3. Construction, prior to initial ground-disturbance 4. Construction 5. Construction 6. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM 5. SFPUC BEM 6. SFPUC BEM	1. Ensure contract documents include avoidance measures for special-status plant species. 2. Ensure contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform preconstruction surveys. 3. Conduct special-status plant survey. 4. Monitor to ensure that the contractor implements avoidance measures in contract documents. Report noncompliance and ensure corrective action. 5. If special-status plants are found, install signage and protective fencing to protect plant population.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
				6. If avoidance of special-status plants is not feasible, implement other options as recommended by a qualified botanist, including transplanting or re-seeding in suitable habitat.
Project Mitigation Measure M-BI-1b: Minimization Measures for Special-Status Plant Species and their Habitat *Applies to construction of the universal access loop trail, four-car parking area, and Cemetery Gate and Portola Gate boundary fencing along Fifield-Cahill ridge trail; construction of the southern skyline ridge trail fence; and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within unsurveyed areas and areas with potential to contain special-status plants.*				
Construction contractor(s) shall limit the construction disturbance area to that necessary for project construction and avoid non-project areas by posting signage delineating the construction disturbance area with flags, stakes, or fencing.	1. SFPUC EMB 2. SFPUC CM Team 3. SFPUC CM Team	1. Design 2. Construction 3. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM	1. Ensure contract documents include minimization measures for special-status plant species. 2. Monitor to ensure that the contractor implements minimization measures in contract documents. Report noncompliance and ensure corrective action. 3. Delineate construction disturbance area with signs/flags/stakes/ fencing.
Project Mitigation Measure M-BI-1c: Revegetation Plan *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants; and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within areas with potential to contain habitat for special-status plants or wildlife, or sensitive natural communities.*				
A qualified ecologist shall prepare and implement a revegetation plan with detailed specifications for restoring all temporarily disturbed areas. The plan shall include or provide for the following: • Preconstruction surveys of representative areas to characterize vegetation composition, including species present, vegetation characterization (tree diameter, etc.), percent cover contributed by each plant species, and total cover by natives, non-natives, and target invasive plant species. Photo points shall also be used to document pre-project conditions. The surveys shall be performed by a qualified ecologist with experience in vegetation restoration.	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC BEM (qualified ecologist) 4. SFPUC CM Team 5. SFPUC BEM	1. Design 2. Design 3. Preconstruction 4. Construction 5. Post-construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM 5. SFPUC BEM	1. Ensure contract documents include implementation of revegetation plan, including minimum performance criteria. 2. Ensure contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform preconstruction surveys.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• Use of locally native, ecologically appropriate species for revegetation. Only native species known to occur on the Peninsula Watershed in the affected habitat types shall be used in the planting and seeding palettes. Local native seeds should be sourced from the watershed where possible. Upon approval of the SFPUC or approved representative, some seed may be sourced from suppliers who specialize in locally sourced seed from the greater Bay Area region. • Sanitation measures (e.g., locally sourced cuttings, the elimination of container stock, or the exclusive use of container plants that were grown according to plant pathogen best management practices) to prevent the introduction and/or spread of sudden oak death, other plant pathogens, and invasive plants during revegetation. • Performance criteria and measures to control/remove target invasive plants. Control species shall include those ranked by Cal-IPC as high or moderately invasive, except those that are already widespread in the watershed (e.g., non-native bromes, rough cat's ear [*Hypochaeris radicata*], Italian ryegrass [*Festuca perennis*], wild oats [*Avena fatua*], etc.). The revegetation plan shall distinguish between well-established invasives not targeted for management and invasives targeted for management. Target invasive plants include but are not be limited to the following: yellow star-thistle, purple star-thistle, Italian thistle, shortpod mustard, poison hemlock, and large periwinkle. Because the proposed trail may serve as a conduit for spread of weeds, controlling newly introduced invasive weeds promptly and effectively at disturbed construction sites is critical. The performance standard for target invasive weeds shall be no more than 10 percent absolute cover during the five-year performance period. • The minimum performance criteria shall include: – Combined native and naturalized[1] plant cover (50 percent cover; or equal to or greater than baseline within five years) (applies to non-maintained areas only) – Maximum cover by target invasive plant species (no more than 10 percent absolute cover during each year of the monitoring period)				3. Prepare revegetation plan with detailed specifications and procedures for restoring all temporarily disturbed areas, and for enhancing revegetation sites for permanently disturbed areas. 4. Monitor to ensure that contractor implements revegetation plan. Report noncompliance and ensure corrective action. 5. Monitor to ensure revegetation plan performance standard targets are met during the five-year performance period. Report noncompliance and ensure corrective action.

[1] Note that naturalized species may include Cal-IPC moderate species such as non-native bromes, Italian ryegrass, wild oats, and other species found in the Peninsula Watershed.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• If special-status plants are identified within the active work area and cannot be avoided, the revegetation plan shall include salvage and transplantation measures to seed or relocate affected plants to an appropriate nearby revegetation site. The qualified ecologist shall identify those plants for which translocation would likely be successful and feasible, and for each of those species the plan shall include a description of microhabitat conditions necessary for the species, salvage and transplantation procedures, seed collection and germination methods, an assessment of potential transplant and enhancement sites, performance criteria (e.g., less than 10 percent coverage by target invasive plants and comparable plant abundance, as deemed appropriate for the affected species), and a long-term monitoring program. If any state-listed or state rare plant species cannot be avoided, SFPUC shall obtain an Incidental Take Permit from CDFW pursuant to Fish and Game Code Sections 2081(b) and/or Section 1900 et seq. prior to any salvage operations, or if salvage and transplantation is not feasible. • Special-status plant mitigation areas shall be established at a ratio of 1:1 (impacted area to plantings) based on either the impacted area or the number of impacted individuals, as deemed appropriate by the qualified ecologist. Plants that can be feasibly relocated shall be transplanted into the revegetation site, typically adjacent suitable habitat that is unoccupied, to avoid making transplants into undisturbed occupied habitat and potentially spreading diseases. ~~If salvage and transplantation is not feasible, consistent with the requirements of the Native Plant Protection Act, the SFPUC shall notify the California Department of Fish and Wildlife at least 10 days prior to disturbance to allow for the salvage of rare or endangered native plants that would otherwise be destroyed.~~				
Project Mitigation Measure M-BI-1d: Worker Environmental Training *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants; and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within areas with potential to contain habitat for special-status plants or wildlife, or sensitive natural communities.*				
A qualified biologist shall conduct a biological resources awareness training session for all construction personnel. A qualified biologist is an individual with a four-year degree in biological sciences and familiarity with the special-status species and their habitat that may occur on the site. The training shall be provided for all personnel prior to individuals conducting any work on site, including vegetation clearing. At a minimum, the training shall include:	1. SFPUC EMB 2. SFPUC CM Team (qualified biologist) 3. SFPUC CM Team (qualified biologist)	1. Design 2. Preconstruction and Construction 3. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM	1. Ensure contract documents include requirement that all construction personnel attend training. 2. Prepare a project specific biological-resources awareness training program. Include documentation of qualifications of the biologist

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• A description of rare plants and sensitive vegetation communities that may be encountered, and means of avoiding or minimizing impacts on these species and communities • A description of the San Francisco garter snake, California red-legged frog, marbled murrelet, and other special-status species that may be encountered, the importance of these species and their habitat, the measures being implemented to conserve these species, the boundaries within which the project construction shall occur, and the penalties for failing to comply with biological mitigation requirements • A description of listed butterflies and how to avoid impacts on these species and their host plants • Instruction that personnel shall not feed or otherwise attract any wildlife or bring pets into the project area, adherence to speed limits and proper trash removal, and other best management practices • Orientation regarding the importance of preventing the spread of invasive weeds and plant pathogens, and means of avoiding such spread				developing the training program (e.g., resume). Refer to mitigation measure for specific worker environmental training requirements. 3. Monitor to ensure that all personnel attend training prior to beginning work and sign training sign-in sheet. Maintain file of sign-in sheets. Report noncompliance and ensure corrective action.
Project Mitigation Measure M-BI-2a: Avoidance and Minimization Measures for Special-Status Reptiles and Amphibians *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants, and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within areas with potential to contain habitat for special-status reptiles or amphibians.*				
The following measures shall be implemented before and during construction: • Construction contractor(s) shall limit the construction disturbance area to that necessary for project construction and avoid outside areas by posting signage delineating the construction disturbance area with flags, stakes, or fencing. • The SFPUC shall identify a qualified biologist (who has familiarity and field experience with the affected species, as described in M-BI-1d) to act as construction monitor before construction work begins. • No more than two weeks prior to the onset of work activities and immediately prior to commencing work, the qualified biologist shall conduct a thorough survey of the entire construction footprint for San Francisco garter snake, California red-legged frog, and other special-status species with the potential to be present.	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC CM Team (qualified biologist) 4. SFPUC CM Team (qualified biologist) 5. SFPUC CM Team 6. SFPUC CM Team (qualified biologist)	1. Design 2. Design 3. Construction 4. Construction, prior to onset of work activities 5. Construction 6. Construction, prior to ground-disturbing activities	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM 5. SFPUC BEM 6. SFPUC BEM	1. Ensure contract documents include avoidance and minimization measures for special-status reptiles and amphibians. 2. Ensure that contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform preconstruction surveys. 3. Obtain and review resume or other documentation of the construction monitor's biologist qualifications.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• The SFPUC shall ensure that, during work activities, all trash is properly contained in closed containers, removed from the work site and disposed of daily to avoid attracting predators to the site. • The contractor and all site personnel in motorized vehicles shall maintain a speed limit of 15 miles per hour within the project area at all times. • The construction contractor shall install a wildlife exclusion fence in or adjacent to wetland areas where earthmoving equipment will be used. The qualified biologist shall determine specific locations for the exclusion fencing and shall be present during, and oversee vegetation removal for, construction of the exclusion fence. Within San Francisco garter snake habitat areas where vegetation clearing would occur, initial vegetation thinning shall occur using hand tools. If mechanized hand tools such as string trimmers are used within San Francisco garter snake habitat, they will be used in the presence of a biological monitor (see last bullet) who ensures the absence of SFGS immediately ahead of vegetation clearing. • In San Francisco garter snake habitat, ~~T~~the contractor shall install an exclusion fence containing exit funnels to allow any San Francisco garter snakes within the construction area to leave without human intervention while preventing entry of San Francisco garter snake and California red-legged frog into the construction zone. A qualified biologist shall supervise the installation of exclusion fencing along the boundaries of the work area, as deemed necessary by the biologist. Exit funnels shall be placed no more than 200 feet apart along the fence, or as modified by the biological monitor. The exit funnels shall be installed at ground level. The contractor may use a qualified biologist as a full-time biological monitor in place of exclusion fencing. The monitor will survey the trail for the presence of San Francisco garter snake and California red-legged frog. If an individual is observed, the monitor shall follow the procedures set forth in this measure (below) for responding in the event special status species are present within the exclusion fence area. • At the beginning of each workday that includes initial ground disturbance, including grading, excavation, and vegetation-removal activities, the approved biologist shall conduct onsite monitoring for the presence of these species in the area where ground disturbance or vegetation removal will occur. The biologist shall inspect the perimeter fences to ensure they do not have any tears or holes, that the bottoms of the fences are still buried, and that no individuals have been trapped in the fences.				4. Conduct special-status reptiles and amphibians survey. 5. Monitor to ensure that the contractor implements avoidance and minimization measures in contract documents. Report noncompliance and ensure corrective action. 6. Delineate construction disturbance area with signs/flags/stakes, and install wildlife exclusion fencing consistent with specifications of the mitigation measure.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• Construction work crews shall cover all excavated or deep-walled holes or trenches greater than 2 feet at the end of each workday using plywood, steel plates, or similar materials or shall construct escape ramps of earth fill or wooden planks to allow animals to exit. Before such holes are filled, workers shall thoroughly inspect them for trapped animals. • If a special-status species is present within the exclusion fence area during construction, work shall cease in the vicinity of the animal, and the animal shall be allowed to relocate of its own volition unless otherwise approved by the regulatory agencies with jurisdiction over the species. • The contractor shall maintain the temporary fencing—both exclusion fencing and protective fencing (if installed)—until all construction activities are completed. No construction activities, parking, or staging shall occur beyond the fenced exclusion areas. After construction is completed, the contractor shall remove exclusion fencing, cover boards, and all associated debris and either store or dispose of it off site. • Project personnel shall be required to immediately report any harm, injury, or mortality of a special-status species during construction (including entrapment) to the biological monitor, who shall immediately notify the SFPUC. As appropriate, the SFPUC shall provide verbal notification to the U.S. Fish and Wildlife Service's Endangered Species Office in Sacramento, California and/or to the California Department of Fish and Wildlife warden or biologist (as applicable) and written notification, as requested, by the agencies. • Full-time biological monitoring shall be provided during vegetation clearing and initial ground disturbance within San Francisco garter snake habitat. Once all clearing and initial ground-disturbing activities are completed, the biological monitor shall perform spot checks of the project area at least once a week, and daily between November and April during rain events, for the duration of construction to ensure that the perimeter fence is in good order, trenches are being covered if left open overnight (or escape ramps provided), project personnel are conducting checks beneath parked vehicles prior to their movement, and all other required biological protection measures are being followed.				

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
Project Mitigation Measure M-BI-2b: Avoidance and Mitigation for Host Plants of Listed Butterfly Species *Applies to construction of Portola Gate boundary fencing improvements under the proposed access program and access program variant 1; construction of Portola Gate boundary fencing improvements and construction of fencing on the Fifield-Cahill ridge trail from Portola Gate to approximately 1.5 miles farther south under variants 2 and 3; operation of Fifield-Cahill ridge trail from Portola Gate to approximately 1.5 miles farther south under variants 2 and 3; and ground- or vegetation-disturbing activities associated with Mitigation Measure M-HZ-8 within areas with potential to contain habitat for special-status butterfly host plants.*				
• Prior to any trail-related construction, vegetation management, development, or any other ground-disturbing activities, a qualified biologist (i.e., with demonstrated experience working with these species) shall conduct preconstruction surveys for butterfly larval host plants (*Sedum spathulifolium, Lupinus albifrons, L. formosus,* and *L. variicolor*). The qualified biologist shall survey any areas within 1.5 miles of Portola Gate where vegetation disturbance for fencing installation would occur. • Prior to construction, the qualified biologist shall flag all areas containing host plants so that personnel avoid vehicular and foot traffic in these areas.	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC CM Team (qualified biologist) 4. SFPUC CM Team (qualified biologist)	1. Design 2. Design 3. Construction, prior to ground-disturbing activities 4. Construction, prior to ground-disturbing activities, and construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM	1. Ensure contract documents include avoidance and mitigation for host plants of listed butterfly species. 2. Ensure contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform preconstruction surveys. 3. Conduct butterfly host plant preconstruction survey. 4. Flag host plants. Monitor to ensure that the contractor implements avoidance measures in contract documents. Report noncompliance and ensure corrective action.
Project Mitigation Measure M-BI-2c: Avoidance and Minimization Measures for Dusky-footed Woodrat and American Badger *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants, and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within areas with potential to contain habitat for dusky-footed woodrat and American badger.*				
The following measures shall be implemented to avoid and minimize impacts on dusky-footed woodrat and American badger, if present: • A qualified biologist with experience identifying woodrat nests and badger dens shall conduct a preconstruction survey for San Francisco dusky-footed woodrat nests and American badger dens in suitable habitat along: the universal access loop trail, staging area, parking lots; the southern skyline ridge trail work area, parking lot, and staging areas; and all fencing work areas along the southern skyline ridge trail and Fifield-Cahill ridge trail, including along the Skyline Quarry access road. The qualified biologist shall flag active nests/dens identified within the project work areas as a sensitive resource to be avoided during construction.	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC CM Team (qualified biologist) 4. SFPUC CM Team (qualified biologist)	1. Design 2. Design 3. Construction, prior to ground-disturbing activities 4. Construction, prior to ground-disturbing activities, and construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM	1. Ensure contract documents include avoidance and minimization measures for dusky-footed woodrat and American badger. 2. Ensure contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform preconstruction surveys.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• Should avoidance of active woodrat stick nests within the project site not be feasible, the nest~~s~~ material shall be dismantled by hand and relocated to a nearby area under the supervision of the qualified biologist, ~~consistent~~ in coordination with California Department of Fish and Wildlife ~~guidance and permits, as applicable~~. If young are encountered during dismantling/ relocation of the nest material, the material shall be ~~replaced~~ placed back and a 20-foot no-disturbance buffer shall be established around the active nest. The biologist shall inspect the nest at least ~~24~~ 48 hours later to see if the young are present. If the young are still present, the buffer shall remain in place until the woodrats have matured enough to disperse on their own accord ~~and the nest is no longer active~~.				3. Conduct nest and den preconstruction survey. 4. Flag active nests/dens. Monitor to ensure that the contractor implements avoidance and minimization measures in contract documents. Report noncompliance and ensure corrective action.
Project Mitigation Measure M-BI-2d: Measures to Minimize Disturbance to Nesting Bird Species *Applies to construction and operation of the Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants, and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within areas with potential to contain habitat for nesting birds.*				
The SFPUC shall conduct tree and shrub removal in the project area outside the breeding season (generally August 16 through February 14) for migratory birds and raptors whenever possible. In the event that the construction schedule requires work during the breeding season, tree and shrub removal shall occur only in the absence of nesting birds. If the SFPUC conducts construction activities during the avian breeding season (February 15 to August 15), a qualified biologist experienced in identifying birds and their habitat shall conduct nesting-raptor surveys within 500 feet of construction areas (as access is allowed on adjacent private lands). The biologist shall conduct nesting songbird surveys within 150 feet of all work areas (as access is allowed on adjacent private lands) and shall map all migratory bird and active raptor nests within these areas. These surveys shall be conducted within two weeks prior to the initiation of construction activities at any time between February 15 and August 15. If no active nests are detected during surveys, no additional mitigation is required. If migratory bird and/or active raptor nests are found within the construction area or in the adjacent surveyed area, the SFPUC shall establish a no-disturbance buffer around the nesting location to avoid disturbance or destruction of the nest site until after the breeding season or after the biologist determines that the young have fledged (usually late June through mid-July). The biologist shall determine the extent of these buffers consistent with U.S. Fish and Wildlife Service guidelines, and buffer placement would depend on: the species' sensitivity to disturbance, which can vary among	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC CM Team (qualified biologist) 4. SFPUC CM Team (qualified biologist)	1. Design 2. Design 3. Construction, prior to tree and shrub removal 4. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM	1. Ensure contract documents include measures to minimize disturbance to nesting bird species. 2. Ensure that contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform nesting raptor and passerine surveys (if construction during avian breeding season). 3. Conduct nesting raptor and passerine surveys (if construction during avian breeding season). 4. If active nests are found, establish buffer zone and restrict contractor activities consistent with specifications of mitigation measure. Monitor to ensure that the contractor implements measures to minimize disturbance in contract documents. Report noncompliance and ensure corrective action.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
species; the level of noise or construction disturbance; the line-of-sight between the nest and the disturbance; ambient noise (baseline noise) and other disturbances under existing conditions; and consideration of other topographical or artificial barriers.				
Project Mitigation Measure M-BI-2e: Avoidance and Mitigation Measures for Special-Status Bats and Maternity Roosts *Applies to construction and operation of the Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants, and ground- or vegetation-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8 within areas with potential to contain habitat for special-status bats and bat maternity roosts.*				
A qualified biologist experienced in the identification of special-status bats shall conduct a preconstruction survey for special-status bat species habitat in advance of any tree removal to identify signs of potential bat habitat, including maternity colonies and any active roost sites. Identified bat maternity colonies shall be avoided, if possible. Should potential maternity colonies, roosting habitat, or active bat roosts be found in trees but cannot be avoided, SFPUC shall ensure the following measures are implemented: • Trim trees or install bat exclusion devices when bats are active, approximately between the periods of March 1 to April 15 and August 15 to October 15; outside of the bat maternity roosting season (approximately April 15 to August 15) if a maternity roost is present, and outside the months of winter torpor (approximately October 15 to February 28, or as determined by a qualified biologist experienced in the identification of special-status bats), to the extent feasible. • If tree trimming is not feasible during the periods when bats are active, and bat roosts being used for maternity or hibernation purposes are found on or in the immediate vicinity of the tree trimming, a qualified biologist shall delineate a no-disturbance buffer around these roost sites until they are no longer in use as maternity or hibernation roosts or the young are capable of flight. • Based on the professional opinion of a qualified biologist, buffer distances may be adjusted around roosts depending on the level of surrounding ambient activity (e.g., if the project area is adjacent to a road or active quarry area) or if an obstruction, such as a large rock formation, is within the line-of-sight between the nest and construction. • A biologist experienced in the identification of special-status bats shall be present during tree trimming and disturbance to rock crevices or outcrops if bat roosts are present. Project activities shall disturb trees and rock crevices with roosts only when no rain is occurring or is not forecast to	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC CM Team (qualified biologist) 4. SFPUC CM Team (qualified biologist)	1. Design 2. Design 3. Construction, prior to tree removal 4. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM	1. Ensure contract documents include avoidance and mitigation measures for special-status bats and maternity roosts. 2. Ensure contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform preconstruction surveys. 3. Conduct special-status bat survey. 4. If potential maternity colonies, roosting habitat, or active bat roosts are found in trees but cannot be avoided, implement measures specified in mitigation measure. Monitor to ensure that the contractor implements avoidance and mitigation measures in contract documents. Report noncompliance and ensure corrective action.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
occur for three days and when daytime temperatures are at least 50 degrees Fahrenheit. • Under the supervision of the qualified biologist, trim trees containing or suspected to contain roost sites over two days. On the first day, branches and limbs not containing cavities or fissures in which bats could roost shall be cut using chainsaws. The following day, branches or limbs containing roost sites shall be trimmed with chainsaws, under the supervision of the biologist.				
Project Mitigation Measure M-BI-3: Minimizing, Monitoring, and Compensatory Replacement for Impacts on Sensitive Natural Communities *Applies to construction of Fifield-Cahill ridge trail improvements under access program variants 2 and 3; construction of all southern skyline ridge trail under the proposed access program and variants; and ground- or vegetation-disturbing activities associated with Mitigation Measure M-HZ-8 within sensitive natural communities.*				
• Prior to start of construction, the extent of sensitive natural communities within the work area shall be surveyed by a qualified botanist experienced in the definition and recognition of the sensitive natural communities in this region, as a basis for avoiding and minimizing impacts on sensitive natural communities. The outer dripline of the tree canopy in Douglas fir forest, redwood forest, and tanoak forest shall be defined as the limits of the natural community; areas currently managed as fuelbreaks shall not be considered part of the extent of sensitive natural communities. SFPUC shall carry out an as-built survey after the project is completed to document the extent of permanent and temporary impacts on sensitive natural communities. • Within Douglas fir forest, redwood forest, and tanoak forest, native trees whose dripline extends within the work area shall be protected using best practices to minimize impact on roots and for cutting roots, when necessary, to minimize the potential to weaken trees and spread disease. SFPUC shall ensure the following actions are implemented during construction within sensitive natural communities to protect native trees: – A certified arborist or qualified ecologist shall assist in tree protection planning, monitoring, and follow-up maintenance as needed to protect trees. – Barriers or sturdy fencing shall be used around individual trees or groups of trees that require protection to define and protect critical root zones near work areas. – Excavation and ground disturbance shall be minimized within the critical root zone (i.e., within the tree dripline).	1. SFPUC EMB 2. SFPUC EMB 3. SFPUC CM Team (qualified botanist) 4. SFPUC CM Team (qualified botanist or arborist) 5. SFPUC CM Team 6. SFPUC BEM	1. Design 2. Design 3. Construction, prior to ground-disturbing activities 4. Construction 5. Construction 6. Construction	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM 5. SFPUC BEM 6. SFPUC BEM	1. Ensure contract documents include minimizing and monitoring measures for sensitive natural communities. 2. Ensure contract documents include requirement for contractor to provide advance notification to SFPUC of construction activities to allow SFPUC to perform preconstruction surveys. 3. Conduct sensitive natural communities survey. 4. Monitor to ensure that the contractor implements minimizing, monitoring, and compensatory replacement measures in contract documents. Report noncompliance and ensure corrective action. 5. Compensate for temporary and permanent impacts on sensitive needlegrass grassland and serpentine bunchgrass natural communities by revegetation wherever feasible as part of the Revegetation Plan (Mitigation Measure M-BI-1c).

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
– Construction shall avoid cutting tree roots over 4 inches in diameter, and any necessary cuts shall be made cleanly with sharp tools to encourage wound closure and confine the spread of decay. – To avoid compacting soils during construction in sensitive natural communities, no parking of cars, trucks, or heavy equipment shall occur within the critical root zone. • The SFPUC shall compensate for temporary and permanent impacts on sensitive needlegrass grassland and serpentine bunchgrass natural communities by revegetation, wherever feasible, as part of Mitigation Measure M-BI-1c.				6. Monitor to ensure revegetation plan performance standard targets are met during the five-year performance period.
Project Mitigation Measure M-BI-4: Operational Measures to Protect Sensitive Plant Species *Applies to operation of the Fifield-Cahill ridge trail under access program variants 2 and 3; operation of the southern skyline ridge trail under the proposed access program and variants 2 and 3; and regular ground- or vegetation-disturbing activities associated with Mitigation Measure M-HZ-8 within unsurveyed areas and areas with potential to contain special-status plants and special-status butterfly host plants.*				
• The SFPUC shall annually survey and monitor special-status plants within 20 feet of the Fifield-Cahill ridge trail, loop trail, and southern skyline ridge trail centerline to detect changes in population size, location, and vigor. If population decline is recorded during annual monitoring and the surveyors determine trail usage or unauthorized off-trail appears to be a contributing factor, the SFPUC shall protect the population and reduce the impact of trail usage by implementing measures such as additional fencing, signage, increased enforcement, rerouting the road or trail, translocation or reseeding, returning to docent-led access, or seasonal trail closure. The SFPUC shall monitor and enforce protection of special-status plant populations for 10 years or until monitoring demonstrates that trail use has no substantial effect on year-over-year plant vigor or plant population numbers, whichever is longer. • The SFPUC shall provide informational signage to educate the public concerning potential recreational impacts on native vegetation, including sudden oak death and other *Phytophthora* spp. • The SFPUC shall regularly inspect trail fencing (e.g., weekly or monthly) and promptly repair damage (e.g., quarterly) in order to maintain fencing integrity and prevent off-trail use.	1. SFPUC NRLM (qualified botanist) 2. SFPUC NRLM (qualified botanist)	1. Operation 2. Operation	1. SFPUC NRLM 2. SFPUC NRLM	1. Annually survey for special-status plants to detect changes in population size, location, and vigor. 2. Implement operational measures to protect sensitive plant species consistent with specifications in mitigation measure.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• All motorized vehicles shall maintain a speed limit of 15 miles per hour within the project area (10 miles per hour at Five Points) at all times to avoid harm to sensitive species. • The SFPUC shall provide closed (wildlife-proof) garbage containers at trailhead parking areas for the disposal of trash items (e.g., wrappers, cans, bottles, food scraps) and empty them daily. The SFPUC shall scan the project area and remove ~~for~~ litter and food waste during daily sweeps.				
Project Mitigation Measure M-BI-5a: Protection of Special-Status Wildlife during Operations *Applies to operation of the Fifield-Cahill ridge trail under access program variants 2 and 3, and operation of the southern skyline ridge trail under the proposed access program and variants 2 and 3.*				
• The SFPUC shall limit public use of the trail system to 9 a.m. to 4 p.m. in winter, and 8 a.m. to 6 p.m. in summer, to avoid periods when wildlife are most active and minimize human-wildlife conflicts. • The SFPUC shall provide interpretive signage to educate the public concerning potential recreational impacts on special-status and native wildlife. Topics shall include the protection of listed butterflies, marbled murrelet, San Francisco garter snake, and California red-legged frog, the importance of properly disposing food trash, and the need to avoid butterfly host plants. The SFPUC shall educate the public on the dangers of trampling, intentional or unintentional feeding of park wildlife, and harassment through observation or pursuit. • Each spring, the SFPUC shall demarcate the locations of butterfly host plants. Along the trail edge in the vicinity of these plants, Carsonite brand fiberglass composite or equivalent markers shall be installed to indicate the habitat that visitors and maintenance traffic should avoid. The SFPUC shall monitor and maintain these markers throughout the year to protect all phases of the butterfly life cycle. • During operations, the SFPUC shall regularly monitor and hand-clear non-native invasive plants and all shrubs from grassland habitat along the Fifield-Cahill ridge trail that supports butterfly larval host plants (i.e., select areas from Portola Gate to approximately 1.5 miles farther south) to limit the encroachment of native and non-native invasive species on butterfly host plants. The SFPUC shall treat any trampling that causes the loss of host plants as the take of a listed butterfly and shall provide mitigation as described below in Mitigation Measure M-BI-5b, via habitat enhancement	1. SFPUC NRLM (qualified botanist) 2. SFPUC NRLM (qualified wildlife biologist) 3. SFPUC NRLM (qualified wildlife biologist and botanist)	1. Operation 2. Operation 3. Operation	1. SFPUC NRLM 2. SFPUC NRLM 3. SFPUC NRLM	1. Annual spring survey to demarcate special-status butterfly host plants. 2. Monitor special-status wildlife species consistent with specifications in mitigation measure to detect changes in populations/ habitat. 3. Implement operational measures to protect special-status wildlife species consistent with specifications in mitigation measure.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
or contribution to habitat restoration in areas that support San Bruno elfin butterfly and/or Mission blue butterfly, such as at San Bruno Mountain. • The SFPUC shall continue to conduct annual breeding-season monitoring for: – Murrelets, as described in Avocet Research Associates:[2] ▪ Conduct nesting season flyover surveys over multiple sequential days in the Pilarcitos Watershed to estimate the number of breeding murrelets. – Listed butterflies, as described in Arnold, Richard A., Monitoring Report for the Endangered San Bruno Elfin and Mission Blue Butterflies at the San Francisco Peninsula Watershed, prepared for San Francisco Public Utilities Commission, December 2016, as follows: ▪ Conduct surveys to visually monitor the life stages of both endangered butterflies at all of the same Ridge Trail study sites studied since 2004. ▪ Regularly inspect all the foodplant locations that are part of the Ridge Trail study sites for signs of trampling or other damage, and take measurements of the area of foodplant at each location. ▪ Conduct presence-absence butterfly and foodplant surveys along other service roads and off-road locations throughout the entire watershed that were identified by the Geographic Information System-based models created to predict the potential occurrences of the lupine or stonecrop larval foodplants.				

[2] Avocet Research Associates, Protocol-level Nesting Season Surveys for the Marbled Murrelet (Brachyramphus marmoratus), San Francisco Public Utilities Commission Lands, Upper Pilarcitos Creek, San Mateo County, California, 2018.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
Project Mitigation Measure M-BI-5b: Additional Biological Protections for Unsupervised Access *Applies to operation of the Fifield-Cahill ridge trail under access program variants 2 and 3, and operation of the southern skyline ridge trail under the proposed access program and variants 2 and 3.*				
• The SFPUC shall post informational signage at trailheads explaining the presence of endangered species and/or their habitat and the importance of preserving host plants as habitat for endangered butterflies. The signs shall provide speed limits to slow bicyclists and shall explain the need to avoid closed areas and roped-off plants and to use care in traversing sensitive habitat areas. • If population decline is recorded during annual surveys and the surveyors determine trail usage or unauthorized off-trail use appears to be a contributing factor, the SFPUC shall monitor the population and implement protective measures in order to reduce the impacts of trail usage. Protective measures may include additional fencing, signage, increased enforcement, rerouting the road or trail, returning to docent-led access, or seasonal trail closure. • To compensate for the loss of listed butterfly host plants due to trampling, the SFPUC shall clear existing host plant patches or nearby bare areas on the Peninsula Watershed of invasive competitor species and shrubs and reseed the areas to improve habitat and encourage butterfly use. Specifically, the SFPUC shall collect and scatter lupine seeds within the existing host plant patches or nearby bare areas at a 2:1 ratio to lost host plant acreage, or as otherwise required by the U.S. Fish and Wildlife Service. The SFPUC shall monitor sites in accordance with the success parameters provided by Mitigation Measure M-BI-1c. • Whether on or off the site, restoration sites shall be chosen based on several factors including: – Size of the mitigation area, with large contiguous areas of habitat preferred over small, separated areas – Demonstrated nearby species use or occupancy – Overall habitat suitability and quality – Proximity of the mitigation area to the lupine impact site – The presence of appropriate soils and environmental conditions to support target plant species	1. SFPUC EMB 2. SFPUC CM Team 3. SFPUC NRLM 4. SFPUC NRLM 5. SFPUC NRLM	1. Design 2. Construction 3. Operation 4. Operation 5. Operation	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC NRLM 4. SFPUC NRLM 5. SFPUC NRLM	1. Ensure contract documents include installation of signs. 2. Install signage. 3. Monitor to ensure presence/ condition of signage. 4. If population decline recorded, implement population stabilization measures consistent with specifications of mitigation measure. 5. Implement additional biological protections for unsupervised access to protect special-status wildlife species consistent with specifications in mitigation measure.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
– The absence of long-term impact mechanisms or threats to successful restoration • Alternatively, the SFPUC may fund butterfly habitat restoration in an equivalent area, based upon the 2:1 ratio of restoration to lost host plant acreage at the San Bruno Mountain Habitat Conservation Plan implementing agency, or other existing comparable restoration initiative or program permitted by the U.S. Fish and Wildlife Service for Mission blue butterfly. • The SFPUC shall continue annual monitoring (Arnold, 2016) and use the findings to assess the impacts of increased visitation on sensitive species, butterfly host plants, and vegetation communities and allow for adaptive management. If visitation shows a significant impact on vegetation, such as host plant trampling or reduction in plant numbers, the SFPUC shall consider additional actions such as supplementary educational signage; additional flagging; more frequent maintenance, security patrols, and increased enforcement; increased seasonal restrictions; or reversion to more restricted access (such as permit or docent only). • In the Five Points area, the SFPUC shall install signage designating a speed limit of 10 miles per hour within 1,000 feet of the intersection, and may install road striping or similar mechanism on both sides of the intersection to induce bicyclists to slow speeds through this area. If warranted based on visitor conduct, the SFPUC shall place camera stations and enforcement personnel in this area to monitor for non-compliance, trespassing, and illegal collection.				
Project Mitigation Measure M-BI-5c: Mitigation for Permanent Upland Impacts on Special-Status Reptiles and Amphibians *Applies to operation of the Fifield-Cahill ridge trail under access program variants 2 and 3.*				
• The SFPUC shall reduce the likelihood of user-wildlife encounters and mitigate for permanent impacts on upland dispersal habitat for San Francisco garter snake and California red-legged frog in the Five Points area by preparing and implementing a five-year reptile and amphibian adaptive management plan. • The plan shall be prepared by a qualified biologist (i.e., with a four-year degree and one to two years of field experience with the affected species) and reviewed by SFPUC senior biologists. The plan shall also address mechanisms for protecting California red-legged frog and San Francisco garter snake populations. Such mechanisms may include additional fencing, signage,	1. SFPUC NRLM (qualified biologist) 2. SFPUC NRLM (qualified biologist) 3. SFPUC NRLM (qualified biologist)	1. Operation 2. Operation 3. Operation	1. SFPUC BEM and ERO 2. SFPUC NRLM 3. SFPUC NLRM	1. Prepare a five-year adaptive reptile and amphibian management plan consistent with specifications of MM. 2. Implement five-year adaptive reptile and amphibian management plan consistent with specifications of MM. 3. Monitor to ensure effectiveness of adaptive reptile and amphibian management plan.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
increased enforcement, rerouting the road or trail, seasonal trail closure or return to docent-led access, or a monitoring program to preclude unauthorized off-trail use and other unauthorized activities. • Such a monitoring program could include placing appropriate enforcement personnel at either end of the trail and at two- to three-mile intervals, and trail use could be conditional upon agreement to check in with monitors at reasonable intervals, which might vary depending on skill level and travel mode (i.e., hikers, bicyclists, or equestrians). Monitors would be connected (by phone or walkie-talkie) and identification would be required when users checked in. • The adaptive management plan shall include mitigation for habitat loss at a 1:1 ratio within the watershed in the form of habitat enhancement or restoration. The SFPUC shall file the finalized plan with the San Francisco Planning Department prior to project construction.				
Project Mitigation Measure M-BI-7a: Measures to Reduce Spread of Invasive Plants *Applies to construction and operation of the Fifield-Cahill ridge trail and southern skyline ridge trail under the proposed access program and all variants, and ground-disturbing activities associated with Mitigation Measure M-HZ-8.*				
The SFPUC shall ensure the following measures to reduce spread of invasive plants are implemented: • Construction equipment shall arrive at the project area free of soil, seed, and plant parts to reduce the likelihood of introducing new weed species • Any imported fill material, soil amendments, gravel, etc., required for construction and/or restoration activities that would be placed within the upper 12 inches of the ground surface, shall be certified free of weed seeds and plant material. (see: www://cal-ipc.org/ip/prevention/WeedFree LandManagers_web.pdf) • Certified, weed-free, imported erosion-control materials (or rice straw in upland areas) shall be used exclusively, as applicable (this measure concerns biological material and does not preclude the use of silt fences, etc.). • Excavated topsoil shall be salvaged, stored on-site, and reused on the site if it is of suitable quality, or removed and disposed at an appropriate offsite location if it is not suitable.	1. SFPUC EMB 2. SFPUC CM Team 3. SFPUC BEM 4. SFPUC BEM and NRLM (qualified biologist) 5. SFPUC BEM (qualified biologist) and NRLM 6. SFPUC NRLM	1. Design 2. Construction 3. Operation 4. Construction and operation 5. Construction and operation 6. Operation	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC BEM 4. SFPUC BEM and NRLM 5. SFPUC BEM and NRLM 6. SFPUC NRLM	1. Ensure contract documents include measures to reduce spread of invasive plants. 2. Monitor to ensure that the contractor implements measures to reduce spread of invasive plants in contract documents. Report noncompliance and ensure corrective action. 3. Implement operational measures to reduce spread of invasive plants consistent with specifications of MM. Report noncompliance and ensure corrective action. 4. Prepare an invasive plant management plan consistent with specifications of MM.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
• Prepare and implement an invasive plant management plan for the Fifield-Cahill ridge trail and southern skyline ridge trail segments on Peninsula Watershed lands. At a minimum, the plan shall commit the SFPUC to carry out semiannual surveys and treatment and removal of target invasive plants on the southern skyline ridge trail and Fifield-Cahill ridge trail segments during the operation of the ridge trail. The plan shall specify invasive exotic plant species shall be managed using integrated pest management practices, and define invasive plants as those which the Cal-IPC rates as high in invasiveness, and a subset of those it rates as moderate in invasiveness and which pose relevant management concerns for the ridge trail region of the Peninsula Watershed (i.e., could spread along the trail). The plan shall except from this definition any species that are already widespread and naturalized in the watershed (e.g., annual and perennial non-native grasses, rough cat's ear, etc.). The performance standard for target invasive weeds shall be no more than 5 percent absolute cover, or no more than 30 percent above-baseline invasive plant cover, whichever is higher, within 20 feet of the southern skyline ridge trail, Fifield-Cahill ridge trail, or Quarry Road edge.				5. Implement invasive plant management plan consistent with specifications of MM. Report noncompliance and ensure corrective action. 6. Monitor to ensure effectiveness of invasive plant management plan consistent with performance standards and specifications of MM.
Project Mitigation Measure M-BI-7b: Measures to Limit the Spread of Phytophthora spp. (including Sudden Oak Death) *Applies to operation of the Fifield-Cahill ridge trail and southern skyline ridge trail under the proposed access program and all variants, and ground-disturbing activities associated with Mitigation Measure M-HZ-8.*				
• The SFPUC shall post signage along the southern skyline ridge trail requiring users to remain on the surfaced trail rather than venturing onto adjacent soil to prevent the spread of soil-borne pathogens. • Based on the rate and extent of pathogen spread, the SFPUC may adopt further measures to reduce disease spread, such as the use of phytosanitizing wash stations at entrances for vehicles and individuals entering the Peninsula Watershed per the recommendations of the *Phytophthora* Working Group's Guidelines to Minimize *Phytophthora* Contamination in Restoration Projects, October 2016 (see Appendix D). • Project staff and volunteers (e.g., docents) shall be trained to educate visitors about the need to avoid the spread of *Phytophthora* spp. and other pathogens, such as by not stepping in or riding through ponded water and mud and complying with phytosanitation measures, if implemented, before and after trail use.	1. SFPUC EMB 2. SFPUC CM Team 3. SFPUC NRLM 4. SFPUC NRLM 5. SFPUC NRLM	1. Design 2. Construction 3. Operation 4. Operation 5. Operation	1. SFPUC BEM 2. SFPUC BEM 3. SFPUC NRLM 4. SFPUC NRLM 5. SFPUC NRLM	1. Ensure contract documents include measures to limit the spread of Phytophthora spp. (including Sudden Oak Death). 2. Monitor to ensure that the contractor implements measures to reduce spread of Phytophthora spp. (including Sudden Oak Death. Report noncompliance and ensure corrective action. 3. Implement operational measures to reduce spread of Phytophthora spp. consistent with specifications of MM.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
				4. Post signs along southern skyline ridge trail requiring users to remain on the surfaced trail consistent with specifications of MM. 5. Ensure that all project staff and volunteers attend phytosanitation training prior to beginning work consistent with specifications of MM, and sign the training sign-in sheet. Maintain file of signature sheets for submittal to SFPUC BEM. Monitor to ensure staff/volunteers educate visitors.
Project Mitigation Measure M-BI-7c: Measures to Monitor and Prevent Further Spread of Phytophthora spp. Pathogens *Applies to operation of the Fifield-Cahill ridge trail under access program variants 2 and 3, and operation of the southern skyline ridge trail under the proposed access program and variants 2 and 3.*				
• SFPUC maintenance staff shall monitor the condition of the trail edges on the southern skyline ridge trail. If monitoring identifies areas of exposed earth or mud adjacent to the trail where vegetation has been removed due to foot traffic beyond the 6-foot-wide aggregate base trail, additional gravel or other measures to prevent direct soil contact (e.g., signage, barriers) shall be placed in these locations to reduce the potential for spread of *Phytophthora* spp. pathogens. • At least once, beginning one year before construction is completed, the SFPUC shall retain a qualified forest pathologist who is familiar with signs of *Phytophthora* damage to conduct a review of plant health along all portions of the southern skyline ridge trail, the Fifield-Cahill ridge trail, and Quarry Road. The forest pathologist shall test unhealthy trees and shrubs adjacent to the alignment for the presence of *Phytophthora* spp. pathogens This review shall be used to determine the baseline extent of the infestation and assess the rate of spread over the baseline rate. The forest pathologist shall establish permanent monitoring transects away from trails to examine the baseline tree infestation over time (i.e., the control area) to compare with transects in forested areas located adjacent to the trail segment with unsupervised access (i.e., southern skyline ridge trail and/or Fifield-Cahill ridge trail). The forest pathologist shall monitor	1. SFPUC NRLM 2. SFPUC NRLM (qualified forest pathologist) 3. SFPUC NRLM (qualified forest pathologist)	1. Operation 2. Construction, and operation 3. Construction and operation	1. SFPUC NRLM 2. SFPUC NRLM 3. SFPUC NRLM	1. Monitor condition of trail edges on southern skyline ridge trail and implement measures to prevent spread of Phytophthora spp. pathogens consistent with specifications of MM. 2. Perform a review of plant health consistent with specifications of MM, including establishing permanent monitoring transects. 3. Monitor and evaluate Phytophthora infection conditions in each transect area for a period of at least 5 years consistent with specifications of MM. If warranted, deploy measures to reduce pathogen spread, as presented in Measure M-BI-7b.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
BIOLOGICAL RESOURCES (CONT.)				
Phytophthora infection conditions in each area for a period of at least five years. Monitoring data shall be evaluated using a statistical test, such as a t-test, to assess the potential rate of spread over the baseline rate. The SFPUC shall use this information to gauge the need to deploy measures to reduce spread, as presented in Measure M-BI-7b.				
HAZARDS AND HAZARDOUS MATERIALS				
Project Mitigation Measure M-HZ-5: Fire Safety During Construction *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants.*				
The SFPUC shall require the construction contractor to comply with the following requirements of the Public Resources Code during construction: • Earthmoving and portable equipment with internal combustion engines shall be equipped with a spark arrester to reduce the potential for igniting a wildfire (Public Resources Code section 4442). • Appropriate fire suppression equipment shall be maintained during the highest fire danger period—from April 1 to December 1 (Public Resources Code section 4428). • On days when a burning permit is required, flammable materials shall be moved to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor shall maintain the appropriate fire suppression equipment (Public Resources Code section 4427).[3] • On days when a burning permit is required, the appropriate fire suppression equipment shall be maintained when portable tools powered by gasoline-fueled internal combustion engines are used within 25 feet of any flammable materials (Public Resources Code section 4431).	1. SFPUC EMB 2. SFPUC CM Team	1. Design 2. Construction	1. SFPUC BEM 2. SFPUC BEM	1. Ensure contract documents include the fire safety during construction following the requirements of the Public Resources Code. 2. Monitor to ensure that the contractor implements fire safety during construction measures in contract documents. Report noncompliance and ensure corrective action.

[3] The project would not require a burning permit, but these restrictions would apply when burning permits would be required for projects that do involve burning. This time period would be from May 1 to a date specified by CalFire when the department has determined that hazardous fire conditions have abated for that year. CalFire may also declare that unusual fire hazard conditions exist in the area at any time during the year and impose these requirements.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
HAZARDS AND HAZARDOUS MATERIALS (CONT.)				
Project Mitigation Measure M-HZ-8: Fire Management Plan *Applies to operation of the Fifield Cahill Ridge Trail under access program variants 2 and 3, and southern skyline ridge trail under the proposed access program and variants 2 and 3.*				
The SFPUC shall prepare and implement a new fire management plan in coordination with CalFire prior to opening the southern skyline ridge trail, universal access loop trail, or Fifield-Cahill ridge trail to unsupervised public access. The new fire management plan shall include the actions of the fire management element of the Peninsula Watershed Management Plan relevant to the project and which have not been completed. Specifically, the new fire management plan shall include: • Relevant fire defense improvement actions related to increasing the water supply for firefighting and constructing access improvements (Peninsula Watershed Management Plan fire defense improvement actions fir2, fir3, fir4, fir5, fir6, and fir7 – see expanded mitigation measure in Appendix E). • Relevant fuel management actions related to reducing fuel volume and flammability, establishing/maintaining fuel discontinuity, and preventing fires from spreading to the tree crowns (Peninsula Watershed Management Plan fuel management action fir8 – see expanded mitigation measure in Appendix E). Relevant fire response actions that provide the framework for the SFPUC's response to fires (Peninsula Watershed Management Plan fire response actions fir9, fir10, fir11, fir12, and fir13 – see expanded mitigation measure in Appendix E). If prescribed burns are proposed for fuel management, the fire management plan shall specify appropriate actions for safe implementation. These actions include preparing a prescription (or burn plan), coordinating with appropriate regulatory agencies regarding potential environmental impacts, obtaining a burn permit from the Bay Area Air Quality Management District, and notifying the public and neighboring agencies. The prescribed burn shall be conducted when conditions permit both adequate combustion and control of the fire and shall be coordinated with CalFire as part of its vegetation management program. The new fire management plan shall address all of the identified fire management element actions and tailor those actions to site-specific conditions, as well as the potential effects of climate change. The plan's implementation methodology shall consider and incorporate, as relevant,	1. SFPUC NRLM 2. SFPUC NRLM 3. SFPUC NRLM	1. Pre-operation and operation 2. Pre-operation and operation 3. Pre-operation and operation	1. SFPUC NRLM and CalFire 2. SFPUC NRLM and CalFire 3. SFPUC NRLM	1. Prepare Fire Management Plan consistent with specifications of MM, including fire defense improvement actions, fuel management actions, and fire response actions. Coordinate preparation with CalFire. 2. Implement/continue to implement Fire Management Plan actions consistent with specifications of MM, including fire defense improvement actions, fuel management actions, and fire response actions. Coordinate implementation with CalFire 3. Monitor to ensure implementation of the Fire Management Plan's fire defense improvement actions, fuel management actions, and fire response actions prior to opening the southern skyline ridge trail, universal access loop trail, or Fifield-Cahill ridge trail to unsupervised public access, consistent with specifications of MM.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
HAZARDS AND HAZARDOUS MATERIALS (CONT.)				
the methods set forth in the Peninsula Watershed Management Plan's Appendix A-1 (Peninsula Watershed Fire Management Element). An implementation schedule shall be provided. The southern skyline ridge trail, universal access loop trail, and Fifield-Cahill ridge trail shall not be opened for unsupervised access until the actions intended to address fire risk in those areas have been completed. The SFPUC shall coordinate preparation and implementation of the fire management plan with CalFire as part of its fire prevention and vegetation management programs, in accordance with standing procedures and Peninsula Watershed Management Plan policy F9. Implementation of the fire management plan shall be assigned to an incident commander employed by the SFPUC's Natural Resources and Land Management Division in accordance with Peninsula Watershed Management Plan action fir13.				
TRIBAL CULTURAL RESOURCES				
Project Mitigation Measure M-TCR-1: Tribal Cultural Resources Preservation Plan and/or Interpretive Program *Applies to construction of all Fifield-Cahill ridge trail and southern skyline ridge trail improvements under the proposed access program and all variants; and ground-disturbing activities associated with Mitigation Measures M-TR-5b and M-HZ-8.*				
If the archeological consultant called for under M-CU-1 determines that the accidental discovery is an archeological resource of Native American origin, retains sufficient integrity, and is of potential scientific/historical/cultural significance, Mitigation Measure M-TCR-1 shall be implemented. In the event of the discovery of an archeological resource of Native American origin, the Environmental Review Officer (ERO), the project sponsor, and the tribal representative shall consult to determine whether preservation in place would be feasible. If it is determined that preservation-in-place of the tribal cultural resource would be both feasible and effective, then the archeological consultant shall prepare an archeological resource preservation plan to be implemented by the project sponsor during construction. If the ERO in consultation with the project sponsor and the tribal representative determines that preservation-in-place of the tribal cultural resource is not a sufficient or feasible option, then the project sponsor shall prepare an interpretive program of the tribal cultural resource in consultation with affiliated Native America tribal representatives.	1. SFPUC EMB 2. SFPUC CM Team (Archaeologist) 3. SFPUC CM Team (Archaeologist)	1. Design 2. Construction 3. Construction	1. SFPUC BEM 2. SFPUC BEM and ERO 3. SFPUC BEM and ERO	1. Ensure contract documents include measures related to tribal cultural resources discovery and preservation/ protection. 2. If the ERO determines that preservation-in-place is a feasible option for an accidental discovery and if it is determined that the resource constitutes a tribal cultural resource, implement a tribal cultural resource preservation plan in consultation with affiliated tribal representatives.

Adopted Mitigation Measures	MONITORING AND REPORTING PROGRAM			
	Implementation Responsibility	Mitigation Schedule	Monitoring / Reporting Responsibility	Monitoring Actions / Completion Criteria
TRIBAL CULTURAL RESOURCES (CONT.)				
The plan shall identify proposed locations for installations or displays, the proposed content and materials of those displays or installation, the producers or artists of the displays or installation, and a long-term maintenance program. The interpretive program may include artist installations, preferably by local Native American artists, oral histories with local Native Americans, artifacts displays and interpretation, and educational panels or other informational displays. Upon approval by the ERO and prior to project occupancy, the interpretive program shall be prepared by the project sponsor.				3. If the ERO determines that preservation-in-place is not a feasible option for an accidental discovery and if it is determined that the resource constitutes a tribal cultural resource, implement additional measures as outlined in Mitigation Measure M-CU-1, Accidental Discovery of Archeological Resources, such as archeological testing or monitoring, as appropriate, or an interpretive program of the tribal cultural resource in consultation with affiliated tribal representatives.

NOTES:

Definitions of MMRP Column Headings:

Adopted Mitigation Measures: Full text of the mitigation measure(s) copied verbatim from the final CEQA document.

Implementation Responsibility: Entity who is responsible for implementing the mitigation measure. In most cases this is the project sponsor and/or project's sponsor's contractor/consultant and at times under the direction of the planning department.

Mitigation Schedule: Identifies milestones for when the actions in the mitigation measure need to be implemented.

Monitoring/Reporting Responsibility: Identifies who is responsible for monitoring compliance with the mitigation measure and any reporting responsibilities. In most cases it is the Planning Department who is responsible for monitoring compliance with the mitigation measure. If a department or agency other than the planning department is identified as responsible for monitoring, there should be an expressed agreement between the planning department and that other department/agency. In most cases the project sponsor, their contractor, or consultant are responsible for any reporting requirements.

Monitoring Actions/Completion Criteria: Identifies the milestone at which the mitigation measure is considered complete. This may also identify requirements for verifying compliance.

Acronyms Used in Table:

ERO = (SF Planning Department) Environmental Review Officer
FARR = Final Archaeological Resources Report
MM = Mitigation Measure
SF EP = San Francisco Environmental Planning
SFPUC BEM = Bureau of Environmental Management
SFPUC CM Team = Construction Management Team
SFPUC EMB = Engineering Management Bureau
SFPUC NRLM = Natural Resources Land Management
SFPUC PMB = Project Management Bureau