

Appendix B. Invasive Species Removal Techniques

Manual Control

- Hand pulling: pulling entire plant from ground using hands or weed wrench. This is the most commonly used method for controlling invasive plants in the GGNRA. It is best used for species that are either shallowly rooted or with tap root easily pulled from the ground. This is an excellent technique for volunteers and is minimally invasive. Examples include iceplant (*Carpobrotus edulis*) and French broom (*Genista monspessulana*).
- Cutting: cutting stems using loppers, hand shears, or handsaws. This treatment is commonly used for removing inflorescences to minimize the seed crop of an invasive species or for tree like species that are not known to resprout. This is an excellent technique for volunteers and is minimally invasive, involving no ground disturbance or impacts to non-target species. Examples include removing plumes from large pampas grass (*Cortaderia jubata*) or controlling Monterey pine (*Pinus radiata*) or cypress (*Cupressus macrocarpa*) saplings.
- Grubbing: using hand tools to dig out plants. This treatment is commonly used to dig out plants that cannot be easily hand pulled using a weed wrench or by hand. It entails more ground disturbance than the above treatments and it is more difficult to ensure that the entire root is removed. Examples where grubbing may be successful include pampas grass (*Cortaderia jubata*), purple star thistle (*Centaurea calcitrapa*), tocalote (*Centaurea melitensis*), Italian thistle (*Carduus pycnocephalus*), cape ivy (*Delairea odorata*), and sweet fennel (*Foeniculum vulgare*).

Mechanical Control

- Scorching: apply heat to seedlings with propane torch. Effective for controlling cotyledons and small seedlings of invasive plants, especially in areas with otherwise low vegetative cover. Examples include French broom (*Genista monspessulana*) seedlings.
- Brushcut or Mow: mechanical equivalent of cutting, but faster. Excellent for controlling large patches of plants that respond to cutting or for eliminating inflorescences from mature plants before they set seed. Examples include annual and perennial grasses, other annual or biennial species.

Chemical Control

- Spot / wick application: spray or sponge a dilute amount of NPS approved herbicide to growing foliage. These methods are only employed for plant species or plant stages that cannot be effectively removed by manual or mechanical means because they resprout, because ground disturbance entailed is unacceptable, or because other means of removal would pose a threat to worker safety. Wick application is less commonly used, but has substantially less non-target impact due to its direct application. Further, herbicide can be applied specifically to the upper foliage in order to prevent small mammals, reptiles, and amphibians from coming directly into contact with herbicide. Examples include large plants of sweet fennel (*Foeniculum vulgare*), large patches of pampas grass

(*Cortaderia jubata*), bristly ox-tongue (*Picris echioides*), and plants occurring on steep slopes or in poison oak thickets.

- Cut and treat stump with herbicide: cut stems as above then apply a small amount of NPS approved herbicide to cut stump or stem. This method is employed for certain shrub species at locations where ground disturbance caused by hand pulling or grubbing is unacceptable. It is also used for tree species that resprout after being cut. Examples include Eucalyptus (*Eucalyptus globulus*), Cotoneaster (*Cotoneaster pannosa*), and French broom (*Genista monspessulana*).

Note: All herbicide use would be implemented consistent with the NPS Integrated Pest Management (IPM) Program (<http://www.nature.nps.gov/biology/ipm/>). IPM is a science-based, decision making process that coordinates knowledge of pest biology, the environment and available technology to prevent unacceptable levels of pest damage, by cost-effective means, while posing the least possible risk to people, resources and the environment. The IPM Process reviews all available tools suitable for managing the specific pest species in each situation and selects for use the least toxic and effective method. Pesticides and biological control agents proposed for use on NPS lands must be submitted to the park IPM Coordinator for review by Washington Service Office or Regional IPM Coordinators.

Appendix C. Trail Construction Methods

Close trail and convert to natural habitat

Non-designated trails would be decommissioned by using signage, fencing, and/or, where necessary, mechanical scarification. Scarification will occur to the depth necessary to restore soil conditions consistent with adjacent uncompacted sites using a small trail tractor with a maximum width of four feet. Revegetation would occur as appropriate to rehabilitate the area.

Close road and convert to natural habitat

Prior to deconstruction, seeps or springs would be identified and wet water crossings would be installed for the duration of deconstruction. Roads would be converted to habitat primarily by re-establishing the natural drainage pattern of the landscape. Where feasible, soil from the road's out-sloping side, or imported fill, would be used to recontour the segment to best recreate pre-road topography. Established vegetation would be removed and the former roadbed would be decompacted, then filled and recontoured. Revegetation would occur as needed to rehabilitate area.

Down-grade and convert road to trail

Several of the existing roads at Mori Point were constructed with a drainage system paralleling the road. Over the years, these ditches have filled with sediment and have become non-functional. Water then travels down the roadbed causing gullying and additional sediment build up. Sediment is ultimately delivered to the lower wetland area where it has a negative effect on habitat values. The steps to convert road to trail are similar to road to habitat conversion. Seeps or springs shall be identified prior to deconstruction and wet water crossings will be installed for the duration of deconstruction. The inner road-edge drainage system would be removed to reestablish the natural drainage pattern of the landscape and imported or relocated fill from the outer edge of the road would be used to narrow and recontour the area. Any established vegetation would be removed followed by decompaction of the roadbed. An approximately five-foot wide trail tread on a preferred alignment would be constructed with an out-slope of 2% to 5% to maintain natural drainage patterns. Revegetation would occur as needed to rehabilitate the area and clearly define trail boundaries.

Improve trails

Existing trails would be narrowed using the appropriate trail removal and conversion methods described above. On steeply graded segments, approximately five-foot wide timber steps would be constructed, with a one-foot shoulder on either side, resulting in an approximate 7-foot wide temporary impact area.

Establish new trails

New trails would be constructed so that they are out-sloped from 2 to 5% to allow water to drain from the surface naturally. The CCT multiple-use alignment would be approximately six feet wide where feasible plus a one-foot shoulder on both sides. Other new trails would be approximately five feet wide, plus shoulders. Trail tread would be of a durable, appropriately-colored material. Where trail alignments exceed a grade of 8-12%, construction of timber steps would be considered. Prior to construction, seeps or springs would be identified and wet water crossings will be installed for the duration of construction.

Appendix D. Proposed Pond Locations

Five potential sites for pond creation have been identified, however, locations may change as further detailed study is needed to determine optimal pond location, size, and depth.

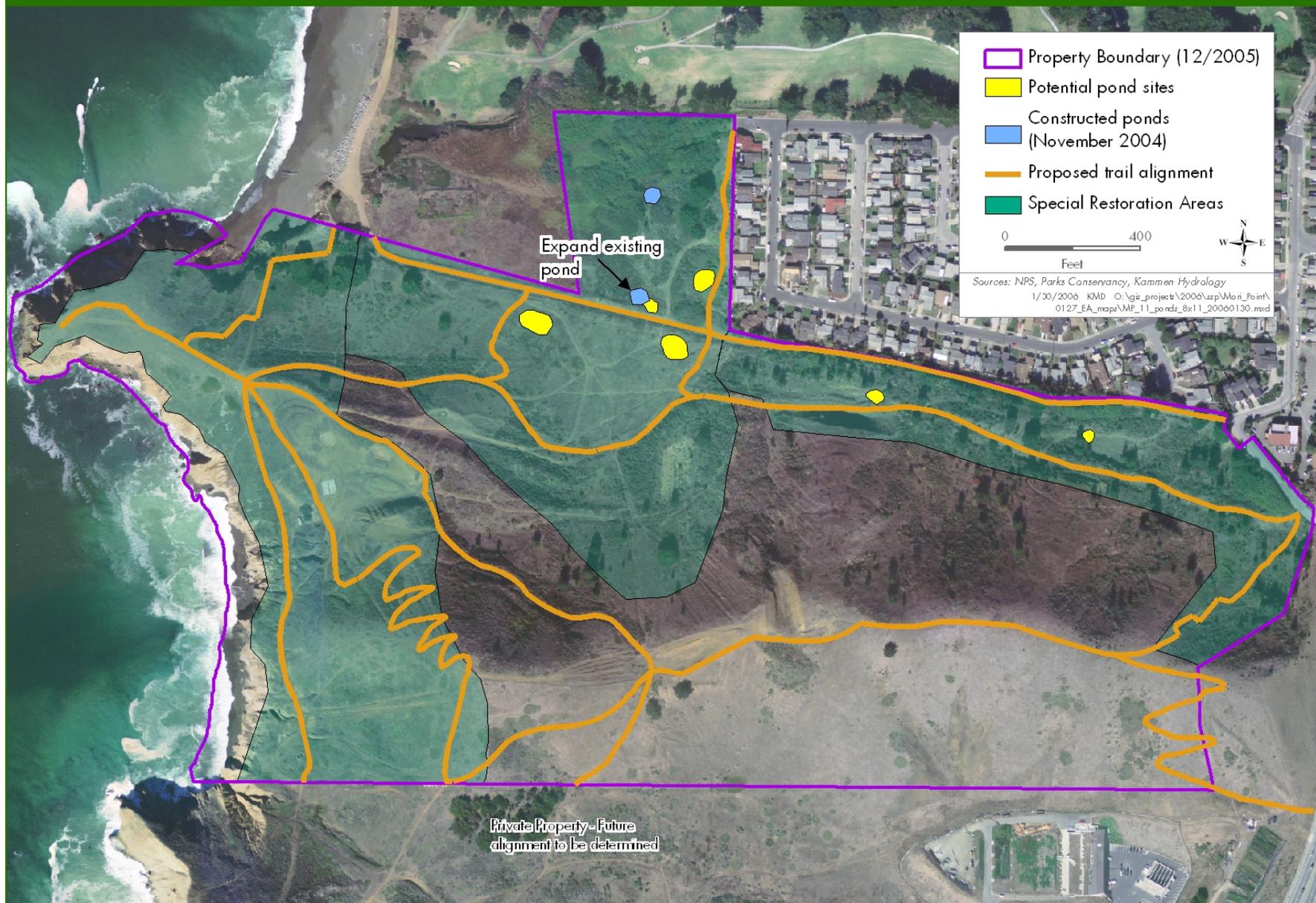
Proposed Pond Location 1 is on the western side of the property between the Upper Trail and Mori Road. It was selected for its close proximity to perennially saturated soils and the dense willow canopy located immediately to the north. The primary limiting factor for long-term sustainability of this pond is water supply. There does not appear to be substantial surface water runoff directed to the vicinity of the pond, nor is there shallow groundwater at this site. Thus, successful pond creation at this site will require some regrading of upland slopes in order to direct runoff to this location.

Proposed Pond Location 2 is a large flat expanse below the road quarry along the Upper Trail. This site was identified for its ease of access and for the potential for redirecting water from a nearby drainage into a pond. Currently, runoff from the surrounding hillside is concentrated in a small channel located immediately east of Pond Location 2. The outfall of this drainage is directed through a V-shaped notch in the retaining wall on Mori Road and ultimately to the drainage ditch running along the southern side of Mori Road. It appears that this drainage could easily be rerouted to the west to supply a pond with surface water run off. Ground water would not be a substantial source of water supplied to a pond in this location.

Proposed Pond Location 3 is located near Fairway Trail just north of Mori Road. A pond in this location would receive run off from the roadside ditch as a primary water supply. This would entail redirecting ditch flow through a culvert beneath the road at a location several hundred feet east of the existing culvert crossing. Groundwater levels and water supply from the ditch would need to be identified before pond construction.

Proposed Pond Location 4 is in a stream depression and water to a pond constructed here would capture runoff concentrated from the upland Bowl area. Pond outflow would be directed to the existing Southern Pond. This would entail removing a substantial portion of the earthen berm, located along the south side of Mori Road, and creating a bridge or elevated causeway road surface. In essence, this work would create a more natural hydrologic connection between the upland Bowl area and the lower freshwater marsh habitat located on the north side of Mori Road. In addition to accommodating a more natural water flow, these changes would enable unrestricted migration of the San Francisco garter snake and other wildlife in the area.

Proposed Pond Location 5 is further west near the CCT Bowl Connector in a known seep area. This pond would rely on groundwater seepage as its primary water source as there are no existing surface water drainage features directing runoff to this location. Prior to design of this pond, monitoring of shallow groundwater conditions and water table variability throughout the year will need to be conducted. A potential benefit of a seep/spring fed pond is substantially lower sediment input and a longer life span.



Appendix E. Best Management Practices and Mitigation Summary

These measures will guide implementation of the project where appropriate and are intended to minimize adverse impacts to sensitive biological resources within the Project Area.

A. Pre-construction Preparation

- 1) The boundaries of construction areas will be clearly flagged and/or signed in advance of construction.
- 2) Trees or shrubs overhanging or encroaching on access roads will be trimmed back to allow vehicles to pass by without going off the road.
- 3) All material stockpiling and staging areas will be located within project right of ways in non sensitive areas, or at designated disturbed/developed areas outside of design construction zones.
- 4) The implementation of project elements will be conducted in incremental phases (as feasible) by region to ensure that disturbance to habitats and species is restricted to small and/or spatially separate portions of the site at any one time. These areas will be defined in coordination with the NPS Aquatic Ecologist.

B. Transportation and Access

- 1) Access to the project area will be restricted to existing access roads and routes identified in the project description. Appropriate turnaround areas will be approved by the Biological Monitor and shall be clearly marked.
- 2) Speed limit signs (10 miles per hour) will be posted on all access roads.
- 3) All entry gates to the construction area will be kept closed during construction and be locked when not in use.
- 4) Vehicle and equipment refueling and lubrication will only be permitted in designated disturbed developed areas where accidental spills can be immediately contained.
- 5) All vehicles will carry a suitable fire extinguisher and other protective and preventative gear as required by NPS.

C. Training

- 1) A qualified Biological Monitor will train all project staff, contractors and consultants prior to the start of construction regarding habitat sensitivity, identification of species of concern, and required practices within the habitat area. A fact sheet or flier containing this information will be prepared and distributed.

D. Monitoring

- 1) The Biological Monitor will inspect each active work area daily immediately before activities begin and continually monitor in advance of the work crew and heavy equipment.
- 2) The Biological Monitor will have the authority to stop activities that are in violation of permit conditions or put listed species in danger.
- 3) A Biological Monitor will inspect underneath any vehicle that is parked for 30 minutes or more immediately prior to moving the vehicle.
- 4) The Biological Monitors will keep a daily log of project activity and compliance with permit conditions.
- 5) NPS or GGNPC staff shall educate the public to report suspicious activity at Mori Point.
- 6) NPS or GGNPC staff shall carry out a protocol for monitoring visitor-associated impacts to

listed species, their host plants and habitats. A report will be submitted to the Service annually (e.g. in the annual report prepared by the stewardship team for the site).

E. *Reporting*

- 1) If the Biological Monitor discovers a reportable incident, they will concurrently notify the construction supervisor and the USFWS immediately following the discovery.
- 2) If a San Francisco garter snake or California red-legged frog is killed or injured by activities associated with this project, project activities in the vicinity will stop immediately, if this can be done safely, and would not resume until the USFWS have provided permission to resume activities.
- 3) Any dead or injured San Francisco garter snakes will be turned over to the USFWS. A written report detailing the date, time, location, and general circumstances under which a dead or injured San Francisco garter snake was found will be submitted to the USFWS no later than three business days following the incident.

F. *Site Restoration*

- 1) All trash, debris, and construction materials generated by construction will be contained within non-sensitive areas and promptly removed from the site.
- 2) A biologist or horticulturist will inspect the site, and determine whether reseeding is needed following construction. In upland habitat, areas of bare soil exposed as a result of project activities will be revegetated with appropriate native species collected on site to restore vegetation similar to pre-existing conditions.
- 3) Prior to any on-site seed collection efforts per year for restoration activities, including broadcast seeding and nursery propagation, the NPS Vegetation Ecologist will be consulted to determine appropriate collection methods and thresholds per native or sensitive plant community, per native species, and per geographic area on-site to ensure that seed collection efforts do not deplete natural seed resources and/or genetic diversity.
- 4) The effectiveness of restoration efforts would be monitored. Photographs will be taken before construction, immediately after construction, and at appropriate periods for the year following construction.

G. *Invasive Non-Native Plant Species Removal and Control*

All invasive non-native plant removal and control activities would be incrementally phased within small areas in order to reduce any potential impact on sensitive species.

1) Manual Control

- Hand pulling:
 - Large woody species- Prior to removal, the site will be surveyed for underground burrows. In those areas where no burrows are found, the plant will be removed by hand or by hand using a weed-wrench tool. Cleared vegetation would be placed in small piles to decompose naturally, unless the vegetation contains viable seeds. In those situations, vegetative material will be disposed of off-site. In cases where underground burrows are present, plants will be cut instead of pulled.
 - Small woody or herbaceous species – Small individuals or species that have a very small root mass, such as purple star thistle, or Italian thistle can be easily pulled by hand and

removed without causing any substantial ground disturbance, and would not require hand excavation of burrows prior to removal. These should be pulled when the soil is moist to facilitate removal and avoid breakage, resulting in roots remaining in the soil and possibly resprouting.

- Cutting:
 - Cutting may occur in cases where hand pulling is inadvisable due to the presence of rodent burrows. Cutting would not cause any soil disturbance and would hence not result in adverse impacts to sensitive species. Cleared vegetation would be placed in small piles to decompose naturally, unless the vegetation contains viable seeds. In those situations, vegetative material will be disposed of off-site.
 - During tree removal activities, trees will be felled into areas of lower quality habitat for San Francisco Garter snake and California red-legged frog whenever possible. A biologist will survey these areas immediately prior to felling or trees to ensure that neither of these species is present in the drop zone. All vehicles associated with tree-removal activities shall be escorted into the work area by the biologist when traveling cross country or when using any unpaved access road. The biologist will clear the access roads and other routes prior to removal of logs by the skidder, but will not escort the vehicle. When skidding logs out of the project areas, this activity will be supervised by the biologist prior to moving logs. All tree removal will be conducted in such a way as to minimize erosion and changes to drain patterns. In most locations, stumps should be cut flush (parallel) with the ground. On steep slopes, stumps should be cut leaving a horizontal surface which should be cross-hatch cut with a saw to facilitate rapid rotting of the stump – this method is less visible than flush-cutting the stump parallel to the slope.
 - All wood chips associated with tree removal will be either 1) broadcast under a closed canopy pine, blackwood acacia, eucalyptus, or cypress forest with no understory (pine needle or leaf substrate) provided that the maximum chip depth is six inches or 2) the chips will be hauled off-site to an approved dump site.
- Grubbing:
 - Prior to any removal, vegetation will be carefully checked and searched for the presence of the San Francisco garter snake. If no snake is found, aboveground vegetation would be progressively cut back from overstory level to ground level to allow frogs to move out of the treatment area. Again, if no San Francisco garter snake is found, the remainder of the plant will be removed using a Pulaski, handpick, or similar digging tool. Cleared vegetation will be placed in small piles to decompose naturally, unless the vegetation contains viable seeds. In those situations vegetative material will be disposed of off site.

2) Mechanical Control

- Scorching (using a flame torch to wilt and kill young vegetation):
 - Scorching would only take place during winter and early spring months when vegetation is in a cotyledon or seedling stage, and small-statured enough to allow for a complete visual survey to ensure that snakes and frogs are not in the treatment area.
- Brushcut, mow, or chainsaw.: mechanical equivalent of cutting, but faster. Excellent for removing large trees, patches of plants that respond to cutting or for eliminating inflorescences

from mature plants before they set seed. Examples include annual and perennial grasses, other annual or biennial species.

3) Chemical Control

- Stump-cutting and painting: Stump-cutting and painting poses very little threat to the San Francisco garter snake and California red-legged frog as it does not involve soil disturbance nor will it introduce pesticides into an area where reptiles and amphibians may contact them. In this method, stems or trunks are cut and a small amount of GGNRA approved herbicide applied to the growing tissue in the cut stem. No herbicide direct stump applications will be allowed in riparian or wetland habitats supporting special status species except in the dry season. No herbicide run-off would be permitted. In order to ensure that amphibians and reptiles do not come into contact with the herbicide, stems would not be cut less than 6 inches from the ground.
- Foliar spray application will not be used in the vicinity of wetland and riparian areas, unless the site has dried out completely. Herbicides would not be applied in any area where surface flow would transport herbicide residue into Sanchez Creek, or in any pond on or adjacent to Mori Point unless such application is approved by the GGNRA IPM specialist or USFWS.
- All herbicide use will be administered through the park's Integrated Pest Management (IPM) Coordinator, and only licensed personnel will be allowed to apply pesticides. All herbicide use for project actions will be reported monthly to the IPM Coordinator. No herbicide foliar spraying or direct stump applications will be allowed in riparian or wetland habitats supporting special status species except in the dry season. Foliar herbicide applications beyond the riparian corridor are not approved where saturated soils are present, at wind speeds over 5 miles per hour, or when weather conditions facilitate herbicide movement toward drainages. All herbicide use is administered through each park's integrated pest management coordinator.

H. *Wetlands*

The following serve as Best Management Practices (BMPs) for GGNRA actions that may have adverse impacts on wetlands (per *Procedural Manual #77-1: Wetland Protection*). Additional BMPs may be appropriate depending on local conditions or special circumstances. These also serve as "conditions" that must be met for the actions listed in Section 4.2.A of these procedures to qualify as "excepted."

- 1) Effects on hydrology: Action must have only negligible effects on site hydrology, including flow, circulation, velocities, hydroperiods, water level fluctuations, and so on.
- 2) Water quality protection and certification: Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements (check with appropriate state agency).
- 3) Erosion and siltation controls: Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.
- 4) Effects on fauna: Action must have only negligible effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.
- 5) Proper maintenance: Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.

- 6) Heavy equipment use: Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.
- 7) Stockpiling material: Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semi-permeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
- 8) Removal of stockpiles and other temporary disturbances during construction: Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.
- 9) Topsoil storage and reuse: Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community. Salvaged topsoil should not be pile taller than 2 feet high and 3 feet wide, and piles should be windrowed to retain viability of the microorganisms.
- 10) Native plants: Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
- 11) Boardwalk/bridge elevations: Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures. (Placing a boardwalk/bridge at an elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.)
- 12) Coastal zone management: Action must be consistent, to the maximum extent practicable, with state coastal zone management programs.
- 13) Endangered species: Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat (see NPS Management Policies (1988) and guidance on threatened and endangered species).
- 14) Historic properties: Action must not have adverse effects on historic properties listed or eligible for listing in the NRHP.

I. *Invasive Non-Native Plant Introduction Control*

- 1) All vehicles will be brought in cleaned and free of weeds to prevent the spread and/or introduction of invasive plant species.
- 2) Appropriate excavated soil and aggregate materials from other projects within the GGNRA will be reused before allowing the importation of materials from outside the Park. Soils and vegetation contaminated with weed seeds from within the GGNRA would be segregated and disposed of or treated as appropriate.
- 3) At the direction of the Biological Monitor, restrictions will be placed on the movement or deposition of fill, rock, or other materials containing weed seed or viable plant cuttings to areas

relatively free of weeds.

J. *Erosion Control and Water Quality*

- 1) These BMPs include measures guiding the management and operation of construction sites to control and minimize the potential contribution of pollutants to storm runoff. These measures address procedures for controlling erosion and sedimentation and managing all aspects of the construction process to ensure control of potential water pollution sources. Erosion and sedimentation control practices typically include:
 - Construction will be limited to the dry-weather months, to the greatest extent practical.
 - Erosion and sedimentation control measures, such as rice straw mulch, sediment traps, check dams, geofabrics, drainage swales, sand bag dikes and/or straw wattles would be installed wherever deemed appropriate to eliminate the potential for sediment discharge into storm water and into wetlands and creeks from project construction. Erosion control structures will be installed concurrently with construction so that run-off will be deflected away from sensitive habitats. Fiber netting that has a mesh size smaller than 0.25 inches will be used to ensure that neither of these species gets trapped in the material. Plastic mono-filament erosion control matting shall not be used for erosion control where frogs or snakes may become entangled or trapped in it.
 - Erosion control measures and mulches that contain non-native plant seeds would be prohibited. Only rice straw should be permitted to prevent inadvertent introduction of wheat and barley species.
 - Stockpiled or disturbed soils would be temporarily covered with straw, matting, netting (no mono-filament plastic netting), or plastic sheeting. All open trench areas would be covered at the end of work day.
 - Waste and excess excavated materials would be stockpiled outside of drainages, and contained with appropriate silt control.
 - Unless no feasible alternative is available, heavy equipment use in areas with soils that are undisturbed, saturated or subject to extensive compaction would be prohibited. Where staging of heavy equipment, vehicles or stockpiling is unavoidable, the limit of allowable disturbance will be clearly demarcated by staking, flagging or fencing.
 - Erosion and sediment control measures would be implemented where project actions could leave soils exposed to runoff prior to revegetation. Areas disturbed by equipment or vehicles will be rehabilitated as quickly as possible to prevent erosion, discourage the spread of nonnative plants and address soil compaction. Techniques, including decompacting and recontouring to natural topography, compacting to natural, soil stabilization, and removal and monitoring of nonnative plants, will be used for rehabilitation efforts.
 - After tree felling, roots would be left in place in areas with highly erosive soils or on steep slopes. Stumps would be ground down to the ground level if appropriate.
 - Ensuring that all newly constructed impervious surfaces prevent, to the greatest extent feasible, increased water runoff volume and velocity, reduced water quality and reduced water infiltration.
 - Ensuring protection of normal movement, migration, reproduction, or health of aquatic fauna, including low flow conditions;
 - Properly maintaining structures or fill so as to avoid adverse impacts to aquatic environments and public safety;

- Placing excavated fill on non-sensitive upland sites, and stabilizing all material with compatible erosion control techniques;
- Designing projects to prevent alterations to drainage patterns or water movement. The design of trail features that intersect natural surface water bodies, such as bridges or wooden boardwalks, would include measures to avoid or reduce interference with the feature's natural flow dynamics;
- Placement and construction of new trails to prevent erosion and to minimize disruption to natural geologic processes, such as soils and slopes susceptible to erosion, minimize concentrated runoff, reduce sediment transport, and improve the quality of collected surface water. Trail slopes and gradients would comply with standard guidelines so that concentrated quantities of surface water would not run off at velocities capable of removing trail base material.
- Appropriate design would drain surface water from the trail to avoid ponding and development of soft, muddy surfaces that can lead to soil degradation and water quality impacts.

K. *Pollution Prevention*

- 1) Proper storage, use and disposal of chemicals, fuels, and other toxic materials would be required.
- 2) Construction equipment would be required to be refueled only in upland areas and in conformance with the Avoidance Zones described above to prevent fuel spills near sensitive habitats. Equipment would be inspected for hydraulic and oil leaks regularly as well as prior to use in the park.
- 3) All heavy equipment working in the GGNRA would be required to carry emergency spill containment materials. For example, pans should be placed under equipment that is stored onsite to reduce potential for leaking oil and other substances onto park lands. Absorbent materials should be on hand at all times to absorb any minor leaks and spills.
- 4) An Emergency Response Plan will be prepared by the construction and tree removal contractor(s), approved by NPS, and implemented during project implementation.

L. *Fugitive Dust Control Measures*

- 1) All active construction areas may be watered where soil is exposed to control dust frequency, depending on type of operation and wind exposure.
- 2) A person or persons would be designated to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.
- 3) All trucks hauling soil, sand, and other loose materials will be covered, or all trucks will be required to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer) in accordance with Section 23114 of the California Vehicle Code during transit to and from the site.
- 4) Inactive storage piles will be covered.

M. *Trail Construction*

Drainage Control: Trails in hilly terrain are particularly subject to erosion caused by water movement. Design and construction errors can allow water to build up volume and velocity, which often causes trail damage. There are several basic design strategies to improve drainage

control, such as using alignments perpendicular to sheetflow direction and full or half bench construction.

- *Outsloping:* Outsloping is slightly elevating the uphill edge of a trail. It encourages water to flow across the trail surface and reduces the potential for erosion. All proposed trail designs include outsloping. Full bench construction provides a more stable trailbed. Where cross slopes are not steep (generally less than 30 percent), half bench construction may be used.
- *Rolling Grade Dips:* Rolling grade dips are short sections of trail that channel water off the trail surface. Grade dips work best on trails with slow, steady grades and are best placed at naturally occurring drainage ways. Typically, trails are outsloped more at the point of the grade dip to provide better drainage. Grade dip backslopes should be about 1.2 to 1.8 m (4 to 6 ft) long to eliminate abrupt grade changes that may be barriers to access. For this reason, dips are preferable to both waterbars and open culverts. They typically require less maintenance than covered culverts, which can easily become clogged with leaves or other debris.

Trails in Wet Areas: Trails in the proximity of areas with seasonal or permanent soft and water-saturated soils pose problems for visitor enjoyment and for resource protection and maintenance. Trail users often walk to trail sides to avoid wet patches, which can cause destruction of adjacent vegetation and surface soil horizons. However, relocating these trails to higher or drier ground may not benefit the resource if the existing trail provides special benefits to users or if rerouting the trail would disturb sensitive habitat areas. Providing a hardened trail surface in the current trail alignment may be the best choice. Techniques that allow access for users with disabilities are preferred.

- *Surface Reinforcing:* Placing flat stones or cobbles on the trail surface, in combination with geotextile or sheet drain materials, is an aesthetically pleasing way to provide a stable trail surface in wet areas. Since water can pass through the entire structure, this solution offers the additional advantage of only minimally disrupting existing drainage patterns. Another alternative is a short, concrete-paved section that would be more accessible for people using wheelchairs.
- *Boardwalk/Bridge:* Trail structures such as bridges help maintain drainage patterns. They can be constructed of timber or recycled plastic lumber. To maximize accessibility for people with disabilities, bridge entrances and exits should be at grade rather than elevated or ramped. Additional maintenance might be required to ensure that surfaces that adjoin the entrances and exits do not vary more than 50 mm (2 in) from the bridge surface.
- *Drainage Lens:* The low-volume water flow caused by ephemeral springs or seeps can often be managed with a drainage lens. The area beneath the trail bed should be filled with progressively smaller quarry rock and then capped with fine aggregate or suitable native fill. Sandwiching the rock lens between two layers of geotextile material would provide a more stable base, and would prevent rock from mixing with surrounding soils.

Trails on Steep Cross Slopes: Steep slopes present many challenges for safe and sensitive trail design. Trail cuts on steep slopes increase the visual impact and the area of disturbance and often require special measures to stabilize the slope, such as slope protection or retaining walls. In some cases, stairways may also be needed. Trail structures and retaining walls, when

required, should be designed to minimize impact on natural and cultural resources and should use materials appropriate to the area's landscape management zone.

- *Area Avoidance and Trail Relocation:* When possible, avoid locating trails on steep slopes. Where trails must cross a steep slope, consider a minimum width trail.
- *Reinforced Backslope or Retaining Wall:* Depending on soil type, backslope cuts into hillsides may need protection in order to prevent severe erosion and slope destabilization. Backslope reinforcing and protection can be provided by a permanent structure or by temporary measures during revegetation. Retaining devices may be as simple as a log curb, or they may need to be designed by a structural engineer. Retaining materials may be poured-in place or pre-cast concrete segments, stones or timber from vegetation management practices, depending on the landscape management zone. All retaining structures must allow water to drain around or through the wall and not accumulate behind it. Stepped-back wall construction may provide opportunities for more planting. Green wall systems (a structure permeated by plantings) may be an acceptable alternative to retaining walls in some areas. Ongoing maintenance, including repair, replacement and removal of broken or detached components, must be provided for all retaining structures.
- *Trail Structure:* Boardwalks, stairways, and decks may be used where standard cut-and-fill techniques are inappropriate. For example, on steep trails on sandy or loose soils, stairways are recommended to avoid excessive erosion. Steel deck structures would allow light to penetrate to the vegetation below and reduce impacts on habitats sensitive to light.

Trails on Flat Grades: Since trails exist in dynamic environments, it is not possible to keep them clean and dry – especially when they're on primarily level terrain. Without proper drainage, trails on level ground tend to pond and collect debris, creating obstacles for all users. This creates a cycle that further degrades the trail and surrounding lands. Proper trail design can help mitigate this problem. There are several approaches for providing good drainage. The goal in all cases is to maintain a firm, stable, slip-resistant surface that is free of ponding.

- *Above Grade Trail:* One technique is to elevate a trail slightly, about 75 mm to 150 mm (3 in to 6 in), and provide drainage swales on each side. Using a gravel bed to elevate the trail would provide additional subsurface drainage. Raised trails are often used in conjunction with drainage lenses to facilitate water movement. An elevated trail offers a more convenient pathway for users during wet periods, provides the greatest degree of accessibility for persons with disabilities, and may require less maintenance.
- *Boardwalks :* This approach also provides an accessible trail surface. Boardwalks are often the most appropriate solution on erodible soils, such as sand or other loose, uncompacted soil.

Eroding and Hazardous Trail Edges: Edge protection has two purposes: to protect the trail and adjacent resources, and to protect the user. Clearly defined edges help keep users of all types on the established trail surface and help protect resources. Properly constructed edges also protect trails from water damage and erosion. Edge protection can also increase trail safety for various user groups. For example, a raised curb at least 75 mm (3 in) high or a guardrail may help a person using a wheelchair keep on track. However, some types of edge protection may be hazardous for bicyclists.

- *Edge Stabilization:* Edge protection is sometimes required to stabilize the trail structure, and prevent erosion of edges and eventual undermining of the trail base. Reinforcement of both sides of the trailbed can improve long-term sustainability. Soft surfaces such as those proposed for walking or jogging on the edges of multiple-use trails generally require full depth edge protection to prevent breakdown of trail edges. Since trails pass through many different environments, including sensitive natural habitat, edge protection should be consistent with the setting.
- *Edge Safety:* Trail edge safety provisions are sometimes required and must be appropriate to the trail user group and the setting. On multiple-use trails, edge protection and barriers must be designed for bicycle safety. For example, a raised curb that might aid a wheelchair user should not be located immediately adjacent to a bicycle way or paved portion of a multiple-use trail, unless the trail is widened to provide buffers. All vertical structures such as curbs and railings should be set back a minimum of 0.6 m (2 ft) from the bicycle way. Where required for trail user safety immediately adjacent to a steep drop off, safety railings with a height of 1.1 m (42 in) should be provided. However, because railings can be a visual intrusion in a natural setting, they should be used only when there is no other alternative.
- *Reducing Hazards at Drop-offs:* An effective strategy for reducing hazardous conditions on hillside trails (with or without additional edge protection) is to widen the trail and plant vegetation at the trail's edge.

Trails on Sandy Soils: Maintaining a stable trail surface can be particularly challenging in areas with sandy soils. Solutions depend on factors such as the relative sensitivity of the surrounding habitat, continuing maintenance costs, accessibility requirements, and issues specific to each landscape management zone.

- *Subsurface Geogrids:* Geogrids or geocells, when used in combination with geotextiles, provide a relatively unobtrusive means of stabilizing sandy trails. The geogrid confinement chambers distribute trail tread loads over a greater area and reduce settling, both of which help keep trail surfaces intact, in place and dry. The geotextile material provides separation between saturated soil and the tread fill, or increased containment over a sand base. Permeable tread fill provides drainage if the trail is built with a grade or on a sideslope. Imported soils should not be used for tread fill in areas of sensitive natural habitat.
- *Permanent and Moveable Above-Grade Trail Structures:* Boardwalks, which are permanent trail structures described in BMP 10-2, Boardwalks, are traditionally used for access across sandy soils. Another option is textured panels with drain holes, which are installed directly on the surface without excavation (Figure C-15). These panels meet current accessibility guidelines and can be relocated. They may require additional maintenance, such as sweeping and readjustment of linked panels to provide a uniform surface. Sand ladders are a series of logs connected by cable, such as the one in use on the dunes just south of Battery Crosby. They are an option for sandy trails with a steep linear grade. Sand ladders do not provide an accessible route for people with disabilities. Periodic maintenance is required to restore sand ladders to grade level after sand accumulates on the surface. Although temporary or moveable beach access routes are permitted, there are currently no recommendations for products that meet accessibility requirements.

Trails Damaged by Vehicle Use: Maintenance vehicles can damage trails that were not designed to support vehicular traffic. Trail structural stability and strength should be increased on pedestrian and multiple-use trails that will be used by maintenance vehicles. Since many trails are located in areas where sub-grades have a low bearing strength or are poorly drained, sub-bases and trail surfaces would need to be thicker than standard practice to support greater design loads.

- *Geotextile Underlay and Deeper Sub-Base:* Geotextiles can promote trail structural stability and increase the strength of trail cross sections. Wherever maintenance vehicle use is expected, geotextiles should be used to keep trail sub-bases intact and reinforce the structural qualities of trail subgrades. In some cases, the depth of trail subbases should be increased to 0.2 m (8 in).

Non-Designated Trails Requiring Closure: Although considered convenient by users, non-designated trails are often unsafe, contribute to the loss of plant communities, and disturb wildlife. They also impact water resources through erosion and soil compaction. In order to protect Mori Point's unique natural resources, non-designated trails would be closed.

- *Entrance Point Closures and Signs:* Obscuring the entrance to non-designated trails with brush piles or permanent or temporary barriers, such as fences and signs, can discourage the use of non-designated trails. Fencing should be kept to a minimum or used as a temporary measure to protect revegetation areas until these areas are well established. Trail closure signs might be installed temporarily until vegetation is established. Signs or notices posted at trailheads can inform people of the need for social trail closures and encourage them to comply with trail closures. Natural resources staff would help time the trail closures, to ensure that there is adequate time for seed and/or plant collection and salvage, and nursery propagation for revegetation.
- *Vegetation Restoration:* There are several effective techniques that can be used to rehabilitate areas damaged by non-designated trails. For instance, it might be necessary to camouflage the trail surface to discourage continued use. One technique is vertical mulch or brushing-in, where materials are collected from the immediate vicinity and "planted" into the trail surface. Vertical mulch can facilitate the deposition of blowing soil, organic debris, and seeds while creating a protected site for plant reestablishment. Specific prescriptions for plant establishment would be done in consultation with park vegetation restoration specialists. In heavily eroded areas, native soil fill, grading, and temporary check dams may help slow and disperse water flow and encourage the deposition of sediments in ruts or low points

Mitigation Measure Summary Table

IMPACT TOPIC	MITIGATION
Geology and Soils	GGNRA would prohibit construction activities in any site area with seismic hazards until geologic and soil conditions of the site are investigated and appropriate mitigation measures, if any, are incorporated into development/restoration plans.
Hydrology and Water Quality	Construction will be limited to the dry-weather months to the greatest extent practicable.
Hydrology and Water Quality	Areas disturbed by equipment or vehicles will be rehabilitated as quickly as possible to prevent erosion, discourage the spread of nonnative plants and address soil compaction.
Hydrology and Water Quality	Appropriate design would drain surface water from the trail to avoid ponding and development of soft, muddy surfaces that can lead to soil degradation and water quality impacts.
Hydrology and Water Quality	Erosion and sediment control measures would be implemented where project actions could leave soils exposed to runoff prior to revegetation. Erosion control measures would be installed wherever necessary during construction to eliminate the potential for sediment discharge into stormwater, wetlands, and creeks.
Visitor Safety	As per recommendation from the SMCMA, monitoring of mosquito populations and possible application of <i>Bacillus thuringiensis</i> would be implemented.
Visitor Safety	Advanced notification of construction work, detour signage, and construction fencing will be implemented to restrict visitors from hazardous areas during construction.
Visitor Use and Recreation	Hours of construction will be limited and restricted between the hours of 8:00 p.m. until 7:00 a.m., would not occur on weekends, and established trails will be rerouted during construction.
Noise	Use of powered construction equipment will comply with the City of Pacifica Municipal Code, Sec. 5-10.03. Enumerated, which prohibits construction noise at night from 8:00 p.m. until 7:00 a.m. Neighbors would also be given notice prior to any construction activities.
Noise	Noise generated by the construction equipment will be reduced by proper muffling of machinery.
Noise	Construction vehicles and equipment will not idle when not in use.
Biological Resources	All vehicles will be brought in cleaned and free of weeds to prevent the spread and/or introduction of invasive plant species.
Biological Resources	Soils and vegetation contaminated with weed seeds would be segregated and disposed of or treated as appropriate.
Biological Resources	At the discretion of the project Biological Monitor, restrictions will be placed on the movement or deposition of fill, rock, or other materials containing weed seed or viable plant cuttings to areas relatively free of weeds.
Biological Resources	No earthmoving or soil disturbing work shall occur in the vicinity of the “Bowl” or existing ponds or wetlands between November 15 and April 15, the breeding season for California red-legged frog and the season when San

	Francisco garter snake are inactive in their winter burrows.
Biological Resources	Vegetation in all construction areas will be progressively cleared by hand equipment to a height of 4 inches and checked for presence of snakes prior to ground-disturbance and construction equipment or vehicles entering the sites. Once vegetation is cleared, a pre-construction survey for the San Francisco garter snake will be conducted in the impact area.
Biological Resources	Prior to construction near wetlands or ponds, exclusion fencing will be constructed and all rodent burrows in the construction area will be hand excavated until the burrows terminates or until a maximum depth of 30 centimeters in areas where soil or fill will be removed or placed.
Biological Resources	Speed limits of 10 miles per hour will be posted on all access roads.
Biological Resources	A Biological Monitor will inspect for snakes and frogs underneath any vehicle that is parked for 30 minutes or more, immediately prior to moving the vehicle.
Biological Resources	Exclusion fencing gates will be closely monitored throughout construction to ensure no snakes enter the area.
Biological Resources	Personnel who detect any suspected San Francisco garter snake or California red-legged frog on-site will immediately report their finding to a Biological Monitor for positive identification. Non-permitted personnel will not attempt to capture or move any snake or frog detected. If the Biological Monitor determines that the animal is not a San Francisco garter snake or California red-legged frog, the Biological Monitor may hand capture and move the animal to suitable habitat outside the construction area. If the Biological Monitor determines that the detected animal is a San Francisco garter snake or a California red-legged frog, or is unable to positively identify the animal, then the Biological Monitor will notify the permitted biologist for appropriate action.
Biological Resources	A biologist holding a valid Scientific Collection Permit from the U.S. Fish and Wildlife Service will be on call or on-site to handle any San Francisco garter snakes or California red-legged frogs encountered during pre-construction and construction activities. Only a holder of a valid Scientific Collection Permit from the USFWS will handle San Francisco garter snakes. California red-legged frogs will only be handled by a holder of a valid Scientific Collection Permit from the USFWS or a USFWS-approved Monitor.
Biological Resources	All excavated holes and trenches will be either covered at the end of the workday, ramped or escape boards will be placed in trench to allow the animals to escape. Trenches will be inspected each morning and late afternoon by the Biological Monitor as well as before the trench is filled. The permitted biologist will relocate any San Francisco garter snake or California red-legged frog individuals found.
Biological Resources	Equipment and trucks used for construction should utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, and installation of sound blanket around the project site, wherever feasible and necessary). Construction vehicles should be properly maintained

	and equipped with exhaust mufflers that meet state standards.
Biological Resources	Impact tools used for construction should be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. Where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used. External jackets on the tools themselves and quieter procedures should be used wherever feasible.
Biological Resources	Invasive non-native plant removal would be conducted as follows so that any San Francisco garter snakes that may be hiding in vegetation can escape unharmed. First, search each clump or patch thoroughly for snakes. If a San Francisco garter snake is found, disturbing it is likely to make it hide more deeply in the vegetation, therefore, leave the clump or patch alone and check it again on a later day. If no San Francisco garter snake is found, cut the vegetation manually 1 to 2 feet above ground level and search it again (carefully). If no San Francisco garter snake is found, the remainder of the clump or patch can be removed.
Biological Resources	Current sterilization protocols will be followed for all wetland sampling and monitoring at Mori Point, to protect against chytrid and trematode infestation.
Biological Resources	Wetlands will be monitored for invasive aquatic species and removal will be conducted if found. During invasive non-native plant removal, if physical removal or destruction is planned, conduct the work as follows so that any San Francisco garter snakes that may be hiding in the grass can escape unharmed. First, search each clump or patch thoroughly for snakes. This should be done with caution, since there is some potential for rattlesnakes to be present. If a garter snake is found, disturbing it is likely to make it hide more deeply in the vegetation, therefore, leave the clump or patch alone and check it again on a later day. If no garter snake is found, cut the vegetation manually 1 to 2 feet above ground level and search it again (carefully). If no garter snake is found, the remainder of the clump or patch can be removed.
Biological Resources	Project activities including vegetation removal, grading, earth movement, or other activities involving mechanized equipment shall not be conducted during the bird-nesting season, from March 1 through July 31 st , unless a qualified biologist conducts a pre-project survey for nesting birds and determines that birds are not nesting within the project area. All pre-project surveys would be coordinated with the GGNRA Wildlife Ecologist. To the greatest extent possible, these activities will be planned and conducted outside bird-nesting season. If work is necessary during the bird-nesting season, vegetation shall be removed to a height of less than 8 inches prior to the nesting season (March 1 st through July 31 st) and throughout project activities to discourage the nesting of ground-dwelling bird species.
Biological Resources	In order to protect nesting raptors, trees shall not be removed between January 1 st and July 31 st unless qualified personnel conduct a pre-project survey for nesting birds and determine that birds are not nesting within the project area. If nesting raptors are detected, a qualified biologist will delineate a suitable buffer.
Biological Resources	Prior to implementation of proposed project activities, conduct visual surveys

	<p>within the Monterey pine and cypress groves on-site to determine the presence or absence of woodrat nests. If woodrat nests are located during this survey, avoid the nest(s) and establish a minimum protection buffer of 50 feet around each nest. Project activities requiring grading, mechanized equipment or vehicles, or large crews within the 25-foot protective buffer should only occur during the non-breeding season (October-November) to avoid noise impacts to any breeding woodrats that may occupy the nest from December through September. If project activities cannot avoid impacting or removing the nest, then the nest(s) should be dismantled by hand prior to grading or vegetation removal activities. The nest dismantling shall occur during the non-breeding season (October-November) and shall be conducted so that the nest material is removed starting on the side where most impacts will occur and ending on the side where the most habitat will be undisturbed, which will allow for any woodrats in the nest to escape into adjacent undisturbed habitat. If young are encountered during nest dismantling, the dismantling activity should be stopped and the material replaced back on the nest and the nest should be left alone and rechecked in 2-3 weeks to see if the young are out of the nest or capable of being out on their own (as determined by a qualified biologist); once the young can fend for themselves, the nest dismantling can continue.</p>
<p>Biological Resources</p>	<p>Prior to implementation of proposed project activities, conduct visual surveys on-site to determine the presence or absence of suitably sized burrows for badgers. If potential badger burrows are located on-site, surveys will be conducted at each burrow to determine the presence or absence of badgers. If badgers are determined to be present, a qualified biologist will be consulted to determine appropriate buffer distances from each occupied burrow to maintain during project activities, and possible project timing restrictions to avoid impacts to birthing individuals (most young are born in March and April⁹). If avoidance of impacts to occupied burrows is not feasible, then a qualified biologist shall implement a pre-construction program during the non-birthing season (Summer through Winter) to exclude badgers from their burrows by closing each burrow once the badger has emerged.</p>

⁹ Long 1973 (Long, C. A. 1973. Taxidea taxus. Mammal. Species. No. 26. 4pp.) from “California's Wildlife, Mammals, Badger. California Wildlife Habitat Relationships System, California Department of Fish and Game, 1983.”

Appendix F. U.S. Fish and Wildlife Service Letter with Species List for the Project

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United States Department of the Interior



FISH AND WILDLIFE SERVICE



Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

December 14, 2005

Document Number: 051214041937

Shannon Lucas
May & Associates, Inc.
730 Clementina Street
San Francisco, CA 94103

Subject: Species List for Mori Point Coastal Trail Construction, Habitat Restoration and Site Maintenance Project

Dear: Ms. Lucas

We are sending this official species list in response to your December 14, 2005 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested. You have stated that this list is for consultation with the Fish & Wildlife Service.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 14, 2006.

Please contact us if your project may affect endangered or threatened species or if you

have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



**Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested
Document Number: 051214041937
Database Last Updated: November 3, 2005**

CRITICAL HABITAT:

On August 11, 2005, the Service published a revised [critical habitat designation](#) for vernal pool species. It did not specify critical habitat locations on a species by species basis. If there are species on the list(s) below that were covered under the rule, they are shown because we believe that they are present in the area or may be affected by projects in the area, not because it has specifically been designated as critical habitat for them.

Quad Lists

MONTARA MOUNTAIN (448C)

Listed Species

Invertebrates

Haliotes sorenseni - white abalone (E)

Icaricia icarioides missionensis - mission blue butterfly (E)

Incisalia mossii bayensis - San Bruno elfin butterfly (E)

Fish

Eucyclogobius newberryi - tidewater goby (E)

Hypomesus transpacificus - delta smelt (T)

Oncorhynchus kisutch - coho salmon - central CA coast (E)

Oncorhynchus mykiss - Central California Coastal steelhead (T)

Oncorhynchus mykiss - Central Valley steelhead (T)

Oncorhynchus mykiss - Critical habitat, Central California coastal steelhead (X)

Amphibians

Rana aurora draytonii - California red-legged frog (T)

Reptiles

Thamnophis sirtalis tetrataenia - San Francisco garter snake (E)

Birds

Brachyramphus marmoratus - Critical habitat, marbled murrelet (X)

Brachyramphus marmoratus - marbled murrelet (T)

Charadrius alexandrinus nivosus - western snowy plover (T)

Diomedea albatrus - short-tailed albatross (E)

Haliaeetus leucocephalus - bald eagle (T)

Pelecanus occidentalis californicus - California brown pelican (E)

Rallus longirostris obsoletus - California clapper rail (E)

Sterna antillarum (=albifrons) *browni* - California least tern (E)

Mammals

Arctocephalus townsendi - Guadalupe fur seal (T)

Balaenoptera borealis - sei whale (E)

Balaenoptera musculus - blue whale (E)

Balaenoptera physalus - finback (=fin) whale (E)

Eubalaena glacialis - right whale (E)

Physeter catodon (=macrocephalus) - sperm whale (E)

Reithrodontomys raviventris - salt marsh harvest mouse (E)

Plants

Potentilla hickmanii - Hickman's potentilla (=cinquefoil) (E)

Proposed Species

Amphibians

Rana aurora draytonii - Critical habitat, California red-legged frog (PX)

Candidate Species

Invertebrates

Haliotes cracherodii - black abalone (C)

Species of Concern

Invertebrates

Cicindela hirticollis gravida - sandy beach tiger beetle (SC)

Coelus globosus - globose dune beetle (SC)

Hydrochara rickseckeri - Ricksecker's water scavenger beetle (SC)

Hydroporus leechi - Leech's skyline diving beetle (SC)

Lichnanthe ursina - bumblebee scarab beetle (SC)

Fish

Lampetra tridentata - Pacific lamprey (SC)

Pogonichthys macrolepidotus - Sacramento splittail (SC)

Spirinchus thaleichthys - longfin smelt (SC)

Amphibians

Rana boylei - foothill yellow-legged frog (SC)

Reptiles

Clemmys marmorata marmorata - northwestern pond turtle (SC)

Clemmys marmorata pallida - southwestern pond turtle (SC)

Phrynosoma coronatum frontale - California horned lizard (SC)

Birds

Agelaius tricolor - tricolored blackbird (SC)

Amphispiza belli belli - Bell's sage sparrow (SC)

Arenaria melanocephala - black turnstone (SC)

Athene cunicularia hypugaea - western burrowing owl (SC)

Buteo regalis - ferruginous hawk (SC)

Calidris canutus - red knot (SC)

Calypte costae - Costa's hummingbird (SC)

Carduelis lawrencei - Lawrence's goldfinch (SC)

Chaetura vauxi - Vaux's swift (SC)

Cypseloides niger - black swift (SC)

Elanus leucurus - white-tailed (=black shouldered) kite (SC)

Empidonax traillii brewsteri - little willow flycatcher (CA)

Falco peregrinus anatum - American peregrine falcon (D)

Geothlypis trichas sinuosa - saltmarsh common yellowthroat (SC)

Haematopus bachmani - black oystercatcher (SC)

Histrionicus histrionicus - Harlequin duck (SC)

Lanius ludovicianus - loggerhead shrike (SC)

Laterallus jamaicensis coturniculus - black rail (CA)

Limosa fedoa - marbled godwit (SC)
Melanerpes lewis - Lewis' woodpecker (SC)
Numenius americanus - long-billed curlew (SC)
Numenius phaeopus - whimbrel (SC)
Oceanodroma homochroa - ashy storm-petrel (SC)
Riparia riparia - bank swallow (CA)
Rynchops niger - black skimmer (SC)
Selasphorus rufus - rufous hummingbird (SC)
Selasphorus sasin - Allen's hummingbird (SC)
Sterna elegans - elegant tern (SC)

Mammals

Corynorhinus (=Plecotus) townsendii townsendii - Pacific western big-eared bat (SC)
Eschrichtius robustus - gray whale (D)
Eumops perotis californicus - greater western mastiff-bat (SC)
Myotis evotis - long-eared myotis bat (SC)
Myotis thysanodes - fringed myotis bat (SC)
Myotis volans - long-legged myotis bat (SC)
Myotis yumanensis - Yuma myotis bat (SC)
Neotoma fuscipes annectens - San Francisco dusky-footed woodrat (SC)

Plants

Abronia umbellata ssp. umbellata - pink sand-verbena (SLC)
Allium peninsulare var. franciscanum - Franciscan onion (SLC)
Amsinckia lunaris - bent-flowered fiddleneck (SLC)
Arabis blepharophylla - coast rock-cress (SLC)
Arctostaphylos andersonii - Santa Cruz manzanita (SLC)
Arctostaphylos montaraensis - Montara manzanita (SC)
Arctostaphylos regismontana - Kings Mountain manzanita (SLC)
Astragalus nuttallii var. virgatus - Nuttall's milk-vetch (SLC)
Astragalus pycnostachyus var. pycnostachyus - marsh milkvetch (=brine milk-vetch) (SLC)
Atriplex californica - California saltbush (SLC)
Castilleja affinis spp. affinis - Coast Indian paintbrush (SLC)
Castilleja ambigua ssp. ambigua - salt marsh owl's clover (=johnny-nip) (SLC)

Castilleja exsertta ssp. latifolia - purple owl's-clover (=wideleaf Indian paintbrush) (SLC)
Chorizanthe cuspidata var. cuspidata - San Francisco Bay spineflower (SC)
Cirsium andrewsii - Franciscan thistle (SC)
Clarkia davyi - Davy's clarkia (SLC)
Dirca occidentalis - western leatherwood (SLC)
Eriogonum caninum - Tiburon buckwheat (SLC)
Erysimum franciscanum - San Francisco wallflower (SC)
Fritillaria liliacea - fragrant fritillary (= prairie bells) (SC)
Grindelia hirsutula var. maritima - San Francisco gumplant (SC)
Horkelia marinensis - Point Reyes horkelia (SC)
Lessingia arachnoidea - Crystal Springs lessingia (SC)
Linanthus grandiflorus - large-flowered (=flower) linanthus (SC)
Linanthus rosaceus - rose linanthus (SC)
Lupinus arboreus var. eximius - San Mateo tree lupine (SLC)
Malacothamnus arcutatus (= *M. fasciculat*) - arcuate bush mallow (SLC)
Silene verecunda ssp. verecunda - Mission Delores (=San Francisco) campion (SC)
Spartina foliosa - Pacific cordgrass (=California cordgrass) (SLC)
Tanacetum camphoratum - dune (=camphor) tansy (SC)
Triphysaria floribunda - San Francisco owl's-clover (SC)

County Lists

No county species lists requested.

Key:

- (E) *Endangered* - Listed (in the Federal Register) as being in danger of extinction.
- (T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
- (P) *Proposed* - Officially proposed (in the Federal Register) for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the [National Marine Fisheries Service](#). Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(CA) Listed by the State of California but not by the Fish & Wildlife Service.

(D) *Delisted* - Species will be monitored for 5 years.

(SC) *Species of Concern*/(SLC) Species of Local Concern - Other species of concern to the Sacramento Fish & Wildlife Office.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey [7½ minute quads](#). The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, or may be affected by projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the quad or quads covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the nine surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

State-Listed Species

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. However you should contact the California Department of Fish and Game [Wildlife and Habitat Data Analysis Branch](#) for official information about these species.

Your Responsibilities Under the Endangered Species Act

All plants and animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant

and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal

Regulations (50 CFR 17.95). See our [critical habitat page](#) for maps.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

[Species of Concern](#)

Your list may contain a section called Species of Concern. This is an informal term that refers to those species that the Sacramento Fish and Wildlife Office believes might be in need of concentrated conservation actions. Such conservation actions vary depending on the health of the populations and degree and types of threats. At one extreme, there may only need to be periodic monitoring of populations and threats to the species and its habitat. At the other extreme, a species may need to be listed as a Federal threatened or endangered species. Species of concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 14, 2006.

Appendix G. Special Status Species with Potential to Occur at Mori Point.

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Appendix G. Special Status Species with Potential to Occur within the Mori Point Project Area

Scientific name	Common name	Status ¹				General habitat	Micro habitat	Potential to occur within Proposed Project Area	Source ²	Blooming period
		Federal	State	CDFG	CNPS					
Plants										
<i>Abronia umbellata</i> ssp. <i>breviflora</i>	Pink sand-verbena	FSLC			1B	COASTAL DUNES AND COASTAL STRAND.	FOREDUNES AND INTERDUNES WITH SPARSE COVER.	Low; not observed on-site.	FWS	Jun-Oct
<i>Allium peninsulare</i> var. <i>franciscanum</i>	Franciscan onion				1B	CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.	CLAY SOILS; OFTEN ON SERPENTINE. DRY HILLSIDES. 100-300M.	Low; not observed on-site.	CNDDDB	May-Jun
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck				1B	CISMONTANE WOODLAND, VALLEY AND FOOTHILL GRASSLAND.	50-500M.	Low; not observed on-site.	CNDDDB	Mar-Jun
<i>Arabis blepharophylla</i>	coast rock cress				4	BROADLEAVED UPLAND FOREST, COASTAL BLUFF SCRUB, COASTAL PRAIRIE, COASTAL SCRUB	3-1100M.	Low; not observed on-site.	CNPS	Feb-May
<i>Astragalus nuttallii</i> var. <i>nuttallii</i>	Nuttall's milk-vetch				4	COASTAL BLUFF SCRUB, COASTAL DUNES	3-120M.	Not present per focused survey conducted in 8/02	CNPS	Jan-Nov
<i>Calandrinia breweri</i>	Brewer's calandrinia				4	CHAPARRAL, COASTAL SCRUB (SANDY OR LOAMY, DISTURBED SITES AND BURNS)	10-1220M.	Low; not observed on-site.	CNPS	Mar-Jun
<i>Castilleja affinis</i> var. <i>affinis</i>	Coast Indian paintbrush	FSLC				CHAPARRAL, COASTAL SCRUB (SANDY SOILS)	0-1200M.	Low; not observed on-site.	FWS	
<i>Castilleja exserta</i> ssp. <i>latifolia</i>	Purple owl's-clover	FSLC				COASTAL BLUFFS, DUNES.	0-100M.	Low; not observed on-site.	FWS	
<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant				1B	COASTAL PRAIRIE, MEADOWS AND SEEPS, COASTAL SALT MARSH, VALLEY AND FOOTHILL GRASSLAND.	VERNALLY MESIC, OFTEN ALKALINE SITES. 2-420M.	Low; not observed on-site.	CNDDDB	May-Nov
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i>	San Francisco Bay spineflower				1B	COASTAL BLUFF SCRUB, COASTAL DUNES, COASTAL PRAIRIE, COASTAL SCRUB.	CLOSELY RELATED TO C. PUNGENS. SANDY SOIL ON TERRACES AND SLOPES. 5-550M.	Not present per focused survey conducted in 8/02	CNDDDB	Apr-Aug
<i>Chorizanthe robusta</i> var. <i>robusta</i>	robust spineflower	FE			1B	CISMONTANE WOODLAND, COASTAL DUNES, COASTAL SCRUB.	SANDY TERRACES AND BLUFFS OR IN LOOSE SAND. 3-120M.	Not present per focused survey conducted in 8/02	CNDDDB	Apr-Sep
<i>Cirsium occidentale</i> var. <i>compactum</i>	compact cobwebby thistle				1B	CHAPARRAL, COASTAL DUNES, COASTAL PRAIRIE, COASTAL SCRUB.	ON DUNES AND ON CLAY IN CHAPARRAL; ALSO IN GRASSLAND. 5-155M.	Low; not observed on-site.	CNDDDB	Apr-Jun
<i>Clarkia davyi</i>	Davey's clarkia	FSLC				COASTAL GRASSLAND, BLUFFS		Low; not observed on-site.	FWS	
<i>Collinsia multicolor</i>	San Francisco collinsia				1B	CLOSED-CONE CONIFEROUS FOREST, COASTAL SCRUB.	ON DECOMPOSED SHALE (MUDSTONE) MIXED WITH HUMUS. 30-250M.	Low; not observed on-site.	CNDDDB	Mar-May
<i>Erysimum franciscanum</i>	San Francisco wallflower				4	CHAPARRAL, COASTAL DUNES, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND (OFTEN SERPENTINE OR GRANITIC)	0-550M.	Low; not observed on-site.	CNPS	Mar-Jun
<i>Fritillaria agrestis</i>	stinkbells				4	CHAPARRAL, CISMONTANE WOODLAND, PINYON AND JUNIPER WOODLAND, VALLEY AND FOOTHILL GRASSLAND (CLAY, SOMETIMES SERPENTINE)	10-1555M.	Low; not observed on-site.	CNPS	Mar-Jun
<i>Gilia capitata</i> ssp. <i>chamissonis</i>	dune gilia				1B	COASTAL DUNES, COASTAL SCRUB.	2-200M.	Low; not observed on-site.	CNDDDB	Apr-Jul
<i>Grindelia hirsutula</i> var. <i>maritima</i>	San Francisco gumplant				1B	COASTAL SCRUB, COASTAL BLUFF SCRUB, VALLEY AND FOOTHILL GRASSLAND.	SANDY OR SERPENTINE SLOPES, SEA BLUFFS. 15-400M.	Not present per focused survey conducted in 8/02	CNDDDB	Aug-Sep
<i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax				2	COASTAL BLUFF SCRUB, COASTAL DUNES.	SANDY BLUFFS AND FLATS. 0-200M.	Low; not observed on-site.	CNDDDB	Mar-Jun
<i>Horkelia cuneata</i> ssp. <i>sericea</i>	Kellogg's horkelia				1B	CLOSED-CONE CONIFEROUS FOREST, COASTAL SCRUB, CHAPARRAL.	OLD DUNES, COASTAL SANDHILLS; OPENINGS. 10-200M.	Not present per focused survey conducted in 8/02	CNDDDB	Apr-Sep
<i>Horkelia marinensis</i>	Point Reyes horkelia				1B	COASTAL DUNES, COASTAL PRAIRIE, COASTAL SCRUB (SANDY)	5-350M.	Not present per focused survey conducted in 8/02	CNPS	May-Sep
<i>Leptosiphon acicularis</i>	bristly linanthus				4	CHAPARRAL, CISMONTANE WOODLAND, COASTAL PRAIRIE, VALLEY AND FOOTHILL GRASSLAND	55-1500M.	Low; not observed on-site.	CNPS	Apr-Jul
<i>Leptosiphon croceus</i>	coast yellow leptosiphon				1B	COASTAL BLUFF SCRUB, COASTAL PRAIRIE.	10-150M.	Low; not observed on-site.	CNDDDB	Apr-May
<i>Leptosiphon grandiflorus</i>	large-flowered linanthus				4	COASTAL BLUFF SCRUB, CLOSED-CONE CONIFEROUS FOREST, CISMONTANE WOODLAND, COASTAL DUNES, COASTAL PRAIRIE, COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND (USUALLY SANDY)	5-1220M.	Not present per focused survey conducted in 8/02	CNPS	Apr-Aug
<i>Leptosiphon rosaceus</i>	rose leptosiphon				1B	COASTAL BLUFF SCRUB.	0-100M.	Not present within property, but found just outside boundary per focused survey conducted in 8/02	CNDDDB	Apr-Jul
<i>Lilium maritimum</i>	coast lily				1B	BROADLEAVED UPLAND FOREST, CLOSED-CONE CONIFEROUS FOREST, COASTAL PRAIRIE, COASTAL SCRUB, MARSHES AND SWAMPS (FRESHWATER), NORTH COAST CONIFEROUS FOREST	5-335M.	Not present per focused survey conducted in 8/02	CNPS	May-Aug
<i>Lotus formosissimus</i>	harlequin lotus				4	BROADLEAVED UPLAND FOREST, COASTAL BLUFF SCRUB, CLOSED-CONE CONIFEROUS FOREST, CISMONTANE WOODLAND, COASTAL PRAIRIE, COASTAL SCRUB, MEADOWS AND SEEPS, MARSHES AND SWAMPS (FRESHWATER), NORTH COAST CONIFEROUS FOREST, VALLEY AND FOOTHILL GRASSLANDS (WETLANDS, ROADSIDES)	0-700M.	Low; not observed on-site.	CNPS	Mar-Jul
<i>Lupinus eximius</i>	San Mateo tree lupine				3	CHAPARRAL, COASTAL SCRUB	90-550M.	Not observed on-site	CNPS	Apr-Jul

Appendix G. Special Status Species with Potential to Occur within the Mori Point Project Area

Scientific name	Common name	Status ¹				General habitat	Micro habitat	Potential to occur within Proposed Project Area	Source ²	Blooming period
		Federal	State	CDFG	CNPS					
<i>Monardella undulata</i>	curly-leaved monardella				4	CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL DUNES, COASTAL PRAIRIE, COASTAL SCRUB, LOWER MONTANE CONIFEROUS FOREST (PONDEROSA PINE HILLS) / SANDY	0-305M.	Not present per focused survey conducted in 8/02	CNPS	May-Sep
<i>Pedicularis dudleyi</i>	Dudley's lousewort				1B	CHAPARRAL (MARITIME), CISMONTANE WOODLAND, NORTH COAST CONIFEROUS FOREST, VALLEY AND FOOTHILL GRASSLAND	60-900M.	Low; not observed on-site.	CNPS	Apr-Jun
<i>Perideridia gairdneri</i> ssp. <i>gairdneri</i>	Gairdner's yampah				4	BROADLEAVED UPLAND FOREST, CHAPARRAL, COASTAL PRAIRIE, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS (MESIC)	0-365M.	Not present per focused survey conducted in 8/02	CNPS	Jun-Oct
<i>Piperia michaelii</i>	Michael's rein orchid				4	COASTAL BLUFF SCRUB, CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, CISMONTANE WOODLAND, COASTAL SCRUB, LOWER MONTANE CONIFEROUS FOREST	3-915M.	Not present per focused survey conducted in 8/02	CNPS	Apr-Aug
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	Choris's popcorn-flower				1B	CHAPARRAL, COASTAL SCRUB, COASTAL PRAIRIE.	MESIC SITES. 15-100M.	Low; not observed on-site.	CNDDDB	Mar-Jun
<i>Plagiobothrys chorisianus</i> var. <i>hickmanii</i>	Hickman's popcorn-flower				4	CLOSED-CONE CONIFEROUS FOREST, CHAPARRAL, COASTAL SCRUB, MARSHES AND SWAMPS, VERNAL POOLS	15-185M.	Low; not observed on-site.	CNPS	Apr-Jun
<i>Potentilla hickmanii</i>	Hickman's cinquefoil	FE	SE		1B	COASTAL BLUFF SCRUB, CLOSED-CONE CONIFEROUS FOREST, MEADOWS AND SEEPS, MARSHES AND SWAMPS.	FRESHWATER MARSHES, SEEPS, AND SMALL STREAMS IN OPEN OR FORESTED AREAS ALONG THE COAST. 5-125M.	Not present per focused survey conducted in 8/02	CNDDDB	Apr-Aug
<i>Ranunculus lobbii</i>	Lobb's aquatic buttercup				4	CISMONTANE WOODLAND, NORTH COAST CONIFEROUS FOREST, VALLEY AND FOOTHILL GRASSLAND, VERNAL POOLS (MESIC)	15-470M.	Low; not observed on-site.	CNPS	Feb-May
<i>Sanicula hoffmannii</i>	Hoffmann's sanicle				4	BROADLEAVED UPLAND FOREST, CHAPARRAL, COASTAL SCRUB (OFTEN SERPENTINE OR CLAY)	30-300M.	Low; not observed on-site.	CNPS	Mar-May
<i>Sanicula maritima</i>	adobe sanicle		3		1B	MEADOWS AND SEEPS, VALLEY AND FOOTHILL GRASSLAND, CHAPARRAL, COASTAL PRAIRIE.	MOIST CLAY OR ULTRAMAFIC SOILS. 30-240M.	Low; not observed on-site.	CNDDDB	
<i>Silene verecunda</i> ssp. <i>verecunda</i>	San Francisco campion				1B	COASTAL SCRUB, VALLEY AND FOOTHILL GRASSLAND, COASTAL BLUFF SCRUB, CHAPARRAL, COASTAL PRAIRIE.	OFTEN ON MUDSTONE OR SHALE; ONE SITE ON SERPENTINE. 30-645M.	Not present per focused survey conducted in 8/02	CNDDDB	Mar-Aug
<i>Tanacetum camphoratum</i>	Dune tansy	FSC				COASTAL DUNES	PREFERS SANDY SOILS, BRACKISH WATER	Low; not observed on-site.	FWS	
<i>Triphysaria floribunda</i>	San Francisco owl's-clover				1B	COASTAL PRAIRIE, VALLEY AND FOOTHILL GRASSLAND.	ON SERPENTINE AND NONSERPENTINE SUBSTRATE (SUCH AS AT PT. REYES). 10-160M.	Low; not observed on-site.	CNDDDB	Apr-Jun
<i>Triquetrella californica</i>	coastal triquetrella				1B	COASTAL BLUFF SCRUB, COASTAL SCRUB.	MOSS GROWING ON SOIL. 10-100M.	Low; not observed on-site.	CNDDDB	N/A
Invertebrates										
<i>Caecidotea tomalensis</i>	Tomales isopod					INHABITS LOCALIZED FRESH-WATER PONDS OR STREAMS WITH STILL OR NEAR-STILL WATER IN SEVERAL BAY AREA COUNTIES.		Moderate	CNDDDB	N/A
<i>Callophrys mossii bayensis</i>	San Bruno elfin butterfly	FE				COASTAL, MOUNTAINOUS AREAS WITH GRASSY GROUND COVER, MAINLY IN THE VICINITY OF SAN BRUNO MOUNTAIN, SAN MATEO COUNTY.	COLONIES ARE LOCATED ON STEEP, NORTH-FACING SLOPES WITHIN THE FOG BELT. LARVAL HOST PLANT IS SEDUM SPATHULIFOLIUM.	Low	CNDDDB	N/A
<i>Coelus globosus</i>	Globose dune beetle	FSC				Inhabitant of coastal sand dune habitat, from Bodega Head in Sonoma County south to Ensenada, Mexico.	Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.	Low	FWS	N/A
<i>Danaus plexippus</i>	monarch butterfly					WINTER ROOST SITES EXTEND ALONG THE COAST FROM NORTHERN MENDOCINO TO BAJA CALIFORNIA, MEXICO.	ROOSTS LOCATED IN WIND-PROTECTED TREE GROVES (EUCALYPTUS, MONTEREY PINE, CYPRESS), WITH NECTAR AND WATER SOURCES NEARBY.	Low	CNDDDB	N/A
<i>Euphydryas editha bayensis</i>	Bay checkerspot butterfly	FT				RESTRICTED TO NATIVE GRASSLANDS ON OUTCROPS OF SERPENTINE SOIL IN THE VICINITY OF SAN FRANCISCO BAY.	PLANTAGO ERECTA IS THE PRIMARY HOST PLANT; ORTHOCARPUS DENSIFLORUS & O. PURPURSCENS ARE THE SECONDARY HOST PLANTS.	Low	CNDDDB	N/A
<i>Hydrochara rickseckeri</i>	Ricksecker's water scavenger beetle	FSC				Various water bodies.	Aquatic; known from the San Francisco Bay area.	Moderate	FWS	N/A
<i>Hydroporus leechi</i>	Leech's skyline diving beetle					AQUATIC.		Moderate	CNDDDB	N/A
<i>Ischnura gemina</i>	San Francisco Forktail Damselfly					ENDEMIC TO THE SAN FRANCISCO BAY AREA.	SMALL, MARSHY PONDS AND DITCHES WITH EMERGENT ANF FLOATING AQUATIC VEGETATION.	Present	CNDDDB	N/A
<i>Plebejus (Icaricia) icarioides missionensis</i>	Mission blue butterfly	FE				INHABITS GRASSLANDS OF THE SAN FRANCISCO PENINSULA.	THREE LARVAL HOST PLANTS: LUPINUS ALBIFRONS, L. VARIICOLOR, AND L. FORMOSUS, OF WHICH L. ALBIFRONS IS FAVORED.	Low	CNDDDB	N/A

Appendix G. Special Status Species with Potential to Occur within the Mori Point Project Area

Scientific name	Common name	Status ¹				General habitat	Micro habitat	Potential to occur within Proposed Project Area	Source ²	Blooming period
		Federal	State	CDFG	CNPS					
<i>Speyeria callippe callippe</i>	callippe silverspot butterfly	FE				RESTRICTED TO THE NORTHERN COASTAL SCRUB OF THE SAN FRANCISCO PENINSULA.	HOSTPLANT IS VIOLA PEDUNCULATA. MOST ADULTS FOUND ON E-FACING SLOPES; MALES CONGREGATE ON HILLTOPS IN SEARCH OF FEMALES.	Low	CNDDDB	N/A
<i>Speyeria zerene myrtleae</i>	Myrtle's silverspot	FE				RESTRICTED TO THE FOGGY, COASTAL DUNES/HILLS OF THE POINT REYES PENINSULA; EXTIRPATED FROM COASTAL SAN MATEO COUNTY.	LARVAL FOODPLANT THOUGHT TO BE VIOLA ADUNCA.	Low - considered extirpated in San Mateo County. Proposed actions include possible habitat restoration and re-introduction of the species.	CNDDDB	N/A
Amphibians and Reptiles										
<i>Rana aurora draytonii</i>	California red-legged frog	FT		CSC		LOWLANDS & FOOTHILLS IN OR NEAR PERMANENT SOURCES OF DEEP WATER WITH DENSE, SHRUBBY OR EMERGENT RIPARIAN VEGETATION.	REQUIRES 11-20 WEEKS OF PERMANENT WATER FOR LARVAL DEVELOPMENT. MUST HAVE ACCESS TO ESTIVATION HABITAT.	Present	CNDDDB	N/A
<i>Emys (=Clemmys) marmorata</i>	western pond turtle			CSC		A THOROUGHLY AQUATIC TURTLE OF PONDS, MARSHES, RIVERS, STREAMS & IRRIGATION DITCHES WITH AQUATIC VEGETATION.	NEED BASKING SITES AND SUITABLE (SANDY BANKS OR GRASSY OPEN FIELDS) UPLAND HABITAT FOR EGG-LAYING.	Moderate	CNDDDB	N/A
<i>Phrynosoma coronatum frontale</i>	California horned lizard	FSC		CSC		Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.	Open areas for sunning, bushes for cover, patches of loose soil for burial, & abundant supply of ants & other insects.	Moderate	FWS	N/A
<i>Thamnophis sirtalis tetrataenia</i>	San Francisco garter snake	FE	SE			VICINITY OF FRESHWATER MARSHES, PONDS AND SLOW MOVING STREAMS IN SAN MATEO COUNTY AND EXTREME NORTHERN SANTA CRUZ COUNTY	PREFERS DENSE COVER & WATER DEPTHS OF AT LEAST ONE FOOT. UPLAND AREAS NEAR WATER ARE ALSO VERY IMPORTANT.	Present	CNDDDB	N/A
Birds										
<i>Agelaius tricolor</i>	Tricolored blackbird	FSC				(Nesting colony) highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California.	Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.	Low - no known occurrences in San Francisco or San Mateo County (CNDDDB, Jones & Stokes 1997).	FWS	N/A
<i>Amphispiza belli belli</i>	Bell's sage sparrow	FSC				(Nesting) nests in chaparral dominated by fairly dense stands of chamise. Found in coastal sage scrub in south of range.	Nest located on the ground beneath a shrub or in a shrub 6-18 inches above ground. Territories about 50 yds apart.	Low	FWS	N/A
<i>Arenaria melanocephala</i>	Black turnstone	FSC				Breeds in coastal Alaska. Winters on rocky coasts.	Strictly coastal species.	Low	FWS	N/A
<i>Athene cucularia hypugaea</i>	Western burrowing owl	FSC				(Burrow sites) open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Low - no known occurrences in San Francisco or San Mateo County (CNDDDB). Project area not within report species range as of 1990 (FWS 2003).	FWS	N/A
<i>Buteo regalis</i>	Ferruginous hawk	FSC				(Wintering) open grasslands, sagebrush flats, desert scrub, low foothills & fringes of pinyon-juniper habitats.	Mostly eats lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Moderate	FWS	N/A
<i>Calidris canutus</i>	Red knot	FSC				Breeds on tundra; during migration, on tidal flats, rocky shores, and sandy beaches.	Often breeds with dowitchers.	Low	FWS	N/A
<i>Calypte costae</i>	Costa's hummingbird	FSC				Fairly common in desert washes, dry chaparral, and successional scrub.		Low	FWS	N/A
<i>Carduelis lawrencei</i>	Lawrence's goldfinch	FSC				(Nesting) nests in open oak or other arid woodland & chaparral, near water. Nearby herbaceous habitats used for feeding	Closely associated with oaks.	Low	FWS	N/A
<i>Chaetura vauxi</i>	Vaux's swift	FSC				(Nesting) redwood, douglas fir, & other coniferous forests. Nests in large hollow trees & snags. Often nests in flocks.	Forages over most terrains & habitats but shows a preference for foraging over rivers and lakes.	Low	FWS	N/A
<i>Charadrius alexandrinus nivosus</i>	Western snowy plover	FT				Coastal beaches, sand spits, dune-backed beaches, beaches at river mouths, salt pans at lagoons and estuaries, mud flats, and man-made salt ponds.	Breeds primarily on coastal beaches from southern Washington to southern Baja California, Mexico. Overwintering population on Ocean Beach. Periodically sighted at other beaches.	Low	FWS	N/A
<i>Cypseloides niger</i>	Black swift	FSC				(Nesting) coastal belt of Santa Cruz & Monterey Co; central & southern Sierra Nevada; San Bernardino & San Jacinto Mtns.	Breeds in small colonies on cliffs behind or adj to waterfalls in deep canyons and sea-bluffs above surf; forages widely	Low	FWS	N/A
<i>Elanus leucurus</i>	White-tailed kite	FSC				(Nesting) rolling foothills/valley margins w/scattered oaks & river bottomlands or marshes next to deciduous woodland	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Present - observed on-site.	FWS	N/A

Appendix G. Special Status Species with Potential to Occur within the Mori Point Project Area

Scientific name	Common name	Status ¹				General habitat	Micro habitat	Potential to occur within Proposed Project Area	Source ²	Blooming period
		Federal	State	CDFG	CNPS					
<i>Empidonax traillii brewsteri</i>	Little willow flycatcher		SE			Breeds in shrubby vegetation in meadow and riparian woodlands, typically where there are mature, dense stands of willows, cottonwoods, or alders.		Low	FWS	N/A
<i>Falco peregrinus anatum</i>	American peregrine falcon	DM	SE			(Nesting) near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape on a depression or ledge in an open site.	Moderate	FWS	N/A
<i>Geothlypis trichas sinuosa</i>	saltmarsh common yellowthroat	FSC		SC		Resident of the San Francisco Bay region, in fresh and salt water marshes.	Requires thick, continuous cover down to the water surface for foraging; tall grasses, tule patches, willows for nesting.	Moderate; occurrences noted at Laguna Salada and south (PWA et. al. 1992)	FWS	N/A
<i>Haematopus bachmani</i>	Black oystercatcher	FSC				Resident on rocky shores and islands along the Pacific Coast from the Aleutians to Baja California		Low	FWS	N/A
<i>Histrionicus histrionicus</i>	Harlequin duck	FSC				(Nesting) breeds on west slope of the sierra nevada, nesting along shores of swift, shallow rivers.	Nest often built in a recess, sheltered overhead by stream bank, rocks, woody debris, usually within 7 ft of water	Low	FWS	N/A
<i>Lanius ludovicianus</i>	Loggerhead shrike	FSC				(Nesting) broken woodlands, savannah, pinyon-juniper, Joshua tree, & riparian woodlands, desert oases, scrub & washes.	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	Low	FWS	N/A
<i>Limosa fedoa</i>	Marbled godwit	FSC				Common on west coast in winter, fairly common on Texas Gulf coast and in Florida; rare but regular in the east.		Moderate	FWS	N/A
<i>Melospiza melodia pusillula</i>	Alameda (South Bay) song sparrow	FSC				Resident of salt marshes bordering south arm of San Francisco Bay.	Inhabits salicornia marshes; nests low in grinded bushes (high enough to escape high tides) and in salicornia.	Low	FWS	N/A
<i>Numenius americanus</i>	Long-billed curlew	FSC				(Nesting) breeds in upland shortgrass prairies & wet meadows in northeastern California.	Habitats on gravelly soils and gently rolling terrain are favored over others.	Moderate	FWS	N/A
<i>Numenius phaeopus</i>	Whimbrel	FSC				Breeds on arctic tundra, especially near coasts; coastal salt meadows, mudflats, and grassy shoreline slopes during migration.		Low	FWS	N/A
<i>Oceanodroma homochroa</i>	Ashy storm-petrel	FSC				(Rookery site) colonial nester on off-shore islands. Usually nests on driest part of islands. Forages over open ocean.	Nest sites on islands are in crevices beneath loosely piled rocks or driftwood, or in caves.	Low	FWS	N/A
<i>Pelecanus occidentalis californicus</i>	California Brown pelican	FE	SE			Forage over near shore marine areas including open coast, San Francisco Bay, and Rodeo lagoon. Utilize islands, rocks, cliffs, and some protected beach areas for roosting.		Low	FWS	N/A
<i>Phalacrocorax auritus</i>	double-crested cormorant			CSC		(ROOKERY SITE) COLONIAL NESTER ON COASTAL CLIFFS, OFFSHORE ISLANDS, & ALONG LAKE MARGINS IN THE INTERIOR OF THE STATE.	NESTS ALONG COAST ON SEQUESTERED ISLETS, USUALLY ON GROUND WITH SLOPING SURFACE, OR IN TALL TREES ALONG LAKE MARGINS.	Low	CNDDB	N/A
<i>Riparia riparia</i>	bank swallow		ST			(NESTING) COLONIAL NESTER; NESTS PRIMARILY IN RIPARIAN AND OTHER LOWLAND HABITATS WEST OF THE DESERT.	REQUIRES VERTICAL BANKS/CLIFFS WITH FINE-TEXTURED/SANDY SOILS NEAR STREAMS, RIVERS, LAKES, OCEAN TO DIG NESTING HOLE.	Low	CNDDB	N/A
<i>Rynchops niger</i>	Black skimmer	FSC				(Nesting colony) nests along the north & south ends of the Salton Sea; also, on salt pond dikes of south San Diego Bay.	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	Low	FWS	N/A
<i>Selasphorus rufus</i>	Rufous hummingbird	FSC				(Nesting) breeds in transition life zone of northwest coastal area from Oregon border to southern Sonoma County.	Nests in berry tangles, shrubs, and conifers. Favors habitats rich in nectar-producing flowers.	Moderate	FWS	N/A
<i>Selasphorus sasin</i>	Allen's hummingbird	FSC				Mixed evergreen, riparian woodlands, eucalyptus and cypress groves, oak woodlands, and coastal scrub areas in breeding season.		Moderate	FWS	N/A
<i>Sterna elegans</i>	Elegant tern	FSC				(Nesting colony) only known breeding colony in U.S. located in the salt work dikes at the south end of San Diego Bay.	Nests on dikes between salt ponds in association with Caspian tern.	Low	FWS	N/A
Mammals										
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat	FSC				Forest habitats of moderate canopy & moderate to dense understory. Also in chaparral habitats.	Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.	Moderate	FWS	N/A
<i>Nyctinomops macrotis</i>	big free-tailed bat			CSC		LOW-LYING ARID AREAS IN SOUTHERN CALIFORNIA.	NEED HIGH CLIFFS OR ROCKY OUTCROPS FOR ROOSTING SITES. FEEDS PRINCIPALLY ON LARGE MOTHS.	Low	CNDDB	N/A
<i>Taxidea taxus</i>	American badger			CSC		MOST ABUNDANT IN DRIER OPEN STAGES OF MOST SHRUB, FOREST, AND HERBACEOUS HABITATS, WITH FRIABLE SOILS.	NEED SUFFICIENT FOOD, FRIABLE SOILS & OPEN, UNCULTIVATED GROUND. PREY ON BURROWING RODENTS. DIG BURROWS.	Moderate	CNDDB	N/A

¹Status:
 FE = Federally-listed endangered
 FT = Federally-listed threatened
 DM = Federal recovered species; removed from endangered or threatened species list
 FSC = Federal species of concern
 SE = California state endangered
 ST = California state threatened
 SR = California state rare
 CSC = California Department of Fish and Game Species of Concern
 1B = CNPS plants considered to be rare, threatened, and endangered
 2 = CNPS plants rare of endangered in California, but more common elsewhere
 3 = CNPS plants for which more information is needed (watch list)
 4 = CNPS plant limited distribution (watch list)

Appendix G. Special Status Species with Potential to Occur within the Mori Point Project Area

Scientific name	Common name	Status ¹				General habitat	Micro habitat	Potential to occur within Proposed Project Area	Source ²	Blooming period
		Federal	State	CDFG	CNPS					

FSLC = Federal species of local concern

²Sources:

CDFG = California Natural Diversity Database, search for occurrences on the Montara Mountain USGS quadrangle and the surrounding quadrangles. Database search conducted December 2005.

CNPS = On-line Electronic Inventory of Rare and Endangered Plants of California, 9-quad search for the Montara Mountain USGS quadrangle and search for List 4 plants within San Mateo County. Database search conducted December 2005.

USFWS = Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Montara Mountain USGS 7.5 Minute Quad. Document Number: 051214041937. www.fws.gov/pacific/sacramento/es/spp_lists/auto_list.cfm (NOTE: Only species from the FWS search that occur in habitats similar to those observed on-site were included in this table).