

## **Appendix D. Mitigation Measures and Best Management Practices**

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| <b>MITIGATION MEASURES INCLUDED AS PART OF THE PREFERRED ALTERNATIVE</b> |  |                          |
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| <b>Mitigation Number</b>   | <b>Mitigation Measure</b>  | <b>Responsible Party</b> |
| <b>BIOLOGICAL RESOURCES</b>  |  |                          |
| BIO-1  | If flowing water is present, localized areas within the channel will be dewatered and downstream flows will be maintained.   | NPS and Contractors      |
| BIO-2  | Measures would be employed to minimize turbidity from discharging waters by directing discharge into a diffuser.   | NPS and Contractors      |
| BIO-3  | All materials placed for creation of coffer dams would be removed upon completion of activities.   | NPS and Contractors      |
| BIO-4  | During construction, erosion control materials, such as silt fences with straw wattles at the base, will be placed below any banks where berms are to be removed or graded.  | NPS and Contractors      |
| BIO-5  | Erosion control materials will be placed on any newly exposed riparian banks.  | NPS and Contractors      |
| BIO-6  | No in-water construction activities or creek dewatering will occur prior to July.  | NPS and Contractors      |
| BIO-7  | Prior to any in-stream activities, fish will be removed from project site. Fish will be netted or chased from each individual area where in-channel work will occur. Electrofishing will be used to capture any remaining individuals. Captured fish will be placed in aerated holding containers and transferred to pool habitats outside of the project area.  | NPS and Contractors      |
| BIO-8  | If flowing water is present, nets and silt fences will be placed at the upstream and downstream limits of the project area to prevent entry of fish into the project area and to prevent dispersal of sediments downstream.  | NPS and Contractors      |
| BIO-9  | Following construction of breeding habitat at the Banducci Site, access roads will be posted with speed limit signs 10 or 15 mph to minimize vehicle-related injury or mortality to red-legged frogs.  | NPS and Contractors      |
| BIO-10   | Prior to and during construction activities, a biological monitor will search all work localities for the presence of red-legged frogs. The search area will encompass a 50-foot radius around the work sites.   | NPS and Contractors      |
| BIO-11   | Should any frogs be observed, activities will cease until the animal is removed and relocated by a Service-approved biologist. Captured frogs shall be relocated to suitable habitat outside of the construction zone, either upstream or downstream of the construction zone.   | NPS and Contractors      |
| BIO-12   | If erosion control materials are used, only tightly woven fiber netting or non-binded materials e.g., rice straw shall be used for erosion control or other purposes at the project site to ensure that the red-legged frog does not get trapped. No plastic mono-filament matting shall be used for erosion control. Revegetation of native species from locally collected propagules will be planted to speed the establishment vegetation which will enhance the habitat. | NPS and Contractors      |
| BIO-13   | If woodrat nests are encountered during construction activities, the nests will be avoided, if possible, by establishing a minimum protection buffer of 50 feet around each nest. If nests are identified in   | NPS and Contractors      |

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|---------------------------|---|---------------------|
|                           | <p>areas where heavy equipment operation or excavation is integral to the project design, then the nests would be dismantled prior to grading or vegetation removal activities in a careful, gradual process that would allow any woodrats in the nest to escape into adjacent undisturbed habitat. Surveys will be conducted to determine the likelihood that nests are inhabited, such as a cleared entrance, for example, or recently placed twigs on the nest. A clearly unoccupied nest in an area integral for construction would be dismantled during the routine construction period; however, if the nest appears to be occupied, it would not be dismantled until the non-breeding season of October-November. 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. Due to the possibility of exposure to hanta virus known to be carried by woodrats, any dismantling or observations of the woodrat nests would be conducted only in a manner that fully protects the health of crews, equipment operators, or surveyors.</p> |                     |
| BIO-14                    | All vehicles will be brought in cleaned and free of weeds to prevent the spread and/or introduction of invasive plant species.  | NPS and Contractors |
| BIO-15                    | Soils and vegetation contaminated with weed seeds would be segregated and disposed of or treated as appropriate.  | NPS and Contractors |
| BIO-16                    | 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.   | NPS and Contractors |
| <b>CULTURAL RESOURCES</b> |   |                     |
| ARCH-1                    | If buried cultural resources such as chipped stone or groundstone or human bone are inadvertently discovered during ground-disturbing activities, work should stop in that area and within a 100-foot radius of the find until a qualified archaeologist can assess the significance of the find.   | NPS and Contractors |
| ARCH-2                    | Inadvertent discoveries will be treated in accordance with 36 CFR 800.13 Protection of Historic Properties: Post-review discoveries. The archaeological resource will be assessed for its eligibility for listing on the NRHP in consultation with the SHPO and the Federated Indians of Graton Rancheria if it is an indigenous archaeological site and a determination of the project effects on the property will be made. If the site will be adversely affected, a treatment plan will also be prepared as needed during the assessment of the site's significance. Assessment of inadvertent discoveries may require archaeological excavations or archival research to determine resource significance. Treatment plans will fully evaluate avoidance, project redesign, and data recovery alternatives before outlining actions proposed to resolve adverse effects.  | NPS and Contractors |
| ARCH-3                    | If human skeletal remains are encountered, protocols under federal law will apply. All work shall stop in the vicinity of the discovery, and the find will be secured and protected in place. The Marin County coroner and Park Archaeologist will both be immediately notified. If a determination finds that the remains are Native American, and that no further coroner investigation of the cause of death is required, they will be treated in accordance with the Native American Graves Protection and Repatriation Regulations at 43 CFR 10.4 (Inadvertent discoveries).   | NPS and Contractors |

## **BEST MANAGEMENT PRACTICES**

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.

### *B. Transportation and Access*

- 1) Access to the project area will be restricted to existing access roads and routes identified in the project description and construction documents.
- 2) Vehicle and equipment refueling and lubrication will only be permitted in designated disturbed developed areas where accidental spills can be immediately contained. No refueling or maintenance will be conducted in the creek or immediately adjacent to the creek.
- 3) 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. Site Maintenance*

- 1) All trash, debris, and construction materials generated by construction will be contained within non-sensitive areas and promptly removed from the site.

### *E. 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 piled 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) Coastal zone management: Action must be consistent, to the maximum extent practicable, with state coastal zone management programs.
- 12) 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).
- 13) Historic properties: Action must not have adverse effects on historic properties listed or eligible for listing in the NRHP.

F. *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.

G. *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.

#### H. *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.

#### I. *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.