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# Th10a

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## STAFF REPORT: REGULAR CALENDAR

**Application No.:** CD-0011-22

**Applicant:** National Park Service

**Location:** Tennessee Valley, Golden Gate National Recreation Area, Marin County

**Project Description:** Restoration of wetland habitat within lower Tennessee Valley watershed, removal of an earthen dam, and repair of Tennessee Valley Trail.

**Staff Recommendation:** Concurrence

## SUMMARY OF STAFF RECOMMENDATION

The National Park Service (NPS) has submitted a consistency determination to implement the Tennessee Valley restoration project, which includes the removal of an earthen dam, restoration of wetland habitat, and repair of the Tennessee Valley Trail located within the Golden Gate National Recreation Area (GGNRA) in Marin County. The Tennessee Valley coastal watershed encompasses approximately 2.35-square-miles and is bound to the west by the Pacific Ocean at Tennessee Beach. As part of the GGNRA, Tennessee Valley is managed by NPS as native plant and wildlife habitat, as well as for public recreational uses. The Tennessee Valley Dam is located within lower Tennessee Valley, approximately 900-linear feet upstream of Tennessee Beach, a

small isolated sandy cove located between the larger beaches of Fort Cronkhite to the south and Muir Beach to the north. This earthen dam was built in the 1960s by the previous landowner to impound water from the main channel flowing through the watershed in order to create a waterfowl hunting pond in existing wetland and riparian habitat. The dam has been classified by the U.S. Bureau of Reclamation as “high hazard” due to its poor condition, erosion issues, and lack of compliance with current seismic engineering standards. If the dam were to fail when water elevations are high in the pond, there could be severe flooding downstream and significant risks to both downstream habitats and public safety at Tennessee Beach. To maintain public safety, NPS closes the trail to the beach during and after storms, with some closures lasting several weeks in recent years. Additionally, the trail adjacent to the dam has been eroded significantly from bypass flows from the dam during high-water events. Although the pond provides California red-legged frog breeding (CRLF) habitat, it has decreased by almost half of its original size steadily over time and is projected to continue decreasing due to sediment deposition and encroachment of invasive emergent vegetation. The channel and wetland area downstream of the dam have also been impacted by the dam. There is deep incision within the stream channel and scour, while the wetland habitat is limited due to the deficit of sediment and steady water flows.

The goals of this project are to remove the dam for safety purposes, restore the natural channel, wetland, riparian, and coastal functions within lower Tennessee Valley, and improve public access to the Tennessee Valley Trail and Tennessee Beach. To achieve these goals, NPS proposes to lower the dam to an appropriate height to eliminate the possibility of catastrophic injury or fatality to park visitors from a sudden dam failure. NPS further proposes to restore the wetland areas both upstream and downstream of the existing dam, including installation of grade-control and flow-diversion structures, fill and widening of the incised channel, creation of floodplain terrace habitat, and revegetation of native plant species. The proposed project also includes the creation of three new CRLF breeding ponds, which NPS would maintain and monitor. To improve public access, NPS proposes to repair using excavated dam material an approximately 300 to 350-linear foot section of trail damaged by dam overflow.

While the ultimate project goal is habitat restoration and improved public access, short-term adverse impacts to wetland habitats, special-status species, and water quality could occur through construction and dam removal activities. To help ensure that these adverse impacts from the project are avoided and minimized, NPS has committed to implementing mitigation measures designed to protect native habitat, species, and water quality. These measures include limiting work to seasonal work windows outside of wildlife breeding times; conducting pre-construction surveys for sensitive wildlife and plant species to aid in relocating individuals out of work areas; implementing erosion control measures during and after construction; and implementing standard construction best management practices such as environmental awareness training, staging outside of sensitive habitats, and an onsite biological monitor for work in sensitive aquatic

habitats. In addition, the creation of CRLF breeding ponds encompassing a total of 0.93 acres is also proposed to help offset the loss of 2.7 acres of open-water CRLF breeding habitat within the existing pond area as it is converted to vegetated wetland habitat. In addition, the applicant has committed to coordinating with Commission staff on the development and finalization of five different mitigation plans prior to implementation of project activities. These plans include the Stormwater Pollution Prevention Plan, CRLF Pond Monitoring and Adaptive Management Plan, Native Plant Management Plan, and Revegetation Plan. With implementation of these measures and plans, the Commission staff recommends the Commission find the proposed project is consistent with Sections 30230, 30231, 30232, 30233, and 30240 of the Coastal Act.

The proposed project also has the potential to adversely affect public access during the approximately 18-month construction period. To minimize such impacts, NPS would implement mitigation measures including: avoiding full trail closures, when possible, by dividing the trail; providing the public with alternative routes around active construction sites; and implementing a Visitor Use Access and Safety Plan. In addition, the completed project would result in repair and improvement of the Tennessee Valley Trail and reduce the need for rainfall-related closures, thus providing more consistent and stable access to it and Tennessee Beach. Commission staff therefore recommends the Commission find the project consistent with the public access, recreation and cultural resource protection policies of the Coastal Act (Sections 30210 and 30212).

The proposed project would remove the high hazard dam and eliminate the possibility of its catastrophic failure. By removing the dam, dangerous flooding, erosion, geologic instability, and the related risks to public safety would all be avoided. The proposed project would thus minimize risks to life and assure stability of the project area. Staff therefore recommends the Commission find the project consistent with Coastal Act Section 30253.

For the reasons described above, Commission staff recommends that the Commission **concur** with consistency determination CD-0011-22. The motion to implement this recommendation can be found on Page 5 below.

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### APPENDIX: SUBSTANTIVE FILE DOCUMENTS

#### EXHIBITS

[Exhibit 1 - Project Location](#)

[Exhibit 2 - Mitigation Measures](#)

## I. FEDERAL AGENCY'S CONSISTENCY DETERMINATION

The National Park Service has determined that the project is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP).

## II. MOTION AND RESOLUTION

### Motion:

*I move that the Commission **concur** with Consistency Determination No. CD-0011-22 on the grounds that the project described therein is fully consistent, and therefore consistent to the maximum extent practicable, with the enforceable policies of the California Coastal Management Program (CCMP).*

### Staff Recommendation:

Staff recommends a **YES** vote on the forgoing motion. Passage of this motion will result in concurrence with the determination and adoption of the following resolution and findings. An affirmative vote of a majority of the Commissioners present is required to pass the motion.

### Resolution:

*The Commission hereby concurs with Consistency Determination No. CD-0006-22 on the grounds that the project described therein is fully consistent, and therefore consistent to the maximum extent practicable, with the enforceable policies of the CCMP.*

## III. FINDINGS AND DECLARATIONS

### A. BACKGROUND

Tennessee Valley Dam is located within the undeveloped Tennessee Valley coastal watershed in the Marin Headlands portion of southern Marin County ([Exhibit 1](#)). The Tennessee Valley watershed encompasses approximately 2.35-square miles within the Golden Gate National Recreation Area (GGNRA), which is managed by the National Park Service (NPS). As described in NPS' Environmental Assessment (EA) for the project, the surface water hydrology of the area is disrupted by the Tennessee Valley Dam:

Tennessee Valley is a 2.35-square-mile coastal watershed that contains a creek and several perennial and ephemeral tributaries along with numerous springs and seeps. The creek, which is obstructed by the existing earthen dam, is the primary source of water for the impounded pond. Water flows from the pond through a culvert in the dam to a channel and adjacent wetland area before discharging to the Pacific Ocean. The pond currently extends over approximately 2.7 acres and impounds approximately 14-acre feet of water (in winter/summer), with depths ranging from 3 to 12 feet (Kamman, 2020). Since the approximate 1960 construction date of the dam, sediment deposition has reduced the total pond area by almost by half of its estimated original size. Much of the area of sediment deposition is now covered by cattails, which provide some stability to the deposits. The dam substantially reduces natural sediment deposition in the downstream wetland area where it would counteract the encroachment of the rising sea level.

The previous landowner built Tennessee Valley Dam around 1960 to impound the main creek and create an artificial pond for waterfowl hunting. The dam was created as a 230-foot linear earthen structure on top of native marsh habitat, spanning the narrow Tennessee Valley at the end of the watershed, approximately 900 feet upstream of Tennessee Beach.

In 2017, the U.S. Bureau of Reclamation classified Tennessee Valley Dam as a “high hazard” dam because of its poor structural condition, ongoing erosion, and lack of adherence to current seismic engineering standards. Hydraulic analyses showed that high levels of impounded water elevations could cause the dam to fail, releasing a sudden surge of water with a depth and velocity high enough to pose a significant safety risk downstream of the dam, particularly at Tennessee Beach which is a popular public beach just 900-feet downstream of the dam. Tennessee Beach can be accessed by the main Tennessee Valley Trail, which has been eroded down to the bedrock due to bypass flows from the dam. Currently, NPS closes access to Tennessee Beach and the section of Tennessee Valley Trail leading to the beach before, during, and after storm events because of the risk of a sudden dam failure. When considering removing a dam under its management, NPS determines the level of risk for dam failure and potential catastrophic losses, and whether the dam “contributes to the cultural, natural, or recreational resource bases of the area or are a necessary part of a park’s water system.” NPS has determined that Tennessee Valley Dam is obsolete and does not contribute to cultural or recreational resources or water system services at GGNRA, and that the natural resources adversely affected through its removal can be mitigated for through the restoration of native habitats.

## **B. PROPOSED PROJECT**

The NPS submitted a Consistency Determination for its removal of Tennessee Valley Dam and restoration of the natural channel, wetland, riparian, and coastal functions within lower Tennessee Valley. The goals of the project are to:

1. Remove the eroding dam structure to prevent catastrophic losses from dam failure
2. Restore natural function and processes to be compatible with long-term watershed restoration
3. Minimize future maintenance requirements by designing features to be self-sustaining
4. Reuse dam material beneficially in the watershed, including for natural resource condition improvement or trail improvement
5. Repair road damage associated with the dam
6. Improve climate change resiliency for facilities and natural resources by increasing the capacity for adaptation to changing conditions

To achieve the project goals, NPS would carry out a variety of specific project elements. Project construction would be completed over a three-year period and would be timed to occur outside of the California red-legged frog (CRLF) breeding period and during dry months (April-October). Project elements include removal of Tennessee Valley Dam, construction of three new breeding ponds for CRLF, restoration of wetland habitat, and repair of the eroded Tennessee Valley Trail. Each of these proposed project elements are summarized below.

### **Tennessee Valley Dam Removal**

This component of the project would include the removal of the existing 12- to 16-foot high dam, leaving a 3-foot high berm in its footprint. Prior to work in the pond, this area would either be dewatered or a sheet pile wall would be installed to prevent the need for heavy equipment within the flowing channel. To accomplish the dam removal, heavy equipment such as excavators and dozers would be required for the removal of native soils and grading of the pond contours. All excavated soil from the dam removal would be re-used to create other restoration components such as the proposed berm.

The proposed berm would act as a grade control structure and prevent the new flow patterns from incising the creek channel. Native material from the dam would be used to create the berm with uniform gently sloped transition aprons, extending from the pond to the wetland area downstream of the berm. The gentle slope of the berm structure would disperse the energy from the high flows of the channel and create a natural grade transition to encourage vegetation to establish, further reducing the risk of incision. Other grade control structures would include installation of large wooden structures buried in the channel upstream of the pond. In addition, two or more natural large flow diversion structures would be placed in the channel upstream of the buried grade

control structure to disperse high channel flows onto the adjacent wetland floodplain, reducing flow velocity and channel scour. These flow diversion structures would act similar to a natural log jam during low flows. The removal of the dam would result in a transition from the open water pond to vegetated marsh habitat.

To implement the dam removal and installation of grade control structures, access to the work site would be provided by the existing main trail from the Tennessee Valley parking lot to the Tennessee Valley Dam. Heavy equipment and construction materials would be staged at the lower end of the main trail, adjacent to the area around the vault toilet in the lower watershed. All areas used for staging and access would be returned to their pre-project condition at the completion of construction through revegetation and recontouring.

### **California Red-Legged Frog Breeding Ponds**

The former waterfowl hunting pond behind Tennessee Valley Dam contains breeding habitat for CRLF, a federally-listed threatened species. To mitigate for the loss of this habitat while also providing habitat resilience, NPS proposes to create three new breeding ponds (referred to as Ponds B, C, and D) for CRLF within the Tennessee Valley watershed. NPS evaluated multiple potential locations for these CRLF breeding ponds and selected the final three locations based on various factors. As discussed in the project's Environmental Assessment (EA), all three chosen pond sites were:

- Located within 1 mile of the existing pond in order to provide habitat within the known migration range of CRLF that currently use the existing pond
- Located near to the creek channel, which would serve as an ecological corridor
- Supplied by springs and/or groundwater as consistent water sources

Ponds B and C would be located closest to the existing pond, approximately 600 and 1,200 feet, respectively, upstream of Tennessee Valley Dam. Pond D would be located further upstream, approximately 5,000 feet from Tennessee Valley Dam. Construction of these ponds would occur prior to the removal of Tennessee Valley Dam so that the breeding habitat is in place prior to the loss of the existing pond. At the Pond B and C sites, the ground would be excavated to a maximum of 7 feet and a berm would be constructed along the pond perimeter to protect against creek flows and sedimentation. At Pond D, the ground would be excavated to a maximum depth of approximately 6 feet. A berm would not be needed for Pond D because creek flows are not expected to affect this pond site. Ponds would be built with low-gradient sidewalls to support emergent aquatic vegetation on one side and open water on the other. NPS also proposes to install groundwater wells near the ponds to monitor the groundwater elevations. Native wetland plants would be salvaged from these pond sites and be replanted in suitable nearby locations. Additionally, channel sediment collected from downstream of Tennessee Valley Dam may be placed in the new ponds to introduce populations of native aquatic invertebrates. CRLF egg masses and frogs would also be



translocated to the new ponds from the existing pond, prior to the dam removal. Following this translocation, vegetation and brush piles would be placed in the shallow areas of the new ponds as egg attachment locations for CRLF.

### **Wetland Restoration**

To prevent head cutting and scour after dam removal and to restore wetland functions within lower Tennessee Valley, NPS proposes to use suitable material from the dam removal to restore wetland habitat both downstream and upstream of the dam. Approximately 500 linear feet of the channel downstream of Tennessee Valley Dam is extremely incised due to discharge flows from a culvert in the dam. NPS proposes to repair the channel incision using a combination of compacted earthen plugs and approximately 60 cubic yards of soil excavated from the dam. Repairing the channel would allow for higher groundwater levels to be sustained in the surrounding marsh and encourage sheet flow over the floodplain habitat. Repairing the channel would restore the functions of the marsh and prevent the channel flows from cutting as deeply through the beach, which would also allow for the back beach berm to build up naturally. On the opposite side of the dam, NPS proposes to create a low-riparian floodplain terrace, lightly compacted and revegetated with riparian species. NPS would place suitable material from the dam removal on an approximately 0.27-acre area, extending up to 210 feet across Tennessee Valley, immediately upstream of the existing pond. The terrace would provide erosion and incision protection for the upstream channel, while also supporting native riparian vegetation. Along with the flow diversion structures, grade controls, and the proposed low berm, this floodplain terrace would decrease the possibility of future channel incision following dam removal. Depending on the availability of material, a second low floodplain terrace may also be created, with a maximum footprint equal to the first floodplain terrace. This second floodplain terrace would be built along the right bank of the existing pond.

### **Tennessee Valley Trail Repair**

The Tennessee Valley Trail begins at the parking lot at the start of Tennessee Valley near the community of Mill Valley and extends down to the beach at Tennessee Beach. As described in the project's EA, the section of trail that runs from the dam downstream to the beach poses a danger to the public:

During high-water events, the trail between the dam and the beach is closed, signage is posted and public notices are released stating that the Tennessee Valley trail is closed at the dam and beach access is prohibited. The NPS monitors weather forecasts and would close the trail ahead of storm events for public safety. The signage remains until the NPS determines water levels have returned to a level determined safe for public access and use. In recent years, closures of the trail have extended for several weeks while the trail was unsafe. The risk of dam failure and flooding of the beach increases over time.

Over time, these high-water events have completely eroded sections of the Tennessee Valley Trail as water bypasses the dam and flows over onto the trail. The trail is highly irregular in these sections and not completely accessible. NPS proposes to repair approximately 300 to 350-linear feet of the trail using an estimated 380 cubic yards of material from the dam removal. The repaired trail would have a uniform surface and provide more consistent and safer access to the coast.

## **C. OTHER AGENCY APPROVALS**

### **U.S. Fish and Wildlife Service**

NPS staff informally consulted with the USFWS in early 2022 to establish a mutually acceptable approach to species and habitat preservation during and after dam removal. A Biological Assessment was submitted to USFWS on May 23, 2022, starting the formal consultation process under Section 7 of the Endangered Species Act. On December 19, 2022, USFWS provided its Biological Opinion to NPS which stated that “the Tennessee Valley Dam Removal and Lower Valley Restoration Project, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog.” In addition, the Biological Opinion also provided an Incidental Take Statement acknowledging that some loss of CRLF will occur as a result of the project and establishing conservation measures including requirements for training of project personnel, development and implementation of a CRLF Translocation Plan, and adherence to mitigation measures included in the project’s EA ([Exhibit 2](#)).

### **U.S. Army Corps of Engineers**

NPS met with the USACE in 2020 to discuss the project. The USACE communicated to NPS that the GGNRA Proposed Action is expected to be permissible under NWP 53 for removal of low-head dams and NWP 27 for aquatic habitat restoration, enhancement, and establishment. NPS would continue to work with the USACE on a future application for compliance with the Clean Water Act.

### **Tribal Outreach and Consultations**

During the process of reviewing the proposed project, Commission staff reached out both via email and physical mailing to representatives from Native American Tribes understood to have current and/or historic connections to the project area. These Tribes include the Federated Indians of Graton Rancheria, Guidiville Indian Rancheria, and Wuksache Indian Tribe/Eshom Valley Band. Contact information for these Tribal Representatives was gathered from the Native American Heritage Commission’s Native American Contact List. If any correspondence is received prior to the hearing, staff would provide that material in an addendum to this report.

In addition, NPS began consultation with the Federated Indians of Graton Rancheria on March 22, 2021. During this consultation, Buffy McQuillen, Tribal Preservation Officer, requested for a Native American monitor to be present onsite for the preliminary archeological survey work. Tribal Liaison, Bob Holloway, along with NPS staff

conducted a site visit of the project area. NPS has hired the Federated Indians of Graton Rancheria as a subcontractor to carry out monitoring during the archeology field work in Tennessee Valley.

### **Regional Water Quality Control Board**

The NPS has consulted with the RWQCB regarding sediment reuse. The beneficial reuse of fill materials included in the Proposed Action is consistent with RWQCB guidance and discussion with NPS. Additionally, the NPS would obtain a Section 401 water quality certification from the RWQCB during final design.

### **D. WETLANDS, SUBSTANTIAL STREAM ALTERATIONS, AND WATER QUALITY**

Coastal Act Section 30230 states:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Coastal Act Section 30231 states:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Coastal Act Section 30232 states:

Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

Section 30233 of the Coastal Act states:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.
- (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.
- (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
- (4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.
- (5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.
- (6) Restoration purposes.
- (7) Nature study, aquaculture, or similar resource dependent activities.

Coastal Act Section 30236 states:

Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (1) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.

Tennessee Valley supports a diverse mosaic of native habitats and wildlife. Tennessee Valley is made up of coastal scrub, grasslands, riparian forests, emergent wetlands, open water, and coastal lagoon habitats which together provide a valuable resource for different types of native wildlife. For example, riparian and wetland areas provide a water source as well as foraging, nesting, and wintering habitat for many species. Species that been known to use these resources include birds (such as the Northern harrier); bats; amphibians (including the California red-legged frog); and mammals (like coyotes and bobcats).

NPS proposes to restore the freshwater and riparian wetland both upstream and downstream of Tennessee Valley Dam. Once complete, the project would result in an increase in the quality of habitat and amount of habitat area available for native wildlife species and native wetland plant communities, including special-status species. However, the proposed restoration activities and methods also have the potential to result in adverse impacts to wetland habitats, species, and water quality.

### **Special Status Species**

Wetland habitat upstream of the dam in the pond is largely composed of submerged aquatic vegetation like the invasive Brazilian waterweed and nonnative parrot feather, with some mats of floating aquatic vegetation like the large-flower primrose-willow. Immediately upstream of the pond, broad-leaf cattails and hardstem bulrush have established. Wetland habitat downstream of the dam is largely composed of a large willow thicket, with some large patches of slough sedge which transitions to the salt tolerant plant species, salt rush, towards the mouth of the creek. The top of the dam is mowed by NPS to facilitate dam inspections and thus is bare of vegetation.

Although several rare plant species occur within Tennessee Valley, only one, Franciscan thistle, has been known to occur in the vicinity of the project area. However, observations of this species are limited to areas outside of the project's disturbance footprint. The conservation status of this thistle is California Rare Plant Rank 1B.2, according to the California Native Plant Society. Franciscan thistle is endemic to California, specifically along the coastline of the San Francisco Bay Area, from Marin to San Mateo Counties.

While designed to ultimately benefit native species and habitats, proposed construction activities and invasive plant removal in wetland areas may result in the temporary disturbance and loss of special status plant species and native plant communities. For example, work crews may inadvertently trample plants on foot or crush plants and their habitat with construction equipment. Accidental spill of oil or fuel in wetland areas from construction equipment and vehicles could also be toxic to special status and native plant species. Additionally, construction equipment could also introduce invasive plant species into the restoration area.

The proposed project includes implementation of best management practices (BMPs) and mitigation measures during construction to help avoid and reduce these potential adverse impacts to special status wetland plant species. The full list of these BMPs and mitigation measures is provided in [Exhibit 2](#). Those that are most relevant to special status plants and communities and would be expected to significantly reduce the magnitude and likelihood of adverse impacts to them include Best Management Practices General-3 and BIO-8 through BIO-13. These measures would ensure that areas of temporary construction impacts would be revegetated with plants salvaged onsite or propagated in NPS nurseries to reduce the introduction or spread of invasive weeds and that NPS's current invasive weed control management would continue in the project area. To further prevent the spread of invasive species, BMP General-3 requires that vehicles and equipment be power washed prior to entering the project area and inspected upon arrival. As part of BMP BIO-10, a qualified botanist would conduct pre-construction special-status plant surveys within the project area and if any special-status plants are found, NPS would create an exclusion area to avoid any construction-related impacts in that area. If avoidance is not feasible, NPS may conduct a variety of minimization measures, including transplanting species and seed collection and

dispersal. In addition, plant management crews would also be trained in avoidance and protection measures for special status plant species.

With the implementation of these best management practices, the proposed project would be carried out in a manner that would help ensure that adverse impacts to special status plants and vegetation communities would be avoided and minimized to the extent feasible. Although construction activities in wetland habitat would result in short-term adverse impacts to vegetation, the proposed project is designed to result in beneficial long-term impacts to native plant communities and an increase in high quality habitat. The project would thus facilitate the expansion of special status plants and vegetation communities and promote their continued health and resilience.

### **Water Quality**

Restoration activities, including construction access, vegetation removal, and grading could temporarily increase sediment loads and turbidity levels to the main channel which may adversely affect water quality during and immediately after construction. Additionally, following the dam removal, sediment would likely be released in the channel in two phases. The first phase would be the largest and would occur in the first winter following construction during modest flows, while the second phase would occur over the following years during larger flood events. This sediment would be beneficial to maintaining the wetland habitats downstream of the dam, thus turbidity in this case is considered a minor impact while the newly created floodplain stabilizes and vegetation cover establishes.

Currently, the earthen dam is a main source of sediment downstream as it continues to erode while simultaneously causing scouring of the channel downstream, further deepening the incised channel. Erosion is also a concern along the adjacent trail, especially where water flows around the dam during high water events. This erosion causes increased turbidity which can adversely affect fish gill function, reproduction, or feeding in fish and may create unsuitable living conditions for other aquatic species.

To help avoid and minimize these adverse impacts to water quality, the proposed project includes the installation of grade control structures, flow diverters, three-foot-wide aprons along the dam footprint, and repair of the scoured incised channel downstream of the dam. These project features are specifically designed to reduce erosion and promote gentle sheet flow across the floodplain. This allows for sediment loads to be spread throughout wetland areas, rather than being stored behind a dam and abrasively released during blow outs due to high water events. The proposed project also includes protective measures to avoid and minimize adverse impacts to water quality, including BMPs Water-1 and Water-2 as described in the project's EA. These measures include the use of erosion controls such as silt fences and tarps to enhance soil stability and the restriction of heavy equipment use in live streams.

The proposed project also includes potential risks of adverse impacts on coastal resources through the accidental spill of fuels, lubricants and other hazardous materials. Coastal resources could be adversely affected by the unintentional release of chemicals or motor fuel from project equipment or activities occurring within sensitive habitats. To help avoid and minimize such adverse impacts to water quality, the proposed project would require the implementation of a Stormwater Pollution Prevention Plan (SWPPP), the maintenance of spill kits at on the project site at all times, and the training of construction crews in hazardous spill material containment and response. Additionally, vehicle and equipment fueling and maintenance operations would occur in designated areas at least 50 feet away from water areas.

### **Wetland Fill**

As previously described above, the proposed project includes the restoration of lower Tennessee Valley to improve the long-term function of the wetland and riparian ecosystem, including the natural channel, by removing the earthen dam and returning the natural processes to the channel and surrounding wetland habitats. These components of the project would reduce erosion both from the existing dam and adjacent trail, improve and expand wetland habitat for native species, and increase hydrologic connectivity throughout the lower watershed of Tennessee Valley. These components of the project involve the placement of fill within wetland and dredging of materials within the existing pond.

According to the applicant, proposed fill activities include:

Fill would be placed in wetlands as part of the proposed project for the purpose of habitat restoration and to support the overall enhancement of watershed functions. The material from the dam removal that is proposed as channel fill below the dam would be placed within the channel to fill a scour hole and the incised channel in order to increase groundwater elevations of the wetlands within the Coastal Zone and allow the freshwater wetlands to be more sustainable with sea level rise. The beneficial reuse of fill material would not affect water circulation and would not affect the downstream marine environment. All sediment proposed for reuse within the wetlands meets Regional Water Quality Control Board water quality standards for beneficial reuse in aquatic environments. The channel fill would not require a separate borrow source.

The majority of this fill material would be collected through dredging within the dam, existing pond, and adjacent wetland habitat. In total, an estimated 7,000 cubic yards of dam removal material would be excavated and re-used within the GGNRA for NPS park projects, including for recontouring trails. Approximately 60 cubic yards of material excavated from the dam would be used to repair the incised channel downstream of the dam. In addition, approximately 1,460 cubic yards of material would be placed at the head of the existing pond area to create a floodplain terrace that would provide scour

protection and support riparian vegetation. All reused sediment would be placed onsite at elevations suitable for wetland habitats to continue functioning as wetlands and because the material would be collected through dredging, no fill material would need to be imported or exported into the project area for restoration activities.

### **Allowable Use**

The first test of Section 30233(a) limits dredging and fill activities in wetlands to only those carried out for one of seven allowable uses. In this case, all proposed dredging and placement of fill within wetland areas is for the purpose of restoring the wetland and riparian ecosystem in Tennessee Valley. Thus, the proposed dredging and fill placement is an allowable use pursuant to Section 30233(a)(6).

### **Alternatives**

The second test of Section 30233 allows the dredging or filling of wetlands only where there is no feasible less environmentally damaging alternative. Commission staff considered several alternatives to the proposed dredging and filling of wetlands, including the “no project” alternative and the “reduced height dam” alternative.

Under the “no project” alternative, the dam would continue to deteriorate and the risk to public safety due to a catastrophic dam failure would steadily increase. The trail that provides access to the coast would continue to erode from dam spillover and NPS would continue to close the trail to the public during and after storms. Both these factors would adversely affect public access and the natural environment. Natural channel and floodplain processes would remain obstructed, and the channel downstream of the dam would become more incised, decreasing the wetland’s resilience to sea level rise. Under this “no project” alternative, increasing levels of impounded sediment and encroaching emergent vegetation would eventually fill the existing pond, thus eliminating CRLF breeding habitat. Overall, the proposed project is expected to have long-term beneficial impacts on native and special-status species with minimal short-term impacts from construction and invasive plant removal. Thus, the Commission finds that the “no project” alternative would not be a less environmentally damaging feasible alternative.

The “reduced height dam” alternative was also considered. This alternative would cause less disturbance to the existing pond and CRLF breeding habitat. NPS would maintain the dam structure by reducing the height to six feet, thus also keeping open water behind the dam. However, this alternative would not prevent catastrophic losses due to flood or seismic failure at the dam. Erosion would also continue to affect the remnant dam. Thus, the Commission finds that the “reduced height dam” alternative would not be a less environmentally damaging feasible alternative.

For the reasons discussed above, the Commission finds that there is no feasible less environmentally damaging alternative to the proposed project, thus satisfying the second test of Section 30233(a).



### **Mitigation Measures**

The third test of Section 30233(a) requires that adequate mitigation measures are provided to minimize adverse environmental effects. Potential adverse impacts from the dredging and filling aspects of the project may include impacts to special-status species and water quality. NPS has incorporated numerous mitigation measures in the proposal and in the EA for the protection of wetland and riparian habitat, water quality, and special status species (as shown in [Exhibit 2](#)). These protective measures would be implemented during all relevant project activities.

The California red-legged frog is the only special-status species that is present within the project area, although there are other special-status species that occur in other areas of Tennessee Valley. CRLF is listed as both a threatened species by USFWS and a species of special concern by the state of California. CRLF habitat includes permanent slow-moving bodies of water, such as ponds, marshes, and reservoirs. In the Tennessee Valley watershed, CRLF can be found in the existing dam pond. This pond provides one of the few available breeding sites in the general area. During periods of drought, the pond also serves as breeding habitat for CRLF when other locations are without water. However, due to the dam, the pond is steadily being filled with sediment and NPS has observed non-native wetland plant species steadily taking over the area. High stream flow velocities during the winter and spring that lead to sudden blow-outs within this area also make the existing pond unstable breeding habitat.

During wetland restoration activities, adverse impacts to CRLF individuals and their habitat may occur. These potential impacts include individuals being crushed during excavation and dewatering activities during the dam removal and the repair of the incised channel downstream of the dam. Filling and grading activities may also harm frogs that are present within the construction site. Accidental injury or death may also occur during the translocation of CRLF larvae, juveniles, and adult individuals from the existing pond to the three proposed breeding ponds that would be created as part of the project.

To avoid and minimize these types of adverse impacts to CRLF habitat during construction activities, NPS would implement a variety of protective measures, as described in [Exhibit 2](#). BMP General-1 from the project's EA requires all contractors, partners, and NPS staff to undergo an environmental awareness training, which would include all avoidance and protection measures for sensitive aquatic resources during construction. In addition, BMP General-3 requires that construction activities occur during the day to minimize impacts on CRLF which are most active at night. BMPs BIO-1, BIO-2, and BIO-3 also require that a qualified biological monitor and biologist be present to ensure that project activities follow the species protection measures, including for CRLF. Protective measure BIO-4 requires that prior to construction activities, all areas to be disturbed by restoration activities must be surveyed for all life

stages of CRLF. CRLF individuals that are found during these surveys would be relocated.

To further avoid adverse impacts to CRLF, CRLF-1 restricts construction activities to outside of the CRLF breeding season and during the dry months (April-October) while CRLF-3 requires any vegetation removal to be done by hand. If a CRLF individual is observed, CRLF-5 requires project activities to cease and the individual be allowed to leave the site on its own or be translocated to a safe location away from the construction zone by the onsite biologist. To avoid CRLF from being trapped in construction related trenches, all steep-walled holes and trenches would be covered at the end of each day after an inspection for trapped wildlife, as required by CRLF-7. Similarly, to prevent CRLF from being trapped in erosion control products, only natural fiber, loose-weave materials may be used for erosion control, as required by CRLF-8.

Additionally, as part of the project and to mitigate for the loss of CRLF breeding habitat within the existing pond, NPS has proposed to create three new CRLF breeding ponds, each located within a mile of each other and existing pond, and in sites that were selected for their long-term sustainability due to reliable water sources. These new breeding ponds would be high-quality consistent breeding habitat for CRLF and would have the benefit of increasing breeding habitat resilience compared to a single pond that is subject to catastrophic blow-outs from high water events. Connectivity to adjacent watersheds would also be an added benefit of multiple breeding ponds spread throughout the Tennessee Valley watershed. Overall, these newly created breeding ponds in their different locations and with different water sources would increase the long-term viability of CRLF regionally. NPS would continue to conduct watershed-wide annual winter breeding surveys of CRLF post-construction as part of the GGNRA CRLF Management Plan. NPS also proposes to create a monitoring plan for the newly created CRLF breeding ponds which would include continued breeding survey monitoring, monitoring of groundwater elevations, and an adaptive management strategy to help ensure that the ponds successfully function as CRLF breeding habitat.

NPS staff has met with USFWS multiple times since November 2021 to discuss the proposed project's effects on CRLF and recommended conservation measures. In USFWS' 2022 Biological Opinion, USFWS determined that the project would not likely result in jeopardy to CRLF with the implementation of proposed conservation measures and a relocation plan for CRLF. NPS will submit annual reports to USFWS on the status of the restoration of all habitats temporarily disturbed by the proposed project until the success criteria are achieved for the restoration of suitable habitat.

Proposed mitigation measures would also require wetland areas to be isolated and dewatered prior to dredging and filling activities in order to prevent fish species from entering work areas. Erosion and sedimentation mitigation measures would also be required to be implemented in wetland and riparian areas to minimize potential adverse

impacts to water quality. For example, temporary settling basins, sediment filter sacks, silt fencing, and a coffer dam would be installed and readily available on-site during the project. To avoid and minimize adverse impacts to birds such as nest abandonment or direct injury during restoration activities, vegetation removal would be conducted outside of songbird nesting season. If vegetation must be removed during the nesting season, a qualified biologist would monitor for nesting activities and implement avoidance measures to help ensure that bird nests are not adversely affected by construction activities until the young have fledged the nest. Additionally, NPS proposes to monitor the revegetated and restored areas and conduct additional planting, seeding, and non-native plant control in subsequent years based on needs identified by monitoring results. Post-construction invasive species management would be conducted until dominant native vegetation communities are established.

Therefore, the Commission finds that the project will provide adequate mitigation measures to minimize adverse environmental effects, as required by the third test of Section 30233.

### **Substantial Stream Alteration**

As described in previous sections of this report, the proposed project includes the removal of Tennessee Valley Dam from the main stream channel and restoration of wetland and riparian habitat within lower Tennessee Valley. These activities would result in substantial alteration of the stream in Tennessee Valley. Section 30236 of the Coastal Act establishes a two-part test for projects involving such alterations of streams. The first test requires that the best feasible mitigation measures be incorporated into the project and the second test requires that the project be limited to one of three project types.

### **Mitigation Measures**

NPS has included multiple mitigation measures in the proposal and its EA. These measures are discussed in detail above in the Wetlands and Water Quality section of this report and provided in full in [Exhibit 2](#). Examples of such mitigation measures include: implementing erosion control measures, implementing a Stormwater Pollution Prevention Plan, isolating and dewatering live stream areas, and limiting work to the dry season (April-October). As previously found with respect to wetland fill, there are no feasible alternatives that would lessen the environmental effects of the project. Based on the NPS's proposed mitigation, the Commission concludes that the project also includes the best mitigation feasible. Incorporation of these mitigation measures thus satisfies the first test of Section 30236.

### **Allowable Project Type**

The second test of Section 30236 limits substantial alterations of rivers and streams to only those carried out for one of three allowable uses. NPS' proposed removal of Tennessee Valley Dam is for two primary purposes: (1) to protect public safety in case

of sudden dam failure; and (2) the restoration of wetland and riparian habitat. This second purpose would be achieved through the filling of the incised downstream channel, creation of CRLF breeding ponds, and installation of grade-control and flow-diversion structures to provide more consistent and less habitat damaging stream flows. These efforts would provide significant improvement to fish and wildlife habitat. Thus, the proposed alterations to the main stream channel would be allowable uses pursuant to the third project type described in Coastal Act Section 30236.

The proposed project thus satisfies the two tests of Section 30236 and is therefore consistent with this section of the Coastal Act.

### **Conclusion**

As stated in NPS' EA, one of the main objectives of the project is to "restore the natural channel, wetland, riparian, and coastal functions within lower Tennessee Valley." To achieve that goal, restoration activities may result in short-term adverse impacts to special-status species and water quality, as described above. However, the long-term benefits from the project's improvements to wetland habitats, species, and water quality would offset those temporary disturbances. Once the restoration is complete, natural stream channel flow patterns would establish and floodplain functions would be significantly improved within the more natural hydrologic setting of an unobstructed waterway and expanded wetland habitat.

With the implementation of BMPs and the protective measures listed in [Exhibit 2](#) and described above, adverse impacts to plant and wildlife species and water quality from restoration activities within wetland areas would be minimized. These include revegetating temporarily disturbed areas, removing non-native invasive vegetation, conducting pre-construction special-status plant surveys in order to establish exclusion zones, implementation of erosion controls, and implementation of a SWPPP. Further, the restoration and expansion of wetland habitat would provide long-term benefits to species, including special status species, and would increase their abundance within the project area. The Commission therefore finds that, with implementation of the BMPs described above and detailed in [Exhibit 2](#), the project would maintain and improve water quality and the biological productivity of coastal waters, wetlands and aquatic habitats. Therefore, the project is consistent with Sections 30230, 30231, 30232, 30233, and 30236 of the Coastal Act<sup>1</sup>.

### **E. PUBLIC ACCESS AND RECREATION**

Coastal Act Section 30210 states:

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with

public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Coastal Act Section 30212 states in part that:

Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: (1) It is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, (2) Adequate access exists nearby, or, (3) Agriculture would be adversely affected.

Tennessee Valley is a popular park within the GGNRA due to its many scenic trails, access to the coast, and proximity to San Francisco. According to NPS Visitor Use Statistics, the average number of visitors per year over the last three years is approximately 390,000. Hiking, cycling, and horseback riding are popular recreational activities in this area. The scenic natural landscape also provides excellent wildlife viewing and allows for general exploration of Tennessee Valley's network of public trails. One of the most popular trails is the Tennessee Valley Trail. The trailhead begins at a public parking area near the community of Mill Valley and then meanders through the undeveloped valley for 1.7 miles to Tennessee Beach. With its sandy beach, Tennessee Beach is a popular destination for ocean viewing and picnicking. On busy weekends, this beach may be visited by several hundred people.

Currently, NPS closes the trail between the dam and Tennessee Beach during and after storms until water levels behind the dam subside in order to prevent risks to human health and potential loss of life due to dam failure. During these closures, NPS posts signage and releases public notices stating that the trail is closed and beach access is prohibited. In recent years, closures have extended for several weeks due to the risk to public safety.

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<sup>1</sup> The existing waterfowl pond provides habitat for the CRLF and is a wetland that also qualifies as an environmentally sensitive habitat area for purposes of Section 30240 of the Coastal Act. Consistent with prior Commission actions, as the more specific and stringent policies that apply to development in wetlands and streams, the Commission applies sections 30233 and 30236 of the Coastal Act as the controlling policies for development that affects the wetlands/streams that are also ESHAs in this project site. See *Bolsa Chica Land Trust, et al. v. Superior Court of San Diego* (1999) 71 Cal.App.4th 493 [“the ESHA protections provided by section 30240 are more general provisions and the wetland protections provided by section 30233 are more specific and controlling when a wetland area is also an ESHA.”] Nevertheless, as a restoration project, the proposed project is an allowable use in ESHA under Section 30240(a) and the short-term adverse impacts from removing the dam would ultimately be offset by the long-term beneficial impacts from the restoration of wetland habitat and creation of three new CRLF breeding ponds. Accordingly, the project will prevent impacts which would significantly degrade ESHA and is compatible with the continuance of the ESHA.

The project includes improvements to public access and recreational amenities that are consistent with the Coastal Act's policies on the protection and encouragement of coastal access and recreation. Proposed access improvements include the repair of an approximately 300 to 350 linear feet section of the Tennessee Valley Trail that has been eroded down to the bedrock from dam overflow. The erosion has created an obstruction for some users, blocking coastal access for those who are unable to traverse the rocky terrain. The trail is also regularly flooded during periods of dam overflow in the winter season. An estimated 380 cubic yards of excavated dam material would be used to repair the trail and create a uniform surface suitable for safer and more reliable access. Additionally, the removal of the dam would mean that there would no longer be a risk of catastrophic dam failure and NPS would not need to close off the section of adjacent trail and access to Tennessee Beach.

To maintain public safety, segments of the main trail near the beach would be intermittently closed to visitors during the approximately three-year construction period for staging and equipment access to the dam. Due to the limited space in lower Tennessee Valley, there is no alternative path to the beach so coastal access would be temporarily closed during these construction periods. Although this section of trail would need to be closed due to active construction and public safety concerns, NPS would encourage visitors to use other trails within Tennessee Valley and the GGNRA that are accessible from the Tennessee Valley trailhead. Additionally, NPS would minimize the amount of full trail closures as much as possible by implementing traffic management methods and temporarily dividing the trail between pedestrian and slow vehicle lanes. To further maintain public safety during construction, NPS would develop a Visitor Use Access and Safety Plan which would include safety measures and communication to visitors that would be implemented throughout the project. NPS proposes to also post signage and provide other communications to visitors to keep them informed of construction on the trails and safety methods.

For the reasons described above, the proposed project would not result in significant adverse impacts to the public's ability to access, enjoy and recreate in the project area and would ultimately expand public access opportunities, consistent with the need to protect public safety. The proposed project would result in long-term benefits to public access and recreation due to improved trail conditions and the elimination of flood hazard risk and intermittent beach closures during storm events. Therefore, the Commission finds that the proposed project is consistent with the public access and recreation policies of the Coastal Act (Sections 30210 and 30212).

## **F. HAZARDS**

Coastal Act Section 30253 states in part that:

New development shall do all of the following:

- (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

- (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Since its creation in the 1960's, Tennessee Valley Dam has impounded surface water flow and sediment and obstructed natural channel and floodplain processes within Tennessee Valley. Downstream of Tennessee Valley Dam, an undersized culvert in the dam has created deep channel incisions while the wetland area has been suffering from a deficit of sediment deposits. The dam itself is in poor condition structurally, is experiencing erosion, and does not adhere to current seismic engineering standards. The U.S. Bureau of Reclamation has classified this dam as "high hazard" with a high risk of failure. Additionally, the section of trail adjacent to the dam has been eroded down to the bedrock from high flow bypass from the dam. As the trail continues to erode, the risk of dam failure further increases. If the dam were to fail under pressure of high water levels and continued erosion, the entire volume of water in the pond and sediment at the dam could abruptly wash out onto the downstream wetlands and beach. According to the U.S. Bureau of Reclamation, the amount and velocity of water released would be sufficient to cause catastrophic injury or fatality to Tennessee Valley visitors. Sudden dam failure would also cause flooding, sediment deposition, and erosion in these downstream areas.

One of the proposed project's primary objectives is to "eliminate the possibility of catastrophic injury or fatality to Tennessee Valley visitors from sudden dam failure." According to NPS, the proposed project would eliminate these hazards:

The Proposed Action includes a 3-foot remnant berm at the location of the existing dam. At a maximum 3-foot depth, the impounded water would no longer pose a serious downstream hazard or risk to beachgoers, and the 3-foot berm would not be classified as a dam. If the 3-foot berm were to fail while water was impounded, flows at the beach would be at a depth and velocity below a level that poses a serious risk to visitors (Kamman, 2020). The Proposed Action would provide long-term beneficial impacts to public safety due to the removal of the dam. Dam removal eliminates the hazard and risk associated with the potential for dam failure. The Proposed Action would meet the terms of the project purpose and need to address DO #40 for dam safety. The project would be consistent with NPS public safety goals and would improve safety for visitors.

For the reasons described above and with the removal of Tennessee Valley Dam and restoration of surrounding wetland habitat, the proposed project would minimize risks to life and property from high flood hazards and would prevent erosion, geologic instability,

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and destruction of the lower Tennessee Valley watershed. Therefore, the Commission finds that the proposed project is consistent with Coastal Act Section 30253.



## **APPENDIX A – SUBSTANTIVE FILE DOCUMENTS**

National Park Service Tennessee Valley Dam Removal and Lower Valley Restoration Project Environmental Assessment

Consistency Determination Submittal (CD-0011-22) and associated file documents

California Coastal Commission, March 2018. Consistency Determination No. CD-0006-17