# Habitat and Mitigation Monitoring Plan

## Napa Sanitation District 66-inch Trunk Sewer Rehabilitation Project
## Napa, Napa County

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# 1.0 INTRODUCTION

This Habitat and Mitigation Monitoring Plan (HMMP/Plan) has been prepared for Woodard & Curran on behalf of Napa Sanitation District (Project Proponent) to satisfy mitigation requirements for temporary impacts to aquatic resources, as required by San Francisco Regional Water Quality Control Board (RWQCB). The Project Proponent submitted an application for a Clean Water Act Section 401 Water Quality Certification for the 66-inch Trunk Sewer Rehabilitation Project in early 2020. Communication with RWQCB staff indicated a HMMP was necessary to mitigate temporary impacts. Temporary impacts include vegetation reduction of up to 0.765 acre of brackish and freshwater marsh and up to 0.016 acre of seasonal wetland due to project activities, mostly associated with special status species protection.

Per RWQCB, a mitigation ratio of 0.1-acre restored/enhanced habitat for every acre of temporary impacts is recommended in this Plan. Applying this ratio, the total area of restoration/enhancement will be 0.0781 acres. This Plan includes: 1) enhancement area site selection criteria 2) invasive species removal methods; 3) planting palette with recommended quantities and densities; 4) planting methods; 5) an implementation and monitoring schedule; and 6) annual performance standards.

# 2.0 PROJECT DESCRIPTION

## 2.1 Location of Project

The Project Area is located on the eastern side of Napa River between Highways 29 and 221 in southern Napa County, approximately 3.0 aerial miles southeast of downtown Napa. The Project Area is located within sewer easements in eight parcels in southern Napa County, California. The Project Area is located primarily in developed areas, particularly the northern portion that is in an industrial area, and a new business office complex. The remainder of the Project Area is less developed but still dominated by disturbed lands, including along roadsides, railroad and pedestrian trail. The upland areas of undeveloped areas consist of non-native grassland and ruderal vegetation. Several aquatic features are located adjacent to the Project Area, including sloughs, streams, and drainage ditches; marsh habitat is associated with aquatic features.

## 2.2 Summary of Project

The proposed project includes the rehabilitation of approximately 6,985 feet of a 66-inch diameter sewer trunk pipeline using either Cured-In-Place Pipe (CIPP) or spiral wound liner. To conduct the sewer rehabilitation, installation of a temporary sewer bypass system is necessary because rehabilitation work cannot be conducted in live flow. Project activities would occur in four primary phases: 1) installation of the bypass system; 2) cleaning of sewer trunk pipeline; 3) rehabilitation of the trunk sewer pipeline; 4) disassembly of bypass system and restoration.

## 2.3 Project Impacts

Temporary impacts include vegetation reduction in up to 0.765 acre of brackish and freshwater marsh and up to 0.016 acre of seasonal wetland through Project activities. This Plan addresses the enhancement of jurisdictional habitat through invasive plant removal and native revegetation.

The enhancement area shall meet the 0.1:1 acre enhanced to impacted ratio recommended by the RWQCB. Though the Project may not impact the entire 0.781 acres of sensitive habitats, the proponent has agreed to mitigate for this level of impact (totaling 0.0781 acres).

### 2.4 Responsible Parties

The following parties are responsible for the several aspects of this plan:

Party Responsible for Mitigation:

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## 3.0 GOALS OF MITIGATION

The goal of this Plan is to develop a program to enhance jurisdictional habitat. To meet this goal, the Project Proponent will implement the invasive species removal and revegetation in the enhancement area and ensure invasive species cover will not exceed 5 percent absolute cover, and non-invasive species cover will increase by 50 percent of baseline conditions, with dominant species being wetland species.

## 4.0 PROPOSED ENHANCEMENT SITE AND ENHANCEMENT DESIGN

### 4.1 Enhancement Area Description

The enhancement area will be selected based on criteria, which will allow the RWQCB requirements be met. The area will be a size sufficient to meet the 0.1:1 acre enhancement to impacted ratio and shall be no less than 0.0781-acre, which is based on a 0.1:1 acre enhancement ratio for the total potential impact area. The 0.0781 acres will be enhanced even if the total impacted sensitive areas are less than 0.0781 acres, which may be possible as the Project is designed to minimize impacts to all sensitive areas.

The location will be sited within existing jurisdictional habitat, which has equal to or greater than 50 percent relative cover of invasive species to non-invasive species, with total vegetation cover equal to or greater than 50 percent. For the purposes of this Plan, invasive species include California Invasive Plant Council (Cal-IPC) rank of “High” or “Red Alert” or “High Priority” in Bay Area Early Detection Network[1] (BAEDN) (Cal-IPC 2020). Invasive plant species observed within

[1] Bay Area Early Detection Network has been incorporated into Cal-IPC: https://www.cal-ipc.org/solutions/wmas/bayareaearlydetectionnetwork/. The most recent BAEDN “High Priority” list was drafted 2010: https://www.cal-ipc.org/wp-content/uploads/2019/01/BAEDN_EDRRSpecies2010.pdf

the Project Area and its vicinity include Himalayan blackberry *(Rubus armeniacus*), perennial pepperweed *(Lepidium latifolium*), and yellow star thistle (*Centaurea solstitialis*). As the enhancement area may be sited outside of the Project Area, additional invasive plants may be present within the enhancement area. A qualified biologist, familiar with native and non-native wetland plant species will determine the location(s) of the enhancement area that meet the above-specified criteria.

The location of the enhancement area will be located within Project Proponent's property and can be located within or outside of the Project Area; Project Proponent will assist in determining location of the enhancement area. Portions of the property are regularly irrigated; if possible, the enhancement area will utilize the existing irrigation for supplemental water source. The enhancement area can be any type of jurisdictional habitat (i.e., brackish marsh, freshwater marsh, seasonal wetland).

Enhancement Area Baseline Data Collection

Following site selection, baseline data will be gathered within the enhancement area. The vegetation data will generally follow the releve method outlined by California Native Plant Society (CNPS)/California Dept. of Fish and Wildlife (CDFW) (CNPS 2007). Within the enhancement area, 10x10 meter square plot, which best represents vegetation within the enhancement area, will be identified. If the enhancement area is smaller than 100 square meters, then the entire enhancement area will be the plot. Within the plot, the absolute cover of every species in the enhancement area will be calculated. The corners of the plot will be mapped using a GPS unit for future sampling efforts.

### 4.2 Ownership Status

The enhancement area will be located within Project Proponent's property.

### 4.3 Enhancement Area Preparation and Enhancement Design Implementation

Enhancement Area Preparation

Invasive species will be removed prior to installation of supplemental plantings, to help ensure success criteria can be met. Selected native species planted will include the same native wetland species observed within the jurisdictional habitat to be enhanced. For example, if tule patches are to be enhanced, plantings of tule, saltmarsh bulrush and other observed native wetland species will be used.

Removal of invasive species will be conducted using hand tools. Removal of invasive species shall target above and below ground material to the greatest extent practical, and shall be conducted prior to seed set, generally mid-spring. A more specific timeframe will be determined based on the invasive species present. Ideally, a follow-up removal effort will also be conducted in late summer to remove any missed or resprouting/re-seeding material. It is expected areas of bare soil will be present following removal of invasive vegetation; these areas will provide the area of supplemental planting and/or seeding, and natural recruitment.

Enhancement Design

Container planting shall be utilized to promote native vegetation within the enhancement area. Table 1, below provides a potential planting palette based on jurisdictional habitat type to be enhanced. The palette is based on Project Area jurisdictional habitats and plant species present, as well as typical plant species which occur in these habitat types within Napa County. Substitutions may be conducted based on enhancement area specific species composition. Substitutions, if required, will be determined by a qualified biologist familiar with wetland species of Napa County.

*Seeding*

Seeding will not be used due to the prevalence of invasive species at the site.

*Supplemental Container Plantings*

Container plantings include established individuals within containers of species appropriate for the jurisdictional habitat to be enhanced. Table 1 provides a suggested planting palette for each jurisdictional habitat observed. Planting material will be obtained from a nursery which uses local (Napa County) stock. All planting will be conducted by a qualified horticulturist or native plant nursery staff experienced with native California plants. If containerized plants are used, an inspection of plant material will be performed prior to installation, and only plants with healthy, well-developed root systems will be used. Cultivars will not be used as supplemental plantings.

Table 1. Potential Planting Palette for Enhancement Area by Habitat Type. Selected species from this palette are expected to used, depending on availability.

| Species | Common name | Indicator |
|---|---|---|
| **Seasonal Wetlands** | | |
| *Carex barbarae* | Valley sedge | FAC |
| *Carex praegracilis* | Clustered field sedge | FACW |
| *Cyperus eragrostis* | Tall flatsedge | FACW |
| *Distichlis spicata* | Salt grass | FAC |
| *Eleocharis macrostachya* | Spikerush | OBL |
| *Euthamia occidentalis* | Western goldenrod | FACW |
| *Hordeum brachyantherum* | Meadow barley | FACW |
| *Juncus bufonius* | Toad rush | FACW |
| *Juncus occidentalis* | Western rush | FACW |
| *Juncus phaeocephalus* | Brownhead rush | FACW |
| *Juncus xiphioides* | Iris-leaf rush | OBL |
| **Freshwater Marsh** | | |
| *Cyperus eragrostis* | Tall flatsedge | FACW |
| *Juncus phaeocephalus* | Brownhead rush | FACW |
| *Juncus xiphioides* | Irisleaf rush | OBL |
| *Euthamia occidentalis* | Western goldenrod | FACW |
| *Rosa californica* | California wild rose | FAC |
| *Schoenoplectus acutus* var. *occidentalis* | Tule | OBL |
| *Typha angustifolia* | Narrow leaf cattail | OBL |
| *Urtica dioica* | Stinging nettle | FAC |
| *Xanthium strumarium* | Cocklebur | FAC |
| **Brackish Marsh** | | |
| *Bolboschoenus maritimus* ssp. *paludosus* | Saltmarsh bulrush | OBL |
| *Frankenia salina* | Alkali heath | FACW |
| *Grindelia stricta* | Gumweed | FACW |
| *Salicornia pacifica* | Pickleweed | OBL |
| *Schoenoplectus acutus* var. *occidentalis* | Tule | OBL |

Perimeter fencing or flagging will be installed around the enhancement area to prevent accidental disturbance from property maintenance (i.e., mowing, grazing) but allow for easy access for

monitoring and maintenance. Additionally, signage will be placed on the perimeter fencing to deter undesirable and potentially impactful activities.

Implementation Plan

Table 2 below summarizes each activity and the appropriate months for the activity to be conducted. Hand clearing of invasive species should be conducted early to mid-spring and again in late summer. Installation of plants within the enhancement area should be in the fall, following the first rains, while the soil is still warm. It is anticipated that implementation of the Project will occur in the late summer and early fall of 2021. As such, invasive plant removal in restoration areas may occur prior to the initial ground disturbance for the Project. Planting will occur in 2021, after completion of the Project.

Table 2. Plan activity and work windows for implementation

| Activity | Months of Work |
|---|---|
| Invasive plant removal | April to August* |
| Planting | October to December (ideally following first significant rainfall event) |

*These are general work window months; more appropriate windows will be determined by a horticulturist or qualified biologist, based on invasive species present.

## 5.0 MONITORING PLAN

Monitoring is required to document plant establishment and determine if success criteria are being met. Monitoring reports will be prepared and submitted to RWQCB by a qualified biologist for each monitoring year. These reports will assess progress in meeting success criteria. If necessary, recommendations to improve success in achieving success criteria will be included. A final report detailing the history of the monitoring and results, along with any corrective measures, if necessary, will be drafted and submitted to the RWQCB; submittal of this final report is dependent upon annual performance as described below.

### 5.1 Performance and Monitoring Criteria

No specific final performance criteria is required. The intention of the enhancement is to provide the opportunity of non-invasive wetland species within jurisdictional habitat to become dominant (i.e., have more than 50 percent relative cover of non-invasive species after 5 years) through reduction of invasive species and supplemental planting of native species within the enhancement area. Baseline data gathered prior to enhancement activities will provide pre-enhancement existing species composition. Enhancement activities will ensure invasive species cover will not exceed 5 percent absolute cover, and non-invasive species cover will increase by 50 percent of baseline absolute cover by the end of the monitoring period, within the enhancement area. Further, plant species whose combined cover totals 50 percent absolute cover will be facultative (FAC), facultative wet (FACW), and/or obligate (OBL), meeting hydrophytic vegetation criteria as defined by the U.S. Army Corps (Corps) wetland delineation manual. As existing jurisdictional habitats are to be enhanced, no monitoring of hydrology or soils is necessary. To determine success of the mitigation, the following monitoring criteria will be applied:

Year 1

- Invasive species absolute cover will be less than 5 percent
- Non-invasive plant species absolute cover will be 10 percent greater than baseline cover

Year 2

- Invasive species absolute cover will not exceed 5 percent
- Non-invasive plant species relative cover will be 20 percent greater than baseline cover

Year 3

- Invasive species absolute cover will not exceed 5 percent
- Non-invasive plant species relative cover will be 30 percent greater than baseline cover
- More than 50 percent of dominant species being classified as either obligate (OBL), facultative wet (FACW), or facultative (FAC)

Years 4 and 5

- Invasive species absolute cover will not exceed 5 percent
- Non-invasive plant species relative cover will be 50 percent greater than baseline cover
- More than 50 percent of dominant plant species being classified as either obligate (OBL), facultative wet (FACW), or facultative (FAC)

If the Year 5 success criteria are met in two consecutive years, even if this occurs prior to the fifth year, no additional monitoring shall be required and the mitigation shall be deemed successful and complete.

### 5.2 Monitoring Methods

Annual monitoring will occur over five years (or until Year 5 success criteria have been documented in two consecutive years), beginning in the first full growing season following the planting (i.e., if planting is conducted in fall 2021, Year 1 monitoring will occur in fall 2022). Monitoring will be performed by a qualified biologist, horticulturalist, or landscape professional familiar with mitigation monitoring techniques, wetland ecology, and the habitat's flora. The monitoring is intended to capture data sufficient to evaluate the success of the enhancement activities, and to provide recommendations for adjustments to management, should they be necessary[2]. Data collected will include absolute percent cover of each plant species in the enhancement area and documentation of general conditions in and adjacent to the enhancement area.

[2] Conditions on the ground and changes through the monitoring period may warrant adapting or altering the monitoring methods proposed here. If altered, they will be documented in the annual monitoring report.

Vegetation

The vegetation data will be collected following the same protocol as baseline data collection. The previously mapped representative 10x10 meter square plot (or smaller if necessary) will be used to calculate species cover. Within the plot, the absolute cover of every species in the enhancement area will be calculated. This information will be used to determine if the enhancement area meets the success criteria described above.

General Conditions

During the monitoring visit, photo documentation from established photo-points will be conducted. Additionally, the biologist(s) will make general notes of existing conditions which can be used for recommendations regarding maintenance and management (e.g., targeted weeding of invasive species, supplemental planting, increase/decrease irrigation) to ensure success in the enhancement area. These notes, along with monitoring data and photographs, will be compiled in an annual monitoring report.

### 5.3 Annual Reports to RWQCB

An annual report will be generated in the fall/winter of each monitoring year and submitted to the RWQCB. These reports will include the required information outlined in the mitigation plan to assess the progress in meeting monitoring criteria. General causes of poor survival or growth, if any, will be discussed, and, if necessary, recommendations to improve success in achieving monitoring criteria will be made. After five years, a final report describing the success of the mitigation in meeting the monitoring criteria, and an evaluation of the success of any necessary corrective measures undertaken, will be prepared and submitted. If Year 5 monitoring criteria are not met, then further monitoring and reporting will be conducted as outlined in the contingency measures. Reports will be prepared by a qualified biologist with experience in mitigation monitoring.

## 6.0 COMPLETION OF MITIGATION

Upon completion of the monitoring period, a final report will be sent to the RWQCB. The report will present the results of the final monitoring year as well as a summary of the entire 5-year monitoring period. If performance criteria have been met, a request to release the Project Proponent from further monitoring and maintenance will be submitted to RWQCB.

## 7.0 CONTINGENCY MEASURES

Adjustments to the plant palette given herein may be necessary based on site quality, plant availability, etc. Any changes will be documented and approved by a qualified biologist familiar with the requirements of the RWQCB and native wetland species of Napa County.

If within any of the monitoring years, known causes of failure for meeting performance criteria are identified, then the Project Proponent will prepare an analysis of the failure and provide

contingency procedures necessary for successful completion of the revegetation effort. For instance, if Year 3 cover performance criteria is not met, then the Project Proponent will transplant additional plants in Year 4 so that the percent cover criteria may be met in Year 5.

If final cover monitoring criteria is not met in Year 5, then the Project Proponent will transplant additional plants in Year 6. The entire enhancement population will be monitored for an additional 2 years to ensure Year 5 cover criteria. If Year 5 criteria is not achieved within 10 years, then the Project Proponent will contact the RWQCB for guidance.

## 8.0 REFERENCES

Californica Invasive Plant Council (Cal-IPC). 2020. California Invasive Plant Inventory: Cal-IPC Publication 2006-2. California Invasive Plant Council, Berkeley, CA. Available online: http://www.cal-ipc.org/ip/inventory/index.php. Accessed: August 2020.

California Native Plant Society (CNPS). 2007. Vegetation Program Field Protocols and Guidelines. California Native Plant Society Releve Protocol. CNPS Vegetation Committee. 2007