San Pedro Terrace Restoration and Mitigation Monitoring Plan

Prepared for

Benaiah Ventures, LLC
11 Bay Rd
Menlo Park, California 94025-1728

Prepared by

Toyon Consultants
309 Seabright Ave
Santa Cruz, CA 95062

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INTRODUCTION

Report Purpose

Benaiah Ventures, LLC has proposed a project in Pacifica, California. A *Biological Assessment* (Toyon 2016a) was developed for this project, which found that there were potential impacts to sensitive species and habitats. One of the mitigations offered in the *Assessment* is to develop a restoration plan for the site. This report fulfills that mitigation measure.

Project Location

The proposed project is located at the end of San Pedro Terrace Road in the City of Pacifica, San Mateo County, California. The lot is adjacent to 751 San Pedro Terrace Road. Figure 1 shows the project location.

APN: 023-075-050

Site Description

The proposed project is on a lot of approximately 87,000 sq. ft. The majority of the parcel is flat. The North-northeastern section of the parcel abuts the San Pedro Creek and has a bank with a 35% slope with a depth of approximately 15 feet. There is a terrace that retains high water flows, adjacent to a second bank that defines the normal creek channel.

Project Description

The project consists of dividing the parcel into six lots and building single family houses on these lots. An entry road is included, and a storm water overflow pipe drains into the adjacent San Pedro Creek. Figure 2 provides an overview of the entire project, including the 25 foot setback from the riparian corridor. Figure 3 shows the site plan with the limits of grading. The Utility Plan indicating the location of the drain pipe is shown in Figure 4. Figure 5 shows a details for the drainpipe.

Two environmental reports have also been completed for this project: *Biological Assessment San Pedro Terrace* (Toyon 2016a) and *San Pedro Terrace Preliminary Wetland Delineation Report* (Toyon 2016b).

Project Owner

Benaiah Ventures, LLC
11 Bay Rd
Menlo Park, California 94025-1728

Figure 1: Project Location

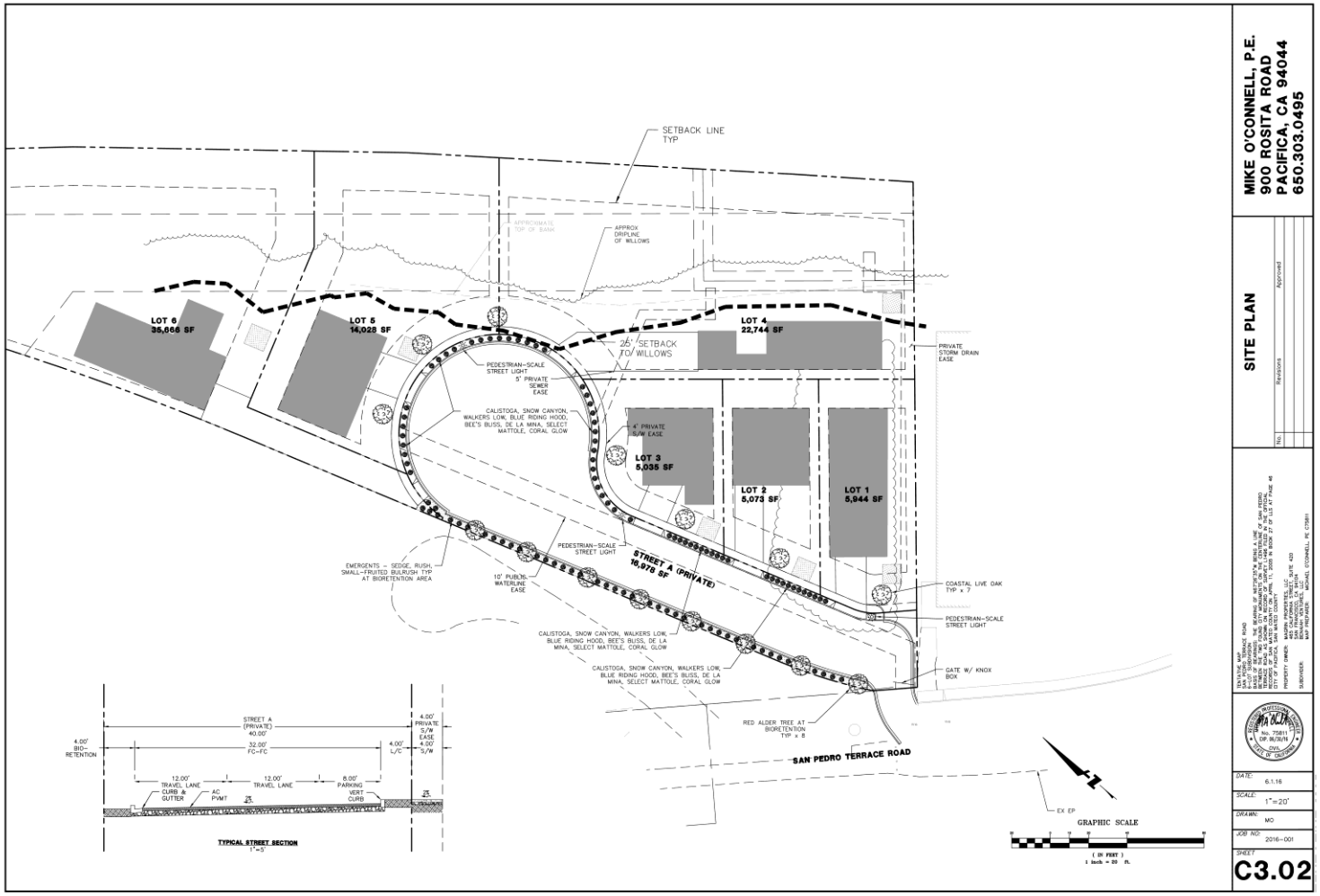

Figure 2: Proposed Site Plan

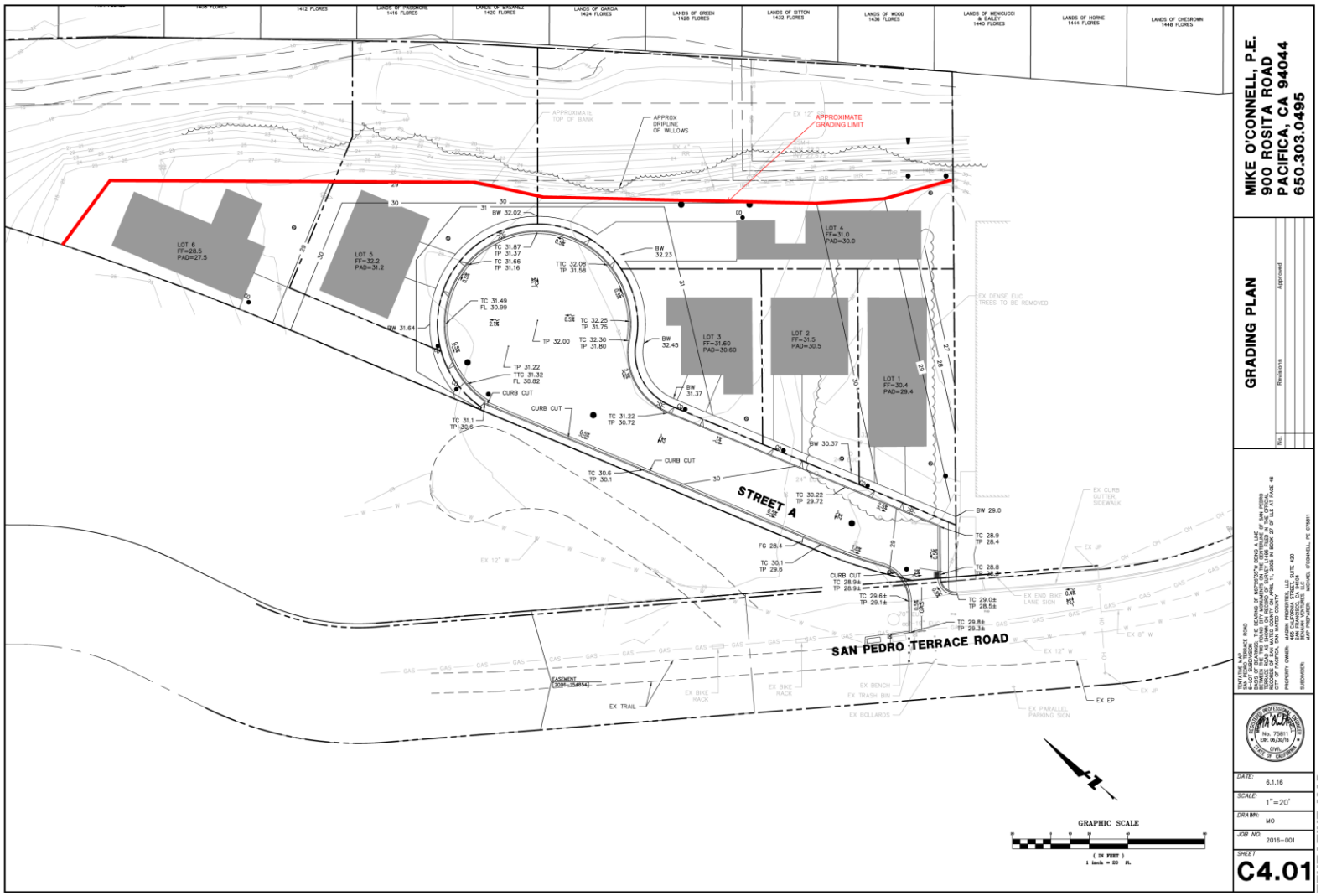

Figure 3: Site Plan with Limits of Grading

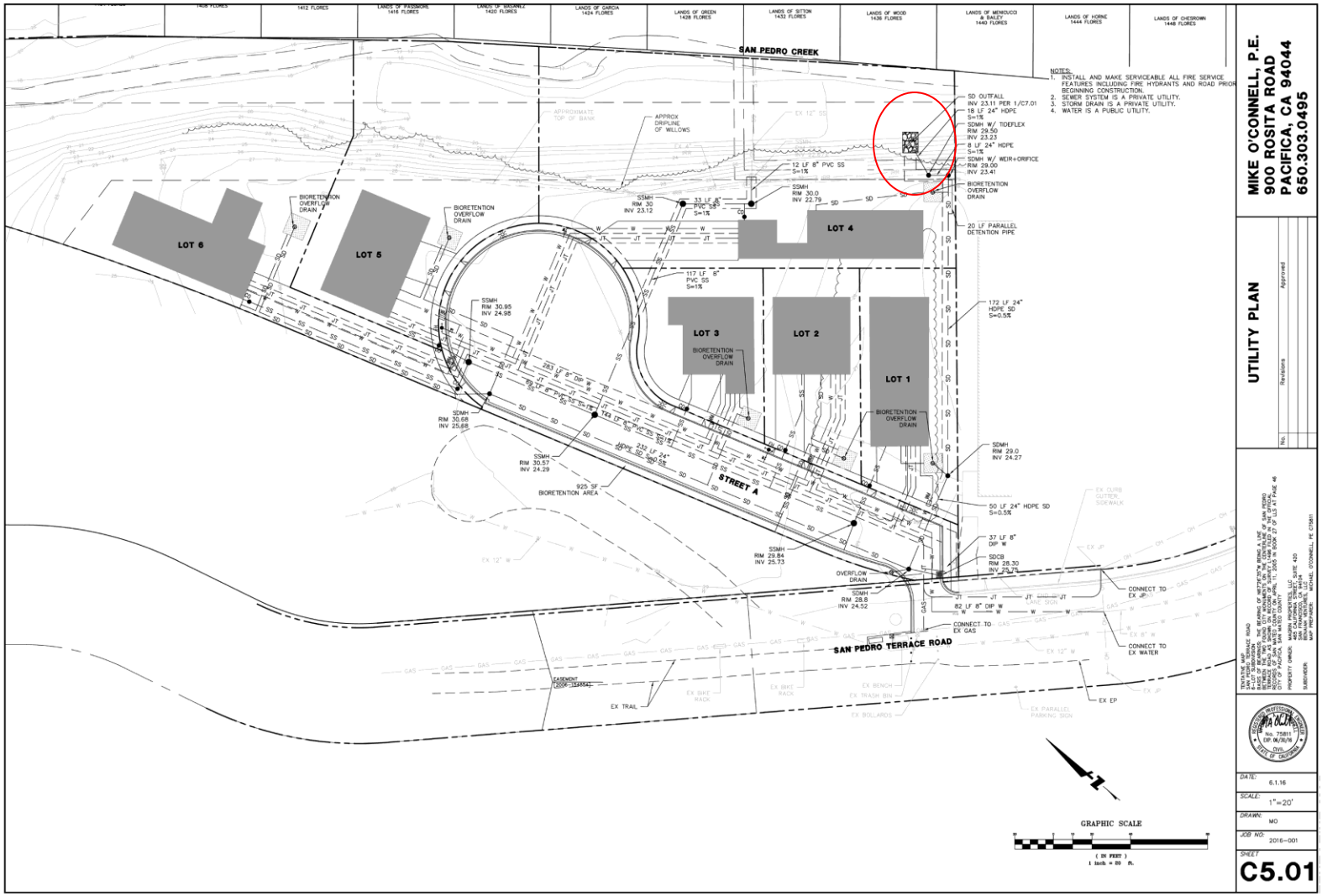

Figure 4: Proposed Utility Plan (Storm water drain circled in red)

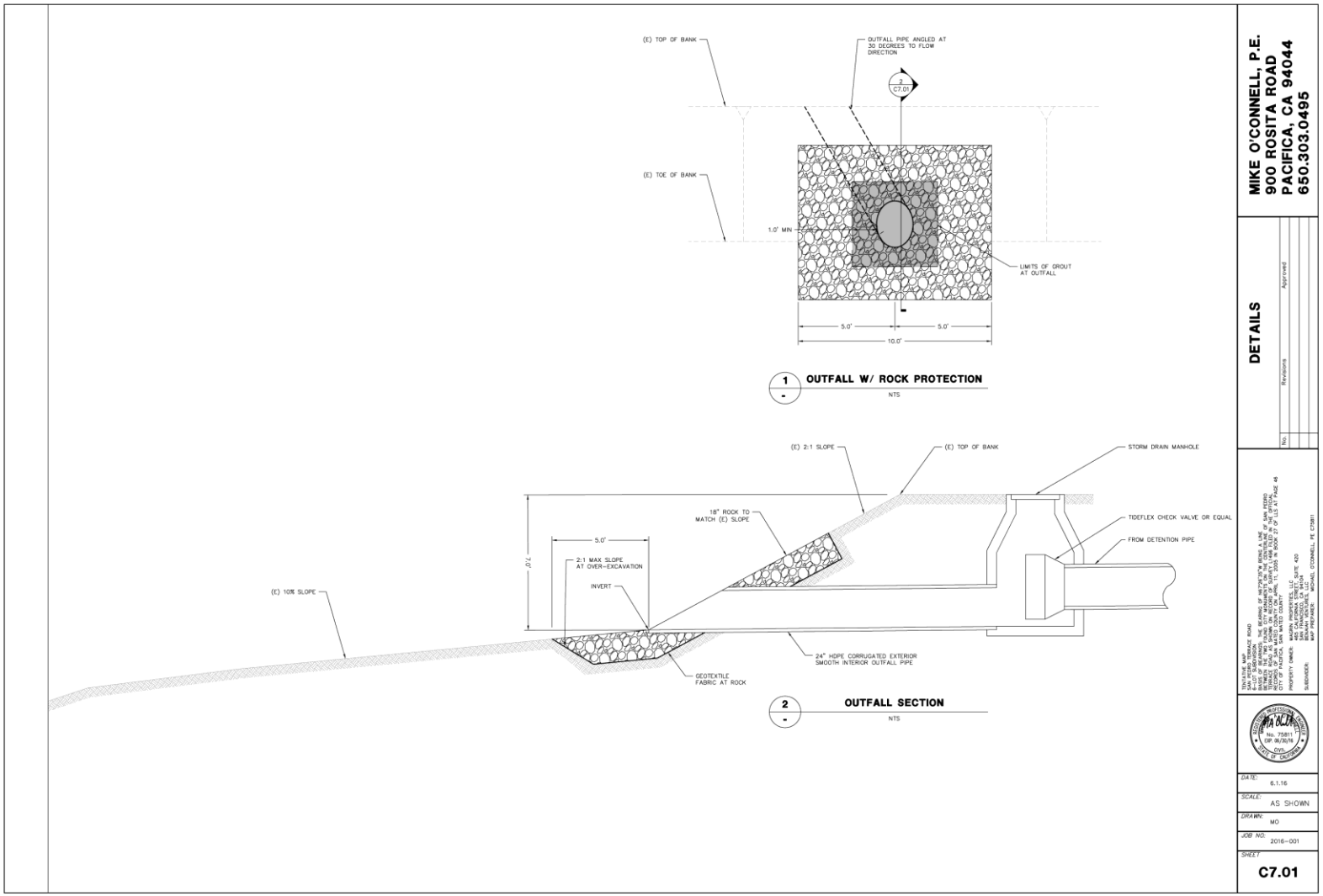

Figure 5: Drainpipe Details

Plan Goals and Objectives

The goal of this plan is to mitigate to a less than significant level the environmental impacts to sensitive habitat areas and species as a result of this project.

The objectives are:

- Plant willows to mitigate for direct impacts to wetland habitat due to building the storm water outfall
- Replace any willows remove by placement of storm water outfall within riparian habitat
- Enhance wetland and riparian habitat by removing invasive exotic species in order to mitigate for direct and indirect impacts to the habitat.

Precedence of Permit Stipulations over this Report

Implementation of the proposed project may require that environmental permits from various agencies, including, but not limited to, U.S. Army Corps of Engineers (USACE), California Department of Fish and Wildlife (CDFW), and the Regional Water Quality Control Board (RWQCB). Every attempt has been made to reflect the requirements of those permits within this plan.

In the event of an apparent or actual contradiction between the requirements of this plan and the requirements of any given permit, the permit stipulations shall take precedence over this plan. Questions concerning the stipulations of permits required to implement this plan should be directed to the appropriate permitting agency.

IMPACT ANALYSIS AND MITIGATION

Habitat Impacts

Habitat Areas

Habitat areas were identified in the *Biological Assessment* (Toyon 2016a). Figure 6 shows the habitat areas as indicated in that report. Table 1 provides total areas for each habitat area. Of the habitat areas found on site, the *Salix laevigata* Alliance is the only portion identified as sensitive habitat.

Habitat Area	Dominant Species	Area (sq. ft.)
Salix laevigata Alliance	Red Willow Sitka Willow	22,400
Baccharis pilularis Alliance	Coyote Bush Pampas Grass	29,600
Phalaris aquatica - Avena barbata Alliance	Harding Grass Slender Wild Oat Bristly Ox-tongue	11,800
Eucalyptus globulus Semi-natural Stands	Blue Gum Eucalyptus Monterey Cypress	23,500
Table 1: Habitat Types (from Toyon)		

Indirect Impacts to Sensitive Habitat

Figures 2 and 3 indicate that there will be 2,680 sq. ft. of grading into 25-ft. riparian setback. Of this, 145 sq. ft. will be hardscaped as part of the cul-de-sac.

Direct Impacts to Sensitive Habitat

Figures 4 and 5 show that 80 sq. ft. of wetland and riparian habitat within the *S. laevigata* habitat will be impacted by the placement of the storm water outfall. The *Biological* Assessment indicates several willows were planted in this area during a previous restoration project, which included Sitka willow. Depending on the final location of the outfall, it is possible that Sitka willow will be removed.

Figure 6: Habitat Map (from Toyon 2016a)

Mitigation Strategy

In order to mitigate direct impacts to the wetland habitat due to the placement of the outfall structure, three Sitka willow will be established within the outfall area. In the event that the outfall area requires that Sitka willow be removed, plants will be replaced in a 3:1 ration. These replacement plants are in addition to the required three willows planted in order to mitigate for indirect impacts.

In order to provide additional mitigation for direct impacts from the outfall structure, as well as to mitigate for indirect impacts due to encroaching within the 25-foot riparian setback area, habitat enhancement will occur within the entire *Salix laevigata* Alliance habitat area (see figure 6). Enhancement will consist of removal of invasive exotic species from the riparian area, with five years of monitoring and follow-up control as necessary.

Mitigation Ratio

Direct Impact Area =	80 sq. ft.
Indirect Impact Area =	2,680 sq. ft.
Total Impact Area =	2,760 sq. ft
Total restoration enhancement area =	22,400 sq ft
Mitigation ratio =	8.1:1

IMPLEMENTATION

Adaptive Management

It is the goal of this project that management of the restoration areas adapt to the conditions revealed during monitoring. The project biologist shall have the authority to change this plan over the course of implementation as necessary to attain the project performance criteria (see MONITORING AND REPORTING below). Any changes to the plan shall be reported in the required reports.

Adaptive strategies that may be implemented under specific conditions are provided below.

1. Death of plants due to water stress
    - Add irrigation system

2. Death of plants due to animal browsing
    - Add plant protection to effected plants

Willow Planting
Willow stakes will be collected from onsite. Ideally, willow stakes should be collected during the winter months when willows have lost their leaves. All stakes will be collected from the riparian scrub onsite. Stakes should be a minimum three feet long and approximately 1 inch in diameter.

Planting will occur within the rip-rap of the outfall. This will require that biodegradable tubes be placed in the rip-rap area during the placing of the rocks. Figure 7 shows a typical specification for this planting process. The final design can change based on input from the Project Biologist and the Project Engineer. The location of tubes shall be determined by the Project Biologist.

Invasive Exotic Control
A variety of techniques may be used, including hand pulling, weed whipping, cut and paint, and seedling blanching using a propane torch. Spot treatment with a surfactant free glyphosate based herbicide that is registered for use in wetland habitat areas shall be applied by a certified herbicide applicator only as determined necessary by the project biologist.

Invasive species observed on the site that will be given priority for removal: *Cortaderia jubata* (Pampas Grass), *Eucalyptus globulus* (Blue Gum), *Rubus ameniacus,* (Himalayan Blackberry), *Tropaeolum majus (*Nasturtium), and *Vinca major* (Periwinkle). The Project Biologist may add to this list as necessary.

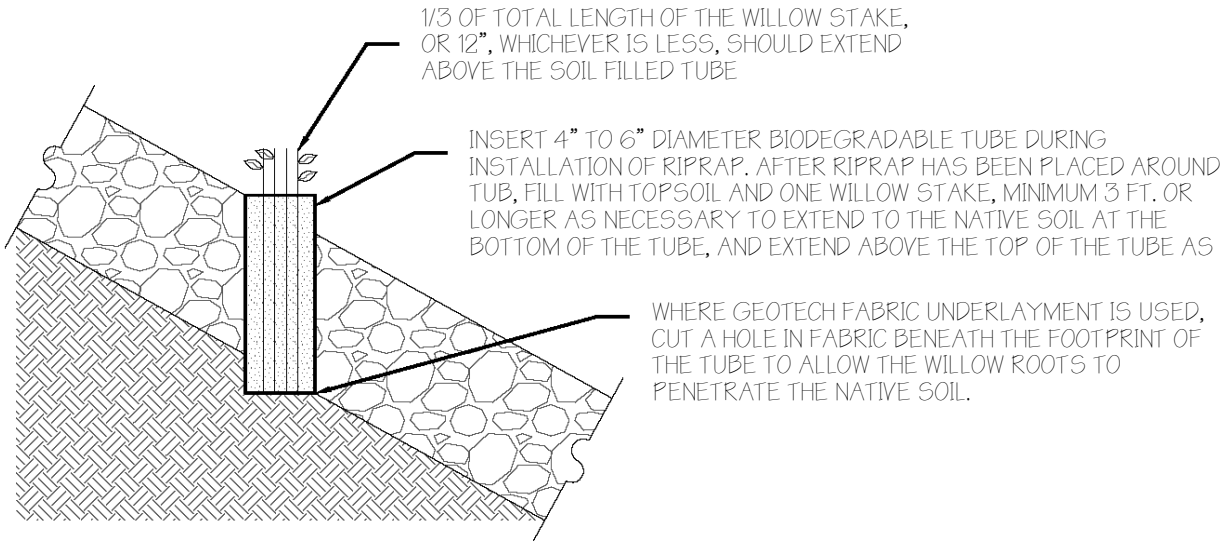

FIGURE 7: TYPICAL DESIGN FOR WILLOWS IN RIP-RAP (NOT TO SCALE)

MONITORING AND REPORTING

Photo Monitoring

Sufficient photo points will be established to provide coverage of the entire site. Initial photos will be taken of the site prior to project implementation. Photos shall be taken at least once per year during the same season. Photos shall be included in the As Built Report and the yearly reports. To the greatest extent possible, photos will include a distinctive reference object (i.e. large boulder, tree, fence, etc.) to ensure ease of photo monitoring in future years.

Plant Survivorship

Willow plantings will be monitored for five years to verify plant survival. Each planted willow will be counted and its overall health will be noted. In order to be considered a success, willow planting will have to have survived for a minimum of two years.

Invasive Exotic Control

Invasive exotic species percent cover will be determined using the point-transect method. Three 100 foot line transects will be placed within the riparian habitat. Transect location will be stratified so as to cover different areas of the habitat, and the beginning point will be chosen randomly. The transect beginning and end shall be marked with a permanent stake so as to make the transects repeatable. Point transect data will be taken to determine the presence/absence of invasive exotic species in all habitat strata (i.e. herbaceous, shrub, tree, and vine). This data will be used to determine percent cover of invasive exotic species.

Performance Criteria

The following performance criteria must be met in order to consider the project a success:

End Year 1

- 100% Survival of willow plantings

End Year 5

- 80% Survival of willow plantings for minimum two years
- Less than 5% invasive exotic species cover in all strata

In the event that one or both of the success criteria are not met, the project will be continued until the criteria have been met. If one criteria is met, but not the other at the end of Year 5, then only that criteria which is not met will be extended.

Reporting

Within 30 days of the completion of project implementation, an *As Built Report* will be submitted to Monterey County, CDFW, RWQCB, and USACE. This report shall include any changes to the plan as implemented and will show the locations of willow installation.

Monitoring will occur once per year. By December 15 in each year the project is monitored a *Mitigation Monitoring Report* shall be submitted to USACE, CDFW, RWQCB, and the City of Pacifica. The report shall include at a minimum the following information:

- Date(s) monitoring occurred
- Results of quantitative monitoring, including copies of field data sheets
- Photos from photo monitoring
- Summary of restoration actions taken during the reporting period
- Analysis of project based on the performance criteria
- Any changes proposed or implemented in the project as a result of monitoring, including but not limited to:
    - invasive exotic control techniques
    - plant replacement

MAINTENANCE ACTIVITIES

Invasive Follow-up

In order to ensure that the success criteria are met, control of invasive exotic species will be required. The project Biologist will make recommendations on when and how the follow-up is to occur, though the methods used will be the same as identified under IMPLEMENTATION above. Typically, follow-up activities will be more intense early in the project, then will slow as the project progresses.

Plant Replacement

Willows will be replaced as necessary for the project to be successful. In the event that establishing willows within the area of the outfall is not feasible, such as due to the placement and movement of rocks, or due to the force of water coming out of the outfall, then the Project Biologist shall determine an appropriate area for additional willow planting within the restoration enhancement area.

REFERENCES

Toyon Consultants. August 4, 2016 (2016a). *Biological Assessment San Pedro Terrace*. Submitted to City of Pacifica.

Toyon Consultants. August 30, 2016 (2016b). *San Pedro Terrace Preliminary Wetland Delineation Report*. Submitted to U.S. Army Corps of Engineers, San Francisco Division.