

## Scope of Work

### Betts-Kismat-Silva (BKS) Outfall Swale Modification

#### Background

The Natomas Basin Conservancy (TNBC) is a not-for-profit organization responsible for the restoration implementation and perpetual stewardship of lands dedicated as preserves for the listed species described in the Natomas Basin Habitat Conservation Plan (NBHCP). The NBHCP was approved by the US Fish & Wildlife Service and California Department of Fish & Game in 1997, and amended in 2003, to allow Sutter County and the City of Sacramento to develop portions of the Basin while providing habitat compensation for the NBHCP covered species. Since the initial NBHCP approval, TNBC has acquired and manages 4,140 acres of land as permanently-dedicated preserves in the Natomas Basin (TNBC).

#### Summary:

This proposal describes the modification of a drainage structure to be carried out on the BKS site for The Natomas Basin Conservancy. The purpose of this modification is to reduce side slopes of an existing drainage swale to allow for better functionality and habitat production. A spillway will be constructed on the south end of the swale to the RD1000 drainage canal located to the west of the site. A slight depression will be excavated and armored with erosion control materials as specified in the site plan and details. Fill soils from swale excavation and spillway will be placed locally in berms and planted with Valley Oak (*Quercus lobata*). Finally, a steel rope and utility pole bollard system will be constructed on the east end of the swale. All activities described are part of an ongoing conservation effort to restore and maintain habitat for sensitive species covered under the Natomas Basin Habitat Conservation Plan. All work conducted on TNBC sites shall be approved by Conservancy staff prior to implementation.

#### Tasks:

##### 1A Site Preparation

Site preparation includes mobilization at the site, preparing a staging area, staking work areas for grading, and meeting with Conservancy staff to undergo Worker Environmental Awareness Program training.

##### 1B Rough Grading Swale

Rough grading of the swale will first focus on cutting a 3' wide vegetation bench at an elevation roughly 3' below the berm top. The remaining slope above the bench will then be reworked to a 4:1 grade. Fill will be placed at predetermined locations within the work area. Excavation will be limited to the side of the swale where the tule bench is to be constructed.

### 1C Rough Grading Spillway

Rough grading of the spillway will follow the outline provided in the plan sets. The target finish elevation of the spillway shall be established at a depth of 6" below the berm top where it emanates from the existing spillway. Over excavation will be required as specified in detail on sheet L-1.3. Sides of spillway shall be cut at a 10:1 slope leaving minimum of 10' between the toes of excavated area. Following excavation, sub soil compaction, and geotechnical fabric installation, 6" minus rip-rap shall be wheel rolled into the excavated foot print and side slopes of spillway.

### 1D Habitat Placement

After channel grade has been established, several mounds of 6"x15" rip-rap will be placed in predetermined locations throughout the bottom of the swale.

### 1D Finish Grading

After swale excavation and placement of fill soils and rip rap are complete, finish grading of the soil to allow for seeding of native grass and planting of native trees shall be carried out in a manner consistent with standard horticultural practices.

### 2A Bollard Construction

After major earth works and rip rap placement have been completed, construction of a steel rope and utility pole bollard system will be carried out along the eastern terminus of the swale. Care must be taken to locate and avoid the existing culvert under the road. See bollard specifications, details and layout plan to locate poles on the site. A known source for bollard lumber is Nor-Cal Poles: <http://www.norcalpole.com/>. Where contractor sourced materials or installation techniques differ from those specified in design documents, shop drawings and samples shall be provided by the contractor.

### 2B Planting

Check planting stock quality, quantities and locations with TNBC staff prior to planting. Locate and install trees based on layout plan and tree planting details. Install tree wells and protection fencing at all locations. Finally, all berms are to have a native seed mix hand sown and raked into the soil at a rate of

## SPECIFICATIONS

### BOLLARD LUMBER SPECIFICATIONS

#### 1.1 Summary

Strict specifications for the bollard size and character have been laid out by the client. As material selection and procurement will be carried out by the contractor, the following specifications will be used to inform product acquisition. All materials to be used in the bollard system shall be verified with project management staff prior to installation.

#### 1.2 Dimensions and Condition

Bollards shall be 6' long by 10"-12" in diameter. Tolerance of plus or minus 3" in length are acceptable. Tolerance of plus or minus 1" in diameter is acceptable only if the size discrepancy is due to natural taper of the material. If materials are to be purchased long and cut to length by contractor, special consideration will be needed with regard to treating cut ends (see section 1.3) Bollards exhibiting severe splitting or warping shall be rejected for use in the project.

#### 1.3 Lumber Preservatives

All bollard material shall be treated with Ammoniacal Copper Zinc Arsenate (ACZA). Any proposed lumber to be used not treated with ACZA shall be cleared with project managers prior to installation. If pre-treated lumber is to be purchased at length and cut on site, then all cut ends shall be treated with pre-approved wood preserver prior to installation.