4.0 DESIGN PROCESS AND DELIVERABLES

4.1 Design Process

During the design phase, the design team will review current site conditions, such as sediment size, bank slopes, vegetation type, and the likely range of hydraulic conditions. This information will be used to evaluate mechanisms that may be leading to erosion such as bank-toe undercutting, root failure, or over-island flow, as well as to develop appropriate material size distribution specifications for capping materials. Design criteria will be established based on this evaluation, including flood-recurrence interval and allowable shear stress, in order to assemble a range of feasible remediation alternatives. To the extent possible, the design efforts will build on existing data and previous design efforts. For example, topographic surveys are available for the Island Complex and Harvard Road North sites, and can be used to calculate bank slopes among other design tasks. At Island Complex, the topographic survey (conducted by USACE) has notations describing the sediment grain size, e.g., 1-3 inch cobbles, in various areas. For Harvard Road North, Ecology conducted material size distribution analysis on bulk samples collected at the site. The USACE assembled a HEC-RAS hydraulic model for the Starr Road project, which includes the Island Complex site within the extent of the model. After verifying the model geometry at Island Complex the model can be used to predict velocities and shear stresses at the project site. These parameters can be used to identify appropriate bank stabilization measures, and to select the type and size of materials used to stabilize the bank.

4.2 Deliverables

The required deliverables for the remedial design phase of the project include:

- Remedial Design Work Plan (this document)
- 30% design package for each site, including a memorandum documenting the design process as described above
- Draft 90% design submittal (drawings and specifications)

- Final 90% design package (drawings and specifications)
- 100% design package (drawings and specifications)
- As-built drawings
- Project closeout, including remedial action completion reporting

Other submittals may be prepared to support the following project tasks: public outreach; permitting; construction cost estimating; contractor procurement and selection; construction oversight and inspection; meeting minutes; and schedule updates.