Practical Considerations of Implementing a Natural Resource Damage Assessment Restoration Project
Kathleen Hurley, Lisa Saban, and Maryann Welsch, Windward Environmental LLC

Introduction
Natural resource damage assessment (NRDA) is used to measure injury to air, water, lands, plants, or animals from the release of hazardous substances. The purpose of an NRDA is to restore injured or lost natural resources and to compensate the public for the interim loss of use. An NRDA was conducted in Commencement Bay, Tacoma, Washington, by the Commencement Bay Natural Resource Trustees to measure losses of natural resources from widespread sediment contamination. Through a restoration-based settlement, a responsible party is implementing an offsite stream and wetland restoration project to compensate for natural resource damages associated with their industrial property in the bay. This poster presents the project design for the stream and wetland restoration and practical considerations for implementing an NRDA restoration project in an urban setting.

Permitting
- Multiple agency involvement created a complex and lengthy process.
- Permitting process represented 15% of the budget.
- Education about NRDA and restoration-based settlements is important throughout the process, particularly for local jurisdictions, which had the longest permit approval process.
- Following approval of the project as a restoration-based settlement, the permit approval process took 18 months and delayed construction for almost 2 years.

Lessons Learned
- Early interaction with all permitting agencies facilitates the permitting process.
- NRDA adds some complexity to the permitting process because of credit requirements that are tied to specific habitat types.
- Know your site! Defining site goals, hydrology, existing vegetation, invasive species, topography, water budget is essential.

Restoration Actions
- Enhancement of stream sinuosity through the addition of stream meanders
- Removal and management of invasive species
- Creation of habitat heterogeneity through the excavation of hollows and de-leveling of the ground surface
- Placement of 160 pieces of large woody debris
- Restoration and enhancement of native vegetation along stream banks and in wetlands and uplands through the installation of about 40,000 plants

Design Considerations
- Site selection is important to allow sufficient scale of restoration relative to injury.
- Design accounted for the watershed scale by considering the location of the site in a highly urban watershed.
- Site was selected based on the restoration of natural resources (e.g., salmonid spawning habitat) specified by the Trustees.

Introduction
Current configuration of the stream channel and a portion of the adjacent wetlands on the site

Restoration Goals
- Improve aquatic habitat for salmon spawning and rearing
- Restore and enhance wetland and upland habitats for birds and wildlife
- Increase flooding frequency and duration of the adjacent wetland

Permitting Flowchart for Aquatic and Wetland Projects in Washington State

Proposed design for habitat enhancement

Current wetland and stream configuration