

NANCY STREET WETLAND ENHANCEMENT, JUNEAU

Introduction / Objective:

The Nancy Street wetland enhancement project is the result of a partnership formed around the need for a waste disposal site for material extracted from the Mendenhall Valley high school construction project at Dimond Park. The City and Borough of Juneau (CBJ) purchased 6 acres of wetland to provide a fill disposal site only one mile from the construction site, satisfying development needs. Conservation goals from the Juneau Management Wetland Plan were also met because the fill material would improve wildlife habitat and water quality of the Nancy Street Wetland.

The Nancy Creek Wetland is located in Mendenhall Valley 10 miles northwest of Juneau, Alaska. In the 1950s-60s, the land was dredged for the extraction of gravel deposits and then left to fill with groundwater high in iron and low in dissolved oxygen content. This affected fish and other animals that require high levels of oxygen for survival. This contaminated water would eventually flow into the Mendenhall wetlands. Adding fill material to this site created a wetland community and provided plants that filter the water, thereby increasing overall habitat area for birds and salmon.

The manner in which fill was added to the Nancy Street wetland determined habitat diversity. Protruding fingers were created to allow access for equipment dumping the fill material in the middle of the wetland. The fingers became the low and high marsh habitat zones. Hauling and placing of fill material took place in September 2005. The fingers then received 6 to 8 inches of low organic rock/cobble topsoil to aid revegetation efforts.

Dam and channel outlet construction began in July 2006. Fill material was placed, the stream channel excavated, and the dam shaped in less than 2 weeks.

Methods of Revegetation:

Volunteers, members of the Southeast Alaska Guidance Association (SAGA), and Trail mix workers all participated in the revegetation effort.

Cuttings were taken on April 8. Barclays Willow, High Bush Cranberry and Black Cottonwood stakes were collected using hand pruners. These cuttings were kept in a cold storage facility until they were planted on June 7. Unfortunately, all of

the Highbush Cranberry died in storage.

A SAGA crew contracted by the US Fish & Wildlife Service planted 3,600 plugs, shrubs, and small trees, and also seeded some of the wetland area. Plants were taken and moved from the source wetland and replanted on the remediation site.

Species Used:

Plants were selected based on success in previously constructed wetland sites in the region. The plants' ability to be transplanted or seeded, as well as potential for phyto-remediation of iron was also considered. Transplanting plugs was the primary method of revegetation. Cuttings of willow & cottonwood were also used, with some seeding.

The focus of the revegetation effort was transplanting local plants to preserve local gene stock and minimize the need to purchase plants. This is feasible for a 6 acre site, but for a larger freshwater wetland, a different strategy may be required.

Availability, accessibility and diversity of source wetlands determined the species chosen. Acquiring revegetation material was difficult because source wetlands were chosen to minimize cost and driving time. Only wetland accessible by a crew with a vehicle were considered, and obtaining permission was a challenge, due to the number of land owners involved.

Plants were divided into zones based on the depth of water in which they grow.

Low and High Marsh:

Marsh Marigold, *Caltha palustris*
Sitka Sedge, *Carex sitchensis*
Spike Rush, *Eleocharis palustris*
Small Leaved Bulrush, *Scirpus microcarpus*
Lyngbye's Sedge, *Carex lyngbyei*

Wet Meadow :

Western Columbine, *Aquilegia formosa*
Bluejoint Reedgrass, *Calamagrostis canadensis*
Tufted Hairgrass, *Deschampsia caespitosa*
Chocolate Lily, *Frittilaria camschatcensis*
Wild Iris, *Iris setosa*
Nootka Lupine, *Lupinus nootkatensis*
Sweet Grass, *Hierochloe odorata*

Upland Shrub :

Sitka Alder, *Alnus viridus*,
Goat's Beard, *Aruncus dioicus*
Red Twig Dogwood, *Cornus stolonifera*,

Salmonberry, *Rubus spectabilis*
Barclay's Willow, *Salix barclayi*
Red Fescue, *Festuca rubra*
Thimbleberry, *Rubus parviflorus*
Red Alder, *Alnus rubra*

Upland :

Red Alder, *Alnus rubra*,
Sitka Alder, *Alnus viridus*
Red Twig Dogwood, *Cornus stolonifera*
Sitka Spruce, *Picea sitchensis*
Black Cottonwood, *Populus balsamifera*
Salmonberry, *Rubus spectabilis*
Barclay's Willow, *Salix barclayi*
Thimbleberry, *Rubus parviflorus*
Red Fescue, *Festuca rubra*

Cornus stolonifera plugs were purchased by CBJ and planted. The species was chosen because it grows rapidly, provides berries for birds, and controls erosion.

CBJ also purchased and spread seed throughout the five month period of revegetation for erosion control and habitat enhancement.

Results:

At the end of the 2006 planting season there was approximately 70% survival rate of transplanted species.

Conclusions / Lessons Learned:

Community involvement showed great support and enthusiasm for the creation of a wetland. Local volunteers and community groups donated their time and money. Nearby property owners and the community at large have expressed appreciation for the completed wetland.

Choosing to fill and complete each finger and section of wetland individually allowed the species habitat to thrive. The other option; filling the entire site and returning to dredge the stream channel later would have resulted in less diversity of habitat.

A dry sunny period in June almost resulted in failure of the newly transplanted plants. The soil dried and cracked around the plantings. An irrigation plan would help to mitigate similar events that may arise at the site. Delaying the transplanting to a period of more favorable conditions (July), would assure more frequent precipitation. Applying topsoil with higher organic matter content will also help with moisture retention.

Lack of proper gear & equipment for the crew

made harvesting and planting more difficult. Waterproof gloves, waders, rubber boots, and bigger buckets for transporting plants would have allowed the revegetation effort to progress more efficiently.

References:

Michele Elfers, 2006, Nancy Street Wetland Enhancement: Assessment of Design and Construction. City and Borough of Juneau, Engineering Department, 69pp.

Project Location:

The Nancy Street wetland is located in the Mendenhall Valley, in the city and borough of Juneau, Alaska.

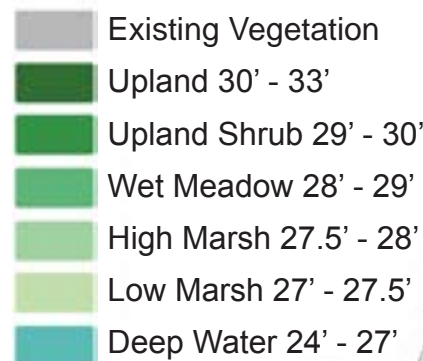
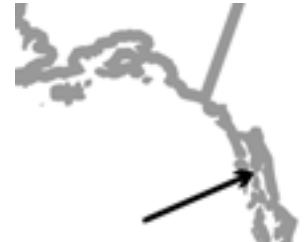


Photo: Michele Elfers (CBJ)

Nancy Street Pond 2005, prior to reclamation



Aerial view of Nancy Street wetland area.



Photo: Michele Elfers (CBJ)

Planting willow & cottonwood cuttings - June, 2006



Photo: Michele Elfers (CBJ)

Leaves emerge from cuttings - August, 2006



Photo: Neil Stichert (USFWS)

Early stages of filling - November, 2005



Photo: Michele Elfers (CBJ)

Sedges being extracted from nearby wetland - 2006



Photo: Michele Elfers (CBJ)

Digging outlet stream channel - July, 2006



Photo: Michele Elfers (CBJ)

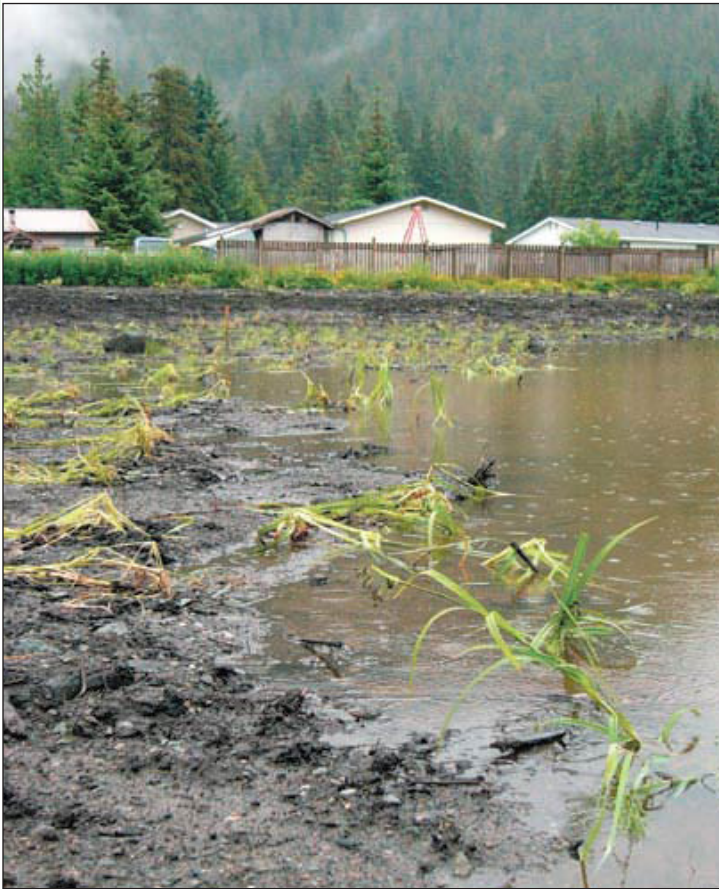
Volunteers planting wet meadow grasses - 2006



Alders transplanted along stream channel - 2006



Transplanted cuttings bordering trail - October, 2006



Low marsh & high marsh sedges, bulrushes - 2006



Created fingers, view to the south - October, 2006



Wetland vegetation establishment - October, 2006



Finished observation deck & gathering area - 2006

Photos: Michele Effers (CBJ)