Brightwater Mitigation Project

Molly Deardorff

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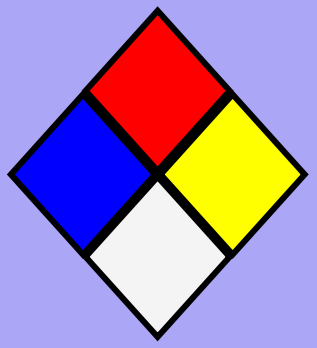
- University of Washington, class of 2007
  - Community, Environment and Planning
    - Urban Design and Planning
    - Restoration Ecology
- Parks and trail systems, urban green spaces, urban streams, stormwater management and alternative drainage systems.

Week one - Training



- Hazard Communication
- Chemical Awareness
- Biological Hazards
- Bloodborne Pathogens
- Emergency Response

Week one - Training

South Treatment Plant

Week one - Training

West Point Treatment Plant

Week one – finale
Week two - Monday

Confined Space Training

CPR / First Aid

Brightwater Mitigation Project

Mentor, Chris Tiffany

- Pollution Control
  - Water QualityTesting
  - Erosion and Sediment Control
- Mitigation
  - Post-Mitigation Monitoring Handbook
  - Invasive Management Plan
  - Vashon Planting Revision

Pollution Control

- Only clean water leaves the site
  - Water quality testing weekly
- No sediment leaves the site
  - Use BMP’s to control erosion and sedimentation

Pollution Control Regulations

- Clean Water Act of 1972
  - EPA allows each state to put a regulating agency in charge
  - Dept. of Ecology is Washington State's regulating agency
- National Pollutant Discharge Elimination System (NPDES) Permit
  - Water Quality Monitoring Plan
- Stormwater Management Manual for Western Washington – Volume II
  - Stormwater Pollution Prevention Plan (SWPPP)

Weekly water testing

Test for:

- Temperature
- pH
- Dissolved Oxygen
- Turbidity

- Type of test depends on where water is discharging to and type of water being discharged

Water sampling schedule

Dewatering water	
To surface water (Little Bear Creek)	•Dissolved oxygen •Turbidity •pH
To groundwater	•pH
Test weekly	

Stormwater	
To surface water	•Turbidity •Temperature •pH
To groundwater	•pH
Test every storm event	

Erosion and Sediment Control

Best Management Practices

- Sediment should not leave the site
- Use Best Management Practices (BMP’s) to control erosion and sediment on a site.
- SWPPP outlines the BMP’s that have been chosen for the particular conditions on the Brightwater project.

Examples of BMP’s

A35

BMP C140 Dust Control

BMP C130 Surface Roughening
BMP C241 Temporary Sediment Pond

BMP C103 High Visibility Fence

BMP C105 Stabilized Construction Entrance

BMP C160 Erosion Control Lead

Mitigation

- Post-mitigation monitoring study
- Invasive Plant Management Plan
- Vashon Treatment Plant planting revision

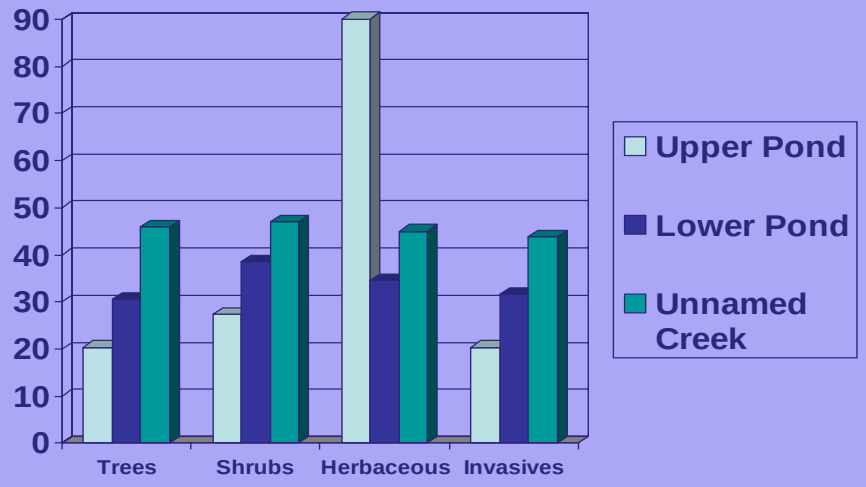
United Rentals

Post Mitigation Monitoring

- King County is required to collect data and report conditions of site to assess success (or failure) of mitigation over a ten year period.
- Data collection
  - Vegetation
  - Hydrology
  - Fish habitat
  - Wildlife habitat

Post Mitigation monitoring

- CAS dictates monitoring guidelines
- My job is to write a ‘how-to’ manual for volunteers or staff



- Manual will be a step by step guide for community volunteers or KC staff.
  - Data collection
  - Data analysis
  - Reporting

Invasive Plant Management Plan

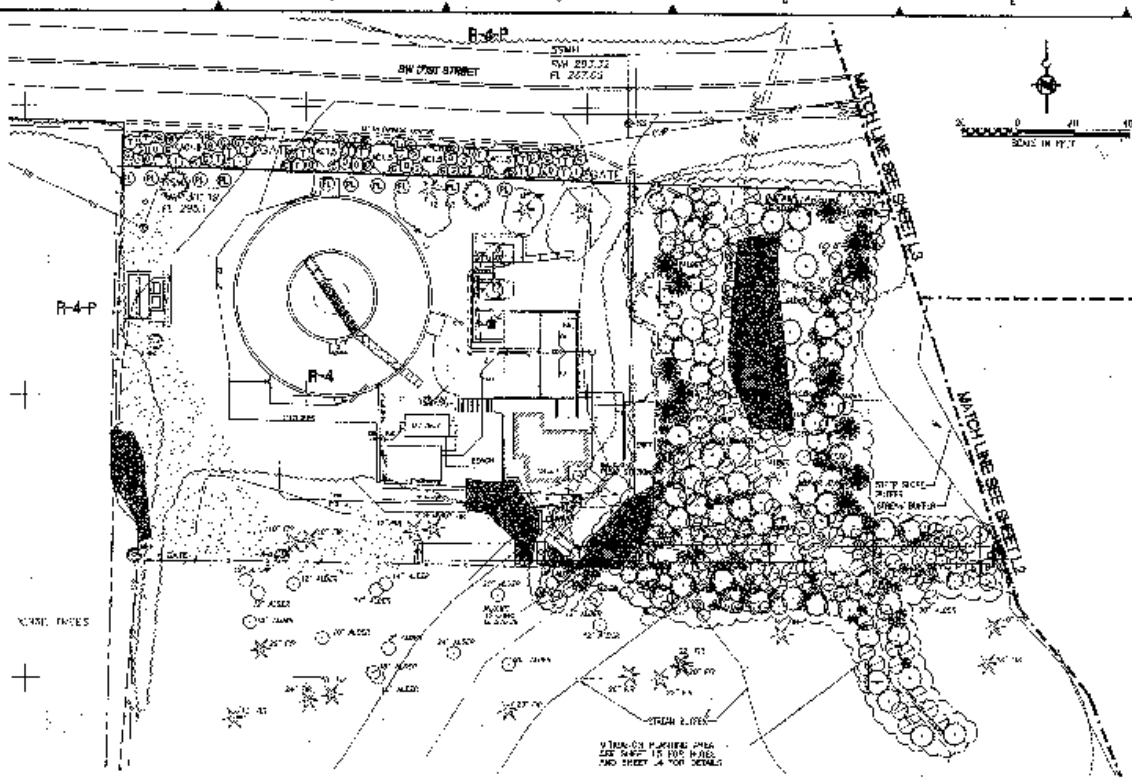
- Map invasive species on site
- Develop short-term and long-term management plan
- Usual suspects:
  - Blackberry
  - Japanese Knotweed
  - English Ivy
  - Scotch Broom
  - Purple Loosestrife
  - Canary Reed Grass
  - European Nightshade
  - Buttercup

Purple Loosestrife Class B Noxious Weed

Vashon Mitigation Revision

Revised original planting plans:

- Original plans called for planting over existing vegetation
- 4:1 mitigation requirements were not being met for impact of pipe bridge
- Additional mitigation goals needed to be met due tree removal on site



LEGEND

- STREAM
- STREAM BUFFER
- PROPERTY LINE
- WETLAND
- NEW CHAINLINK FENCE
- SENSITIVE AREA SIGN
- R-4 ZONING DESIGNATION
- EXISTING DECIDUOUS TREE OR SHRUBS
- EXISTING CONIFER
- SAMPLE POINT/ PHOTO POINT DIRECTION SEE SHEET L5

MITIGATION PLANT SCHEDULE (THIS SHEET)

SYMBOL	QUANTITY	BOTANICAL NAME/COMMON NAME	SIZE	SPACING	TOTAL
	30	TILIA PLATYPHYLLOS/RED LEAF LINDEN	4" HT., B&B	AS SHOWN	0/14
	12	PSEUDOTSUGA MENZIESII/DOUGLAS FIR	4" HT., B&B	AS SHOWN	0/14
	19	ACER MACROPHYLLUM/BIG LEAF MAPLE	5 GAL. CONT.	AS SHOWN	0/14
	20	FRAXINUS LATIFOLIA/OREGON ASH	4" HT., B&B	AS SHOWN	0/14
	25	ACER CIRCINATUM/VINE MAPLE	4" HT., B&B	AS SHOWN	0/14
	34	SAMBUCUS RACEMOSA/RED ELDERBERRY	4" HT., B&B	AS SHOWN	0/14
	77	CORNUS STOLONIFERA/RED OSIER DOGWOOD	1 GAL. CONT.	AS SHOWN	0/14
	24	VACCINIUM PARVIFOLIUM/RED HUCKLEBERRY	1 GAL. CONT.	AS SHOWN	0/14
	10	OENLEMA OSMANTHIFORMIS/INDIAN PLUM	1 GAL. CONT.	AS SHOWN	0/14
	15	RUBUS SPECTABILIS/SALMONBERRY	1 GAL. CONT.	AS SHOWN	0/14
	19	GAULTHERIA SHALLON/SALAL	1 GAL. CONT.	AS SHOWN	0/14
	50	POLYSTICHUM MUNITUM/SWORD FERN	1 GAL. CONT.	AS SHOWN	0/14
	75	CAREX OBNUPTA/SLOUGH SEDGE	1 GAL. CONT.	2' O.C.	0/14
	27	ATHYRIUM FILIX-FEMINA/LADY FERN	1 GAL. CONT.	2' O.C.	0/14

RESTORATION PLANT SCHEDULE (THIS SHEET)

SYMBOL	QUANTITY	BOTANICAL NAME/COMMON NAME	SIZE	SPACING	TOTAL
	2	POPULUS TRICHOCARPA/BLACK COTTONWOOD	6' HT., B&B	AS SHOWN	0/14
	5	ACER CIRCINATUM/VINE MAPLE	1 1/2" CAL., B&B	AS SHOWN	0/14
	25	AMELANCHIER ALNIFOLIA/PACIFIC SERVICEBERRY	2 GAL. CONT.	AS SHOWN	0/14
	8	OEMLERIA CERASIFORMIS/INDIAN PLUM	2 GAL. CONT.	AS SHOWN	0/14
	10	PRUNUS LUSITANICA/PORTUGAL LAUREL	2 GAL. CONT.	AS SHOWN	0/14
	31	GAULTHERIA SHALLON/SALAL (MONOCEIC)	1 GAL. CONT.	AS SHOWN	0/14

PLANTING NOTES (EXCEPT MITIGATION AREA)

1. SHRUBS MUST BE LOCATED, STAKED AND PINCHED PRIOR TO PLANTING. SEE SPECIFICATIONS.
2. SEE SPECIFICATIONS FOR SOIL PREPARATION.
3. HYDROSEED ALL DISTURBED AREAS NOT SCHEDULED TO RECEIVE SHRUBS AND TREE PLANTINGS.
4. LIMITS OF INCORPORATING AREAS SHOWN ARE APPROXIMATE.
6. FOLLOWING SEEDING PLACE 3" DEPTH COMPOST MULCH IN ALL PLANTING BED AREAS, AND IN AREAS DESIGNATED BY PARKS CONSTRUCTION.
8. PLACE APPROXIMATELY 2" OF SITE WOOD CHIPS IN PLANTING AREAS OVER COMPOSTED MULCH.
7. SEE LEVEL 3 PLANS FOR LIMITS OF CONSTRUCTION.
8. PRESERVE AND PROTECT EXISTING VEGETATION OUTSIDE LIMITS OF CONSTRUCTION.
9. WATER SHALL BE PROVIDED TO ALL NEW PLANT MATERIALS BEFORE, DURING AND AFTER INSTALLATION TO ENSURE PLANT SURVIVAL AND ESTABLISHMENT. WATER SHOULD BE PROVIDED BY A TEMPORARY ABOVE GROUND DRIP IRRIGATION SYSTEM AND/OR A WATER TRUCK. WATER SHALL BE APPLIED AT A RATE OF [illegible] OF WATER ONCE A WEEK UNTIL SUBSTANTIAL COMPLETION OF THE LANDSCAPE WORK. COUNTY MAINTENANCE STAFF WILL ASSUME ANCHORING OF PLANTS WITH ON-SITE POTABLE WATER SUPPLIES FROM THE DATE OF LANDSCAPE SUBSTANTIAL COMPLETION THROUGH PLANT ESTABLISHMENT.

No.	REVISION	BY	APPR.	DATE

Tetra Tech/KCM, Inc.
1917 First Avenue
Seattle, Washington 98101
206-448-5065 Fax 206-443-6373

DESIGNED: JCL
DRAWN: JCL
CHECKED: JCL
RECOMMENDED:
APPROVED:

CHECKED: MAS
DATE: 1"=20'
CONTRACT NO: 0430030

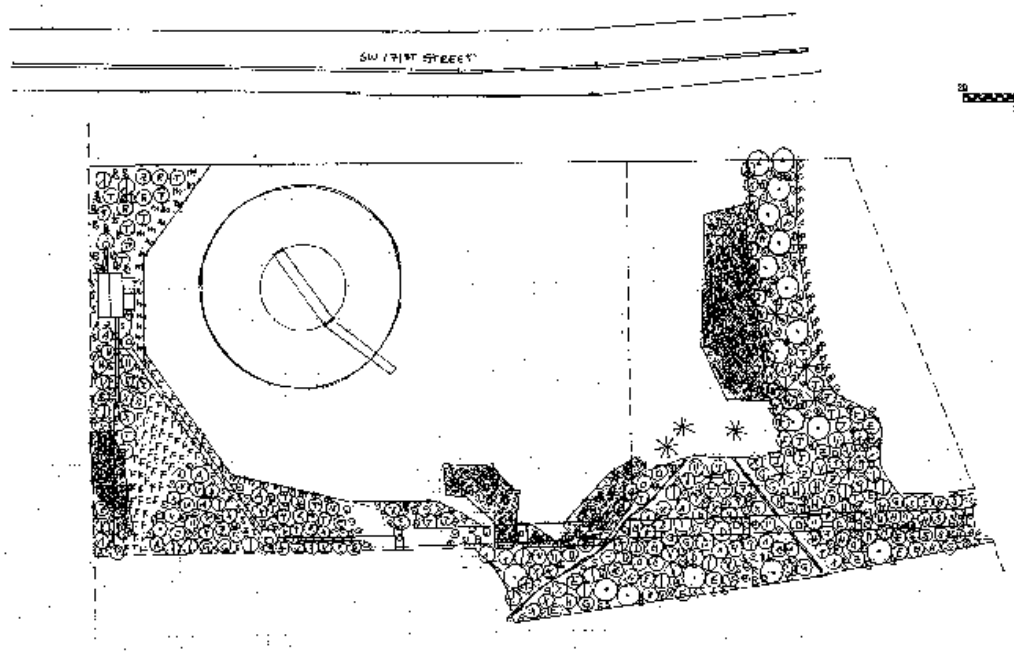
King County

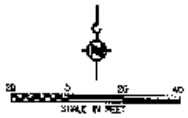
DEPARTMENT OF NATURAL RESOURCES AND PARKS
VASHON ISLAND WASTEWATER TREATMENT PLANT FACILITIES
Landscape Plan

STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT
STATE OF WASHINGTON REGISTERED LANDSCAPE ARCHITECT

ONE INCH
IF NOT 1" SCALE ADJUST ACCORDINGLY

DATE: February 2004
FILE NO.:
DRAWING NO.: L1
CONTRACT NO.:





Legend

Stream
Wetland

Mitigation Plant Schedule

Symbol	Quantity	Common Name	Botanical Name	Size	Spacing	Detail
	10	Douglas Fir	*Thuja plicata*	5 Gal. Cont	As Shown	D/L4
	17	Western Red Cedar	*Pseudotsuga menziesii*	5 Gal. Cont	As Shown	D/L4
A	8	Vine Maple	*Acer circinatum*	1 Gal. Cont	As Shown	E/L4
D	11	Devils Club	*Oplopanax horridus*	1 Gal. Cont	As Shown	E/L4
B	17	Red Elderberry	*Sambucus racemosa*	1 Gal. Cont	As Shown	E/L4
G	14	Gooseberry	*Ribes lacustre*	1 Gal. Cont	As Shown	E/L4
H	20	Evergreen Huckleberry	*Vaccinium ovatum*	1 Gal. Cont	As Shown	E/L4
I	17	Indian Plum	*Oemleria cerasiformis*	1 Gal. Cont	As Shown	E/L4
N	9	Nootka Rose	*Rosa nutkana*	1 Gal. Cont	As Shown	E/L4
O	4	Red Twig Dogwood	*Cornus stolonifera*	1 Gal. Cont	As Shown	E/L4
R	4	Baldhip Rose	*Rosa gymnocarpa*	1 Gal. Cont	As Shown	E/L4
S	7	Snowberry	*Symphoricarpos albus*	1 Gal. Cont	As Shown	E/L4
T	30	Thimbleberry	*Rubus parviflorus*	1 Gal. Cont	As Shown	E/L4
V	20	Serviceberry	*Amelanchier alnifolia*	1 Gal. Cont	As Shown	E/L4
W	41	Salmonberry	*Rubus spectabilis*	1 Gal. Cont	As Shown	E/L4
X	6	Beaked Hazelnut	*Corylus cornuta var. californica*	1 Gal. Cont	As Shown	E/L4
Y	9	Pacific Ninebark	*Physocarpus capitatus*	1 Gal. Cont	As Shown	E/L4
Z	4	Oceanspray	*Holodiscus discolor*	1 Gal. Cont	As Shown	E/L4
	24	Twinberry	*Lonicera involucrata*	1 Gal. Cont	As Shown	E/L4
A	18	Lady Fern	*Athyrium filix-femina*	1 Gal. Cont	As Shown	E/L4
B	44	Trailing Blackberry	*Rubus ursinus*	1 Gal. Cont	As Shown	E/L4
F	76	Deer Fern	*Blechnum spicant*	1 Gal. Cont	As Shown	E/L4
M	31	Low Oregon Grape	*Mahonia nervosa*	1 Gal. Cont	As Shown	E/L4
S	171	Salal	*Gaultheria shallon*	1 Gal. Cont	As Shown	E/L4
	155	Sword Fern	*Polystichum munitum*	1 Gal. Cont	As Shown	E/L4
	13	Slough Sedge	*Carex obnupta*	1 Gal. Cont	As Shown	E/L4

Mitigation Revision Notes

The original Landscape Plan was revised for the following reasons:

To preserve already established native growth and to only plant in areas disturbed by construction.

To use originally planned hydroseeded areas as an opportunity to meet the 4:1 mitigation goals set forth in the PAUE

To additionally mitigate for 9 alders that were cut down to be replaced with conifers at a 3:1 ratio.

Department of Natural Resources and Parks

Vashon Island Wastewater Treatment Plant

Revised Landscape / Mitigation Plan

Revised August 2006

Scale 1"=20'

Other Duties

- Work with WCC to implement York Pump Station stream restoration
- Submit monthly DMR reports to the Dept. of Ecology
- Update permitting documents and notify Dept. of Ecology
- Maintain Brightwater laboratory
- Handle permit-related invoices and payments
- General office support as needed

The End