Homeowner Incentive Program Contractor Certification Training

WELCOME!

Part 1: Introductions & Workshop Objectives

Jenny Coe Whatcom Conservation District

You can expect to:

- 1. Understand the context/history of the HIP and its role in a larger effort to reduce phosphorus in Lake Whatcom.
- 2. Understand the benefits of participating in HIP, your role in the HIP process, and how to address project change requests.
- 3. Understand how to navigate the contractor portion of HIP, including understanding the HIP project types, material specifications, and implementing the stormwater pollution prevention plan.
- 4. Know what your resources are, how to access and use them.
- 5. Know what the next steps are to become certified so you can start growing your clientele!

Agenda Review

Materials Review

Questions

Certification Process

- Take the training
- Study the notebook
- Pass the exam (3 chances to pass)
- Eli follows up
- Business info added to HIP certified professional list
- Maintain certification

3-year HIP Professional Certification



Part 2: Background

Ingrid Enschede Whatcom County

Lake Whatcom Problems









City Limits

Lake Whatcom Watershed

Comparison of Conditions: *Pre-development*



Pre-development forest

- During winter months, evaporation continues to be active while the transpiration component is minimal.
- Storm events are moderated by infiltration, evaporation, and transpiration.
- Water is available in substrata to sustain stream base flows during summer months.
- As winter progresses, the interflow component of stream flow increases.
- During the summer and fall, streams are maintained primarily by glacial melt water and/or groundwater flow.

Graphic courtesy of Washington State University/Puget Sound Action Team – Low Impact Development Technical Guidance Manual for Puget Sound

Comparison of Conditions: *Post-development*



Developed Conditions

- Overland flow increases and time of concentation decreases.
- Less water in substrata available to sustain base stream flows.
- Interflow is highly variable depending on level of development.



Graphic courtesy of Washington State University/Puget Sound Action Team – Low Impact Development Technical Guidance Manual for Puget Sound

The Math...

10 acres of Native Forest =

<u>1</u> b of phosphorus runoff per year

10 acres of Developed Land =

10.7 lbs of phosphorus runoff per year

Development = **10x more phosphorus** going into the lake

Lake Whatcom Solutions



The Math...

Jurisdictions MUST reduce phosphorus in runoff by **87%**, but...

...the best "end-of-pipe" treatment is only ~70% effective.

HIP helps fill the gap

Homeowner Incentive Program (HIP)

Provides <u>technical</u> <u>assistance</u> and <u>financial</u> <u>reimbursement</u> to watershed residents for <u>voluntary</u> Lake Whatcom-friendly <u>retrofit</u> projects on <u>residential sites</u>



Shoreline Native Landscaping



The HIP Partnership

Lake Whatcom Management Program, Whatcom County, and City of Bellingham

Administer and fund HIP

Whatcom Conservation District

 Technical assistance to landowners; supports the HIP Coordinator Position

Homeowners

• Voluntary landscape improvements

Professionals

Design and construction expertise and services







BEL

SHING

Program Changes in 2017

- 1. Expand program to new areas and increase number of eligible properties (all of basins 1 & 2)
- Change messenger from City and County staff to Whatcom Conservation District (non-regulatory)
- 3. Simplify projects and reduce number of eligible BMPs
- 4. Certify private designers/contractors
- 5. Focus incentive on highest impact
- 6. Revise incentive structure to increase to \$1.30/sf improved

Eligible Area



Two-Tier Program

Tier 1 – most opportunity for P-reduction, Labor • Shoreline • Creekside • Creekside

- Large lawns >10,000 square feet
- No cap on maximum reimbursement
- Tier 2 less opportunity for P-reduction
 - Native Landscaping only
 - Assistance through DIY workshops
 - Design/labor fees <u>NOT</u> reimbursable
 - \$6,000 maximum reimbursement

HIP Project Requirements

- 1. Voluntary project that doesn't trigger development or redevelopment regulations
- 2. Homeowner signs HIP Participant Agreement
- 3. At least 25% developed area improved
- 4. Improvement achieved with primary HIP Best Management Practices (BMPs)
- 5. Meets HIP design guidelines & submittal requirements
- 6. Easement and Maintenance Agreement

HIP Limitations

HIP Does NOT Provide assistance or resources for:

- Required mitigation
- New or redevelopment projects
- Anything that provides a private benefit without a public benefit for water quality
- Additional work outside the scope of the HIP BMPs

Primary HIP Best Management Practices (BMPs)

Native Landscaping

- create forests, replace lawn or rehabilitate existing landscape
- nutrient retention and recycling (up to 85% P reduction)

Infiltration Rain Garden, Infiltration Trench

• soak runoff into native soil (up to 95% P reduction)

Treatment *Media Filter Drain*

• filter runoff (~85% P reduction)

Dispersion – spread runoff

- Spread runoff out into native vegetation
- Plants recycle P into vegetation (~85% P reduction)

Secondary HIP Best Management Practices (BMPs)

- Permeable Paving
- Rainwater Collection
- ONLY as addition to primary BMPs
- 25% improvement must be achieved through the primary BMPs

25% Developed Area Improvement

FOREST	FOREST	FOREST	FOREST
ROOF	LAWN	ROOF	LAWN
ROOF	LAWN	ROOF	LAWN
ROOF	LAWN	ROOF	Lawn and Iower
DRIVEWAY	DRIVEWAY	DRIVEWAY	driveway to Rain Garden

25% Developed Area Improvement

FOREST	FOREST	FOREST	FOREST
ROOF	LAWN	ROOF	New Native Landscaping
ROOF	LAWN	ROOF	LAWN
ROOF	LAWN	Roof to Infiltration	LAWN
DRIVEWAY	DRIVEWAY	DRIVEWAY	DRIVEWAY

25% Developed Area Improvement

FOREST	FOREST	FOREST	FOREST
ROOF	LAWN	ROOF	LAWN
ROOF	LAWN	ROOF	LAWN
ROOF	LAWN	ROOF	LAWN
DRIVEWAY	DRIVEWAY	Driveway to Dispersion Area	

Homeowner Reimbursement

- Reimbursement rate = \$1.30/square foot of treated area (covers approx. 80-85% of the cost of an average project)
- Paid after project is complete
- Reimburses approved expenses (e.g., labor, approved materials, design)

Example

10,000 ft2 improved area x \$1.30 = \$13,000 reimbursement budget

Goal is to maximize treated area to maximize reimbursement budget

Part 3: HIP Overview

Jenny Coe Whatcom Conservation District

The HIP Process



STEP 1 - Contact

www.lakewhatcomHIP.org



HOW IT WORKS RESULTS

PROJECTS FOR PROFESSIONALS

SEE IF YOU QUALIFY

IMPROVE YOUR PROPERTY PROTECT LAKE WHAT ON

Get Reimbursed

Enter your address and select it from the list

Check Your Address

FAQS



Step 2 - Site Visits/Pre-Design

Step 3 - Designer Interviews

Step 4 - Project Design

Step 5 - Review & Approval

CONTRACTOR SPECIFIC STEPS Steps 6, 7, 8, 10 CONTRACTOR INTERVIEWS

- Homeowners are given a list of HIP Certified Contractors
- Homeowners are recommended to interview more than one contractor
- Homeowners may ask the HIP Coordinator to attend contractor interviews

Resources:

Approved plans & permit conditions

HIP Coordinator

CONTRACTOR SPECIFIC STEPS Steps 6, 7, 8, 10

BIDS & CONTRACTING

QUALIFICATIONS FOR BIDDERS:

- Must have Washington State Business License
- In City of Bellingham Limits, must register with COB Finance Office
- Homeowners may ask the HIP Coordinator to attend meetings with contractor
- Bid the project
- Private contract is developed

- HIP staff does not comment on costs
- Reimbursement budget is SET
- Homeowners not required to choose the lowest bidder

CONTRACTOR SPECIFIC STEPS Steps 6, 7, 8, 10

CONSTRUCTION

YOU ARE EXPECTED TO:

- Order materials
- Prep site
- Install erosion controls
- Install BMPs according to plan & permit conditions
- Communicate as needed
- HIP Coordinator inspection & assistance as needed, particularly if there are changes that need to be made

- Arrange any necessary inspections as specified in permit conditions
- Button up site and remove erosion controls
- Bill client and get paid (invoices clearly itemized)

Step 9

Step 9 - Reimbursement

- HIP Coordinator inspects completed project & fills out final inspection from
- Homeowner signs Easement & Maintenance Agreement & submits for reimbursement
 - Contractor *MAY* provide project asbuilt for Easement paperwork

CONTRACTOR SPECIFIC STEPS Steps 6, 7, 8, 10

CLOSE OUT

Provide feedback on process & experience



Permitted HIP Designs

What information is important to you?
Important Documents for contractors

- Project Narrative
 - Description of project
 - Helps you understand project but doesn't tell you how to do it
- Plan Set
 - Existing Conditions Sheet
 - Proposed Improvements Sheet
 - Erosion & Sediment Control Plan Sheet
- Material Specifications
 - Describes specified materials
 - Provides approved alternative specs if needed
- SWPPP
 - Read and follow general guidelines/ pay attention to Erosion & Sediment Control Plan Sheet
 - Reference Ecology Stormwater Manual if needed

Important Documents in the Standard Submittal Packet

- Standard Details
 - HIP standard details for each BMP & conveyance
 - Changes or alternatives will be noted on standard details
 - All materials should meet HIP specs (See Supplier Directory)
- Permit Language/special conditions
 - Read the permit, make sure you understand implications
 - Common conditions include:
 - No earthwork Oct. 1 June 1
 - Site-specific limitations resulting from past land use action (determined by permitting agency)
 - Inspection requirements or inspection frequency
 - Notify prior to beginning construction

Permitted HIP Designs

What to expect from a CITY PERMIT

Permitted HIP Designs

What to expect from a COUNTY PERMIT

INSPECTIONS

City

County

Plan Amendments and Changes

- Plans change...what to do
- Simple material substitutions that don't affect design plan or area treated may be allowed
- <u>Communicate with HIP Coordinator</u>
- Examples:
 - Substituting one approved, low-Phosphorus mulch for another
 - Substituting one native plant for another within a given category (e.g., tree, shrub, groundcover)

Plan Amendments and Changes

- Other changes may require that a plan amendment be submitted and approved
- Changes could affect
 - Permit rules and conditions
 - Reimbursement amount
 - HIP eligibility
- Not all changes go through the designer to revise submittal documents
- Changes that affect BMP design and size may require designer participation

Plan Amendments and Changes **Examples:**

- Changing the number of trees in a planting plan
- Removing a BMP from the plan
- Adding a BMP to the plan
- Changing the size, configuration, or location of a BMP REQUIRED

Plan Amendment Process

- 1. Homeowner or contractor identifies need to change the plan
- 2. Consult with HIP Coordinator; determine if designer involvement is required
- 3. Contacts designer to discuss and confirm change is possible
- 4. Contractor/homeowner works with designer to complete the plan amendment form and required revised submittals
- 5. Plan amendment form submitted to HIP Coordinator for review
- 6. HIP Coordinator forwards to jurisdiction for review and approval

Plan Amendment Form



PLAN AMENDMENT/REVISION

PROPERTY ADDRESS: LAST NAME ON APPLICATION: HAS THE PERMIT BEEN ISSUED? YES NO		DATE: PARCEL #: PERMIT NUMBER:			
			PROJECT CONTACT PERSON NAME: EMAIL: ADDRESS: CITY/STATE/ZIP: PHONE NUMBER: HOMEOWNER INCENTIVE PROGRAM (HIP)-SPECIFIC. INFORMATION 1. Change in site area improved (+ or -)	REVISIONS BEING SUBMITTED WERE REQUESTED BY (check all applicable): CITY/COUNTY REVIEWER HIP STAFF HOMEOWNER PROJECT DESIGNER PROJECT CONTRACTOR If different than project contact person, list name and affiliation of person(s) requesting change:	
			Instructions: Check the box next to each item being submitted fro If this submittal is in response to a review comment I Revised plan sheets must show all of the following: An itemized list describing the proposed plan chan identified with a unique Delta symbol. ex; All revisions clearly marked and labeled with the ap Designer signature CHECK BESIDE ALL REVISED SUBMITTAL FORMS	om the list be letter, please ges and their ppropriate D CHECK B	low. include a written response. locations on plans. Each item to be elta identifier ESIDE ALL REVISED PLAN SHEET PAGES
Project Narrative	Project	Site Plan - Existing Conditions			
Stormwater Pollution Prevention Plan	Project	Site Plan - Proposed Improvements			
Materials Specifications	Project	Site Plan - Frosion and Sediment Control Plan			
DND Since Coloridations and for Standard Datail	Dianti	star Planting Plan			

Explanation of Revisions (attach additional pages as needed):

Part 4: Introduction to HIP-Eligible BMPs

Eli Mackiewicz City of Bellingham

Primary and Secondary BMPs

Five primary BMPs

- A. Native Landscaping
- B. Rock Trench 🛩
- C. Media Filter Drain (MFD)
 - 1. Sheet Flow MFD
 - 2. End of Pipe MFD
 - 3. Clean Beach MFD
- D. Dispersion⁴
- E. Lake Whatcom Rain Garden

Two <u>secondary</u> BMPs

S1. Permeable Pavement Surfacing

S2. Rainwater Reuse

BMP B - Infiltration Trenches

- Washed drain rock trench. Pipe in, overflow out.
- Minimum depth is 18" of rock. Minimum width 24". Any shape ok.
- Okay to move piping around as long as you are not in conflict with utilities or grade











BMP C - Media Filter Drain Trench

- Can be built in smaller footprint than infiltration systems and on poor soil
- Special media (mineral aggregate, perlite, dolomite, gypsum) is available locally
- Dirty water needs to flow through at least 12" of media
- Needs an underdrain pipe connected downstream
- 3 configurations
 - 2 upland
 - 1 specific to shorelines











Upland MFDs – Key Differences

Sheet Flow MFD

- No pipe in
- Drain rock on bottom, MFD mix on top
- Surface is river rock or pea gravel

End-of-Pipe MFD

- Piped inflow
- Drain rock on top; MFD mix on bottom
- Surface is river rock, pea gravel, washed rock, or spaced pavers

BMP C.3. Clean Beach MFD

- MFD uphill of beach built with C33 sand
- No work below high water mark
- Requirements differ by location*



SECTION VIEW

MEDIA FILTER DRAIN CLEAN BEACH CONFIGURATION HIP BMP "C.3" TYPICAL NTS

*exemptions vary by jurisdiction due to differences in code language. Check with HIP staff for details.

BMP C.3. Clean Beach MFD (cont'd)

- No removal of native plants, only lawn can be replaced with beach
- MFD must be 25' from shoreline.
- May be built behind bulkhead without slope or directly on shore with slope.
- Pipe or no pipe in. No underdrain.



Sand Beach Protects Lake Whatcom

Polluted stormwater runoff is one of the leading threats to the health of Lake Whatcom. According to Clean Water Act standards, the lake is currently considered impaired due to excess nutrients (mainly phosphorus) and bacteria in runoff from developed land. Excess nutrients feed the growth of algae, which leads to a lack of oxygen for aquatic life. Lake Whatcom is important to us all. So here at the park, the City of Bellingham is taking action to protect Lake Whatcom.

A LOOK UNDERGROUND

Account A COOPERATIVE PROJECT

ASHING

New infiltration systems in the expanded beach capture polluted runoff from 5 acres of lawn, roof, and pavement in the park. These systems collectively remove approximately 90% of pollution, reducing the park's phosphorus load into Lake Whatcom from 6 lbs. to less than 0.5 lbs.



WHAT CAUSES EXCESS PHOSPHORUS?

Phosphorus is not just found in fertilizer—it comes from sediment, leaves, grass clippings, dog poop, and goose droppings. Even an unfertilized lawn generates excess phosphorus. And just 1 lb. of phosphorus can grow 100 lbs. of algae.



 Update your landscaping to protect water quality and deter geese just like we did here at the park get assistance through the Homeowner Incentive Program at www.cob.org (search "HIP").

BMP D. Dispersion System

- Washed drain rock trench. Pipe in, even drainage out.
- No pipe needed for even flows over flat lawn.
- Minimum depth is 18" of rock.
- Must drain to vegetated area of minimum width.







BMP E. Lake Whatcom Rain Garden

- Infiltration system, but with plants and mulch instead of rock
- Minimum depth is 18" of Rain Garden Soil Mix
- Overflow, but NO UNDERDRAIN!!
- Piping can move, but check conflicts and grade









Secondary BMPs

S.1. Permeable Paver Surfacing



S.2. Rainwater Collection



BMP S.1. Permeable Paver Surfacing

- Protect infiltration trenches, and some MFDs with permeable pavers
- Cover other infiltration trenches, MFDs, and dispersion trenches with pea gravel or river rock
- Must follow manufacturer's specifications at all times








BMP S.2. HIP Rainwater Collection

- Collect and re-use roof runoff for irrigation
- Indoor use requires plumbing permit
- Tanks less than 320 gal. do not require permits if for outdoor use only





LUNCHTIME!

Part 5: HIP Process for Native Landscaping

Ingrid Enschede Whatcom County

HIP BMP A Native Landscaping

- Install at least 4" of Low-P mulch
- Minimum plant density requirement (in approved plan)
- Provide at least two layers of plant cover <u>(trees are NOT</u> <u>required)</u>
- Existing plants and mulch count
- At least 90% of plants must be native











Native Landscaping Plan Components

- Proposed Improvements Sheet
- Design submittal sections I & II
- Plant density calculator
- Plant list
- Other material specifications:
 - Low-P mulch
 - Edging
 - Fencing
 - Irrigation
- Erosion control documents

Proposed Improvements Sheet Example



Proposed Improvements Sheet Example



Native Landscaping Areas Not to Scale

Proposed Improvements Summary

TOTAL NATIVE LANDSCAPINET 15,450 643 LAND REMOVAL 1,830 Ft² LANDSCAPE ROMAR J.600 Ft²

> Low-P MULCH: 1934ds NMIVE PLANTS: See attacked calculator and plant list

Optional Planting Plan Example





Design Submittal Sections I & II Example

Design Submittal

Native Landscaping

Section I: System and Sizing Summary

4	site map showing the planting area.
	Native landscaping will replace <u>3250</u> ft² of lawn/existing landscape and/or ft² of impervious surface
	If any of my planting is in the public right-of-way, I have received written approval from the jurisdiction that manages the public area (City or County).
	The size of the area of the Right-of-Way I plan to landscape isft ²
V	I have selected a vegetation layer combination for each unique planting area (e.g., right-of- way area, front yard, back yard, etc) and used the HIP plant density calculator to calculate the number of plants and yards of mulch required for each planting area.
	The total combined quantities for all of my planting areas are: <u>41</u> cubic yards of approved mulch, trees, <u>67</u> shrubs, and <u>130</u> groundcovers.

Section II: Site-Specific Planning





20

Plant Density Calculator Native Landscaping

Instructions: Select one of the options listed below for each unique planting area and calculate the minimum required planting density and mulch. Note that existing plants may be counted to meet required plant density numbers.

Vegetation Layer Combination	Plant Layer	Project area (sq ft)	Density Divider	Number of Plants
Tree, Shrub, and Groundcover	Trees	-	225 (15' o.c.*)	
	Shrubs	-	64 (8' o.c.)	-
	Groundcovers	4	25 (5' o.c.)	
Tree and Shrub Only (No Groundcovers)	Trees	-	144 (12' o.c.)	
	Shrubs		36 (6' o.c.)	
Tree and Groundcover Only (No Shrub)	Trees	4	144 (12' o.c.)	•
	Groundcovers		16 (4' o.c.)	=
Shouh and			(0(7')	
Groundcover Only (No Tree)	Shrubs	3250	49 (7 o.c.)	67
	Groundcovers	3250	25 (5' o.c.)	130
Cubic Yards of Mu	ulch	3250	80	41
	Vegetation Layer Combination Tree, Shrub, and Groundcover Tree and Shrub Only (No Groundcovers) Tree and Groundcovers) Tree and Groundcover Only (No Shrub) Shrub and Groundcover Only (No Tree) Cubic Yards of Mu	Vegetation Layer CombinationPlant LayerTrees, Shrub, and GroundcoverTreesShrubs, and GroundcoverGroundcoversTree, Shrub, and GroundcoversTreesTree and Shrub Only (No Groundcovers)TreesTree and Shrub Only (No Groundcovers)TreesTree and GroundcoversShrubsTree and GroundcoversTreesShrub ShrubGroundcoversShrub and 	Vegetation Layer CombinationPlant LayerProject area (sq ft)Tree, Shrub, and GroundcoverTreesIShrubsGroundcoversITree and Shrub Only (No Groundcovers)TreesITree and Shrub Only (No Groundcovers)TreesITree and Groundcovers)ShrubsITree and Groundcovers)GroundcoversIShrub and Groundcover Only (No Tree)ShrubsIShrub and GroundcoversShrubsIShrubsIIShrub and Groundcover Only (No Tree)ShrubsIShrub and GroundcoversIIShrub and GroundcoversIIShrub and GroundcoversIIShrub and GroundcoversIIShrub and GroundcoversIIShrub and GroundcoversIIShrub and GroundcoversIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubIIShrubII	Vegetation Layer CombinationPlant LayerProject area (sq ft)Density DividerTree, Shrub, and GroundcoverTrees225 (15' o.c.*)225 (15' o.c.*)Shrubs64 (8' o.c.)64 (8' o.c.)64 (8' o.c.)GroundcoversGroundcovers25 (5' o.c.)144 (12' o.c.)Tree and Shrub Only (No Groundcovers)Trees144 (12' o.c.)Tree and Groundcovers)Shrubs36 (6' o.c.)Tree and Groundcovers)Trees144 (12' o.c.)Groundcovers)Groundcovers16 (4' o.c.)Shrub and Groundcover Only (No Tree)Shrubs3 2 5 049 (7' o.c.)Groundcovers3 2 5 049 (7' o.c.)Groundcovers3 2 5 049 (7' o.c.)Shrub and Groundcovers3 2 5 049 (7' o.c.)Groundcovers3 2 5 040 (7' o.c.)Groundcovers <td< td=""></td<>

"The abbreviation "o.c." stands for "on center", a convention used to describe the average distance between plants. For example, a tree that is planted 15' o.c. would be, on average, 15' from its nearest neighbor.

Plant List

Instructions: submit a list of native plants proposed for the project categorized by tree, shrub, and groundcover. List plant name (scientific preferred) and quantity. Include number of existing plants used to meet plant density requirements. Identify non-natives and cultivars and limit to no more than 10% of total plants.

Plant Density Calculator Example

Native Plant List County Critical Areas Example

Plant List Example

Native Landscaping BMP - 3250 ft²

Shrubs: 67 Groundcovers: 130

Shrubs: Amelanchier alnifolia - 8 Calycanthus occidentalis - 7 Holodiscus discolor - 10 Myrica gale- 5 Phildelphus lewisii - 8 Physocarpus capitatus - 9 Ribes sanguieum - 10 Vaccinium ovatum - 5 Viburnum opulus var. americanum - 5

Groundcovers: (10 of each) Asarum caudatum Deschampsia caespitosa Festuca idahoensis spp. Roemeri Brodiaea coronaria Camassia leichtlinii spp. suksdorfii Aruncus diocus Helenium autumnale Lupinus latifolius Lupinus polyphyllus Mahonia Repens Penstemon serrulatus Petasites firgidus v palmatus Symphyotrichum subspicatum spp. subspicatum

BMP A: Native Landscaping *Materials*

HIP-eligible Materials

- Mulch
- Rock
- Edging
- Deer Fencing/Netting
- Irrigation
- Native Plants

What do you mean <u>native</u> plant?

www.plants.usda.gov

https://green2.kingcounty.go v/gonative/index.aspx

See HIP 2.0 BMP Material Specifications

Approved Mulches

City of Bellingham Approved Mulch, Topsoil, and Compost for Use in the Lake Whatcom Watershed

Last Updated 05/08/2014

Source	Product Name	Phosphorus Concentration*	Address**	Phone	Website
Perry Pallet	Appearance Grade Chip	3	742 Delta Line Road, Ferndale	366-5239	www.perrvpallet.com
Lenz Enterprises	Fine Eco-Mulch	8	Locally Available By Delivery Only	961-3112 629-2933	www.lenz-enterprises.com
GrowSource	Cedar Chips	9	2200 Division St	318-8554	www.growsource.com
Lenz Enterprises	Cedar Chips	9	Locally Available By Delivery Only	961-3112 629-2933	www.lenz-enterprises.com
De Wilde's Nursery	5-Way Topsoil	20	3410 Northwest Ave.	733-8190	www.dewildesnursery.com
North Star Stone & Landscape	4-Way Topsoil Mix	30	4840 Pacific Hwy	383-9090	www.northstar-stone.com
Lenz Enterprises	Black Bark Mulch	38	Locally Available By Delivery Only	961-3112 629-2933	www.lenz-enterprises.com
GrowSource	3-Way Topsoil	64	2200 Division St	318-8554	www.growsource.com
GrowSource	4-Way Topsoil	75	2200 Division St	318-8554	www.growsource.com
De Wilde's Nursery	Medium Bark	83	3410 Northwest Ave	733-8190	www.dewildesnursery.com
North Star Stone & Landscape	Medium Bark	94	4840 Pacific Hwy	383-9090	www.northstar-stone.com
North Star Stone & Landscape	3-Way Topsoil Mix	116	4840 Pacific Hwy	383-9090	www.northstar-stone.com
De Wilde's Nursery	Fine Bark	118	3410 Northwest Ave	733-8190	www.dewildesnursery.com
North Star Stone & Landscape	Fine Bark	174	4840 Pacific Hwy	383-9090	www.northstar-stone.com
GrowSource	Medium Bark	175	2200 Division St	318-8554	www.growsource.com
Plantas Nativa	Black Mulch	190	210 E. Laurel St	715-9655	www.plantasnativa.com
Beautiscape Bark Express	Blow-Soil	199	Locally Available By Delivery Only	354-2359	www.beautiscapes.com

* Soluble Reactive Phosphorus (SRP) in µg (micrograms) per kg (kilograms). One kilogram is equal to one liter of water. Phosphorus amounts for materials on this list considered functionally-equivalent. No preference is given to materials based on this number, and all materials on this list are Homeowner Incentive Program (HIP)-eligible.

** All addresses are in Bellingham unless otherwise noted. Products Marked "Locally Available By Delivery Only" do not have local locations for pick-up.

Edging Examples



BMP A Native Landscaping Construction Method/ Critical Path

- 1. Define area, install edging
- 2. Recommended: cardboard over flat, lawn areas
- Mulch over cardboard to a depth of 4" on flat areas or 6" on sloped areas
- 4. Prepare hole (push mulch back, depth of root ball and 2x as wide)
- 5. Remove potting media, spread roots over native soil, fill with native soil
- 6. Replace mulch to within 6" of plant stem
- Install irrigation system and rain barrels (optional)
- 8. Water well
- 9. Install temporary deer fencing (optional)
- 10. Sweep any impervious surfaces that may have been dirtied by mulch or soil

Invoicing Tips for Native Landscaping

- Mulch name (to match approved list), quantity, cost
- Plant name (to verify native), quantity, cost
- Subtotal native vs. non-natives & cultivars

Part 6: Construction Methods for Underground BMPs

Eli Mackiewicz City of Bellingham

Expectations of you, the contractor

- Order materials using HIP specifications and HIP Supplier Directory, or your own suppliers
- Prep site get ready for materials delivery and equipment access
- Install erosion controls follow SWPPP/TESC plan or submit your own alternative (review required)
- Build project per plans contact WCD and/or Designer if Plan Amendments are necessary
- Communicate as needed leave no question unasked, schedule required inspections with WCD or City/County
- Button up site All exposed soils covered before rain or October 1
- Bill client and get paid Per your contract with homeowner, invoices clearly itemized per specifications.

Site Prep/Utility Information

Information Provided

- Public utilities inside ROW in City of Bellingham
 - Water
 - Sewer
 - Storm Drainage

Information NOT Provided

- Non-public ROW utilities
 - \circ Electric
 - \circ Natural Gas
 - Fiber/Cable
- All ROW utilities in Whatcom County areas

- 1. CALL 811!
- 2. Use Brain!
- ALL private-site utilities

Standard Erosion Control Page



Erosion Control Inspection

- Call in before you disturb soil, but you can start if weather is dry and call's been made
- Always install BMPs for equipment access and sweep street as often as necessary
- Have all other materials on-hand in case of rain (No Exceptions!). Lay out wattles/fencing, pile straw bales, etc.
- Slightly different in City and County. Check with WCD.

HIP Project Construction Building HIP BMPs Proposed Improvements - 123 Watershed Street - Parcel 38000000000

BMP B -Infiltration Trench *Plan Example*



Infiltration Trench and Associated Conveyance Not to Scale

> Proposed Improvements Summary See attached Standard Detail for components

Tributary Area: 19,200 ft² Lawn: 17,500 ft² Reaf: 1,700 ft²

Trench Area: 1,200 ft² Trench Surfacing: Permuable-Interlocking Pavers (P.1-P) See attached manufacturer's specifications

BMP B - Infiltration Trenches *Materials*



Rock examples to pass around

BMP B - Infiltration Trenches *Cross-Section and Profile*



BMP B Infiltration Trench *Critical Path*

- 1. Install erosion controls
- 2. Excavate soil and reuse on site or dispose
- 3. Gently scarify subgrade
- 4. Install 75% base rock in first lift
- 5. Install elevated distribution pipe
- 6. Install overflow riser and pipe
- Connect overflow pipe to downstream drainage system
- 8. Install drains and conveyance into trench from site surfaces
- 9. Connect conveyance to distribution pipe
- 10. Install second lift of rock (25%) to reach final grade
- 11. Install surfacing (optional)
- 12. Stabilize disturbed soils
- 13. Remove erosion controls

Proposed Improvements - 123 Watershed Street - Parcel 38000000000



Media Filter Drain (Sheet Flow) and Associated Conveyance Not to Scale

> Proposed Improvements Summary See attended Hill Slanddird Detail for components

Tributung Area: 20,000 Fri Tutal MED length: 60 ft Tutal MED Sprine Footoge: 200ft" Minimum width: 2 ft Surfacing: Fiver reck

BMP C.1: Sheet Flow MFD Plan Example



BMP C: Media Filter Drain *Materials*


BMP C.1 – Upland MFD Sheet Flow Media Filter Drain (MFD) Trench



SECTION VIEW

MEDIA FILTER DRAIN ; SHEET FLOW CONFIGURATION HIP BMP "C.1", TYPICAL NTS BMP C.1 Sheet Flow MFD Critical Path

- 1. Install erosion controls
- 2. Excavate soil and reuse on site or dispose
- 3. Lay fabric in trench and pin to edge
- 4. Install drain rock to bed underdrain pipe
- 5. Place underdrain pipe
- 6. Connect underdrain pipe to downstream drainage system
- 7. Bury underdrain pipe in drain rock
- 8. Fold fabric over rock
- 9. Place fabric over remaining trench
- 10. Install MFD material in 6" lifts over fabric
- 11. Fold fabric over second layer, cut to fit.
- 12. Install surfacing (optional) or cover with rock
- 13. Stabilize disturbed soils
- 14. Remove erosion controls

Proposed Improvements - 123 Watershed Street - Parcel 38000000000

BMP C.2: End-of-Pipe MFD *Plan* Example



Media Filter Drain (End-of-Pipe) and Associated Conveyance Not to Scale

> Proposed Improvements Summary See attached HIP Standard Detail for components Tributary Area: 18,700ft² Lawon : 17,000ft² Roof: 1,700ft² Total MFD Square footage: 300ft² Minimum width: 3A Surfacing: Pormable Interlocking Pavers (1-1-P) See attached manufacturer's specifications

BMP C.2 – Upland MFD End-of-Pipe Media Filter Drain Trench



SECTION VIEW

BMP C.2 End-of-Pipe MFD *Critical Path*

- 1. Install erosion controls
- 2. Excavate soil and reuse on site or dispose
- 3. Lay fabric in trench and pin to edge
- 4. Install **MFD materia**l to bed underdrain pipe
- 5. Install underdrain pipe and stub out
- 6. Fold fabric over bottom layer
- 7. Place fabric over remaining trench
- 8. Install drain rock in 6" lifts over fabric
- 9. Install perforated pipe
- 10. Fold fabric over second layer, cut to fit.
- 11. Connect underdrain pipe to downstream drainage system
- 12. Install conveyance to perforated pipe
- 13. Connect drains to conveyance
- 14. Install surfacing (optional)
- 15. Stabilize disturbed soils
- 16. Remove erosion controls

BMP C.3. Clean Beach MFD

- MFD uphill of beach built with C33 sand
- No work below high water mark
- Requirements differ by location*



SECTION VIEW

MEDIA FILTER DRAIN CLEAN BEACH CONFIGURATION HIP BMP "C.3" TYPICAL NTS

*exemptions vary by jurisdiction due to differences in code language. Check with HIP staff for details.

BMP C.3. Clean Beach MFD (cont'd)

- No removal of native plants, only lawn can be replaced with beach
- MFD must be 25' from shoreline.
- May be built behind bulkhead without slope or directly on shore with slope.
- Pipe or no pipe in. No underdrain.







Proposed Improvements - 123 Lakeshore Street - Parcel 38000000000



Media Filter Drain (Clean Beach) and Associated Conveyance Not to Scale



BMP C.3. Clean Beach MFD Plan Example

Special Considerations for <u>County</u> Projects with Shorelines

30% Clean Beach with Native Landscaping Buffer



Clean Beach MFD Cross Sections



MEDIA FILTER DRAIN - CLEAN BEACH CONFIGURATION	SECTION VIEW
HIP BMP "C.3" TYPICAL	NTS

- (1) 25' RECOMMENDED SHORELINE SETBACK. MAYBE REDUCED TO 15' IF SOIL INVESTIGATION DEMONSTRATES BOTTOM OF MFD IS ABOVE HIGH GROUNDWATER ELEVATION
- (2) MATCH EXISTING SLOPE TO GREATEST EXTENT FEASIBLE. RECOMMENDED MAXIMUM SLOPE IS 7:1. 4:1 SLOPE MAYBE BE STABLE ON CERTAIN SITES

Clean Beach MFD Cross Sections



MEDIA FILTER DRAIN - CLEAN BEACH CONFIGURATION	SECTION VIEW
HIP BMP "C.3" TYPICAL END OF PIPE	NTS

- (1) 25' RECOMMENDED SHORELINE SETBACK. MAYBE REDUCED TO 15' IF SOIL INVESTIGATION DEMONSTRATES BOTTOM OF MFD IS ABOVE HIGH GROUNDWATER ELEVATION.
- (2) MATCH EXISTING SLOPE TO GREATEST EXTENT FEASIBLE RECOMMENDED MAXIMUM SLOPE IS 7:1 (4:1 SLOPE MAY BE STABLE ON CERTAIN SITES).

BMP C.3. Clean Beach MFD Limitations

- No hard surfacing, including "permeable" paving
- No digging in groundwater.
- No work below high water mark. Period. Exclamation Point. Lay out wattle or silt fence to stop yourself.
- No bulkhead removal, dock work, pathways, fire pits, anything not on the approved plans
- No barging of equipment without special approval

BMP C.3 Clean Beach *Critical Path*

These steps necessary if pipe is involved

- 1. Install erosion controls and delineate approximate high water mark
- 2. Excavate soil and reuse on site or dispose
- 3. Place non-woven geotextile (for drainage) onto subgrade
- 6. Install MFD mix in 6" lifts
- 7. Pull geotextile edges up and around MFD material, creating a MFD "burrito"
- 8. Backfill clean sand around and over MFD burrito and match to grade
 - 9. Place distribution piping
 - 10. Install conveyance to dispersion inlet
 - 11. Connect roof/driveway/yard drains to conveyance
- 12. Stabilize disturbed soils
- 13. Remove erosion controls

BMP D. Dispersion System Plan Example



Dispersion System and Associated Conveyance Not to Scale

Proposed Improvements Summary See anached Hip Standard Detroi for Components

Tobology Area: 18,700 fr² Lown: 17,000 fr² Roof: 1,700 fr² Dispersion Tobach Length: 50 ft² Dispersion Area: 10,000 ft² Vegelaked Flaw Bills Length: 90 ft

BMP D. Dispersion System Design



BMP D. Dispersion System Design (cont'd.)

Canop	by (Native Trees)	Understory	(Native Shrubs)	Groundco	ver (Sn	nall Native Plants)	
6	If you chose:		Then you	ur minimum density	will be	<u>e</u>	Total Project
			Divide project a	ea by 225 (15' o.c.)	17	Trees	fact)
A	Canopy, Understory, and	Groundcover	Divide project	area by 64 (8' o.c.)	59	Shrubs	reet)
1		Divide project	area by 25 (5' o.c.)	152	Groundcovers	3800	
			Divide project an	ea by 144. (12' o.c.)	26	Trees	
В	Canopy and Understory Only	No Groundcovers)	Divide project	area by 36 (6' o.c.)	106	Shrubs	
			Divide project a	ea by 144 (12' o.c.)	26	Trees	
C Canopy and Groundcovers Only (No Understory)	ly (No Understory)	Divide project	area by 16 (4' o.c.)	238	Groundcovers		
		a. L. (1). a	Divide project	area by 49 (7' o.c.)	78	Shrubs	
Understory and Groundcover Or	Only (No Canopy)	Divide project	area by 25 (5' o.c.)	152	Groundcovers		

Plant List, Please complete with species name (common or scientific) and desired number

T	2.13
	<u>#</u>
	27
	30
	25
	25
	10
	25
-	10

Native Shrubs		
<u>#</u>	Species Name	
6	Red Huckleberry	
6	Evergreen Huckleberry	
4	Blueberry	
6	Oceanspray	
10	Bald Hip Rose	
6	Indian Plum	
6	Pacific Rhododendron	
	Salal	
59	Total	

Native Trees		
Species Name	<u>#</u>	
Western Redcedar	2	
Pacific Crabapple	4	
Bitter Cherry	4	
Douglas Fir	4	
Grand Fir	3	
Total	17	

BMP D Dispersion System Critical Path

- 1. Install erosion controls
- 2. Excavate soil and reuse on site or dispose
- 3. Gently scarify subgrade
- 4. Install 75% base rock in first lift
- 5. Install elevated distribution pipe
- 7. Install drains and conveyance into trench from site surfaces
- 8. Connect conveyance to distribution pipe
- 9. Install second lift of rock (25%) to reach final grade
- 10. Install surfacing (optional)
- 11. Stabilize disturbed soils
- 12. Remove erosion controls

Proposed Improvements - 123 Watershed Street - Parcel 38000000000



BMP E. Lake Whatcom Rain Garden *Plan Example*

Lake Whatcom Rain Garden and Associated Conveyance Not to Scale

> Proposed Improvements Summary See onicident Hill Standard Definit For components

Tribulary Area : 13,70042 Lawn : 12,00042 Reaf : 1,700A² Pandung Arean : 600102 Rain Gandon Foolprint: 1,00042 Rain Gandon Foolprint: 1,00042 Planking Plan : See attacked plant list

BMP E. Lake Whatcom Rain Garden *Detail*



SECTION VIEW

BMP E. Lake Whatcom Rain Garden

 Ponding Area Discussion



BMP E. Lake Whatcom Rain Garden *Materials*

Low-Phosphorus Rain Garden Soil Mix; (Bioretention soil mix; Lake Whatcom Friendly Rain Garden soil mix):

Shall be a well-blended mixture of mineral aggregate and compost measured on a volume basis.

Consist of approximately two parts HIP-approved compost (35 to 40%) by volume and three parts mineral aggregate (sand component) (60 to 65%).

Any soil-based or organic materials used, or added to, this mixture shall conform to the definition of compost in the HIP specification book and be found on the **City of Bellingham Approved Mulch, Topsoil, and Compost for Use in the Lake Whatcom Watershed**. Located online at: lakewhatcomhip.org, search "Resources for Professionals"

The mixture shall be well blended to produce a homogeneous mix, and have an organic matter content of 4% to 8%.

BMP E Lake Whatcom Rain Garden *Critical Path*

- 1. Install erosion controls
- 2. Excavate soil and reuse on site or dispose
- 3. Gently scarify subgrade
- 4. Install overflow riser and pipe
- 5. Install 75% of rain garden mix on first lift
- 6. Connect overflow pipe to downstream drainage system
- 7. Install drains and conveyance into rain garden from site surfaces
- 8. Install river rock for energy dissipation at inlet
- 9. Install second lift of rain garden mix (25%) to final surface grade
- 10. Place 75% of mulch over all soil surfaces
- 11. Install plants
- 12. Place remaining 25% of mulch
- 13. Stabilize disturbed soils
- 14. Remove erosion controls

BMP S.1. Permeable Paver Surfacing



SECTION VIEW

PERMEABLE PAVING SURFACING HIP BMP "S.1", TYPICAL NTS

BMP S.1. Permeable Paver Surfacing Materials



Note: These surfaces cannot be installed within 200' of shorelines or 100' of creeks <u>without additional approval</u> from the City of Bellingham or Whatcom County.

Conveyance (On-Site)



Pipe Connections to Public Infrastructure

If connecting to a ditch

- Permit allows direct piping, no additional paperwork
- Only overflow or underdrain pipe
- Rock to 3X pipe diameter and to bottom of ditch. Pipe should be flush with ditch slope

If connecting to a pipe or catch basin

- Need revocable ROW permit and bond
- Only when absolutely necessary and on plans
- HIP Staff will oversee

Part 7: BMP Construction Work Session

Eli Mackiewicz City of Bellingham

Part 8: Overview of Resources & Next Steps

Jenny Coe Whatcom Conservation District



Summary of Resources

- Contractor manual
- Friendly humans with phone numbers and emails
- Certification Guidance Document
- The HIP website <u>www.lakewhatcomHIP.org</u>
 - "For Professionals" link



Who Ya Gonna Call?









Jenny Coe HIP Coordinator Whatcom Conservation District jcoe@whatcomcd.org 360-306-4701

Ingrid Enschede

Program Specialist Whatcom Co. Public Works iensched@co.whatcom.wa.us 360-778-6229 Eli Mackiewicz Engineering Technician City of Bellingham Public Works emackiewicz@cob.org 360-778-7742

Next Steps

- Pat yourself on the back for putting in the time to learn about the HIP
- Go home and study the manual
- Take the exam
- Submit the exam via mail or scan and email to Eli and wait for follow-up





Next Steps (cont'd)

- You passed the test! Your name will be added to the HIP certified contractors list given to homeowners
- Promotional materials— you will be given access to the HIP logo and may use your HIP certified professional credentials in marketing materials





Questions?





THANK YOU!