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

- Too much lawn
- Stream erosion
- Fertilizer use
- Improper yard waste handling
- Not enough forest
- Pet waste
- Inadequate infrastructure
- Too much pavement

Impaired 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 concentration 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 = \textbf{1 lb} of phosphorus runoff per year

10 acres of Developed Land = \textbf{10.7 lbs} of phosphorus runoff per year

Development = \textbf{10x more phosphorus} going into the lake
Lake Whatcom Solutions

Healthy Watershed

- Native landscaping
- Permeable paving
- Sustainable gardening
- Residential stormwater management
- Capital improvements
- Pet waste pickup
- Fertilizer use reduction
- Stream and shoreline restoration

Whatcom Solutions

Healthy Watershed
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 technical assistance and financial reimbursement to watershed residents for voluntary Lake Whatcom-friendly retrofit projects on residential sites.

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
Program Changes in 2017

1. Expand program to new areas and increase number of eligible properties (all of basins 1 & 2)

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
- Shoreline
- 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 **NOT** 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

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Lawn and lower driveway to Rain Garden
### 25% Developed Area Improvement

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<td>LAWN</td>
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<td>Roof to Infiltration</td>
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25% Developed Area Improvement

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</table>

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

Overview of HIP Process

➤ **Step 1: Contact,** homeowner hears about the program and either visits website and schedules site visit or calls WCD for site visit.

➤ **The players and their roles**
- City/County - develops website and uploads information
- WCD - makes phone calls and schedules site visit
- Homeowner - asks for and schedules site visit

➤ **Step 2: Site Visit,** WCD visits site, explains program, provides options for projects that will work on that property and identifies red flags, issues pre-project survey. WCD also identifies site-specific design considerations/constraints and requests critical areas delineation, as applicable,

➤ **The players and their roles**
- WCD - conducts site visit and provides point of contact for ongoing communications
- Homeowner - attends site visit and asks questions
- HIP Staff - coordinates critical areas delineation, if applicable, at no cost to homeowner.

➤ **Step 3: Designer Interviews,** homeowner expresses interest in moving forward, WCD provides list of certified designers and offers to attend meetings with consultants, homeowner meets with designers and makes selection. If non-certified contractor selected, WCD confirms eligibility for reimbursement.

➤ **The players and their roles**
- Homeowner - confirms interest in moving forward, contacts and interviews designers
- Designer - reviews homeowner information, attends meeting, provides estimate of design fee
- WCD - provides list of certified designers, attends meeting, if needed confirms business eligibility of non-listed designers, communicates important details to both designer and homeowner.
STEP 1 - Contact
www.lakewhatcomHIP.org
STEPS 2-5

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

• Arranged 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 form
• Homeowner signs Easement & Maintenance Agreement & submits for reimbursement

• Contractor *MAY* provide project as-built 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

• Communicate with HIP Coordinator

• 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
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**

<table>
<thead>
<tr>
<th>Property Address</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Last Name on Application</strong></td>
<td><strong>Parcel #:</strong></td>
</tr>
<tr>
<td><strong>Has the Permit Been Issued?</strong></td>
<td><strong>Permit Number:</strong></td>
</tr>
</tbody>
</table>

**Project Contact Person**

- **Name:**
- **Email:**
- **Address:**
- **City/State/Zip:**
- **Phone Number:**

**Homeowner Incentive Program (HIP) Specific Information**

1. Change in site area improved (+ or -) \( \text{ft}^2 \)
2. Project proposal meets HIP eligibility requirements for size and scope (HIP Staff initial for approval)

**Revisions Being Submitted**

- [ ] 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 from the list below.
- If this submittal is in response to a review comment letter, please include a written response.

Revised plan sheets must show all of the following:

1. An itemized list describing the proposed plan changes and their locations on plans. Each item to be identified with a unique Delta symbol, etc.
2. All revisions clearly marked and labeled with the appropriate Delta identifier.
3. Designer signature.

**Check Beside All Revised Submittal Forms**

- Project Narrative
- Stormwater Pollution Prevention Plan
- Materials Specifications
- QMIP Scoping Calculations and/or Standard Detail

**Check Beside All Revised Plan Sheet Pages**

- Project Site Plan - Existing Conditions
- Project Site Plan - Proposed Improvements
- Project Site Plan - Erosion and Sediment Control Plan
- Plant List or 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. Dispersion

E. Lake Whatcom Rain Garden

**Two secondary 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*

*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

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 CAN YOU DO?

- Only use phosphorus-free fertilizer on your lawn and garden.
- At home, pick up dog poop at least weekly, ideally daily.
- At the park, pick up dog poop immediately.
- 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](http://www.cob.org) (search “HIP”).

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.

A LAWN GENERATES 10x MORE PHOSPHORUS THAN A FOREST.
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 (trees are NOT required)
- 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

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Total Native Landscaping</td>
<td>15,950 ft²</td>
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<tr>
<td>Lawn Removal</td>
<td>11,830 ft²</td>
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<tr>
<td>Landscape Rmbr.</td>
<td>3,120 ft²</td>
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<tr>
<td>Low-P Mulch</td>
<td>193 yd³</td>
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Native Plants: See attached calculator and plant list.
Optional Planting Plan Example
Design Submittal
Sections I & II
Example

Section I: System and Sizing Summary

☐ I have defined the area that will be converted into native landscaping and have provided a site map showing the planting area.

Native landscaping will replace __3250__ 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 is __________ ft²

☐ 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:

__41__ cubic yards of approved mulch, ________ trees, __7__ shrubs, and __130__ groundcovers.

Section II: Site-Specific Planning

☐ I have determined that I will not be planting trees or shrubs within 5' of a known utility, including septic systems (on private property) or 10' from a utility (in public ROW).

☐ I have determined that I will not need additional approvals for planting trees in the public right-of-way (if proposed, tree planting in ROW is not required).

☐ I have determined that the planting area is not on or next to a slope steeper than 35%.

☐ I have developed a plan to prevent erosion or runoff during my planting activities, including work during the wet season that complies with winter work provisions.
## 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.

<table>
<thead>
<tr>
<th>Option</th>
<th>Vegetation Layer Combination</th>
<th>Plant Layer</th>
<th>Project area (sq ft)</th>
<th>Density Divider</th>
<th>Number of Plants</th>
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<tbody>
<tr>
<td>A</td>
<td>Tree, Shrub, and Groundcover</td>
<td>Trees</td>
<td>225 (15’ o.c.*)</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Shrub</td>
<td>64 (8’ o.c.)</td>
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<tr>
<td></td>
<td></td>
<td>Groundcovers</td>
<td>25 (5’ o.c.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Tree and Shrub Only (No Groundcovers)</td>
<td>Trees</td>
<td>144 (12’ o.c.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shrub</td>
<td>36 (6’ o.c.)</td>
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<tr>
<td>C</td>
<td>Tree and Groundcover Only (No Shrub)</td>
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<td>144 (12’ o.c.)</td>
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<td></td>
<td></td>
<td>Groundcovers</td>
<td>16 (4’ o.c.)</td>
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<tr>
<td>D</td>
<td>Shrub and Groundcover Only (No Tree)</td>
<td>Shrub</td>
<td>49 (7 o.c.)</td>
<td>3250</td>
<td>6.7</td>
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<td></td>
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<td>Groundcovers</td>
<td>25 (5’ o.c.)</td>
<td>3250</td>
<td>12.0</td>
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<td></td>
<td>Cubic Yards of Mulch</td>
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<td>3250</td>
<td>80</td>
<td>41</td>
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*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.
Native Plant List
County Critical Areas Example

Native Landscaping BMP – 3250 ft²

Shrubs: 67
Groundcovers: 130

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

Groundcovers:
(10 of each)
Asarum caudatum
Deschampsia caespitosa
Festuca idahoensis spp. Roemer
Brodiaea coronaria
Camassia leichtlinii spp. suksdorfii
Aruncus dioicus
Helenium autunnum
Lupinus latifolius
Lupinus polyphyllus
Mahonia Repens
Penstemon serrulatus
Petasites frigidus v palmaus
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 native plant?

www.plants.usda.gov

https://green2.kingcounty.gov/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

<table>
<thead>
<tr>
<th>Source</th>
<th>Product Name</th>
<th>Phosphorus Concentration*</th>
<th>Address**</th>
<th>Phone</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perry Pallet</td>
<td>Appearance Grade Chip</td>
<td>3</td>
<td>742 Delta Line Road, Ferndale</td>
<td>366-5239</td>
<td><a href="http://www.perrypallet.com">www.perrypallet.com</a></td>
</tr>
<tr>
<td>GrowSource</td>
<td>Cedar Chips</td>
<td>9</td>
<td>2200 Division St</td>
<td>318-8554</td>
<td><a href="http://www.growsource.com">www.growsource.com</a></td>
</tr>
<tr>
<td>Lenz Enterprises</td>
<td>Cedar Chips</td>
<td>9</td>
<td>Locally Available By Delivery Only</td>
<td>961-3112 629-2933</td>
<td><a href="http://www.lenz-enterprises.com">www.lenz-enterprises.com</a></td>
</tr>
<tr>
<td>De Wilde’s Nursery</td>
<td>5-Way Topsoil</td>
<td>20</td>
<td>3410 Northwest Ave.</td>
<td>733-8190</td>
<td><a href="http://www.dewildesnursery.com">www.dewildesnursery.com</a></td>
</tr>
<tr>
<td>Lenz Enterprises</td>
<td>Black Bark Mulch</td>
<td>38</td>
<td>Locally Available By Delivery Only</td>
<td>961-3112 629-2933</td>
<td><a href="http://www.lenz-enterprises.com">www.lenz-enterprises.com</a></td>
</tr>
<tr>
<td>GrowSource</td>
<td>3-Way Topsoil</td>
<td>64</td>
<td>2200 Division St</td>
<td>318-8554</td>
<td><a href="http://www.growsource.com">www.growsource.com</a></td>
</tr>
<tr>
<td>GrowSource</td>
<td>4-Way Topsoil</td>
<td>75</td>
<td>2200 Division St</td>
<td>318-8554</td>
<td><a href="http://www.growsource.com">www.growsource.com</a></td>
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<tr>
<td>De Wilde’s Nursery</td>
<td>Medium Bark</td>
<td>83</td>
<td>3410 Northwest Ave.</td>
<td>733-8190</td>
<td><a href="http://www.dewildesnursery.com">www.dewildesnursery.com</a></td>
</tr>
<tr>
<td>De Wilde’s Nursery</td>
<td>Fine Bark</td>
<td>118</td>
<td>3410 Northwest Ave.</td>
<td>733-8190</td>
<td><a href="http://www.dewildesnursery.com">www.dewildesnursery.com</a></td>
</tr>
<tr>
<td>GrowSource</td>
<td>Medium Bark</td>
<td>175</td>
<td>2200 Division St</td>
<td>318-8554</td>
<td><a href="http://www.growsource.com">www.growsource.com</a></td>
</tr>
<tr>
<td>Plantas Nativa</td>
<td>Black Mulch</td>
<td>190</td>
<td>210 E. Laurel St</td>
<td>715-9655</td>
<td><a href="http://www.plantasnativa.com">www.plantasnativa.com</a></td>
</tr>
<tr>
<td>Beautiscape Bark Express</td>
<td>Blow-Soil</td>
<td>199</td>
<td>Locally Available By Delivery Only</td>
<td>354-2359</td>
<td><a href="http://www.beautiscape.com">www.beautiscape.com</a></td>
</tr>
</tbody>
</table>

* 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
3. 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
7. 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
  o Electric
  o Natural Gas
  o Fiber/Cable
• All ROW utilities in Whatcom County areas
• ALL private-site utilities

1. CALL 811!
2. Use Brain!
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
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
Roof: 1,700 ft²

Trench Area: 1,200 ft²

Trench Surfacing: Permeable Interlocking Pavers (P+P)
See attached manufacturer's specifications
BMP B - Infiltration Trenches

Materials

Rock examples to pass around
BMP B - Infiltration Trenches

Cross-Section and Profile
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
7. 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
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
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
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 Hill Standard Detail for Components

- Tributary Area: 18,700.66 ft²
- Lawn: 17,000 ft²
- Roof: 1,700 ft²

Total MFD Square footage: 300.01 ft²
Minimum width: 3 ft
Sizing: Permeable Interlocking Pavers (1-10)
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 material** 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*

*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.
Removed Buried Concrete Wall

Remove sod and install sand this area

Protected Shoreline Plants to remain as-is

This sand stays as-is

Bloedel Shoreline - clarification
9-23-2014
BMP C.3. Clean Beach MFD Plan Example
Special Considerations for County Projects with Shorelines

30% Clean Beach with Native Landscaping Buffer
(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 STABLE ON CERTAIN SITES
Clean Beach MFD Cross Sections

(1) SHORELINE SETBACK

TYPICAL SUMMER LAKE ELEV. 314'

WORK BELOW REQUIRES ADDITIONAL PERMITS

SIONE VIEW

MEDIA FILTER DRAIN - CLEAN BEACH CONFIGURATION

MEDA FILTER DRAIN MIX

WASHED DRAIN ROCK

8" MIN

GEOTEXTILE FOR DRAINAGE

INFLOW VIA PIPED FLOW

MATCH EXISTING

WMD

WS

(2) SHORELINE SLOPE

SAND OR SHORELINE GRAVEL

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
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

These steps necessary if pipe is involved
BMP D. Dispersion System Plan Example
BMP D. Dispersion System Design
# BMP D. Dispersion System Design (cont’d.)

**My HIP Project will meet the required density for the following layers (Choose AND CIRCLE at least two)**

<table>
<thead>
<tr>
<th>Canopy (Native Trees)</th>
<th>Understory (Native Shrubs)</th>
<th>Groundcover (Small Native Plants)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>If you chose:</th>
<th>Then your minimum density will be...</th>
<th>Total Project Area (in square feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Canopy, Understory, and Groundcover</td>
<td>Divide project area by 225 (15' o.c.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Divide project area by 64 (8' o.c.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Divide project area by 25 (5' o.c.)</td>
</tr>
<tr>
<td>B</td>
<td>Canopy and Understory Only [No Groundcovers]</td>
<td>Divide project area by 144 (12' o.c.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Divide project area by 36 (6' o.c.)</td>
</tr>
<tr>
<td>C</td>
<td>Canopy and Groundcovers Only [No Understory]</td>
<td>Divide project area by 144 (12' o.c.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Divide project area by 16 (4' o.c.)</td>
</tr>
<tr>
<td>D</td>
<td>Understory and Groundcovers Only [No Canopy]</td>
<td>Divide project area by 48 (7' o.c.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Divide project area by 25 (5' o.c.)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Native Trees</th>
<th>Native Shrubs</th>
<th>Native Groundcovers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species Name</strong></td>
<td><strong>Species Name</strong></td>
<td><strong>Species Name</strong></td>
</tr>
<tr>
<td>Western Redcedar</td>
<td>Red Huckleberry</td>
<td>Nodding Onion</td>
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<tr>
<td>Pacific Crabapple</td>
<td>Evergreen Huckleberry</td>
<td>Sword Fern</td>
</tr>
<tr>
<td>Bitter Cherry</td>
<td>Blueberry</td>
<td>Deer Fern</td>
</tr>
<tr>
<td>Douglas Fir</td>
<td>Oceanspray</td>
<td>Lady Fern</td>
</tr>
<tr>
<td>Grand Fir</td>
<td>Bald Hip Rose</td>
<td>Beach Strawberry</td>
</tr>
<tr>
<td></td>
<td>Indian Plum</td>
<td>Woodland Strawberry</td>
</tr>
<tr>
<td></td>
<td>Pacific Rhododendron</td>
<td>Camas</td>
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<td></td>
<td>Salal</td>
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</tr>
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<td>6</td>
<td>25</td>
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<tr>
<td>15</td>
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</table>
**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
6. Install drains and conveyance into trench from site surfaces
7. Connect conveyance to distribution pipe
8. Install second lift of rock (25%) to reach final grade
9. Install surfacing (optional)
10. Stabilize disturbed soils
11. Remove erosion controls
BMP E.
Lake
Whatcom
Rain Garden
Plan Example
BMP E. Lake Whatcom Rain Garden Detail

OVERFLOW STRUCTURE WITH ATRIUM CRATE

PONDING DEPTH
6" MIN., 12" MAX.

RIVER ROCK ARMORING TO PREVENT EROSION

LAWN RUNOFF

FLOW FROM ROOF, DRIVEWAY OR LAWN DRAIN

PLANT RAIN GARDEN PER APPROVED NATIVE PLANT LIST

UNCOMPACTED NATIVE SOIL

LOW PHOSPHORUS RAIN GARDEN SOIL MIX PER HIP SPECIFICATIONS

SECTION VIEW

NO STEEPER THAN 3H:1V

LOW PHOSPHORUS MULCH 4" MIN

RIGID SOLID PIPE
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%.
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
BMP S.1. Permeable Paver Surfacing Materials

**Note:** These surfaces cannot be installed within 200’ of shorelines or 100’ of creeks *without additional approval* from the City of Bellingham or Whatcom County.
Conveyance (On-Site)

**Pipes and Junctions**

- **FLOW TO SECOND DISPERSION TRENCH IF NECESSARY**
- **FLOW TO OTHER BRANCHING CATCH BASINS AS NECESSARY**
- **GROUND**
- **TO TRENCH**
- **FROM ROOF/YARD**
- **FINE MESH SCREEN**
- **JUNCTION BOX**

**HIP French Drain**

- **PEA GRAVEL TOP SOIL**
- **FILTER FABRIC FOR TOP SOIL COVER ONLY**
- **WASHED DRAIN ROCK OR BALLAST**
- **4" PERFORATED PIPE**
- **SECTION VIEW**

HIP PIPE TRENCH CONVEYANCE DETAIL (TYPICAL)

NTS
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
   www.lakewhatcomHIP.org
   • “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!