



WATERBARS

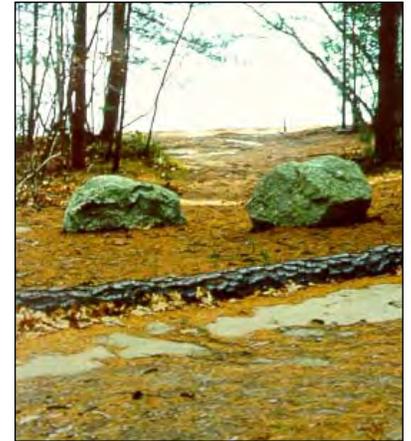
~diverting water off paths and trails~



Portland Water District

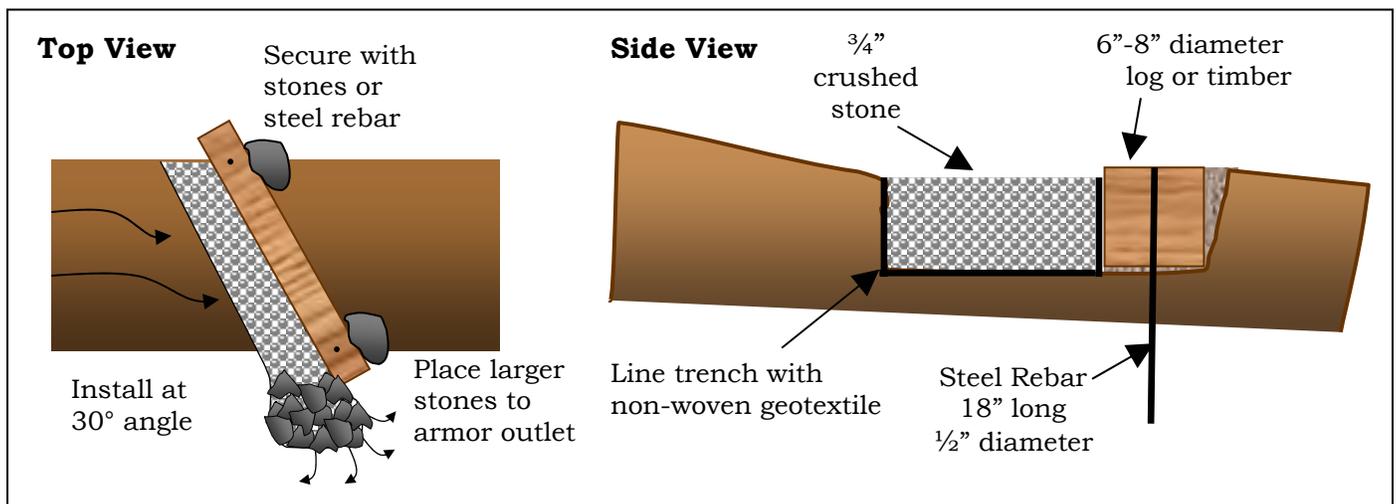
Purpose: A waterbar intercepts water traveling down footpaths, trails and other areas and diverts it into stable vegetated areas.

Installation: Install waterbars on moderately steep paths with concentrated flows. Select a location where the waterbar outlet can drain to a stable, vegetated area. Install multiple waterbars as needed and space closer together on steeper slopes as directed in Table 1.



Any rot-resistant type of wood, such as cedar, spruce, fir or hemlock logs can be used. For logs, the diameter should be at least 8" at the small end. 6" to 8" diameter, pressure treated or cedar timbers can also be used. The length should extend past the edge of the path on both sides. Install waterbars as follows:

1. **Dig the trench** – First, dig a trench for the wood that is a 30° angle across the path. Be sure the trench and the waterbar extends off both sides of the path. The trench should be deep enough so the top of the log will be almost flush with the trail on its downhill side once in place. Soil and rock excavated from the trench should be heaped on the trail below the water bar to be used later as backfill.
2. **Install the log or timber** – Place the log or timber in the trench. The log should fit snugly in the trench with no high point or voids under the log. Secure the waterbar with large stones, rebar pins or wooden stakes. If using stones, partially bury on downhill side. If using rebar, drill ½" holes 6" in from each edge and pound in 18" pieces of rebar so that the rebar is flush or slightly recessed with the top.
3. **Backfill around the waterbar** – Dig a 12" wide and 6" deep trench along the uphill side of the bar. Fill the trench with crushed stone, leaving a few inches of the timber exposed. Place a flared apron of stones to armor the waterbar outlet. Pack soil and gravel up against the downhill side of the waterbar so that the top of it is flush with the trail. Cover all disturbed soil with seed and mulch or leaf litter.



Materials: Fallen rot-resistant timbers can often be found on site. Pressure treated timbers, cedar landscape timbers and steel rebar can be purchased from lumber and hardware stores. Some stores will cut rebar to the specified length for a small fee. Otherwise, rebar can be cut with a hack saw.

Contact your local Soil and Water Conservation District for suppliers of non-woven geotextile fabric. Other geotextiles, including landscaping weed barrier, can be substituted for smaller projects.

Table 1. Waterbar Spacing	
% Grade	Spacing Between Waterbars (feet)
2	250
5	130
10	80
15	50
25+	40

Maintenance: Waterbars should be checked periodically and after storm events to ensure that material is not eroding behind the structure or at the outlet. Any needed repairs should be made as soon as possible. Periodically remove accumulated leaves and debris from behind the waterbar.



Other Types of Waterbars: There are several other types of waterbars that are better suited for diverting water off driveways and gravel roads. For more information, see fact sheets on open-top culverts and rubber razors.



OPEN-TOP CULVERTS



~diverting water off gravel roads and driveways~

Portland Water District



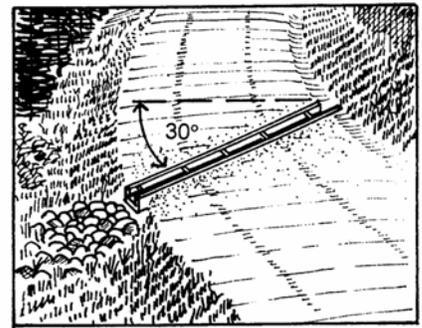
Also Called: Box culverts

Purpose: Open-top culverts collect and divert water off a camp road or driveway and discharge it to a vegetated or other stable area. By getting stormwater off the road, open-top culverts reduce erosion of the road surface, while allowing easy movement of vehicles across the structure. Open-top culverts are inexpensive to build and relatively easy to install. They can be built from lumber with common hand tools.

Open-top culverts can be used on seasonal camp roads and driveways that receive little or no winter plowing.

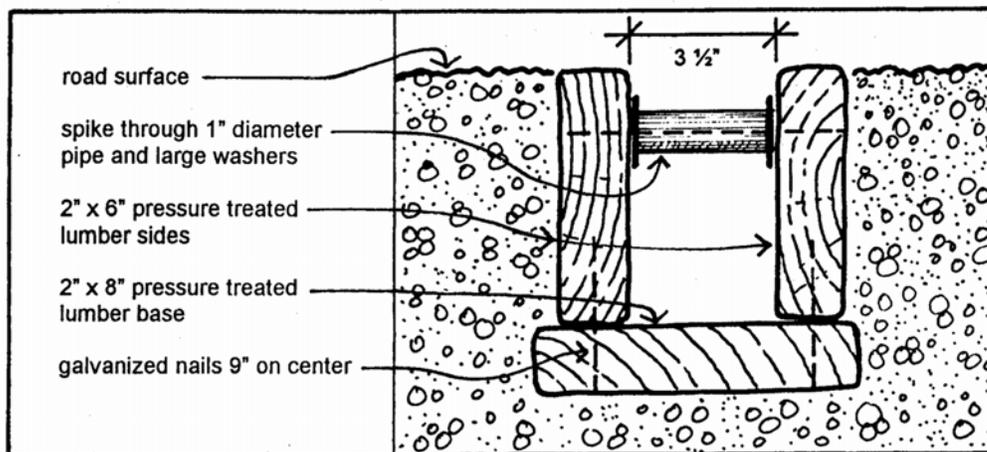
Installation: Open-top culverts can be constructed of pressure treated lumber or cedar timbers. Using pressure treated lumber will considerably extend the life of the structure. Spacers placed in the open-top culverts will hold the shape of the culvert and strengthen the structure.

Open-top culverts will vary in length, depending on the width of your road. When sizing an open-top culvert, remember that it should be installed at an approximately 30° angle down slope. Take this added length into consideration when purchasing materials.



The following is a guideline for materials you will need:

- 2" x 6" pressure treated lumber for the sides (twice the total length as that for the bottom)
- 2" x 8" pressure treated lumber for the bottom
- Galvanized nails (approximately 3") to secure the base to the sides of the structure
- Spacers to maintain the structure of the culvert (spikes, washers/bolts/nuts, pipe, or 1" pieces of wood and galvanized nails)





Install the culvert flush with the surface of the road. If placed too high, stormwater will not enter the structure; if placed too low, it may quickly fill with road material and sediment loosened during installation.

The outlet of the open-top culvert should extend beyond the edge of the road. Remove any plowing berms or other debris that could interfere with water flowing from the outlet. Diverted water should flow into a stable area away from the road or open water to allow for infiltration. A stone-lined outlet or vegetated area is an acceptable way of reducing erosion at the culvert outlet.

Materials: All materials needed to construct an open-top culvert can be purchased from lumber and hardware stores.



Maintenance: Open-top culverts need to be cleaned regularly to remove sediments, gravel, leaves, and twigs. Check after storm events for accumulated sediment. A child's toy hoe fits easily into the culvert and can be used for cleaning.

Open-top culverts are not generally recommended for camp roads that get plowed in the winter. Winter snowplowing can easily destroy this type of culvert and result in even greater erosion problems in the spring. However, some people have had success with open-top culverts if the road is not plowed until the ground is frozen and have an attentive plow driver. If you choose to plow a road with an open-top culvert, you may want to flag both end of the culvert to alert the snow plow drivers.



RUBBER RAZORS



~managing runoff on gravel roads and driveways~

Portland Water District



Before



After



Also Called: Rubber Razor Blades, Rubber Blades, Rubber Waterbars

Purpose: Rubber Razors divert water off gravel driveways and camp roads into stable vegetated areas.

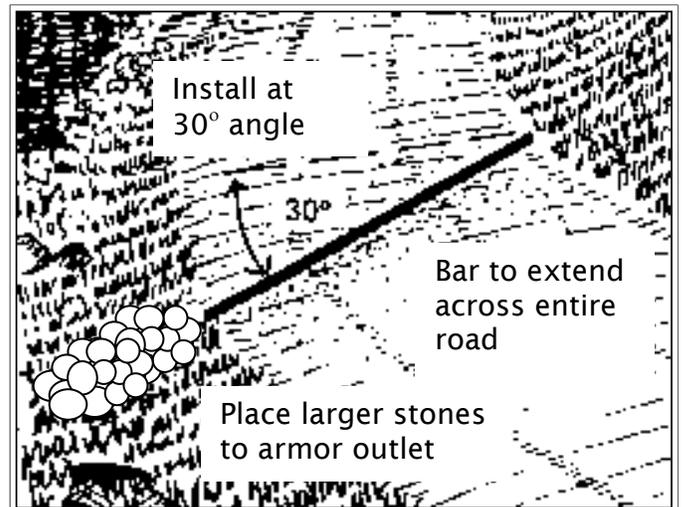
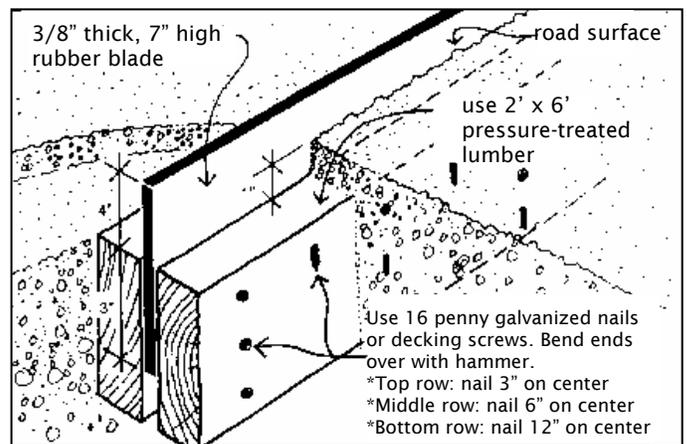
These structures are well suited for seasonal roads that are not plowed. They can be plowed over if the location is clearly marked and the plow operator lifts the plow blade slightly.

Installation: Install the rubber razor at a 30 degree angle to the road edge and point the outlet toward a stable vegetated area.

Pack gravel around the rubber razor to make sure it is securely installed.

Armor the outlet with a flared grouping of stones to slow down the water before it enters the buffer.

Materials: Rubber razors are constructed using new or used conveyor belts. These may be obtained at no or low cost from industrial sources. Contact your Soil and Water Conservation District for additional sources. Lumber can be purchased at any local hardware store.



Maintenance: To maintain these structures, periodically remove accumulated debris from behind the razor.

Part of the **Conservation Practices for Homeowners** Factsheet Series, available at:
Maine DEP (800.452.1942); <http://www.maine.gov/dep/blwq/docwatershed/materials.htm>
Portland Water District (207.774.5961); <http://www.pwd.org/news/publications.php>



INFILTRATION TRENCH

~managing runoff from rooftops and paved areas~



Portland Water District

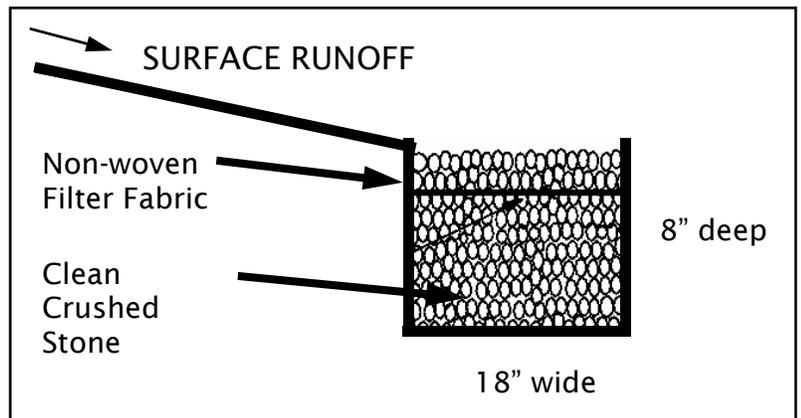


Purpose: Infiltration trenches collect and infiltrate runoff from paved driveways, rooftops and other areas. Infiltration trenches work best in well-drained soils like sands and gravels. Due to their relatively small size, they can effectively handle only smaller rainfall events. Infiltration trenches are not well suited for areas that receive large amounts of sediment (e.g., gravel driveways) as they will fill in quickly.

Installation: Dig a trench that is 18” wide and at least 8” deep. Make sure to dispose of the soil in a flat area where it cannot be washed into the lake. The front and sides of the trench may be edged with stone or lumber to hold the stones in place.

Extend the life of the infiltration trench by lining the sides with non-woven geotextile fabric. Fill to within 3” of the ground level with ½” to 1½” crushed stone. Fold a flap of non-woven geotextile fabric over the top of the trench and top off with additional stone.

Materials: Crushed stone can be purchased at your local gravel pit. Contact your local Soil and Water Conservation District for suppliers of non-woven geotextile fabric. Other geotextiles, including landscaping weed barrier, can be substituted for smaller projects.



Maintenance: To maintain these structures, periodically remove accumulated debris and weeds from the surface. Non-woven geotextile fabric will extend the life of these structures, however, they will eventually clog over time and the stone will need to be removed and washed to clean out the accumulated sediment and debris.

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DRIPLINE TRENCH



~managing roof runoff on homes without gutters~

Also Called:

Roof Dripline Trench,
Infiltration Trench

Purpose:

Dripline trenches collect and infiltrate stormwater, and control erosive runoff from the rooftop. The trenches collect roof runoff and store it until it soaks into the soil. These systems also minimize wear on your house by reducing back splash.



Installation:

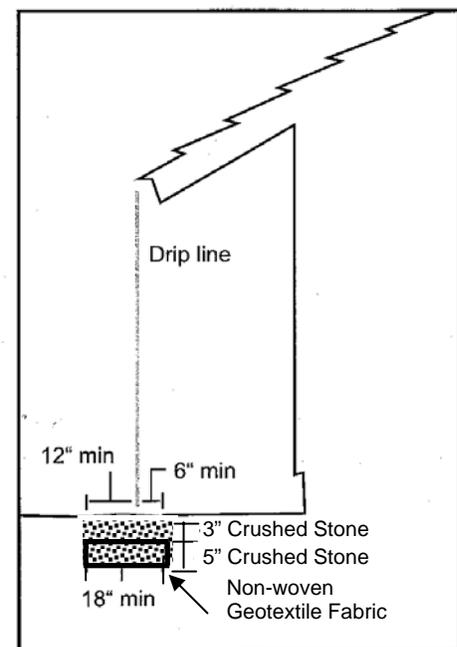
Dig a trench that is 18" wide and at least 8" deep along the drip line. Slope the bottom away from the house so that water will drain away from the foundation. Make sure to dispose of the soil in a flat area where it cannot be washed into the lake. Fill the trench with ½" - 1½" crushed stone. The front and sides of the trench may be edged with stone or with pressure-treated lumber to hold the stones in place.

Extend the life of the dripline trench by lining the sides with non-woven geotextile fabric and filling to within 3" of the ground level with stone. Fold a flap of non-woven geotextile fabric over the top of the trench and top off with additional stone.

Note: Dripline trenches work best in sand and gravel soils that can quickly disperse a large volume of water. They should not be used on structures with improperly sealed foundations, as flooding may result.

Materials: Crushed stone can be purchased at your local gravel pit. Contact your local Soil and Water Conservation District for suppliers of non-woven geotextile fabric. Other geotextiles, including landscaping weed barrier, can be substituted for smaller projects.

Maintenance: To maintain these structures, periodically remove accumulated debris and weeds from the surface. Trenches lined with non-woven geotextile fabric will require less frequent maintenance, however, they will still clog over time and the stone will need to be removed and washed to clean out the accumulated sediment and debris.



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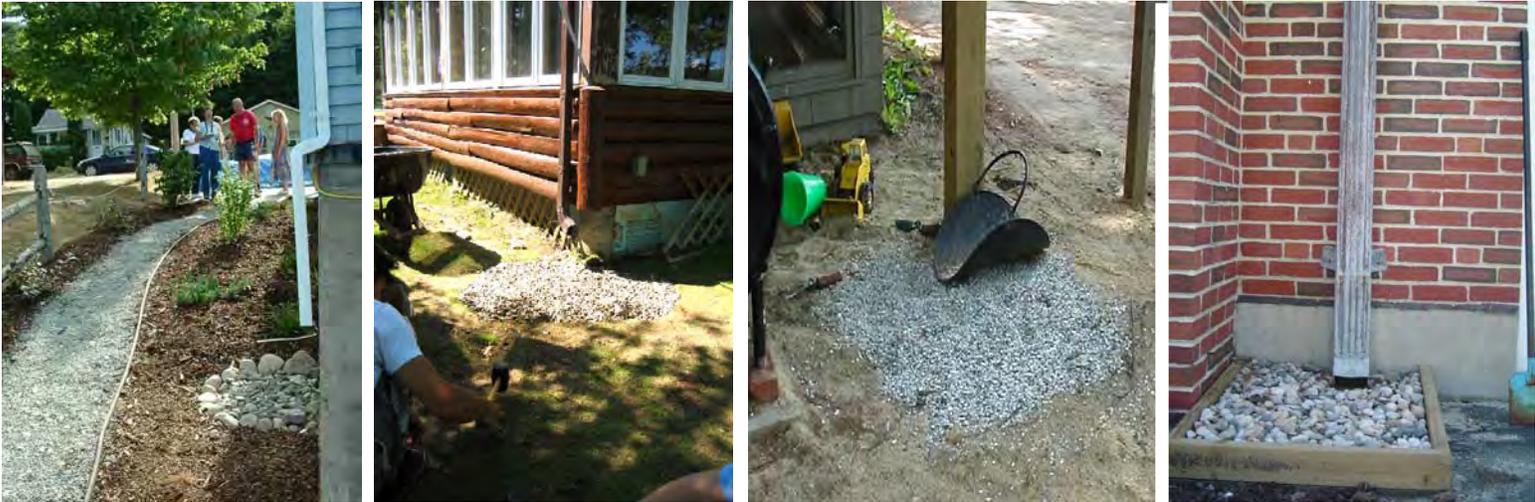


DRYWELLS

~managing roof runoff from homes with gutters~



Portland Water District



Purpose: Drywells collect and infiltrate runoff at gutter downspouts and other places where large quantities of concentrated water flow off rooftops. These systems help control erosive runoff on your property, and reduce wear on your house by minimizing back splash.

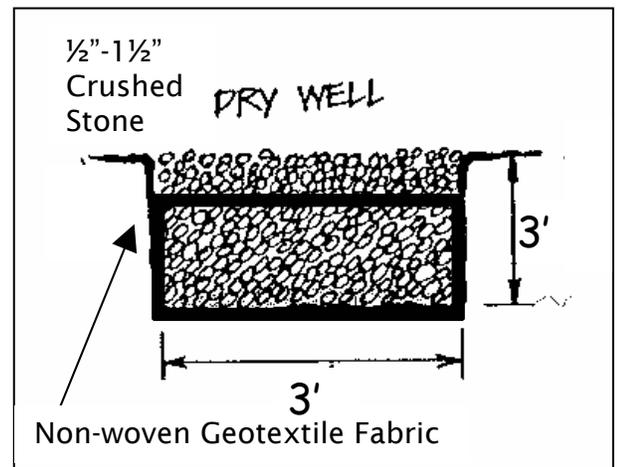
Installation: Drywells should measure about 3' x 3' x 3', be lined with non-woven geotextile fabric and back-filled with 1/2" to 1 1/2" crushed stone. Slope the bottom of the drywell away from the house so that water does not drain towards the foundation. Make sure to dispose of the removed soil in areas where it will not wash into the lake.

Extend the life of the dry well by lining the sides with non-woven geotextile fabric and filling to within 3" of the ground level with stone. Fold a flap of filter fabric over the top of the dry well and top off with additional stone.

Note: Drywells work best in sand and gravelly soils that can quickly disperse a large volume of water. They should not be used on structures with improperly sealed foundations, as flooding may result. If flooding is of concern, place the drywell 6' away from the base of the foundation.

Materials: Crushed stone can be purchased at your local gravel pit. Contact your local Soil and Water Conservation District for suppliers of non-woven geotextile fabric. Other geotextiles, including landscaping weed barrier, can be substituted for smaller projects.

Maintenance: To maintain these structures, periodically remove accumulated debris and weeds from the surface. Non-woven geotextile fabric will extend the life of these structures, however, they will eventually clog over time and the stone will need to be removed and washed to clean out the accumulated sediment and debris.



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PATHS & WALKWAYS

~managing foot traffic for lake protection~



Portland Water District



Purpose: Properly designed pathways direct foot traffic, absorb water, reduce the rate of flow, and protect soil. Pathways can also reduce the potential for erosion and minimize the amount of pollutants flowing from your property into local streams and lakes.

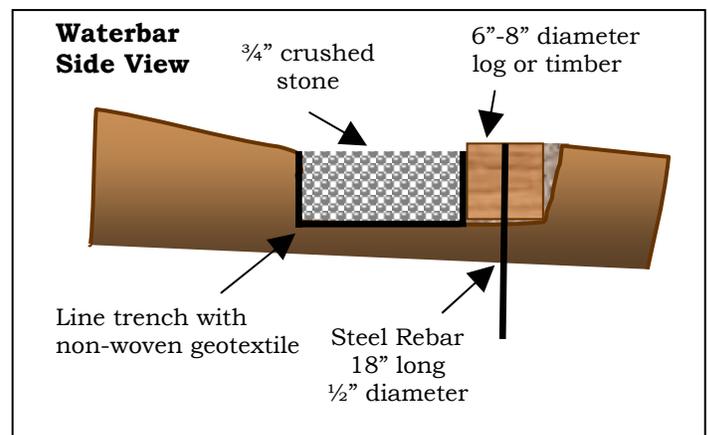
Installation: Install narrow, meandering pathways in high-use areas. Reroute paths that go directly down steep slopes or install steps or **waterbars*** to break up the slope.

- ❖ Ideally, paths should be no more than **3'-4' wide**.
- ❖ The walking surface should be covered with **3"-4" of material** such as Erosion Control Mix, pine needles, bark mulch, crushed stone, wood chips, or other material. This will define the path, guide foot traffic, and reduce soil erosion.
- ❖ Paths should be **meandering**, depending on the slope, to provide opportunities for runoff to disperse into adjacent vegetation.
- ❖ If formal pathways do not currently exist, the new paths can be clearly **marked with strategic plantings**, stones, solar lights, etc. along the edges.

Materials: Contact your local Soil and Water Conservation District for Erosion Control Mix. This is a mix of wood fibers, soil, and gravel, which holds up to runoff and has a natural look. Crushed stone is available from your local gravel pit. One option for pathway materials includes setting stepping stones into a crushed stone base. The crushed stone allows runoff to infiltrate, and the stepping stones are comfortable for bare feet.

Maintenance: To maintain these structures, periodically remove accumulated debris from the surface. Mulched pathways may need to be re-shaped and additional material may be needed to replace what has washed or worn away. Using non-woven geotextile fabric below stone pathways will extend their life.

***Waterbars:** Install waterbar “speed bumps” to break up the slope and keep water from concentrating on a pathway. Fill behind with crushed stone to help runoff soak into the ground and direct water into vegetated areas. Rot-resistant logs or pressure treated timbers can be used. Extend past the outside edge of both sides of the path and install at a 30-degree angle. Secure the waterbar with large stones on the downhill side and/or pound in with pieces of rebar steel.



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INFILTRATION STEPS

~ controlling erosion on steep paths ~



Portland Water District

Purpose: Infiltration steps use crushed stone to slow down and infiltrate runoff. They are effective on moderate slopes, but consider building wooden stairways on 1:1 slopes (45°) or areas where rocks or surface roots make it difficult to set infiltration steps in the ground.

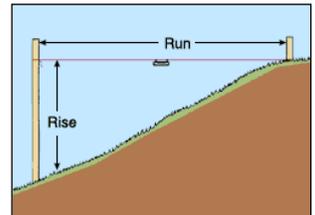
Note: Prior to installation, contact the Maine DEP and town Code Enforcement Officer to find out if permits are required.

Installation: Infiltration steps are steps built with timbers and filled with crushed stone or pea stone. See separate sheet for retrofitting existing timber steps. Build new infiltration steps as follows (adapted from www.homestore.com):



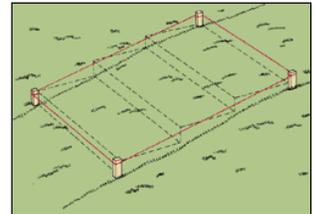
1. Calculate the Rise and Run of Each Step

First, measure the overall rise and run of your steps in inches. The step height is determined by the 6" thickness of the timber. Divide the rise by 6 and round off to the nearest whole number to determine the number of steps. Divide the run by the number of steps to determine step width. A comfortable width will be at least 15".



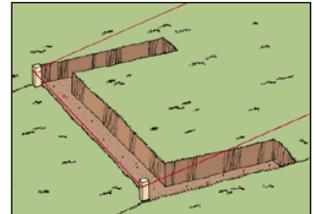
2. Stake Out the Steps

Figure out the step width. A 4' width is comfortable for one person. Paths must be less than 6' wide in the shoreland zone. Drive stakes at each corner of the stairway and stretch string between them to outline the steps. Spray paint or sprinkle sand or flour on the ground to mark the outline.



3. Excavate the First Step

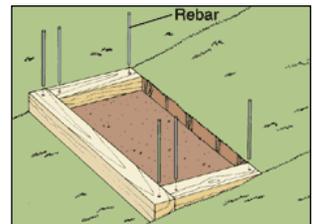
Starting at the bottom, dig a trench for the first timber (this will be little more than a shallow groove in the ground). Next, dig trenches for the side timbers, which need to be long enough to extend 6" past the next step's riser. Check to make sure the trenches are level.



Note: Infiltration steps may not require side timbers, especially if the steps are in an eroded pathway where the surrounding land is higher. In this case, extend the timbers into the adjacent banks so water will not go around the steps.

4. Cut the Timbers

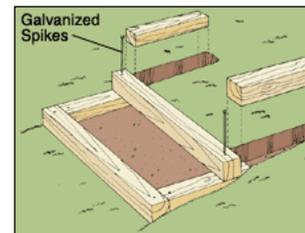
Cut the riser timber to length, then measure and cut the side timbers. Drill 1/2" diameter holes 6" from the ends of each timber. Position the step, then remove or add soil as needed to level it. Anchor the step by driving 18" long pieces of 1/2" diameter steel rebar through the holes and into the ground. Make sure the rebar is flush or slightly recessed since the edges may be sharp. Set the side timbers in place, and level and anchor them.



Shovel out the soil inside the step to create a surface roughly level with the bottom of the timbers. Additional soil can be removed to provide more area for infiltration. Make sure to dispose of excavated soil in a place where it will not wash into the lake or other resource.

5. Build the Next Step

Measure from the front of the first riser to precisely locate the second riser. Dig a trench for the riser, and trench back into the hill for the sides, as before. Set the riser roughly in place with the ends resting on the side timbers below. The riser is attached to the side timbers below it with 12" galvanized spikes. Drill a pilot hole about 5" into the riser, and spike the riser into the side timbers below. Set the side timbers, drill ½" holes and pound in 18" rebar pieces into the ground as with the first step.



Excavate between the sides, as before. Continue up the hillside in this fashion. When installing the top step, cut the side timbers 6" shorter than the ones on the lower steps - these timbers do not need the extra length since no stairs will rest on them.

6. Lay Down Geotextile Fabric and Backfill with Stone

Line the area inside each set of timbers with non-woven geotextile fabric. This felt-like fabric will allow water to percolate through but will separate the stone from the underlying soil. Make sure the fabric is long enough to extend a few inches up the sides of the timbers.



Fill each step with ¾" crushed stone or pea stone until it is about 1" below the top of the timber. This lip will break up water flow and encourage infiltration. Pea stone is comfortable for bare feet but may be more expensive and more difficult to find. Paving stones can also be set into crushed stone to provide a smooth surface for bare feet - as long as ample crushed stone is exposed to allow infiltration.

Seed and/or mulch bare soil adjacent to the steps. Planting areas adjacent to the steps with shrubs and groundcover plants to soften the edges and help prevent erosion.



Materials: Crushed stone and pea stone can be purchased from gravel pits. Contact your local Soil and Water Conservation District for suppliers of non-woven geotextile fabric. Other geotextiles, including landscaping weed barrier, can be substituted for smaller projects. Pressure treated timbers, cedar landscape timbers and steel rebar can be purchased from lumber and hardware stores. Some stores will cut rebar to the specified length for a small fee. Otherwise, rebar can be cut with a hack saw.

Maintenance: Replace rotten timbers. If the crushed stone or pea stone becomes filled up with sediment over time, remove, clean out sediment and replace.

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INFILTRATION STEPS

~retrofitting steps to control erosion on paths~



Portland Water District

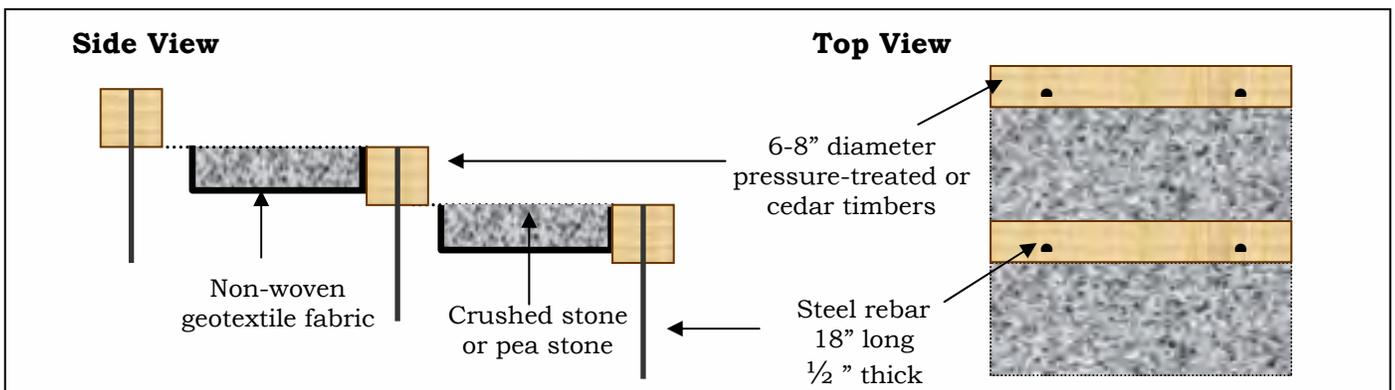
Purpose: Infiltration steps use crushed stone to slow down and infiltrate runoff. They are effective on moderate slopes, but consider building wooden stairways on 1:1 slopes (45°) or areas where rocks or surface roots make it difficult to set infiltration steps into the ground.

Note: Prior to installation, contact the Maine DEP and town Code Enforcement Officer to find out if permits are required.

Installation: Infiltration steps are steps built with timbers and backfilled with crushed stone or pea stone to help water soak into the ground. See separate factsheet for new infiltration step construction. Many existing timber steps can be retrofitted to create infiltration steps by making the following changes:



1. Remove several inches of soil from behind each step. Dispose of excavated soil in a place where it will not wash into the lake or other resource.
2. Line the bottom and sides of the excavated area with non-woven geotextile fabric. This felt-like fabric allows water to infiltrate but will separate the stone from the underlying soil.
3. Backfill the hole with washed $\frac{3}{4}$ " crushed stone or pea stone so that the tread is level or it just slightly slopes up to meet the above step. Pea stone is comfortable on bare feet but also usually more expensive. Paving stones can also be set into crushed stone to provide a smooth surface for bare feet - as long as ample crushed stone is exposed to allow infiltration.
4. If the timbers are not firmly secured, drill $\frac{1}{2}$ " diameter holes, 6" from the ends of each timber. Drive $\frac{1}{2}$ " diameter, 18" long steel rebar through the holes with a sledge hammer. For gentle slopes, wooden stakes or large rocks can also secure the timbers.



Materials: Crushed stone and pea stone can be purchased from gravel pits. Contact your local Soil and Water Conservation District for suppliers of non-woven geotextile fabric. Other geotextiles, including landscaping weed barrier, can be substituted for smaller projects. Pressure treated timbers, cedar landscape timbers and steel rebar can be purchased from lumber and hardware stores. Some stores will cut rebar to the specified length for a small fee. Otherwise, rebar can be cut with a hack saw.

Maintenance: Replace rotten timbers. If the crushed stone or pea stone becomes filled up with sediment over time, remove, clean out sediment and replace.

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RAIN GARDENS

~managing roof runoff in your backyard~



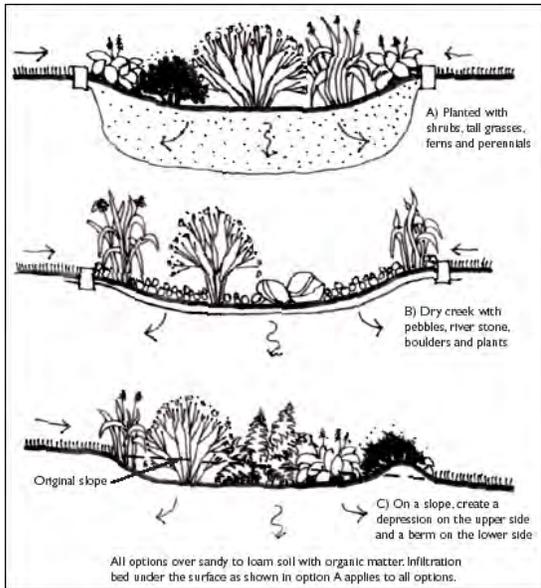
Portland Water District



<http://clean-water.uwex.edu/pubs/raingarden/gardens.pdf>

Purpose: Rain gardens are attractive and functional landscaped areas that are designed to capture and filter stormwater from roofs, driveways, and other hard surfaces. They collect water in bowl-shaped, vegetated areas, and allow it to slowly soak into the ground. This reduces the potential for erosion and minimizes the amount of pollutants flowing from your lawn into a storm drain, and eventually into our streams and lakes.

Installation: Rain gardens can vary in size, but are most effective when built to 20-30% of the drainage area. Rain gardens for single-family homes will typically range from 150 to 300 square feet, but even a smaller one will help reduce water pollution problems.



- ❖ The garden should be bowl-shaped, with the lowest point of the garden no more than 6" below the surrounding land.
- ❖ The sides should be gently sloping towards the center to prevent sudden drop-offs that could lead to erosion problems or walking hazards.
- ❖ Rain gardens are often placed in a preexisting or created depression within a lawn, or in a location that receives roof runoff from a downspout.
- ❖ To avoid flooding improperly sealed foundations, build your rain garden 10' away from existing structures, and direct water into the garden with a grassy swale, French drain, gutter extension or other device.

Rain gardens can be placed in sunny or shady regions of your lawn, but plants should be chosen accordingly, with the lowest point planted with wet tolerant species, the sides closest to the center planted with moist tolerant species, and the edges of the rain garden should be planted with sub-xeric (moist to dry) or xeric (dry) tolerant plants. It is also important to check the permeability of your soil. Sandy soils only need compost added, but clay soils should be replaced with a mix (50-60% sand, 20-30% topsoil, 20-30% compost). After construction of the garden is complete, the entire area should be covered with a thick layer of mulch, preferably Erosion Control Mix.

Materials: Replacement Soil mixes and Erosion Control Mix are available from local garden centers. Native plants can be purchased from your local nursery. Please see *Native Plant Lists* from this series for plant descriptions based on specific sun and soil conditions.

Maintenance: Overall, once plants mature, the maintenance of a rain garden is very low. Watering is important during the first growing season, and some weeding is necessary after planting. As the garden matures, some of the perennials may need to be divided if plantings become too crowded.

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EROSION CONTROL MIX

~mulching to stabilize and enrich the soil~



Portland Water District

Also Called: ECM, Slope Stabilizer, Erosion Control Mulch, Superhumus™, Wood Waste, Stump Grindings

Purpose: Erosion Control Mix is a kind of mulch made of partially composted bark, sand, gravel, stone and wood fragments. It is much heavier than other types of mulch and its mixture of elongated fibers, gravel and soil lock together to protect the underlying soil from erosion. Like other mulches, it also retains moisture, controls weeds and improves the soil as it decomposes. It can be used on paths, slopes and between plantings.



Installation: ECM should completely cover areas of bare soil to a thickness of 3 to 4 inches. Keep an inch or two of space between the mulch and base of plants. Erosion Control Mix should not be used in areas with concentrated water flows or on slopes greater than 2:1 (27°).

ECM often comes in a fine grade (such as Superhumus™) that works well in a more landscaped setting and a standard, more “chunky” grade that is less composted and holds up better on steeper slopes and paths. Some people choose to top-dress the chunky ECM with a few inches of Superhumus™ or regular bark mulch for a more finished appearance. If the ECM is going to be used to naturalize an existing lawn or grassy area, a weed barrier such as several layers of newspaper should be placed down before the mulch is added.



Materials: Locating this relatively new product can be difficult. However, many contractors are starting to use it on construction sites in place of silt fence. Contact your local contractor or gravel pit and ask for Erosion Control Mix or the other names mentioned above. Make it clear that you are not looking for landscaping bark mulch because it is not the same product and will not be as effective. Some transfer stations also make ECM available to residents.



Maintenance: Mulched areas should be inspected regularly and after each large rainfall. Mulch should be immediately added to washed out areas to maintain the desired thickness. ECM should be left in place, and new plant growth should be promoted. Mulched areas should not be raked.

Drawbacks of Other Mulches: ECM is the most effective mulch for erosion control purposes. If ECM is not available, however, the following other mulches may be suitable. Any mulch is better than bare soil.

- **Pine Needles** – Washes away easily on slopes. Provides a natural look and is often plentiful and free. Especially good around acid-loving plants like blueberries, azaleas and rhododendrons.
- **Bark Mulch** – Better than bare soil, but easily eroded. Most popular mulch and readily available.
- **Wood Chips** – Will float away in rains and does not enrich the soil like ECM.
- **Crushed Stone or Pea Stone** – Does not allow vegetation to grow, creates an unnatural appearance and may not be allowed by DEP or Town depending on distance to water.

Part of the **Conservation Practices for Homeowners** Factsheet Series, available at:
Maine DEP (800.452.1942); <http://www.maine.gov/dep/blwq/docwatershed/materials.htm>
Portland Water District (207.774.5961); <http://www.pwd.org/news/publications.php>



CONSTRUCTION BMPs

~minimizing erosion with sediment barriers and mulching~



Portland Water District

Purpose: Sediment barriers, followed by mulching, are common construction BMPs (Best Management Practices) that intercept and retain sediment from disturbed or unprotected areas. Together these practices minimize pollutants flowing from your property into local streams and lakes. The installation of erosion control measures as directed in these guidelines will meet the requirements of the Maine Erosion and Sediment Control Law.



Before



After



ECM

Sediment Barriers:

- ❖ Sediment barriers must be installed before construction of any project that causes soil disturbance, and must be maintained until the area is fully stabilized and vegetation is established.
- ❖ Install sediment barriers across or at the bottom of a slope and down gradient of the area of disturbed earth. Sediment barriers should not be placed in areas of concentrated water flows.
- ❖ Erosion Control Mix (ECM) berms are the simplest method of filtering sediment, but silt fences are another option. At a minimum, berms should measure 4' wide by 1.5' high. If silt fences are used, they must be entrenched, kept taut, and installed according to the manufacturer's directions (see diagram).
- ❖ ECM berms can be left in place after construction is complete, but silt fences should be removed once areas upslope have been stabilized. Once the site is stable, ECM can be raked out and seeded down, or removed and used as mulch elsewhere.



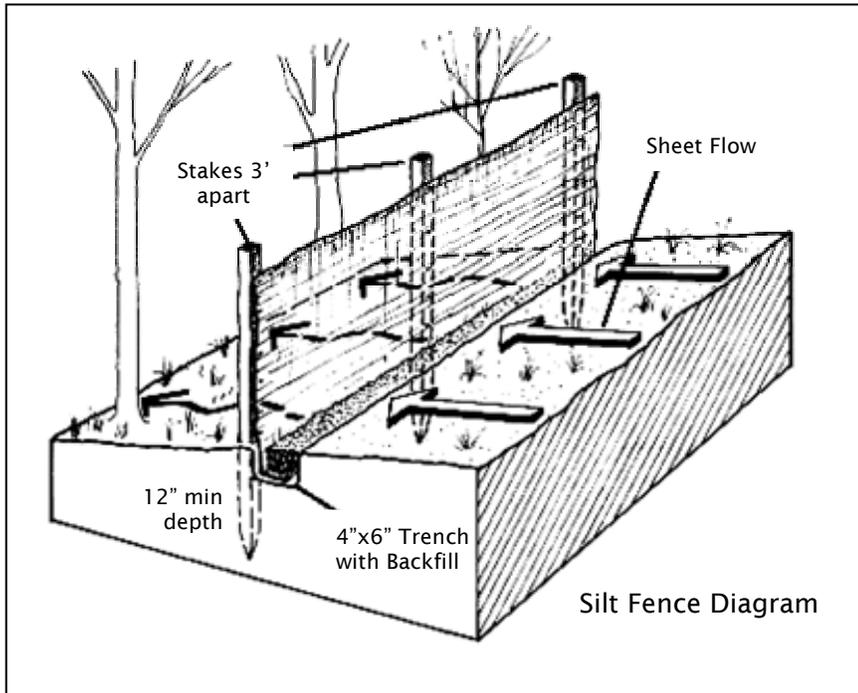
ECM Berm

Mulching:

- ❖ Mulch all bare areas as soon as possible and prior to any rainstorm. A tarp may be used instead of mulch to cover these areas overnight. Mulch should be thick enough so that the soil is not visible. The following types of mulch are best suited for construction projects:
- ❖ *Hay mulch* or *straw* is used as a temporary protective measure to cover bare soils and newly seeded areas. Secure the hay mulch by walking over it.
- ❖ *Erosion Control Mix (ECM)* is a special mix of wood waste and gravel that holds up to runoff and has a natural look. It is a long-term soil cover that will eventually allow the growth of new vegetation.



Hay Mulch



Materials: Contact your local contractor or gravel pit to see if Erosion Control Mix is available in your area. This relatively new product may also be called: Slope Stabilizer, Erosion Control Mulch, or Superhumus. Stump grindings may also be used for sediment berms in areas with low slopes.

Hay and straw mulch is available in bales from local farms and hardware stores. Silt fences can be purchased from construction supply stores.



Maintenance: Until grass and other vegetation is well established, mulched areas and sediment barriers should be inspected regularly for erosion, especially following rain events. Periodically remove sediment and debris that accumulates behind sediment barriers. Erosion Control Mix berms may need to be re-shaped and additional material may be needed to maintain function.

For more information concerning the Maine Erosion and Sediment Control Law, contact DEP at 1-800-452-1942. For specific details on these conservation measures, consult the Maine Erosion and Sediment Control BMP manual (2003) at:

<http://www.maine.gov/dep/blwq/docstand/escbmps/index.htm>

Part of the **Conservation Practices for Homeowners** Factsheet Series, available at:
 Maine DEP (800.452.1942); <http://www.maine.gov/dep/blwq/docwatershed/materials.htm>
 Portland Water District (207.774.5961); <http://www.pwd.org/news/publications.php>



PERMITTING

~understanding environmental laws and requirements~



Portland Water District

Purpose: Protection of Maine's watersheds is ensured through the goodwill of residents around the lakes and through laws and ordinances created and enforced by the State of Maine and local municipalities. The following laws and ordinances require permits for activities adjacent to wetlands and waterbodies.

Shoreland Zoning Law—Construction, clearing of vegetation and soil movement within 250 feet of lakes, ponds, and many wetlands, and within 75 feet of most streams, falls under the Shoreland Zoning Act, which is administered by the Town through the Code Enforcement Officer and the Planning Board.

Natural Resources Protection Act (NRPA) - Soil disturbance & other activities within 75 feet of the lakeshore or stream also falls under the NRPA, which is administered by the DEP.

Contact the DEP and Town Code Enforcement Officer if you have any plans to construct, expand or relocate a structure, clear vegetation, create a new path or driveway, stabilize a shoreline or otherwise disturb the soil on your property. Even if projects are planned with the intent of enhancing the environment, contact the DEP and town to be sure.

How to apply for a Permit by Rule with DEP:

To ensure that permits for small projects are processed swiftly, the DEP has established a streamlined permit process called **Permit by Rule**. These one page forms (shown here) are simple to fill out and allow the DEP to quickly review the project.

❖ Fill out a notification form before starting any work. Forms are available from your town code enforcement officer, Maine DEP offices, or online at <http://www.state.me.us/dep/blwq/docstand/nrpa/pbrform.pdf>

❖ The permit will be reviewed by DEP within 14 days. If you do not hear from DEP in 14 days, you can assume your permit is approved and you can proceed with work on the project.

❖ Follow all standards required for the specific permitted activities to keep soil erosion to a minimum. It is important that you obtain a copy of the standards so you will be familiar with the law's requirements.

52005 DEPARTMENT OF ENVIRONMENTAL PROTECTION
PERMIT BY RULE NOTIFICATION FORM
(For use with DEP Regulation, Chapter 305)

PLEASE TYPE OR PRINT IN BLACK INK ONLY

Name of Applicant: (owner)	Sandy Waters		Applicant Mailing Address:	123 Blueberry Lane	
Town/City:	Brunswick		State:	Maine	
Zip Code:	04011	Daytime Telephone No: (include area code)	(207).555-1234	Project Location: (town)	New Gloucester
County:	Cumberland	Map #:	20	Lot #:	50
Name of Agent:			Name of Wetland or Waterbody:	Sabbathday Lake	
Detailed Directions to Site:			121 Outlet Road, Rte 26 North, turn right onto Outlet Road. 121 Outlet Road is on the left, 4th to 5th houses before Barefoot Beach.		
Description of Project:			Installation of a drywell to allow infiltration of roof runoff.		
			UTM Northing: (if known)	UTM Easting: (if known)	
			Part of a larger project? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

(CHECK ONE) This project: does does not involve work below mean low water.

I am filing notice of my intent to carry out work which meets the requirements for Permit by Rule (PBR) under DEP Rules, Chapter 305. I and my agents, if any, have read and will comply with all of the standards in the Sections checked below.

Sec. (2) Act. Adjacent to Protected Natural Res. Sec. (8) Shoreline Stabilization Sec. (14) REPEALED

Sec. (3) Intake Pipes Sec. (9) Utility Crossing Sec. (15) Public Boat Ramps

Sec. (4) Replacement of Structures Sec. (10) Stream Crossing Sec. (16) Coastal Sand Dune Projects

Sec. (5) REPEALED Sec. (11) State Transportation Facilities Sec. (17) Transfers/Permit Extension

Sec. (6) Movement of Rocks or Vegetation Sec. (12) Restoration of Natural Areas Sec. (18) Maintenance Dredging

Sec. (7) Outfall Pipes Sec. (13) F&W Creation/Enhance-Water Quality Improvement

I authorize staff of the Departments of Environmental Protection, Inland Fisheries & Wildlife, and Marine Resources to access the project site for the purpose of determining compliance with the rules. I also understand that this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.

I have attached the following required submittals. NOTIFICATION FORMS CANNOT BE ACCEPTED WITHOUT THE NECESSARY ATTACHMENTS:

Attach a check for \$55 (non-refundable) made payable to: "Treasurer, State of Maine".

Attach a U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.

Attach all other required submissions as outlined in the PBR Sections checked above.

By signing this Notification Form, I represent that the project meets all applicability requirements and standards in the rule and that the applicant has sufficient title, right, or interest in the property where the activity takes place.

Signature of Agent or Applicant: Sandy Waters Date: 3/4/06

Keep a copy as a record of permit! Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection at the appropriate regional office listed below. The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Permits are valid for two years. Work carried out in violation of any standard is subject to enforcement action.

AUGUSTA DEP STATE HOUSE STATION 17 AUGUSTA, ME 04333-0017 (207)287-2111	PORTLAND DEP 312 CANCO ROAD PORTLAND, ME 04103 (207)752-4300	BANGOR DEP 106 HOGAN ROAD BANGOR, ME 04401 (207)741-4270	PRESQUE ISLE DEP 1230 CENTRAL DRIVE PRESQUE ISLE, ME 04969 (207)764-0477
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OFFICE USE ONLY			Staff		
PBR #	FP	Date	Acc. Date	Def. Date	After Photos

DEPLW0306-12005

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NATIVE PLANT LIST



Portland Water District

☽ ~Part Sun, Moist to Wet Soil~ 💧

Although this is not an exhaustive list, the following native plants are carried at local nurseries. If a particular plant is not available at your nursery, ASK for it by name. The more demand there is for native plants, the more likely a nursery is to carry it. Additionally, nursery staff may be able to recommend a suitable, NON-INVASIVE substitute.

- ☀ **Full Sun** – more than 5 hours of direct sun a day
- ☽ **Part-Sun** – 2 to 5 hours of direct sun or full day of dappled sun a day
- ⦿ **Full Shade** – less than 2 hours of direct sun a day

SMALL SHRUBS (<6')

Bog Rosemary (*Andromeda polifolia*) Grows from 6 to 30 inches high with a spread of 3 feet. Leaves are narrow, evergreen and leathery with a blue-green color. Some resemblance to the culinary herb. Typically found in northern bogs and marshes. Flowers are small, pink, and bell-shaped. Grows best in very moist, acidic soil in cooler climates. Zones 2-6.



Buttonbush (*Cephalanthus occidentalis*) – Grows 6 to 10 feet with a similar spread. Darkish-green, glossy leaves. Large, showy, spherical flower heads (pom-poms) in summer, followed by spherical fruits that persist into winter. Sun to part-sun. Wet soil. Grows in up to 3 feet of water. Flood tolerant. Found along lakes and streams. Zones 4-11.

Summersweet (*Clethra alnifolia*) Also called Hummingbird Clethra or Sweet Pepperbush. Grows 3 to 8 feet high with a 4 to 6 foot spread. Attractive, deep-green foliage and very fragrant, white or pink flowers in summer. Sun to shade. Moist to wet soil. Zones 4-8.



Sheep Laurel/Lambkill (*Kalmia angustifolia*) Grows from 1 to 3 feet high with a greater spread. Grows best in moist, organic, cool, acidic soils but can tolerate a variety of soil types. Prefers full sun to partial shade. Bright pink flowers bloom in early summer. As the name suggests it is poisonous to livestock. Zones 1-6.

Labrador Tea (*Ledum groenlandicum*) Grows to approximately 3 feet high with a spread of 3 feet. Typically found growing in bogs and swamps. Clusters of white flowers bloom in the spring. Grows best with full sun to partial shade. Prefers a wet, acid soil. Leaves are evergreen with a silvery underside. Zones 2-5.



Rhodora (*Rhododendron canadense*) Grows from 1 to 3 feet high with a similar spread. Typically found near bogs and marshy areas. Grows best in wet, acidic soils with full sun to partial shade. Bright pink/purple flowers bloom in spring. Very hardy. Zones 2-6.

Meadow Rose (*Rosa blanda*) Grows from 3 to 4 feet high and spreads easily. Grows best in rich soil with medium moisture and full sun or light shade. Showy, attractive flowers are white to pink in color. Stems only have very small prickles at base of stem. Often called the “thornless rose”. Zones 3-7.





Snowberry (*Symphoricarpos alba*) Grows 3 to 6 feet high with similar spread. Spreads by suckering so will form thickets, if allowed. Good for erosion control. Blue-green foliage, pink spring flowers and ornamental, white berries in fall. Rapid growth. Sun to part-sun. Moist to dry soil. Adaptable to a variety of soil conditions. Good for birds. Zones 3-7.

Canadian Yew (*Taxus canadensis*) Grows from 1 to 6 feet high with branches spreading to 6 feet. Grows best in moist, loamy, alkaline, well-drained soils. Prefers partial to full shade. A popular food for moose and deer. Tolerant of the cold. Zones 2-6.



Mapleleaf Viburnum (*Viburnum acerifolium*) Grows from 4 to 6 feet high with an equal spread. Grows best in well-drained, mildly acidic soil with average moisture but can tolerate drier soils. Prefers shade to partial sun. Similar to other viburnums, a cluster of small white flowers gives way to dark blue/black fruits that are enjoyed by birds and other wildlife. *Mapleleaf Viburnum* is susceptible to attack from the *Viburnum Leaf Beetle*. Check with your local nursery to see if the Beetle is a problem in your area. Zones 4-8.

Highbush Blueberry (*Vaccinium corymbosum*) Grows from 6 to 8 feet in height with a spread of 8 to 12 feet. Typically found near bogs and marshes. Prefers moist, well-drained, acidic soil. Sun to partial shade. White bell-shaped flowers bloom in the spring and are followed by edible dark blue berries. Leaves turn red in the fall. Berries are attractive to birds and other wildlife. Zones 5-7.



TALL SHRUBS (>6')



Downy Serviceberry (*Amelanchier arborea*) Grows from 10 to 25 feet high with a spread of 12 feet. Sun to part sun. Prefers rich loamy soil but will grow well in clay or any soil that has moderate moisture. White showy flowers bloom in early to mid spring and turn into dark red to purple edible berries. Zones 4-9.

Shadblow Serviceberry (*Amelanchier canadensis*) Grows from 25 to 30 feet high with a spread of 15 to 20 feet. Grows best in medium wet, well-drained soil but will tolerate a wide range. Prefers partial shade to full sun. Clusters of white flowers are followed by edible red/purple berries in late summer. Zones 4-8.



Allegheny Serviceberry (*Amelanchier laevis*) Grows to approximately 25 feet high with a spread of 20 feet. Grows in shade and partial shade and prefers moist soils. A hardy serviceberry species that will tolerate more moisture and light than some other varieties. White flowers and purple/black edible berries are typical. Zones 4-8.

Black Chokeberry (*Aronia melanocarpa*) Can grow up to 8 feet high with a spread of 8 feet. Grows best in moist, well-drained, acidic soils but will tolerate drier sandy soils or wet clay ones. Very good for soil stabilization. Prefers full to partial sun. White flowers bloom in the spring with black berries appearing in the fall and lasting through the winter. Zones 3-8.



Gray Dogwood (*Cornus racemosa*) Grows to 10 feet high with a spread of 10 to 15 feet. Can form thickets. Tolerant of a wide range of soils and city air pollution. Grows best in medium wet soil with full sun to partial shade. Small white clusters of flowers bloom in late spring. Zones 3-8.

Redosier Dogwood (*Cornus sericea*) Grows from 6 to 9 feet high with a spread of 8 to 12 feet. Grows best in rich medium to wet soil. Typically found in bogs or swamps and will tolerate a wide range of soils. Young branches are bright red. Small white clusters of flowers bloom in late spring and are followed by fall fruits which are attractive to birds. Prefers full sun to part shade. Zones 2-7.



Common Witchhazel (*Hamamelis virginiana*) Grows 10 to 15 feet high with an equal spread. Prefers moist, acidic soil and grows best with full sun to partial shade. Small clumps of yellow flowers with narrow petals bloom in early fall and have a pleasing fragrance. Zones 3-8.

Winterberry (*Ilex verticillata*) Grows 6 to 10 feet high with a similar spread. Grows best in moist well-drained soils but will tolerate wet, swampy areas. Prefers full sun to partial shade. Bright red attractive fruits are produced and last through the winter. Male and female plants are needed to produce berries. Zones 3-9.



Northern Bayberry (*Myrica pennsylvanica*) Typically grows from 5 to 6 feet high but can reach 10 feet. Spreads easily and forms colonies. Often found in coastal areas. Foliage is semievergreen and aromatic. Will grow well in dry, infertile, sandy, acidic soils. Grows best in full sun but will tolerate partial shade. Zones 2-6.

Chokecherry (*Prunus virginiana*) Grows from 25 to 30 feet tall with a spread of 20 feet. Grows best in moist soil but will tolerate drier conditions. Partial to full sun. White flowers bloom in the spring and are followed by bright red berries. Flowers have a strong sweet fragrance. The fruit has an astringent taste but does attract birds. Zones 2-6.



Witherod (*Viburnum cassinoides*) Also called Wild Raisin. Grows 6 to 10 feet with a lesser spread. A slender, upright shrub with glossy, green leaves. Round clusters of feathery, white to pink flowers in late spring and whitish fruit turning blue-black in the fall. Red fall color. Sun to shade. Moist to wet soil but tolerates drier conditions. Found in damp clearings, swamps and moist thickets. Good for birds. Witherod is *susceptible to attack from the Viburnum Leaf Beetle*. Check with your local nursery to see if it is a problem in your area. Zones 3-8.



Nannyberry (*Viburnum lentago*) Grows from 14 to 16 feet with a spread of 6 to 12 feet. Grows well in medium wet to average soil but is tolerant of drier soils. Prefers full sun to partial shade. Clusters of white flowers give way to blue/black berry like fruit. Supposedly the fruit is particularly attractive to nanny goats, hence its common name. *Susceptible to attack from the Viburnum Leaf Beetle*. Check with your local nursery to see if it is a problem in your area. Zones 2-8.



TREES



Balsam Fir (*Abies balsamea*) Grow up to 50 feet high and 20 feet wide. Narrow, pyramidal tree; typical Christmas tree shape. Needles are short, dark green, and blunt. Small, light brown cones. Sun to shade. Moist to wet soils. Zones 3-5.

Yellow Birch (*Betula alleghaniensis*) Can grow up to 80 feet with a 50 foot spread. Attractive golden, peeling bark on older specimens. Leaves are alternate, 3-5 inches long, turning yellow in fall. Part-sun to shade. Moist soil. Found near streams. Zones 3-7.





Green Ash (*Fraxinus pennsylvanica*) Grows to 60 feet. Rapid growth. Rounded crown. Five to nine leaflets on each compound leaf turns bright yellow in fall. Bark has narrow, interlacing ridges. Dry to wet soils. Sun to part sun. Zones 3-9.

Swamp White Oak (*Quercus bicolor*) Grows to 60 feet with a similar spread. Produces many acorns. Leaves irregularly lobed, about 6 inches long, shiny, dark green above and light below. Bark on large trees ridged and furrowed. Moist to wet soil. Tolerates swampy, poorly-drained conditions. Sun to part sun. Zones 4-8.



White Cedar (*Thuja occidentalis*) Also called Arborvitae. Grows to 60 feet and 25 feet across. A dense tree with flat, green aromatic foliage. Often sheered and shaped for landscaping purposes, but has an attractive shape on its own. Sun to part sun. Moist soil best, tolerates flooding and occasional drought. Found in wet soils and swampy areas. Zone 3.



Hemlock (*Tsuga canadensis*) Can grow up to 80 feet with a 30 foot spread in ideal conditions. Large, irregular, pyramidal tree. Small, deep-green needles with a loose, feathery appearance. Small, interesting cones. Also available in dwarf forms. Sun to shade. Does best in cool, moist, well-drained soil. Tolerates shade and some flooding. Zones 3-7.



VINES AND GROUNDCOVERS



Bearberry (*Arctostaphylos uva-ursi*) Grows from 4 to 6 inches with a spread of 3 feet. Spreads easily to form a mat. Grows best in moist, well-drained, rich, acidic soil. Full sun to partial shade. Light pink, cup-shaped flowers give way to a bright red berry in the fall. It is a useful in preventing erosion and is commonly planted along banks. Zones 2-6.

Bunchberry (*Cornus canadensis*) Grows to approximately 6 inches in height and spreads easily. Favors moist, rich, acidic soils. Grows best in partial to full shade. Larger white bracts surround small green flowers. A red berry is produced in the fall is attractive to birds. Zones 2-6.



Woodbine/Virginia Creeper (*Parthenocissus quinquefolia*) A climbing vine that can reach heights of up to 40 feet. Grows easily. Will tolerate a range of soil types and a variety of light conditions (except for complete shade). Drought tolerant. Small white flowers in spring. Foliage turns bright red in the fall and small purple berries are produced. When not in a position to climb it is an excellent ground cover and will put down more roots. Zones 3-9.

Lowbush Blueberry (*Vaccinium angustifolium*) Grows from 2 to 24 inches and spreads to form colonies. Prefers an acidic, well-drained soil that has previously been untilled. A popular ground cover. Blueberries are attractive to wildlife and humans. Grows well in partial shade to full sun. Zones 2-6.



Lingonberry (*Vaccinium vitis-idaea*) Also called Crowberry or Mountain Cranberry. Grows to 7 inches and spreads. Small, glossy-green, leathery foliage and small pink or white flowers, followed by small, red fruit, sour but edible. Found in bogs and wet or dry, rocky, mossy slopes. Sun to shade. Dry to moist, well-drained soil. Zones 2-6.

PERENNIALS

Columbine (*Aquilegia canadensis*) Grows from 2 to 3 feet high with a spread of 1 to 1½ feet. Flowers are light pink with yellow to blood red with yellow and bell shaped. Full sun to part shade. Prefers medium wet, well-drained soil but will tolerate a wide range as long as drainage is adequate. Flowers are attractive to hummingbirds. Zones 3-8.



Goats Beard (*Aruncus dioicus*) Grows from 4 to 6 feet high with a spread of 2 to 4 feet. Typically bushy and tends to form clumps. Small white flowers are clustered in plumes which extend above the foliage. Blooms occur in early to mid summer. Full sun to part shade. Prefers, medium wet to wet, well-drained soil. Zones 4-8.

Marsh Marigold (*Caltha palustris*) Grows from 8 inches to 2 feet high with a spread of approximately 1 foot. Typically found in swamps and marshes and is recommended for planting along stream banks, in bog gardens and near ponds. Bright yellow flowers bloom in late spring to early summer. Prefers wet organic soils and partial to full sun. Zones 1-8.



Turtlehead (*Chelone glabra*) Grows to a height of 2 to 3 feet with a spread of 1½ to 2½ feet. Flowers are white with a pinkish tinge and are similar to snapdragons. Prefers a rich, moist to wet, organic soil with partial shade. Zones 3 to 9.

Joe Pye Weed (*Eupatorium maculatum*) Grows from 4 to 5 feet high with a spread of 1.5 to 2 feet. Found naturally growing in damp meadows. Light pink flowers bloom from mid summer to early fall and are attractive to butterflies. Prefers average to wet soil with full sun. Zones 4-8.



Boneset (*Eupatorium perfoliatum*) Grows 4 to 6 feet high with a spread of 3 to 4 feet. Clusters of small, white flowers bloom in late summer. Leaves are lance shaped and have hairy stems. Full sun to part shade. Prefers medium wet to wet soil and will tolerate sand and clay soils with adequate moisture. Found in swamps and on streambanks. Zones 4-8.

Blue Flag Iris (*Iris versicolor*) Grows from 1 to 3 feet with a spread of 6 to 12 feet. Leaves are sword shaped and can be up to 3 feet long. Flowers are usually blue-violet but can be lavender, or red-violet. Full sun to partial shade. Prefers moist to wet, organic, slightly acidic soils. Can tolerate growing in up to 6 inches of standing water. Grows well near bogs and ponds. Zones 3-9.



Cardinal Flower (*Lobelia cardinalis*) Grows from 2 to 4 feet high with a spread of 1 to 2 feet. Bright red flowers are tubular and bloom in late summer. Lance-shaped leaves are finely toothed and approximately 4 inches long. Full sun to partial shade. Prefers medium wet to wet, rich, organic soil. Found near streams and swamps and in low wooded areas. Attractive to hummingbirds. Zones 3-9.

Bee Balm (*Monarda didyma*) Grows from 2 to 3 feet high with a 1 to 2 foot spread. Spreads easily. Leaves are toothed and have a minty fragrance. Blooms can be purple, red, or pink. Full sun to partial shade. Prefers medium wet to wet, moisture retentive, organic soil. Attractive to hummingbirds, butterflies, and bees. Zones 4-9.





Black-eyed Susan (*Rudbeckia hirta*) Grows from 2 to 3 feet high with a spread of 1 to 2 feet. Leaves are rough, hairy, and lance shaped. Flowers are yellow to orange-yellow with a dark brown center. Full sun to part shade. Prefers dry to medium wet, well-drained soil but is tolerant of heat, drought and a wide range of soils. Low maintenance. Zones 3-9.

Bloodroot (*Sanguinaria canadensis*) Grows from 6 to 12 inches high and is usually found in colonies. Part sun to shade. Leaves and root contain an orange/red juice that is poisonous. Flowers in early spring. Grows best in part sun to shade and leaf litter.



Tall Meadow Rue (*Thalictrum polygamum*) Grows from 3 to 8 feet high. Typically found in swampy areas and near water bodies. Small white inflorescences bloom in mid summer. Often recommended for the back border of gardens due to its large size. Prefers average to moist soil with light shade to full sun. Zones 3-8.

Appalachian Barren Strawberry (*Waldsteinia fragarioides*) Grows from 3 to 8 inches high with a ½ to 1 foot spread. A low, mat-forming, strawberry-like plant with evergreen, basal leaves and several yellow flowers on a leafless stalk. Fruit is not fleshy or edible. Sun to shade. Prefers medium wet, well-drained, organic, slightly acidic soil, but tolerates a wide range. Flowers from April to June. Zones 3-9.



USEFUL LINKS:

The following publications can be found at: <http://extensionpubs.umext.maine.edu/>

University of Maine Cooperative Extension Bulletin #2502 “*Native Plants: A 2002 Maine Source List.*”

University of Maine Cooperative Extension Bulletin #2500 “*Gardening to Conserve Maine's Landscape: Plants to Use and Plants to Avoid.*”

University of Maine Cooperative Extension Bulletin #2701 “*Designing Your Landscape for Maine.*”

Part of the **Conservation Practices for Homeowners** Factsheet Series, available at:
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