Technical Consultant Update for Long Creek Watershed Management Plan

Steering Committee Meeting
January 28, 2008
Watershed Management Plan Review

- Long Creek does not meet state water quality standards
- Consequently, municipalities required to take remedial actions
- Team of technical consultants hired to review existing data and identify key impairment areas
- In close consultation with TAC, consultants will develop specific recommendations for “fixes” to restore water quality and stream habitat
Role of the Technical Advisory Committee

- Provide input on planned programs, activities and infrastructure improvements for stormwater management & stream restoration strategy.
- Guide the development of the stormwater retrofit strategy.
- Assist with the development of the cost-benefit prioritization.
- Review and comment on the draft management plan.

<table>
<thead>
<tr>
<th>Projected Timeline</th>
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<tbody>
<tr>
<td>TAC Meeting #1</td>
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<tr>
<td>TAC Meeting #2</td>
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<tr>
<td>TAC Meeting #3</td>
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<tr>
<td>Draft Plan Review</td>
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Quick Historical Perspective
Aerial photographs of the study area from 1976. Aerial photo source: Greater Portland Council of Governments / Lockwood Mapping Inc. (Rochester, NY)

Sheraton Inn
Figure 12: Representation of the Impervious Cover Model (ICM)

The ICM illustrates the relationship between subwatershed IC and expected stream quality, and defines three broad urban subwatershed categories—impacted streams, non-supporting streams and urban drainage. The prospects and strategies for restoration are often markedly different for each of the three subwatershed categories.
## Water Classification Criteria

<table>
<thead>
<tr>
<th>Class</th>
<th>Aquatic Life (Biological)</th>
<th>Habitat</th>
<th>Numeric Criteria</th>
<th>Bacteria (E. coli)</th>
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</thead>
<tbody>
<tr>
<td>Class AA</td>
<td>as naturally occurs</td>
<td>free flowing &amp; natural</td>
<td>as naturally occurs</td>
<td>as naturally occurs</td>
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<tr>
<td>Class A</td>
<td>as naturally occurs</td>
<td>natural</td>
<td>7ppm or 75% sat.</td>
<td>as naturally occurs</td>
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<tr>
<td>Class B</td>
<td>support all indigenous aquatic species w/ no detrimental changes to resident biological community</td>
<td>Unimpaired</td>
<td>7ppm or 75% sat.</td>
<td>236/100mL (instant) 64/100mL (geomean)</td>
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<tr>
<td>Class C</td>
<td>maintain structure &amp; function of resident biological community</td>
<td>habitat for fish &amp; other aquatic life</td>
<td>5ppm or 60% sat.</td>
<td>236/100mL (instant) 126/100mL (geomean)</td>
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</table>
Riparian Restoration Rankings
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Geomorphology Assessment
EPA Stressor Id. Probable Impairment Causes

- Decreased dissolved oxygen
- Altered flow regime
- Decreased large woody debris
- Increased temperature
- Increased toxicity due to ionic strength

- *Episodic metals toxicity from storm flows may contribute to impairment at one of the sites*
- *Insufficient evidence to rule out increased sediment as a cause*
- *Stormwater quality and hydrology data lacking at 2 of the 3 sites analyzed during the Stressor ID process*
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Preliminary Restoration Strategy

- Utilize riparian shade, floodplain restoration and natural stream design techniques on identified segments.
- Focus retrofit inventory on existing above-ground detention facilities.
- Focus on the larger highly impervious, directly connected catchment areas.
- Identify retrofit opportunities along South Portland Land Trust project corridors.
- Focus on identified hotspot parcels.
Management Alternatives

Bioretention

• Soil Media filters with underdrains

Cost (UNH Stormwater Center)

• $15.10 per square foot

Basic Requirements

• Underdrain Tie-In to Existing Infrastructure or Daylighting

Source: Portland Oregon BMP Manual

Falmouth, ME
Management Alternatives

Gravel Wetland

• Horizontal flow media and storage

Cost (Engineers Estimate)

• $30.26 per square foot

Basic Requirements

• Suitable system for high water table

Source: UNH Stormwater Center

Durham, NH
Management Alternatives

Infiltration Contour Trench

• Stone trench without underdrain

Cost (Engineers Estimate)

• $9.21 per square foot

Basic Requirements

• Soils with adequate permeability (>0.5 inches per hour)

Source: Maine DEP BMP Manual

Freeport, ME
Management Alternatives

Storage

• Wet Pond

Cost (UNH Stormwater Center)

• $6.36 per square foot

Basic Requirements

• Outlet regulation and impermeable soils

Source: MaineDEP BMP Manual

Lewiston, ME
Preliminary Priority Restoration Areas