Presentation Topics

• Trust Resources and Trusteeship

• Massachusetts NRD Trust Settlements and Restoration Status

• Restoration Process, Criteria and Roles

• A Tale of Two Dam Removals

• Social Values of Ecosystem Services

• New Tactics for Restoration
Trust Resources

• Natural Resources
  – Biological
  – Surface Water
  – Groundwater
  – Air
  – Geologic (Soils, Sediments)

• Services
  – Support (fish spawning, rearing)
  – Regulating (sediment transport)
  – Provision (water supply, fish, shellfish consumption)
  – Cultural (fishing, waterfowl hunting)
Trustee Authorities

- M.G.L. Chapter 21E
  - § 5A, 11A
- M.G.L. Chapter 21A
  - § 2A

- CERCLA
  - (42 U.S.C. §§ 9601, et seq.), including but not limited to sections 104, 107, 111(i), and 122

- Oil Pollution Act of 1990
  - (33 U.S.C. §§ 2701, et seq.), including but not limited to sections 1006 and 1012

- National Contingency Plan (40 CFR 300)
  - Defines Trustees
  - Requires response agencies to notify Trustees

- NRD under CERCLA
  - Department of Interior
  - 43 CFR 11

- NRD under OPA
  - Department of Commerce (NOAA)
  - 15 CFR Part 990
Massachusetts NRD Trust
Settlements

Under Assessment:
Bouchard B-120 (Terns and Other Birds),
Iron Horse Park NPL, National Fireworks 21E, Shpack NPL
**Restoration Status**

- Completed restoration planning and projects
  - PSC Palmer
  - Charles George Landfill
- Completed restoration planning and projects underway
  - GE/Housatonic (Rounds 1, 2 and 3)
  - Holyoke Coal Tar
  - New Bedford Harbor
  - Bouchard B-120 (plovers)
  - Textron/MMR, Nyanza
- Restoration Planning underway
  - Bouchard B-120 (shoreline, aquatic, lost recreational use)
- Restoration Planning upcoming
  - IndustriPlex
  - Sutton Brook Disposal Area
  - Blackburn & Union Privileges
  - Bouchard B-120 (Ram Island Shoreline)
- MassDEP has developed project solicitation template for use in Planning and Implementation.
Restore, Replace, Acquire the Equivalent
Restoration Process

• CERCLA and OPA require Restoration Plans
  – DOI and NOAA Regs
  – Legal and Technical review
  – Trustee must approve
  – Public review and comment

• 21E no restoration plan required
  – Inter-Bureau and Inter-agency consultation
  – Public informational meetings
  – MassDEP project solicitation template for use in Planning and Implementation
  – Trustee must approve

• Trustee Councils develop and implement Restoration Plans
  – Memorandum of Agreement
  – Trustee Representatives and Alternates
  – Legal and Technical Advisors
  – May have public members

1. Interagency consultation
2. Public meeting
3. Evaluate restoration alternatives
4. Prepare Draft Restoration Plan/Environmental Assessment (RP/EA)
5. Solicit public comment
6. Revise RP/EA and prepare Final RP/EA
7. Complete projects
8. Monitor projects
Restoration Criteria

• DOI Regulations list factors to consider:
  – Technical feasibility
  – Costs/benefits
  – Short and long term impacts
  – Ability of resources to recover w/ or w/o restoration alternatives
  – Consistency with relevant federal, state, and tribal policies
  – Compliance with applicable federal, state, and tribal laws

MUST “restore, replace, or acquire the equivalent” of injured natural resources and their services

• OPA Regulations specify Trustee responsibilities:
  – Establish restoration objectives specific to injuries and specify desired outcomes
  – Indicate performance criteria by which successful restoration will be judged

• 21E:
  – No criteria specified but use similar to DOI and OPA
Restoration Tactics

- Statutes
- Regulations
- Policies

- Administrative Record
- Trustee Council Resolutions
- DOI NRD Fund

- Injury Assessment
- Nexus with Ecological Risk Assessment

- Restoration Planning, Implementation, Oversight and Monitoring
- Public Involvement
- Interagency Coordination
A Tale of Two Dam Removals: Holyoke Coal Tar and GE/Housatonic Settlements

- Bartlett Rod Shop Company Dam, Amethyst Brook
- Tel Electric/Mill Street Dam, West Branch Housatonic River
### A Tale of Two Dam Removals:
Restoration Goals and Status

<table>
<thead>
<tr>
<th>Amethyst Brook</th>
<th>West Branch Housatonic River</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goals:</strong></td>
<td><strong>Goals:</strong></td>
</tr>
<tr>
<td>- improve habitat and access for American eel, sea lamprey, brook trout, brown trout, slimy sculpin</td>
<td>- improve natural stream conditions</td>
</tr>
<tr>
<td>- benefit freshwater mussels</td>
<td>- facilitate movement of resident aquatic species</td>
</tr>
<tr>
<td>- restore natural sediment movement downstream</td>
<td>- recover water quality</td>
</tr>
<tr>
<td><strong>Status:</strong></td>
<td><strong>Status:</strong></td>
</tr>
<tr>
<td>- $158,000 approved by Trustees May 2012</td>
<td>- $750K approved by Trustees October 2001</td>
</tr>
<tr>
<td>- Removed October 2012</td>
<td>- Bid solicitation April 2014</td>
</tr>
</tbody>
</table>

*MassDEP*
A Tale of Two Dam Removals: Challenges and Key to Success

Amethyst Brook

• **Challenges:**
  - Sediment management (physical)
  - Upstream infrastructure (dam)

• **Key to Success:**
  - “Shovel-ready”
  - NRD $$ was “keystone” but not only funding
  - Flexibility

West Branch Housatonic River

• **Challenges:**
  - Sediment management (contaminants)
  - Upstream infrastructure (active and abandoned RR bridge)
  - NRD main source of funding
  - Not “shovel-ready”

• **Key to Success:**
  - Technical leadership
  - Ongoing consultation
  - Low-flow conditions
  - Flexibility
Bartlett Rod Shop Company Dam Removal, Amethyst Brook
Tel Electric/Mill Street Dam, West Branch of the Housatonic River
Restoration Planning: Defining Restoration

- **DOI:** ...actions undertaken to **return an injured resource to its baseline condition**, as measured in terms of the injured resource's physical, chemical, or biological properties or the services it previously provided, when such actions are in addition to response actions completed or anticipated, and when such actions exceed the level of response actions determined appropriate to the site pursuant to the NCP.

- **Society for Ecological Restoration:** ...process of assisting the **recovery of an ecosystem** that has been degraded, damaged, or destroyed.
Prescribed Decision-Making Process

- Easily quantified (data, maps, models)
- Previously documented (photos, narratives, plans)
- Commonly observed (built and natural environment)
# Social Values of Ecosystem Services

A GIS application for assessing, mapping, and quantifying the social values of ecosystem services 2011, Sherrouse, Benson C.; Clement, Jessica M.; Semmens, Darius J. Applied Geography, 31: 748 – 760

<table>
<thead>
<tr>
<th>Social value type</th>
<th>Social value description</th>
</tr>
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<tbody>
<tr>
<td>Aesthetic</td>
<td>I value these forests because I enjoy the scenery, sights, sounds, smells, etc.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>I value these forests because they provide a variety of fish, wildlife, plant life, etc.</td>
</tr>
<tr>
<td>Cultural</td>
<td>I value these forests because they are a place for me to continue and pass down the wisdom and knowledge, traditions, and way of life of my ancestors.</td>
</tr>
<tr>
<td>Economic</td>
<td>I value these forests because they provide timber, fisheries, minerals, and/or tourism opportunities such as outfitting and guiding.</td>
</tr>
<tr>
<td>Future</td>
<td>I value these forests because they allow future generations to know and experience the forests as they are now.</td>
</tr>
<tr>
<td>Historic</td>
<td>I value these forests because they have places and things of natural and human history that matter to me, others, or the nation.</td>
</tr>
<tr>
<td>Intrinsic</td>
<td>I value these forests in and of themselves, whether people are present or not.</td>
</tr>
<tr>
<td>Learning</td>
<td>I value these forests because we can learn about the environment through scientific observation or experimentation.</td>
</tr>
<tr>
<td>Life Sustaining</td>
<td>I value these forests because the help produce, preserve, clean, and renew air, soil, and water.</td>
</tr>
<tr>
<td>Recreation</td>
<td>I value these forests because they provide a place for my favorite outdoor recreation activities.</td>
</tr>
<tr>
<td>Spiritual</td>
<td>I value these forests because they are a sacred, religious, or spiritually special place to me or because I feel reverence and respect for nature there.</td>
</tr>
<tr>
<td>Therapeutic</td>
<td>I value these forests because they make me feel better, physically and/or mentally.</td>
</tr>
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</table>
Restoration Planning: Social Definitions of Restoration

• **More Than One River:**
  - different and conflicting beliefs, values, and attitudes often exist regarding a single environmental concept or place...

• failure to account for these interpretive differences throughout policy and management processes is one of the primary causes of **intractable conflicts** and subsequent failure of environmental policies and management actions...
Boston Harbor Basin (USGS)
Neponset River Herring Restoration
Baker Chocolate Dam

Tilestone-Hollingsworth Dam
“Smart” Development: Economic Growth and Revitalization of the River.

History Uncompromised: Preserving and restoring the Human History of the River.

Putting up a Fight: Preserving Neighborhood Identities and River Legacies.

Wildland Dreams: Returning Nature to the River.

Esplanade Visions: Managing and Revitalizing the River and its Landscape.

Personal Connections: Maintaining and Restoring the River as a Personal Refuge.
Introduce project or program, seek feedback on a position, issue or proposal

Convey or solicit information

Develop common objectives or range of alternatives

Interactive dialogue and discussion

Identify acceptable actions or alternatives

Joint planning, shared decision-making or conflict resolution

High Level of Organizational Engagement

Low Level of Organizational Engagement

High Level of Public Participation

Low Level of Public Participation

Adapted from the Canadian Standards Association
Adapted from the Canadian Standards Association
Achieving Restoration on the Neponset River

- Twenty-six community members met eight times between May 2008 and March 2009
- Professional facilitator
- Unanimous Recommendations:
  - Remove the Tilestone and Hollingsworth Dam
  - Maintain key historic and structural elements of the Baker Dam with partial dam removal to allow construction a “nature-like fishway”
  - Contingent on other actions to address water quality and public health
  - Must be considered in their totality and are not separable
<table>
<thead>
<tr>
<th>Level of Organizational Engagement</th>
<th>INVOLVE</th>
<th>RESOLVE</th>
</tr>
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<tbody>
<tr>
<td>Public Hearing</td>
<td>Citizens Advisory Committee</td>
<td>Multi-stakeholder negotiation</td>
</tr>
<tr>
<td>Charrette</td>
<td>PLAN</td>
<td>INTERACT</td>
</tr>
<tr>
<td>Charrette</td>
<td>Charrette</td>
<td>Computer Simulation</td>
</tr>
<tr>
<td>EXCHANGE</td>
<td>EXCHANGE</td>
<td>CONSENT</td>
</tr>
<tr>
<td>Conference</td>
<td>Conference</td>
<td>Focus Group</td>
</tr>
<tr>
<td>CONSULT</td>
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Introduce project or program, seek feedback on a position, issue or proposal

Convey or solicit information

Develop common objectives or range of alternatives

Interactive dialogue and discussion

Identify acceptable actions or alternatives

Joint planning, shared decision-making or conflict resolution

Level of Organizational Engagement

High

Low

Level of Public Participation

Low

High

Adapted from the Canadian Standards Association
New Tactics for Restoration

Administrative Record
Trustee Council Resolutions
DOI NRD Fund

Statutes
Regulations
Policies

Injury Assessment
Nexus with Ecological Risk Assessment

Restoration Planning, Implementation, Oversight and Monitoring
Public Involvement
Interagency Coordination

MassDEP
For more information

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http://www.mass.gov/eea/agencies/massdep/cleanup/nrd/