Wetland Replacement in Massachusetts

Lisa Rhodes, MassDEP Wetlands Program – December 04, 2018
ACEC Energy and Environment Committee Meeting
PRESENTATION

• METHODS AND RESULTS OF MITIGATION STUDY

• KEY FINDINGS

• RECOMMENDATIONS

• STRATEGY
Assessment of Wetland Mitigation Success in MA

BACKGROUND

• Study funded by EPA 2011 Wetland Program Development Grant

• Follow up to *Compensatory Wetland Mitigation in Massachusetts* by Stephen Brown and Peter Veneman - December 1998 – 54.4% of replacement projects not in compliance with WPA
Mitigation Study Notes:

1. Study conducted 2012 – 2015; Peer and Internal Review 2016-2018;

2. Study evaluated BVW replacement (creation) (310 CMR 10.55 (4));

3. TERM: **Replacement Area**: Area built, whether or not it is determined to be a wetland;

4. TERM: **Wetland created**: area with > 50% hydrophytes and hydric soils and/or indicators of wetland hydrology;
44 Towns Studied

- Random selection;
- Representation by DEP Region, Ecoregion, population, number of NOI’s;
- 4718 Notices of Intent reviewed, 176 wetland replacement areas required (3.7%);
- Field evaluation of 91 sites where landowner permission received;
Field Assessments

- Transects (100 points total) for 75% cover
- Visual % cover estimate of plants > 1%
- Soil pit to ID hydric characteristics
- Other indicators of wetland hydrology
- Size of Replacement Area measured
- Reference sites: same assessment of site adjacent to lost wetland or adjacent to replacement area
14% of Required Replacement Areas Were Never Constructed

- **NO**: 14%
- **YES**: 86%

N = 91

Of Replacement Areas Actually Built, 65% Successfully Created Wetlands

- **NO**: 35%
- **YES**: 65%

N = 79

Replacement Areas Built and Wetland Created

- **NO**: 44%
- **YES**: 56%

N = 91
Relative Size of Replacement Area for Site Where Wetlands Created

- >110: 31%
- 100: 27%
- 90-99: 12%
- 75-89: 10%
- 51-74: 14%
- <50: 6%

N=49

Replacement Areas Built, Wetland Created and Appropriately Sized

- YES: 39%
- NO: 61%

N=89
Replacement Areas Meeting Performance Standards

- Yes: 35%
- No: 65%

n = 89

Wetland Replacement Areas Built and Meeting All Performance Standards
Which is natural and which is the replacement?
Which is natural and which is the replacement?
### Key Finding:
**Wetland Acreage Replaced Statewide**

<table>
<thead>
<tr>
<th>Sites</th>
<th>Wetlands Impacted (acres)</th>
<th>Required Replacement (acres)</th>
<th>Wetland Created (acres)</th>
<th>Wetland Created and Meeting the 7 Performance Standards (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 sites (in 44 towns)</td>
<td>4.89</td>
<td>7.07</td>
<td>5.97</td>
<td>4.68</td>
</tr>
<tr>
<td>4 Variance Sites</td>
<td>9.15</td>
<td>13.68</td>
<td>13.61</td>
<td>11.57</td>
</tr>
<tr>
<td><strong>TOTAL Acreage (Sites in 44 Towns + Variance sites)</strong></td>
<td><strong>14.04</strong></td>
<td><strong>20.75</strong></td>
<td><strong>19.58</strong></td>
<td><strong>16.25</strong></td>
</tr>
<tr>
<td><strong>TOTAL Acreage of 51 sites extrapolated to statewide basis, plus variance sites</strong></td>
<td><strong>48.27</strong></td>
<td><strong>70.24</strong></td>
<td><strong>61.37</strong></td>
<td><strong>49.01</strong></td>
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</tbody>
</table>

Acreage of created wetlands that met all performance standards exceeded acreage of wetlands impacted = NO NET LOSS STATEWIDE
KEY FINDING:
No Hydric Soils or Indicators of Wetland Hydrology in Failed Replacement Areas

Of the 79 sites that were built, 28 DID NOT create a wetland:
• All 28 sites = no hydric soils or indicators of wetland hydrology
• 25 of 28 sites = met wetland plant criteria (> 50%)
KEY FINDING:
Hydrology Not Assessed

Very few project designs used soils or groundwater monitoring to estimate groundwater level in replacement area
KEY FINDING:
Hydrology Not Assessed

Of 79 Field Assessed Sites:

• Only 10% projects had depth to groundwater in NOI (e.g. monitoring wells, soil pits)

• Many assumed groundwater elevation would be the same as for the adjacent wetland
KEY FINDING
Hydrology Not Assessed

83% projects had planting info - compared to 10% that had info on hydrology!
RECOMMENDATION: HYDROLOGY ASSESSMENT

Desired Information During Design and Post-Construction

• Top of saturation within 12-inches of surface during growing season
• Minimum three soil profiles documenting indicators of saturation
• Minimum of 3 groundwater monitoring wells measuring free water elevation
• Cross-sections showing grading, parent and placed material and seasonal high, average and low GW
• Precipitation and GW data from National Weather Service, USGS etc. to provide context
• Monitoring post-construction (3-5 years)
Use Actual Cross-Sections (Not “Typical”) to Depict Seasonal High, Average and Low Groundwater & Design Grades
RECOMMENDATION: Improve Avoidance and Minimization

Case Example
RECOMMENDATION: Improve Avoidance and Minimization

Three crossings (red); BVW impact 12,000+ sf; Five replacement areas (yellow)

Reduce alterations, reduce need for wetland replacement or restoration
RECOMMENDATION:
✓ Require an Environmental Monitor with experience
✓ Greater Oversight During Construction
✓ Replacement Area Construction Prior to/Concurrent with Alteration
RECOMMENDATION:
Allow for Other Strategies that Do Not Require On-Site In-Kind Replacement for All Projects (e.g. Ecological Restoration, Combined Mitigation Areas)
STRATEGY for IMPROVING BVW MITIGATION

SHORT TERM 2019: (NO REGULATORY CHANGE)

• Update MassDEP Replication Guidance:
  ✓ Strengthen Avoidance and Minimization
  ✓ Update Hydrology Section – How to assess
  ✓ Update Monitoring Section- Post Construction
  ✓ Highlight mitigation alternatives already allowable under WPA for certain projects:
    o Limited Projects (Inland 310 CMR 10.53(3) and Coastal (310 CMR 10.24(7))
    o Wetland Protection Act Exempt Projects (still need 401)
    o Variance Projects (310 CMR 10.05(10))

• Increased Review of Proposed Replacement Areas by Con Com, DEP
STRATEGY for IMPROVING BVW MITIGATION

LONG-TERM 2019-2021 (REGULATORY CHANGE)

• Convene Technical Advisory Committee
  ✓ Develop regulatory revisions for BVW Performance Standards
  ✓ Evaluate options to wetland replacement such as restoration for ALL projects
• Promulgate Regulatory Revisions
Thank you!  Lisa.Rhodes@mass.gov  617-292-5512