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: <u>Replacement Area</u>: Area built, whether or not it is determined to be a wetland;

4. TERM: <u>Wetland created</u>: area with <u>></u> 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



Of Replacement Areas Actually Built, 65% Successfully Created Wetlands



Replacement Areas Built and Wetland Created



Relative Size of Replacement Area for Site Where Wetlands Created



Replacement Areas Built, Wetland Created and Appropriately Sized



N=89

Replacement Areas Meeting Performance Standards



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

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

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





Seasonal High Water

> Seasonal Saturation

KEY FINDING:

Hydrology Not Assessed

Of 79 Field Assessed Sites:

- Only10% 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 <u>Design</u> and <u>Post-Construction</u>

- 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)



RECOMMENDATION: HYDROLOGY ASSESSMENT



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 <u>already allowable under WPA for certain projects</u>:
 - Limited Projects (Inland 310 CMR 10.53(3) and Coastal (310 CMR 10.24(7))
 - Wetland Protection Act Exempt Projects (still need 401)
 - 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