Atlas of Tidal Restrictions on the South Shore of Massachusetts

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FINAL ATLAS
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Route 3A crossing the Jones River in Kingston, MA
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This *Atlas of Tidal Restrictions on the South Shore of Massachusetts* was produced by the Metropolitan Area Planning Council (MAPC) in cooperation with the Mass. Bays Program (MBP) and the Executive Office of Environmental Affairs (EOEA), Massachusetts Wetlands Restoration Program (MWRP). The project was funded by MWRP. The format and text of the Atlas were adapted from the *Atlas of Tidally Restricted Salt Marshes - Buzzards Bay* (Buzzards Bay National Estuary Program, 1999 DRAFT) and the *Atlas of Tidally Restricted Salt Marshes – North Shore of Massachusetts* (MWRP, 1996).

The following individuals contributed to the preparation of this Atlas: Bill Clark, (MAPC project planner); Allan Bishop (MAPC GIS mapping); Martin Pillsbury (MAPC project manager); Susan Phinney (MAPC field work); Christy Foote-Smith (MWRP technical review) and Hunt Durey (MWRP technical and editorial review).

MAPC would also like to thank the U.S. Environmental Protection Agency Region One for providing a Global Positioning System (GPS) unit for use in this project.
SECTION 1  BACKGROUND, METHODS, AND RESULTS

Culvert on a tidal creek at Little Harbor, Cohasset (Site # COBB 3)
About this Atlas

Purpose and Goals

This Atlas identifies, inventories and prioritizes Massachusetts South Shore tidal restrictions that may adversely impact upstream tidal wetlands. This is the Final Atlas, which follows a Draft Atlas that was reviewed by each community’s Conservation Commission, other local officials and organizations, and the staff of the Wetlands Restoration Program. The end goals for the Atlas are:

- to provide valuable information to coastal area planners and decision makers;
- to increase public knowledge about tidal restrictions and their impacts; and
- to encourage and facilitate the restoration of tidally restricted South Shore coastal wetlands.

Authority

Atlas production was authorized through a service agreement between the Mass. Department of Environmental Protection (on behalf of the Massachusetts Wetlands Restoration Program) and the Metropolitan Area Planning Council.

Content

The Atlas covers a geographic area comprised by the towns of Weymouth, Hingham, Hull, Cohasset, Scituate, Norwell, Marshfield, Duxbury, Kingston and Plymouth (see study area map on opposite page). The Atlas contains:

- Background information on tidal restrictions and wetland restoration
- Overview maps of each town (11” x 17” sheets) that show tidal restriction locations as well as the geographic coverage of all detail maps
- Detail maps (8 1/2” x 11” sheets) showing groupings of tidal restriction sites
- Table of restoration site-specific data
- Priority site summary sheets with detailed information on priority sites

Atlas Distribution and Public Outreach

The MAPC distributed copies of the Draft Atlas to the following entities within each study area community: conservation commission, executive office (mayor, town manager, selectmen), planning board, harbor master, shellfish warden, public works department, and public library. Copies were also sent to local and regional environmental groups and other interested parties. Copies of the Final Atlas will be distributed to the same parties.
Shortly after the Draft Atlas was distributed, MAPC held public review meetings in collaboration with Conservation Commissions in the communities within the study area. The purpose of the meetings was to discuss the Draft Atlas, review the potential restoration sites and site prioritization, and to obtain feedback for incorporation into the final Atlas. The meetings with Conservation Commissions were held in January and February 2001 as follows:

- January 3, Marshfield
- January 16, Norwell
- January 16, Kingston
- January 17, Scituate
- January 22, Hingham
- January 24, Weymouth
- February 7, Duxbury
- February 8, Cohasset
- February 13, Hull

In addition to Conservation Commissions, the Draft Atlas was also sent to other local officials, state officials, and non-governmental organizations, who were also invited to attend the local public meetings. These included:

**Community Officials**
- conservation commissions
- mayors/selectmen/town managers
- public works departments
- planning boards
- harbor masters
- shellfish wardens

**State Programs**
- South Coastal Watershed Team
- Coastal Zone Management
- Mass. Bays Program

**Non-government Organizations**
- Jones River Watershed Assn.
- Back River Watershed Assn.
- Eel River Watershed Assn.
- Straits Pond Watershed Assn.
- The Gulf Association
- Manomet Observatory

The Draft Atlas was also presented to a meeting of the EOECA South Coastal Watershed Team on December 14, 2000.

**Summary of Comments Received and Responses**

As a result of circulating the Draft Atlas and holding the public meetings described above, MAPC received several written and oral comments on the Draft Atlas, which are summarized below. MAPC submitted these comments to the Wetlands Restoration Program and met with MWRP staff to decide on appropriate responses to the comments received. Responses to the comments are also summarized below.
Summary of Comments:

1. Town of Scituate

Comments: The Conservation Commission suggested one additional potential tidal restriction site in north Scituate Harbor area.

Response: MAPC conducted additional field work on the potential site and found that it should be included in the inventory and atlas. The identified tidal restriction actually encompasses two sites, which are labeled SCSH25 and SCSH26 in the inventory. It ranked as a medium priority.

2. Town of Cohasset:

Comments: The Conservation Commission felt the presentation was timely due to issues with the restoration of the Greenbush rail line and James Brook flood way project issues. A request was made to consider adding a potential site east of Atlantic Avenue which is cut off from Little Harbor by the roadway.

Response: MAPC conducted additional field work on the potential site and found that it should be included in the inventory and atlas. The new tidal restriction site is labeled COBB2 in the inventory, and it ranked as a low priority site.

3. Town of Hull

Comments: The Conservation Commission requested to review and add a potential site near Pemberton point if it proves to be restriction.

Response: MAPC conducted additional field work on the potential site and found that it should be included in the inventory and atlas. The new tidal restriction site is labeled HUHA6 in the inventory, and it ranked as a low priority site.

4. Town of Weymouth

Comments: The Conservation Commission said that it will be using the Atlas to help with Greenbush rail line mitigation issues.

Response: No response was requested

5. Old Colony Planning Council

Comments: OCPC verified identified tidal restrictions and confirmed past interest in these sites by Town boards and individuals.

Response: No response was requested
6. Mass Bays Program

Comments: Comments focused on the prioritization of restoration sites, and suggested a numerical justification of the prioritization of the tidal restriction sites.

After a review of the prioritization purpose and methods, it was concluded that the qualitative prioritization presented in the Draft and Final Atlas is the most effective method for ranking the sites. The Atlas prioritizes tidal restrictions based on a qualitative evaluation of the data collected for each restriction site (see p. 10 for a description of methods). Site rankings were based primarily on the area of potentially affected salt marsh up-stream of the restriction (the larger the area, the higher the rank). However, rankings for many sites were also influenced by other factors such as presence of a fishway, practicability of restoration, and potential benefits for additional upstream restrictions. Each site has unique values and constraints that were identified in the field and that would be difficult to accurately account for and compare using a standardized, quantitative formula. Therefore, a qualitative evaluation based primarily on size, while using best professional judgment to determine the influence of other factors, remains the basis for site rankings. The rankings represent only a first-cut evaluation of sites. People interested in restoring marshes are encouraged to review the data, and, using the Atlas rankings as a guide, make their own decisions about restoration priorities.

How to Use the Information in this Atlas

Municipalities, state and federal agencies, and other organizations and individuals should use this Atlas to plan for and initiate salt marsh restoration projects. Atlas information will be useful for identifying and targeting funds to those projects that best address specific community or regional restoration goals. In short, the Atlas gives people the ability to make informed salt marsh restoration decisions.

We strongly encourage public works and other transportation officials to regularly consult this Atlas when evaluating projects that may involve tidal restrictions. Often times, officials can design projects (e.g. culvert and bridge work) to reduce or eliminate tidal restrictions – with little or no increase in project costs, but with potentially significant environmental benefits. However, such benefits can only be realized when officials make a conscious effort to assess restriction information ahead of time and, when appropriate, incorporate restoration actions into project planning and design. This Atlas provides officials with the information needed to easily cross-check pending transportation projects with known tidal restrictions, and to identify potential salt marsh restoration opportunities. Transportation planners will also find this Atlas useful when evaluating long-range projects as part of the Regional Transportation Plan – projects (and hence restoration) that may be eligible for state and federal transportation funding.
Additional Copies of this Atlas

Additional copies of this Atlas are available from the Metropolitan Area Planning Council. Please contact Bill Clark at 617-451-2770, or email bclark@mapc.org.

Background

Tidal Wetlands and the Effects of Tidal Restrictions

Tidal wetlands are among Massachusetts’ most valuable natural resources. Often called the ocean’s farmlands, these wetland systems create the foundation of a coastal food web that supports a large variety of coastal fish and bird species. They also provide vital nesting and breeding habitats for migratory waterfowl along the Atlantic Flyway. Additionally, these wetlands serve as important nursery and spawning grounds for many commercially and recreationally important fish and shellfish species. Tidal wetlands arguably are the most productive and valuable of all the state’s natural systems.

Tidal wetlands are comprised of salt marshes and adjacent intertidal habitats (e.g. mud flats, sandy beaches, and rocky shores) that are found along tidal rivers and estuarine embayments. Ocean tides flood these areas daily, and for a few days each month, the moon’s gravitational pull creates especially high “spring tides” that flood the upper limits of salt marsh. Plants growing in upper marsh areas are specially adapted to this monthly salt water flooding cycle and, therefore, are especially sensitive to any deviation in that cycle. Even minor restrictions of tidal flows can stress and eventually kill off native upper marsh species.

Tidal restrictions cause hydrological changes that typically reduce the maximum elevations of tidal flooding and lower the water’s salt concentration. These changes cause a major transformation in vegetation and alter the entire upstream saltmarsh. Common reed and other invasive species that are more tolerant of brackish conditions often displace native saltmarsh grasses and rushes, thereby reducing plant diversity and changing vegetative structure (from a low grassy meadow to a tall reedy thicket). This change in vegetation, in turn, causes a major shift in wildlife use, as once diverse native saltmarsh creatures are replaced by fewer, more generalist species. In sum, most tidal restrictions – by altering hydrology and salinity – significantly harm upstream tidal ecosystems.

One of the South Shore’s tidal creeks restricted due to a bridge and a tidegate. Notice the tidal range on the wing walls.
Salt Marsh Protection and Restoration in Massachusetts

Background

In 1963, the Commonwealth of Massachusetts legally acknowledged the important values of coastal wetlands by passing the "Jones Act" – the first state law of its kind protecting coastal wetlands from dredging, filling, and other impacts. Prior to 1963, people dredged, filled, and completely destroyed vast areas of coastal wetlands for harbor improvements, transportation projects, and industrial, residential and commercial developments. A poignant example of this wholesale transformation is the city of Boston, a large portion of which was built upon historic coastal wetlands. The majority of surviving Massachusetts’ salt marshes have been degraded by other human activities including minor filling, mosquito ditching, and restriction of tidal flow.

Since the recognition of salt marsh values in the 1960s, Massachusetts has strengthened and expanded its wetlands protection laws. In the early 1970’s, the state enacted the Wetlands Protection Act which regulates the alteration of wetland areas by requiring local and state government review and approval of potentially damaging activities. While strict regulations under this law virtually prohibit direct adverse impacts to salt marshes, other indirect impacts (e.g. water pollution) are more difficult to control and continue to degrade these areas.

The Massachusetts Wetlands Restoration Program

Laws and regulations have halted most salt marsh alterations, but until recently no mechanism existed to reverse the historic destruction and degradation of these vital natural resources. That void was filled in 1994 when the Secretary of the Executive Office of Environmental Affairs established the Massachusetts Wetlands Restoration Program – the purpose of which is to help change the tide of past wetland losses to one of future net wetland gains.

Unlike mandatory wetland replication projects sometimes required under the Wetlands Protection Act, WRBP’s pro-active wetland restoration projects are voluntarily initiated by project sponsors. Restoration projects usually address problems of water quality, water quantity, and wildlife and fisheries habitat in the surrounding watershed. To assist project sponsors, WRBP provides technical, procedural, and funding assistance on an as-needed basis throughout the duration of a restoration project.
Restoring Salt Marsh in Massachusetts

Coastal salt marsh restoration planning and project implementation are among WRBP’s top priorities. This Atlas – along with similar efforts covering the North Shore, Buzzards Bay, and Cape Cod – reflect that focus and will soon provide an inventory of tidal restrictions for the entire Massachusetts coast. Once all the atlases are complete, WRBP will compile the information into one statewide summary atlas in both paper and GIS formats.

Planning alone does not restore wetlands, and that is why WRBP provides considerable assistance to project sponsors for project implementation. WRBP works with municipalities, environmental groups, state and federal agencies, corporate partners, and other organizations to complete priority wetland restoration projects identified in these atlases. To receive support from WRBP, restoration projects must be sponsored through WRBP’s GROWetlands (Groups Restoring Our Wetlands) program. The WRBP helps GROWetlands sponsors develop goals, secure funding, draft work plans, build project teams, use restoration sites for education and outreach, and monitor restoration sites to ensure success. The level of assistance is commensurate with the level of need and the value of the project. Please see Appendix C for the GROWetlands Project Nomination Form.

Restoration Approaches for Tidally Restricted Salt Marshes

The main objective of salt marsh restoration is to return – as closely as possible – a marsh’s hydrology and chemistry to natural, pre-restriction conditions. In many cases, full restoration is easily accomplished by removing the restrictive feature or by creating an opening sufficient to pass full tidal flows. For example, where tidal flow is reduced by undersized culverts (too small to pass the full spring tide), simply installing new culverts that are correctly sized and positioned will generally be enough to restore tidal range and proper salinity. In other situations, such as where people have developed low-lying property adjacent to salt marsh, restoring full tidal flow may not be possible because of flood concerns.

Engineers can sometimes design projects that will both improve tidal flow to the marsh and protect adjacent property from flooding by adding a protective device called a tide gate. Tide gates manage the flow of water through the restricted...
This electric tidegate shows the effectiveness of salt water on the control of Phragmites. The area on the right of the picture was dominated by Phragmites, until the City of Quincy installed this structure. It is expected that the Phragmites on the left will be reduced in a few years.

Methods

Site Identification and Mapping

Potential tidal restrictions were initially identified using USGS topographic maps, Mass. GIS data, CZM / NOAA color images, and input from local conservation commissions. MAPC staff field-checked potential restoration sites to verify the existence of restrictions and to collect information about restrictive structures and affected salt marsh. Field reconnaissance was limited to tidal restriction sites with public access. Staff recorded field data on the Tidal Restriction Field Inspection Sheets (a sample of these sheets is provided in Appendix B). A set of summary tables of the site data is provided in Appendix A.
MAPC staff digitally located restriction sites using a Global Positioning System (GPS) unit. Site locations were then entered into a Geographic Information System (GIS) program to produce digital maps. A GIS digital record of site locations and data will eventually provide (via the internet) a large group of people with easy access to this valuable information. It also allows planners and other resource managers to combine restriction information with other GIS map layers to reveal valuable spatial and data relationships.

Prioritization of Potential Restoration Sites

Potential restoration sites received a priority ranking based on a qualitative evaluation of several site characteristics. The purpose of site prioritization is to help people focus restoration efforts on those sites with the greatest potential benefits. The methodology is designed to provide a “first cut” at identifying the highest priority sites based on the data currently available. Local priorities will sometimes be different or more specific than those identified in this regional survey, and communities are encouraged to discuss and pursue their own restoration priorities. The results of the prioritization are shown in Table 3 below.

Potential restoration sites were categorized as “high, medium, or low” based on the eight prioritization factors listed below. “Affected area” was the primary factor used to determine restoration site priority rankings. Evaluations of the remaining seven factors often modified the initial area-based ranking. All high priority sites are discussed in greater detail on priority site summary sheets that include a site location map (often accompanied by a photograph), a summary description of the restriction, and an assessment of potential management and restoration options (see pages 21 - 46 for Priority Site Summary Sheets).

Affected Area

MAPC staff estimated the size of affected wetland areas upstream of the tidal restrictions based on field observation and review of maps. Sites of 10 to 20 acres generally received medium to high rankings, while sites over 50 acres primarily received a high priority ranking.

Anadromous Fishways

Some of the tidal restriction sites are located on waterways that serve as important anadromous fish runs. Restoration of these sites may result in fishway habitat improvements.

Contiguous Open Space

Using Mass GIS map information, staff noted whether potential restoration sites are adjacent to or within open space – either publicly owned (municipal, state, or
federal), or privately owned by a conservation organization such as the Trustees of Reservations.

**Shellfish Resource Areas**

Some of the sites are located within or contiguous to shellfish resource areas. Restoration of these sites may help restore or improve shellfish resources.

**Flood Structures**

Some of the identified tidal restrictions are caused by man-made flood control structures. Modification of these structures or their operation and maintenance plans may in some cases significantly improve salt marsh health without jeopardizing human property or safety.

**Areas of Critical Environmental Concern (ACEC)**

Several of the sites are located within two of the three designated South Shore ACECs: the Back River ACEC in Hingham and Weymouth and the Wier River ACEC in Hingham and Hull.

**Upstream Benefits**

In cases where a series of tidal restrictions are found along a river or stream, restoration of downstream sites may produce additional upstream benefits by enabling restoration of upstream sites.

**Feasibility**

Restoration feasibility is an important factor for every potential restoration site. Sites were given a feasibility rating based on factors such as site access, technical difficulty, estimated cost, regulatory obstacles, and property ownership. A qualitative assessment of these factors was made, resulting in a rating of high, medium, or low for each site.

**Other Considerations**

Some potential restoration sites possess unique characteristics that do not fall into any of the categories listed above. In some cases these other considerations affected the priority ranking of a site. These include such things as water supply impacts, involvement in a federal flood hazard project, and cranberry operations. Sites whose priority rankings were affected by one or more of these other considerations are listed below in Table 1.
**TABLE 1 – Site Priorities Affected by Other Considerations**

<table>
<thead>
<tr>
<th>Site #</th>
<th>Change in priority</th>
<th>Other Considerations Affecting Site Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>COBB7</td>
<td>Med to Low</td>
<td>Primary restriction is cut in bedrock at bend in river</td>
</tr>
<tr>
<td>DUBF11</td>
<td>Med to Low</td>
<td>Potential for flooding at nearby schools</td>
</tr>
<tr>
<td>DUBR17</td>
<td>Med to High</td>
<td>Small site, but potential benefits with minimal cost</td>
</tr>
<tr>
<td>HUAH4</td>
<td>Med to Low</td>
<td>Low feasibility due to potential flooding</td>
</tr>
<tr>
<td>MAGH3</td>
<td>Med to High</td>
<td>Small site, but potential benefits with minimal cost</td>
</tr>
<tr>
<td>MANR6</td>
<td>High to Med</td>
<td>Site is on private property</td>
</tr>
<tr>
<td>MABR20</td>
<td>Med to Low</td>
<td>Potential impact on existing cranberry operations</td>
</tr>
<tr>
<td>MABC24</td>
<td>Med to High</td>
<td>Potential Project IMPACT flood control site</td>
</tr>
<tr>
<td>SCHR20</td>
<td>Med to Low</td>
<td>Potential impact on municipal water supply wells</td>
</tr>
</tbody>
</table>

**Prioritization Summary Results**

Application of the above prioritization factors to the tidal restriction sites resulted in a qualitative ranking of each site as “high, medium, or low.” These priority rankings are displayed in Table 3 below. The number of sites within each prioritization rank is summarized here:

```
High    28 sites
Medium  34 sites
Low     57 sites
TOTAL   119 sites
```

The 28 sites ranked as “High priority” are listed in Table 2.

**TABLE 2 – List of High Priority Sites for Restoration**

<table>
<thead>
<tr>
<th>Site #</th>
<th>Community</th>
<th>Water body</th>
<th>Site #</th>
<th>Community</th>
<th>Water body</th>
</tr>
</thead>
<tbody>
<tr>
<td>COBB13</td>
<td>Cohasset</td>
<td>James Brook</td>
<td>KIH8B</td>
<td>Kingston</td>
<td>Halls Brook</td>
</tr>
<tr>
<td>DUJR6</td>
<td>Duxbury</td>
<td>Island Creek</td>
<td>MAGH3</td>
<td>Marshfield</td>
<td>Green Harbor</td>
</tr>
<tr>
<td>DUBR17</td>
<td>Duxbury</td>
<td>Back River</td>
<td>MAGH4A</td>
<td>Marshfield</td>
<td>Green Harbor</td>
</tr>
<tr>
<td>HIHH8</td>
<td>Hingham</td>
<td>Broad Cove</td>
<td>MAGH4B</td>
<td>Marshfield</td>
<td>Green Harbor</td>
</tr>
<tr>
<td>HIHH9A</td>
<td>Hingham</td>
<td>Broad Cove</td>
<td>MASR16</td>
<td>Marshfield</td>
<td>South River</td>
</tr>
<tr>
<td>HIHH9B</td>
<td>Hingham</td>
<td>Broad Cove</td>
<td>MAGH18</td>
<td>Marshfield</td>
<td>Green Harbor R.</td>
</tr>
<tr>
<td>HIHH10</td>
<td>Hingham</td>
<td>Home Meadow</td>
<td>MABC24</td>
<td>Marshfield</td>
<td>Bass Creek</td>
</tr>
<tr>
<td>HIHH12</td>
<td>Hingham</td>
<td>Worlds End</td>
<td>SCSH2A</td>
<td>Scituate</td>
<td>Scituate Harbor</td>
</tr>
<tr>
<td>HIWB14</td>
<td>Hingham</td>
<td>Fresh River</td>
<td>SCSH3</td>
<td>Scituate</td>
<td>Scituate Harbor</td>
</tr>
<tr>
<td>HUWR3</td>
<td>Hull</td>
<td>Straits Pond</td>
<td>SCBB11</td>
<td>Scituate</td>
<td>Musquashcut Bk</td>
</tr>
<tr>
<td>HUWR5A</td>
<td>Hull</td>
<td>Hull Bay</td>
<td>WEF1</td>
<td>Weymouth</td>
<td>Phillips Creek</td>
</tr>
<tr>
<td>HUWR5B</td>
<td>Hull</td>
<td>Hull Bay</td>
<td>WEF2</td>
<td>Weymouth</td>
<td>Mill Cove</td>
</tr>
<tr>
<td>KIJB3</td>
<td>Kingston</td>
<td>Jones River</td>
<td>WEF3</td>
<td>Weymouth</td>
<td>Back river</td>
</tr>
<tr>
<td>KITB8</td>
<td>Kingston</td>
<td>Tussock Brook</td>
<td>WEF4</td>
<td>Weymouth</td>
<td>Fore River</td>
</tr>
</tbody>
</table>
Using the Restriction Site Inventory

Restriction Site Naming Convention

Each restriction site is identified by an alphanumeric code according to the following naming convention: The first two letters are an abbreviation of the site's community; the second two letters are an abbreviation of the site's subwatershed; and the suffix number uniquely identifies a site within a particular community / subwatershed grouping. (See the keys for community and subwatershed abbreviation codes below).

Example: WEBR1 means Town of Weymouth, Back River, site #1

All restriction sites are labeled with the above referenced site codes on both the town summary maps and the detail maps.

Appendix A displays attributes for each site based on both remote and on-site survey and analysis. Data were summarized from the detailed Tidal Restriction Field Inspection Sheets which are not included in this Atlas, but which may be obtained by requesting copies from MAPC (see Appendix B for a sample Tidal Restriction Field Inspection Sheet).

Key to Community and Subwatershed Codes

Community Codes

<table>
<thead>
<tr>
<th>Community Code</th>
<th>Abbreviation</th>
<th>Town</th>
<th>State Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohasset</td>
<td>CO</td>
<td>Marshfield</td>
<td>MA</td>
</tr>
<tr>
<td>Duxbury</td>
<td>DU</td>
<td>Norwell</td>
<td>NO</td>
</tr>
<tr>
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Watershed Codes

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**TABLE 3 – Summary of Tidal Restriction Site Restoration Prioritization (Page 1 of 5)**

(see page 9 for description of prioritization methodology)

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<th>Feasibility</th>
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### TABLE 3 – Summary of Tidal Restriction Site Restoration Prioritization (Page 2 of 5)
(see page 9 for description of prioritization methodology)

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<td>Kingston</td>
<td>Jones River</td>
<td>&lt;1 acre</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<td>Kingston</td>
<td>Tussock Brook</td>
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<td>potential</td>
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<td>Y</td>
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<td>potential</td>
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<td>N</td>
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<tr>
<td>MAGH3</td>
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<td>Marshfield</td>
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<td>3-5 acres</td>
<td>N</td>
<td>Y</td>
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<td>Y</td>
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<td>5-10 acres</td>
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<td>Y</td>
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<td>Y</td>
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<td>&lt;1 acre</td>
<td>N</td>
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<td>South River</td>
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<td>Y</td>
<td>Y</td>
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<td>South River</td>
<td>&lt;1 acre</td>
<td>Y</td>
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<td>N</td>
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<td>&lt;1 acre</td>
<td>Y</td>
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<td>Shellfish Area</td>
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<td>ACEC</td>
<td>Potential Upstream Benefits</td>
<td>Feasibility</td>
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<td>MAGH18</td>
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<td>Marshfield</td>
<td>Green Harbor R.</td>
<td>&gt;100 acres</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>MABR19</td>
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<td>Marshfield</td>
<td>Duxbury Back R.</td>
<td>10-20 acres</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>M</td>
</tr>
<tr>
<td>MABR20</td>
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<td>Duxbury Back R.</td>
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<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<td>MACR21</td>
<td>Low</td>
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<td>Cut River</td>
<td>&lt;1 acre</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>L</td>
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<td>Bass Creek</td>
<td>1-3 acres</td>
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<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>H</td>
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<td>NONR8</td>
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<td>Norwell</td>
<td>North River</td>
<td>&gt;20 acres</td>
<td>Y</td>
<td>Y</td>
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<td>N</td>
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<tr>
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<td>Second Herring Bk.</td>
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<td>potential</td>
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<td>N</td>
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<td>Y</td>
<td>L</td>
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<td>Med</td>
<td>Norwell</td>
<td>North River</td>
<td>&gt;20 acres</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>L</td>
</tr>
<tr>
<td>PLTB1</td>
<td>Low</td>
<td>Plymouth</td>
<td>Town Brook</td>
<td>3-5 acres</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
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<tr>
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<td>Plymouth Harbor.</td>
<td>&lt;1 acre</td>
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<td>N</td>
<td>Y</td>
<td>N</td>
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<td>Bartlet Pond</td>
<td>N/A</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td>PLER4</td>
<td>Med</td>
<td>Plymouth</td>
<td>Eel river</td>
<td>&gt;20 acres</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
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<td>Eel river</td>
<td>&gt;20 acres</td>
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<td>N</td>
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<td>L</td>
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<td>Plymouth</td>
<td>Eel river</td>
<td>&lt;1 acre</td>
<td>Y</td>
<td>N</td>
<td>N</td>
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<td>Ship Pond</td>
<td>10+ acres</td>
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<td>N</td>
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<td>Black Pond</td>
<td>N/A</td>
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<td>SCSH1</td>
<td>Low</td>
<td>Scituate</td>
<td>Scituate Harbor</td>
<td>&lt;1 acre</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
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<tr>
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<td>Scituate Harbor</td>
<td>1-2 acres</td>
<td>N</td>
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<td>Scituate Harbor</td>
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<td>N</td>
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<td>N</td>
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<td>Scituate Harbor</td>
<td>5-10 acres</td>
<td>N</td>
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<td>SCHR4</td>
<td>Low</td>
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<td>Herring River</td>
<td>1-2 acres</td>
<td>N</td>
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<td>2-3 acres</td>
<td>potential</td>
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<td>Scituate</td>
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<td>&gt;20 acres</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
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<td>ACEC Potential</td>
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<td>Scituate</td>
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<td>&lt;1 acre</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>L</td>
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<tr>
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<td>Low</td>
<td>Scituate</td>
<td>Scituate Harbor</td>
<td>&lt;5 acres</td>
<td>N</td>
<td>N</td>
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<td>SCBB9</td>
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<td>Musguashcut Bk.</td>
<td>&lt;1-2 acres</td>
<td>potential</td>
<td>Y</td>
<td>N</td>
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<td>Y</td>
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<tr>
<td>SCBB10</td>
<td>Low</td>
<td>Scituate</td>
<td>The Gulf</td>
<td>1-2 acres</td>
<td>potential</td>
<td>Y</td>
<td>N</td>
<td>N</td>
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<td>&gt; 77 acres</td>
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<td>N</td>
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<td>Scituate</td>
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<td>20+ acres</td>
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<td>The Gulf</td>
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<td>N</td>
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<td>Scituate</td>
<td>Herring River</td>
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<td>L</td>
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<td>Scituate Harbor</td>
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<td>N</td>
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<td>potential</td>
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<td>N</td>
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<td>N</td>
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<td>Scituate</td>
<td>Sheep Ponds</td>
<td>5-10 acres</td>
<td>potential</td>
<td>Y</td>
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<td>Sheep Ponds</td>
<td>3-5 acres</td>
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<td>Scituate</td>
<td>Cedar Point</td>
<td>&gt;5</td>
<td>N</td>
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<td>N</td>
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<tr>
<td>WEWF1</td>
<td>High</td>
<td>Weymouth</td>
<td>Phillips Creek</td>
<td>&gt;10acres</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>H</td>
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<tr>
<td>WEWF2</td>
<td>High</td>
<td>Weymouth</td>
<td>Mill Cove</td>
<td>&gt;10acres</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>H</td>
</tr>
<tr>
<td>WEWB3</td>
<td>High</td>
<td>Weymouth</td>
<td>Back river</td>
<td>&gt;10acres</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>H</td>
</tr>
<tr>
<td>WEWF4</td>
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<td>Weymouth</td>
<td>Fore River</td>
<td>5-10acres</td>
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<td>Y</td>
<td>N</td>
<td>N</td>
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<td>Y</td>
<td>H</td>
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<td>Med</td>
<td>Weymouth</td>
<td>Fore River</td>
<td>5-10 acres</td>
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<td>N</td>
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<td>N</td>
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<td>Low</td>
<td>Weymouth</td>
<td>Back River</td>
<td>5-10 acres</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>Y</td>
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<td>Weymouth</td>
<td>Back River</td>
<td>20-25 acres</td>
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<td>N</td>
<td>Y</td>
<td>Y</td>
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<td>WEWF8</td>
<td>Low</td>
<td>Weymouth</td>
<td>Phillips Creek</td>
<td>2-5 acres</td>
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<td>N</td>
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<td>N</td>
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<td>Back River</td>
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SECTION 2 - PRIORITY RESTORATION SITE SUMMARIES

This section contains summary sheets for each of the tidal restriction sites that are ranked as high priority for restoration. The sheets have a standard format which includes:

- a location map
- a brief site description
- site remediation measures
- a summary of site characteristics
- in some cases a photograph of the site

Please also refer to Appendix A for more detailed information about all the tidal restriction sites in this atlas.
COHASSET: James Brook
Tidal Restriction Site COBB 13
(See Town Overview Map for location)

Site Description

James Brook is a tributary of Cohasset Harbor. The restriction at the beginning of James Brook, COBB13, is a newly installed flapper-gate structure that presently excludes any salt-water inflow to the upstream salt marsh. The area behind the new structure is a fairly healthy salt marsh, approximately 10-20 acres in size, with a heavy ring of Phragmites.

Site Remediation

Remediation measures could include:

- Installation of a self-regulating tide-gate in place of the flapper gate
- Municipal mapping of the storm drain systems and outfalls discharging to the James Brook system
- Regular street sweeping and catch basin maintenance to prevent sediments from reaching the salt marsh areas

Site Summary

- Type of restriction: flapper-gate
- Culvert condition: new
- Culvert material: concrete
- Culvert Size: 30" x 30"
- Wetland Area affected: 10-20 acres
DUXBURY: Island Creek
Tidal Restriction Site DUJR 6
(See Town Overview Map for location)

Site Description

Island Creek in Duxbury is a tidal creek starting in Island Creek Pond, running downstream to Mill Pond, and draining to Kingston Bay by Hicks Point. The tidal creek is an active anadromous fishway. The restriction site DUJR 6 is a road culvert under Bay Road, which is built on a dike across the marshes of South Duxbury. DUJR 6 is a good example of how the early settlers straightened the coastal routes across tidal areas. This site has an up stream effect on DUJR 5.

Site Remediation

Potential remediation measures for this site could include:

- Enlarge the box culvert under Bay Road to allow adequate tidal flow
- Implement stormwater control measures to keep sand out of the waterway

Site Summary

- Culvert condition: fair
- Culvert material: stacked granite block & concrete
- Culvert size: 12’ x 8’
- Length of culvert: 32’
- Wetland area affected: 2-3 acres

(No site pictures available)
**Site Description**

DUBR 17 is an old spar soak. Originally a dike was built across the opening to this marsh and an outlet pipe allowed water in and out. As the accompanying picture shows the pipe size is very small. The vegetation make up of the back marsh became more fresh than salt because of this restriction. Over time and with poor maintenance, the dike is eroding away. The top half of the daily tides are flowing over the dike and into the salt marsh. Just this small amount of saltwater flow is helping to reinvigorate the upstream marsh.

**Site Remediation**

Potential remediation measures for this site could include:

- Removal of the concrete pipe
- Removal of some portion of the restricting dike, (it is already slowly eroding, but assistance would speed the process).
- Further upstream study is recommended to prevent any adverse impacts.

**Site Summary**

- Culvert condition: poor
- Culvert size: 24”
- Length of pipe: +/- 30’
- Length of dike: approx. 40 feet
- Area of wetlands affected: 3 acres
HINGHAM: Broad Cove Area
Tidal Restriction Sites HIHH 8, 9A & 9B
(See Town Overview Map for location)

Site Description
Broad Cove is closed off to Hingham Harbor directly by an outfall system under Route 3A, Otis Street (HIHH 8). This area was filled in the 1860’s. The present day structure is not visible at any tide but the flow is quite substantial. The up-stream restrictions are due to a broken flapper gate at site HIHH 9A as the tidal creek tries to go under Route 3A again just below the old Hingham police station. The creek leading to Site HIHH 9A is heavily filled with sediment from road run-off and the same sediments are responsible for jamming the broken flapper gate. The salt marsh upstream of this flapper gate is heavily impacted with Phragmites. Site HIHH 9B is an undersized culvert at Downer St.

Site Remediation
Potential remediation measures for these sites could include:

- During the future rebuilding of Route 3A, make the culverts at site HIHH 8 larger
- Consider using a self-regulating tidegate at HIHH 9A. This will allow flood storage in the area between Downer Avenue and

Site Summary, HIHH 8
- Culvert condition: unknown
- Restriction width: unknown
- Restriction length: 72’
- Area of wetlands affected: 50+ acres

Site Summary, HIHH 9B
- Culvert condition: good
- Restriction opening: 4’x10’
- Restriction length: 65’
- Channel width: 10’
- Wetland area affected: 50+ acres

Site Summary, HIHH 9A
- Culvert condition: failing
- Restriction opening: 3’x3’
- Restriction length: 70’
- Channel width: 8’
- Area of wetlands affected: 50+ acres
HINGHAM: Home Meadow
Tidal Restriction Site HHH 10
(See Town Overview Map for location)

Site Description

The restriction at this site is a tide gate at the end of a culvert. The culvert is what remains of a tidal creek once flowing into Hingham Harbor. Due to the restricted flow of saltwater and the amount of freshwater directed to Home Meadows from adjacent development, the area is ringed by *Phragmites*, which is spreading. The tide-gate is approximately 500-600' from the mouth of what had been the tidal creek. The flow from the culvert and tide-gate takes a 90° turn and enters a second metal culvert as the flow goes under the Greenbush railroad tracks. This restriction could be addressed with the reconstruction of the Old Colony railroad’s Greenbush line.

Site Remediation

Potential remediation measures for this site could include:

- Retrofit a self-regulating tide-gate, followed by a management plan that would allow more salt water to enter the Home Meadows system to encourage salt marsh and discourage & control the invading *Phragmites*
- Work with the Greenbush Wetlands Mitigation Committee for replacement of existing structures as possible mitigation measures
- Municipal mapping and management of the storm drain systems and outfalls
- Street sweeping and catch basin maintenance to prevent sediment build-up
- Strategic sediment removal to encourage more natural salt marsh growth

Site Summary

- Type of restriction: box culvert
- Culvert condition: good
- Culvert material: concrete area at tide-gate
- Culvert size: 72” round
- Tide gate size: 6’x 8’ manual gear
- Wetland area affected: 100+ acres
- Headwall opening size: 12’x 7’
HINGHAM: World’s End
Tidal Restriction Site HIHH 12
(See Town Overview Map for location)

Site Description

The Trustees for the Reservation privately own site HIHH 12. Two man made dikes and outlet structures form the restriction. These were originally put in place to form grazing land for cattle. The resulting upstream area has changed to a fresh water wetland and pond. What remains of the healthy salt marsh in the lower area is being invaded by Phragmites. The upper ponded area is also being invaded by Phragmites.

Site Remediation

Potential remediation measures for this site could include:

- Removal of the water control structures and dismantle the dikes to ensure a salt water flow, even if only on high tide events

Site Summary

- Type of restriction: 2 dikes & 2 outlet structures
- Dike condition: good
- Outlet condition: one structure buried in the sand and its condition is undeterminable. The second outlet is a pipe in fair to poor condition due to vegetation build up and debris
- Dike material: one structure is stacked rocks; the other is gravel
- Outlet materials: concrete
- Wetland area affected: 20+ acres
HINGHAM: Fresh River
Tidal Restriction Site HIWB 14
(See Town Overview Map for location)

Site Description

This site is in the Back River Area of Critical Environmental Concern (ACEC). The actual restriction is a box culvert in the Fresh River, which is a tributary of the Back River. The site is an active smelt run but the potential for greater use of the site could be greatly enhanced if the structure leading upstream could be lowered and refashioned, according to officials with the Division of Marine Fisheries.

Site Remediation

Potential remediation measures for this site could include:

- Retrofit a larger culvert to allow greater tidal flow to the upstream saltmarsh
- Municipal mapping of the storm drain systems and outfalls
- Regular street sweeping and catch basin maintenance to prevent sediments from reaching pooling area
- Strategic sediment removal to encourage more natural salt marsh growth
- Work with abutters to develop a program to control *Phragmites*

Site Summary

- Constriction Point: box culvert
- Culvert condition: fair
- Culvert material: granite block
- Culvert Size: 4' x 6'
- Wetland area affected: 25+ acres

(No site picture available)
HULL: Straits Pond
Tidal Restriction Site HUWR 3
(See Town Overview Map for location)

Site Description

This site is the entrance to Straits Pond. The pond is the terminus of the Weir River and the boundary between the towns of Hull and Cohasset. There are two tidegates (one electric and one manual) connecting the Weir River and Straits Pond on the pond side of the culvert under Route 228. The pond itself has a natural restriction, a rock ledge just before the tidegates inside the pond. This ledge acts as a natural control or barrier for inflow and outflow to Straits Pond. Presently the Town of Hull controls the water levels of Straits Pond.

The pond has a saltmarsh fringe that is being replaced by rapidly invading Phragmites. The intrusion of Phragmites is due to several causes, including the restricted tidal flow as well as stormwater runoff and over wash of sediments from the Black Rock Beach area.

Site Remediation

Potential remediation measures for this site could include:

- Strategic sediment removal from Straits Pond to encourage salt marsh growth
- Regular street sweeping and catch basin maintenance to reduce sediments entering Straits Pond
- Develop a management plan for control of water and possibly salinity levels
- Municipal mapping of the storm drain systems and outfalls (both towns)

Site Summary

- Culvert condition: fair
- Culvert material: Granite Block
- Culvert Size: 12’x 5’ with 2 openings
- Acres affected: 50+ acres

(No site pictures available)
**HULL: Hull Bay**  
Tidal Restriction Sites HUWR 5A & 5B  
(See Town Overview Map for location)

**Site Description**

These two tidal restriction sites affect a small pocket salt marsh cut off from the bay by George Washington Boulevard. The road is a four-lane heavily traveled roadway with drainage outfalls on both sides of the road. The pipes that feed the salt water to the marsh are at such a level that they are not visible, so their exact size could not be determined. The interior marsh is in need of a shoreline cleaning of debris. Attention should also be paid to sediment input sources. Stormwater runoff is contributing to favorable conditions for the invading *Phragmites*.

**Site Remediation**

Potential remediation measures for this site could include:

- Address the tidal restriction by retrofitting or expanding the culverts under Washington Boulevard to allow for adequate tidal flow to the upstream marsh
- Regular street sweeping and catch basin maintenance to prevent sediments from reaching pooling area
- Strategic sediment removal to encourage more natural salt marsh growth
- Municipal mapping and management of the storm drain systems and outfalls

**Site Summary**

- Culvert condition: fair
- Culvert material: concrete pipe
- Culvert Size: 2 openings of unknown size
- Wetland area affected: 3-5 acres

(No photo available)
KINGSTON: Landing Road
Tidal Restriction Site KIJR 3
(See Town Overview Map for location)

Site Description

KIJR 3 is a box culvert under Loring Road at the confluence of Halls Brook and the Jones River. The culvert presently restricts the natural flow to Halls Brook and Tussock Brook. The roadway area and adjacent marina flood regularly during storm events and some astronomically high tides. The upstream area is greatly impacted by Phragmites due to poor flushing and large amounts of fresh water input due to stormwater runoff.

Site Remediation

Potential remediation measures for this site could include:

- Enlarge the opening under Loring Road. Replacing the box culvert with a larger size culvert or a small bridge instead of a culvert would provide a much greater rate of flushing than is presently available. Further study of the upstream impacts of any increased flow to Halls Brook and Tussock Brook would need to be done.

Site Summary

- Type of restriction: box culvert
- Culvert condition: good
- Culvert material: concrete
- Culvert size: 6' x 22' x 42'
- Wetland area size: 30+ acres

(No site pictures available)
**KINGSTON: Tussock Brook**  
*Tidal Restriction Site KITB 8*  
(See Town Overview Map for location)

**Site Description**

Tussock Brook is restricted as Route 3 South crosses over it. The foundation of Route 3 South is actually a dike across the marshes of the Jones River. The major restriction point is the box culvert under the roadway, however there is also a dam in the box culvert that further restricts water flow, and impedes the passage of anadromous fish. Access to this site is very difficult due to Route 3 and the surrounding marshes. The area is rich in wildlife with deer, raccoon and abundant bird life, all seen during the site visit.

**Site Remediation**

Potential remediation measures for this site could include:

- The removal of the dam at site KITB 8 could increase tidal flow to the upstream salt marsh. This could also benefit the spawning anadromous fish that use the stream, allowing an increased number of fish to pass upstream.

**Site Summary**

- Culvert condition: good
- Culvert material: concrete
- Culvert size: unknown (not accessible)
- Length of culvert: +/- 100'
- Area affected: 20+ acres

(No site pictures available)
**KINGSTON: Halls Brook**  
**Tidal Restriction Site KIHB 9**  
(See Town Overview Map for location)

**Site Description**

The restriction at Site KIHB 9 consists of a channeled stream and a dam. The dam forms a small millpond. The tidal creek is called Halls Brook on the USGS maps but is known locally as Stony Brook. The Massachusetts Archives map # 1235 shows the site as that of a gristmill in 1795 (the name on the historic map is Stony Brook). KIHB 9 is upstream of KIJR 3, which is the key downstream restriction in the area.

**Site Remediation**

Potential site remediation measures could include:

- Increase the size of the box culvert under Landing Road, which would restore greater tidal flow and benefit salt marsh vegetation upstream of the site.

- The addition of a fish ladder or removal of the dam, which would enhance the stream’s potential for use by anadromous fish.

- Redirect stormwater runoff away from the wetlands, which would reduce the input of fresh water and assist in the control of the *Phragmites* problem.

**Site Summary**

- Channel condition: needs cleaning
- Channeled streamlet size: 9’ x 4’ x +300’
- Dam condition: fair
- Spillway condition: needs maintenance
- Dam material: stacked granite block & boulders
- Dam size: 200’ x 11’
- Dam spillway: 6’
- Wetland area affected: 2-3 acres
(No site photo available)

**MARSHFIELD: Green Harbor**

Tidal Restriction Site MAGH 3

(See Town Overview Map for location)

**Site Description**

Site MAGH 3 is part of a forgotten and collapsed drainage system. The original system consisted of a metal flapper gate and piping. Today the upstream low-lying area is completely dominated by *Phragmites*. The potential restoration of salt marsh would benefit the area by removing a fire hazard, improving flood storage capacity, and improving habitat value for wildlife.

**Site Remediation**

Potential site remediation measures could include:

- Reconstruction and enlargement of the flapper gate and drainage system
- The town of Marshfield could replace and enlarge the existing drainage line under the town parking lot and along Dyke Road
- The town could work with the Plymouth County Mosquito Control group for maintenance dredging of the down stream creek areas

**Site Summary**

- Culvert condition: very poor to non-existent
- Flapper condition: destroyed, unusable
- Existing channel width: 2-3 feet
- Area of wetlands affected: 3-5 acres
- Area of *Phragmites*: 3-5 acres
MARSHFIELD: Green Harbor Area
Tidal Restriction Site MAGH 4A & 4B
(See Town Overview Map for location)

Site Description

Sites MAGH 4A and 4B are part of a flood control system for Brant Rock Center. The 10+ acre site is presently dominated by *Phragmites*. The Town of Marshfield and FEMA, through Project IMPACT, are presently scheduling the replacement of the existing manual steel tide-gates with new self-regulating tide-gates. The area east of the tide-gates is a low-lying area that will be used for flood storage during storm events and will once again have natural flows to help control the invasive *Phragmites* and improve the health of the salt marsh. The potential restoration of the salt marsh would benefit the area by improving flood storage capacity, improving habitat value for wildlife, and removing a fire hazard.

Site Remediation

Potential remediation measures for Sites 4A and 4B include the following:

- The town of Marshfield and FEMA Project IMPACT are working to create a restored salt-marsh/flood control area

- The town could work with the Plymouth County Mosquito Control Commission for maintenance dredging

Site Summary

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<th>Site 4A</th>
<th>Site 4B</th>
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<td>Culvert condition: good</td>
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<tr>
<td>Flapper condition-good</td>
<td>Flapper condition: good</td>
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<tr>
<td>Flapper size: 48”x30”</td>
<td>Flapper size: 48”x36”</td>
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<td>Tide-gate size: 48”x36”</td>
<td>Tide-gate size: 48”x30”</td>
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<td>Existing channel width: 7 feet</td>
<td>Tide-gate condition: hinge broken</td>
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<td>Wetland area affected: 10-15 acres</td>
<td>Headwall Size: 12’x7’</td>
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<tr>
<td>Acres of <em>Phragmites</em>—5+ acres</td>
<td>Existing channel width: 8’</td>
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MARSHFIELD: South River
Tidal Restriction Site MASR 16
(See Town Overview Map for location)

Site Description

This site is a restriction of a tidal creek caused by a tide gate just off Route 139 (Ocean Street) beside the Pilgrim Apartment Complex. The structure prevents flow upstream to approximately 10 acres of land formerly used as a Massachusetts State game farm. The land is located behind the Marshfield town library plaza. The restriction has changed the composition of the upstream marsh from salt marsh to a fresh water wetland system which is dominated by *Phragmites*. Stormwater runoff contributes additional fresh water inputs to the marsh.

Site Remediation

Potential site remediation measures include:

- Reconstruction or replacement of the tide gate off of Rt. 139 to allow adequate tidal flow to the upstream wetland system
- Strategic sediment removal from tidal creek to encourage salt marsh growth
- Regular street sweeping and catch basin maintenance to prevent sediments from reaching wetlands
- Municipal mapping and management of the storm drain systems and outfalls
- Development of a management plan for control of water levels which could potentially achieve higher salinity levels. Further, because of the water quality problems, water level issues, insect problems, and *Phragmites*, a community group could study and prioritize the environmental issues of the area.

Site Summary

- Culvert condition: fair
- Culvert material: reinforced concrete pipe
- Culvert Size: 36”
- Headwall material: stacked granite blocks
- Flapper-gate size: 50” steel
- Wetland area affected: 10+ acres
(No site photo available)

MARSHFILELD: Green Harbor
Tidal Restriction Site MAGH 18
(See Town Overview Map for location)

Site Description

Site MAGH 18 is a flapper gate system with two openings that restrict tidal flow. The land behind the dike was historically all salt marsh until the installation of these gates. This land is a polder, land below sea level. The original idea of the tide gates was to claim land for agricultural use. Today their function is flood control. The vegetation make-up of the marsh behind these gates presently is in the process of changing from salt marsh to fresh water wetlands. The restoration of salt marsh and the benefits of having a tidal exchange in the upstream waterways can be achieved with a management plan for the tide gates.

Site Remediation

Potential site remediation measures could include the following:

- Develop and implement a management plan to control the opening and closing of the flapper gates, possibly with a self-regulating tide gate system
- Work with the Plymouth County Mosquito Control group for dredging of upstream creek
- Work on this site could lead to restoration at site MABC24

Site Summary

- Culvert condition: good
- Restriction width: 30 feet
- Restriction length: 62 feet
MARSHFIELD: Bass Creek
Tidal Restriction Sites MABC 24
(See Town Overview Map for location)

Site Description

The restriction point at MABC 24 is a culvert that goes under Route 139 at the junction of Ocean Street and Plymouth Avenue. However, this site also has problems that originate upstream and downstream of the listed restriction point. The larger downstream problem is site MAGH 18, a tide-gate that keeps salt-water flow out of Green Harbor River and ultimately Bass Creek. Another issue is a set of stormwater drainage pipes whose sources of flow are unknown. The upstream issues are stormwater drainage pipes of differing sizes, road crossings, and seasonal flow issues. The restriction has changed the composition of the marsh from salt marsh to a fresh water wetland system that is dominated by Phragmites.

Site Remediation

Potential remediation measures for this site could include:

- Development of a management plan for control of water levels to achieve higher salinity levels. Presently this site is under study by Marshfield’s Project IMPACT and remediation strategies are forth coming.
- Municipal mapping and management of the storm drain systems and outfalls
- Regular street sweeping and catch basin maintenance to prevent sediments from reaching wetlands and stream beds
- Strategic sediment removal from tidal creek to encourage salt marsh growth

Site Summary

- Culvert condition: fair
- Culvert material: reinforced concrete pipe
- Culvert Size: 36"
- Wetland area affected: 1-3 acres
SCITUATE: Scituate Harbor
Tidal Restriction Site SCSH 2A
(See Town Overview Map for location)

Site Description

Known locally as the skating area, site SCSH 2A is a restricted tidal creek located off the section of Scituate Harbor behind the barrier beach Peggotty Beach. The upstream salt marsh has a restricted tidal flow because of a small metal flapper gate attached to a culvert under Kent Street. The salt marsh is ringed by a fringe of *Phragmites* that is growing fairly rapidly. The invasive *Phragmites* is expanding because of the restriction, as well as fresh water influences from stormwater runoff.

Site Remediation

Potential remediation measures could include:

- Replace the flapper gate with a self-regulating tide gate
- Work with the local Mosquito Control group and develop an open marsh management plan
- Work with the town to develop a program to control stormwater runoff to the

Site Summary

- Restriction Point: concrete pipe with a steel flapper gate
- Culvert condition: fair
- Culvert material: concrete
- Culvert Size: 18"
SCITUATE: Scituate Harbor
Tidal Restriction Site SCSH 3
(See Town Overview Map for location)

Site Description

Site SCSH 3, under Gilson Road, is a restriction caused by two metal flapper gates and a drainage pipe. The flapper gates are in place to control flooding upstream, but the negative impact to the upstream saltmarsh due to restricted tidal flow is quite extensive. Phragmites has become the dominant plant.

Site Remediation

Potential site remediation measures could include:

- Study the feasibility of installing a self-regulating tide gate which would restore adequate tidal flow to the upstream marsh

Site Summary

- Culvert condition: poor
- Headwall Condition: poor
- Culvert material: corrugated steel pipes with metal flappers
- Culvert size: 24”
- Length of culvert: 28’
- Wetland area affected: 10 acres

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SCITUATE: Musquashcut Pond
Tidal Restriction Site SCBB 11
(See Town Overview Map for location)

Site Description

Site SCBB 11 is an electric tide gate located at the point where Musquashcut Pond enters Musquashcut Brook, which is a tributary to the Gulf. Musquashcut Pond is designated a Great Pond by the state of Massachusetts. The pond is 77 acres in size and surrounded by houses on two sides, North Scituate Beach on the third and Hatherly road on the fourth. The problem of reduced salinity in the salt marsh is due to restricted inflow from the Gulf and stormwater runoff from areas surrounding the site.

Site Remediation

Remediation measures could include:

- Develop a management plan for the tide gate to control the water level and flushing rate of Musquashcut Pd.
- Work cooperatively with the local Mosquito Control group to develop an open marsh management plan
- Work cooperatively with EOEAs Dept. of Food and Agriculture and the Towns of Hull and Cohasset to seek a solution to the midge problem
- Develop a municipal map of the storm drain systems and outfalls
- Work with the town to manage stormwater runoff to the pond.
- Strategic sediment removal to encourage more natural salt marsh growth

Site Summary

- Restriction Point: electric tide gates
- Culvert condition: good
- Culvert & tide gate materials: concrete & steel
Site Description

Weymouth Fore River site #1 is a restriction caused by a large wooden flapper-gate. The upstream salt marsh is getting smaller due to decreased tidal flow, and is experiencing an invasion of *Phragmites*, particularly in sections of the stream bank influenced by storm water run-off. The majority of the area that was formerly a salt marsh has turned to fresh water wetlands.

This section of the marsh has been identified by Norfolk County Mosquito Control as a breeding area for mosquitoes. Accordingly, measures to increase the flushing rate of the up-stream marsh could also help eliminate some of the mosquito problem.

Site Remediation

Potential site remediation measures could include:

- Retrofit with a self-regulating tidegate
- The town of Weymouth could redirect some of the storm water drainage from North Street
- Work on this site would have upstream benefits to site WEWF8

Site Summary

- Flapper Condition: good
- Flapper material: wood
- Flapper size: 7' x 6'
- Wetland area affected: 10+ acres

WEYMOUTH: Mill Cove, Fore
River
Tidal Restriction Site WEWF 2
(See Town Overview Map for location)

Site Description

Site WEWF 2 is a tidal creek that goes under the Greenbush rail line. Presently the line is under consideration for rebuilding and reuse. Historic tidal flow was originally interrupted by the construction of a dike through the salt marsh, forming the base for the railroad. The restriction is constructed of granite blocks laid in a box formation. Presently the marsh on the upstream side of the restriction point is being heavily invaded by *Phragmites*. The primary reason for the invasive *Phragmites* is an extraordinary amount of fresh water influence that no longer gets mixed with salt water. The fresh water inputs to the marsh are augmented by stormwater runoff.

Site Remediation

Potential site remediation measures could include:

- Enlarging the box culvert during the reconstruction of the Greenbush rail line
- A maintenance program to keep the debris clear of the culvert
- A town drainage system maintenance program in sensitive marsh areas
- Work with the local Mosquito Control Group to do Open Marsh Management

Site Summary

- Culvert condition: good
- Restriction width: 4’
- Restriction length: +/- 100’
- Height to track bed: 25-30’
- Wetland area affected: 10+ acres
- Acres of *Phragmites*: 6-7 acres
WEYMOUTH: Back River
Tidal Restriction Site WEWB 3
(See Town Overview Map for location)

Site Description

Weymouth Back River site WEWB 3 is a tidal creek located at the end of Puritan Road. The tidal creek enters a culvert and moves inland to a small salt marsh before being culverted again at Emerson Road. The tidal restriction is caused by a culvert under the access road of Great Esker Park. The area over the top of the culvert has occasionally collapsed and been refilled, which over time may have reduced the capacity of the flow in the culvert. It is possible that the tidal flow is strong enough to remove some of the fill by itself.

The up-stream area is seeing an invasion of Phragmites, particularly in sections of the stream bank influenced by stormwater runoff. Another related issue of concern is sediment loading to the stream bed.

Site Remediation

Potential site remediation measures could include:

• Replacement or enlargement of the culvert under the access road to allow adequate upstream tidal flow

• Creation of larger pools along the tidal creek course by removal of sediments

Site Summary

〇 Culvert Condition: Fair
〇 Culvert width: 40"
〇 Length of culvert: 159’
〇 Wetland area affected: 10+ acres
WEYMOUTH: Fore River
Tidal Restriction Site WEWF 4
(See Town Overview Map for location)

Site Description

This site is a restriction of a tidal creek caused by a roadway structure. Flow at this site is restricted by a concave concrete structure with a culvert below the low tide water line, in an area of filled salt marsh that provides access to the power lines from the nearby Edgar / Sithe power station. The restriction has changed the composition of the furthest upstream marsh above WEWF4A from salt marsh to a fresh water wetland system. This wetland and the area just above the restriction at WEWF 4 are both dominated by *Phragmites*.

Site Remediation

Potential site remediation measures could include:

- Changing the existing concave roadway structure to a bridge, thus enlarging the waterway channel
- Work with the Greenbush Wetlands Mitigation Committee as they explore potential mitigation sites in the area
- Development of a management plan for control of water levels which could potentially achieve higher salinity levels which would reduce the *Phragmites* problem

Site Summary

- Culvert condition: fair
- Culvert material: concrete
- Culvert Size: 36" reinforced concrete pipe
- Headwalls material: stacked granite blocks
- Wetland area affected: 10+ acres

(No site photo available)
This section contains the atlas maps of tidal restrictions for the ten towns on the South Shore. There are two types of maps:

- **Town Overview maps** that show the location of all tidal restrictions in each town. These are oversized 11x17 inch maps which are folded into the report in the first part of this section.

- **Detailed USGS quad-based maps** of each tidal restriction site. Some maps have multiple restriction sites on them. These are standard 8 1/2 x 11 inch maps, grouped alphabetically by community, and found immediately after the oversized town overview maps.

A tidal creek near Little Harbor, Cohasset (Site # COBB 3)
Appendix A – Tidal Restriction Site Data Tables

The following tables contain the inventory of tidal restrictions on the South Shore. The data is presented in three separate tables as follows:

Table A-1: Tidal Restriction Site Identification
Table A-2: Tidal Restriction Site Characteristics
Table A-3: Tidal Restriction Site Comments
## APPENDIX A: TABLE A-1 – Tidal Restriction Site Identification (Page 1 of 4)

<table>
<thead>
<tr>
<th>Site #</th>
<th>Priority Code</th>
<th>Town</th>
<th>County</th>
<th>USGS Quad</th>
<th>Water Body</th>
<th>Location</th>
<th>Latitude North GPS #</th>
<th>Longitude West GPS#</th>
</tr>
</thead>
<tbody>
<tr>
<td>COBB2</td>
<td>Low</td>
<td>Cohasset</td>
<td>Norfolk</td>
<td>Hull</td>
<td>Treats Pond</td>
<td>Atlantic Avenue</td>
<td>N 42 15’ 00.73&quot;</td>
<td>W 70 47’ 21.40&quot;</td>
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<tr>
<td>COBB3</td>
<td>Medium</td>
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<td>Norfolk</td>
<td>Hull</td>
<td>tidal creek / Little Harbor</td>
<td>Beach &amp; Mohawk</td>
<td>N 42 14’ 59.24&quot;</td>
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<td>Hull</td>
<td>Richardson Brook</td>
<td>Jerusalem</td>
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<td>Cohasset</td>
<td>Norfolk</td>
<td>Hull</td>
<td>by Bow St</td>
<td>Jerusalem Rd</td>
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<tr>
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<td>Norfolk</td>
<td>Hull</td>
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<td>Hull</td>
<td>Little Harbor</td>
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<td>N 42 15’ 08.93&quot;</td>
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<td>COBB8</td>
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<td>Norfolk</td>
<td>Hull</td>
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<td>Gammons Road</td>
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<td>Weymouth</td>
<td>James Brook</td>
<td>Spring Street</td>
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<td>W 70 47’ 41.71&quot;</td>
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<tr>
<td>COBB13</td>
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<td>James Brook</td>
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<td>Norfolk</td>
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<td>Plymouth</td>
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<td>The Nook Inlet</td>
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<td>no signal</td>
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<tr>
<td>DUDB2</td>
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<td>Duxbury</td>
<td>Plymouth</td>
<td>Duxbury</td>
<td>Eagles Nest Bay</td>
<td>Marshall Street</td>
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<td>no signal</td>
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<td>DUJR3</td>
<td>Low</td>
<td>Duxbury</td>
<td>Plymouth</td>
<td>Duxbury</td>
<td>Allen's Pond outlet</td>
<td>Allen's Lane</td>
<td>Private property</td>
<td>Private property</td>
</tr>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>culvert</td>
<td>Bay Rd &amp; Wirth Way</td>
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<td>Tremont Street</td>
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<td>no signal</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Island Creek</td>
<td>Bay Road</td>
<td>N 42 00’ 32.55&quot;</td>
<td>W 70 42’ 45.38&quot;</td>
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<tr>
<td>DUBF9</td>
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<td>Plymouth</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Hound's ditch</td>
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<td>no signal</td>
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<td>DUBF11</td>
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<td>Duxbury</td>
<td>Plymouth</td>
<td>Duxbury</td>
<td>Wright's dike</td>
<td>behind schools</td>
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<td>Plymouth</td>
<td>Duxbury</td>
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<td>Washington Street</td>
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<td>W 70 40’ 18.88&quot;</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Duxbury Hill River</td>
<td>Nest to &quot;Marshes&quot; subdivision</td>
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<td>private property</td>
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<td>Plymouth</td>
<td>Duxbury</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Back River</td>
<td>off Powderpoint Rd</td>
<td>N 42 03’ 02.00&quot;</td>
<td>W 70 39’ 49.86&quot;</td>
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<td>DUBD18</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Duxbury Harbor</td>
<td>Long Point Lane</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Bluefish River</td>
<td>Anchorage Lane</td>
<td>N 42 02’ 49.06&quot;</td>
<td>W 70 40’ 29.23&quot;</td>
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<td>HIWB5</td>
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<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Weymouth Back River</td>
<td>Bare Cove Park</td>
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<td>no signal</td>
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<td>HIWR6</td>
<td>Low</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Weir River</td>
<td>Rockland street/Stone Bridge</td>
<td>N 42 15’ 06.26&quot;</td>
<td>W 70 51’ 37.82&quot;</td>
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<tr>
<td>HHH7</td>
<td>Medium</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Gov. Long Marsh</td>
<td>Rt 3A opposite bath house</td>
<td>N 42 14’ 47.52&quot;</td>
<td>W 70 53’ 18.71&quot;</td>
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<td>HHH8</td>
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<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Broad Cove</td>
<td>Rt 3A at lobster pound</td>
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<td>W 70 53’ 30.05&quot;</td>
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<td>HHH9A</td>
<td>High</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Broad Cove</td>
<td>Rt 3A @ police stat</td>
<td>N 42 14’ 59.55&quot;</td>
<td>W 70 54’ 02.54&quot;</td>
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<td>HHH9B</td>
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<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Broad Cove</td>
<td>Downer Ave</td>
<td>N 42 15’ 09.45&quot;</td>
<td>W 70 54’ 09.61&quot;</td>
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<td>HIHH10</td>
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<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Home Meadow</td>
<td>Tide gate @ Home Meadow</td>
<td>N 42 14’ 37.49&quot;</td>
<td>W 70 53’ 01.45&quot;</td>
</tr>
</tbody>
</table>

## APPENDIX A: TABLE A-1 – Tidal Restriction Site Identification (Page 2 of 4)
<table>
<thead>
<tr>
<th>Site #</th>
<th>Priority Code</th>
<th>Town</th>
<th>County</th>
<th>USGS Quad</th>
<th>Water Body</th>
<th>Location</th>
<th>Latitude North GPS #</th>
<th>Longitude West GPS#</th>
</tr>
</thead>
<tbody>
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<td>HIHH12</td>
<td>High</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Worlds End</td>
<td>Martin Road</td>
<td>N 42 15' 29.36&quot;</td>
<td>W 70 52' 28.15&quot;</td>
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<td>HIWB13</td>
<td>Medium</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Fresh River</td>
<td>RR tracks near Fort Hill St.</td>
<td>no signal</td>
<td>no signal</td>
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<td>Plymouth</td>
<td>Weymouth</td>
<td>Fresh River</td>
<td>Fort Hill St.</td>
<td>no signal</td>
<td>no signal</td>
</tr>
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<td>HIWR15</td>
<td>Low</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Weir River Salt Marsh</td>
<td>George Washington Blvd.</td>
<td>N 42 15' 17.36&quot;</td>
<td>W 70 51' 55.08&quot;</td>
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<tr>
<td>HIWR16</td>
<td>Low</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Weir River</td>
<td>End of Ring Bart Road</td>
<td>N 42 15' 18.16&quot;</td>
<td>W 70 51' 40.44&quot;</td>
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<td>HIWR19</td>
<td>Low</td>
<td>Hingham</td>
<td>Plymouth</td>
<td>Weymouth</td>
<td>Turkey Hill Run</td>
<td>Rockland Street/</td>
<td>No signal</td>
<td>No signal</td>
</tr>
<tr>
<td>HuHB1</td>
<td>Low</td>
<td>Hull</td>
<td>Plymouth</td>
<td>Hull</td>
<td>Hull Bay</td>
<td>Newport Road</td>
<td>N 42 16' 56.29&quot;</td>
<td>W 70 52' 47.33&quot;</td>
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<td>HUHB2</td>
<td>Medium</td>
<td>Hull</td>
<td>Plymouth</td>
<td>Hull</td>
<td>Hull Bay</td>
<td>Nantasket Road</td>
<td>N 42 16' 42.98&quot;</td>
<td>W 70 52' 38.86&quot;</td>
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<td>High</td>
<td>Hull</td>
<td>Plymouth</td>
<td>Hull</td>
<td>Strats Pond</td>
<td>RT 228</td>
<td>N 42 15' 37.36&quot;</td>
<td>W 70 50' 41.05&quot;</td>
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<tr>
<td>HUAH4</td>
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<td>Hull</td>
<td>Plymouth</td>
<td>Allerton Harbor</td>
<td>Fitzgerald Way</td>
<td>N 42 18' 25.49&quot;</td>
<td>W 70 53' 25.86&quot;</td>
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<td>HUWR5A</td>
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<td>Hull</td>
<td>Hull Bay</td>
<td>George Washington Blvd.</td>
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<td>Hull</td>
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<td>George Washington Blvd.</td>
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<td>Plymouth</td>
<td>Hull</td>
<td>Pemberton</td>
<td>Main Street</td>
<td>N 42 18' 11.68&quot;</td>
<td>W 70 54' 54.02&quot;</td>
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<td>Low</td>
<td>Kingston</td>
<td>Plymouth</td>
<td>Plymouth</td>
<td>Jones River</td>
<td>RR Xing at end of Willow St.</td>
<td>N 41 59' 46.25&quot;</td>
<td>W 70 43' 23.31&quot;</td>
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<td>KIJR2</td>
<td>Low</td>
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<td>Plymouth</td>
<td>Plymouth</td>
<td>Jones River</td>
<td>RT 3 Bridge</td>
<td>N 41 59' 50.44&quot;</td>
<td>W 70 43' 14.58&quot;</td>
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<td>KIJR3</td>
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<td>Plymouth</td>
<td>Plymouth</td>
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<td>Landing Rd.</td>
<td>N 41 59' 52.62&quot;</td>
<td>W 70 43' 19.92&quot;</td>
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<td>KIJR4</td>
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<td>Kingston</td>
<td>Plymouth</td>
<td>Plymouth</td>
<td>Jones River</td>
<td>RR Xing @ end of Spring St.</td>
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<td>Not accessible</td>
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<td>Plymouth</td>
<td>Plymouth</td>
<td>Jones River</td>
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<td>Not accessible</td>
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<td>KIJR6</td>
<td>Low</td>
<td>Kingston</td>
<td>Plymouth</td>
<td>Plymouth</td>
<td>Jones River</td>
<td>3A Xing brook to Fondry Pond</td>
<td>N 41 59' 15.69&quot;</td>
<td>W 70 42' 29.76&quot;</td>
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<td>Plymouth</td>
<td>Plymouth</td>
<td>Jones River</td>
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<td>No Signal</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Tussock Brook</td>
<td>Rt 3 crossing Tussock Brook</td>
<td>N 41 59' 58.34&quot;</td>
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<td>Plymouth</td>
<td>Plymouth</td>
<td>Halls Brook (aka.Stony Brook)</td>
<td>Mill Pond</td>
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<td>Not accessible</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Green Harbor</td>
<td>Dyke Road</td>
<td>N 42 05' 26.61&quot;</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Green Harbor</td>
<td>Town Pier Road</td>
<td>N 42 05' 23.21&quot;</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Green Harbor</td>
<td>Town Pier Road</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Green Harbor</td>
<td>Town Pier Road, parking lot</td>
<td>N 42 05' 06.45&quot;</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Green Harbor</td>
<td>Island &amp; Cherry St.'s</td>
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<td>W 70 38' 33.17&quot;</td>
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<td>MANR6</td>
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<td>Marshfield</td>
<td>Plymouth</td>
<td>Scituate</td>
<td>North River</td>
<td>Damons Point</td>
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<td>no signal</td>
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<td>MASR 8</td>
<td>Low</td>
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<td>Plymouth</td>
<td>Scituate</td>
<td>South River</td>
<td>Macomber Creek</td>
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<td>Plymouth</td>
<td>Scituate</td>
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<td>Plymouth</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>South River</td>
<td>RR/pathway Crossing</td>
<td>N 42 05' 39.31&quot;</td>
<td>W 70 42' 23.94&quot;</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>South River</td>
<td>Willow Street Bridge</td>
<td>N 42 05' 35.29&quot;</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>South River</td>
<td>fishway at Veterans Park</td>
<td>N 42 05' 40.37&quot;</td>
<td>W 70 43' 05.35&quot;</td>
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## APPENDIX A: TABLE A-1 – Tidal Restriction Site Identification (Page 3 of 4)

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<tr>
<th>Site #</th>
<th>Priority Code</th>
<th>Town</th>
<th>County</th>
<th>USGS Quad</th>
<th>Water Body</th>
<th>Location</th>
<th>Latitude North GPS #</th>
<th>Longitude West GPS#</th>
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<td>Plymouth</td>
<td>Duxbury</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Green Harbor/River</td>
<td>Careswell / Dyke Rd</td>
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<td>Plymouth</td>
<td>Duxbury</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Duxbury Back River</td>
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<td>Low</td>
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<td>Plymouth</td>
<td>Duxbury</td>
<td>Cut River</td>
<td>Beach St by lobster pound</td>
<td>N 42° 02' 43.94&quot;</td>
<td>W 70° 38' 54.58&quot;</td>
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<td>Duxbury</td>
<td>Bass Creek</td>
<td>Rt139 by Plymouth Ave</td>
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<td>Plymouth</td>
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<td>Second Herring Brook</td>
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<td>Plymouth</td>
<td>Plymouh</td>
<td>Town Brook</td>
<td>Water St</td>
<td>N 41° 57' 21.89&quot;</td>
<td>W 70° 39' 02.09&quot;</td>
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<td>PLPH2</td>
<td>Low</td>
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<td>Plymouth</td>
<td>Plymouh</td>
<td>culvert off PL Harbor</td>
<td>beside cranberry world</td>
<td>N 41° 57' 54.03&quot;</td>
<td>W 70° 40' 10.49&quot;</td>
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<td>PLBP3</td>
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<td>Plymouth</td>
<td>Plymouth</td>
<td>Manomet</td>
<td>Bartlet Pond</td>
<td>Taylor Ave</td>
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<td>Medium</td>
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<td>Plymouth</td>
<td>Plymouh</td>
<td>Eel river</td>
<td>Rt 3A Xing (Warren Ave)</td>
<td>N 41° 56' 32.08&quot;</td>
<td>W 70° 37' 22.62&quot;</td>
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<td>PLER5</td>
<td>Medium</td>
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<td>Plymouh</td>
<td>Plymouh</td>
<td>Eel river</td>
<td>Rt 3 Xing (M Road)</td>
<td>N 41° 56' 12.94&quot;</td>
<td>W 70° 37' 08.40&quot;</td>
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<td>PLER6</td>
<td>Low</td>
<td>Plymouth</td>
<td>Plymouh</td>
<td>Plymouh</td>
<td>Eel river</td>
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<td>Plymouh</td>
<td>Plymouh</td>
<td>Manomet</td>
<td>Ship Pond</td>
<td>Not accessible</td>
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<td>Plymouh</td>
<td>Plymouh</td>
<td>Sagamore</td>
<td>Black Pond (private property)</td>
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<td>Scituate</td>
<td>Scituate Harbor</td>
<td>Kent St @ Brook st</td>
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<td>Scituate</td>
<td>Scituate Harbor</td>
<td>Edward Foster Road</td>
<td>N 42° 11' 32.09&quot;</td>
<td>W 70° 43' 17.58&quot;</td>
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<td>Plymouth</td>
<td>Scituate</td>
<td>Scituate Harbor</td>
<td>Gilson Road</td>
<td>N 42° 10' 58.28&quot;</td>
<td>W 70° 43' 19.05&quot;</td>
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<td>Plymouth</td>
<td>Scituate</td>
<td>Herring River</td>
<td>Old Kent St</td>
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<td>Scituate</td>
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<td>Plymouth</td>
<td>Scituate</td>
<td>Herring River</td>
<td>Rt 3A</td>
<td>N 42° 10' 17.61&quot;</td>
<td>W 70° 44' 48.95&quot;</td>
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<td>Scituate Harbor</td>
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<td>Ann Vinal Road</td>
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<td>Plymouth</td>
<td>Weymouth</td>
<td>Hunters Pond</td>
<td>Mordecai Lincoln</td>
<td>N 42° 13' 23.25&quot;</td>
<td>W 70° 47' 19.17&quot;</td>
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<td>Weymouth</td>
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<td>Plymouth</td>
<td>Weymouth</td>
<td>The Gulf</td>
<td>Holleh SL</td>
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<td>Plymouth</td>
<td>Weymouth</td>
<td>The Gulf</td>
<td>Gannett Road</td>
<td>N 42° 13' 18.00&quot;</td>
<td>W 70° 46' 41.14&quot;</td>
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### APPENDIX A: TABLE A-1 – Tidal Restriction Site Identification (Page 4 of 4)

<table>
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<tr>
<th>Site #</th>
<th>Priority Code</th>
<th>Town</th>
<th>County</th>
<th>USGS Quad</th>
<th>Water Body</th>
<th>Location</th>
<th>Latitude North GPS #</th>
<th>Longitude West GPS#</th>
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<td>Scituate</td>
<td>Herring River</td>
<td>earthen dike</td>
<td>N 42 10' 17.53&quot;</td>
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<td>Plymouth</td>
<td>Scituate</td>
<td>Scituate Harbor</td>
<td>Hatherly Road</td>
<td>N 42 12' 05.40&quot;</td>
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<td>Plymouth</td>
<td>Weymouth</td>
<td>Musquashcut Pond</td>
<td>Mann Hill Extension</td>
<td>N 42 13' 22.61&quot;</td>
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<td>Scituate</td>
<td>Sheeps Pond</td>
<td>Egypt Road</td>
<td>N 42 13' 11.01&quot;</td>
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<td>Scituate</td>
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<td>Weymouth</td>
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<td>Pearl St.</td>
<td>N 42 14' 18.40&quot;</td>
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<td>Norfolk</td>
<td>Weymouth</td>
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<td>RR btn North St &amp; Trefton</td>
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<td>Weymouth</td>
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<td>Norfolk</td>
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<td>Norfolk</td>
<td>Weymouth</td>
<td>Back River</td>
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## APPENDIX A: TABLE A-2 – Tidal Restriction Site Characteristics (Page 1 of 4)

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<th>Site #</th>
<th>Type of Restriction</th>
<th>Culvert Shape</th>
<th>Number of openings</th>
<th># of Piers</th>
<th>Structure Material</th>
<th>Structure Condition</th>
<th>Surface</th>
<th>Ponded water on seaward side of restriction</th>
<th>Ponded water on upstream side of restriction</th>
<th>Proximity to Low Lying Area</th>
<th>Date of site visit</th>
<th>Site Photo</th>
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<td>COBB2</td>
<td>culvert</td>
<td>round</td>
<td>1</td>
<td>0</td>
<td>Concrete pipe</td>
<td>fair</td>
<td>beach</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>5/2/01</td>
<td>N</td>
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<td>COBB3</td>
<td>culvert</td>
<td>rectangle</td>
<td>1</td>
<td>0</td>
<td>granite block</td>
<td>Fair</td>
<td>asphalt</td>
<td>Y</td>
<td>N</td>
<td>N</td>
<td>6/18/98</td>
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<td>round</td>
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<td>0</td>
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<td>Poor</td>
<td>asphalt</td>
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<td>N</td>
<td>Y</td>
<td>6/18/98</td>
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<td>asphalt</td>
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<td>Y</td>
<td>6/18/98</td>
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<td>rectangle</td>
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<td>2</td>
<td>concrete</td>
<td>Good</td>
<td>asphalt</td>
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<td>Y</td>
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<td>6/18/98</td>
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<td>2</td>
<td>concrete/steel truss</td>
<td>Good</td>
<td>asphalt</td>
<td>N</td>
<td>Y</td>
<td>N</td>
<td>6/18/98</td>
<td>Y</td>
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<td>culvert</td>
<td>rectangle</td>
<td>1</td>
<td>0</td>
<td>granite block</td>
<td>Fair</td>
<td>asphalt</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>6/18/99</td>
<td>Y</td>
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<td>rect</td>
<td>2</td>
<td>0</td>
<td>corrugated metal</td>
<td>Good</td>
<td>asphalt</td>
<td>N</td>
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## APPENDIX A: TABLE A-2 – Tidal Restriction Site Characteristics (Page 2 of 4)

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<tr>
<td>COBB2</td>
<td>Culvert with a flapper is a structure that gets buried on major storms, area in the rear has no other visible means of salt water influence</td>
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<tr>
<td>COBB3</td>
<td>Road runoff also cause of <em>Phragmites</em>. Landowner requested a permit from Conservation Commission to remove <em>Phragmites</em></td>
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<tr>
<td>COBB4</td>
<td>Area on the upstream side of the flapper was used for grazing years ago</td>
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<tr>
<td>COBB5</td>
<td>Notable scouring pools</td>
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<tr>
<td>COBB6</td>
<td>Large metal tidgates</td>
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<tr>
<td>COBB7</td>
<td>This bridge is not the primary restriction / flow restricted by natural cut in bedrock at bend of the river</td>
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<tr>
<td>COBB8</td>
<td>Small rock bridge on a private road / saltmarsh parallel to Little Harbor</td>
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<tr>
<td>COBB9</td>
<td>New flappergates / saltmarsh being lost to <em>Phragmites</em>. Town attempted to fix gates</td>
<td></td>
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<tr>
<td>COBB13</td>
<td>Seaward side of gate not visible at high tide / restriction on the upstream side</td>
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<tr>
<td>COBB14</td>
<td>Isolated fresh water wetland with invasive <em>Phragmites</em> pushing towards Coastal area (private road &amp; property)</td>
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<tr>
<td>COBB15</td>
<td>Culvert goes through private property, may be difficult to enlarge</td>
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<tr>
<td>COBB16</td>
<td>Small pocket wetland restricted by culvert under Border Street</td>
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<tr>
<td>DUJR1</td>
<td>Culverted stream, poor water quality</td>
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<tr>
<td>DUBB2</td>
<td>Limited restriction, no sign of <em>Phragmites</em></td>
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<tr>
<td>DUJR3</td>
<td>Too far up stream for significant tidal flow / stormwater runoff issues</td>
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<tr>
<td>DUJR4</td>
<td>Stormwater impacts</td>
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<tr>
<td>DUJR5</td>
<td>Too far up stream for significant tidal flow / fish ladder needs rebuilding</td>
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<tr>
<td>DUJR6</td>
<td>Stormwater run-off issues / oysters under bridge / anadromous fish run (smelt &amp; herring)</td>
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<tr>
<td>DUBF9</td>
<td>Poor water quality testing results by DMF</td>
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<tr>
<td>DUBF10</td>
<td>Too far up stream for significant tidal flow / stormwater runoff issues</td>
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<tr>
<td>DUBF11</td>
<td>Needs more local input, may be to far up stream for significant tidal flow</td>
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<tr>
<td>DUBF12</td>
<td>Scouring pools on both sides of the bridge / active shellfish area / no <em>Phragmites</em></td>
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<tr>
<td>DUBR14</td>
<td>Very old railroad restriction, no sign of <em>Phragmites</em></td>
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<tr>
<td>DUBR16</td>
<td>Site of old wooden tressels for old RR</td>
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<tr>
<td>DUBR17</td>
<td>White cedar area / may have been an old spar soak</td>
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<tr>
<td>DUDB18</td>
<td>Non-functioning flappergate area has a Conservation Restriction possible restoration site</td>
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<tr>
<td>DUBF19</td>
<td>Stone pile - water seems to flow through, no <em>Phragmites</em> present, saltmarsh appears healthy</td>
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<tr>
<td>HIWB5</td>
<td>Bare Cove Park is a former military depot now used for recreation / stormwater impacts</td>
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<tr>
<td>HIWR6</td>
<td>Granite block bridge with scouring pools / stormwater runoff problems / <em>Phragmites</em></td>
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<tr>
<td>HIHH7</td>
<td>Marsh cut off by construction of Rt 3A / system uses catch basin &amp; pressure of the tide to flood the marsh</td>
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<tr>
<td>HIHH8</td>
<td>Cove cut off by construction of 3A / system under 3A, appears to be a culvert, not visible even at low tide</td>
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<tr>
<td>HIHH9A</td>
<td>Wooden flappergate in poor condition / stormwater runoff / serious <em>Phragmites</em> problem</td>
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<tr>
<td>HIHH9B</td>
<td><em>Phragmites</em> problem / area near school peat beds seems to be drying out</td>
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<tr>
<td>HIHH10</td>
<td>Repair/enlargement of the tidegate would greatly benefit a very large salt marsh</td>
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</tbody>
</table>
### APPENDIX A: TABLE A-3 – Tidal Restriction Site Comments (Page 2 of 4)

<table>
<thead>
<tr>
<th>Site #</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIHH12</td>
<td>Land owned by Trustees of the Reservation, looking to restore salt marsh</td>
</tr>
<tr>
<td>HIWB13</td>
<td>Fresh water except for flood tides</td>
</tr>
<tr>
<td>HIWB14</td>
<td>Fresh water influence / smelt spawning area</td>
</tr>
<tr>
<td>HIWR15</td>
<td>Cove cut off by construction of 3A / system is under 3A / appears to be a culvert, not visible even at low tide</td>
</tr>
<tr>
<td>HIWR16</td>
<td>Appears to be an old foundation on both sides of the river (former tidal mill?)</td>
</tr>
<tr>
<td>HIWR19</td>
<td>No sign of salt marsh</td>
</tr>
<tr>
<td>HUHB1</td>
<td>Pump system drains inland areas because flooding is an issue</td>
</tr>
<tr>
<td>HUHB2</td>
<td>Built in the 60s, the main gate has remained open / the tidegate in the dike is only open approximately 6 inches</td>
</tr>
<tr>
<td>HUWR3</td>
<td>Needs a management plan (water quantity &amp; quality, invasive species, insects, runoff, and wave wash over)</td>
</tr>
<tr>
<td>HUAH4</td>
<td>Roadway bridge over a natural cove</td>
</tr>
<tr>
<td>HUWR5A</td>
<td>5A &amp; B (same pipe--opposite ends) provide salt water to a small salt marsh cut off by George Washington Blvd.</td>
</tr>
<tr>
<td>HUWR5B</td>
<td>Pocket wetland / needs sediment cleaning and trash removal</td>
</tr>
<tr>
<td>HUAH6</td>
<td>Small low lying area, lots of Phragmites, potential self-regulating tidegate site, need to be careful of adjacent housing</td>
</tr>
<tr>
<td>KIJR1</td>
<td>Steep banks and armoring scouring pools</td>
</tr>
<tr>
<td>KIJR2</td>
<td>Scouring pools / limited Phragmites impacted by stormwater runoff</td>
</tr>
<tr>
<td>KIJR3</td>
<td>Under sized, floods during high water events / large Phragmites stands due to inadequate flushing &amp; stormwater inputs</td>
</tr>
<tr>
<td>KIJR4</td>
<td>RR culvert too small / also impacts from stormwater runoff</td>
</tr>
<tr>
<td>KIJR5</td>
<td>RR culvert larger / also impacts from stormwater runoff</td>
</tr>
<tr>
<td>KIJR6</td>
<td>Upper extent of the tidal range / potential fishway / Phragmites impacted by stormwater runoff</td>
</tr>
<tr>
<td>KIJR7</td>
<td>Fish ladder will soon be repaired / site of the Jones River Watershed Assoc.’s Storm Treat System</td>
</tr>
<tr>
<td>KITB8</td>
<td>Potential dam removal or fish ladder for anadromous fish restoration</td>
</tr>
<tr>
<td>KIHB9</td>
<td>Potential dam removal or fish ladder for anadromous fish restoration</td>
</tr>
<tr>
<td>MAGH3</td>
<td>Culvert under Rt 139 / no tidal flow due to raised road / Phragmites impacted by stormwater runoff</td>
</tr>
<tr>
<td>MAGH4A</td>
<td>Due to be replaced with self-regulating tidegate (FEMA Project IMPACT)</td>
</tr>
<tr>
<td>MAGH4B</td>
<td>Due to be replaced with self-regulating tidegate (FEMA Project IMPACT)</td>
</tr>
<tr>
<td>MAGH4C</td>
<td>Phragmites impacted by stormwater</td>
</tr>
<tr>
<td>MAGH5</td>
<td>Culvert could be enlarged, but may also raise a question of flooding</td>
</tr>
<tr>
<td>MANR6</td>
<td>RR right of way has broken up and caused several openings in the dike at high water only</td>
</tr>
<tr>
<td>MASR 8</td>
<td>This is a dam / fresh water influence, no further tidal extent</td>
</tr>
<tr>
<td>MASR9</td>
<td>Culvert shows no visible signs of restriction</td>
</tr>
<tr>
<td>MASR10</td>
<td>Extent of the tidal influence, salt wedge further down stream / newly repaired fish ladder</td>
</tr>
<tr>
<td>MASR12</td>
<td>Narrow leaf cattail predominant species / tide runs approx 3 feet / question salinity</td>
</tr>
<tr>
<td>MASR13</td>
<td>All species are fresh water but the tide does run here / scour pools from bridge placement</td>
</tr>
<tr>
<td>MASR15</td>
<td>Extent of the tidal influence, salt wedge further down stream / newly repaired fish ladder</td>
</tr>
</tbody>
</table>
### APPENDIX A: TABLE A-3 – Tidal Restriction Site Comments (Page 3 of 4)

<table>
<thead>
<tr>
<th>Site #</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>MARS16</td>
<td>Culvert under Rt139 / River side has large stand of narrow leaf cattail / large tide-gate system on the upstream side of Rt.139</td>
</tr>
<tr>
<td>MAGH18</td>
<td>Reclaimed land originally for grazing, this area is a polder</td>
</tr>
<tr>
<td>MABR19</td>
<td><em>Phragmites</em> impacted by stormwater runoff</td>
</tr>
<tr>
<td>MABR20</td>
<td>Fresh water pond for cranberries is behind the next dam / serious <em>Phragmites</em> problem</td>
</tr>
<tr>
<td>MACR21</td>
<td>Scouring pools and eroding banks</td>
</tr>
<tr>
<td>MABC24</td>
<td>Affected by site MAGH18 downstream</td>
</tr>
<tr>
<td>NONR8</td>
<td>Scour pools / tidal flow restricted by bridge abutments</td>
</tr>
<tr>
<td>NONR9</td>
<td>Smelt spawning area, possible anadromous fish restoration</td>
</tr>
<tr>
<td>NONR12</td>
<td>Route 3 bridge / stormwater runoff problem</td>
</tr>
<tr>
<td>PLTB1</td>
<td>Dam under the bridge / active anadromous fishway / dam removal projects are going on up stream</td>
</tr>
<tr>
<td>PLPH2</td>
<td>Culverted stream, signs of limited salt marsh upstream (private property)</td>
</tr>
<tr>
<td>PLBP3</td>
<td>Fresh water influence, tidal influence only on extreme tides</td>
</tr>
<tr>
<td>PLER4</td>
<td>Riprapped opening to Eel River</td>
</tr>
<tr>
<td>PLER5</td>
<td>Shallow depth, possible area for restoration</td>
</tr>
<tr>
<td>PLER6</td>
<td>Road closed for safety reasons</td>
</tr>
<tr>
<td>PLSP8</td>
<td>Fresh water influence, possible tidal influence only on extreme tides</td>
</tr>
<tr>
<td>PLBL19</td>
<td>Fresh water influence, possible tidal influence only on extreme tides</td>
</tr>
<tr>
<td>SCSH1</td>
<td>Fresh water influence, possible tidal influence only on extreme tides</td>
</tr>
<tr>
<td>SCSH2</td>
<td>No visible restriction</td>
</tr>
<tr>
<td>SCSH2A</td>
<td>Upstream saltmarsh appears to be impacted by septic systems and corn field</td>
</tr>
<tr>
<td>SCSH3</td>
<td>Stormwater runoff problems</td>
</tr>
<tr>
<td>SCHR4</td>
<td>End of the tidal range</td>
</tr>
<tr>
<td>SCHR5</td>
<td>Flapper gate is stuck open due to trash</td>
</tr>
<tr>
<td>SCNR6</td>
<td>Large culvert / stormwater runoff problem</td>
</tr>
<tr>
<td>SCNR7</td>
<td>Old RR right of way dike structure is slowly being broken through</td>
</tr>
<tr>
<td>SCSH8</td>
<td>Some type of structure is under the Pier 44 restaurant, unkown at this time</td>
</tr>
<tr>
<td>SCBB9</td>
<td>Stormwater runoff problems</td>
</tr>
<tr>
<td>SCBB10</td>
<td>Fresh water influence</td>
</tr>
<tr>
<td>SCBB11</td>
<td>Large <em>Phragmites</em> problem</td>
</tr>
<tr>
<td>SCBB12</td>
<td>Fish ladder at dam, freshwater beyond this point</td>
</tr>
<tr>
<td>SCBB13</td>
<td>Roadway culvert, 2 lane, cape cod berms</td>
</tr>
<tr>
<td>SCBB14</td>
<td>Roadway culvert, 2 lane, cape cod berms</td>
</tr>
<tr>
<td>SCBB15</td>
<td>Stormwater runoff problems</td>
</tr>
<tr>
<td>Site #</td>
<td>Comments</td>
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<tr>
<td>SCHR20</td>
<td>Area on the upstream side is now part of the town’s drinking water wellfields</td>
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<tr>
<td>SCSH21</td>
<td>Marsh is cut up by mosquito ditching / culvert not visible due to dense vegetation</td>
</tr>
<tr>
<td>SCBB22</td>
<td>Influenced by site SCBB11-- flushing rate of Musquashcut Pond and flow from Sheeps pond</td>
</tr>
<tr>
<td>SCBB22A</td>
<td>Influenced by site SCBB11-- flushing rate of Musquashcut Pond and flow from Sheeps pond / Phragmites problem,</td>
</tr>
<tr>
<td>SCBB23</td>
<td>Influenced by site SCBB11-- flushing rate of Musquashcut Pond and flow from Sheeps pond / Water quality and algae problem</td>
</tr>
<tr>
<td>SCBB24</td>
<td>Influenced by site SCBB11-- flushing rate of Musquashcut Pond and flow from Sheeps pond / Midge problem</td>
</tr>
<tr>
<td>SCSH25</td>
<td>Flapper on beach near low tide line, pipe may be undersized, upstream area gets more overwash than water from harbor, lots of Phragmites</td>
</tr>
<tr>
<td>SCSH26</td>
<td>Upstream continuation of SCSH25, site adjacent to sewer pump station</td>
</tr>
<tr>
<td>WEWF1</td>
<td>Large wooden flapper not maintained / stormwater runoff problems / Phragmites is getting established</td>
</tr>
<tr>
<td>WEWF2</td>
<td>RR box culvert undersized, plus stormwater runoff problems (possible Greenbush RR restoration site)</td>
</tr>
<tr>
<td>WEWB3</td>
<td>Existing pipe occasionally collapses</td>
</tr>
<tr>
<td>WEWF4</td>
<td>Replacing concrete bridge with a spanning bridge or larger culvert would allow more tidal flow to marsh</td>
</tr>
<tr>
<td>WEWF4A</td>
<td>Railroad tracks and site WEWF4 prevent flow from reaching further upstream</td>
</tr>
<tr>
<td>WEWB6</td>
<td>Area leads to herring run / structure runs under the Old Colony RR</td>
</tr>
<tr>
<td>WEWB7</td>
<td>Healthy salt marsh invaded by Phragmites / under investigation by BOH, DPW, MBP and Mosquito Control</td>
</tr>
<tr>
<td>WEWF8</td>
<td>Influenced by restriction at WEWF1 downstream</td>
</tr>
<tr>
<td>WEWB9</td>
<td>Fishway, ladders and spillways / no tidal influence beyond this site</td>
</tr>
<tr>
<td>WEWB10</td>
<td>Visible scour pools &amp; bank erosion</td>
</tr>
</tbody>
</table>
## Appendix B – Tidal Restriction Field Inspection Sheet

### TIDALLY RESTRICTED/DEEP WATER HABITAT PRELIMINARY FIELD INSPECTION* SHEET – PAGE 1

#### SITE LOCATION INFORMATION

<table>
<thead>
<tr>
<th>Site ID</th>
<th>Town:</th>
<th>County:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Channel/Wetland Name:</th>
<th>Landmark/Location Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Road Location:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USGS Maps #</th>
<th>GPS#</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date:</th>
<th>TIME:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tidal Stage:</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW, Medium, High</td>
</tr>
</tbody>
</table>

#### TYPE OF RESTRICTING STRUCTURE

**BRIDGE**: Draw Bridge  Piers Present(# = )  Stone Structure  Wooden Structure

<table>
<thead>
<tr>
<th>Length of crossing (ft)</th>
<th>Length of opening (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth of bottom to top of bridge (ft)</th>
<th>Length of structure:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition of structure: (poor fair good excellent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Road:</th>
<th># Lanes</th>
<th>Condition: (P F G E)</th>
<th>Road width:</th>
<th>Surface Material:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TIDE GATE**: Automated  Manual  Material: Wood  Metal

<table>
<thead>
<tr>
<th>Length (ft)</th>
<th>Length of opening (ft)</th>
<th>Number of openings:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth of bottom to top of gate (ft)</th>
<th>Height from top of gate to road</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition of structure: (poor fair good excellent)</th>
<th>Explain:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Road # of Lanes:</th>
<th>Condition: (P F G E)</th>
<th>Road width:</th>
<th>Surface Material:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**CULVERT**: Corrugated Metal  Concrete  Clay  Pebble Conglomerate  Other: ______

<table>
<thead>
<tr>
<th>Length of structure:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length (ft)</th>
<th>Length of opening (ft)</th>
<th>Number of Culverts:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bottom to top of opening:</th>
<th>Top of culvert to road:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Condition of structure: (P F G E)</th>
<th>Explain:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Road:</th>
<th># Lanes</th>
<th>Condition: (P F G E)</th>
<th>Road width:</th>
<th>Surface Material:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DIKE:
Length (ft) _______________ Length of opening (ft) ______________
Depth of bottom to top of dike (ft) ________________________
Condition of structure: (P F G E)   Explain:_____________________
Road: # of Lanes = _______     Condition: (P F G E) Road width:     Surface Material:_________

EVIDENCE OF RESTRICTION

1. Seaward scouring basin        2. Upstream scouring basin
3. Bank erosion                   4. Low marsh slumping
5. Vegetation die back           6. Culvert broken
7. Culvert invert problem detected       8. Culvert clogged
9. Seaward culvert opening submerged @mean high tide
10. Tide Gate broken            11. Tidegate clogged
12. Phragmites australis         13. Lythrum salicoidia
14. Ponded water on seaward side of dike or road: yes _____ no _____
15. Ponded water on upstream side of dike or road: yes ____ no _____

WETLAND PLANT COMMUNITY CHARACTERISTICS

Dominance type: Seaward side of tidal restriction
Upstream side
Some common plant species observed:

Proximity to Low Lying Areas: Yes    No

Wildlife Observations.

DIAGRAM OF STRUCTURE
Thank you for your interest in restoring Massachusetts’ wetlands. If you wish to sponsor a wetland restoration project and would like to propose that it be considered part of the statewide wetlands restoration initiative called GROWetlands (Groups Restoring Our Wetlands) under the Massachusetts Wetlands Restoration & Banking Program, please fill out this form and return to the address below.

**Project Name:** ___________________________________________________________________

**Project Location:** City/Town _________________ Watershed ______________________

Please attach a USGS quad sheet or other map on which the site location has been marked.

If available, please attach current and historic photos and aerial photos of the project site.

**Project Sponsor:** ___________________________________________________________

**Designated Representative:** _________________________________________________

**Telephone:** _________________ FAX _______________ EMail ___________________

**Address:** _________________________________________________________________

**Project Co-Sponsors:** _______________________________________________________

**Landowner:** _______________________________________________________________

Has landowner expressed support for wetland restoration at the site? Yes ___ No ___

Explain:

Is all or part of the wetland totally destroyed or does it exist in a degraded condition? Explain:

Briefly describe the current condition of the wetland to be restored.
Is the wetland part of an agricultural facility or was it farmland in the past?
___ Is in agricultural use now. ___ Was never farmed. ___ Was formerly agricultural land. Explain:

What caused the impact to the wetland?

Is the wetland area under an outstanding enforcement order? Yes ___ No ___
If yes, explain:

What is the approximate size of the area proposed to be restored?

What is the approximate size of adjacent wetland areas, if any?

Please attach a sketch of the area showing the wetland to be restored, adjacent wetlands and waterbodies, roads and buildings in the immediate vicinity, and other pertinent information to describe the site. If possible, indicate different wetland types that are present (Phragmites swamp, wet meadow, forested wetland, etc.).

If known, what was the wetland type(s) prior to impact?

If known, what restoration activity would be required to restore the wetland?

If known, what is the approximate cost of the restoration?

Has any funding been identified for this project? Yes ___ No ___
If yes, describe:

Would you like WRBP to arrange a site visit and project evaluation? Yes ___ No ___

Signed: ___________________________ Date: ___________________________

Please send this form with attachments to:

Steve Block
Wetlands Restoration & Banking Program
One Winter Street – 5th Floor
Boston, MA 02108
Phone: (617) 292-5743
FAX: (617) 292-5850
Email: steve.block@state.ma.us

A representative of WRBP will contact you as soon as possible. Please call us if you have any questions.
Appendix D – References
