

**GRANTHAM
CONSERVATION
COMMISSION'S**

**2012
WETLAND INVENTORY
RECOMMENDATIONS**

OVERVIEW

- Primary focus on four (4) Master Plan Mandates:
 - Flood Storage Capability;
 - Contribution to Water Supply;
 - Contribution to Water Quality; &
 - Wildlife Habitat.
- Guiding Principles of Review:
 - Determine best way to achieve least restriction, but most protection of valuable resources, balancing rights of landowners with the demands of public interest, health, and safety in resource protection.
 - Where possible, avoid duplicating state and local protections that are currently in place.

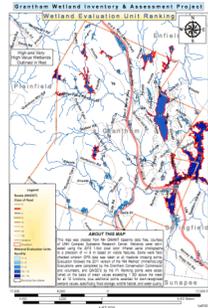
**SUMMARY OF
2012 RECOMMENDATIONS**

- In 2013
 - Adopt a Town Wetlands Map and Index
 - Designate eight (8) wetland evaluation units as prime wetlands
- In 2014, establish a Wetlands Overlay District

ADOPT A TOWN WETLANDS MAP

Map: Wetlands Evaluation Unit Ranking Map in Appendix A, at page A-5, of Dr. Van de Poll's Final Report

Index: Essentially the listing of wetland evaluation unit numbers & names in Appendix B, at pp. 1 & 2, of Dr. Van de Poll's Final Report



Designate Eight Wetland Evaluation Units As Prime Wetlands

FOCUS OF CURRENT PRIME RECOMMENDATIONS

- High Scoring Across Multiple Master Plan Mandates
- Identify Wetland Units That Are Most Critical & Urgent to Protect
- Protect Functions & Values of Entire Wetland Unit
- Where possible, avoid duplicating state and local protections that are currently in place

**WEU'S RECOMMENDED FOR
PRIME WETLAND DESIGNATION**

1. Bog Brook (WEU#32)
2. Chase Pond (WEU#1)
3. Grass Pond West (WEU#26)
4. Lily Pond (WEU#8)
5. Lower Eastman Brook (WEU#37)
6. Stocker Pond (WEU#50)
7. Upper Dunbar Hill Beaver Pond (WEU#20)
8. Upper Stroing Brook (WEU#30)



**QUICK INTRO TO FOUR
MASTER PLAN MANDATES**

The following slides provide a quick introduction to how various Functions in the Revised NH Method relate to the 4 Grantham Master Plan Mandates that are a primary focus in the Commission's recommendations, specifically:

- Flood Storage capability;
- Contribution to Water Supply;
- Contribution to Water Quality; &
- Wildlife Habitat.

FLOOD STORAGE

Function #7-Flood Storage ("F#7") evaluates a WEU's ability to store floodwaters and reduce downstream flooding. The score is a wetland flood index value, which is used to determine a flood value type based on the following ranges:

Wetland Flood Index Values	Flood Value Type
7.6 to 10.0	High Flood Value
5.1 to 7.5	Moderate to High Flood Value
2.6 to 5.0	Moderate Flood Value
1.0 to 2.5	Low to Moderate Flood Value
0.0 to 1.0	Low Flood Value

CONTRIBUTION TO WATER SUPPLY

Function #8 - Groundwater ("F#8")

The questions in this function evaluate the WEU's ability to *recharge* groundwater, including

- presence of stratified drift aquifers
- presence of Favorable Gravel Well Areas ("FWGA"), which are areas that have the potential to yield water for drinking water, in some instances in high enough volume for public or municipal water supplies
- presence and amount of coarse-textured soils adjacent to and within the WEU

CONTRIBUTION TO WATER QUALITY

•Function #9 - Sediment Trapping ("F#9")

Evaluates a WEU's ability to remove sediment/inorganic particles in runoff water from surrounding upland and retain them in the WEU, thereby maintaining or protecting the water quality in downstream ecosystems.

•Function #10- Nutrient Transformation ("F#10")

Evaluates how effective a WEU is at retaining, removing, and transforming nutrients associated with pollution (e.g., nitrogen & phosphorous), all of which are important for maintaining water quality.

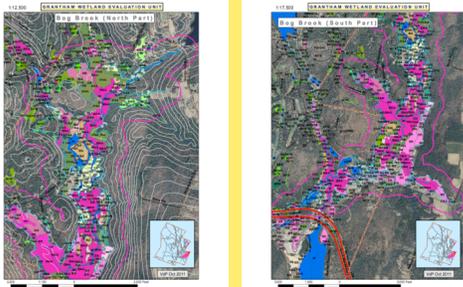
•Function #11 - Shoreline Anchoring ("F#11")

Evaluates a WEU's ability to provide a physical barrier between water bodies and uplands that dissipates wave action, slows currents, and stabilizes banks, thus preventing shoreline erosion.

WILDLIFE HABITAT

- **Function #1 - Ecological Integrity ("F#1")**
Evaluates the overall health and stability of a WEU's ecosystem.
- **Function #2- Wetland-Dependent Wildlife Habitat ("F#2")**
Evaluates how suitable a WEU is as habitat for animals typically associated with wetlands and wetland edges, without emphasis on any single species.
- **Function #3 - Fish & Aquatic Life Habitat ("F#3")**
Evaluates how suitable the ponds, lakes, rivers, or streams associated with a WEU are for fish and other aquatic life, without any emphasis on a single species or group of species.

BOG BROOK (WEU#32)



BOG BROOK (WEU#32) - cont'd

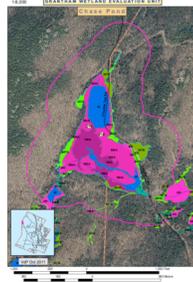
- **Largest WEU, 509.71 acres**
- **Very High Value WEU - 2nd highest overall ranking score** (along w/ 1 other WEU)
- **Flood Storage- 4th highest score** (flood index=6.1)
Provides moderate to high flood storage value for Grantham & neighboring towns.
- **Water Supply- F#8: 3rd highest score** (along w/ 2 other WEU's)
 - Almost entire WEU overlies as low- or unknown-yield aquifer
 - Several favorable gravel well areas ("FGWA") with sufficient buffers but unknown water yields/pumping rates that may be potential municipal well-head sites, if such are needed in future.

BOG BROOK (WEU#32) - cont'd

- **Water Quality** - In top 10 for all 3 functions
 - F#11: Shoreline Anchoring- 2nd highest score
 - F#9 & F#10: 7th highest score in each function
- **Wildlife Habitat** - Large portion of WEU is highest ranked habitat in region in 2010 NH Wildlife Action Plan
- **Existing Protection** - Shoreland Water Quality Protection Act ("SWQPA") only applies to small portion of the southeast section, after junction of Bog and Eastman Brooks.

CHASE POND (WEU#1)

- Wetland Unit is 36.14 acres, with about 2/3 lying in Plainfield
- In Grantham, is part of Town Forest land
- Very High Value Wetland; **received highest overall score for all WEU's evaluated**
Scored above mean for all 12 Functions



CHASE POND (WEU#1) - cont'd

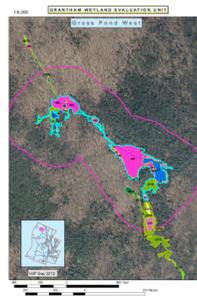
- **Flood Storage**- 5th highest score (flood index=6.0)
Provides moderate to high flood storage value for Miller Pond Road area and Skinner Brook
- **Water Supply**- F#8: 8th highest score; one of only 13 WEU's scoring above mean
- **Water Quality**
 - F#9: 3rd highest score plays a significant role in keeping sediment from traveling down into "Miller Pond West", Mill Pond, & Skinner Brook
 - F#10: 4th highest score

CHASE POND (WEU#1) - cont'd

- **Wildlife Habitat:** Some of best in Grantham
 - F#2: 2nd highest score (along w/ 2 others)
 - F#3: 3rd highest score
 - Per 2010 NH WAP, contains both highest ranked habitat in NH and region, & largely surrounded by highest ranked in NH
- **Existing Protection:**
 - Not covered by SWQPA in Grantham, either state or local application.
 - In Forest Lands Conservation District, but regulations do not afford adequate protection to wetland functions, particularly should the area be removed from Town Forest in the future.
- Designation will have negligible impact on timber, firewood, and other natural resource management in Town Forest.

GRASS POND WEST (WEU#26)

- Wetland Unit is 12.68 acres, largely on conserved UVLT land
- High Value Wetland; 4th highest overall score (along w/ 3 other WEU's)
- Very pristine, with little to no current man-made impacts
 - Received "perfect" score (10 out of 10) for F#1



GRASS POND WEST (WEU#26) - cont'd

- **Flood Storage:** not in top 10, but scored above mean (flood index=4.2); moderate flood value
- **Water Quality:** F#11: 3rd highest score (along w/ 10 other WEUs)
- **Wildlife Habitat**
 - F#1: Highest score possible
 - F#3: 6th highest score (along w/ 2 other WEU's)
 - Contains Marsh & Shrub wetland, Critical Habitat per NH WAP, and area is identified as highest ranked habitat in region in 2010 NH WAP map.
- **Existing Protection:** No protection under SWQPA. While WEU largely on conserved land, vulnerable to degradation by activities on abutting non-conserved land.

LILY POND (WEU#8)

- Lily Pond WEU is 8.96 acres, with a small portion in Plainfield
- Grantham portion is in Town Forest
- Very High Value; 3rd highest overall ranking score



LILY POND (WEU#8) - cont'd

- **Flood Storage**- not in top 10, but scored above mean (flood index=4.3); moderate flood value
- **Water Quality**- F#11: 3rd highest score (along w/ 10 other WEU's)
- **Wildlife Habitat**- Top five for all 3 functions
 - F#1: 5th highest score
 - F#2: 5th highest score
 - F#3: 5th highest score
- Contains Critical Habitat (marsh & shrub wetland) per NH WAP, and portions of WEU are highest ranked habitat in NH or region
- **Existing Protection**: Listed as a locally protected water body under the SWQPA per Grantham Zoning Ordinance. Does not afford protection to entire wetland, as SWQPA measured from water's edge (which is highly variable in this WEU) and not wetland edge.

LOWER EASTMAN BROOK (WEU#37)

- Wetland unit is 44.22 acres, about 4 acres of which are in Springfield
- Abuts Bog Brook WEU at junction of Eastman & Bog Brooks
- High Value; 4th highest overall score (along w/ 3 other WEU's)
 - Scored above mean for 9 of 12 functions



LOWER EASTMAN BROOK (WEU#37) - cont'd

- Water Supply- F#8: 6th highest score
Southern portion overlies a low-/unknown-yield aquifer, & large section of southwestern side is potential, but undefined yield FGWA & thus possible municipal well sites
- Water Quality- F#11: 3rd highest score (along w/ 10 other WEUs)
- Wildlife Habitat - Includes 2 types of Critical Habitat in NH WAP, marsh & shrub wetland and floodplain forest; almost entire WEU is highest ranked habitat in region per 2010 NH WAP map
- Existing Protection: Under both state & local application, SWQPA applies to only a small portion at southern edge of WEU; the rest is not protected.

STOCKER POND (WEU#50)

- WEU is 104.41 acres
- In addition to open water, includes fair amount of other wetland habitats
- High Value; 4th highest overall ranking score (along w/ 3 other WEU's)
- Most important as to Water Supply mandate



STOCKER POND (WEU#50) - cont'd

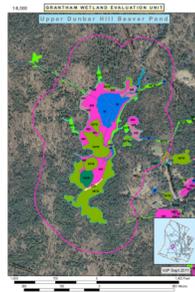
- Flood Storage- 2nd highest score (flood index=7.2)
Provides moderate to high flood value (very close to high range)
- Water Supply- **Most important in Grantham**
 - F#8- Received highest score, which was highest possible for this function
 - Western & Southern tip overlie significant percentage of only high-yield aquifer in Grantham, while rest overlies low-/unknown-yield aquifer
 - About 2 acres in and along western edge identified as FGWA300, satisfying all DES buffers & with potential for high yield municipal wells pumping >75 gpm.
Only acceptable high yield FGWA identified in Grantham

STOCKER POND (WEU#50) - cont'd

- **Wildlife Habitat**
 - 3 types of NH WAP Critical Habitat in WEU: floodplain forest; marsh & shrub wetland; & peatland
 - 2010 NH WAP map shows northeast corner as highest ranked habitat in region
- **Existing Protection**- Stocker Pond itself subject to state & local application of SWQPA
 - The most important functions and values of this WEU lie in the other wetland habitat around Stocker Pond itself, significant portions of which are afforded little to no protection under SWQPA
 - Loss or degradation of WEU's functions would pose significant risk to public, and potential extremely high economic burden if Town later attempted to try & reclaim WEU's functions

UPPER DUNBAR HILL BEAVER POND (WEU#20)

- WEU is 32.29 acres, off Old Dunbar Hill Road
- Very High Value; 2nd highest overall ranking score
 - Scored above mean for 11 of 12 functions



UPPER DUNBAR HILL BEAVER POND (WEU#20) - cont'd

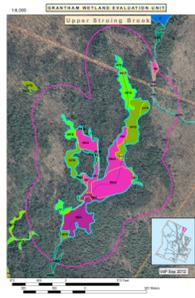
- **Flood Storage**- 5th highest score (along w/ 1 other WEU) (flood index=6.0)
 - Provides moderate to high flood value, which if degraded or lost, would increase greatly the flood risk for portions of Dunbar Hill area
- **Water Quality**
 - Scored above the mean for both F#9 & F#10
 - F#11: 3rd highest score (along w/ 10 other WEUs)

UPPER DUNBAR HILL BEAVER POND (WEU#20) - cont'd

- **Wildlife Habitat**- One of highest quality wildlife areas, scoring in top 5 for all three functions
 - F#1: 2nd highest score (along w/ 2 other WEU's)
 - F#2: 4th highest score (along w/ 2 other WEU's)
 - F#3: 2nd highest score
 - Most of WEU is NH WAP Critical Habitat, either marsh & shrub wetland or peatland.
- **Existing Protection**- No protection under SWQPA
 - WEU is in Rural Residential 3, with 5 acre minimum lot size
 - Development pressure in Dunbar Hill area is high, and should there be development in WEU area without measures in place to protect WEU functions, there could be severe negative impacts on the existing residents of the Dunbar Hill & other downstream areas of Town

UPPER STROING BROOK (WEU#30)

- WEU is 29.97 acres, with approximately 0.7 acres in Enfield.
- High Value; 4th highest overall ranking score (along with 3 other WEU's) scored above the mean score for 10 of 12 functions.



UPPER STROING BROOK (WEU#30) - cont'd

- **Flood Storage**-6th highest score (flood index=5.8)
 - Provides moderate to high flood value
 - If wetland functions degraded or lost, increased risk of flooding in at least some areas of Eastman
- **Water Quality**- Top 10 for all 3 functions
 - F#9: 6th highest score
 - F#10: 3rd highest score (along with 1 other WEU's)
 - F#11: 3rd highest score (along with 10 other WEU's)

UPPER STROING BROOK (WEU#30) - cont'd

- **Wildlife Habitat**-Top 5 for all 3 functions
 - F#1: highest score possible (along with 4 other WEU's)
 - F#2: 4th highest score (along with 1 other WEU)
 - F#3: 4th highest score (along with 1 other WEU)
 - Some NH WAP Critical Habitat, marsh & shrub wetland, in WEU
- **Existing Protection**- No protection under SWQPA
All but small percent of WEU owned by Eastman, & part of NH Fish & Game Wildlife Management Area, but no specific protections for wetland functions and values.

OTHER WEU'S OF PARTICULAR NOTE

- Decision not to recommend other WEU's for prime wetland designation at this time does **not** mean these WEU's do not perform valuable functions.
- Current recommendations focus on those most critical & urgent to protect based on the focus areas discussed above.
- There are a number of other WEU's evaluated in the Wetland Inventory that are particularly important in relation to one or more functions or values.

MADORE SPRUCE FEN (WEU#47)

- **Water Supply**- *2nd highest score; this score is >3X the mean score for this F#8*
- **Water Quality**- 5th highest score for F#9
- **Wildlife Habitat**- A unique habitat in Grantham, & fens relatively rare throughout the NH landscape
 - very sensitive to changes in the uplands that surround it
 - rare, habitat-dependent insect species observed during the roadside evaluation; likely there are unique and rare plant species dependent on this type of habitat in the WEU as well.

EASTMAN LAKE (WEU#24)

- Very large WEU, 338+ acres, almost entirely open water
- 6th highest overall ranking score (along w/ 3 others)- scored above mean for 7 of 12 functions
- **Flood Storage- Highest scoring WEU (flood index=9);**
High flood value
 - Capable of holding back nearly 4 inches of rain run-off from its 5120-acre watershed
- **Existing Protection** - Afforded protection under SWQPA
 - Should SWQPA not prevent degradation of WEU flood storage capability, risk of flooding greatly increased in areas of Grantham and surrounding towns

MILLER POND (WEU#14)

- 5th highest overall ranking score - scored above mean for 8 of 12 functions
- **Flood Storage**- 3rd highest scoring WEU (flood index=6.6);
Moderate to High flood value
- **Wildlife Habitat**- F#2: 2nd highest score (along with 2 other WEU's)
- **Existing Protection**- Afforded protection under SWQPA
 - If SWQPA does not adequately protect WEU's flood storage capability, and this function is degraded, serious risk of increased flooding at least along Skinner Brook and potentially beyond into other areas of Town.

NORTHWEST CORNER (WEU#17)

- **Wildlife Habitat**- High quality wildlife area
 - F#1- highest score possible (along w/ 4 other WEU's)
 - F#3- 4th highest score (along w/ 1 other WEU)
 - Entire WEU is highest ranked habitat in NH on 2010 NH WAP map
 - Large portions are marsh and shrub wetland, a Critical Habitat identified in NH WAP
- **Existing Protection**- Not protected under state/local application of SWQPA

BUTTERNUT POND (WEU#22)

- WEU is 67.46 acres; 6th highest overall ranking score (along w/ 3 others)- scored above mean for 9 of 12 functions
- **Flood Storage**- 8th highest scoring WEU (flood index=5.1); low end of moderate to high flood value range
- **Wildlife Habitat- Scored in Top 5 for all 3 functions**
 - F#1: 4th highest score (along w/ 1 other WEU)
 - F#2: **highest score (along w/ 1 other WEU)**
 - F#3: **highest score**
 - Portions are marsh & shrub wetland, Critical Habitat identified in NH WAP
- **Existing Protection**- Afforded protection under SWQPA
Butternut Pond part of Henry Laramie Wildlife Management Area

LEAVITT POND (WEU#5)

- High Ranked WEU - 6th highest overall ranking score (along w/ 3 other WEU's), scoring above the mean for 8 of 12 functions
- **Wildlife Habitat**- High Quality Wildlife Area (top 5 for 2 functions)
 - F#1: 3rd highest score
 - F#2- 2nd highest score (along w/ 2 other WEU's)
 - Contains marsh & shrub wetland, NH WAP Critical Habitat, and lower half is highest ranked habitat in NH on the 2010 NH WAP map, and abuts large tract of the same
- **Water Quality**- F#11 3rd highest score (along w/ 10 other WEU's)
- **Existing Protection** - Leavitt Pond itself afforded protection under SWQPA, but additional 9+ acres of WEU, beyond the SWQPA buffer zone measured from the water's edge, is not protected.

ASH SWAMP EAST (WEU#42)

- **Water Quality**-
 - F#9- **Highest scoring WEU**
 - F#10- 6th highest score for (along w/ 1 other WEU)
- **Wildlife Habitat**- F#1: highest score possible (10 of 10) (along w/ 4 other WEU's)
 - Unique habitat in Grantham, likely provides habitat for a number of unique, and potentially rare, species
- **Existing Protection**- Not protected under state/local application of SWQPA

LITTLE BROOK GRAVEL PIT (WEU#35)

- This WEU is 6.05 acres, located in corner of Eastman, adjacent to the boundaries of both Enfield & Springfield.
- Some portions currently impacted by active gravel operation.
- Water Supply- 4th highest score, almost 3X the mean score
- Water Quality- Scores high for 2 functions
 - F#9: 2nd highest score
 - F#10: 3rd highest score (along w/ 10 other WEU's)
 - Located upstream of wells for Village District of Eastman
- Existing Protection - Not protected under state/local application of SWQPA

NEXT STEPS

- Recommendations Discussed at December Planning Board Meeting
- Public Hearing on Proposed Prime Wetland Designations
- If adopted by the Planning Board, Public Hearing on Proposed Warrant Articles
 - Town Wetland Map & Index
 - Designation of Prime Wetlands

TOWN WETLANDS MAP & INDEX DRAFT WARRANT ARTICLE

Official Wetlands Map: Are you in favor of adopting as the official town wetlands map, the Wetlands Evaluation Unit Ranking Map, together with an index of wetlands evaluation units, listed in the Final Report of the Grantham Wetland Inventory and Assessment Project by Ecosystem Management Consultants, dated October 2012?

**PRIME WETLAND DESIGNATION
DRAFT WARRANT ARTICLE**

Prime Wetlands Designation: Are you in favor of designating the following wetlands, listed on the wetlands map in the previous article, as prime wetlands in accordance with RSA 482-A:15 and NHDES ENV-WT Rules Chapter 700?

<u>Wetland Name</u>	<u>Map Index Number</u>
Bog Brook	32
Chase Pond	1
Grass Pond West	26
Lily Pond	8
Lower Eastman Brook	37
Stocker Pond	50
Upper Dunbar Hill Beaver Pond	20
Upper Stroing Brook	30
