



MASSACHUSETTS watershed · based plans



Resources.
Tools.
Guidance.

NEWEA Annual Conference
1/29/2019

Geosyntec
consultants

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Project Vision



WBPs are required for **all** projects implemented with Section 319 funds (i.e. to address nonpoint source pollution)

Project Vision



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Goal was to develop a tool to simplify WBP development, so **that good projects in all areas of the state may be eligible for federal watershed implementation grant funds** under [Section 319 of the Clean Water Act.](#)

Project Vision



The WBP-tool simplifies WBP development with web-based **resources, tools, and guidance** using EPA's recommended "nine-element" format.

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9 Required Elements of a WBP

- A. ID causes /sources of pollution requiring control.
- B. Determine pollutant load reductions needed.
- C. Develop measures to achieve water quality goals.
- D. Determine technical/financial assistance needed.
- E. Information/education component.
- F. Develop implementation schedule.
- G: Develop interim milestones to track implementation.
- H: Develop criteria to measure progress towards goals.
- I: Monitoring component.



choose your watershed



review & add information sources



develop your plan

Project Vision



Thousands of watersheds - carefully tailored to the correct scale for planning



Rivers



Lakes/Ponds



Coastal Watersheds



MS4s

Massachusetts Watershed Based Plans

WBPs not just for s.319!

- **Municipal MS4 planning efforts**
- Lake /watershed groups
- Education/outreach
- Partner programs and agencies
- General data gathering and assessment

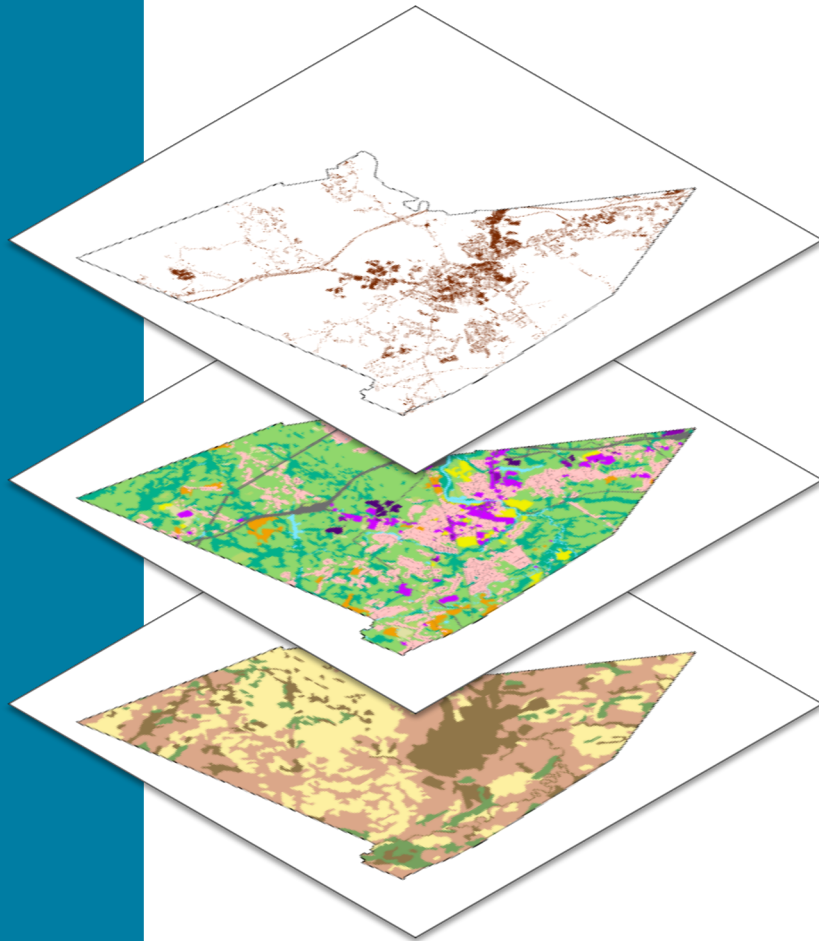


Key Features: Watershed Data Analysis



Automatic Outputs:

- Characteristics (area, etc.)
- Reports / Impairments
- Land Use Map
- Impervious Cover
- DCIA%
- Watershed Health Indicator
- Pollutant Load Estimates
- Water Quality TP Goals



Key Features: BMP Selector Tool



User Inputs:

- BMP type (e.g., bioretention)
- Design storm depth
- Drainage Area / Land Use

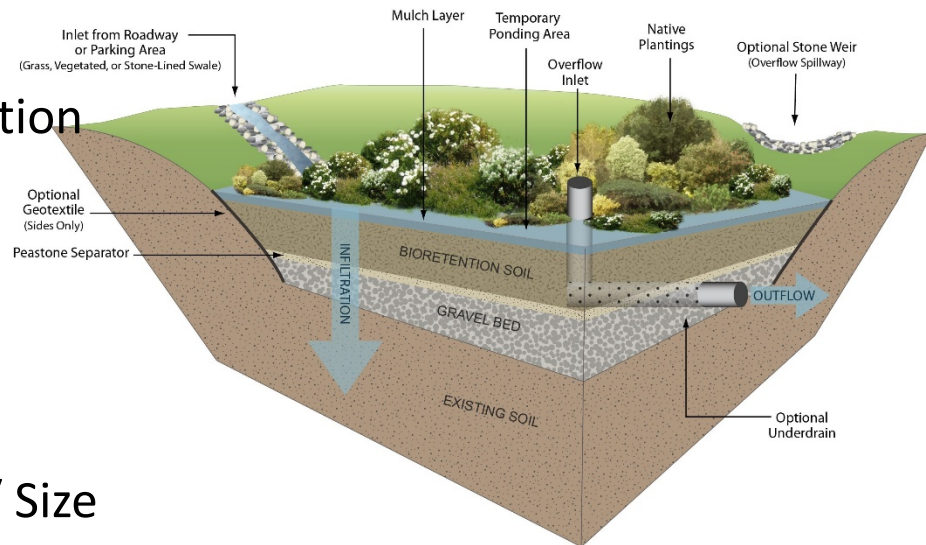


Outputs:

- Estimated Load Reduction
- Planning Level Cost

Upcoming Output:

- Appx. BMP Footprint / Size



Key Features: Element Specific Guidance



The following information is provided to help respond to the Element C requirements:

- An **interactive table** (Table C1), which allows you to select management measures and calculates pollutant loading reductions for those measures.
- Table C1 includes a collection of commonly used structural best management practices (BMPs) that have undergone sufficient study to allow for a modeled estimation of pollutant load removal for several key pollutants: total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS). BMPs included in the interactive table are listed below, with links to fact sheets from the Massachusetts Clean Water Toolkit.

A dark blue rectangular graphic with the text "massachusetts Clean Water TOOLKIT" in white. The word "massachusetts" is in a smaller font above "Clean Water". To the right of "Clean Water" is the word "TOOLKIT" written vertically. Below the text is a graphic of three blue water waves. Underneath the graphic, the text reads: "The Massachusetts Clean Water Toolkit provides fact sheets on a wide array of measures to address NPS pollution. Link"

Structural BMPs (click each title to view fact sheet)			
Bioretention Areas and Rain Gardens	Grassed Channel /Water Quality Swale	Oil/Grit Separator	Wet Basin*
Deep Sump Catch Basin	Constructed Stormwater Wetlands (includes Gravel Wetland, Wetland Basins, etc.)	Porous Pavement	Subsurface Structure
Dry Well	Infiltration-Recharge Basin	Sand Filter	Infiltration Trench
Extended Dry Detention Basin*	Leaching Catch Basin	Vegetated Filter Strip	

*BMP includes sediment forebay for pre-treatment

Key Features: DEP Review Checklists for Consistent WBPs



Review for "Provisional" Acceptance of WBP

- Purpose:** The purpose of this form is to determine whether submitted Watershed Based Plans (WBPs) address the required nine WBP elements. Provisionally Accepted WBPs include all EPA required elements, but have not been formally reviewed and accepted by MassDEP. All items on the below checklist must be satisfied for a WBP to receive provisional acceptance.
- Reviewer Instructions:** Review submitted WBP and complete Section 1 and Section 2 to determine approval status. Upload completed form to "DEP Review" section of the WBP-tool accessible at <http://prf.geosyntec.com/MassDEPWBP/Account/DEPReview>, then update "Plan Status" based on findings.

Section 1: Provisional Review Summary

WBP Info	WBP ID:	Watershed Name / Assessment Unit ID:
Review Info	Reviewer Name:	Review Date:
Findings	Are all checklist items satisfied? (If yes, WBP is provisionally accepted)	
Comments:	<input type="checkbox"/> No <input type="checkbox"/> Yes	

Section 2: Provisional Acceptance Checklist

Element A: Identify Causes of Impairment & Pollution Sources

- Map of watershed
- Identification of the major causes and sources of impairment (e.g., water quality data and other information from previous reports/studies; summary table of water quality impairment causes/sources; land use and impervious cover maps/information; watershed pollutant loading estimates)
- Identification of water quality goals that (at a minimum) meet water quality standards for pollutants that threaten or impair the physical, chemical, or biological integrity of the watershed (e.g., a table of water quality goals(s) including source of how the goal(s) was/were calculated)
- If a TMDL exists for the watershed, relevant information from the TMDL is included (e.g., water quality goal)

Review and Rating for Acceptance of WBP

The purpose of this form is to support technically consistent MassDEP review and scoring of all "Provisionally Accepted" Watershed Based Plans (WBPs) and to provide constructive feedback to project sponsors on how WBPs may be corrected or improved.

Instructions: Review "Provisionally Accepted" WBP and complete Section 1 and Section 2 to determine approval status. Upload completed form to "DEP Review" section of the WBP-tool accessible at prf.geosyntec.com/MassDEPWBP/Account/DEPReview, then update "Plan Status" based on findings. All review criteria must be Rated as a two (2) or higher.

Section 1: Review Summary

WBP ID:	Watershed Name / Assessment Unit ID:
Reviewer Name:	Review Date:
Are all review criteria rated two (2) or higher? (If yes, WBP is accepted)	
<input type="checkbox"/> No <input type="checkbox"/> Yes	

Rating Scale:
 1 = Needs Improvement
 2 = Adequate, but could be improved
 3 = Well done

Section 2: Review Criteria and Rating

Characterizing the Watershed – Element A

Criteria	Rating (1-3)	Comments
Map of watershed and data analysis to problem definition, and are data gaps identified from monitoring data, reports, maps, modeling, and other existing data. Data gaps shall be identified.		



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Demonstration

<http://prj.geosyntec.com/MassDEPWBP>



A Watershed Plan in 3 Easy Steps

1

Choose Your Watershed

2

Review Information Sources

3

Develop Your Plan

Get Started! 

for instant access to your watershed's
maps, data, modeling and more.

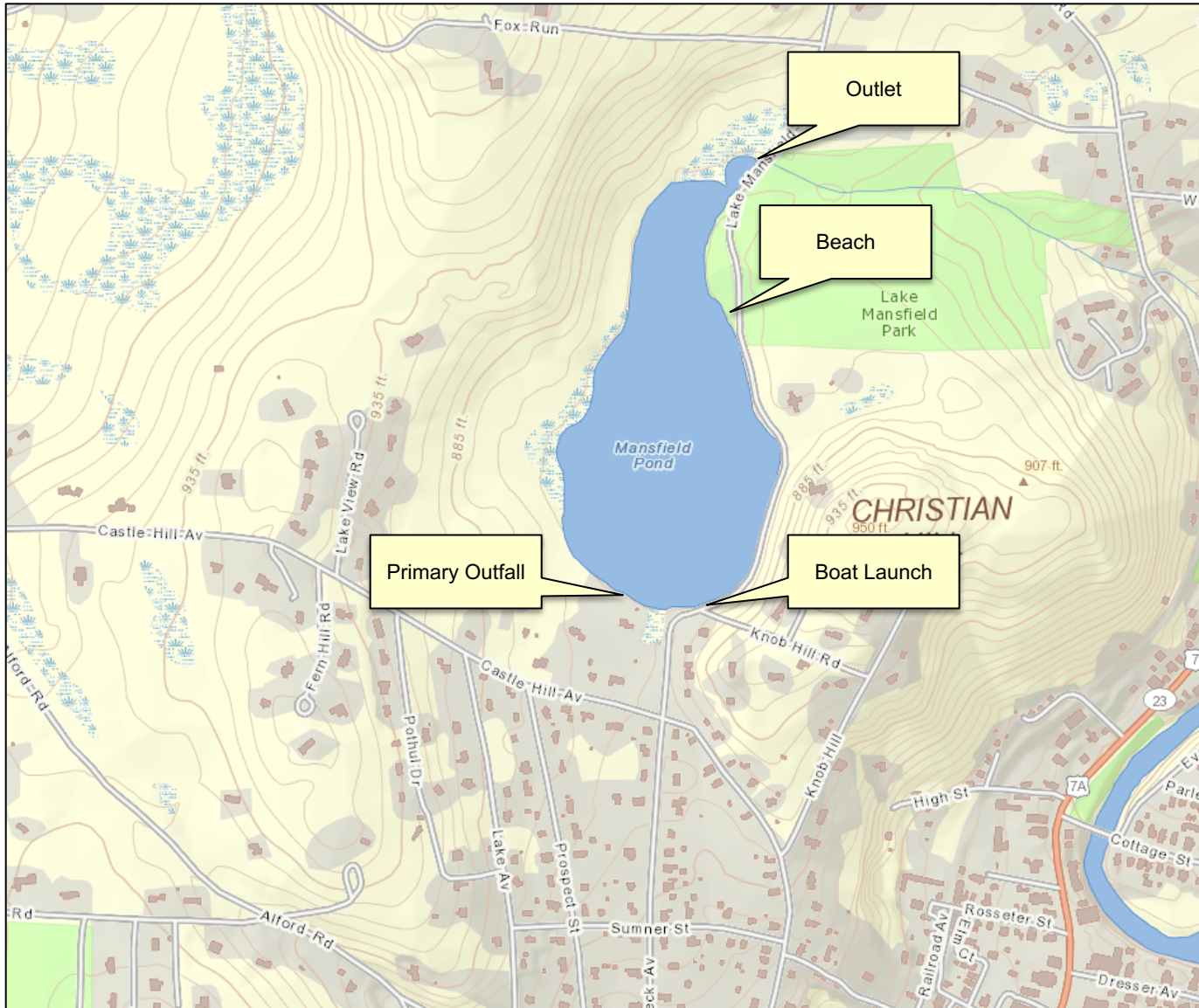
What is a Watershed-Based Plan?
Click [here](#) to learn more.

Click [here](#) to see completed
Massachusetts Watershed-Based Plans



MassDEP Home
Contact Us

Lake Mansfield WBP Case Study



Lake Mansfield WBP Case Study



Problem Area: Beach Parking Area



Lake Mansfield WBP Case Study



Problem Area: Boat Launch



Lake Mansfield WBP Case Study



Problem Area: Steep Neighborhood with Dirt Roads



Lake Mansfield WBP

Case Study



Element A & B:

Identify Impairments and Set Goals

Impairment Identification

- Impaired Category 4C (Non-Native Aquatic Macrophytes)
- Sediment is primary pollutant to Lake and encouraging growth of invasive and nuisance plants

Lake Mansfield WBP

Case Study



Element A & B:

Identify Impairments and Set Goals

Impairment Identification

- Impaired Category 4C (Non-Native Aquatic Macrophytes)
- Sediment is primary pollutant to Lake and encouraging growth of invasive and nuisance plants

Water Quality Goals

- Consistently reduce biomass of non-aquatic macrophytes by reducing stormwater runoff and sediment loading
- Goals in stages: initial goal, intermediate goal, long-term goal
- De-list Lake Mansfield from 303(d) list by 2030

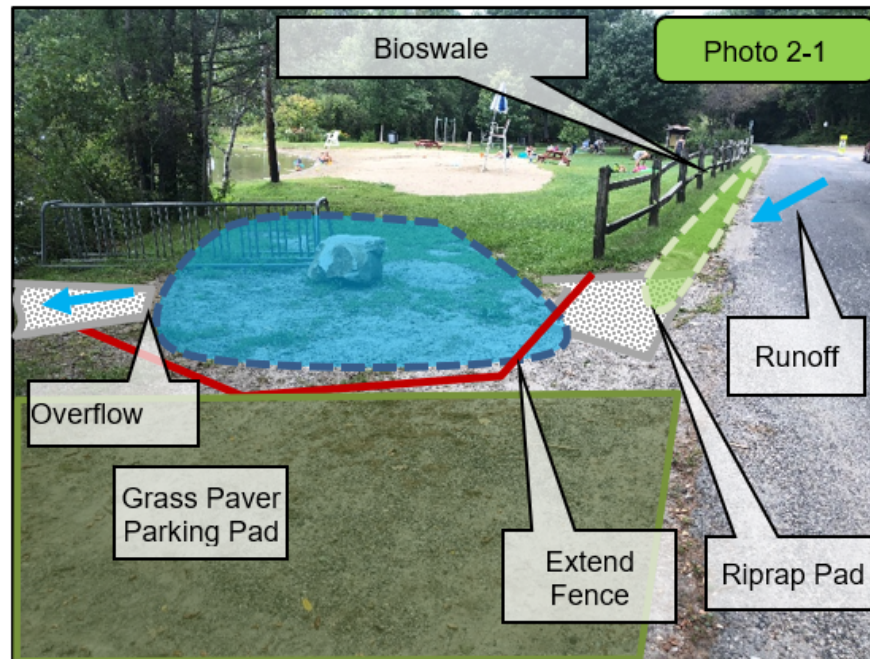
Lake Mansfield WBP

Case Study



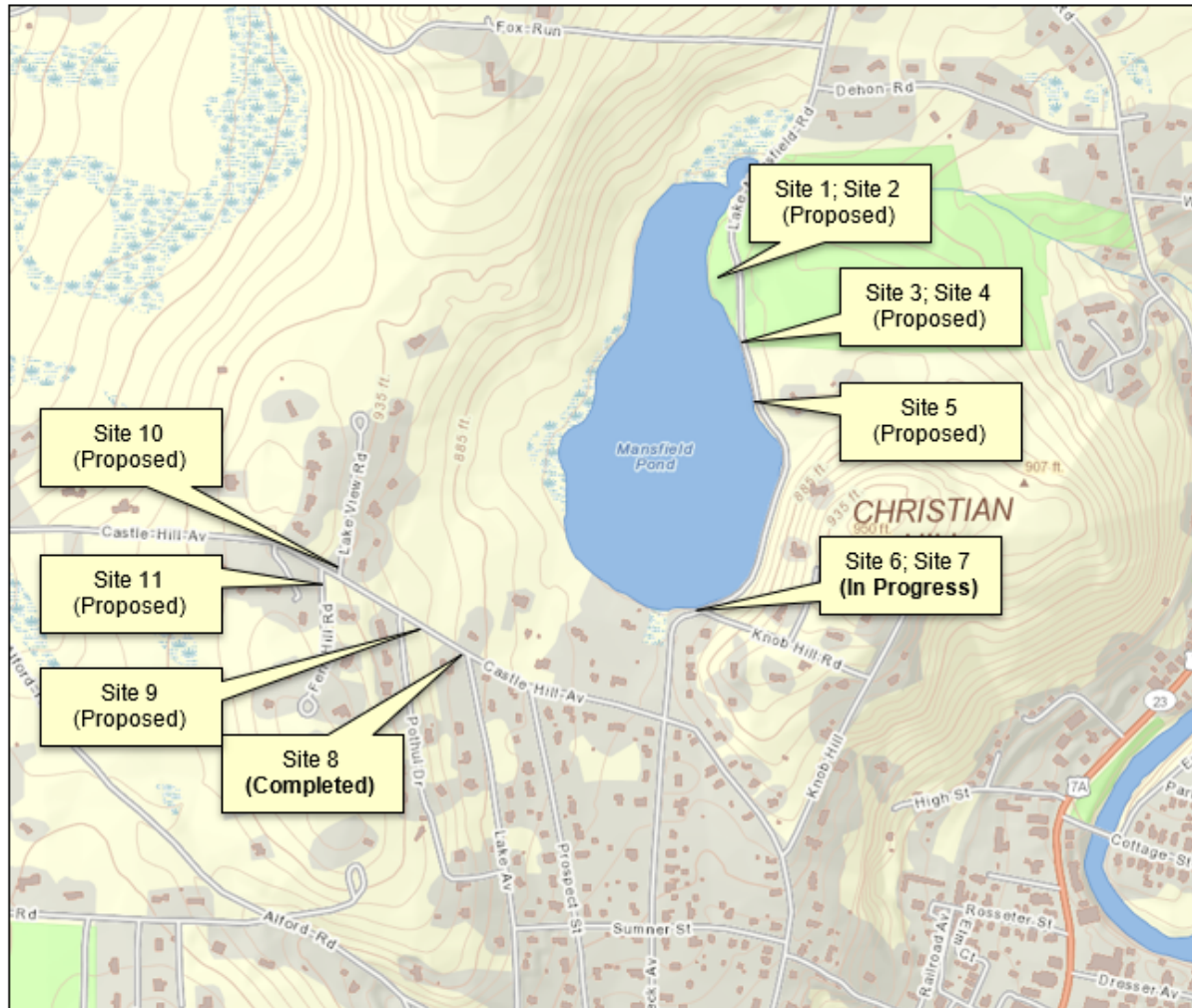
Element C/D: Conceptual BMPs and Cost Estimates

1. Perform field visits, develop 10 BMP concepts
2. Calculate estimated load reduction (from WBP-tool)
3. Calculate estimated costs from (WBP-tool)



Lake Mansfield WBP Case Study

Element C/D: Conceptual BMPs and Cost Estimates



Lake Mansfield WBP

Case Study



Element E: Public Information and Education

1. Define outreach program goals
2. Identify target audience
3. Identify trackable outreach products



Lake Mansfield WBP

Case Study



Elements F&G: Milestone Based Schedule

Category	Action	Year(s)
Monitoring / Vegetation	Write Quality Assurance Project Plan (QAPP) for sampling and establish water quality monitoring program	2019
	Perform annual water quality sampling per Element H&I monitoring guidance.	Annual
	Perform annual aquatic vegetation monitoring and control	Annual
	Establish long-term 10-year sediment or phosphorus reduction goal(s) (or other) from baseline monitoring results (See Element B, Section 3)	2020
Structural BMPs	Obtain funding and implement 2-3 recommended sites from Appendix B	2020
	Obtain funding and implement 2-3 recommended sites from Appendix B	2022
	Obtain funding and implement 2-3 recommended sites from Appendix B	2024
Public Education and Outreach (See <i>Element E</i>)	Periodically post project updates to website, including completed WBP and “snapshot” progress report	Annual
	Continue ongoing implementation of previously completed outreach efforts (See Element D)	Annual
	Create information signage for up to 3 completed BMPs	2022
Adaptive Management and Plan Updates	Establish working group comprised of stakeholders and other interested parties to implement recommendations and track progress. Meet at least twice per year.	2019
	Re-evaluate Watershed Based Plan at least once every three (3) years and adjust, as needed, based on ongoing efforts (e.g., based on monitoring results, 319 funding, etc.). – Next update, December 2021	2021
	Reach long-term goal to de-list watershed from 303(d) list for non-native aquatic macrophytes	2029

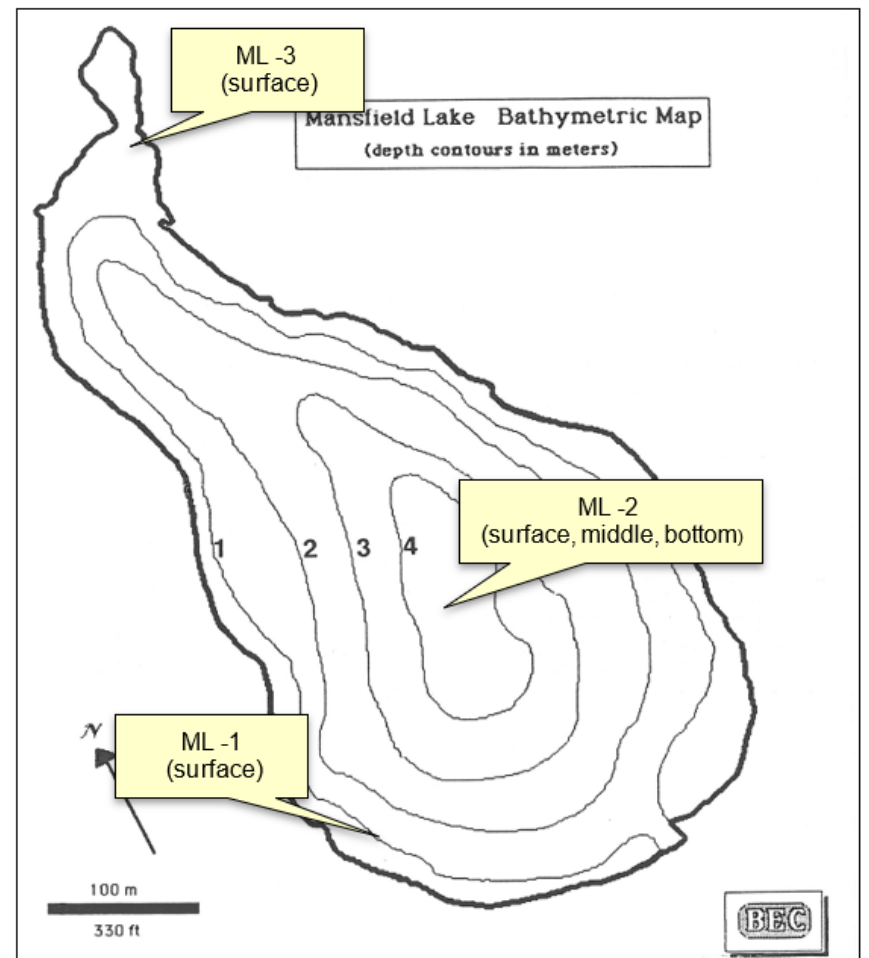
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Case Study



Elements H&I: Progress Evaluation & Monitoring

- 1. Identify indirect indicators of load reductions**
E.g., vegetation monitoring for reduced biomass
- 2. Identify project specific indicators of load reductions**
E.g., Number of BMPs installed and resulting load reduction estimates
- 3. Develop Monitoring Plan for Direct Measurements**
E.g., where, when, what

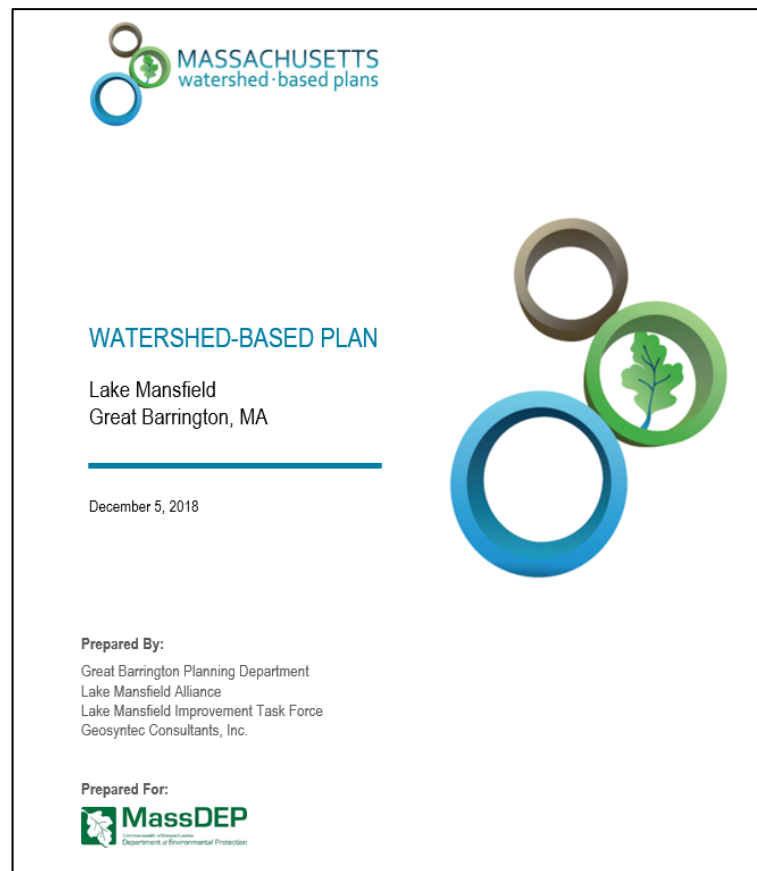


Lake Mansfield WBP Case Study



Completed Plan is Available to Public:

<http://prj.geosyntec.com/MassDEPWBP/Account/AcceptedPlans>



WBP-Tool Next Steps



- 1. Developing WBPs for 18+ watersheds**
- 2. Updating WBP-Tool**
 - Appx. BMP Sizing
 - Add'l BMP Guidance
 - Review Criteria
- 3. Developing Training Workshop (*Schedule / Location TBD*)**
 - WBP-Tool Overview
 - Applications for MS4 Compliance
 - Hands on Exercise to Develop WBPs



<http://prj.geosyntec.com/MassDEPWBP>

Thank you for your time!

Contact:

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