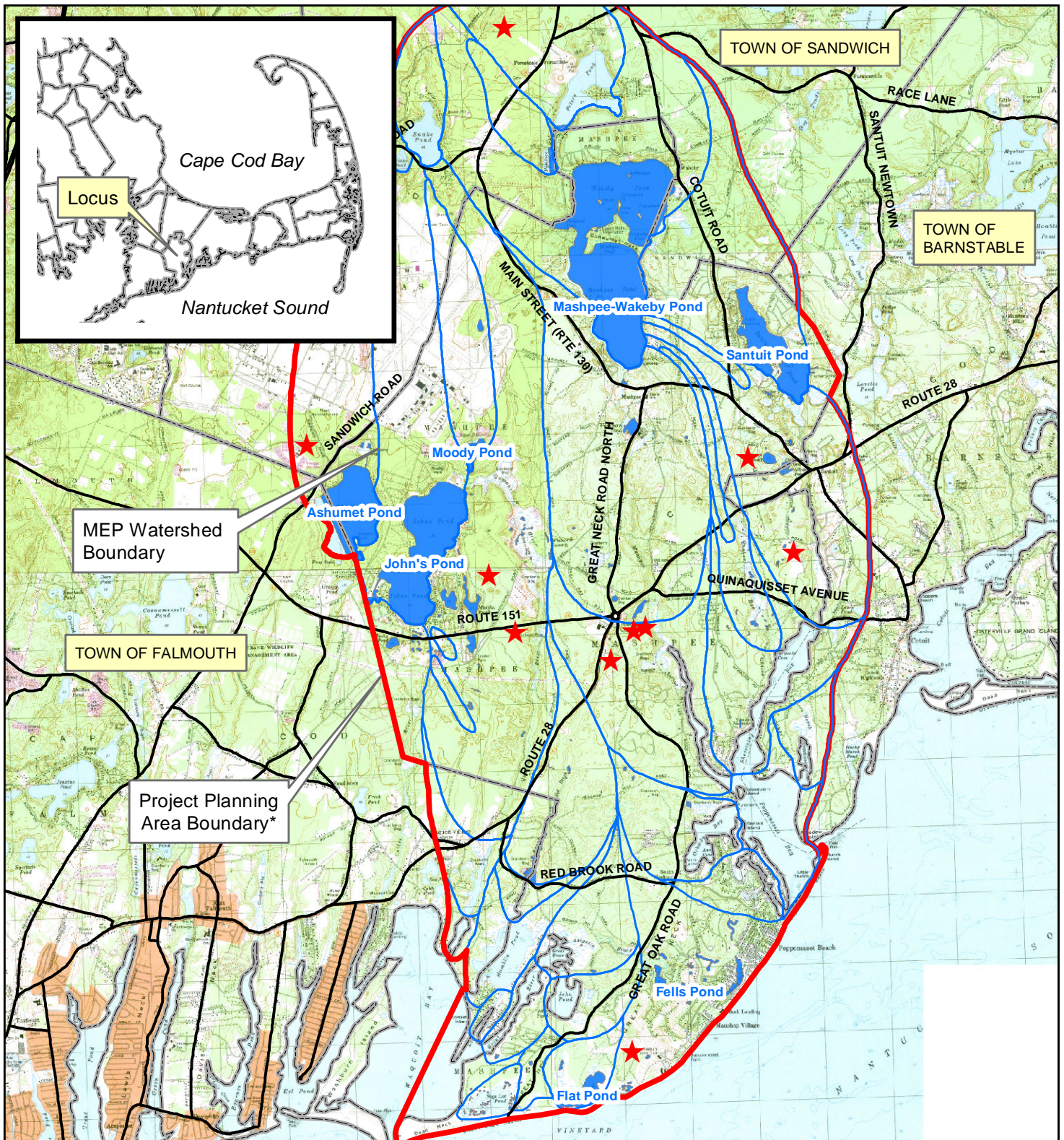


Figures

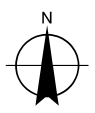


LEGEND

- MEP Watershed
- ★ WWTf Location
- Major Roadway (For Location Reference)

***The Project Area is the combination of the entire Town of Mashpee and the watersheds of Popponesset Bay and Waquoit Bay-East as delineated by the Massachusetts Estuaries Project (MEP) extending into the Towns of Barnstable, Falmouth and Sandwich.**

Paper Size ANSI A
0 0.375 0.75 1.5 Miles
Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001

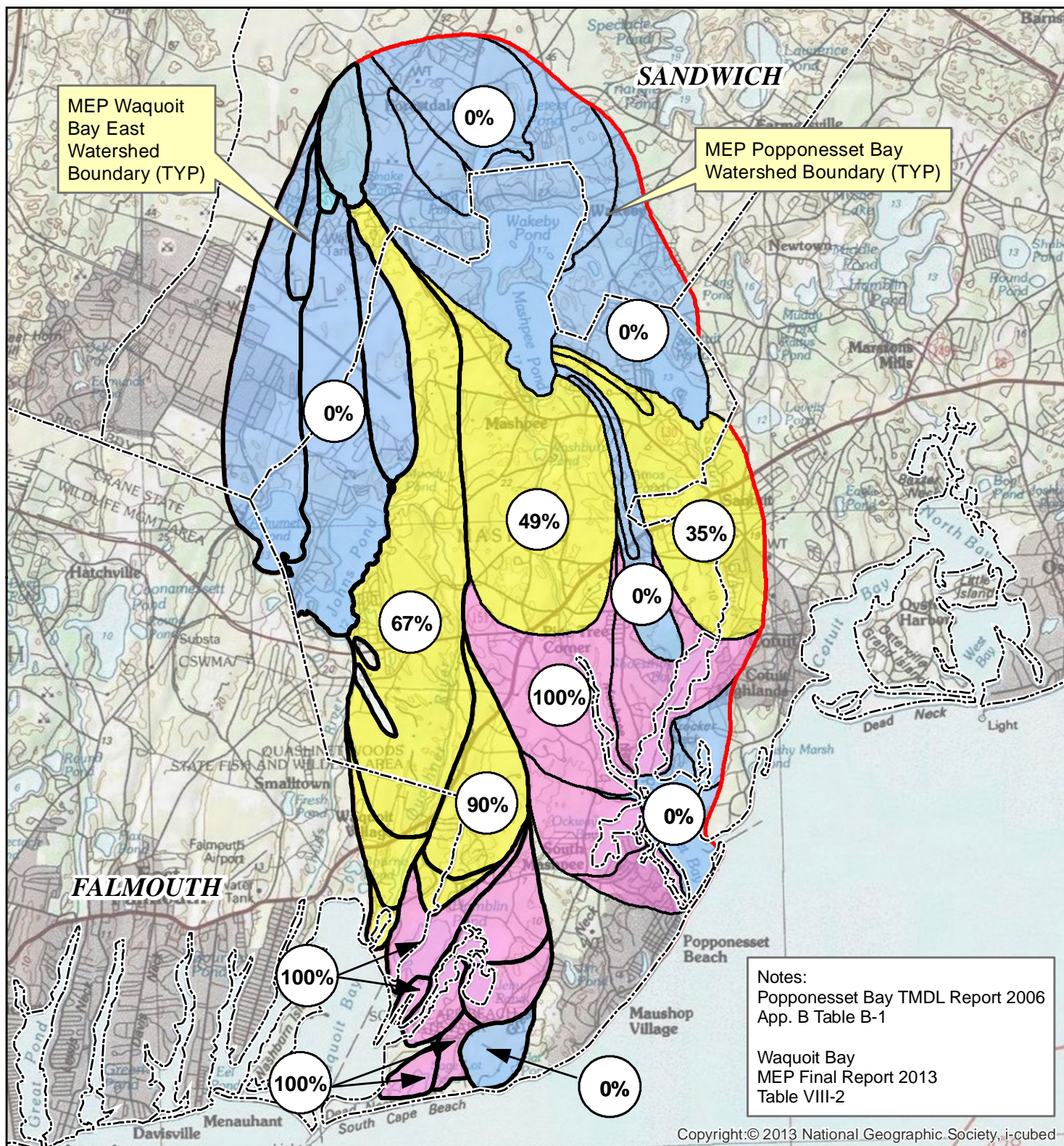


Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number | 86-12001
Revision | A
Date | 07 May 2015

PROJECT PLANNING AREA

Figure 1-1



LEGEND



Percentage of Wastewater Nitrogen Removal Suggested by MEP (Septic Only)



0% Removal

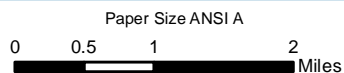


1-99% Removal

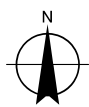


100% Removal

The "Project Area" is the combination of the Town of Mashpee and the watersheds of Popponesset Bay and Waquoit Bay East as delineated by the Massachusetts Estuaries Project (MEP).



Map Projection: Lambert Conformal Conic
 Horizontal Datum: North American 1983
 Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001

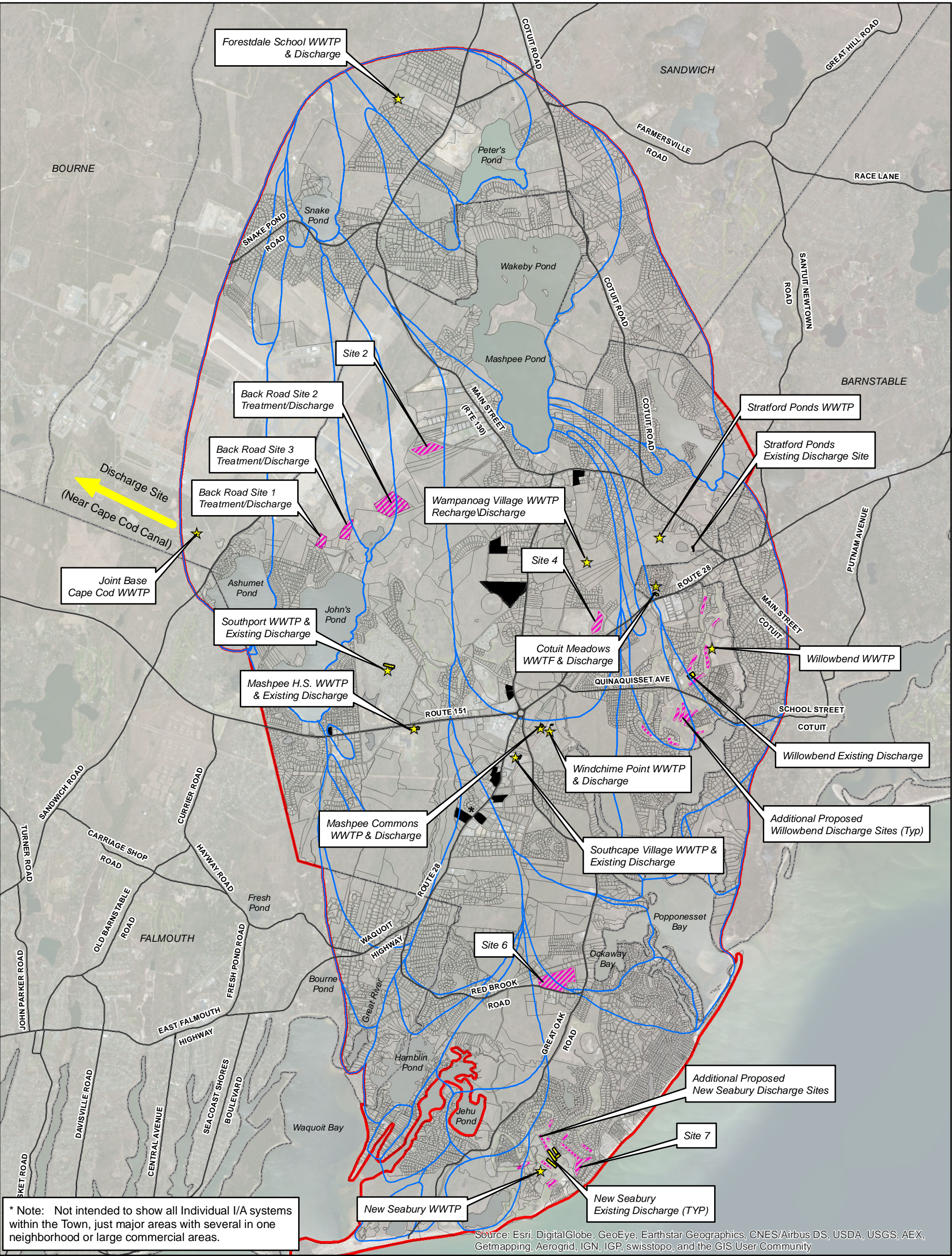


Town of Mashpee Sewer Commission
 Watershed Nitrogen Management Plan

MEP Estimated Percent Septic (only) Removals

Job Number 86-12001
 Revision A
 Date 04 May 2015

Figure 1-2



LEGEND

Parcel Boundary

Planning Area Boundary

Town Boundaries

MEP Watersheds

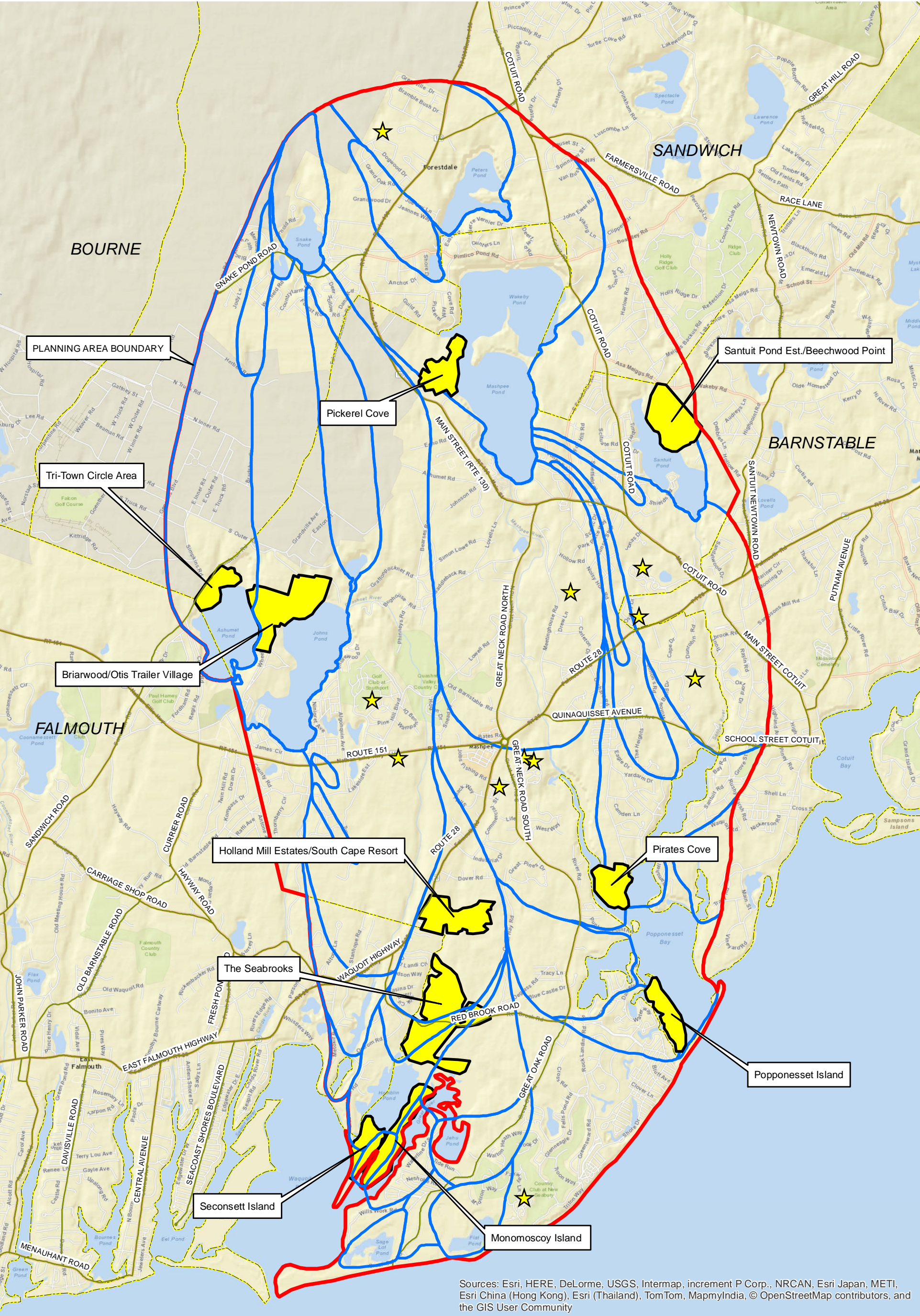
Proposed Treatment/Discharge Site

Existing Discharge Site

Existing WWTPs

I/A

Note: Parcel boundaries on this map represent fiscal years 2011/2012 data based on Level 3 deliveries to MassGIS. The last updated parcel file for the Town of Mashpee, Ma was 2011. The other municipalities within the planning area may have since re-assessed parcels since 2012 but are not currently available on MassGIS.



Legend

- Planning Area Boundary
- Existing Private WWTP
- Potential Cluster System

Paper Size ANSI B

0 0.375 0.75 1.5 Miles

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

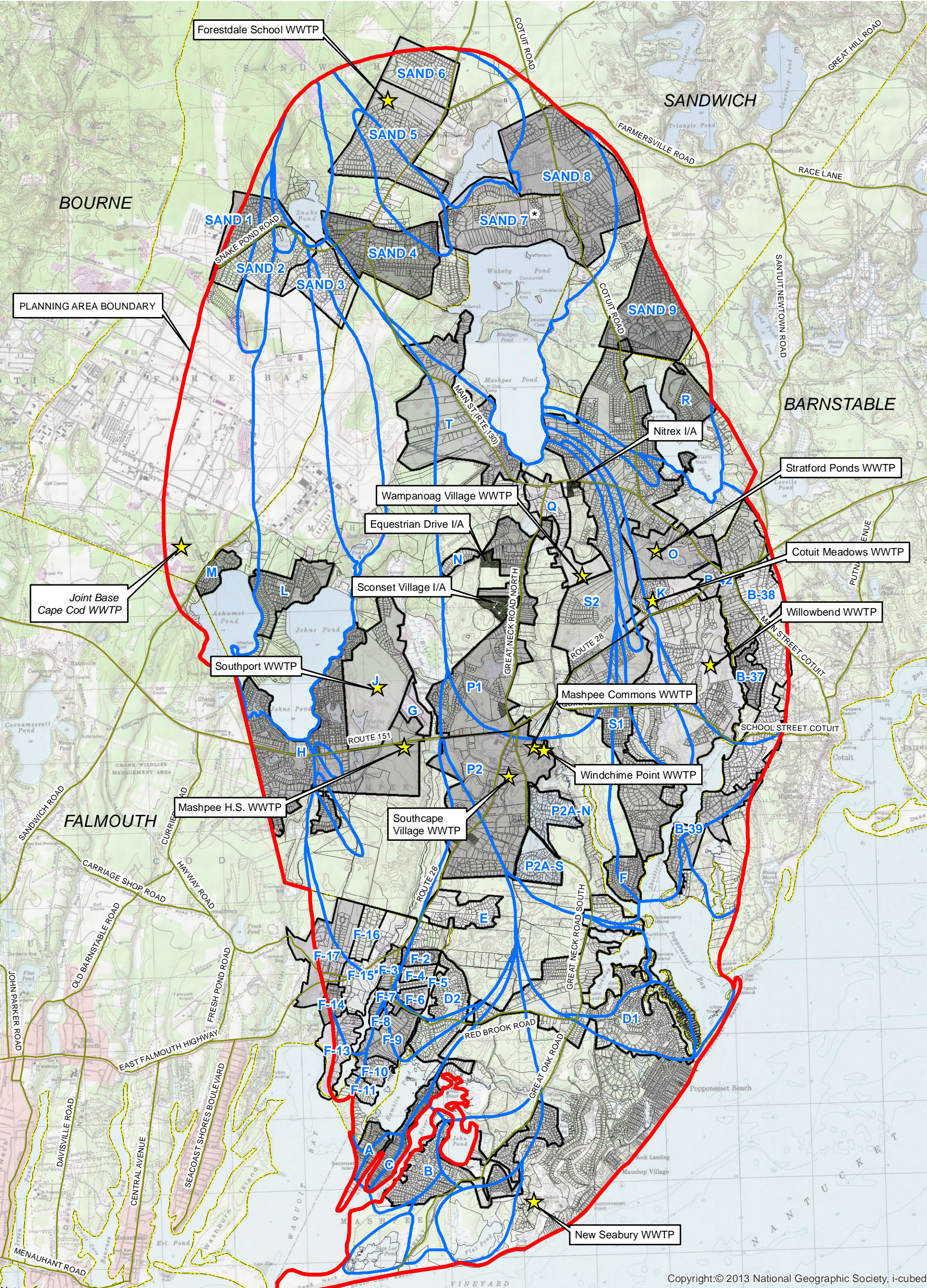


Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number 86-12001
Revision A
Date 06 May 2015

POTENTIAL CLUSTER SYSTEM LOCATIONS

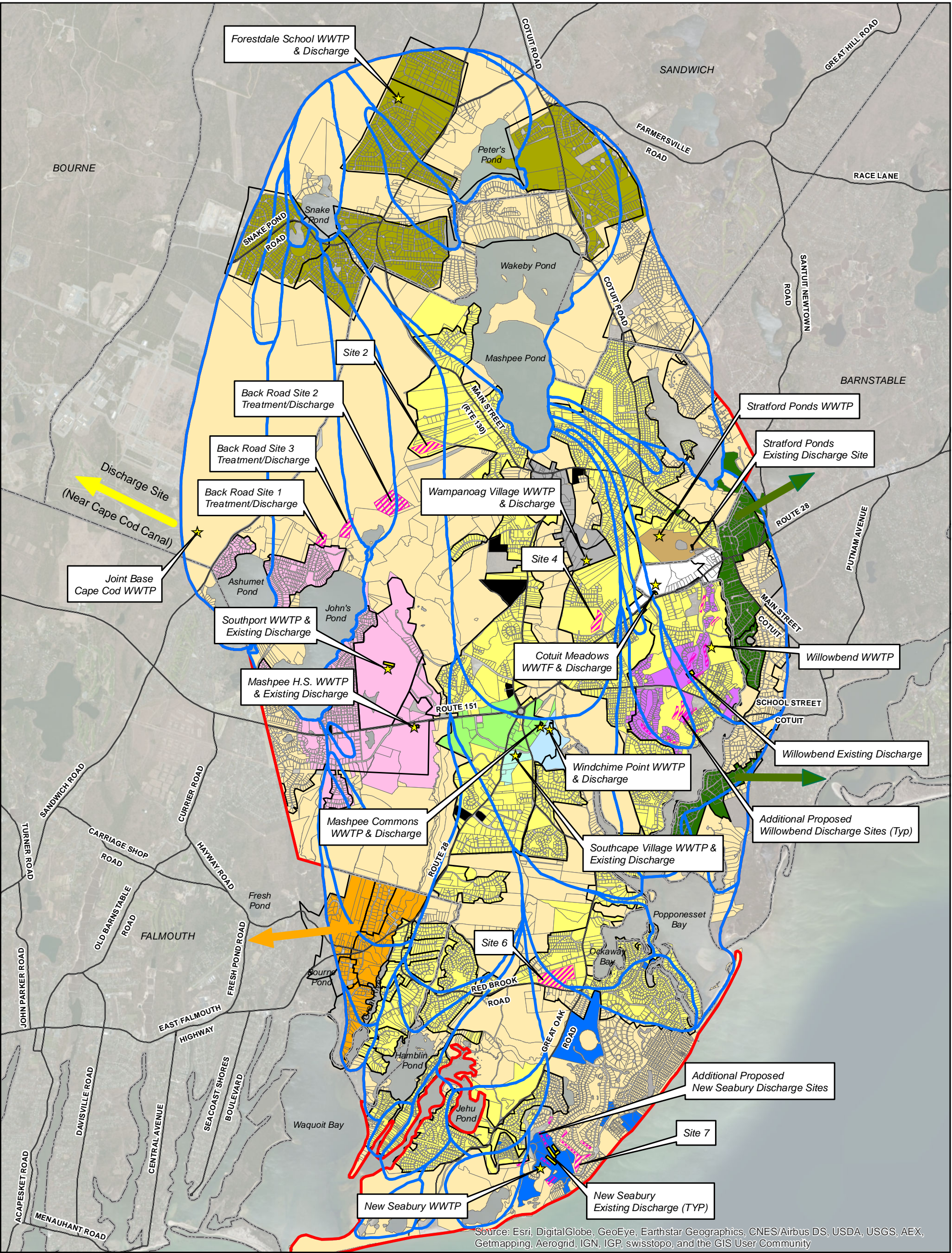
Figure 4-2



Notes:

- 1. Some future areas not shown.
- 2. Map does not show all I/A locations.
- 3. Some areas have been further subdivided for analysis purposes (Not shown for clarity)
- 4. Greyscales and colors shown on map for clarity purposes only.
- 5. **Sand 7* includes a portion of Mashpee

Note: Parcel boundaries on this map represent fiscal years 2011/2012 data based on Level 3 deliveries to MassGIS. The last updated parcel file for the Town of Mashpee, Ma was 2011. The other municipalities within the planning area may have since re-assessed parcels since 2012 but are not currently available on MassGIS.



Planning Area Boundary

Town Boundaries

Proposed Treatment/Discharge Site

Existing Discharge Site

Existing WWTPs

MEP Watersheds

Barnstable Outside Watershed

Cotuit Meadows WWTF

Falmouth Outside Watershed

I/A Systems (Cluster Only)

Johns Pond Region

MSPA

Mashpee Commons WWTF

New Seabury Existing and Future connections

Sandwich Outside Watershed

Septic

South Cape Village WWTF

Stratford Ponds

Wampanoag Village WWTF

Willowbend WWTF

Windchime Point

Paper Size ANSI B

0 0.375 0.75 1.5 Miles

Map Projection: Lambert Conformal Conic

Horizontal Datum: North American 1983

Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

N

GHD

Town of Mashpee Sewer Commission

Watershed Nitrogen Management Plan

OPTION 1A (From ASAR)

Job Number

86-12001

Revision

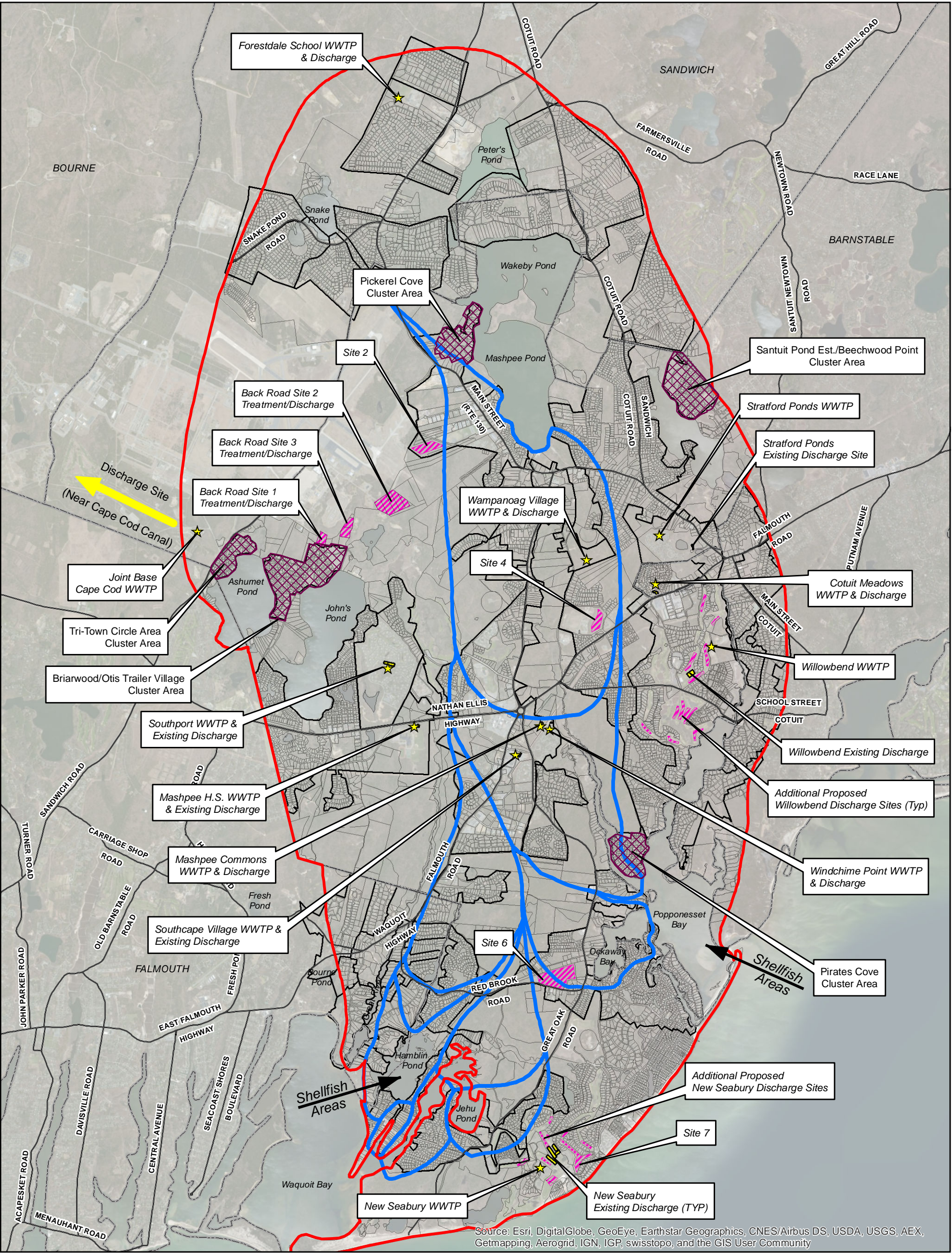
A

Date

06 May 2015

Figure 4-4

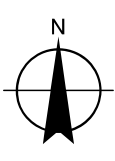
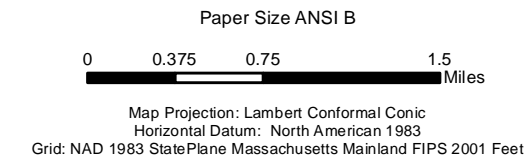
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1545 Iyannough Road Hyannis Massachusetts T 774 470-1630 F 774 470-1631 Web www.ghd.com
© 2012. Whilst every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:jobrien



LEGEND

- Potential Cluster System
- Planning Area Boundary
- Watersheds to Shellfish Areas
- Town Boundaries
- Proposed Treatment/Discharge Site
- Existing Discharge Site
- Existing WWTPs
- Parcel Boundary

Note: Parcel boundaries on this map represent fiscal years 2011/2012 data based on Level 3 deliveries to MassGIS. The last updated parcel file for the Town of Mashpee, Ma was 2011. The other municipalities within the planning area may have since re-assessed parcels since 2012 but are not currently available on MassGIS.

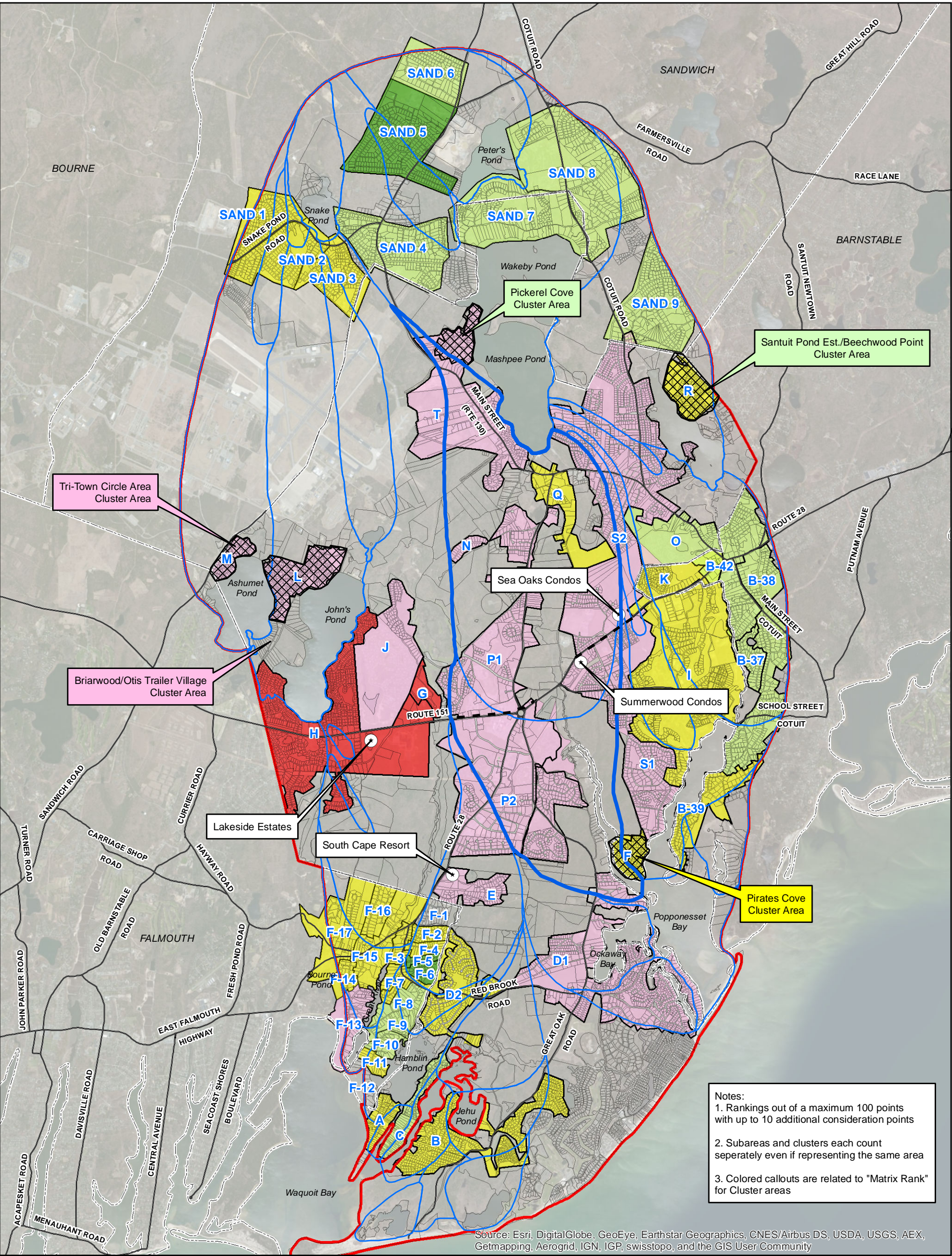


Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number 86-12001
Revision A
Date 29 Apr 2015

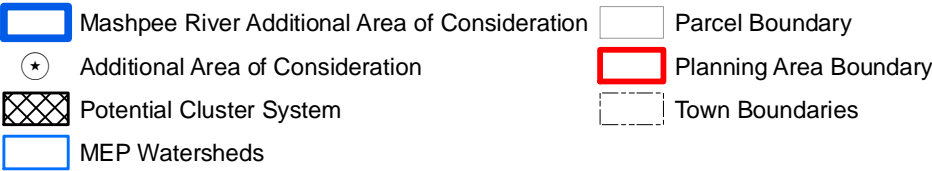
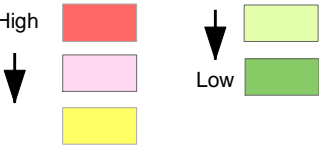
OPTION 1A - ALTERNATIVE
EVALUATION AREAS

Figure 4-5



LEGEND

Matrix Point Rating

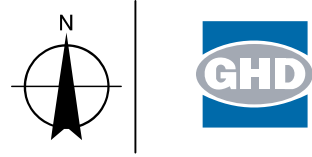
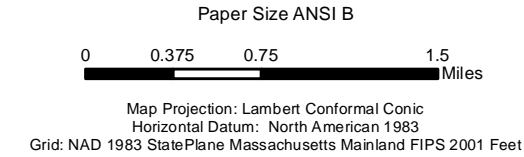


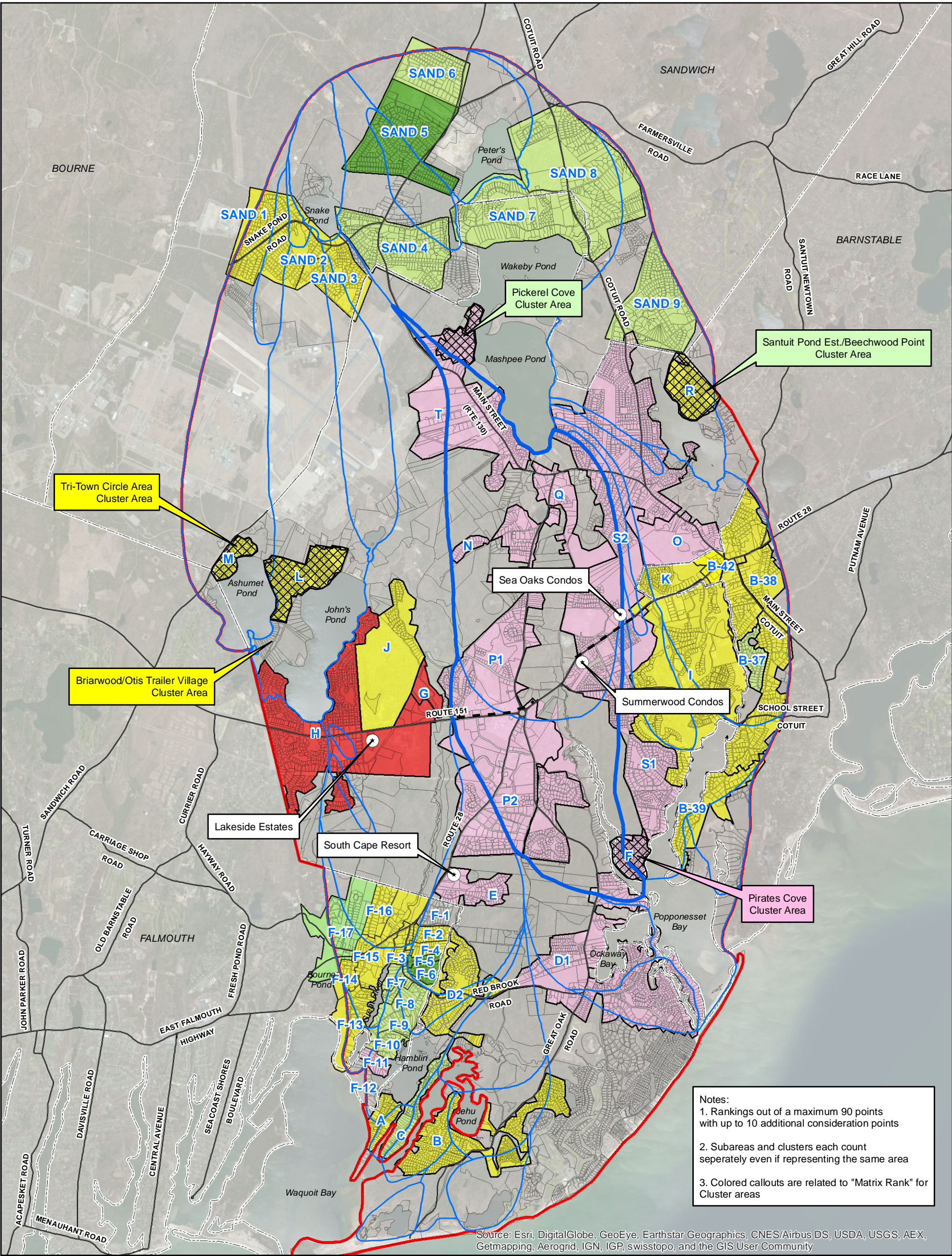
Notes:

1. Rankings out of a maximum 100 points with up to 10 additional consideration points
2. Subareas and clusters each count separately even if representing the same area
3. Colored callouts are related to "Matrix Rank" for Cluster areas

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Note: Parcel boundaries on this map represent fiscal years 2011/2012 data based on Level 3 deliveries to MassGIS. The last updated parcel file for the Town of Mashpee, Ma was 2011. The other municipalities within the planning area may have since re-assessed parcels since 2012 but are not currently available on MassGIS.





Notes:

1. Rankings out of a maximum 90 points with up to 10 additional consideration points
2. Subareas and clusters each count separately even if representing the same area
3. Colored callouts are related to "Matrix Rank" for Cluster areas

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LEGEND

Matrix Point Rating

High	Red	Down Arrow	Light Green
Medium	Pink	Down Arrow	Light Green
Low	Yellow	Down Arrow	Light Green

Additional Area of Consideration

Mashpee River Additional Area of Consideration

Potential Cluster System

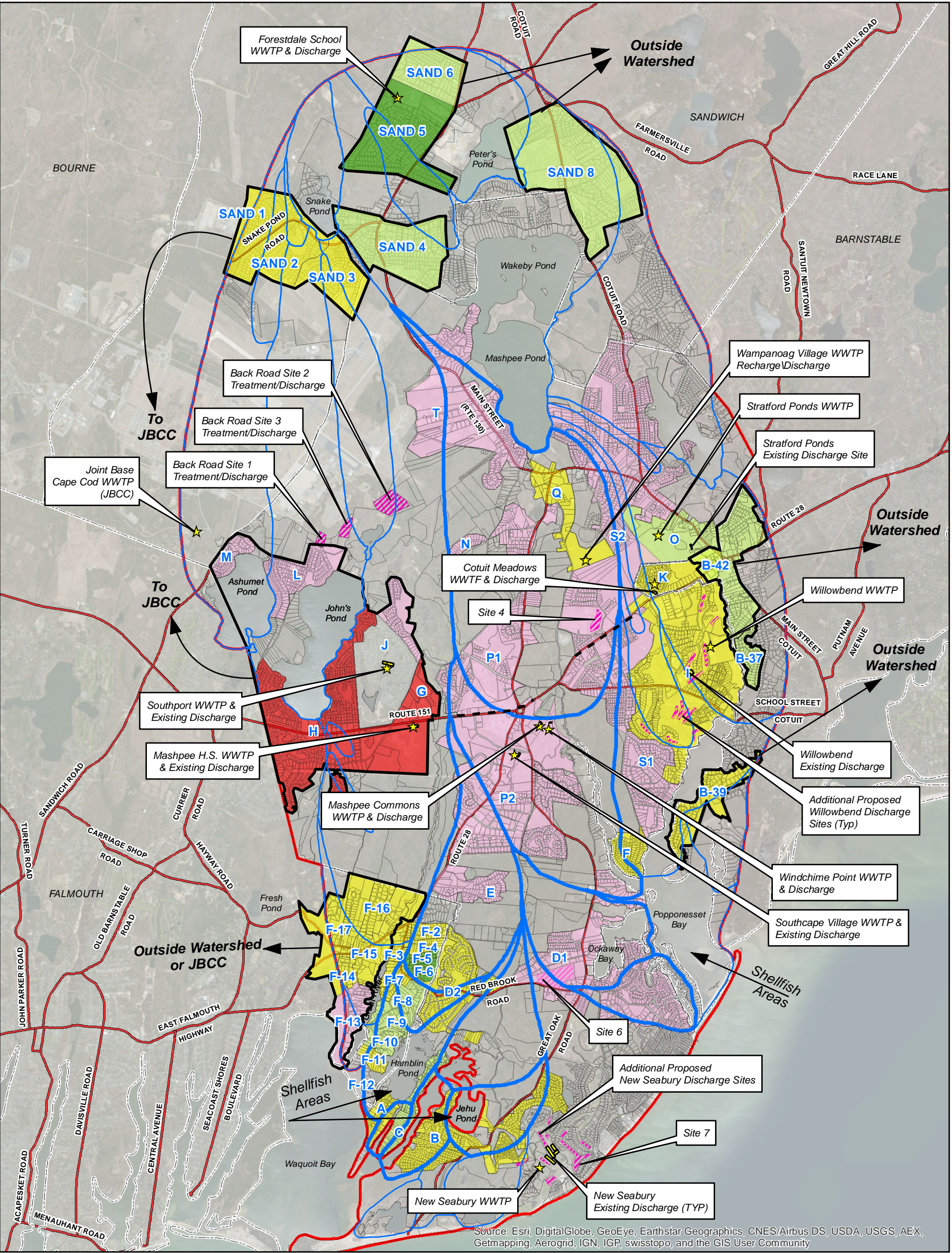
MEP Watersheds

Parcel Boundary

Planning Area Boundary

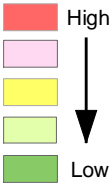
Town Boundaries

Note: Parcel boundaries on this map represent fiscal years 2011/2012 data based on Level 3 deliveries to MassGIS. The last updated parcel file for the Town of Mashpee, Ma was 2011. The other municipalities within the planning area may have since re-assessed parcels since 2012 but are not currently available on MassGIS.



LEGEND

Matrix Rating



Existing WWTPs



Shellfish Area



Planning Area Boundary



Town Boundaries



Existing Discharge Site

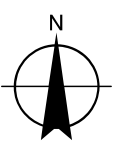
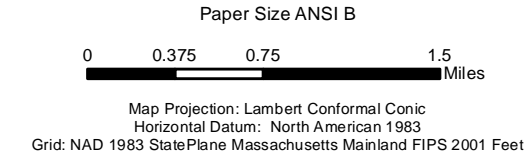


Parcel Boundary



Proposed Discharge Site

Note: Parcel boundaries on this map represent fiscal years 2011/2012 data based on Level 3 deliveries to MassGIS. The last updated parcel file for the Town of Mashpee, Ma was 2011. The other municipalities within the planning area may have since re-assessed parcels since 2012 but are not currently available on MassGIS.



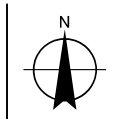
Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number 86-12001
Revision A
Date 06 May 2015

DRAFT- RECOMMENDED PLAN
PRIORITY RANKING WITH SHELLFISH Figure 5-1



Paper Size ANSI A



TOWN OF MASHPEE SEWER COMMISSION
Watershed Nitrogen Management

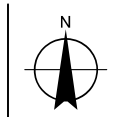
Job Number 86-12001
Revision A
Date 12 May 2015

SC-16 QUAHOG RESTORATION AREAS

Figure 6-1



Paper Size ANSI A

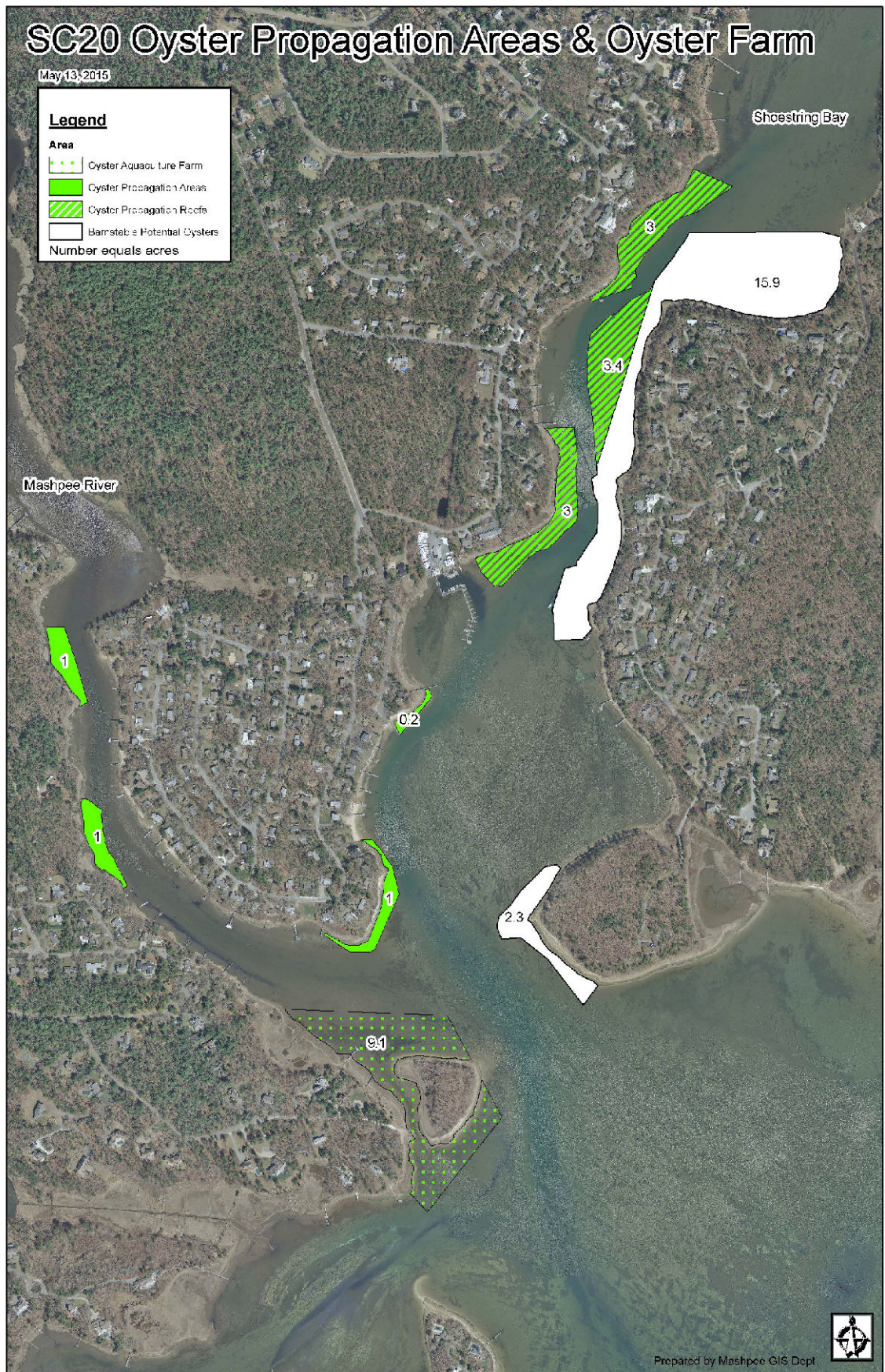


TOWN OF MASHPEE SEWER COMMISSION
Watershed Nitrogen Management

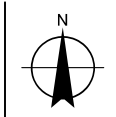
Job Number 86-12001
Revision A
Date 12 May 2015

SC-19 QUAHOG RESTORATION AREAS

Figure 6-2



Paper Size ANSI A

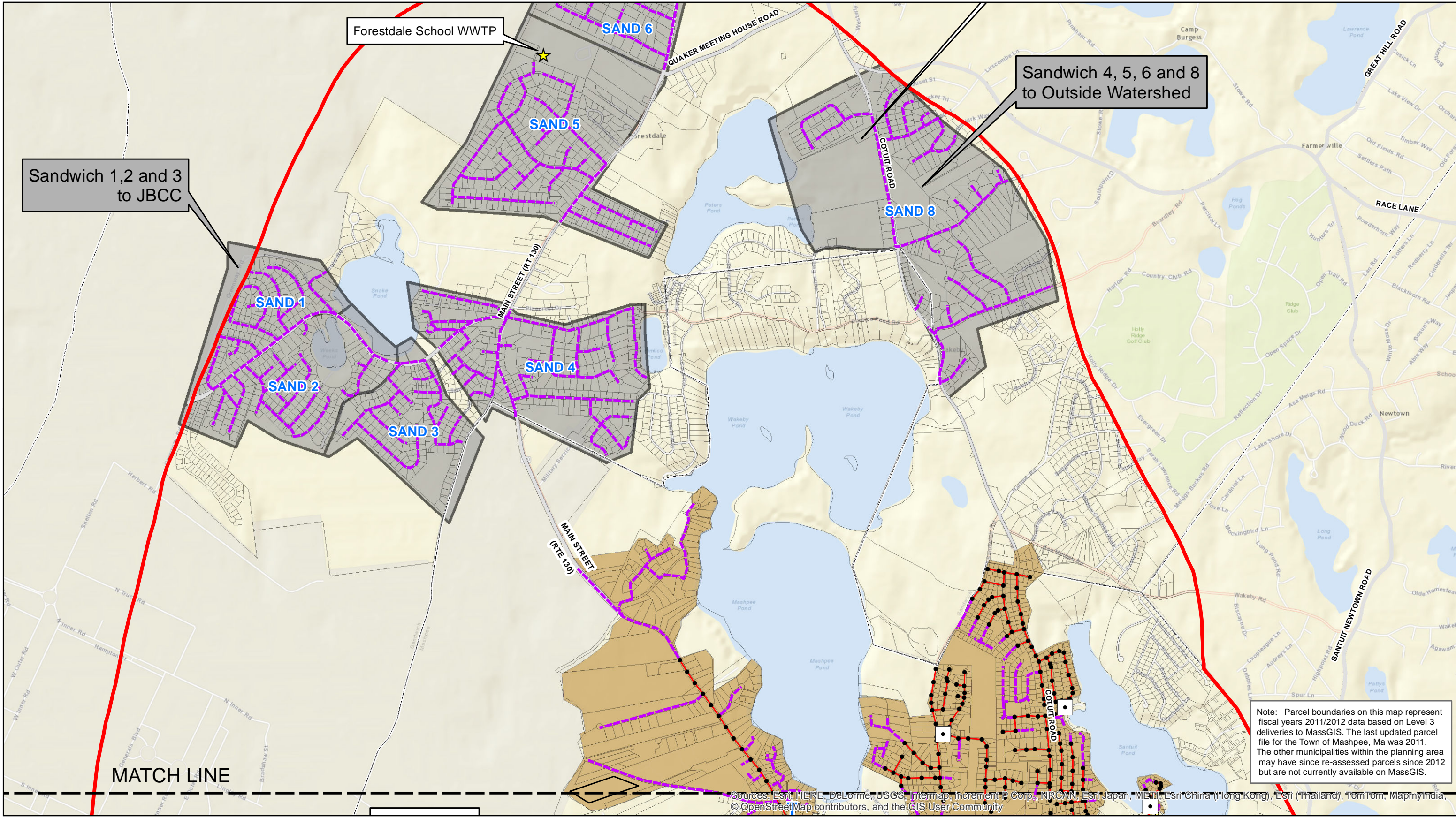


TOWN OF MASHPEE SEWER COMMISSION
Watershed Nitrogen Management

Job Number	86-12001
Revision	A
Date	13 May 2015

SC-20 OYSTER PROPAGATION AREAS

Figure 6-3



Paper Size ANSI B

0 1,000 2,000 4,000 Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

N

★ MMR_Site

■ I/A -Large Individual or Neighborhood Only

▨ Proposed Treatment/Discharge Site

▭ Planning Area Boundary

▭ Parcel Boundary

▨ Existing Private Sewer

▨ Proposed Private Sewer

● Proposed Gravity MH

— Proposed Gravity Sewer

— Proposed Low Pressure Sewer

● Proposed Pump Station

— Dual Force Main

— Single Force Main

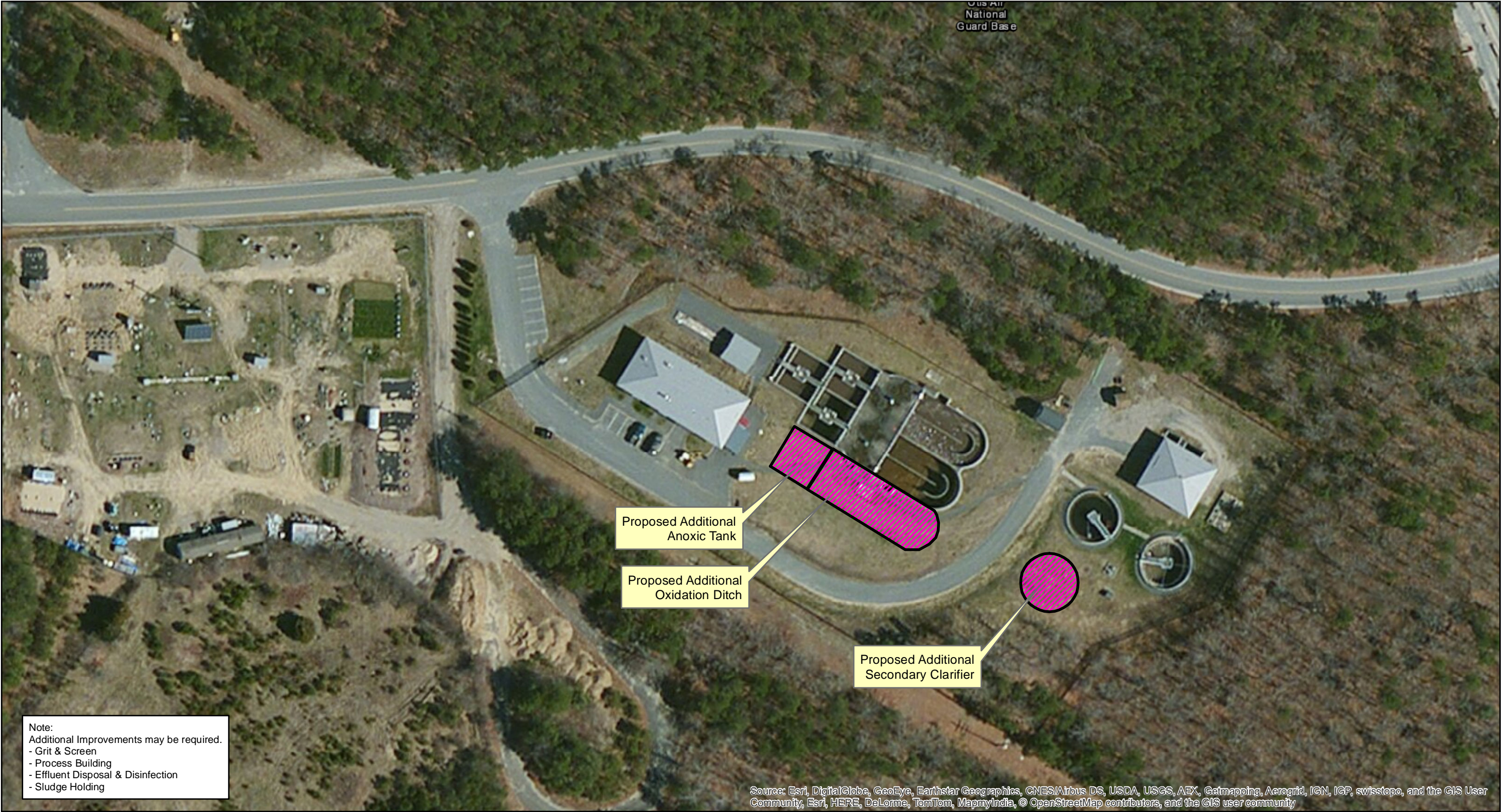
— Proposed Force Main to PS or WWTP

Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

**PRELIMINARY INFRASTRUCTURE
BY SUBAREA (NORTH PPA)**

Job Number 86-12001
Revision A
Date 06 May 2015

Figure 6-5



Paper Size ANSI B

0 50 100 200 Feet

Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

N

LEGEND

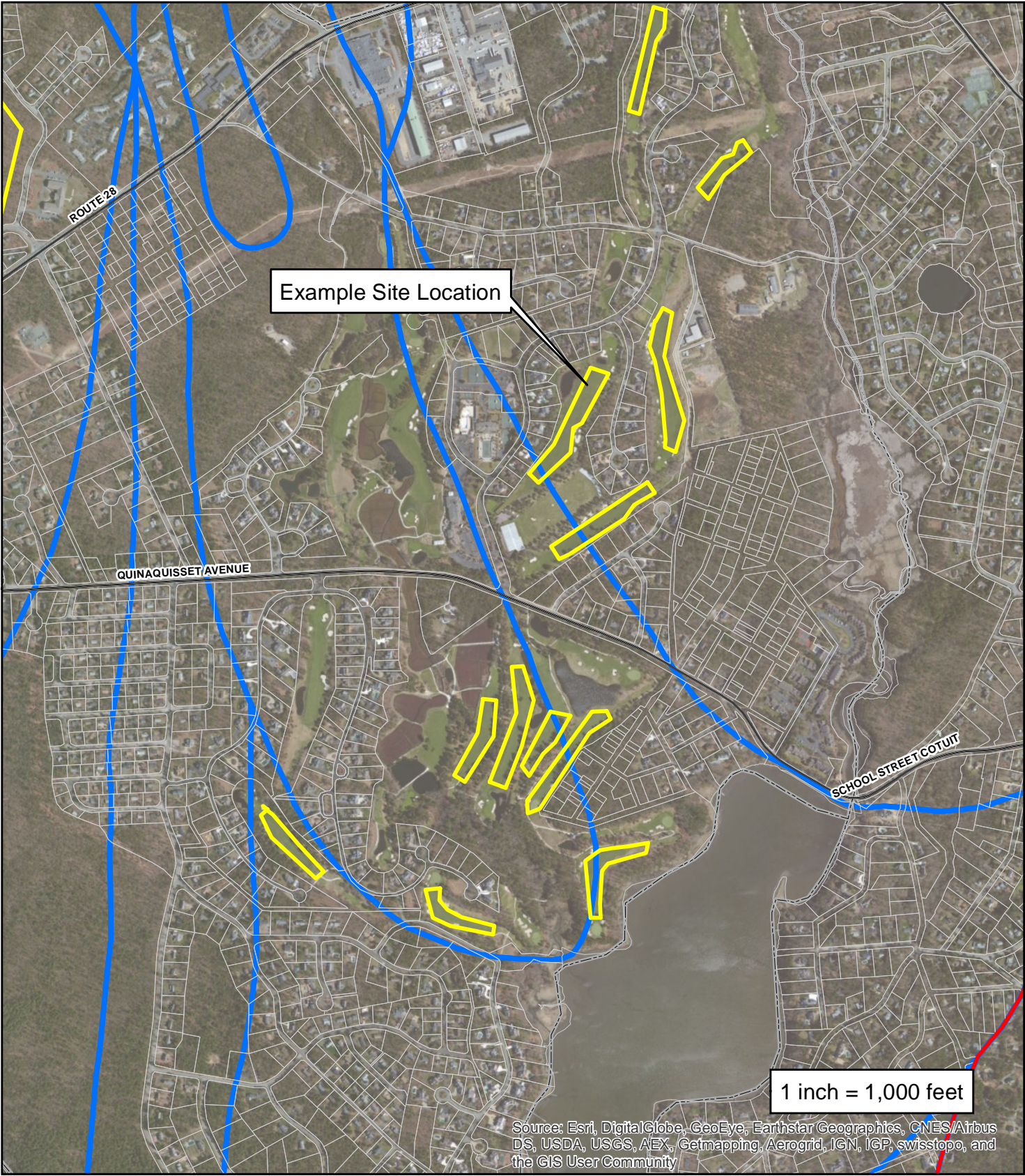
Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

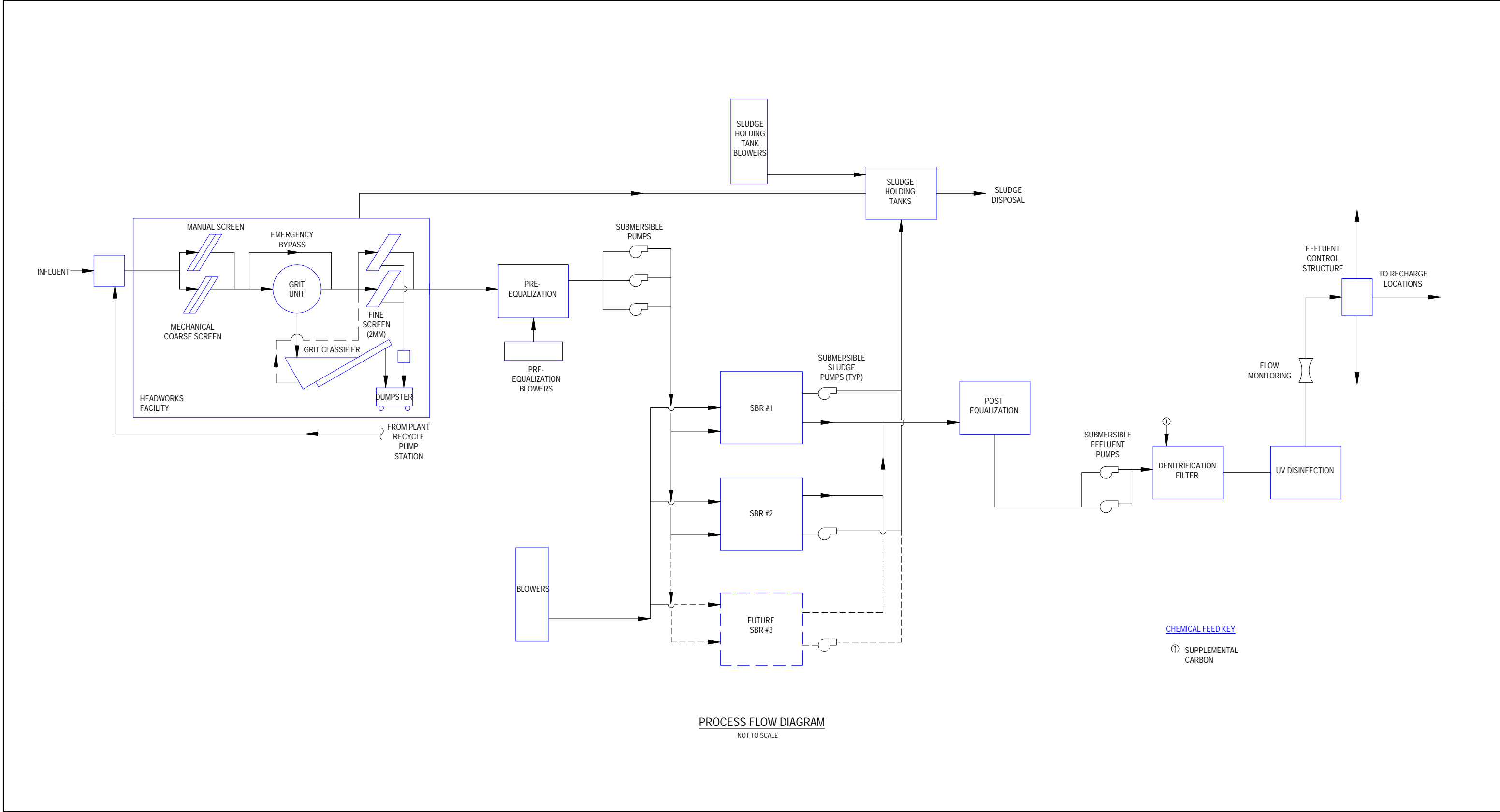
PROPOSED JBCC EXPANSION

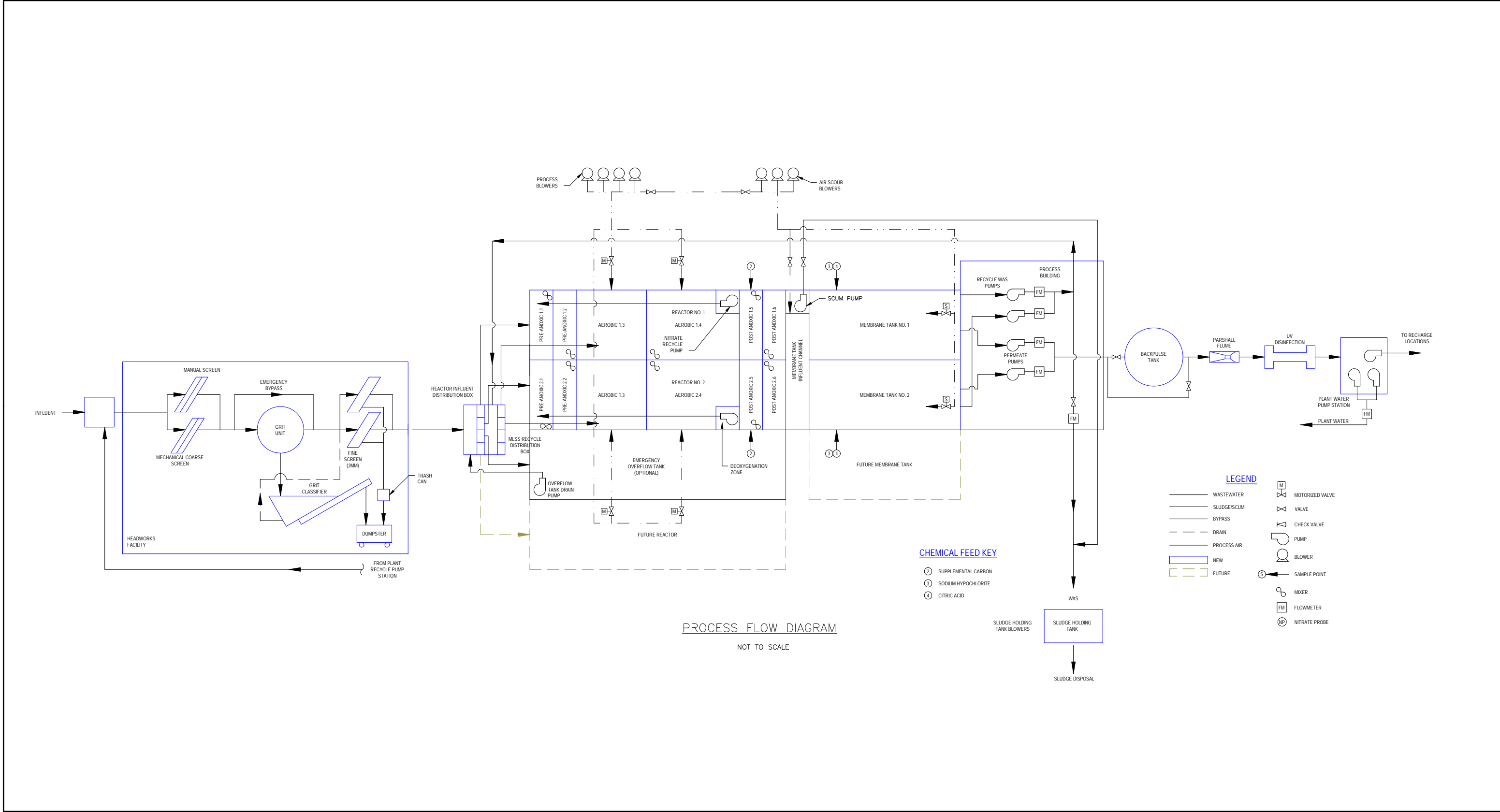
Job Number 86-12001
Revision A
Date 06 May 2015

Figure 6-7











Data Source: Mass GIS, Town of Mashpee GIS Dept,GHD

Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

LEGEND



Town of Mashpee Sewer Commission Watershed Nitrogen Management Plan	Job Number	86-12001
	Revision	A
	Date	06 May 2015

Site 4
Conceptual WWTF Layout

Figure 6-12



Data Source: Mass GIS, Town of Mashpee GIS Dept,GHD

Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

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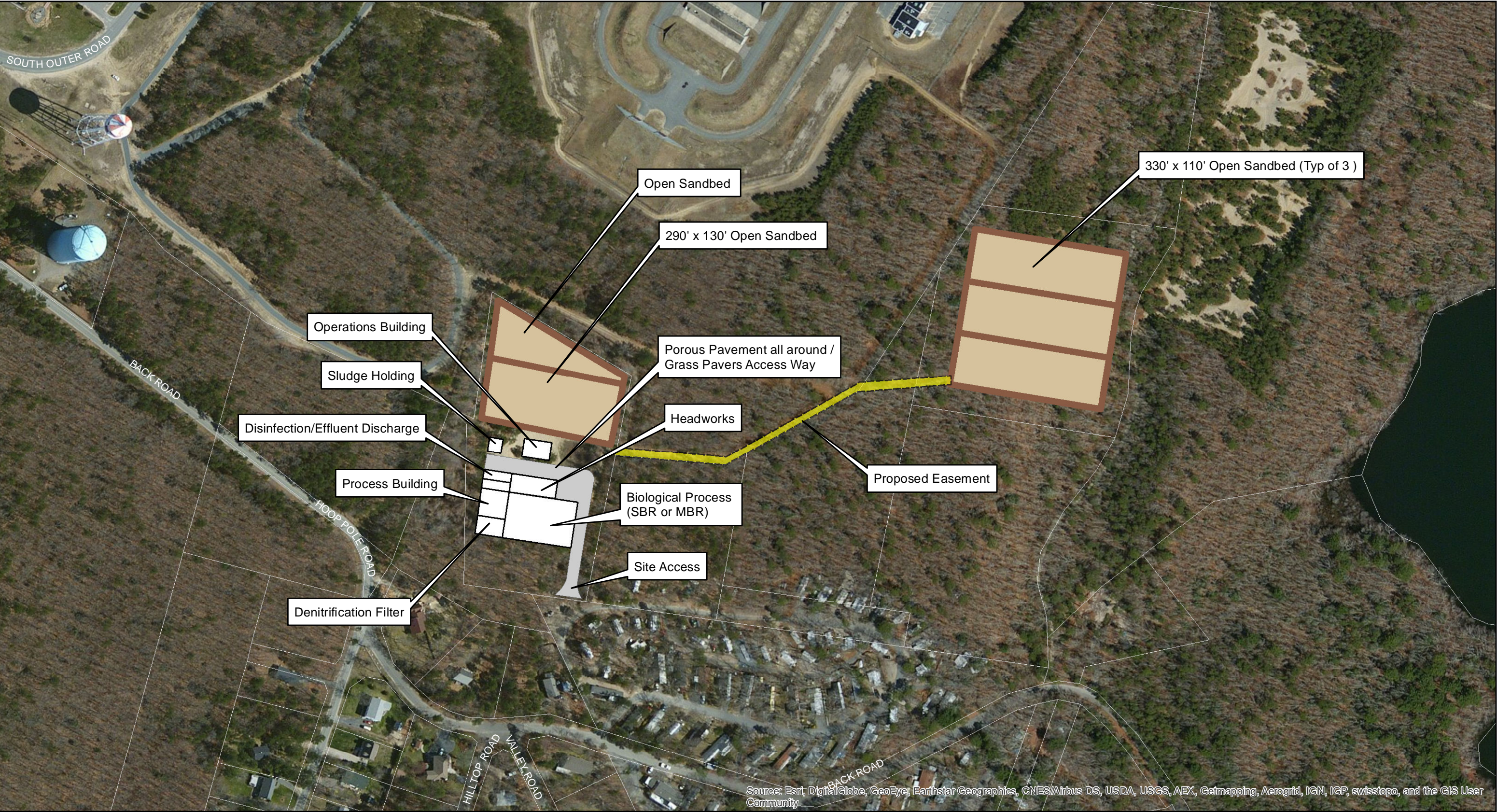
LEGEND



Town of Mashpee Sewer Commission Watershed Nitrogen Management Plan	Job Number	86-12001
	Revision	A
	Date	06 May 2015

Site 6
Conceptual WWTF Layout

Figure 6-13



Data Source: Mass GIS, Town of Mashpee GIS Dept,GHD

Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

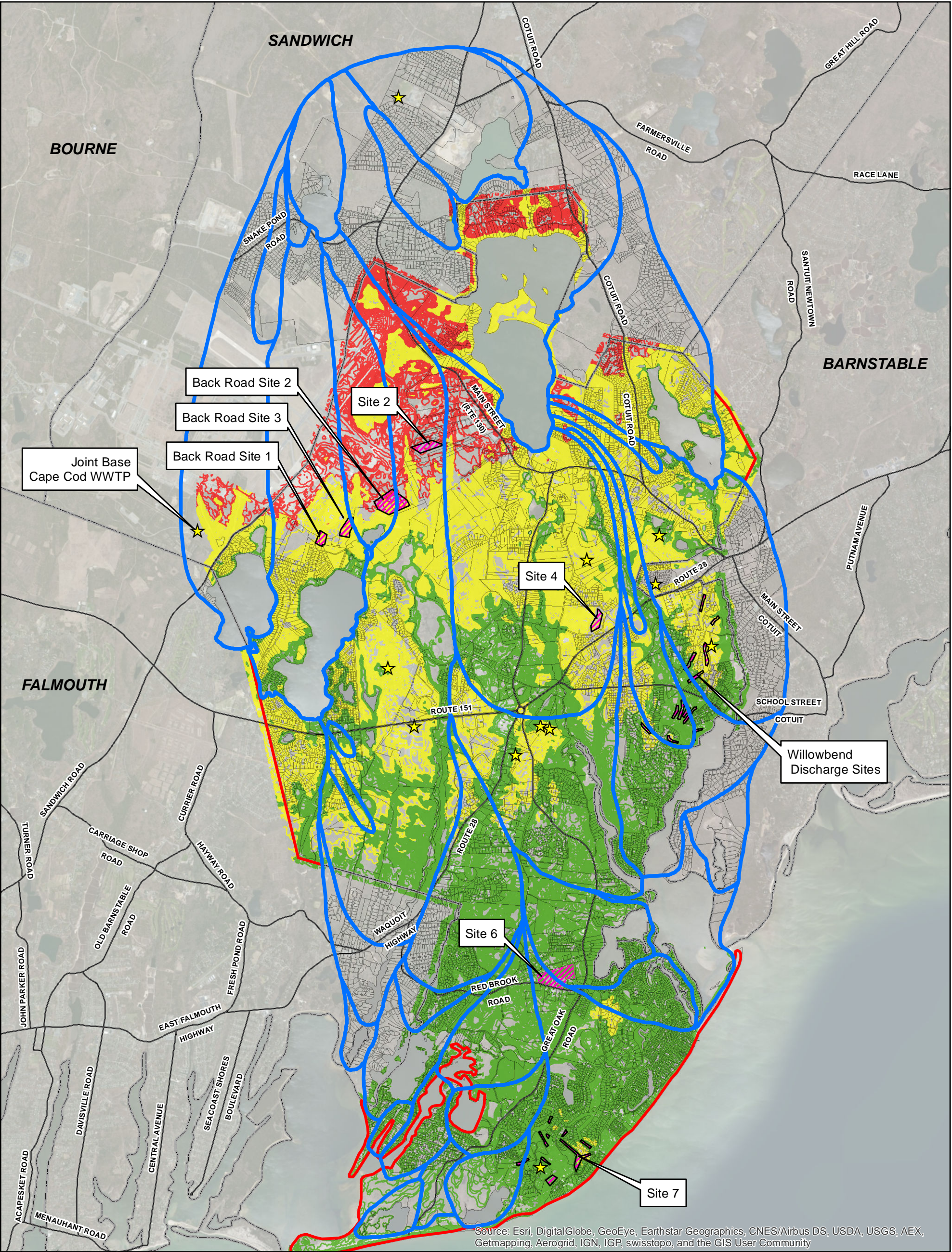
LEGEND

Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number 86-12001
Revision A
Date 06 May 2015

Back Road Sites
Conceptual WWTF Layout

Figure 6-14



LEGEND

Elevation (FT)

- 0 - 49
- 50 - 99
- 100 - 150

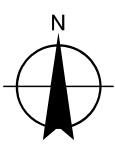
- Proposed Treatment/Discharge Site
- Planning Area Boundary
- Existing WWTPs
- Parcel Boundary
- Town Boundaries

Note: Parcel boundaries on this map represent fiscal years 2011/2012 data based on Level 3 deliveries to MassGIS. The last updated parcel file for the Town of Mashpee, Ma was 2011. The other municipalities within the planning area may have since re-assessed parcels since 2012 but are not currently available on MassGIS.

Paper Size ANSI B

0 0.375 0.75 1.5 Miles

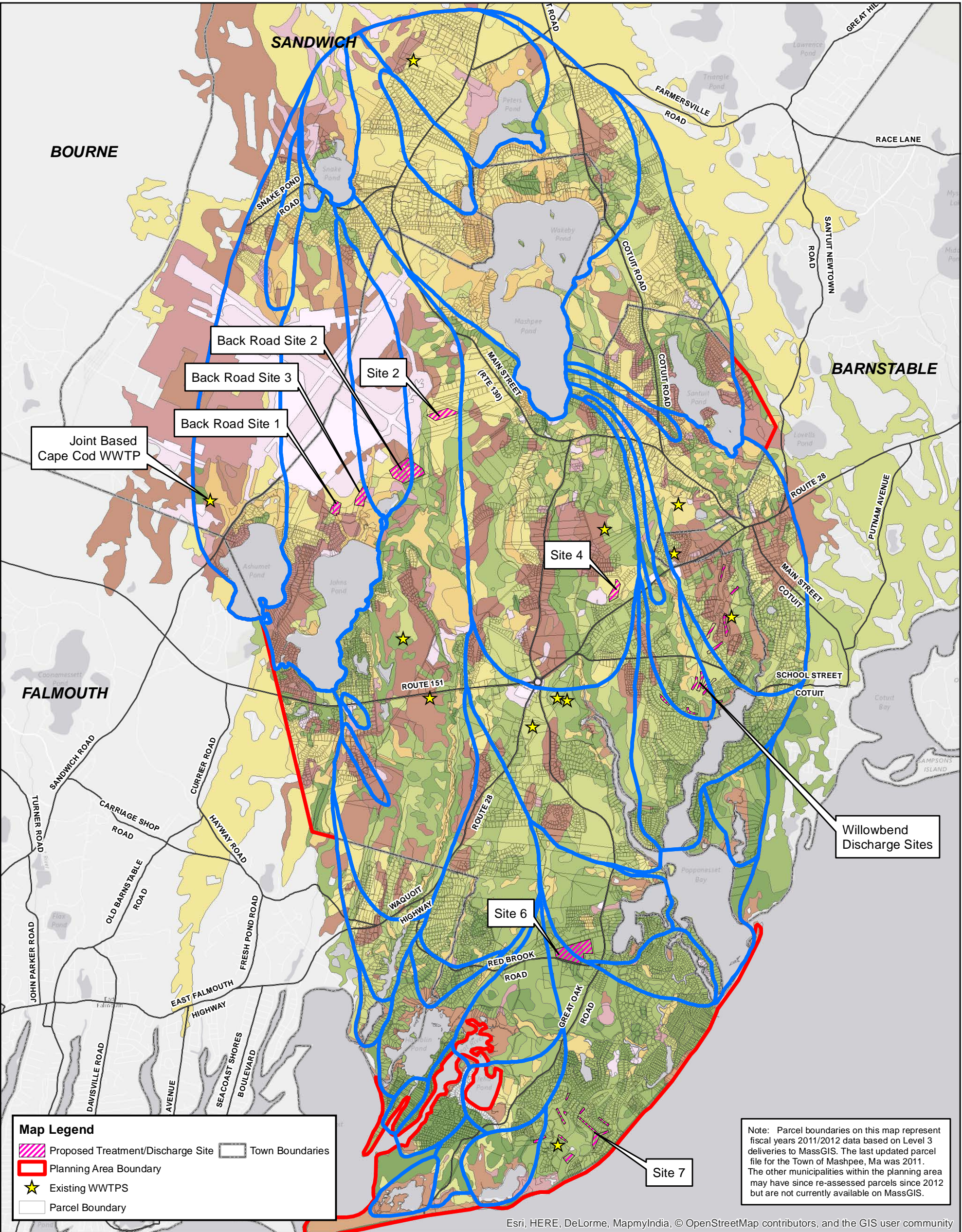
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Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet



Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number 86-12001
Revision A
Date 06 May 2015

PROJECT PLANNING AREA
GENERAL TOPOGRAPHY MAP Figure 7-1

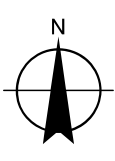


Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

Soils Legend

Beaches	Eastchop loamy fine sand, 3 to 8 percent slopes	Hinckley sandy loam, 0 to 3 percent slopes	Merrimac-Udipsamments-Urban land complex
Berryland mucky loamy coarse sand, 0 to 2 percent slopes	Eastchop loamy fine sand, 8 to 15 percent slopes	Hinckley sandy loam, 3 to 8 percent slopes	Pipestone loamy coarse sand, 0 to 3 percent slopes
Carver coarse sand, 0 to 3 percent slopes	Enfield silt loam, 0 to 3 percent slopes	Hinesburg sandy loam, 3 to 8 percent slopes	Pits, sand and gravel
Carver coarse sand, 15 to 35 percent slopes	Enfield silt loam, 3 to 8 percent slopes	Hooksan sand, rolling	Plymouth loamy coarse sand, 15 to 35 percent slopes
Carver coarse sand, 3 to 8 percent slopes	Enfield silt loam, 8 to 15 percent slopes	Hooksan-Dune land complex, hilly	Plymouth loamy coarse sand, 8 to 15 percent slopes
Carver coarse sand, 8 to 15 percent slopes	Freetown and Swansea mucks, 0 to 1 percent slopes	Ipswich, Pawcatuck, and Matunuck peats, 0 to 1 percent slopes	Sudbury fine sandy loam, 0 to 3 percent slopes
Carver loamy coarse sand, 0 to 3 percent slopes	Freetown coarse sand, 0 to 1 percent slopes	Merrimac sandy loam, 0 to 3 percent slopes	Udipsamments, smoothed
Carver loamy coarse sand, 3 to 8 percent slopes	Freetown mucky peat, 0 to 1 percent slopes, ponded	Merrimac sandy loam, 15 to 25 percent slopes	Urban land
Deerfield loamy fine sand, 0 to 5 percent slopes	Hinckley gravelly sandy loam, 15 to 35 percent slopes	Merrimac sandy loam, 3 to 8 percent slopes	
Eastchop loamy fine sand, 0 to 3 percent slopes	Hinckley gravelly sandy loam, 8 to 15 percent slopes	Merrimac sandy loam, 8 to 15 percent slopes	

Paper Size ANSI B
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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

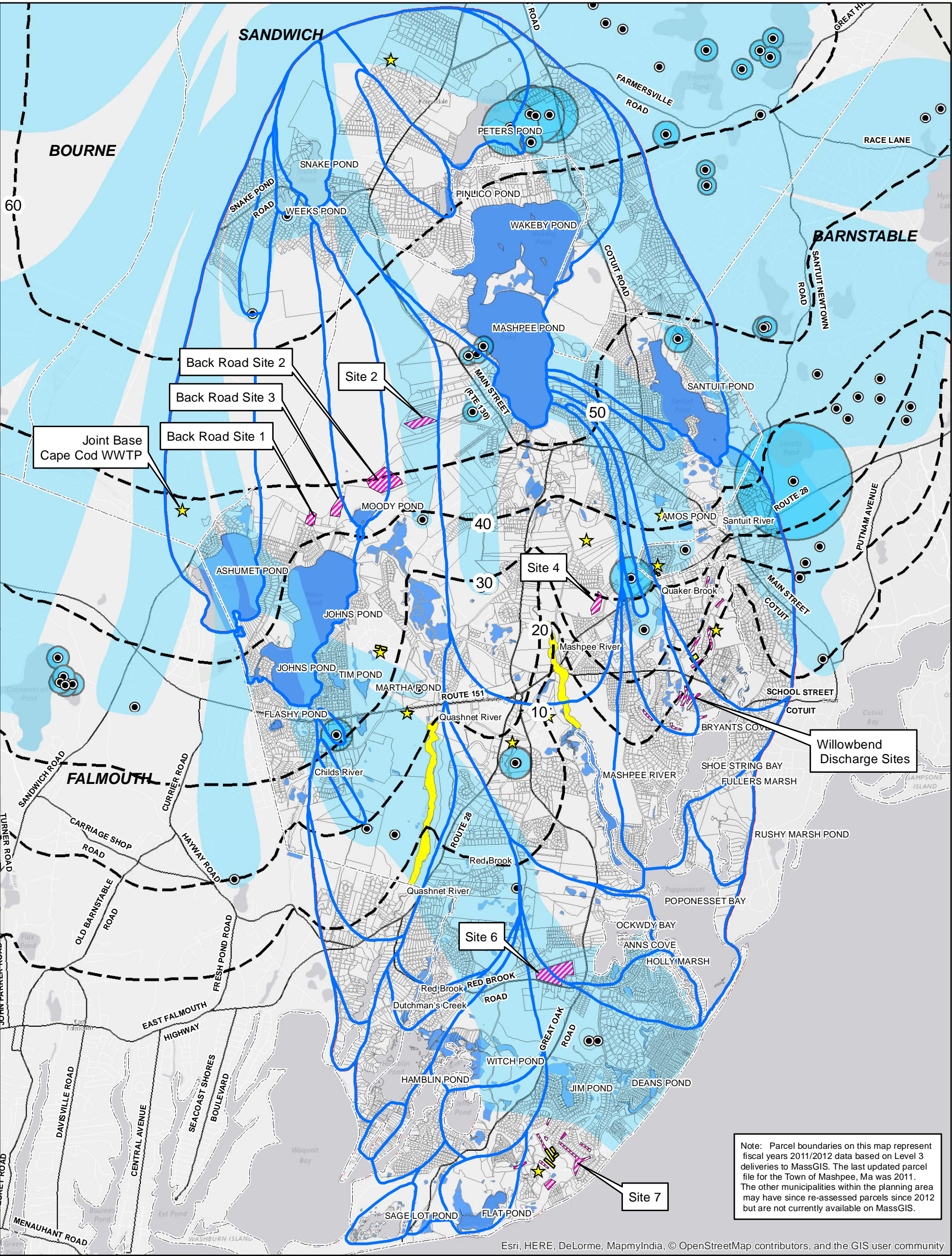


Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number 86-12001
Revision A
Date 06 May 2015

SOILS MAP

Figure 7-3



● Public Water Supply Well

— Ground Water Contours (Ft)

Zone I & II w/Wellhead Protection

Waterbodies

Proposed Treatment/Discharge Site

Town Boundaries

Planning Area Boundary

Parcel Boundary

Existing WWTPs

00.3750.751.5Miles

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

N

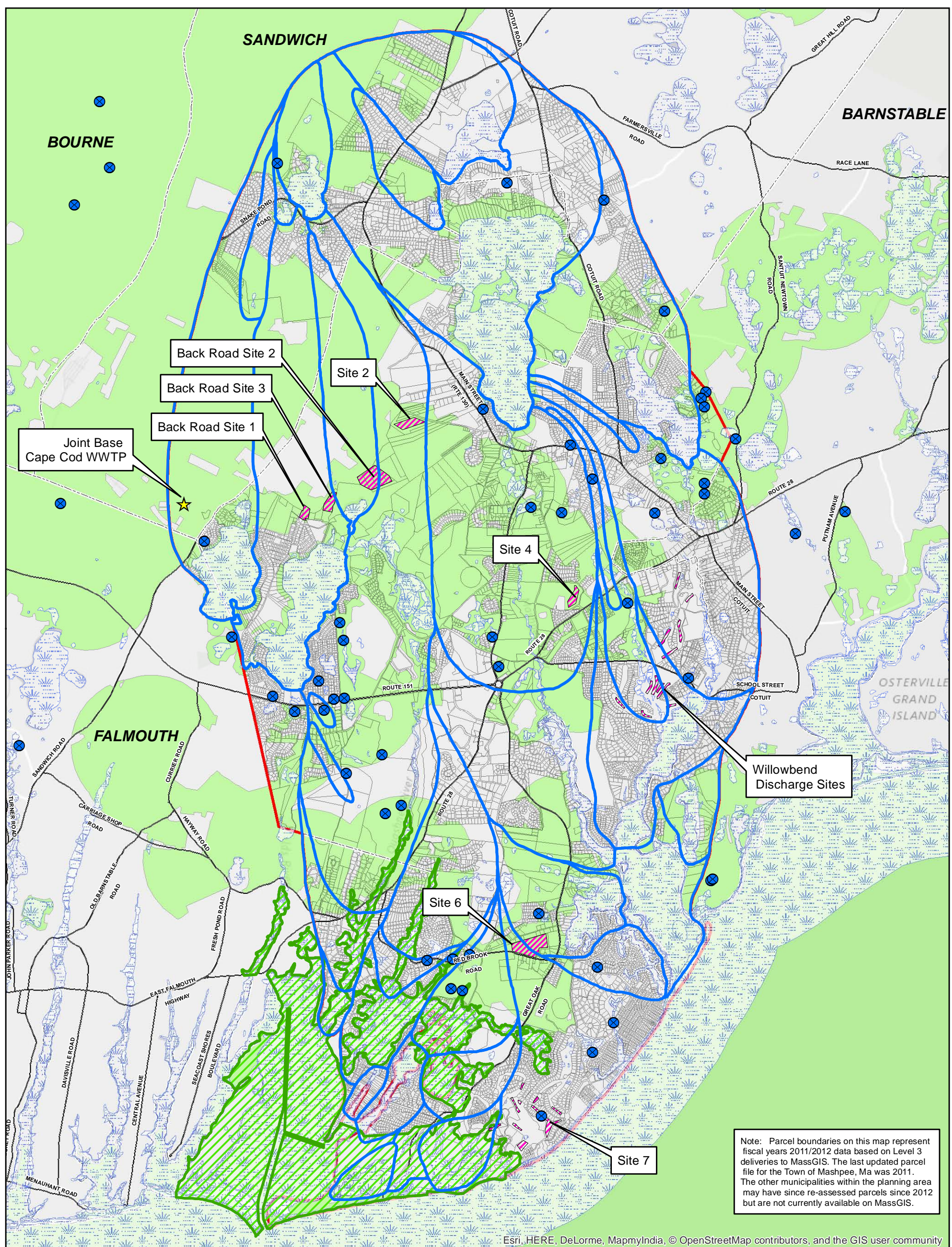
GHD

Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan










Job Number 86-12001
Revision A
Date 06 May 2015

WATER RESOURCE MAP

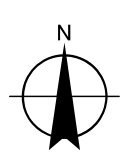
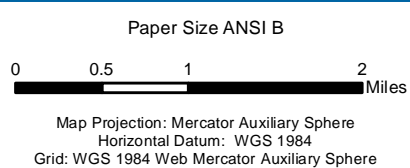
Figure 7-4



Legend

-  Vernal Pools
 Areas of Critical Environmental Concern
 DEP Wetland
 NHESP Estimated Habitats of Rare Wildlife
 Planning Area Boundary
 Town Boundaries
 Parcel Boundary
 Existing WWTPs
 Proposed Treatment/Discharge Site

Data Source: MassGIS, NHESP Oct 2008/2009

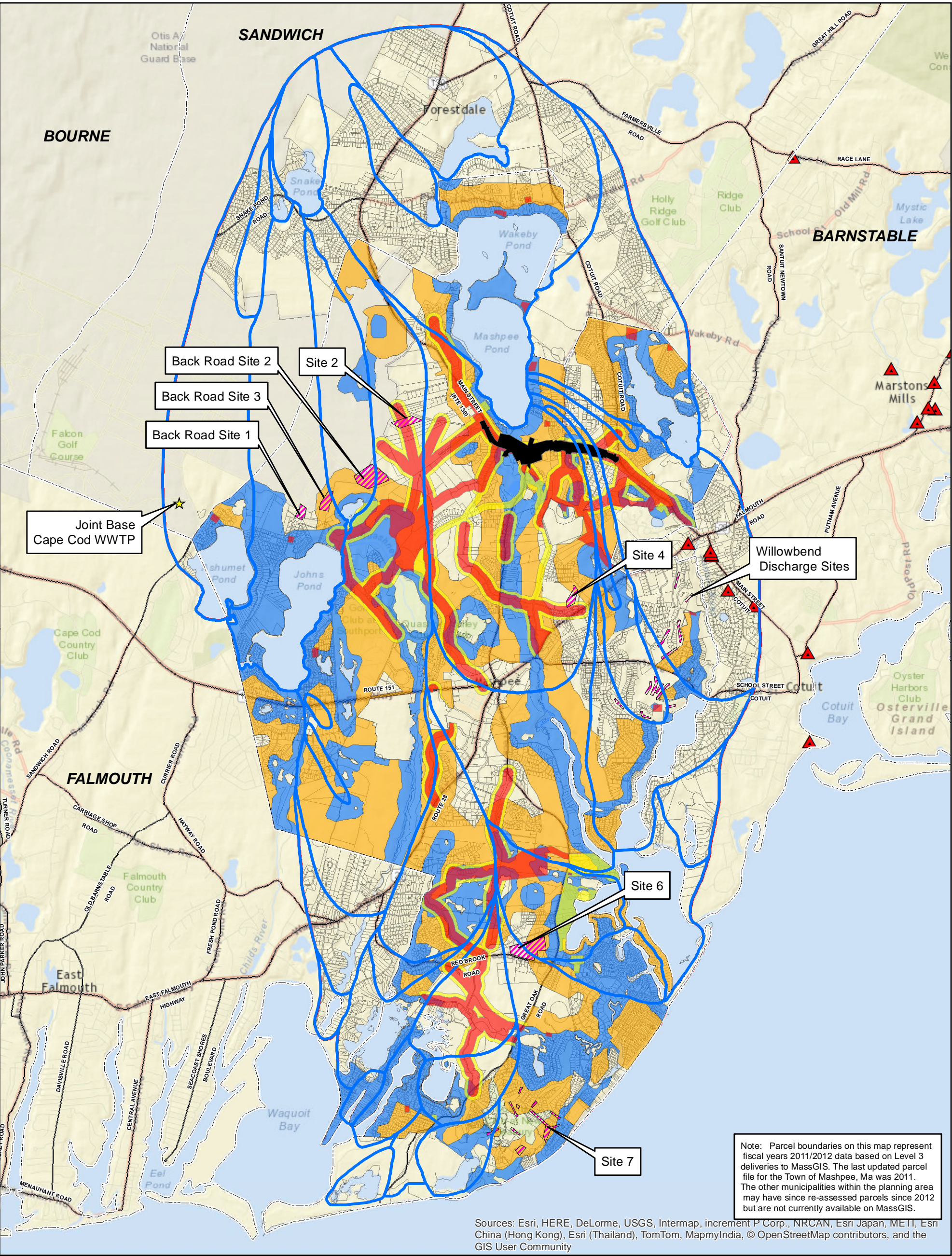


Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number	86-12001
Revision	A
Date	06 May 2015

SENSITIVE HABITAT AREAS

Figure7-5



Legend

Archaeological Post Contact Sensitivity (PAL Study)
High
Low

Archaeological Precontact Sensitivity (PAL Study)
High
Moderate

Historic District

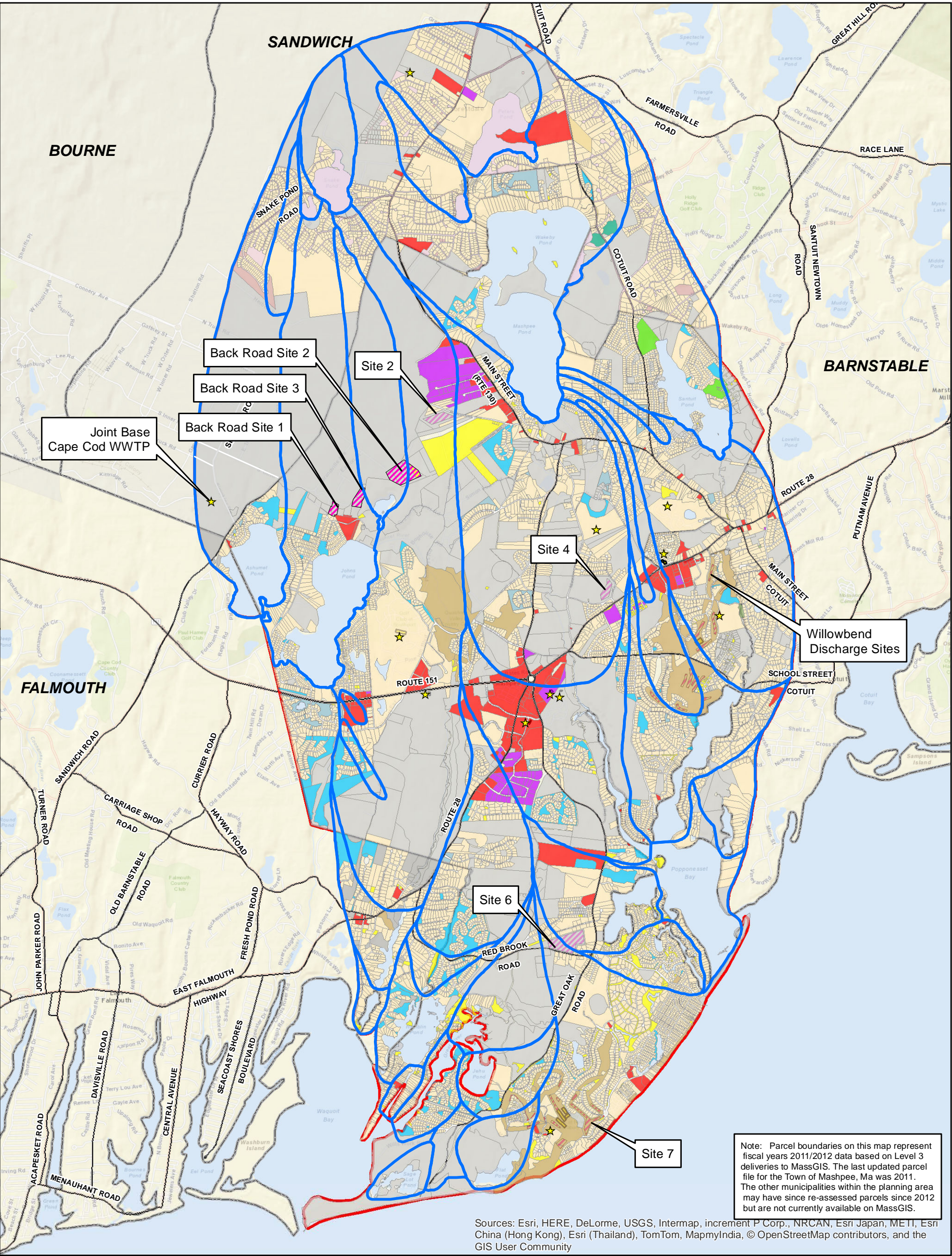
Historic Site

Existing WWTPs

Proposed Treatment/Discharge Site

Planning Area Boundary

Note: Archaeological data from Mashpee GIS/PAL Study



LEGEND

★ Existing WWTPs

▨ Proposed Treatment/Discharge Site

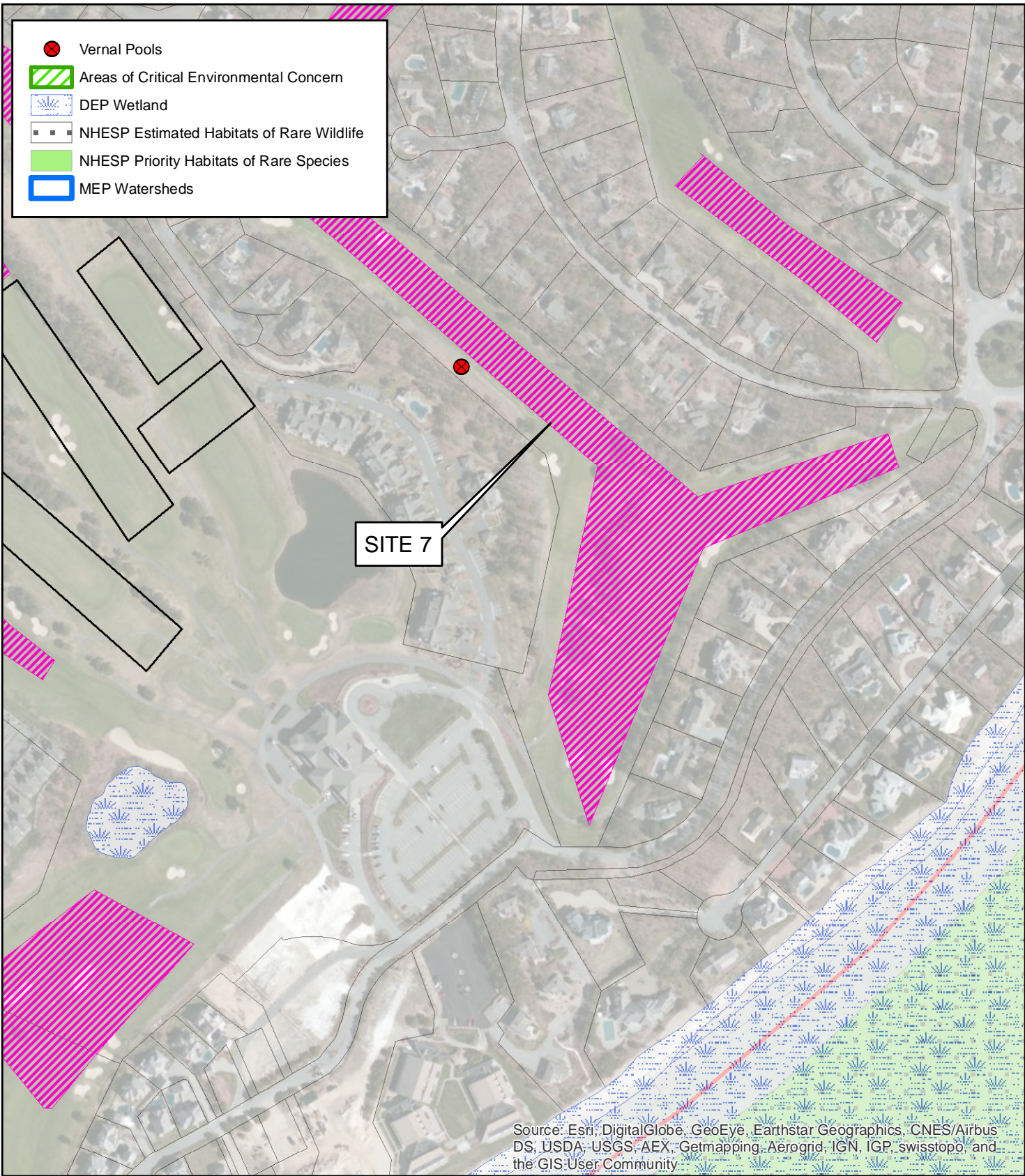
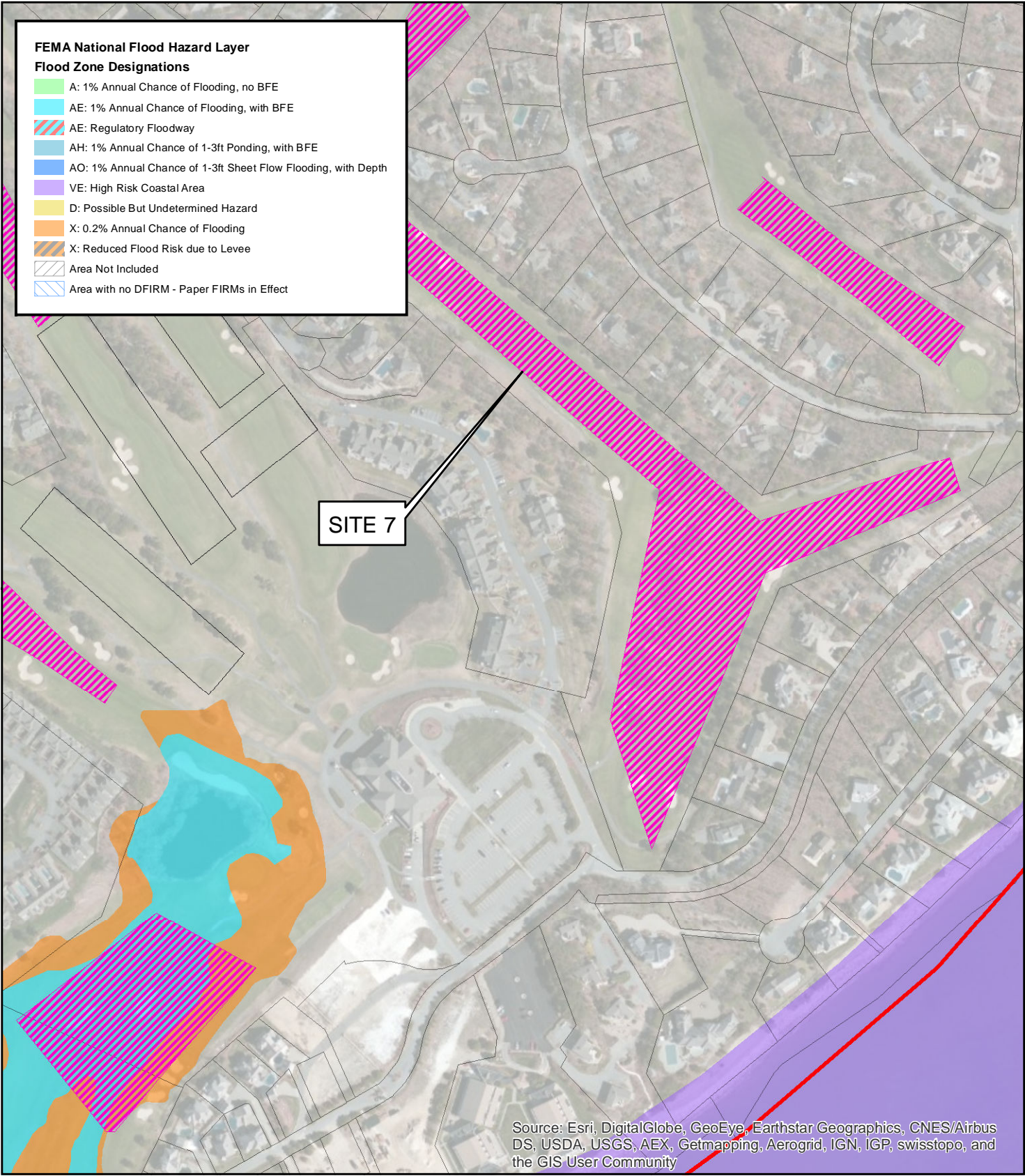
▭ Planning Area Boundary

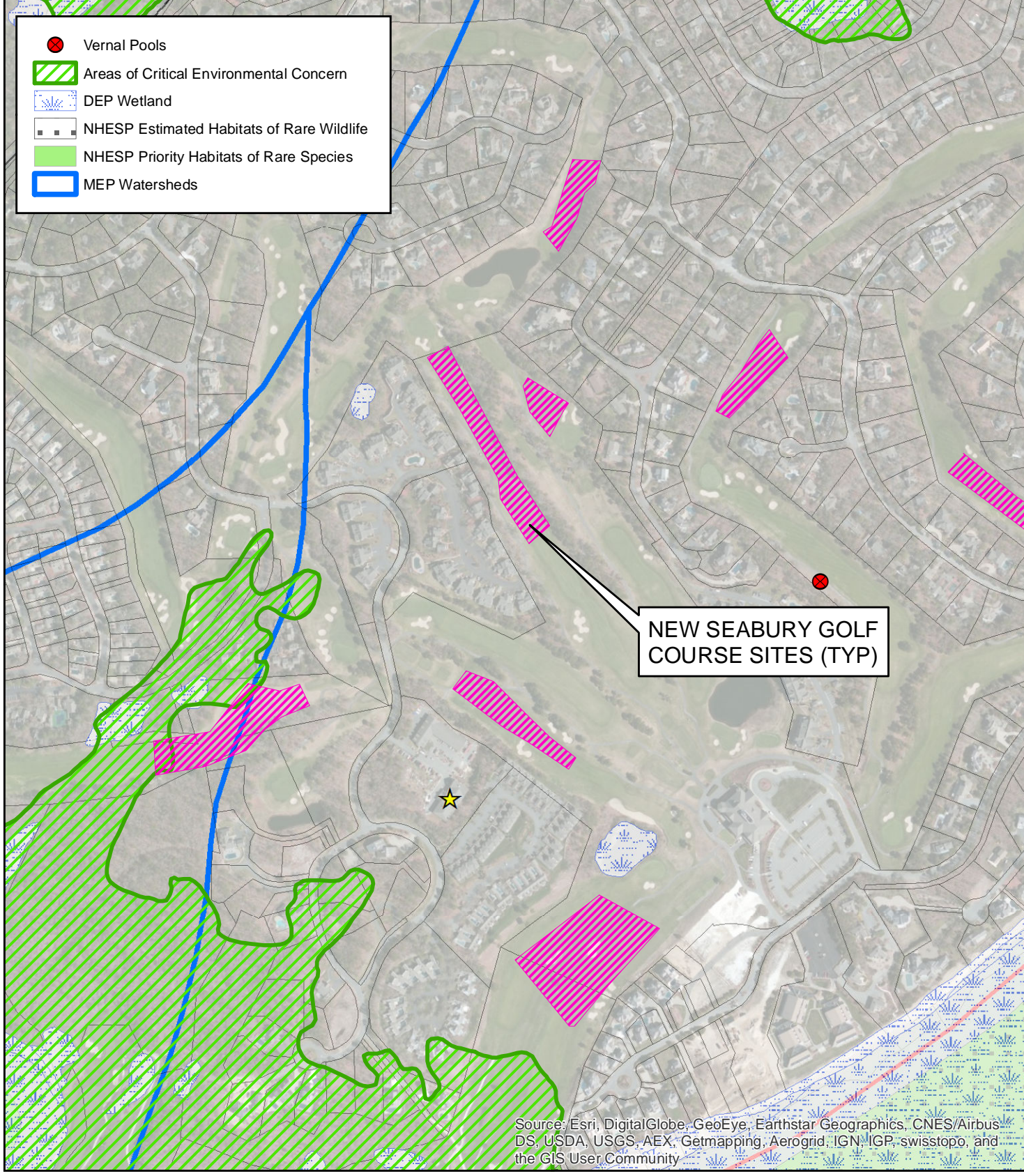
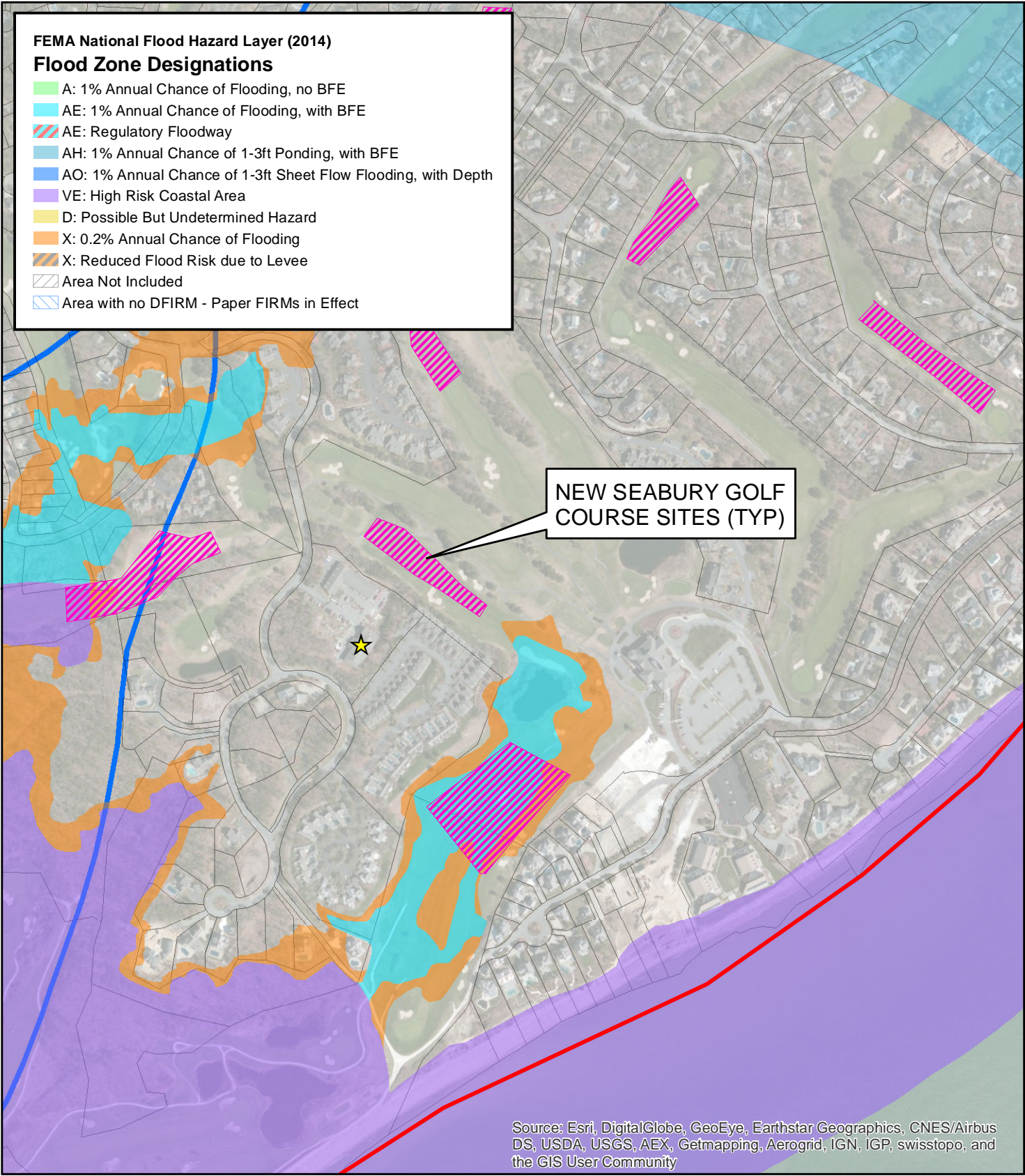
▭ Town Boundaries

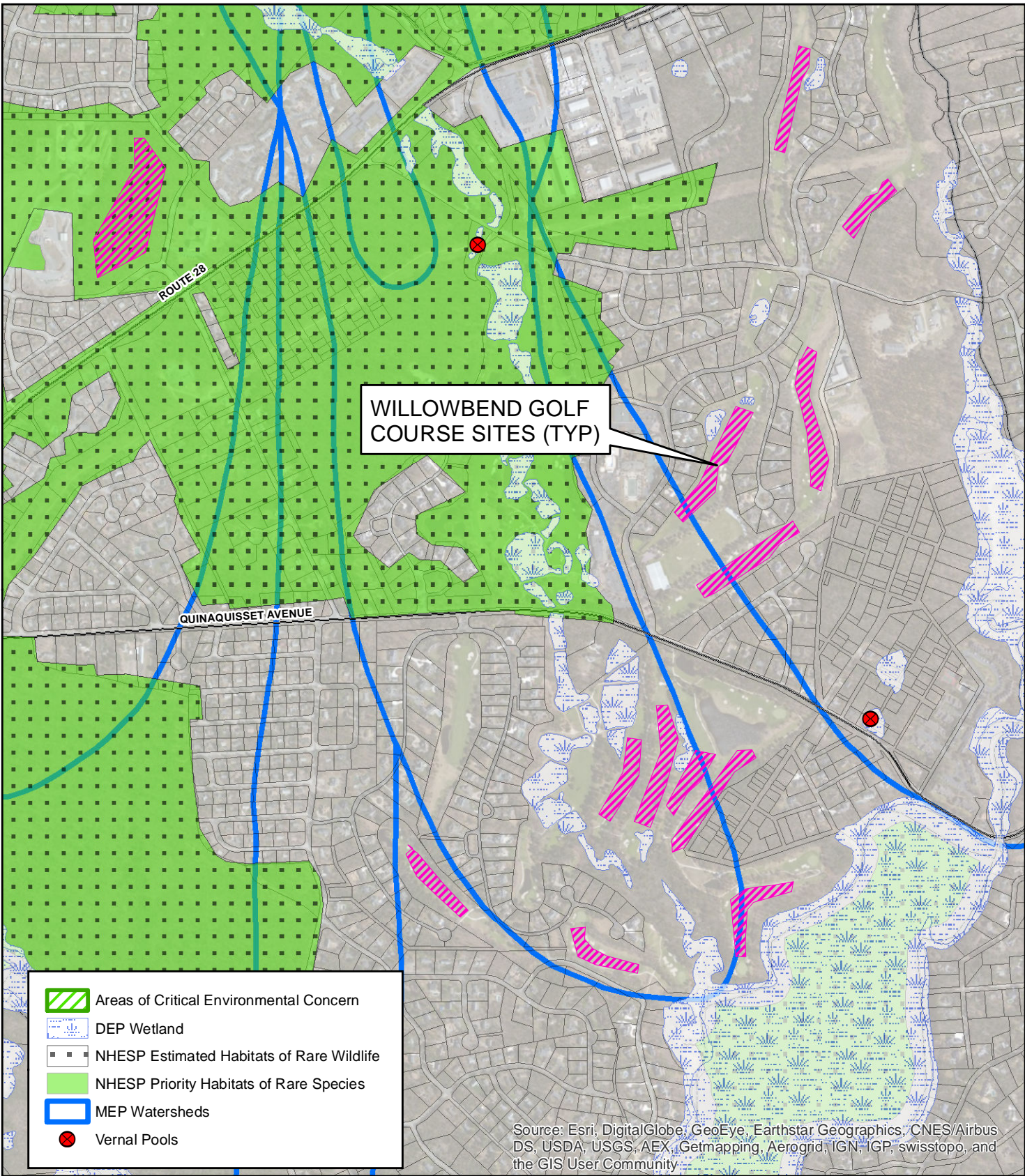
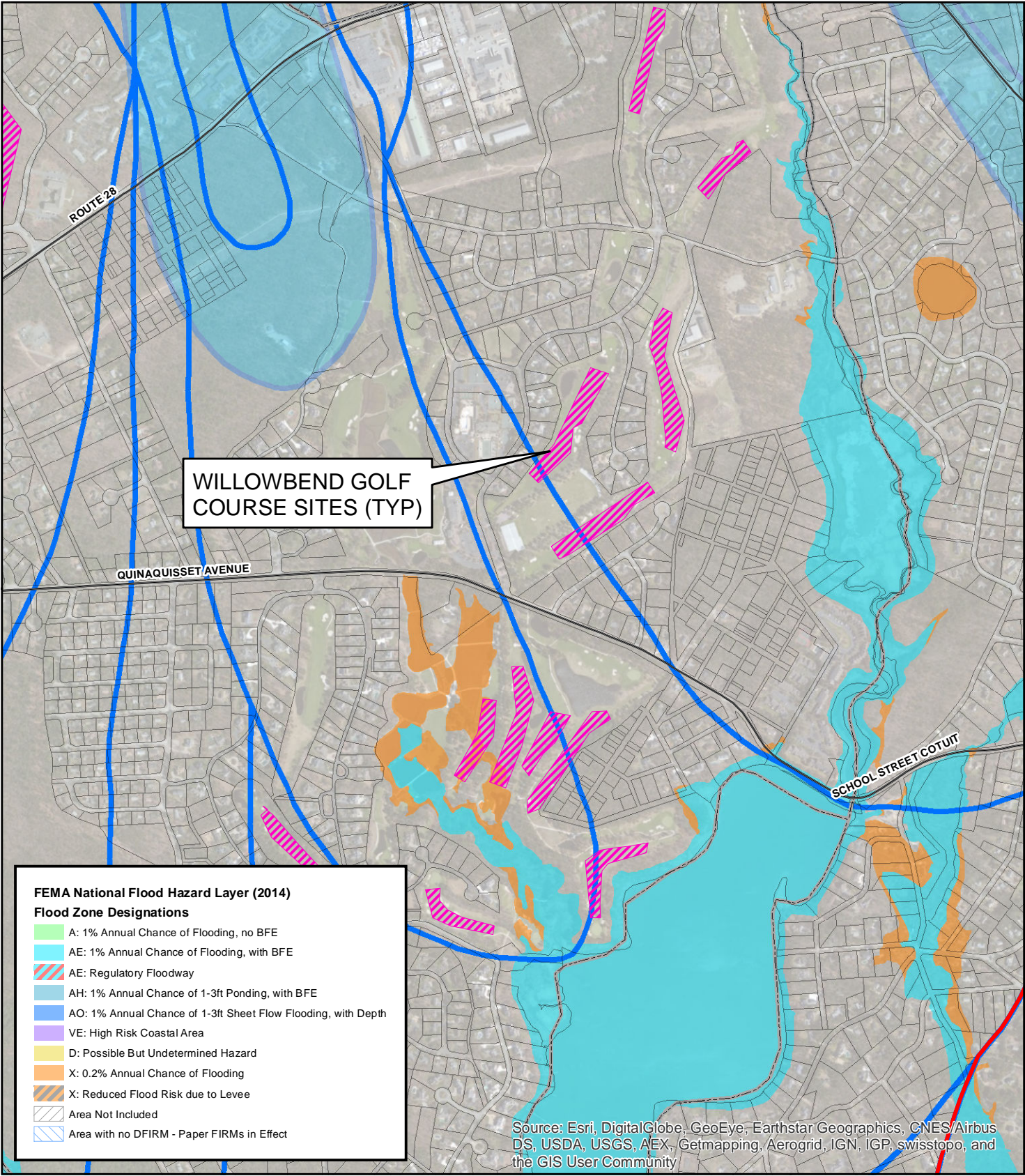
▭ MEP Watersheds

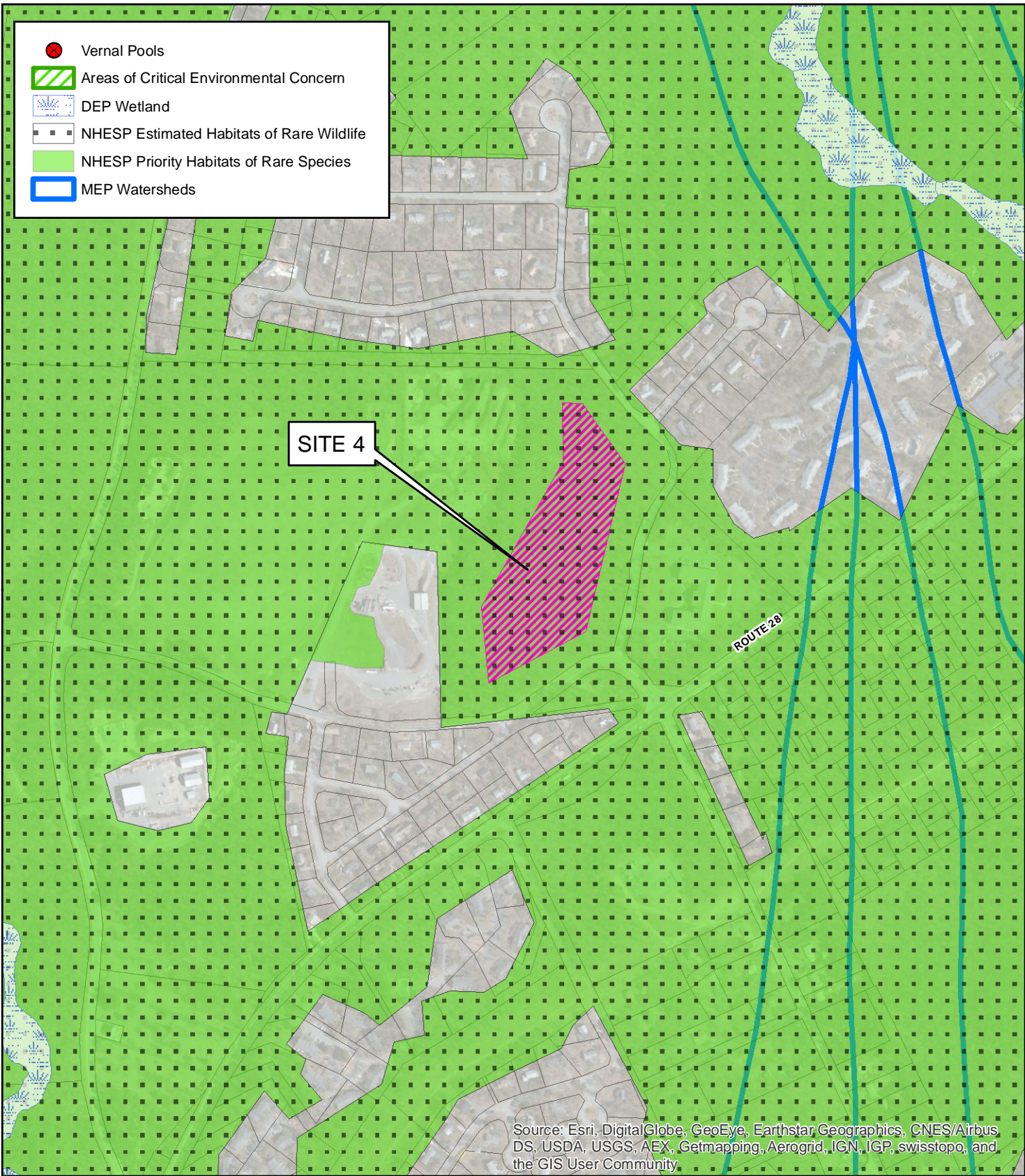
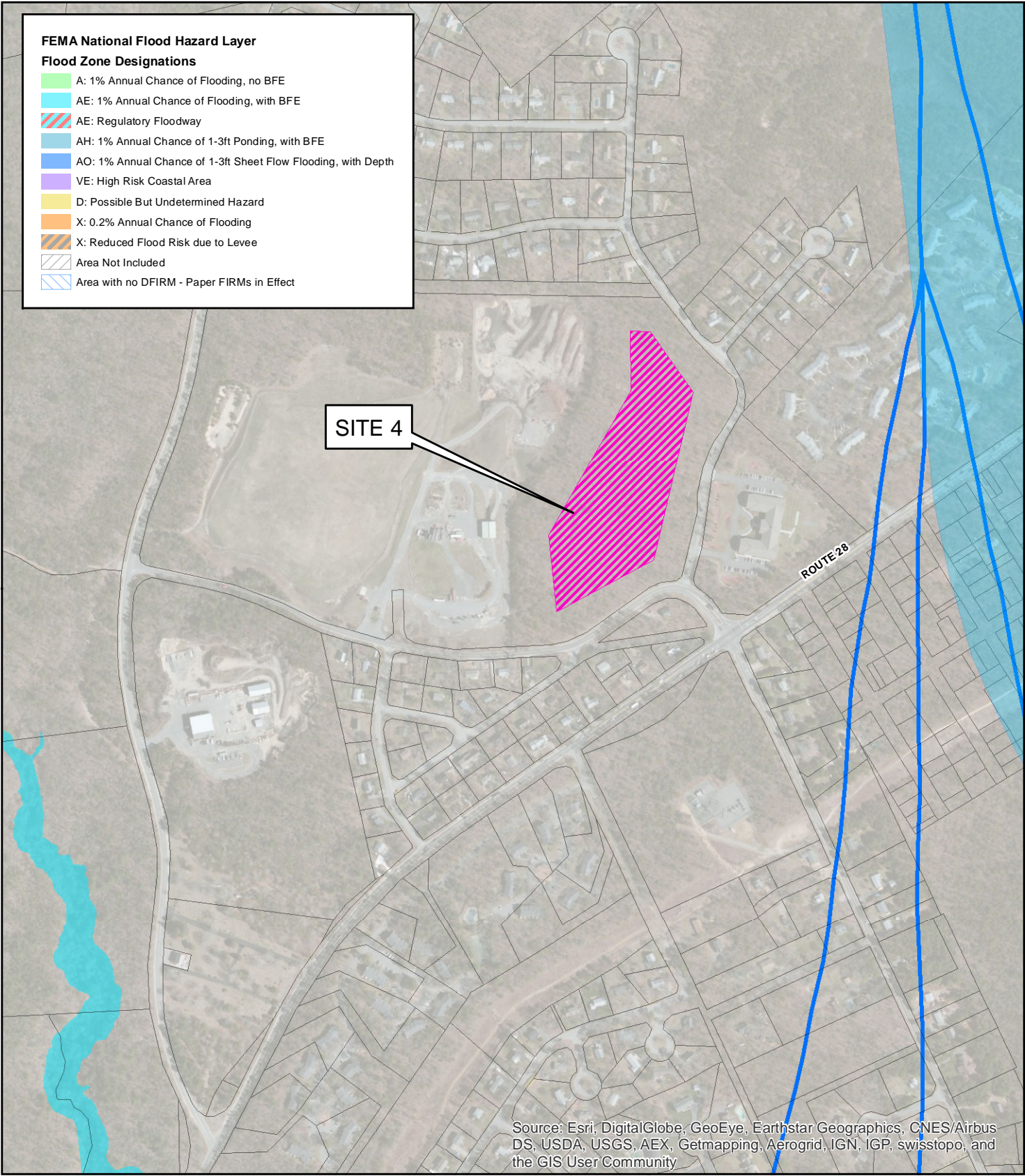
Landuse - State Class Code

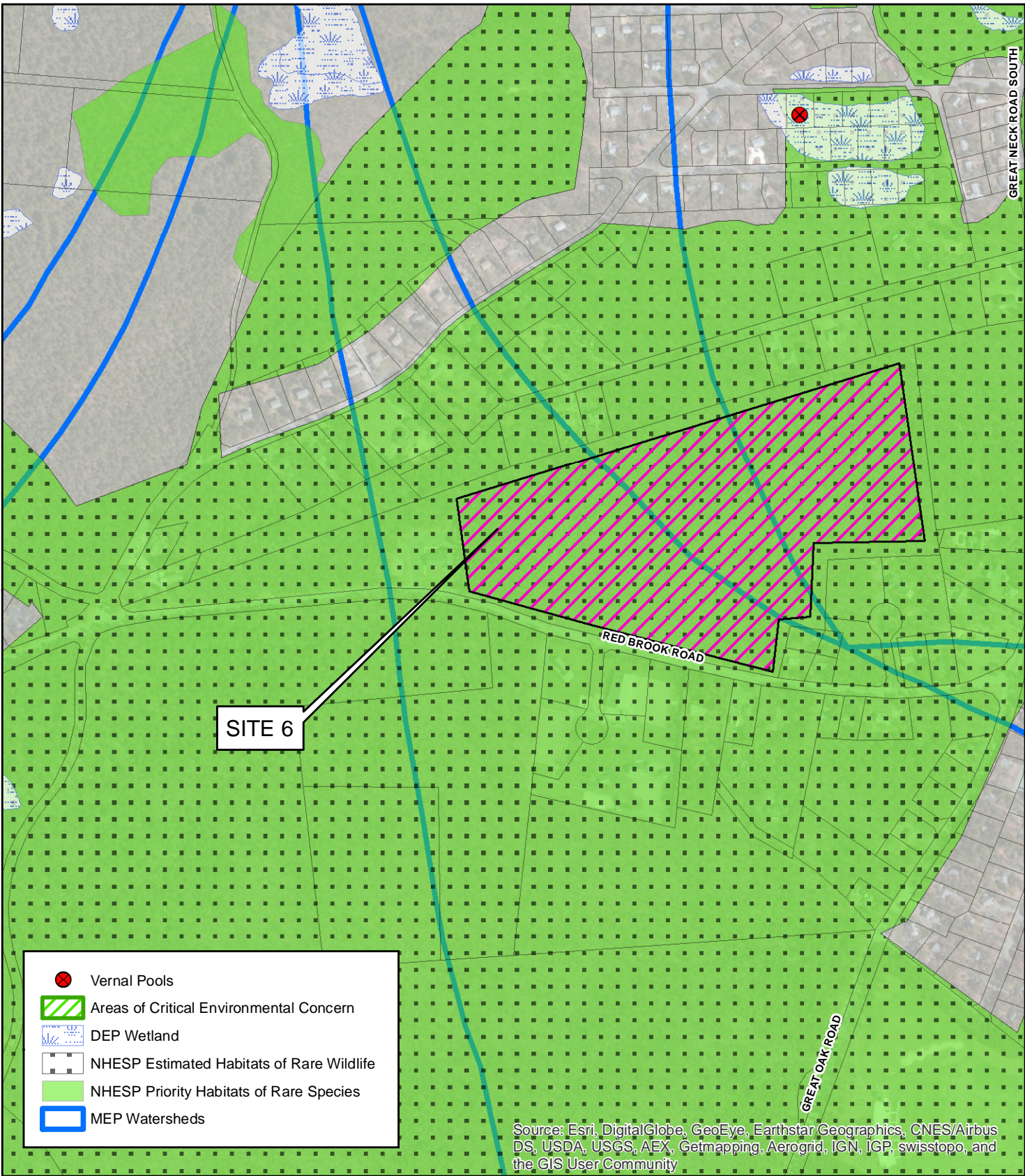
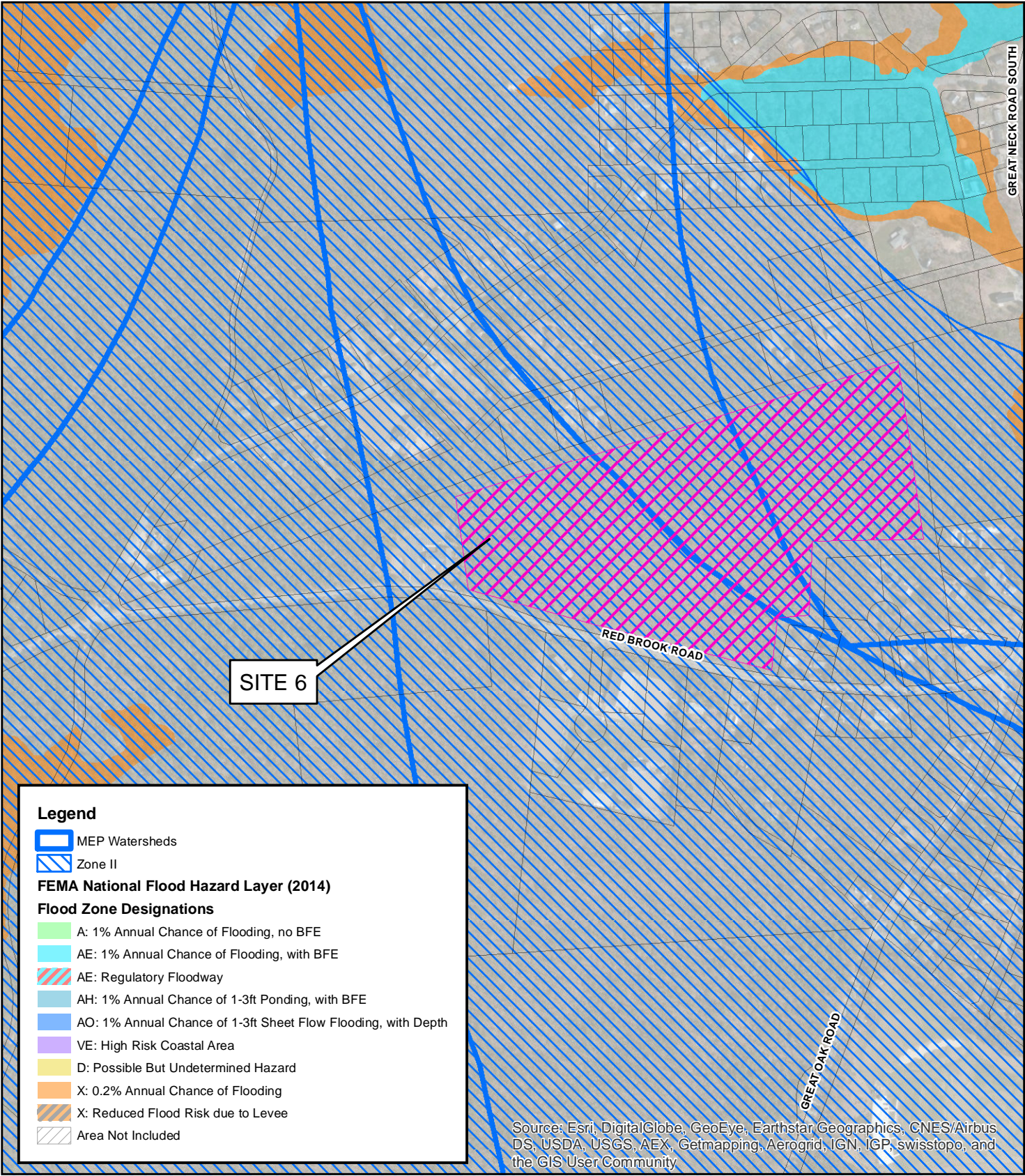
Residential	Industrial
Undevelopable Land	Agriculture
Open Space	Recreation
Commercial	Exempt





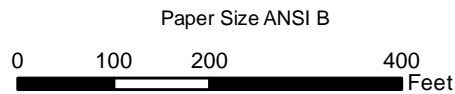








Data Source: Mass GIS, Town of Mashpee GIS Dept,GHD



Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet



LEGEND

- DEP Wetland
- Estimated and Priority Rare Species Habitat
- 100' Wetland Buffer

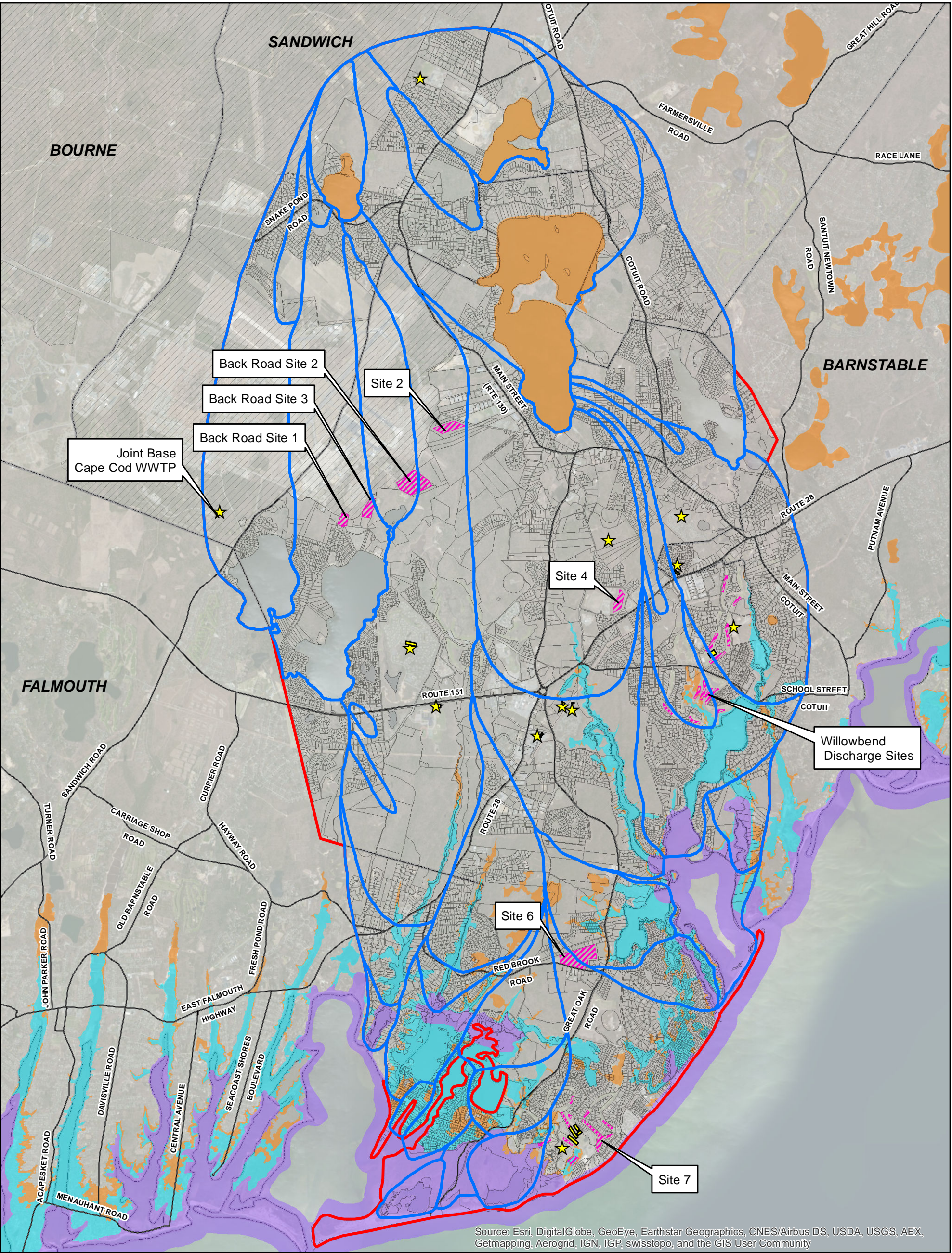


Town of Mashpee Sewer Commission
Watershed Nitrogen Management Plan

Job Number 86-12001
Revision A
Date 06 May 2015

Back Road Sites
Features

Figure 7-13



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

LEGEND

FEMA National Flood Hazard Layer (2014)

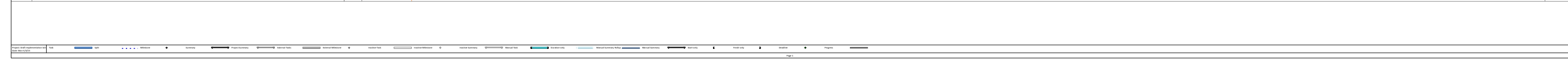
Flood Zone Designations

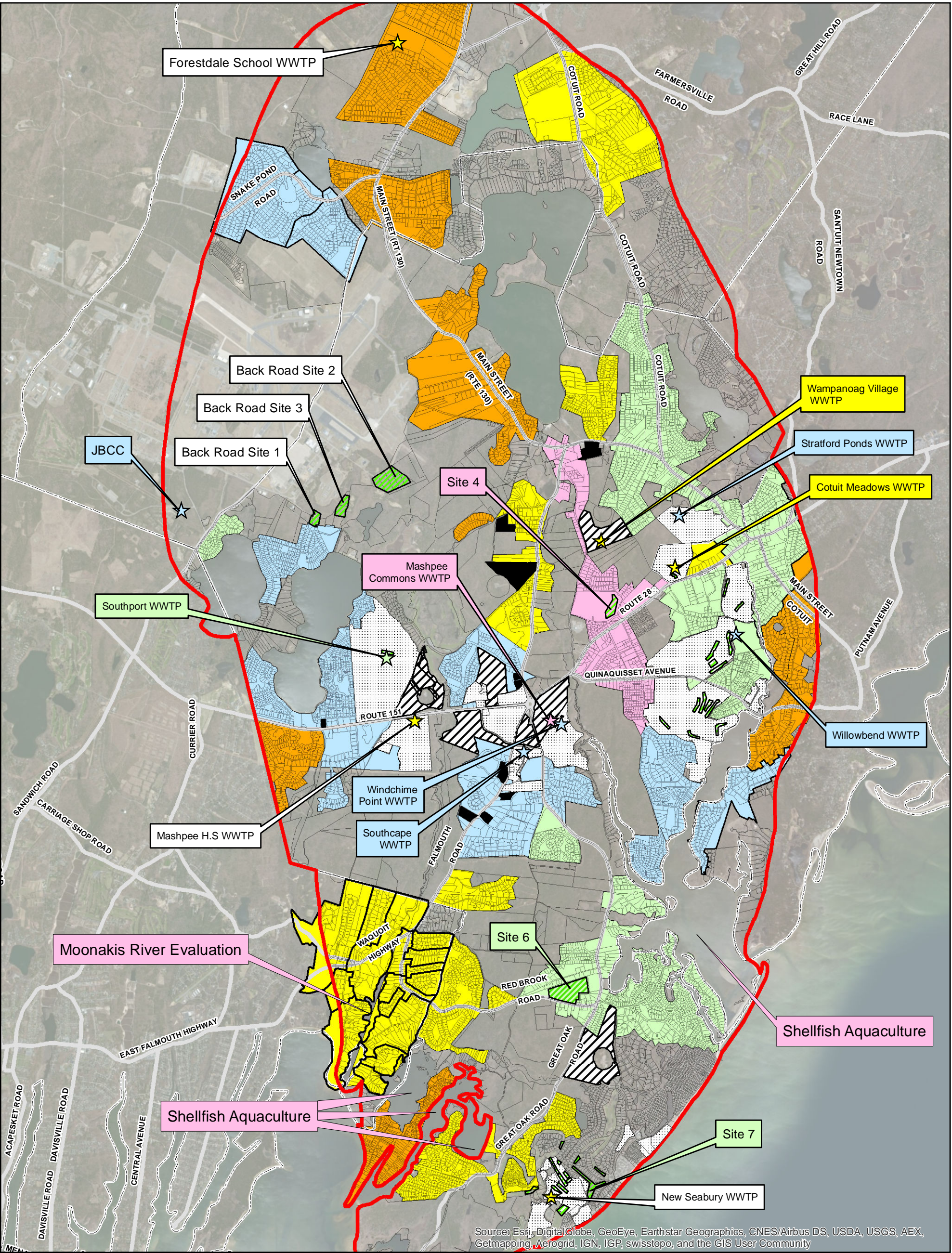
- A: 1% Annual Chance of Flooding, no BFE
- AE: 1% Annual Chance of Flooding, with BFE
- AE: Regulatory Floodway
- AH: 1% Annual Chance of 1-3ft Ponding, with BFE
- AO: 1% Annual Chance of 1-3ft Sheet Flow Flooding, with Depth

- VE: High Risk Coastal Area
- D: Possible But Undetermined Hazard
- X: 0.2% Annual Chance of Flooding
- X: Reduced Flood Risk due to Levee
- Area Not Included
- Area with no DFIRM - Paper FIRMs in Effect

- Planning Area Boundary
- Parcel Boundary
- Town Boundaries
- Proposed Treatment/Discharge Site
- Existing WWTPs

2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
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I/A

Planning Area Boundary

Parcel Boundary

Wastewater WWTP (Color per Phase)

Existing Private Sewer

Proposed Private Sewer

Proposed Treatment/Discharge Site

Phase 1

Phase 2

Phase 3

Phase 4

Phase 5

Paper Size ANSI B

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet

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GHD

TOWN OF MASHPEE SEWER COMMISSION
Watershed Nitrogen Management Plan

Implementation
Phasing Plan

Job Number
Revision
Date

86-12001
A
07 May 2015

Figure 9-2

© 2012. Whilst every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: jobrien

Appendix 1-1

MEPA Certificate Dated September 12, 2014 and Response to Comments Document



MEMORANDUM

May 11, 2015

To	Town of Mashpee		
Copy to	F. Thomas Fudala		
From	J. Jefferson Gregg, P.E., BCEE	Tel	774-470-1640
Subject	MEPA – Draft Environmental Impact Comment Response	Job No.	8612001

This memo is written to address comments received from the public and environmental review process for the Town's Watershed Nitrogen Management Planning (WNMP) Project.

The September 12, 2014 Certificate of the Secretary of Energy and Environmental Affairs provided written comments on the Draft Environmental Impact Report. The written comments are attached at the end of this memo and are discussed in the memo. Excerpts from the comment letters are provided in standard type and then addressed with numbered responses (A.1, A.2, etc.) in ***bold italics***. This memo will be attached in an appendix to the Final Comprehensive Wastewater Management Plan and Final Environmental Impact Report with the Secretary's Certificate and the associated comment letters. Reviewers will be able to read these items to understand how we have addressed their comments.

We have prepared this Comment Response memo with a broad perspective that is appropriate for the broad scope of this project.

INDEX:

- A. MASSACHUSETTS SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS—DATED 9-12-14
- B. COASTAL ZONE MANAGEMENT—LETTER DATED 9-5-14
- C. MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION—LETTER DATED 9-5-14
- D. CAPE COD COMMISSION—STAFF REPORT DATED 9-5-14
- E. DIVISION OF MARINE FISHERIES—LETTER DATED 9-5-14
- F. DIVISION OF FISHERIES & WILDLIFE—LETTER DATED 9-5-14
- G. ASSOCIATION TO PRESERVE CAPE COD—LETTER DATED 9-5-14



MEPA COMMENTS

A. COMMENTS FROM THE MASSACHUSETTS SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS, DATED SEPTEMBER 12, 2014.

Scope for the FEIR

This Scope identifies the additional information and analysis necessary to complete MEPA review and ensure that impacts and issues are analyzed to a degree commensurate with this planning document. The Town should prepare a FEIR in accordance with this Scope. The FEIR should build on the Recommended Plan provided in the DEIR and supplement it with more detailed information, preliminary design and refined environmental impact estimates, in particular for elements proposed in the early phases of the Plan. In particular, the FEIR should better characterize the incremental nitrogen reduction of various phases of the plan and support assignment of priorities and demonstrate that, if necessary, the contingency plan can meet the nitrogen reduction targets. It should address how the NPC process will be used in the context of Adaptive Management to provide additional information and analysis of Plan components and opportunities for public comment.

A1. Notices of Project Change (NPC) will depend on the performance of shellfish at removing nitrogen. If some areas are working better than others are, this may change how the “Phasing” is outlined in the Recommended Plan, and therefore a NPC would be used to advance some areas and delay others as required. The plan is designed to meet the TMDL limits in two ways: (1) by the construction and use of traditional wastewater treatment facilities, and (2) by the use of aquaculture. It is the expectation of the Town that the aquaculture component alone may be enough to meet the TMDL limits, except in certain sub-embayments (Mashpee River, Shoestring Bay, Moonakis/Quashnet River), or reduce the nitrogen in the target bays enough to require a small investment in traditional infrastructure. This approach is in compliance with the Draft 208 Plan that is nearing finalization. The Town anticipates an evaluation phase, and possible course-correction in the adaptive management plan, at five-year increments, or sooner if necessary, and will make those through the NPC process. The construction of all the facilities identified in the plan (the contingency path) will meet the TMDL limits on their own.

Project Description

The FEIR should provide a Final Recommended Plan and a detailed description of its elements. It should describe how transition of responsibility for the planning and implementation of the CWMP will be addressed between the Sewer Commission and the Mashpee Water and Sewer District. It should provide an update on public participation activities and consultation with CCC, State Agencies and adjacent communities. It should include a revised schedule for phases of the Plan that addresses benchmarks for planning, design, environmental permitting and review, and construction. It should provide an update on project permitting and specifically address how elements of the project are designed to meet applicable performance standards, including the Wetlands Regulations and associated Stormwater Management Standards, the Waterways Regulations and 401 Water Quality Certification requirements.



A2. The schedule provided as Figure 9-1 in the DEIR has been updated to reflect a further breakdown of the design phase to call out permitting and review. It was initially anticipated that a Water and Sewer District would be created based on a ballot question scheduled for the May 2015 Annual Town Election, and would share the responsibilities of implementing the plan to meet the TMDLs through the implementation of an Intermunicipal Agreement. Some parts of the plan will transition to the District; other parts will be retained by the Town. It is expected that the aquaculture and monitoring portion will be retained by the Town. Should the ballot question fail, the Town will retain responsibility for all implementation responsibilities through its Sewer Commission and other departments and committees.

Draft 208 Water Quality Plan and Regional Management

The FEIR should include a summary of the Draft 208 Water Quality Plan and how its development and recommendations have influenced the Final Recommended Plan. In particular, it should consider use of watershed tools to better account for nitrogen load reductions, assign and select priorities and take advantage of additional regional efforts. Comments from the CCC indicate that the traditional components of the Recommended Plan identified as contingencies for underperformance of shellfish aquaculture are appropriate; however, subsequent phases may benefit through use and evaluation of the modeling tool. In addition, the work emerging from the 208 planning process may support the development of a Targeted Watershed Management Plan for Waquoit Bay.

A3. A summary of the Cape Cod Commission's 208 Plan is included in Chapter 2. Mashpee will integrate recommendations from the 208 Plan into their adaptive management protocol as appropriate. Communication with the Cape Cod Commission is ongoing and the planning tools will be considered in future phases.

The FEIR should provide an update on consultation with municipalities regarding coordination of nitrogen reduction efforts and identify any progress towards development of the JBCC as a regional facility. To the extent possible, it should identify development of MOUs between municipalities and any regional commitments.

A4. Information on coordination with adjacent communities and JBCC are included in Chapter 3 of the CWMP report. Mashpee reviews JBCC status every month at Sewer Commission meetings. The Town is continuing outreach to, and communication with, surrounding communities and regional entities with a draft MOU for the Popponesset Bay watershed having been prepared and discussed with Barnstable and Sandwich, based on the recommendations of the EPA-funded DEP Popponesset Bay Pilot Project regarding fairly shared responsibility for current and future nitrogen loads to the Bay and future reductions. A similar MOU will be proposed using similar methodology regarding shared responsibility for the "Waquoit East" watersheds, for which TMDLs have been established, or for the Waquoit Bay watershed at such time as a TMDL is finalized.

Wastewater Treatment

The FEIR should provide a more detailed evaluation of proposed wastewater facilities, recharge locations and expansion of collections systems and associated environmental impacts. It should demonstrate



progress on developing and securing agreements with private facilities. It should indicate whether incorporation of private facilities into the District is being proposed.

A5. Detailed evaluations were performed at several sites during the planning process including in the Needs Assessment and the Site 4 hydraulic load testing and site investigation work presented in previous documents. Based on the formation of the recommended plan and the reliance on shellfish, additional evaluations would be part of the adaptive management program and implementation schedule and would be based on the compliance results; therefore, it is not appropriate to preform additional evaluations at this time as part of the FEIR. Mashpee is pursuing both “agreements” and acquisitions. The specific facilities—presently private—are fully integrated in the Mashpee CWMP. The Sewer Commission has received the attached letters from New Seabury, Willowbend, and Mashpee Commons indicating their willingness to work with the Sewer Commission/District toward implementing the portions of the plan involving their properties.

It is unclear if the contingency measures included in the plan, on their own, could meet the removal targets necessary for TMDL compliance and what the incremental nitrogen reduction is for each phase of the plan. The FEIR should clarify nitrogen reduction associated with each phase of the Plan and describe what elements are necessary to achieve TMDLs. For instance, part of the Plan includes phasing in upgrades to achieve higher levels of treatment (i.e. 3 mg/L TN compared to 6 to 10 mg/L of TN). It is unclear whether that level of treatment is assumed to achieve the TMDL or if a certain level of treatment would be targeted as a contingency measure.

A6. The implementation of additional incremental changes to the plan will be driven by observing the effectiveness of previous steps in removing nitrogen from the estuaries. The contingency measures were developed based on achieving the TMDLs and this is clarified in Chapter 6 Section 6.4. Due to the complexity of using shellfish to achieve TMDL compliance, the plan is not able to project beyond the initial phase of nitrogen removal as shellfish are anticipated to be able at a minimum to remove some portion of the load; therefore, nitrogen loading is evaluated continually in order to see what amount of traditional or other approaches would be needed in the subsequent phases. Lacking the aquaculture mitigation aspect of the plan, all phases of the contingency plan (facilities construction) will be necessary to meet the Town’s share of nitrogen load to the impacted bays. The Town is committed to reaching the TMDL limits as prescribed by law. It is difficult to forecast from this point what particular levels of removal, methods, or areas will be necessary to implement in order to attain the required levels. There are many variables and sequences open to reach that goal. There is a lot of discussion as to the efficacy of the proposed aquaculture plan as discussed later. It is intended that the phasing of the project in five-year parts will provide the opportunity to assess progress and redirect, if necessary, effort to a needed area.

Shellfish Propagation

The FEIR should include a revised and more detailed shellfish propagation plan to address comments on the DEIR. The FEIR should identify permitting and review requirements associated with the shellfish propagation program. It should describe associated infrastructure, management and maintenance requirements. It should include plans at a reasonable scale that include infrastructure, identify resource areas and demonstrate that sufficient bottom habitat is available to support identified densities. It should



confirm that amount of shellfish seed can be obtained within the proposed timeframes. The FEIR should identify measures to avoid, minimize and mitigate impacts, including impacts to recreation and navigation.

A7. *The triggers for implementing future phases beyond Phase 1 are further described in Chapter 9; and will be dependent on adaptive management and data review from the ongoing shellfish evaluations. The aquaculture portion of this plan is one of the areas receiving the most discussion. It is also the part of the plan that holds the most promise in reaching the project's goal affordably and in compliance with the Draft 208 Plan. Additional mapping of habitat areas is ongoing and the expectation is that aquaculture may provide even more of a role in the future project. Coordination with DMF, WHOI, the Wampanoag tribe, and surrounding communities, is ongoing. Shellfish Propagation Permits are issued by DMF and will be obtained for the seeding in the plan. They are renewed annually after review by DMF. The infrastructure for implementation, management, and maintenance is in place and will be expanded as needed. The Board of Selectmen, Town Manager, Shellfish Constable, Waterways Assistants, Shellfish Commission, and Masphee Wampanoag Tribe work together to manage the existing propagation programs and are committed to full implementation of the plan. Existing infrastructure including Carolina Skiffs, barges, and propagation gear will be upgraded as needed. The Shellfish Constable asked Richard Kraus, president of the Aquaculture Research Corporation hatchery if they could supply the quantities of oyster and quahog seed needed to implement the plan. Mr. Kraus responded they could with enough lead-time.*

Because of the significant reliance on this program to reach targets, close consultation with MassDEP, CCC and DMF is warranted prior to the filing of the FEIR. The FEIR should include a detailed protocol to ensure that the sampling and monitoring program yields appropriate verifiable data that will be accepted by MassDEP and DMF for evaluation, and will support the Town's evaluation of the effectiveness of the program. In addition, the triggers for implementing contingency plans should be more explicitly stated in the FEIR, including identification of thresholds and amount/duration of data required.

A8. *Meetings are scheduled with each of these organizations as well as others for identifying procedures and protocols for the program.*

The identification of timetables and thresholds may work against the efficient and cost-effective implementation of the plan. Clearly, new facilities built up in the watershed will not show immediate results in the bay until the groundwater is flushed through. Those results may be difficult to attribute to the facility. Results in one subwatershed may require more effort to bring it in line with the TMDLs. These factors require that the plan be flexible in meeting the required goals.

The Mashpee Water Quality Monitoring program is continuing the same sampling protocols, stations, and analytical methods that were used to provide data for the MEP and TMDL reports for the Popponesset Bay and Waquoit Bay systems. The stations are listed and mapped in the reports (Howes et al. 2004, pp. 88 and 89/Howes et al. 2011, p. 117). Water samples are analyzed at the UMass Dartmouth SMAST certified lab. The protocols, analytical methods documents, and reports from ongoing monitoring (after the MEP reports) are available from Dr. Brian Howes, UMass Dartmouth SMAST.



Non-Wastewater Nutrient Management Projects and Programs

The Recommended Plan will be strengthened through additional consideration of other non- wastewater nutrient management strategies and assessment of the potential effectiveness of such strategies. The FEIR should provide more discussion regarding other non-traditional projects and programs identified in the DEIR, including the growth neutral/flow neutral policy, stormwater management, conversion of abandoned cranberry bogs and shallow ponds including Santuit Pond, open space acquisition and additional public drinking water supply well locations, and fertilizer management. In addition, it should indicate when such elements would be incorporated into the Recommended Plan. In particular, it should provide more specificity regarding the framework of a growth neutral/flow neutral bylaw and, if available, provide a draft bylaw for review. If certain elements or analysis of elements will be deferred to later phases or subsequent NPCs, the Plan should clearly identify this.

A9. The Recommended Plan will summarize the findings of the CCC 208 Plan, however the plan is focused on three areas: (1) Shellfish Aquaculture/Propagation; (2) Traditional Infrastructure (wastewater); and (3) will include a flow/growth neutral policy. The Town has already spent significant funds and made significant efforts over the last 30+ years to purchase open space and protect it in order to protect its resources including its waterbodies and water supplies. The Town has adopted its fertilizer management (nitrogen reduction) bylaw and has been implementing best management practices regarding stormwater improvements for nitrogen removal since the 1990s both through its zoning requirements for new development and through Town-constructed stormwater projects. Additional non-traditional methods of nitrogen reduction may be implemented in future years following expanded efforts in adjacent communities regarding pilot programs and the CCCs implementation of the 208 Plan, but no other efforts are being considered as a formal part of the plan at this time; these other programs would be part of Adaptive Management.

Water Quality Monitoring and Adaptive Management

The Recommended Plan is based on Adaptive Management to provide incremental and targeted reductions in nitrogen with regular evaluation and re-evaluation of Plan components based upon a robust water quality monitoring program and associated modeling. As noted previously, the Proponent has committed to provide TMDL compliance reports to MassDEP, DMF, CZM, and other agencies/organizations. The FEIR should clarify that the reports will be provided to the CCC as well. The DEIR identifies regulatory requirements for monitoring and identifies parameters that will be monitored; however, it does not provide a specific monitoring protocol for evaluation. The FEIR must include a detailed protocol for evaluation by MassDEP, DMF and CZM. I strongly encourage the Proponent to consult with State Agencies and CCC regarding the development of this protocol prior to filing the FEIR.

A10. The Cape Cod Commission is added to the list of those to be notified. See Section 10.3 of the report.

The Mashpee Water Quality Monitoring program is continuing the same sampling protocols, stations, and analytical methods that were used to provide data for the MEP and TMDL reports for the Popponesset Bay and Waquoit Bay systems. The stations are listed and mapped in the reports (Howes et al. 2004, pp. 88 and 89/Howes et al. 2011, p. 117). Water samples are analyzed at the UMass



Dartmouth SMAST certified lab. The protocols, analytical methods documents, and reports from on-going monitoring are available from Dr. Brian Howes, UMass Dartmouth SMAST.

Wetlands and Rare Species

The Recommended Plan will impact inland and coastal wetland resources. Overall, the Plan should improve water quality with related improvements in estuary health and habitat. The DEIR provides conceptual plans for proposed facilities and collection systems and identifies on-and off-site resources including wetlands, floodplains, vernal pools, water supply protection areas, and rare species habitat. The Town has sited facilities to avoid significant impacts. The FEIR should provide an assessment of wetlands impacts associated with the shellfish propagation project and, to the extent feasible with projects proposed in early phases of the Recommended Plan, which may be limited to the expansion of sewer service areas. The DEIR should describe measures that will be implemented to avoid and minimize, or mitigate, adverse impacts to wetlands and buffer zones.

A11. The shellfish impacts are positive (water quality improvement) with no adverse impacts. Oyster aquaculture increases habitat and species diversity. Bottom planting of quahogs leaves the sediment surface available for other species. The Recommended Plan mitigation measures discuss minimizing wetlands impacts and buffer zones, and mitigation measures; see Chapter 7.

The FEIR should describe how the proposed stormwater management systems for new and/or expanded facilities will be designed and constructed consistent with MassDEP's stormwater management regulations and standards. The FEIR should describe proposed best management practice (BMP) measures to manage stormwater during project construction.

A12. This was discussed in Section 6.3.1 of the DRP/DEIR and additional description has been added into Chapter 6 discussing BMPs used by the Town of Mashpee.

The sites for new facilities, and many of the expansions, are located within *Estimated* and *Priority Habitat* for rare species. The FEIR should consult with NHESP regarding the design of facilities and identify construction and post-construction commitments to avoid adversely impacting habitats of state-listed rare species.

A13. This will be done as part of the next steps of design and as part of the permitting process for any proposed facilities.

Climate Change

The FEIR must demonstrate that the Town will take meaningful steps to reduce GHG emissions and is well positioned to address impacts of climate change, including sea level rise and more frequent and severe storms. The Recommended Plan represents a significant investment of State and local resources and is the basis for design and construction of long-term infrastructure. As a coastal community, it is critical that these resources are sited, designed and constructed to adapt to sea level rise and associated impacts so that the targeted benefits and investments will be protected over the long-term. Planning for energy efficiency, long-term water quality improvements and infrastructure should be addressed in the FEIR and subsequent NPCs, to the extent reasonable and feasible, rather than deferring these considerations to permitting.



A14. Other than shellfish propagation efforts and some portions of later-phase wastewater collection systems, no facilities are proposed in areas that would be impacted by even the highest predicted levels of sea-level rise by 2100. Regarding GHG emissions and Solar PV, see below.

Greenhouse Gas Emissions

The Town should present a GHG analysis that clearly demonstrates what measures will be adopted to achieve a high level of energy efficiency for proposed facilities and treatment processes and to quantify potential GHG emissions reductions (in tons per year (tpy) of CO₂) associated with the measures. Staff from the MEPA Office, MassDEP and the Department of Energy Resources (DOER) are available to provide guidance and technical assistance for this effort.

A15. The Town adopted the “Stretch Energy Code” 780 CMR 120.AA in January of 2010. The Town would at a minimum adopt these same code requirements for future development related to the CWMP and related facilities as they apply. In addition, any GHG analysis at this time would be predicated upon assumptions of technology to be applied at the time final design is complete, therefore it is recommended that a GHG analysis should be required at the time the Town enters into preliminary and final design and construction phases for each phase related to any proposed new facilities for wastewater treatment.

In addition, the FEIR should evaluate the feasibility of incorporating solar PV into the Recommended Plan. Installation of PV systems on municipal buildings or on municipal properties may achieve cost-savings beneficial to the community and can offset ongoing operational costs. The DEIR should consider ground-mounted and building-mounted systems and ownership structures, including third-party ownership/lease scenarios. MassDEP, DOER and the Clean Energy Center (CEC) can provide resources to assist with the analysis, including a DOER spreadsheet to calculate potential project cost, payback periods and returns on investment. The DEIR should state assumptions with regard to available area for PV equipment, efficiencies, etc.

A16. The Town of Mashpee has already made significant efforts to incorporate PV systems into the Town. The following is a list of the Town’s recent renewable energy projects:

- ***1.83 MW system at closed Mashpee Landfill***
- ***312 KW roof mounted system at Mashpee High/Middle School***
- ***20 KW roof mounted system at Mashpee Public Library***
- ***10 KW roof mounted system at Mashpee DPW***
- ***10 KW roof mounted system at Mashpee COA***
- ***(1) 1.5 KW 30-foot vertical axis wind turbine***

Based on discussions with the Town Manager’s office, these facilities provide close to 90% of the total Town facilities power supply. As part of any future proposed structures, the Town will consider further evaluation for cost benefit of adding PV to those new structures. These projects were completed using a combination of Federal and State grants as well as Public-Private Partnerships, and demonstrate the Town’s commitment to renewable energy efforts.