

# Metropolitan Area Planning Council

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## Metropolitan Area Planning Council

Preliminary Evaluation of Potential  
Renewable Energy Projects

December 1, 2011



Meridian Associates, Inc.

## Meridian Associates Team

- ▶ Richard Waitt, P.E. Principal
- ▶ Jonathan Markey, P.E. Project Manager

## Lynnfield Engineering Team

- ▶ Richard Barthelmes, P.E. Principal



## Introduction

- ▶ Six Communities- 7 Sites: 5 Landfills, 2 Non-Landfills  
Ashland, Bedford, Hamilton, Hopkinton, Sherborn, Sudbury
- ▶ Evaluated commercial wind & ground based PV
- ▶ Preliminary evaluation to identify “fatal flaws”
- ▶ Focused on limited set of technical factors
- ▶ Designed to guide local decision making
- ▶ Offer guidance on possible next steps



## Executive Summary

- ▶ Photovoltaic (PV) potential in all towns
- ▶ Commercial wind potential in 2 towns (Hamilton and Sudbury)
- ▶ Assessment based on:
  - ▶ Site visits
  - ▶ Information from municipal representatives
  - ▶ Data collection and site assessment
  - ▶ Technical, environmental, & regulatory reviews



## Methodology

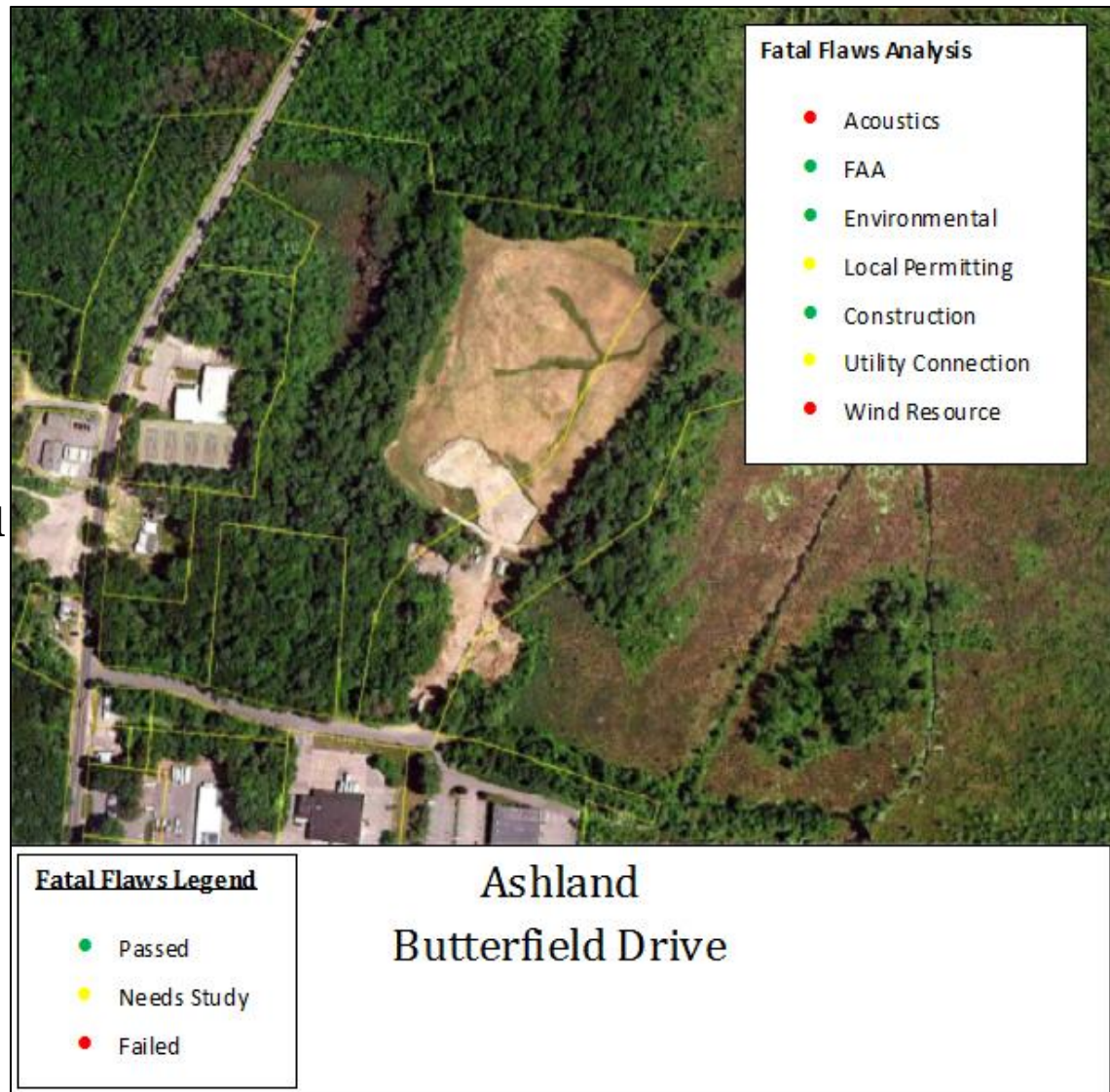
- ▶ Sites evaluated for:
  - ▶ Ownership status
  - ▶ Closure status & reuse permitting for landfill sites
  - ▶ Potential Fatal Flaws
    - ▶ Wind & solar resources
    - ▶ Proximity to residential structures for acoustics for wind
    - ▶ Aviation impacts of wind turbines
    - ▶ Environmental concerns
    - ▶ Local zoning & permitting
    - ▶ Utility interconnection availability
    - ▶ Construction considerations



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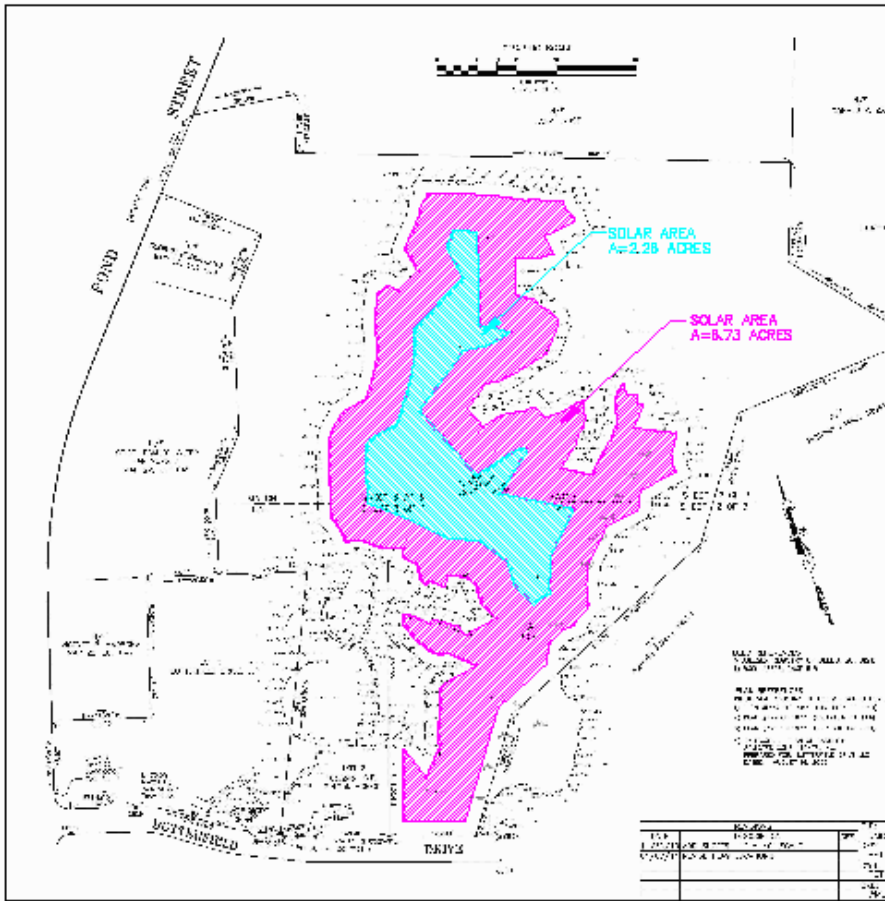
## Ashland Butterfield Drive (non-landfill)

- ▶ Privately owned
- ▶ 35 acres
- ▶ Previously a Driving Range
- ▶ PV potential : 500kW-2 MW
- ▶ Wind potential : None- Fatal Flaw
- ▶ Next steps:
  - ▶ Conduct a grid interconnection Study
  - ▶ Wetlands Delineation
  - ▶ PV seek private development via PPA





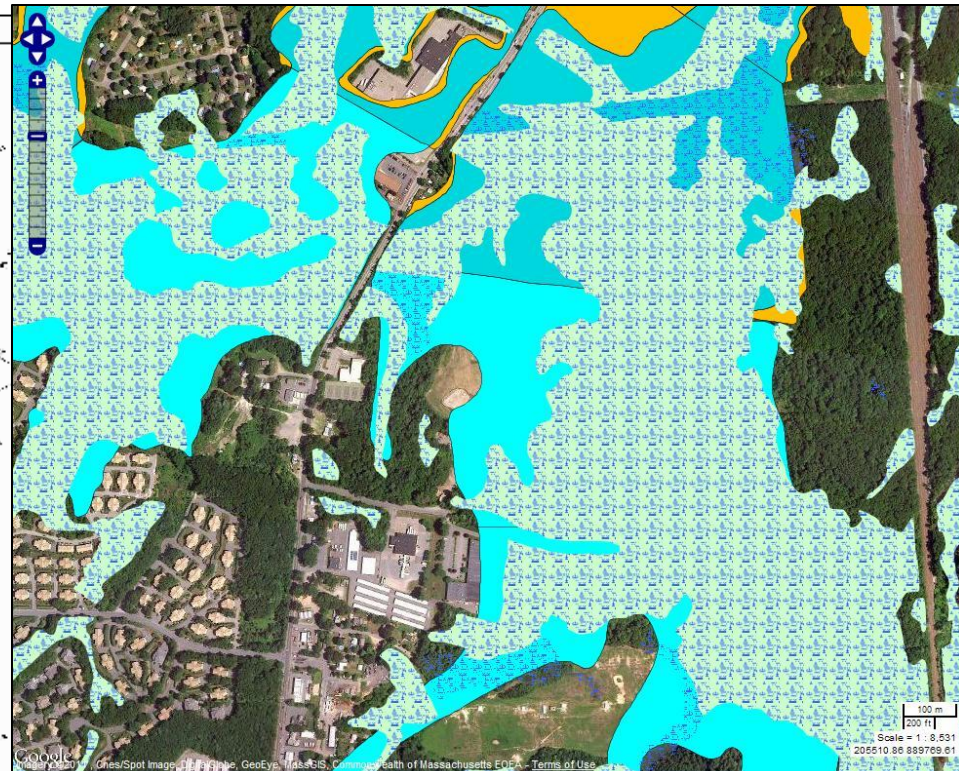
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**Ashland  
Butterfield Drive**



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## Active data legends

### General Categories

- MARSH/BOG
- WOODED MARSH
- CRANBERRY BOG
- SALT MARSH
- OPEN WATER
- RESERVOIR (WITH PWSID)
- TIDAL FLATS
- BEACH/DUNE

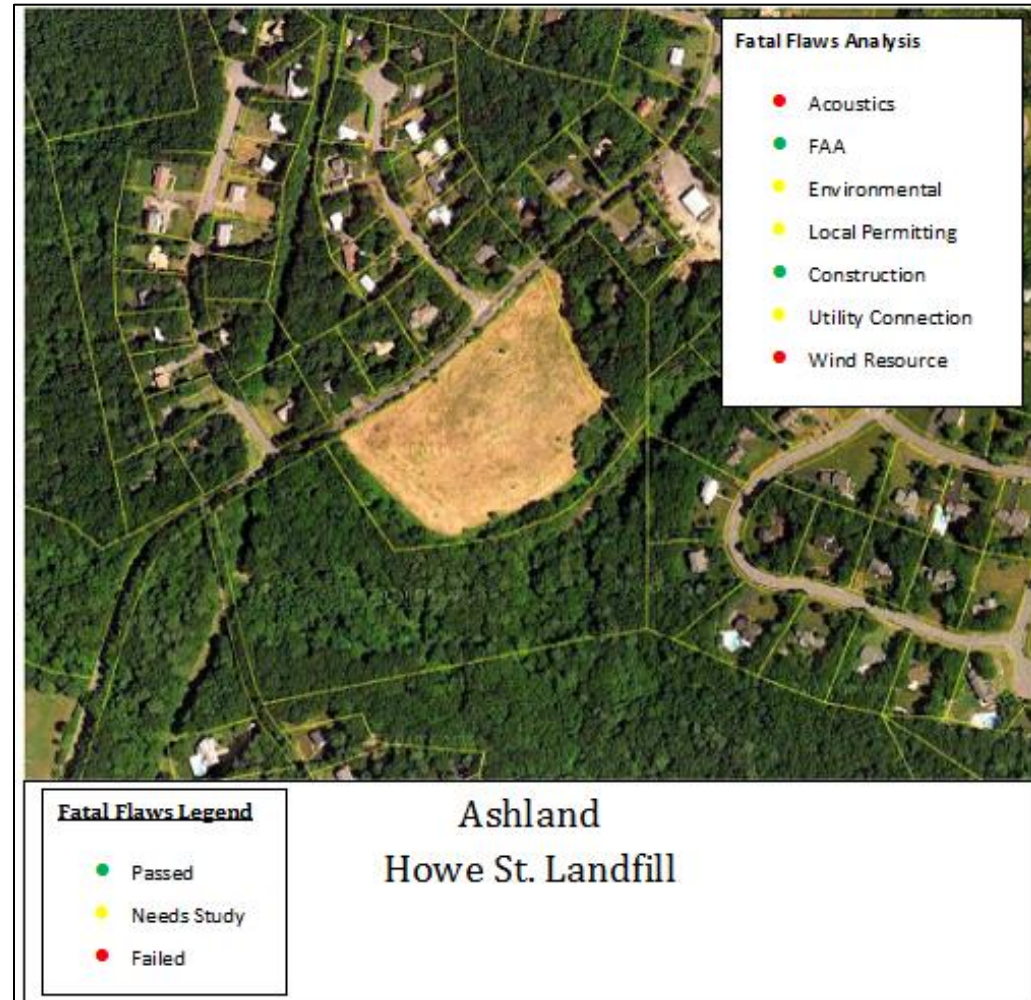
### FEMA Flood Zones

- A
- AE
- AH
- AO
- V
- VE

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## Ashland Howe St. Landfill

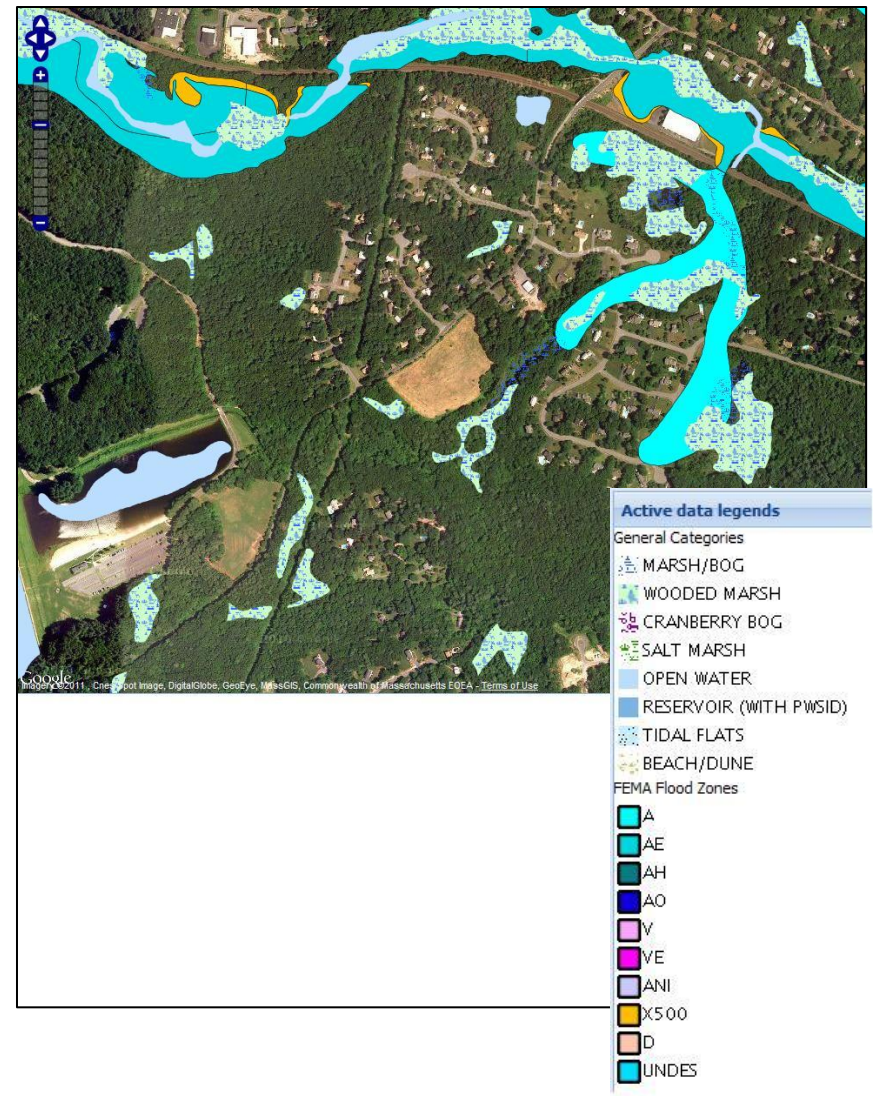
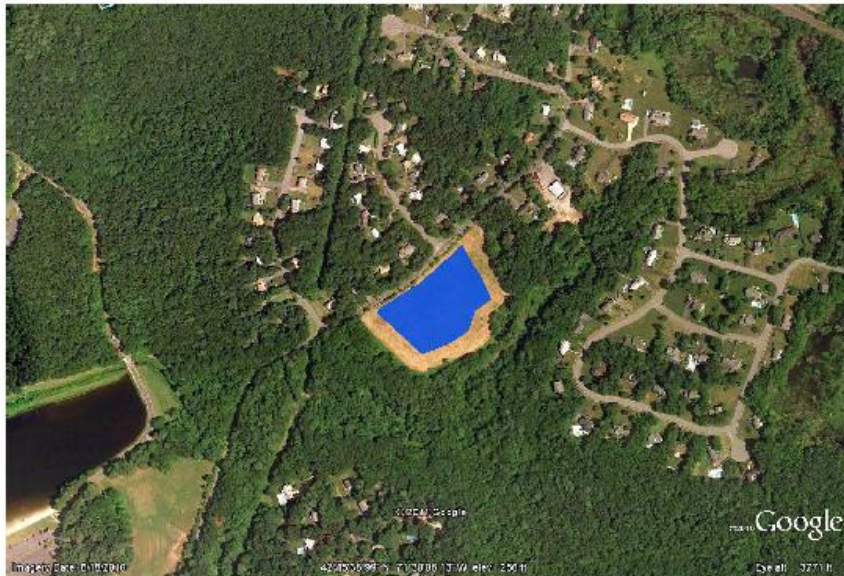
- ▶ Town Owned
- ▶ 7 acres
- ▶ Clay Capped
- ▶ PV potential : 730 kW array
- ▶ Wind potential : None- Fatal Flaw
- ▶ Next Steps:
  - ▶ Post Closure Use Permitting
  - ▶ Wetlands Delineation
  - ▶ PV seek private development via PPA
  - ▶ Conduct an interconnection study





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## Ashland Howe St. Landfill

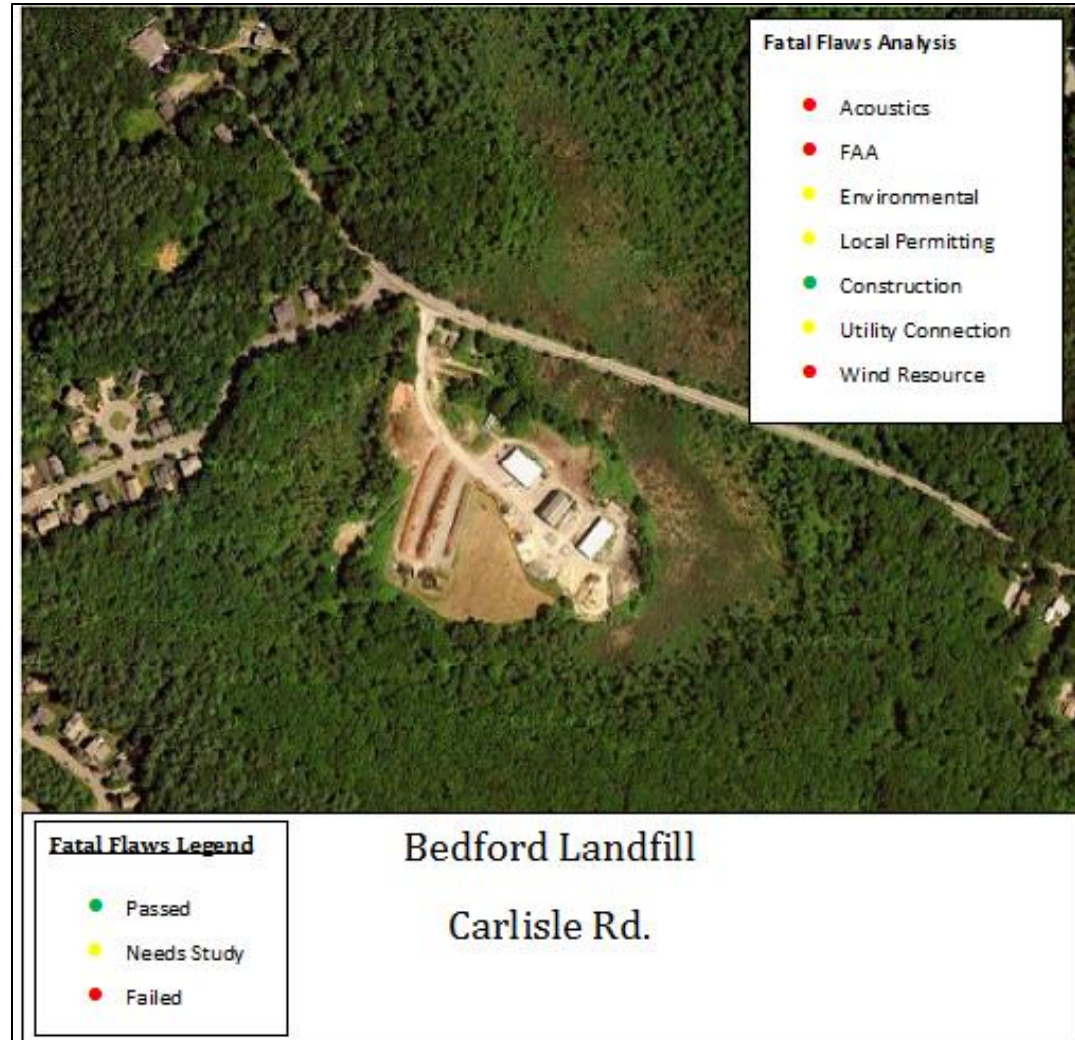


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## Bedford Landfill

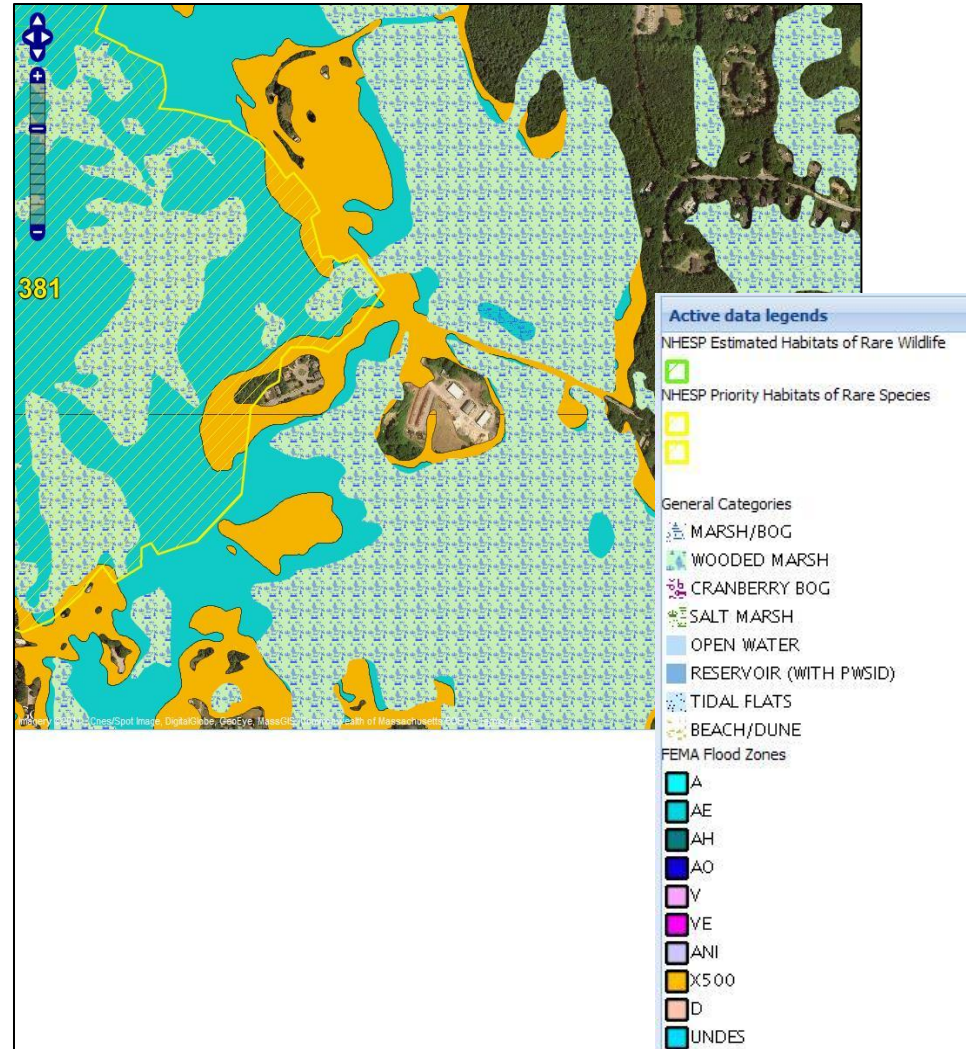
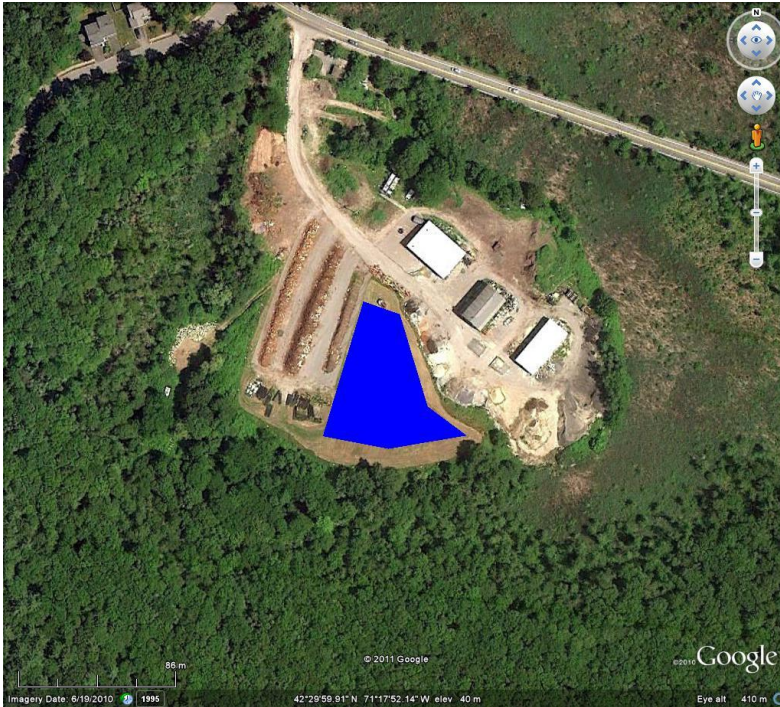
- ▶ Town Owned
- ▶ 10 acre site
- ▶ Geosynthetic Clay Capped
- ▶ Solar Potential: 150 kW's
- ▶ Wind Potential: None, Fatal Flaws
- ▶ Next Steps:
  - ▶ Post Closure Use Permitting
  - ▶ PV seek private development via PPA
  - ▶ Conduct an interconnection study
  - ▶ Wetlands Delineation





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## Bedford Landfill



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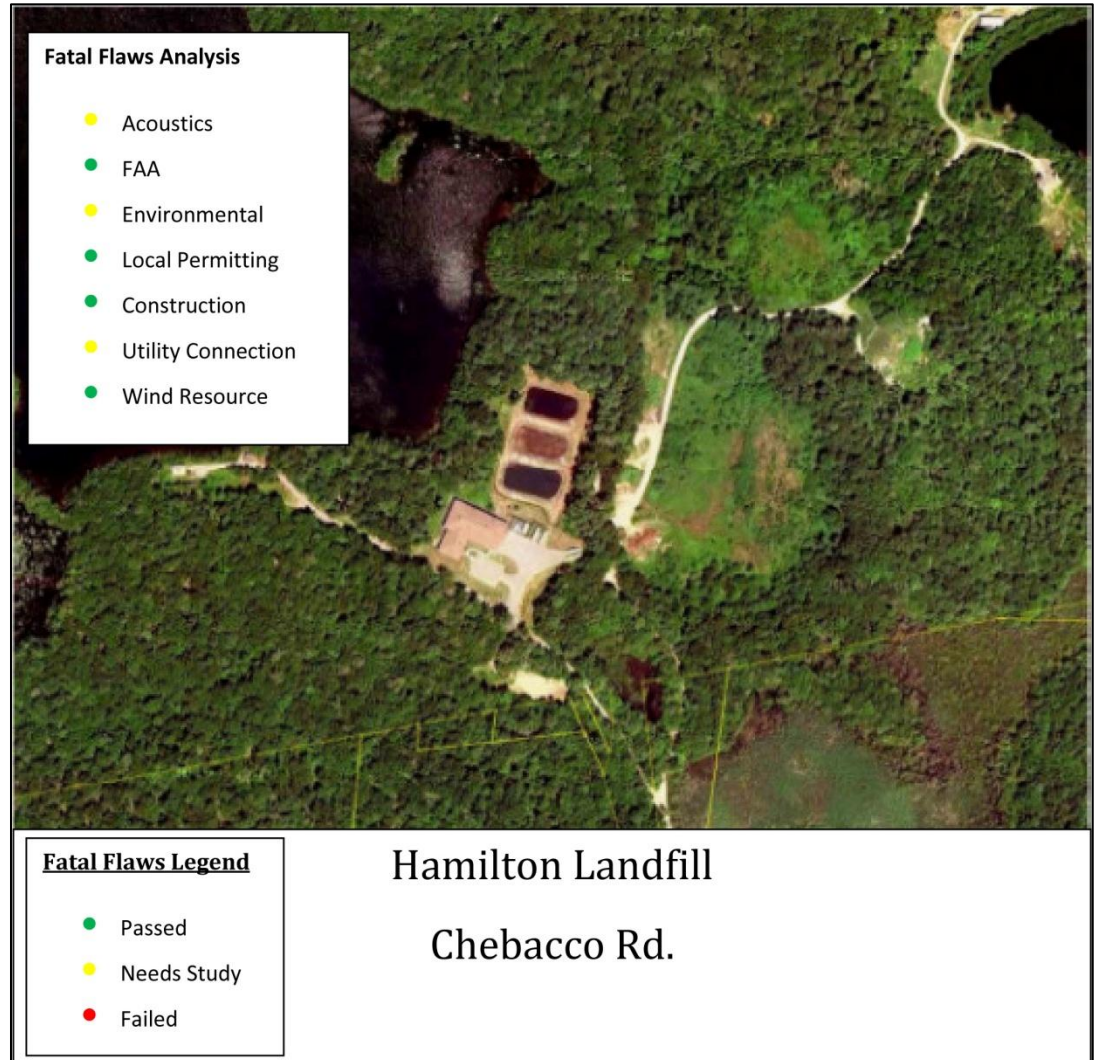
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## Hamilton Landfill

- ▶ Town Owned
- ▶ 13 Acre Landfill (3 Cells)
- ▶ Soil Cover Capped
- ▶ Solar Potential: 1.2 MW
- ▶ Wind Potential: 1.6 MW
- ▶ Next Steps:
  - ▶ Post Closure Use Permitting
  - ▶ PV seek private development via PPA
  - ▶ Acoustics Testing
  - ▶ Wind Feasibility Testing
  - ▶ Conduct an interconnection study
  - ▶ MESA permitting



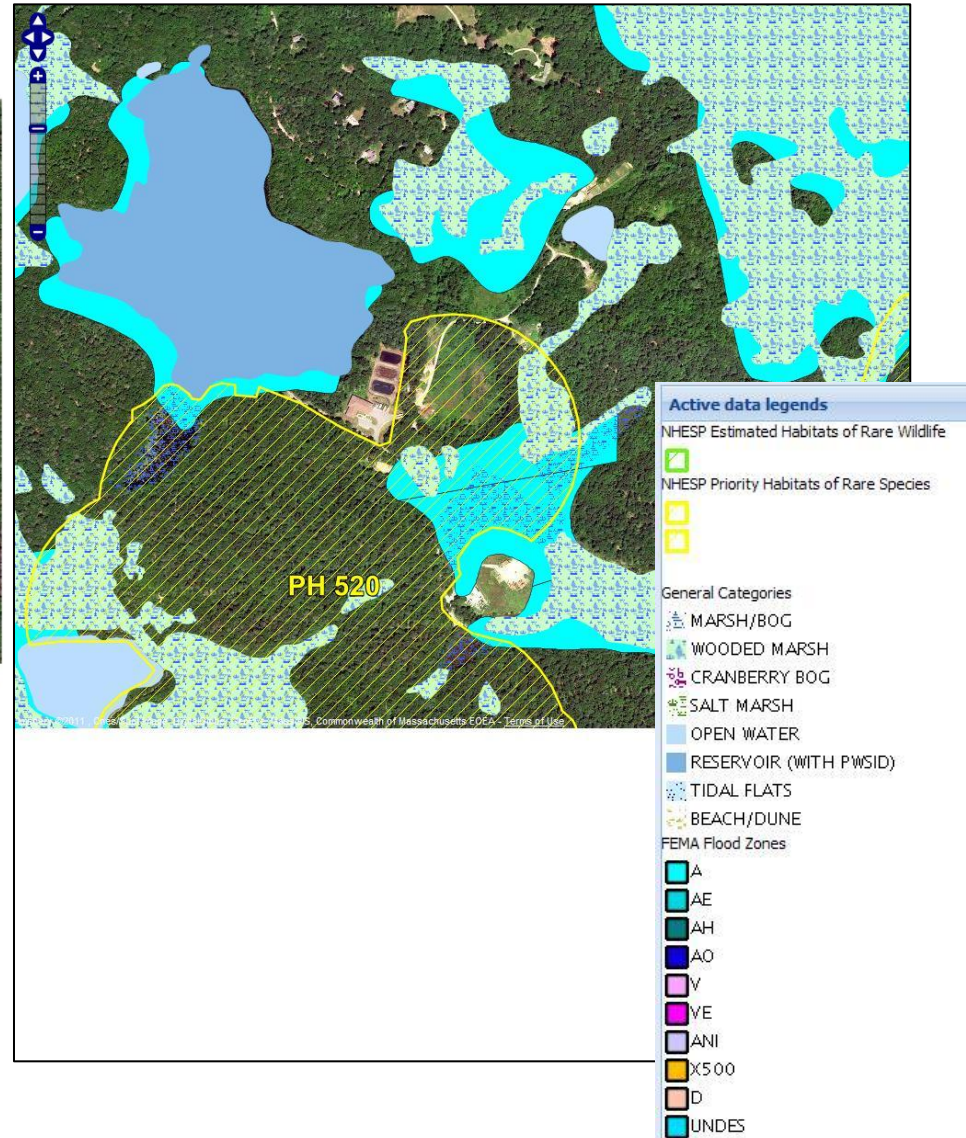
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## Hamilton Landfill



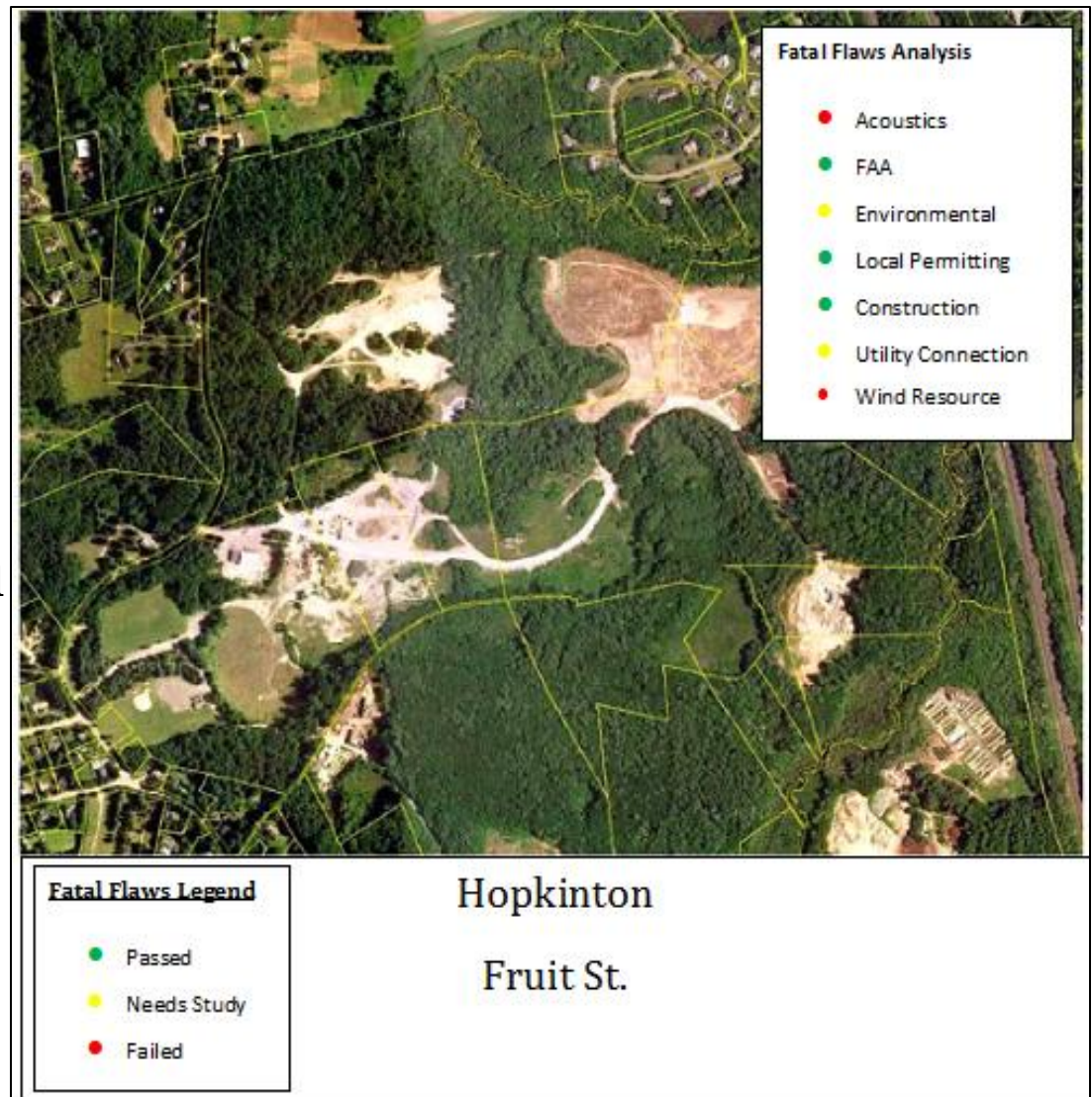
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## Hopkinton Fruit St.

- ▶ Town Owned Land
- ▶ 127 Acres, 23 Useable  
(Excludes Wells, Soccer, CR)
- ▶ Solar PV Potential: 5.2 MW  
(2 Potential Arrays)
- ▶ Wind Potential: None, Fatal  
Flaw
- ▶ Next Steps:
  - ▶ PV seek private  
development via PPA
  - ▶ Conduct an  
interconnection study
  - ▶ Wetlands Delineation

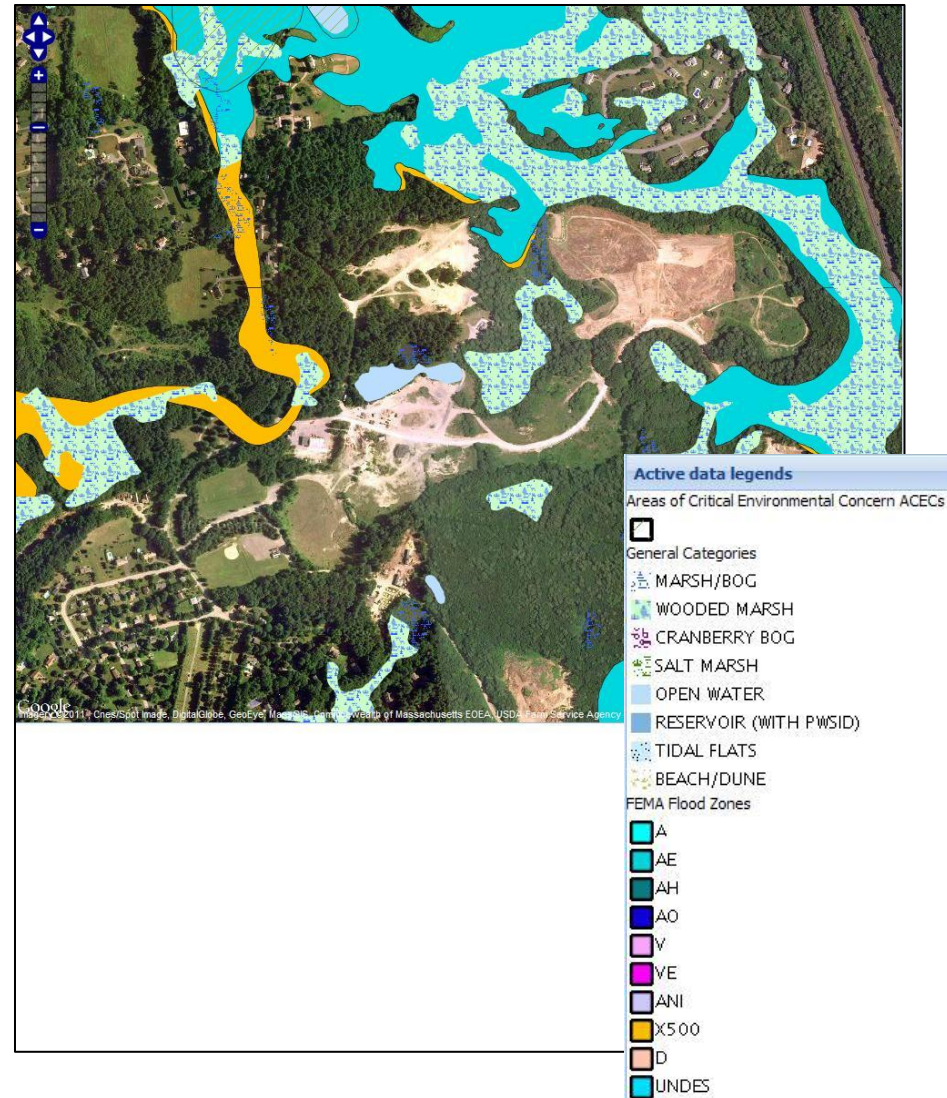


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## Hopkinton Fruit Street



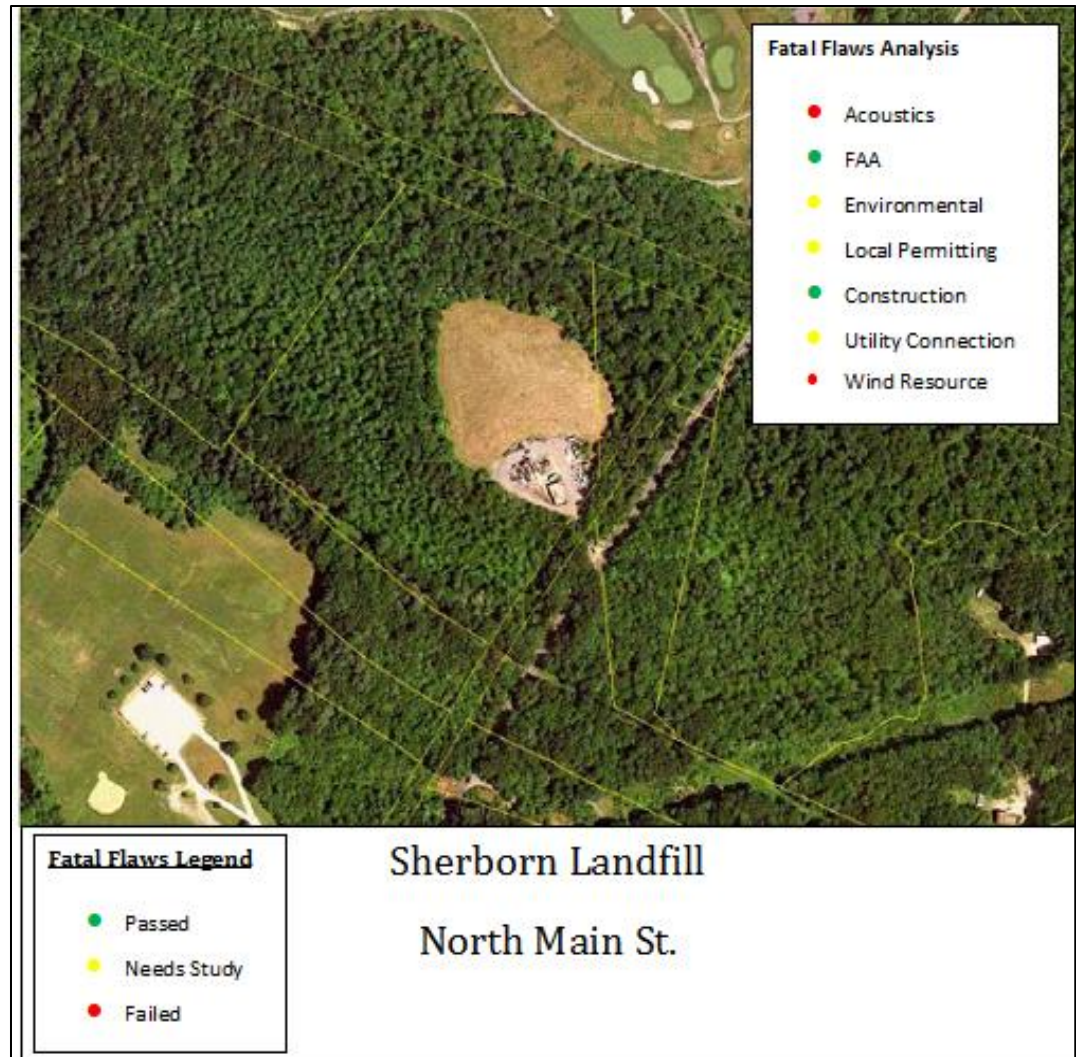
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## Sherborn Landfill

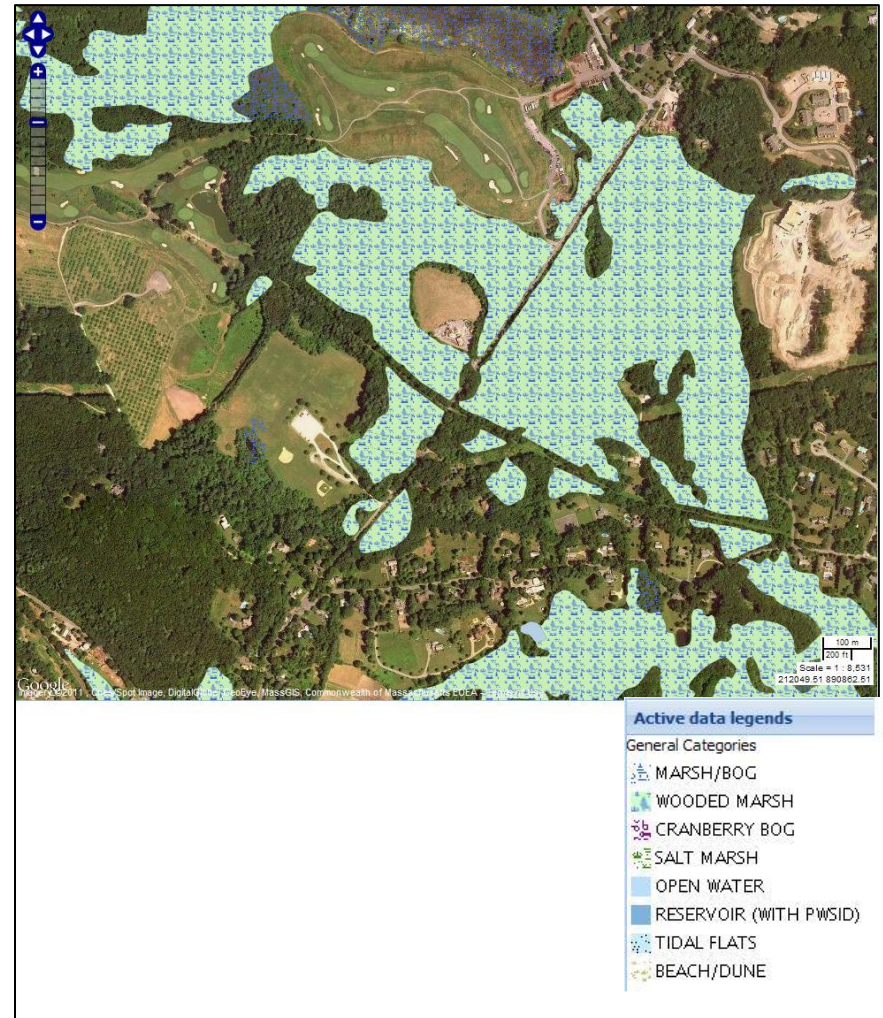
- ▶ Town Owned
- ▶ 9 acres
- ▶ Soil Capped
- ▶ PV Potential: 100 kW
- ▶ Wind Potential: None, Fatal Flaw
- ▶ Next Steps:
  - ▶ Post Closure Use Permitting
  - ▶ PV seek private development via PPA
  - ▶ Conduct an interconnection study
  - ▶ Wetlands Delineation





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## Sherborn Landfill



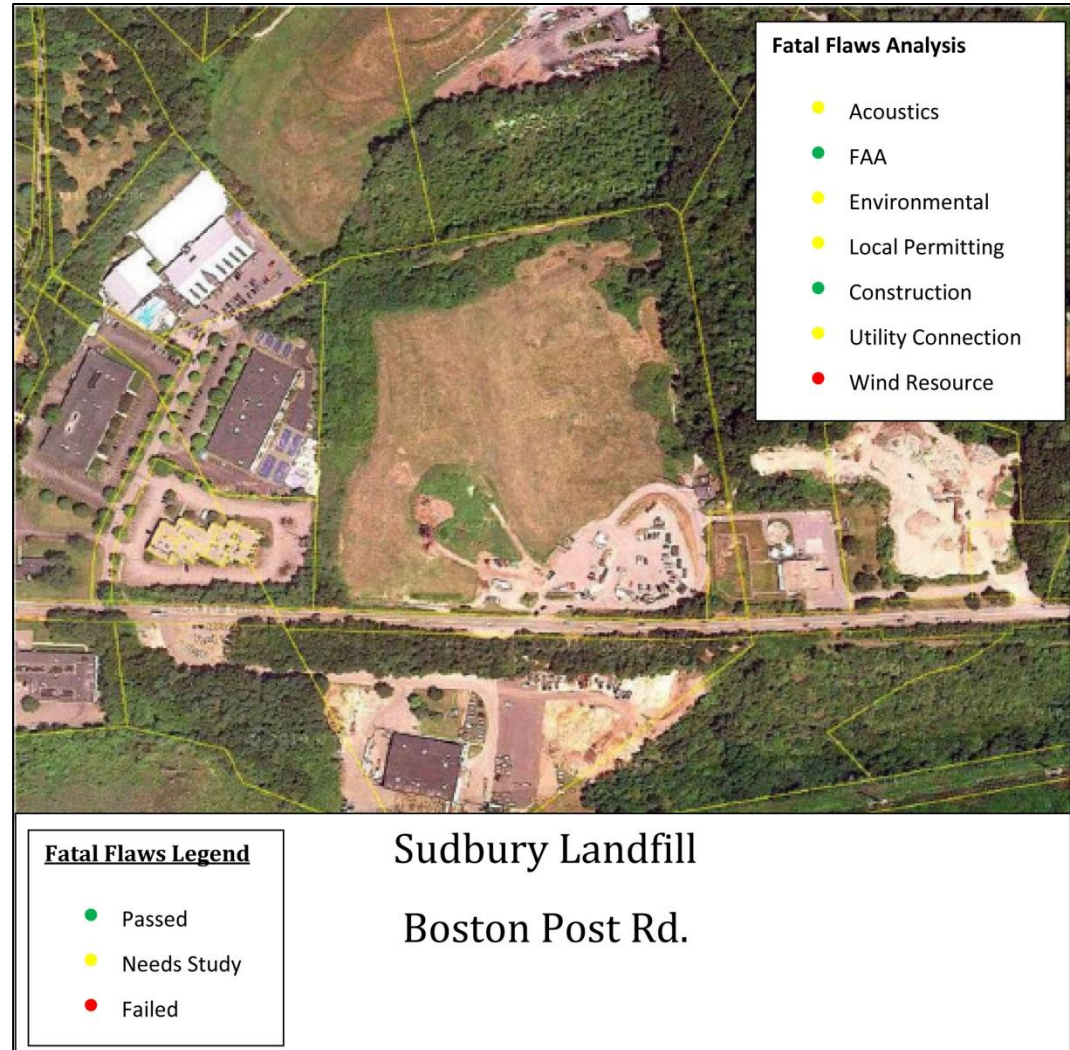
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## Sudbury Landfill

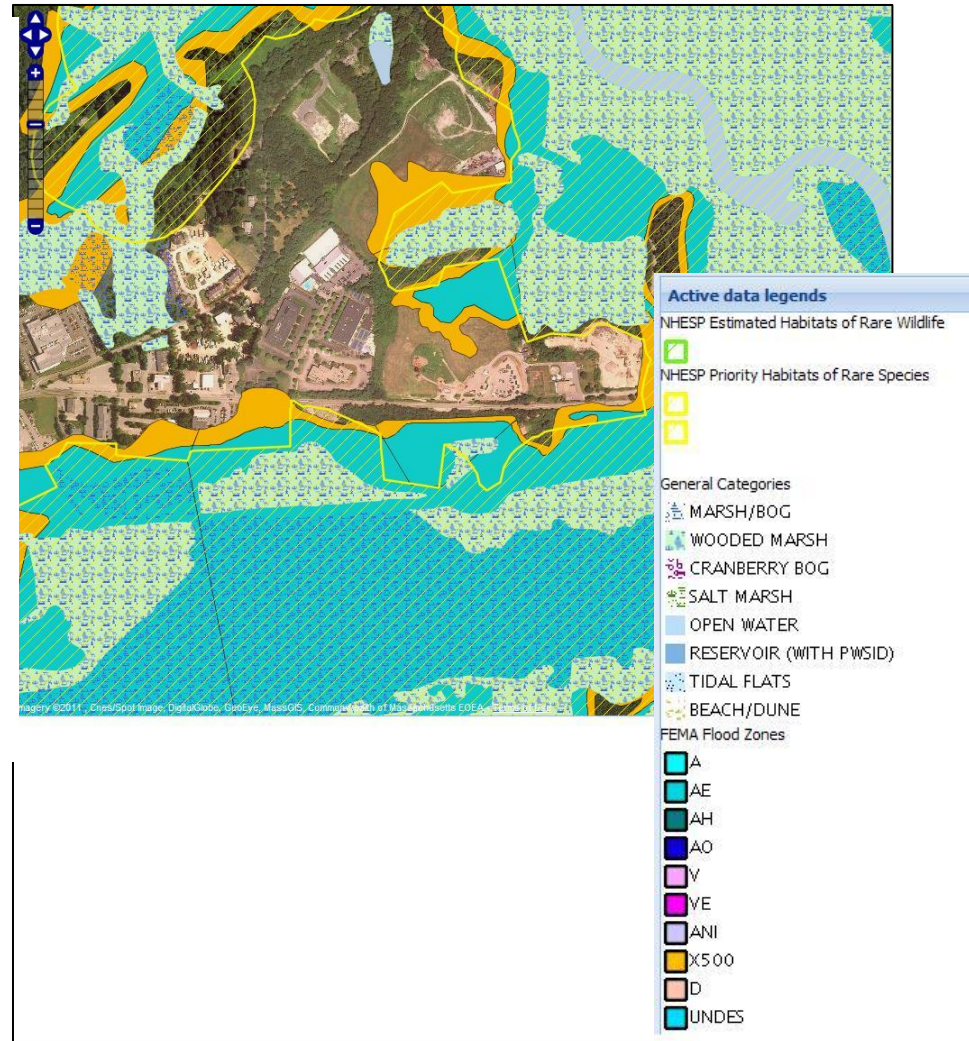
- ▶ Town owned
- ▶ 22 acres
- ▶ Clay Capped
- ▶ PV Potential: 1.1 MW
- ▶ Wind Potential: None, Fatal Flaws
- ▶ Next Steps:
  - ▶ Post Closure Use application
  - ▶ PV seek private development via PPA
  - ▶ MESA permitting





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## Sudbury Landfill



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## **Landfill Post-Closure Use**

- ▶ Work regulated under 310 CMR 19.143, Post-Closure Use of Landfills, and MADEP Landfill Post-Closure Use Permitting Guidelines dated June 2009.
- ▶ Major Post-Closure Use – involves construction or installation of structures, equipment or other appurtenances onto or into the landfill capping system.
- ▶ Minor Post-Closure Use – involves passive post-closure activities that do not require the construction or installation of structures, equipment or other appurtenances onto or into the landfill's capping system.





## **Permit Application**

- ▶ Requires submission of BWP SW 36, Post-Closure Use – Major, or BWP SW 37, Post-Closure Use – Minor.
  
- ▶ Information required:
  - *Background Information:*
    - Solid Waste Site Assignment
    - Property Deed
    - Environmental Site Assessment (If assessment has not been performed, MADEP may determine that one is required)
    - Closure Permit and Closure Certification



## **Permit Application (continued)**

### ➤ *Specific Requirements:*

- Site Plan
- Landfill Capping System Design Plan
- Post-Closure Use Design Plan
- Stormwater Plan
- Stormwater Erosion Control Plan
- Landfill Gas Monitoring Plan
- Geotechnical Settlement and Stabilization Analysis
- Capping System Post-Closure Interface (How will post-closure use affect capping system)



## **Permit Application (continued)**

- Existing and Proposed Utilities; Layout and Construction Details
- Environmental Monitoring Plan
- Qualitative Health and Risk Assessment – Demonstrate post-closure use will not pose a health and safety risk
- Post-Closure Monitoring and Maintenance Plan
- Financial Assurance – 30 year post-closure period
- Wetland Protection Act Compliance
- MEPA Compliance



## **Application Review Process BWP SW 36, Post-Closure Use – Major**

- ▶ Administrative Review – within 24 days.
- ▶ Technical Review – within 72 days of determining application is administratively complete. If additional technical information is requested, the Applicant has 90 days to submit.
- ▶ Final Approval – within 72 days of Application being declared technically complete.





## **Common Permit Conditions**

- ▶ Third-party oversight of construction taking place on the cap.
- ▶ Site specific Health and Safety Plan.
- ▶ No disturbance of cap below vegetative support layer.
- ▶ Enclosures must be designed not to accumulate landfill gas.
- ▶ Vehicles operating on cap shall be restricted to designated access road, except for low-pressure construction equipment. (<7 psi)
- ▶ Quarterly inspection reports be submitted to MADEP.
- ▶ Sufficient fencing and barriers to be provided.
- ▶ All work to comply with local, state, and federal codes.

