

Developing a Shared Vision with Conservation Planning

for Saving Special Places 2017



Photo by Kate Wilcox

Moose Mountains Regional Greenways

Our Mission:

To identify and conserve important natural resource areas, including water resources, farm and forest lands, wildlife habitat, recreational areas, cultural and scenic areas.

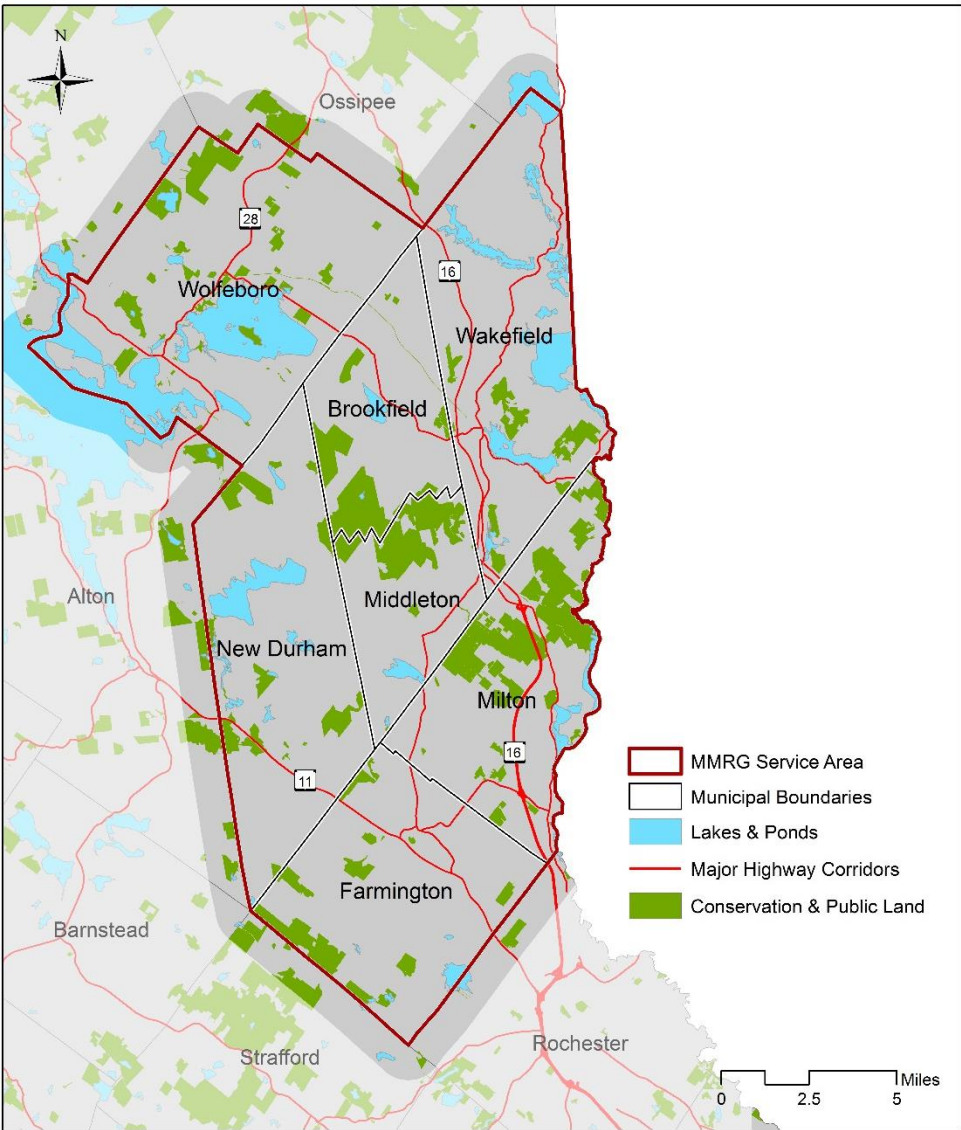
To educate others about these efforts.

To join together protected lands to form greenways.



Photo by Kate Wilcox

MMRG Service Area



Moose Mountains Regional Greenways
Conservation Planning Area

Dreamed Big



1

Had a Big Picture Idea



Raised the Funds

3

Formed a Committee

2

Selected a Planning Team

Gave the **Process**
a Purpose

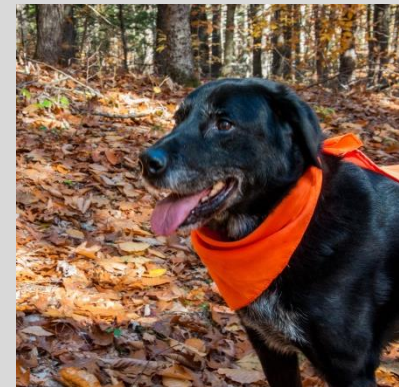
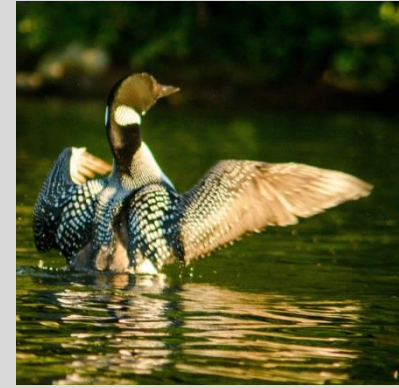
4



MMRG's Challenge to Itself

Using our organizational capacity as strategically as possible and asking ourselves, and the rest of the community:

- What places and resources are most important to you, in this place where you live, work, or play?
- What do we all want our communities to look like in the future?
- Can we take steps today to make that future vision a reality, one conservation project at a time?



Photos by Kate Wilcox

Raised Funds

MMRG's conservation action planning project is supported by funds from the sale of the Conservation License Plate (Moose Plate) through the NH State Conservation Committee grant program.



MMRG is also grateful to the following sources for their support of this project:

- **Jack and Dorothy Byrne Foundation**
- **Davis Conservation Foundation**
- **Adelard A. Roy & Valdea Lea Roy Foundation**
- **Other generous donors**

Developed a Message...

**...about the
Conservation Plan**



**and shared with the
community.**

Communicated

Featured the Conservation Plan in:

- **Newsletters**
- **Emails**
- **Facebook**
- **Annual appeal letters**

Engaged Others:

- **Non-profit groups**
- **State Government agencies**
- **Academic groups**
- **Conservation Commissions**
- **Adjacent town**
- **Participants at our Hikes & Events**

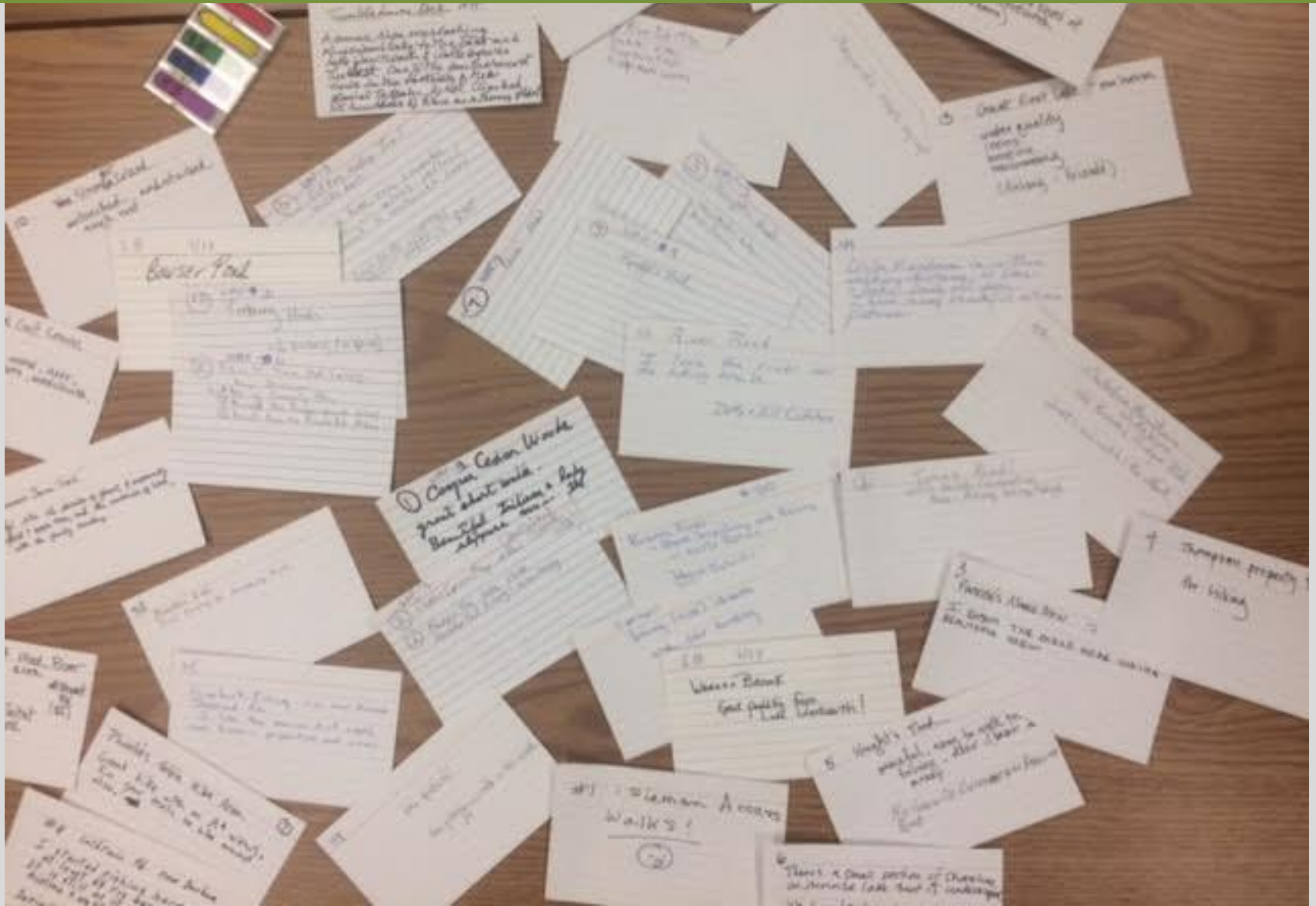


“Map *Your* Special Place”

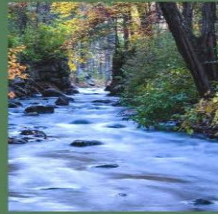


Photo by Kate Wilcox

Map Your Special Place



Created a Title and Images



Photos & Design by Kate Wilcox

Shared the Vision with the Community and Beyond

- Conservation Commission Presentations
- **Community Visioning Session**
- Board of Selectmen Presentation
- Gathered Data
- Met with Agencies/Non-Profits
- **Stakeholder Meetings**
- Strategic Planning for the Ad Hoc Committee and MMRG Board

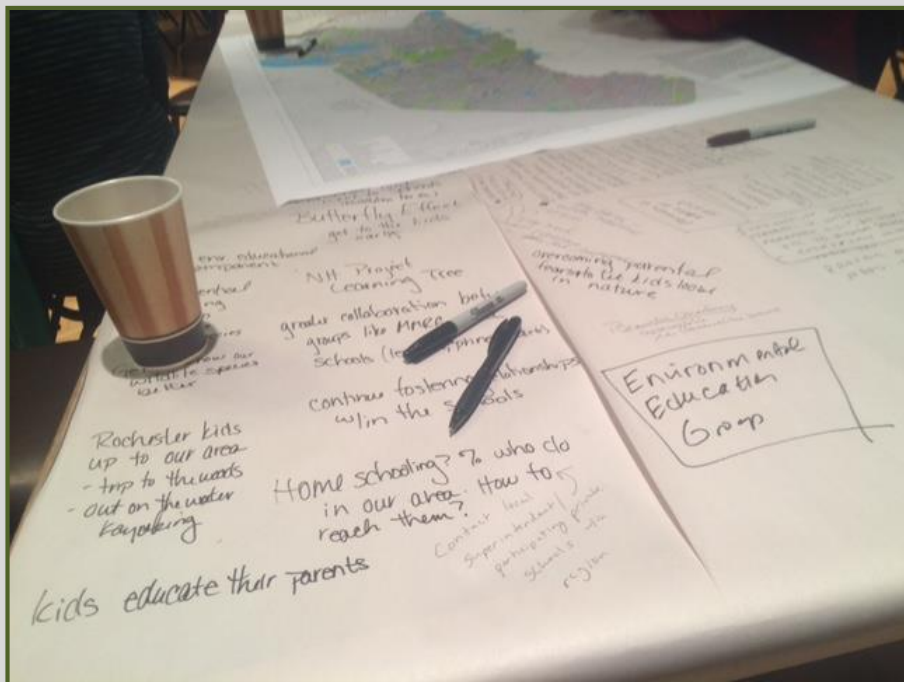


Photos by Kate Wilcox



Photo by Steve Whitman

Conservation Planning Visioning Session



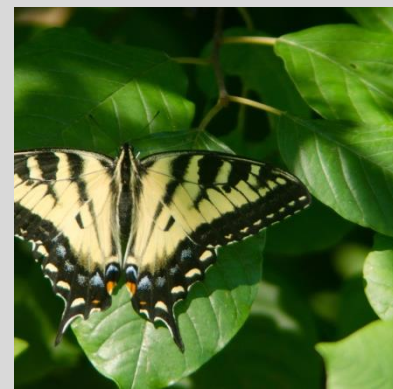
Conservation Planning Stakeholder Participation -



**38 Individuals who
Live, Work, and Play
in MMRG's Region**



Photos by Kate Wilcox



Conservation Planning Stakeholders

- Residents of our 7 towns in MMRG's service area
- Conservation Commissioners /Planning Board
- Local and State elected officials
- Lake Associations
- Trail users-hikers/snowmobilers/snowshoers, etc.!
- Consulting foresters
- Land owners/Woodlot owners/Farmers
- Small business owners
- Land conservation organizations
- Watershed Associations/Estuary Partners
- Limnologist/Aquatic Ecologists/Wetlands Scientists
- NHDES/NH Fish & Game/UNH Extension Staff
- Town planner
- Local passions for history and culture



Photo by Kate Wilcox

Finishing the Plan and Next Steps

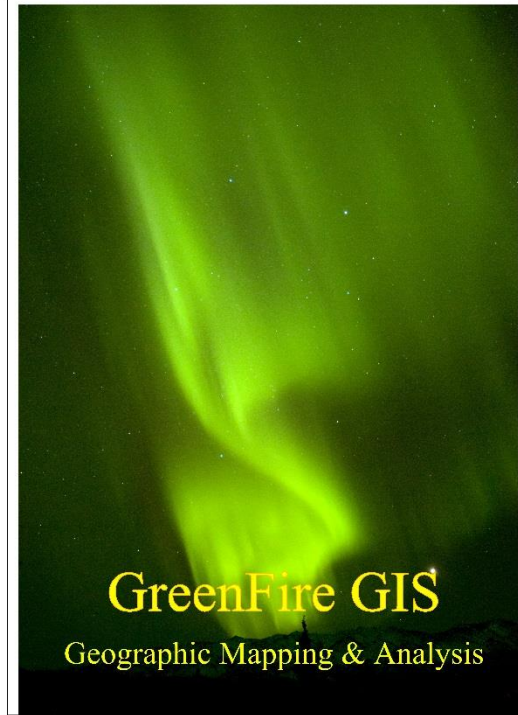


Photo by Emily Lord

- **Create MMRG's Strategic Plan**
- **Unveil the Conservation Plan/ Maps to the Community**
- **Distribute the Plan/Maps to:**
 - **Conservation Commissions**
Watershed Associations
 - **Other Area Non-Profits**
 - **UNH/DES/PREP**
- **Develop Next Steps that Keep the Community Engaged**
- **Pursue Funding**



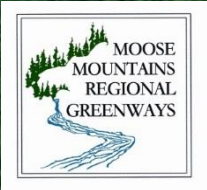
RESILIENCE
Planning & Design LLC



GreenFire GIS
Geographic Mapping & Analysis

“Our Home, Our Land, Our Tomorrow”

Moose Mountains Regional Greenway Outreach Plan



The Personal Touch

"I STARTED
FISHING AT
COLDRAIN
POND AT
LEAST 65
YEARS AGO.
IT IS STILL AS
IT WAS THEN,
PRISTINE AND
UNSPOILED."



Incorporating Local Values

“It’s not down in any map; true places never are.”

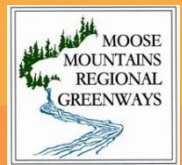
- Herman Melville

Local Values Information Sources:

- Interviews with town officials (BOS, PB, CC)
- Master plan & NRI review & extracts
- Visioning sessions (60 people attending)
- Public Survey (305 respondents)

Survey Results

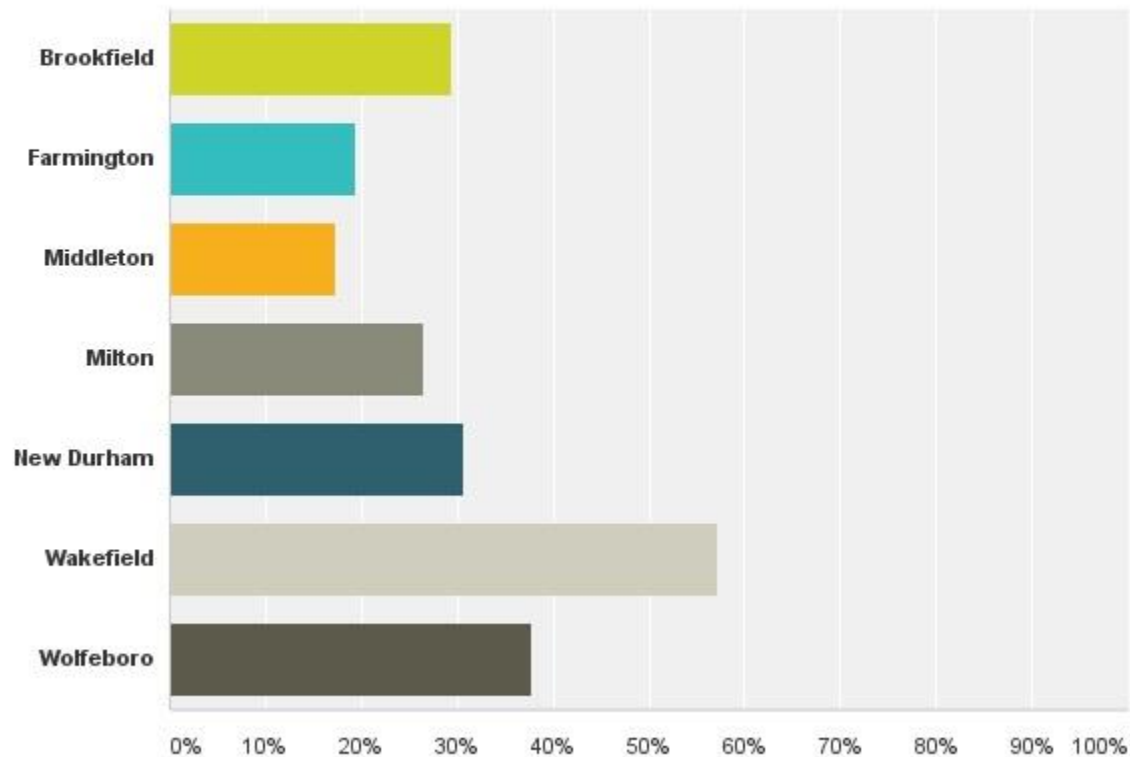
- More than 300 responses
- 30% of respondents don't live in region
- 28% of respondents live in Wakefield
- 67% (of 273) have a second/seasonal home in region
- 56% (of 271) have lived here more than 20 years
- 95% (of 265) have children in local schools
- 53% (of 273) are retired
- 78% (of 276) are 55 or older



Survey Results

Q2 In which towns are you most active in these recreation interests? (Check all that apply)

Answered: 299 Skipped: 8



Survey Results

Q1 What forms of outdoor recreation do you seek in this area? (Select all that apply)

Answered: 305 Skipped: 2



Hiking

CV

XC Skiing

CV

Snowshoeing

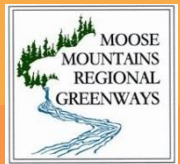
CV

Canoeing/Kayaking
Birdwatching

CV

CV

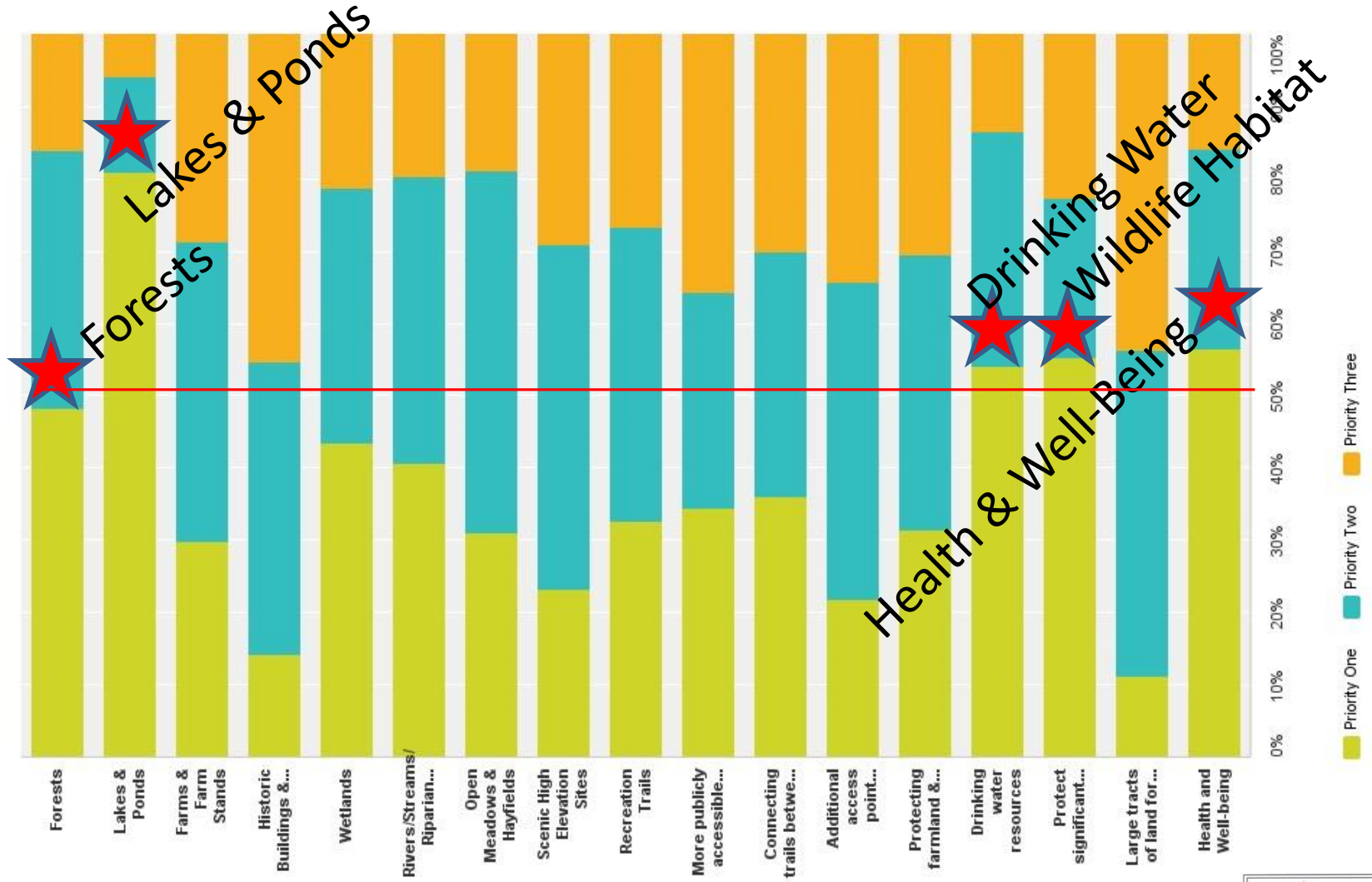
50%



Survey Results

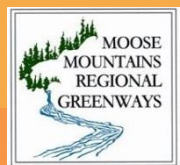
Q3 What are your top three conservation priorities for the MMRG region? Select one priority for each column.

Answered: 301 Skipped: 6



Survey Results

| Top Priority | | |
|--------------|--|-----------------|
| Rank | Answer Options | Total Responses |
| 1 | Lakes & Ponds | 204 |
| 2 | Protect significant wildlife Habitat | 159 |
| 3 | Forests | 143 |
| 4 | Rivers/Streams/Riparian Corridors | 133 |
| 5 | Drinking water resources | 120 |
| 6 | Recreation Trails | 116 |
| 7 | Connecting trails between conserved lands | 100 |
| 8 | Wetlands | 99 |
| 9 | Protect farmland & promote farming | 92 |
| 10 | Publicly accessible land for local use | 87 |
| 11 | Scenic High Elevation Sites | 86 |
| 12 | Farms & Farm Stands | 84 |
| 13 | Historic Buildings & Places | 84 |
| 14 | Health & well-being | 76 |
| 15 | Open Meadows & Hayfields | 74 |
| 16 | Additional water access points | 73 |
| 17 | Large tracts of land for economic forestry | 71 |



Synthesizing Local Values

MMRG Summary of Local Natural Resource Concerns

From a review of Town master plans and other documents

| Community | Forest Blocks | Forest Soils | Riparian Buffers | Lake Water Quality | Wetlands | Floodplains | Aquifers | Drinking Water Protection | Wildlife Habitat | Biodiversity | Climate Change Resilience | Connectivity | Steep Slopes | Highly Erodible Soils | Prime Farm Soils | Farmland | Development Threat | Total Across |
|------------|---------------|--------------|------------------|--------------------|----------|-------------|----------|---------------------------|------------------|--------------|---------------------------|--------------|--------------|-----------------------|------------------|----------|--------------------|--------------|
| Brookfield | 2 | 0 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 0 | 0 | 2 | 3 | 0 | 0 | 3 | 1 | 30 |
| Farmington | 3 | 2 | 0 | 2 | 3 | 3 | 3 | 3 | 2 | 0 | 0 | 1 | 3 | 0 | 3 | 3 | 3 | 34 |
| Middleton | 2 | 0 | 0 | 3 | 3 | 3 | 2 | 3 | 3 | 2 | 0 | 3 | 3 | 3 | 0 | 0 | 2 | 32 |
| Milton | 2 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 0 | 0 | 2 | 3 | 0 | 3 | 3 | 2 | 35 |
| New Durham | 3 | 0 | 3 | 2 | 3 | 2 | 3 | 3 | 1 | 1 | 0 | 3 | 3 | 0 | 0 | 3 | 2 | 32 |
| Wakefield | 1 | 0 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 0 | 0 | 2 | 2 | 0 | 2 | 2 | 2 | 23 |
| Wolfeboro | 3 | 1 | 2 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 1 | 3 | 1 | 1 | 2 | 3 | 3 | 39 |
| | 16 | 4 | 13 | 17 | 20 | 17 | 18 | 19 | 15 | 5 | 1 | 16 | 18 | 4 | 10 | 17 | 15 | |

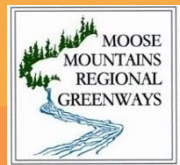
Codes

3 = Emphasized, strongly recommended for action/consideration; supported by other studies, e.g., prime wetland designation, water quality studies, etc.

2 = Included in the narrative as a discrete item but not particularly emphasized

1 = Mentioned but not emphasized, e.g., found in a list but little detail;

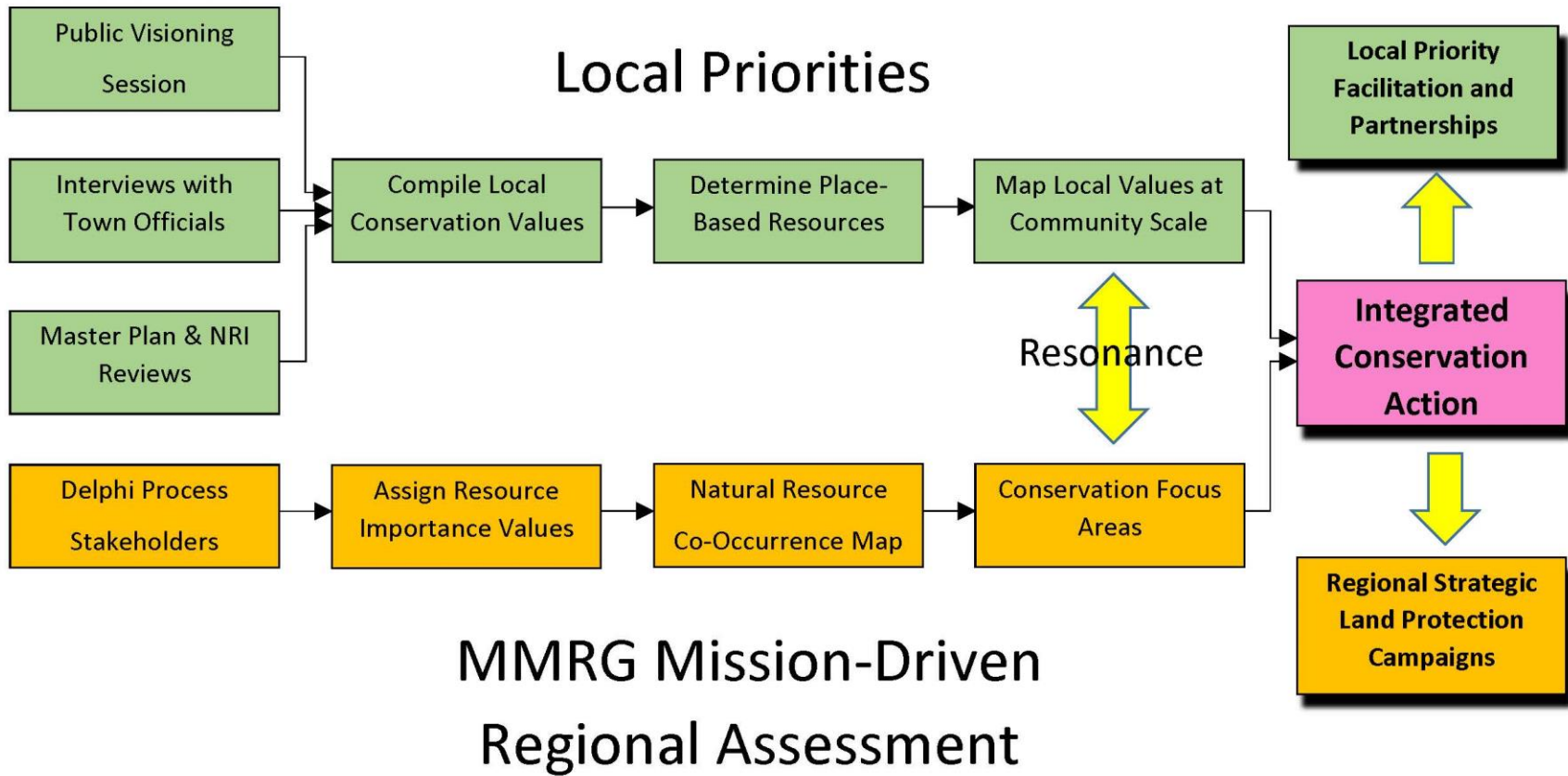
0 = Not mentioned at all



Caveats

- **Coastal Conservation Plan** is outdated, so references in local master plans & NRIs are not considered in local priorities.
- **Scenic Resources** are not included in the MMRG planning process, although protecting scenic quality is an important local value.

MMRG Action Plan Strategy



Identifying High-Priority Conservation Focus Areas

- List Important Natural Resource Features
- Map & Analyze Data
- Identify & Invite Stakeholder Group
- Meet to Familiarize Group with Features
- Run Delphi Process for Importance Values
- Generate Co-Occurrence Map
- Refine to Conservation Focus Areas

Natural Resource Features

Groupings of Natural Resources

- Forest Resources
- Water Resources
- Wildlife Habitat
- Steep Slopes & Highly Erodible Soils
- Agricultural Resources

28 Features All Together

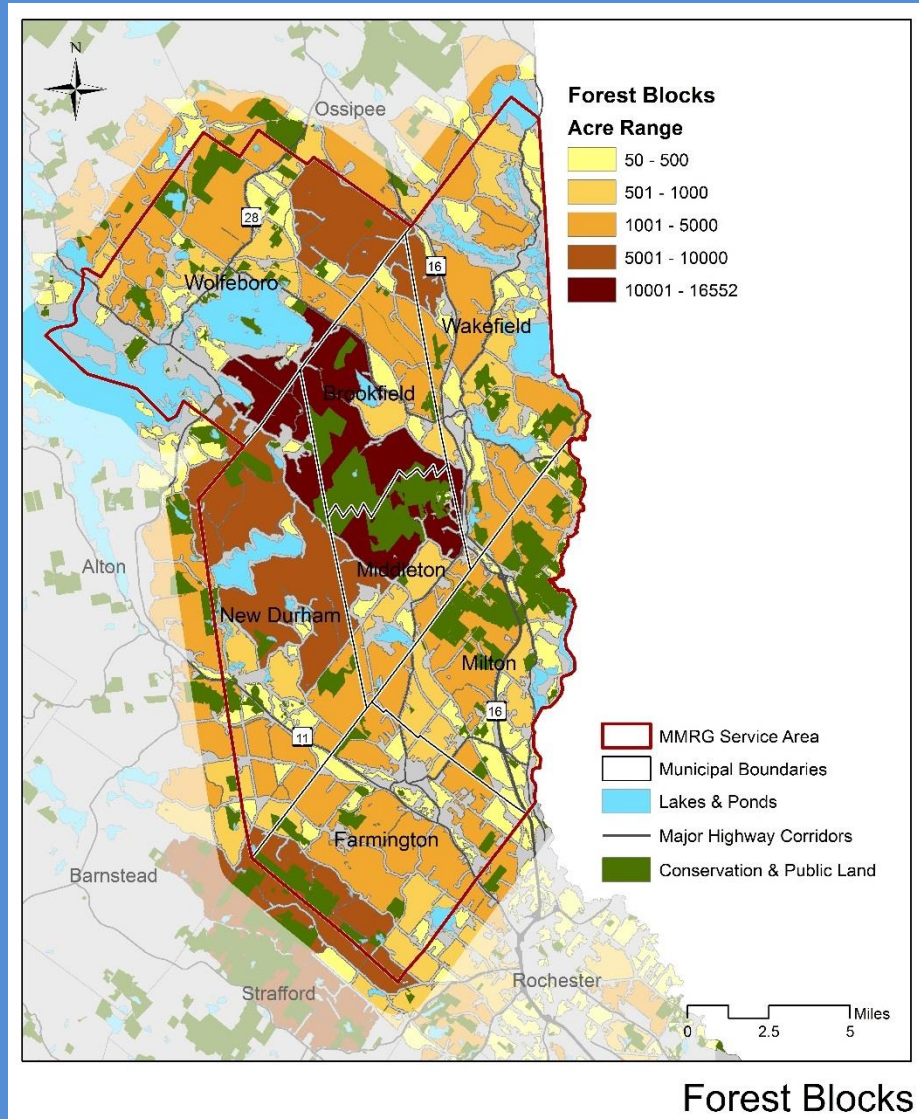
Forest Blocks

Block >50 Acres:
66% of Study Area

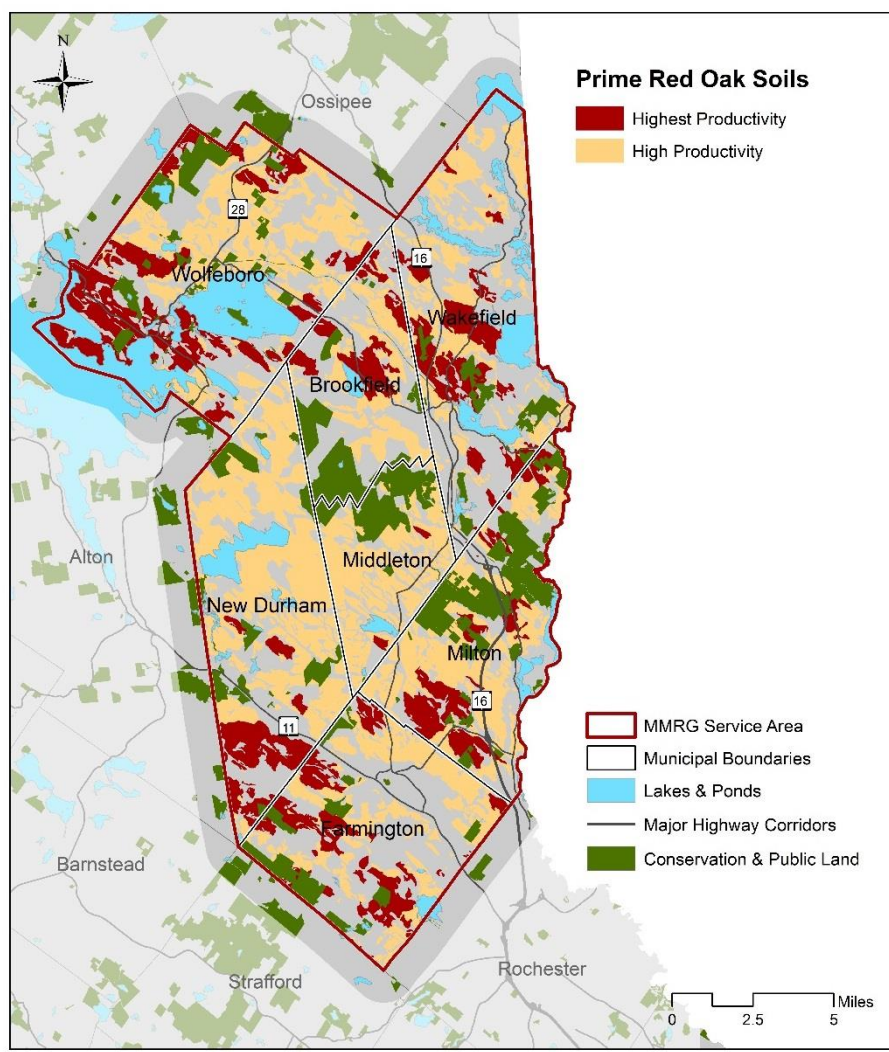
Blocks >1,000 Acres:
48% of Study Area

Largest Block:
16,500 Acres

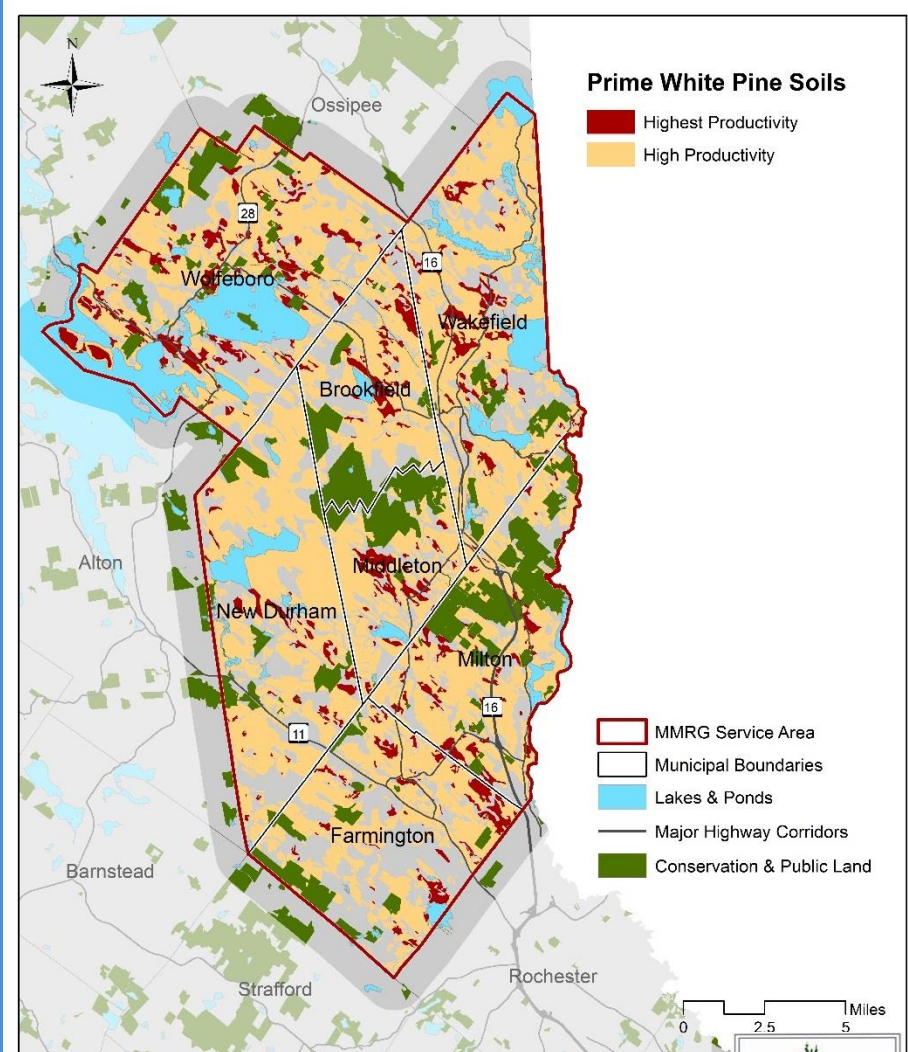
15% Protected



Productive Forest Soils



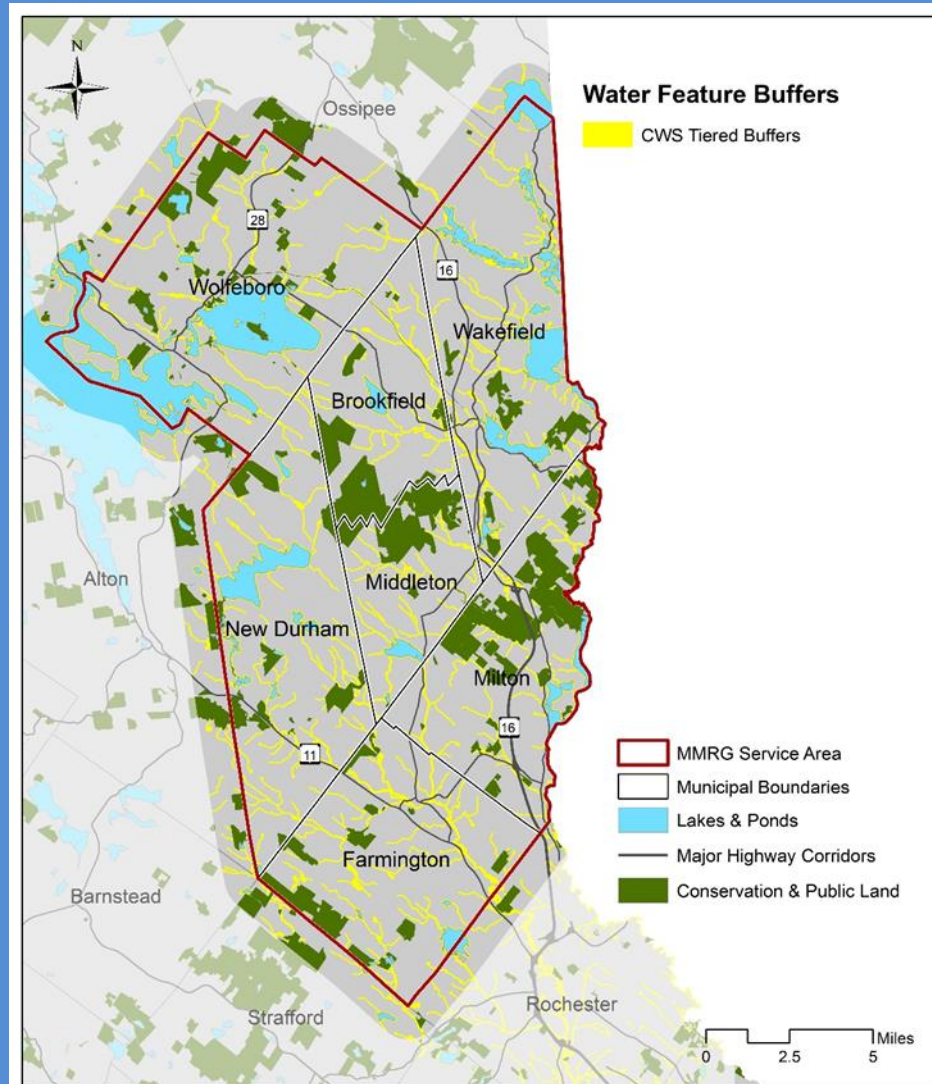
Productive Forest Soils



Productive Forest Soils

Riparian & Shoreland Buffers

~11,000 Acres
12% Protected

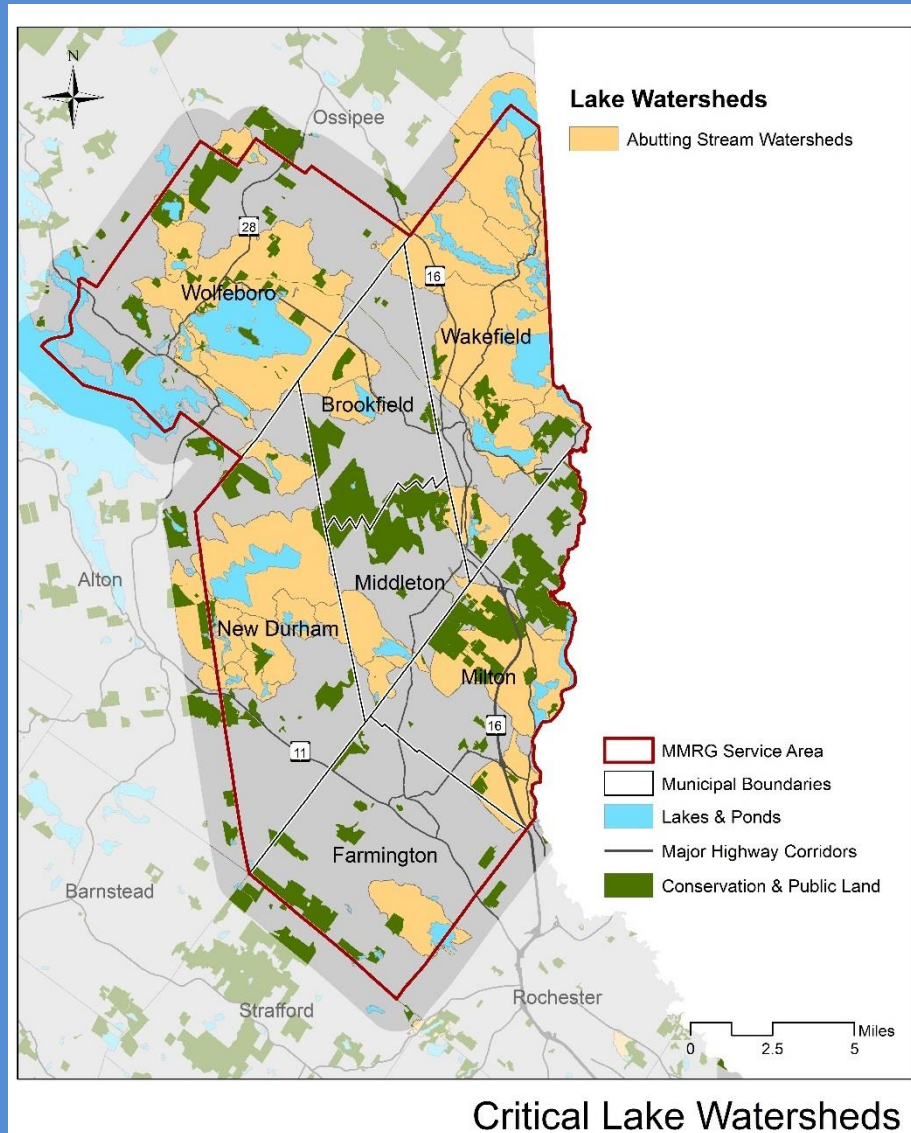


Riparian & Shoreland Buffers

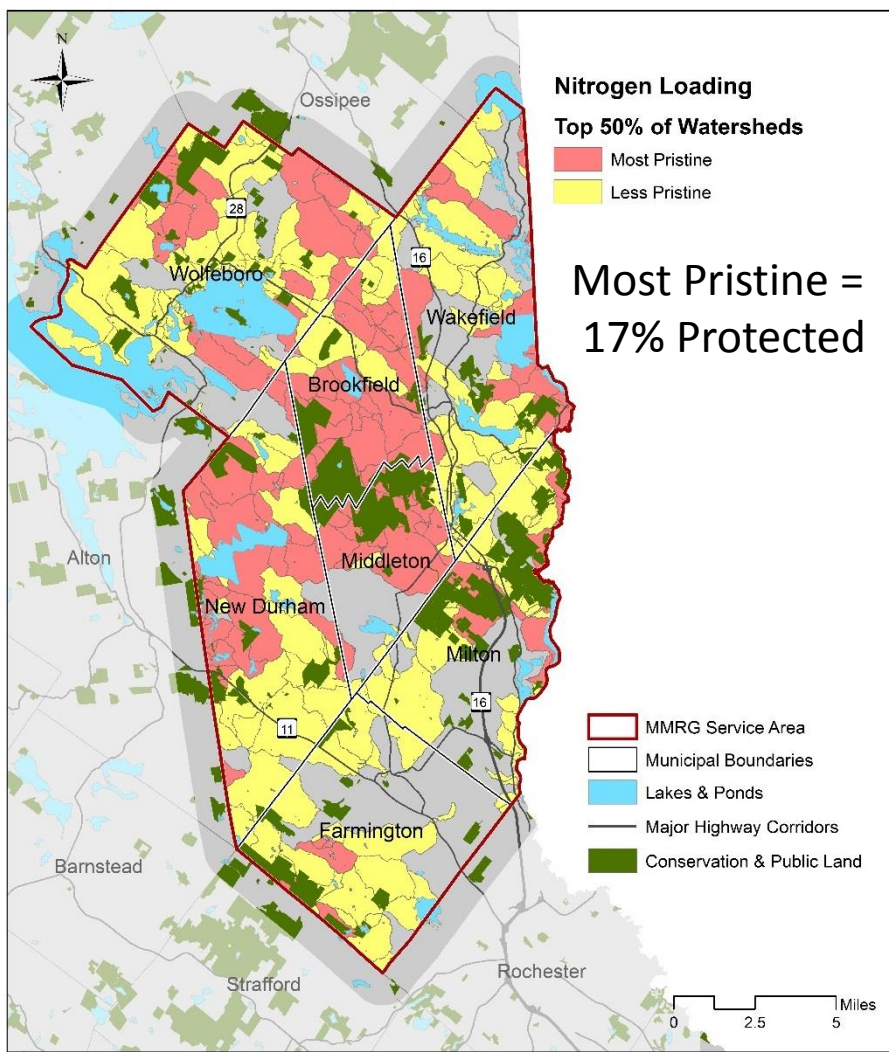
Critical Lake Watersheds

Based on Stream
Watersheds Nearest
Lakes & Pond

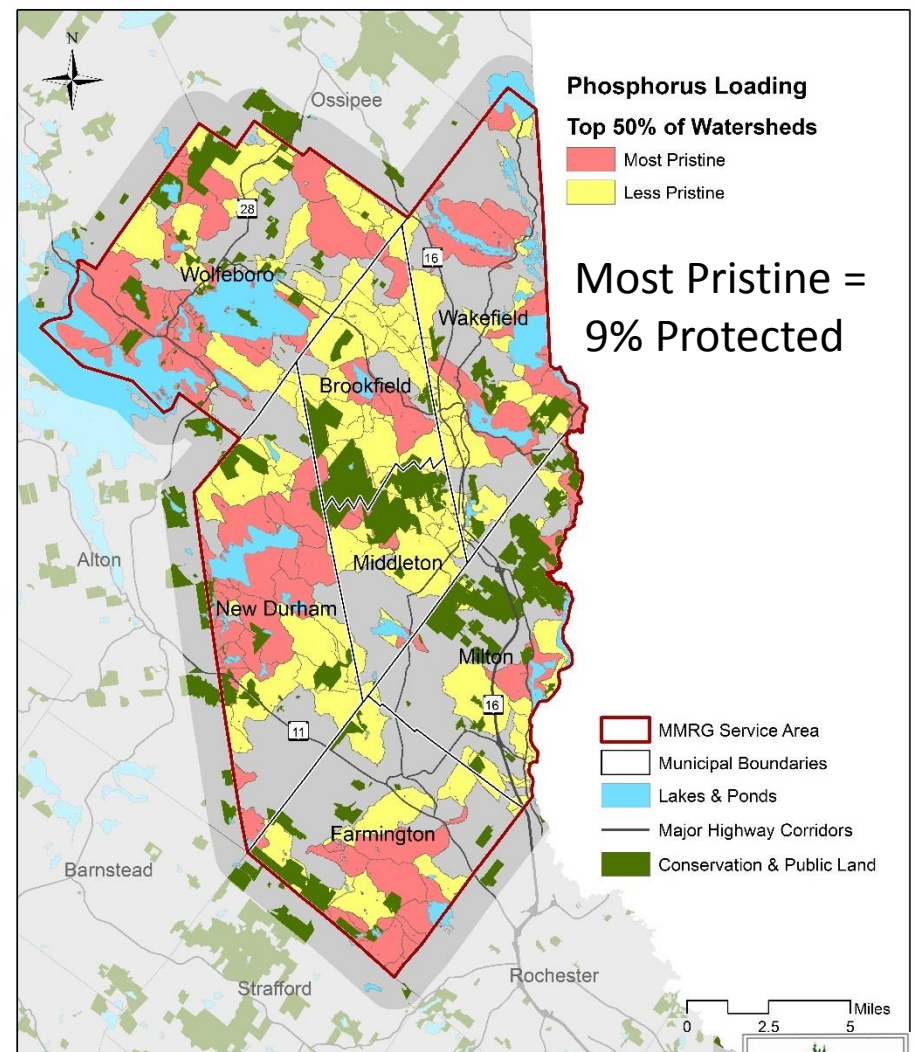
~60,000 Acres
8% Protected



High Quality Stream Watersheds



High Quality Stream Watersheds

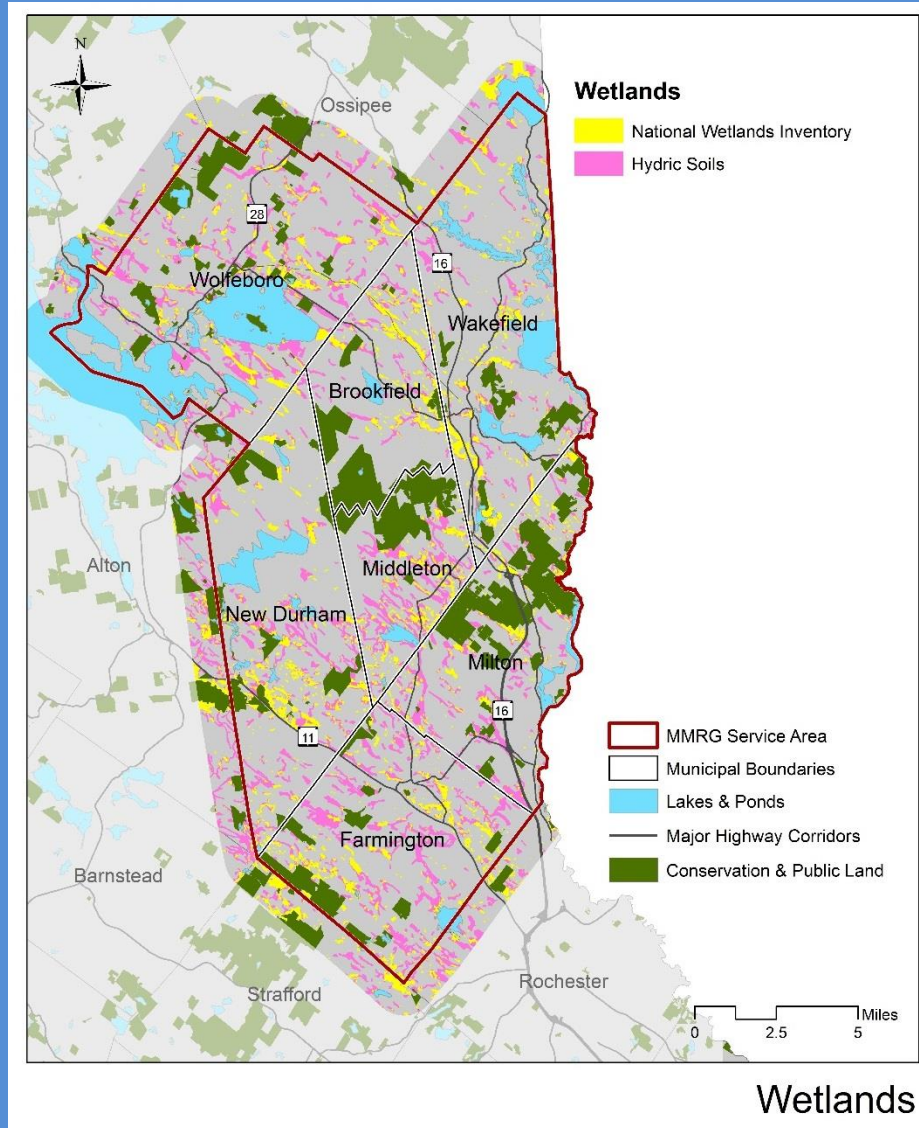


High Quality Stream W

Wetlands

Based on Hydric Soils
and NWI data

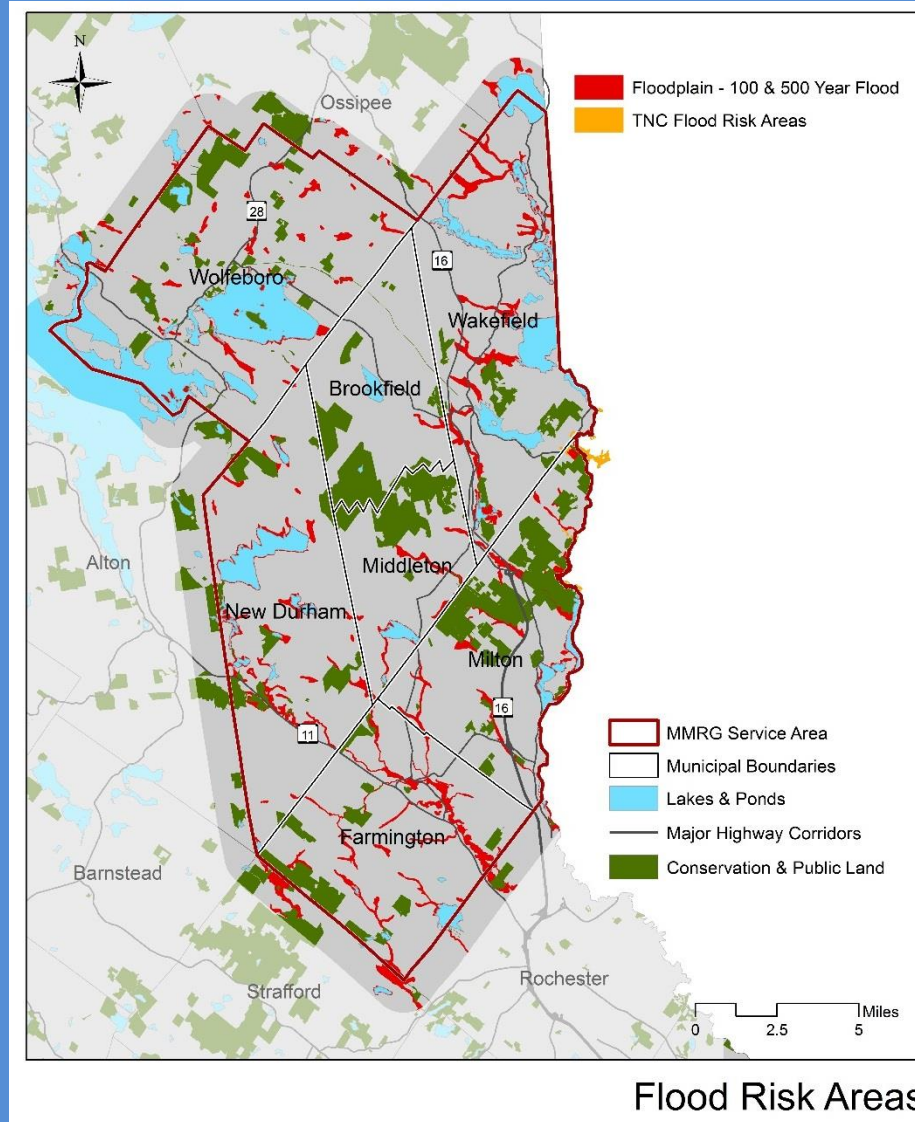
~21,000 Acres
13% Protected



Floodplains

Based on Federal
Flood Insurance Data

~11,000 Acres
19% Protected



NHDES Designated River Corridors

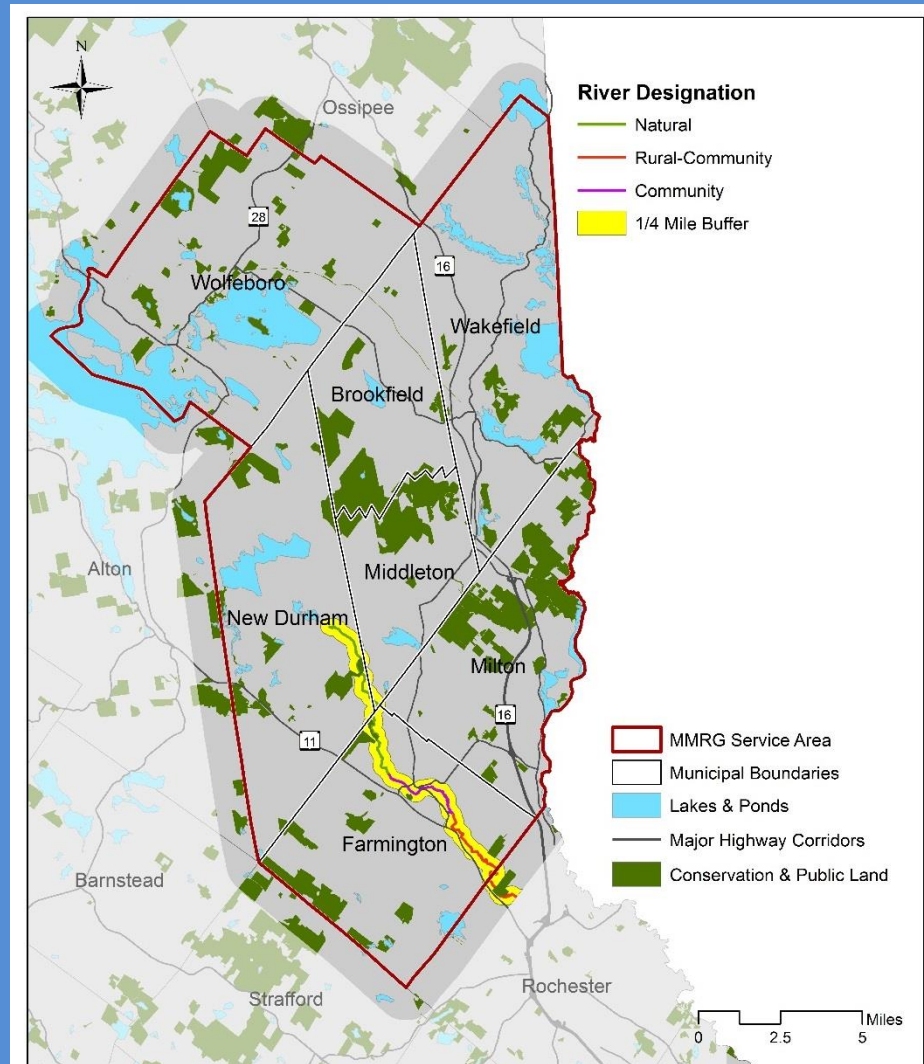
Nominated by Local
Advisory Committee

NHDES Provides
Support & Oversight

1/4 Mile Buffer

3,600 Acres

0.9% Protected



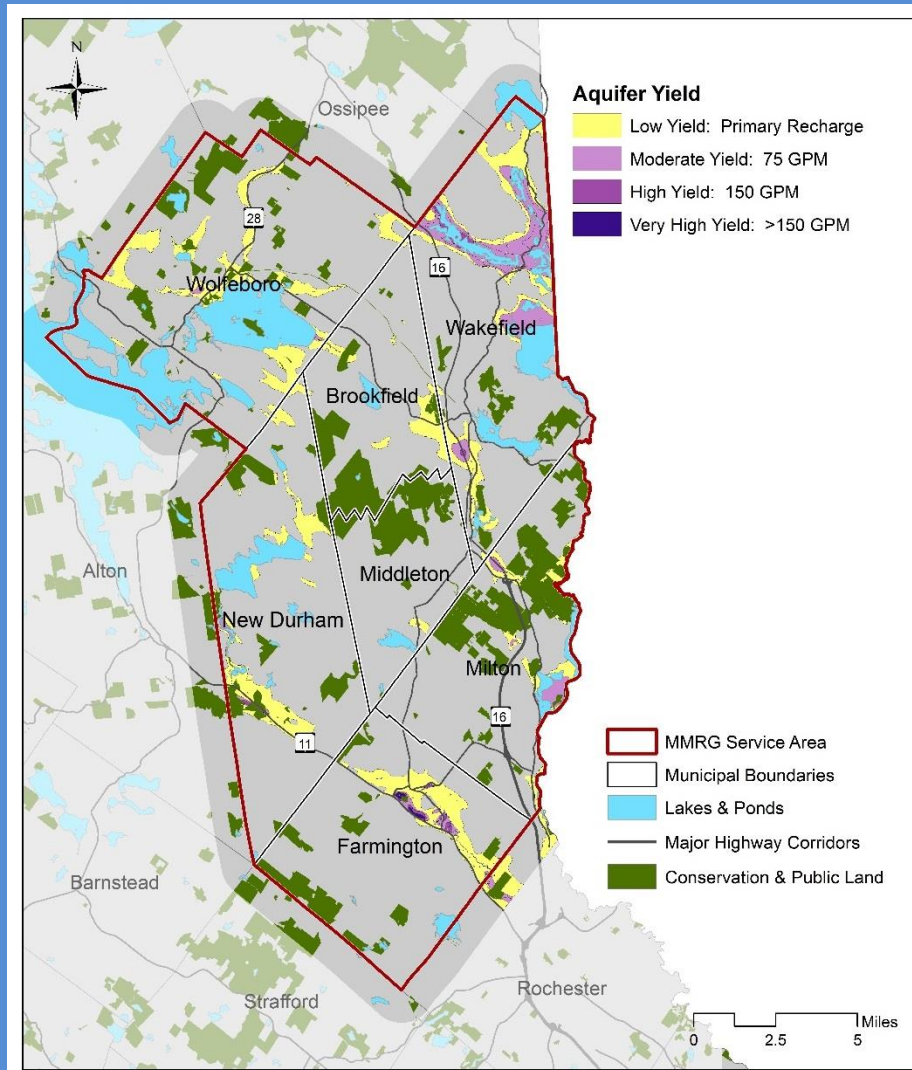
NHDES Designated River Corridors

Aquifer Recharge Area

Sand & Gravel
Aquifer Formations

Primary Source for
Municipal Water

~19,000 Acres
13% Protected



Sand & Gravel Aquifers

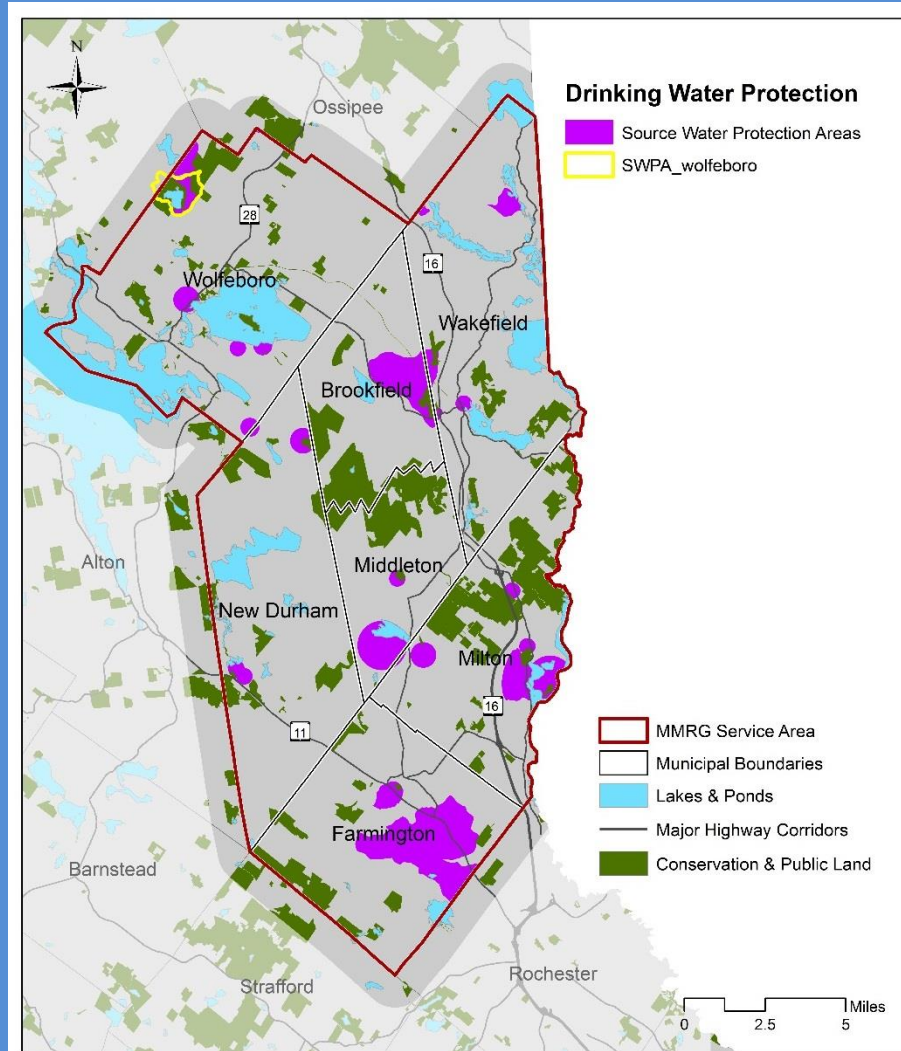
Drinking Water Protection Areas

36% Total Population Served by Wells

12,370 Persons

16% Land Area Already Developed

~11,000 Acres
8% Protected



Community Water Sources

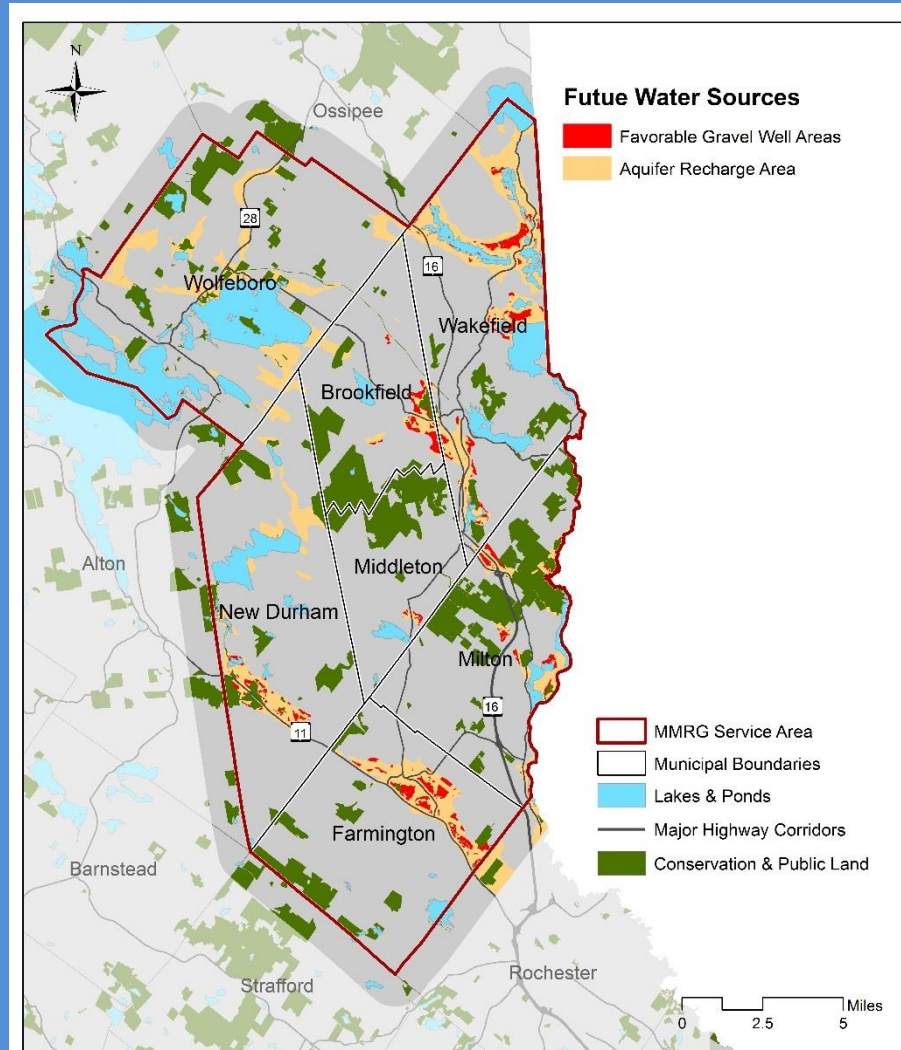
Future Water Supply Areas

Only 11% of Total
Aquifer Area

Unproven Sources

~2,100 Acres

23% Protected



Future Water Sources

Wildlife Habitat Quality

Data = NH Wildlife
Action Plan - 2015

3-Tier Classification

Tier 1 = ~21,000 Ac

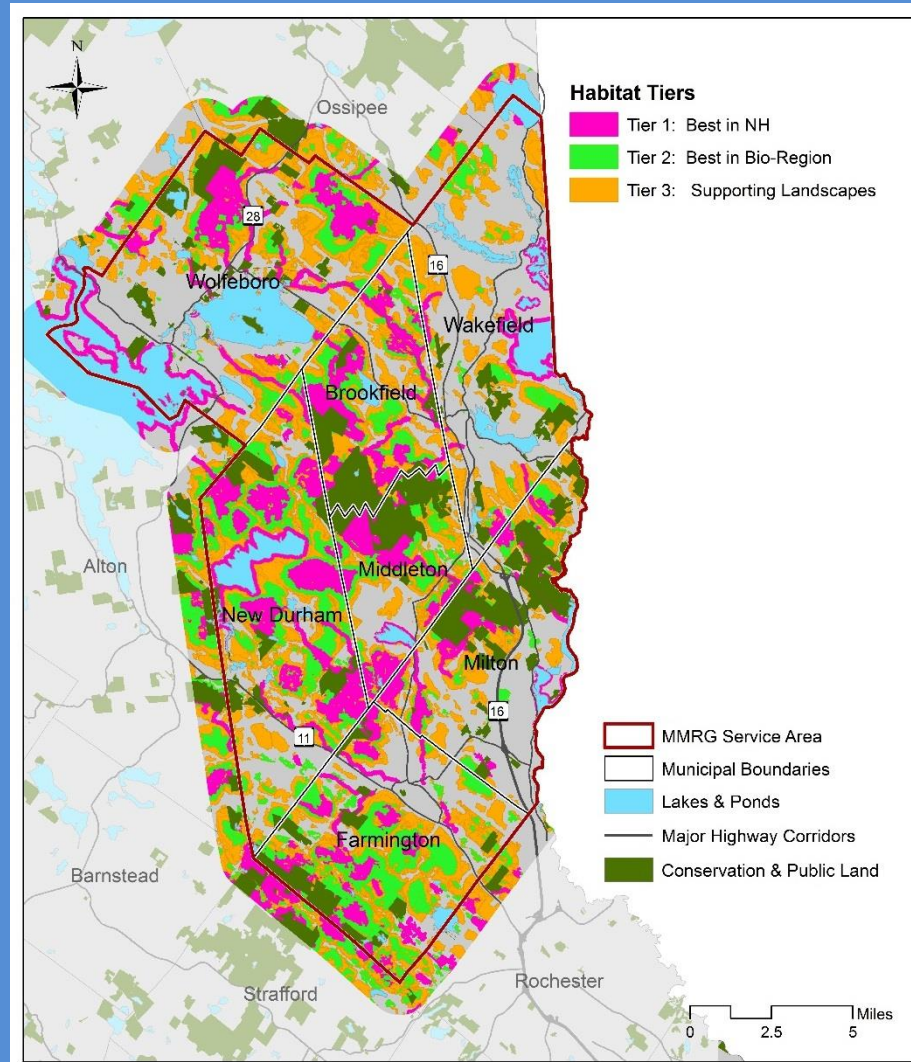
21% Protected

Tier 2 = ~22,000 Ac

14% Protected

Tier 3 = ~40,000 Ac

12% Protected



NHWAP Habitat Quality

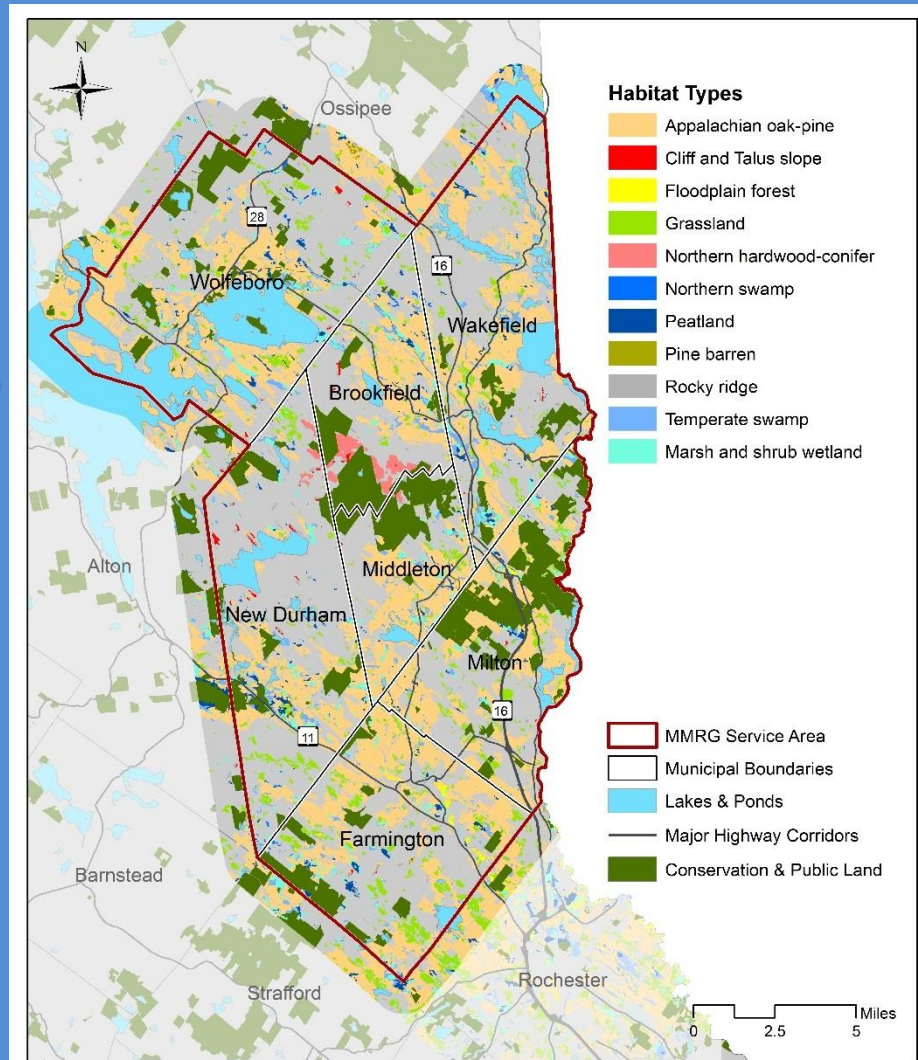
Wildlife Habitat Types

Data = NH Wildlife
Action Plan - 2015

Least Common Types

~65,000 Acres
or 36% of Study Area

14% Protected



NHWAP Uncommon Habitat Types

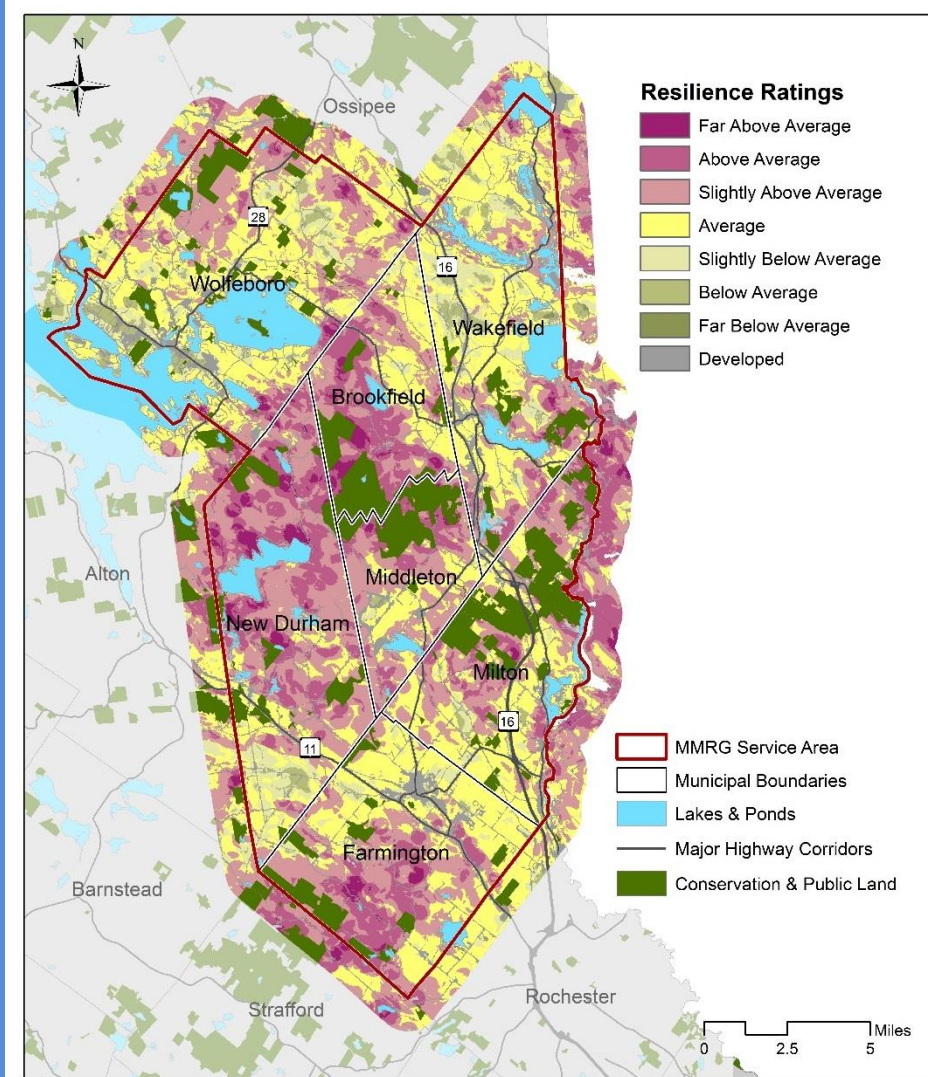
Climate Change Resilience

Data = TNC Eastern
Region Office - 2016

Three Aspects:

- Resilience
- Bio-diversity
- Connectivity

Above-Average
Values Important
To Study



Climate Change Resilience

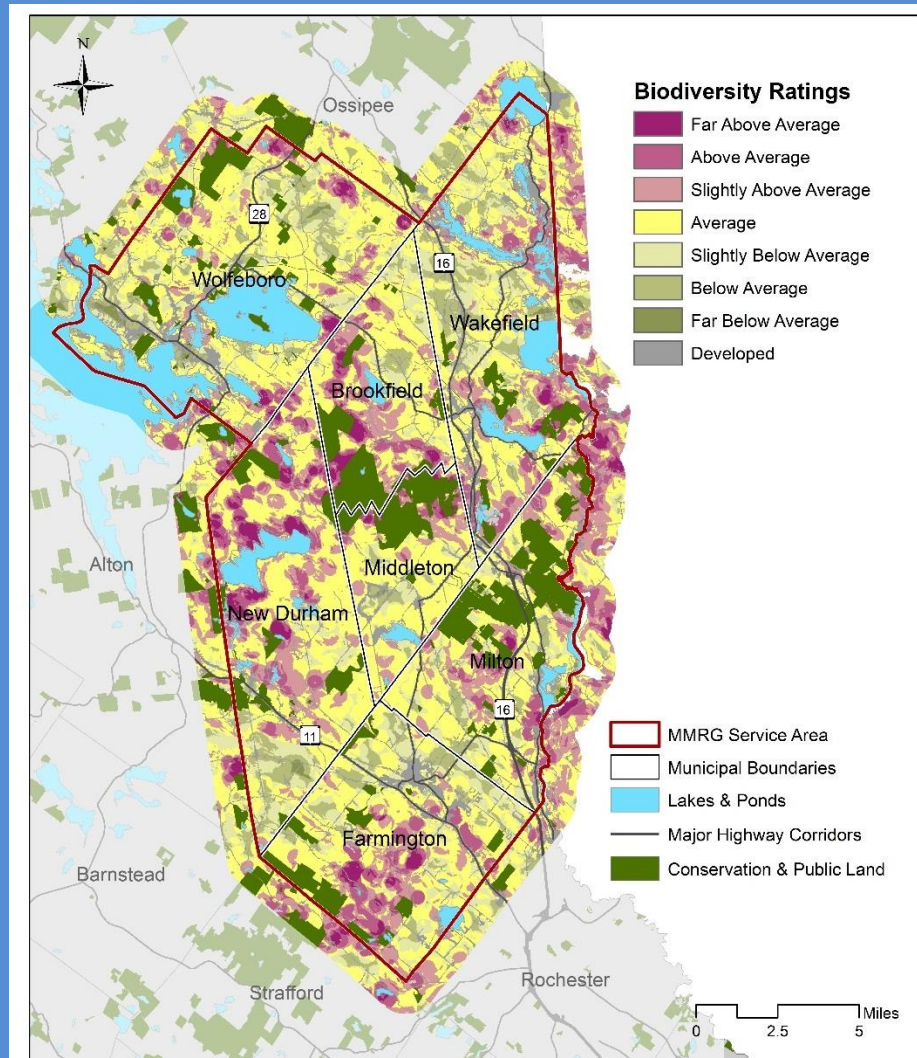
Landscape Diversity

Data = TNC Eastern
Region Office - 2016

Three Aspects:

- Resilience
- Bio-diversity
- Connectivity

Above-Average
Values Important
To Study



Landscape Diversity

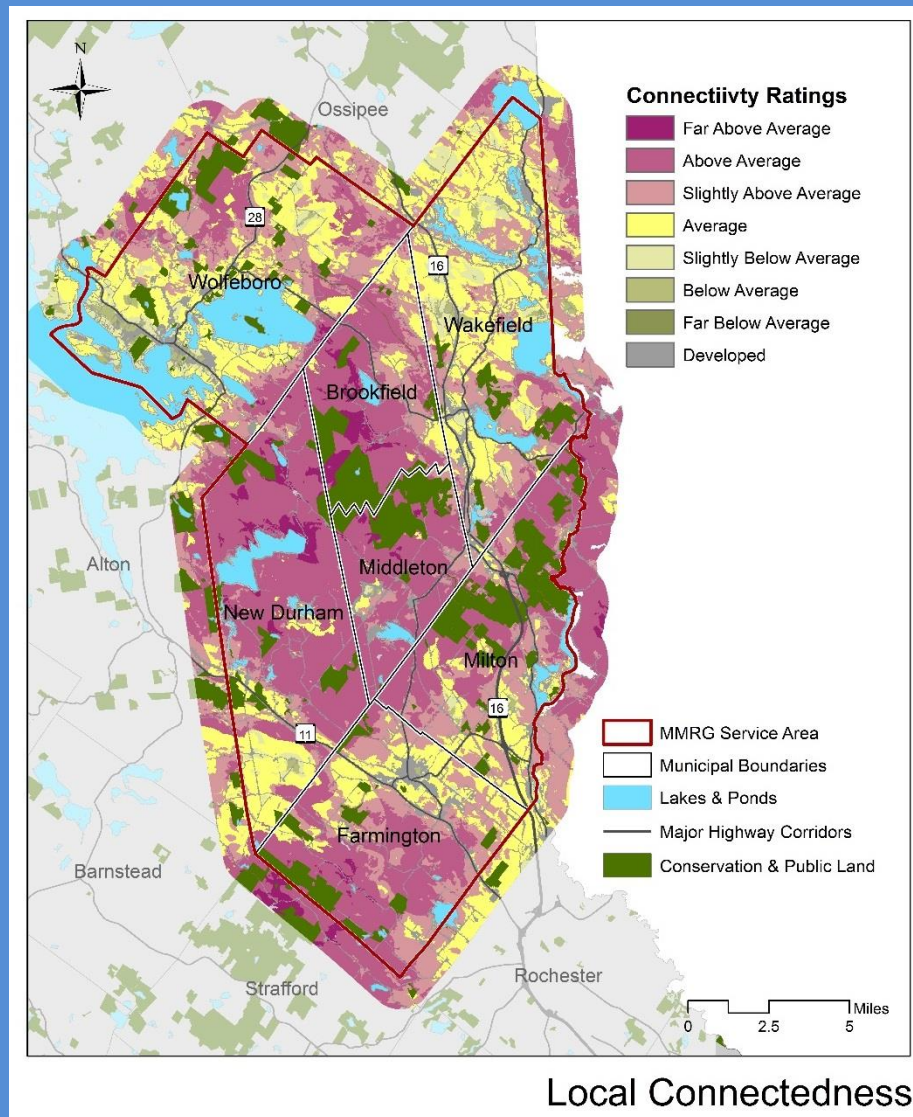
Landscape Connectivity

Data = TNC Eastern
Region Office - 2016

Three Aspects:

- Resilience
- Bio-diversity
- Connectivity

Above-Average
Values Important
To Study



Local Connectedness

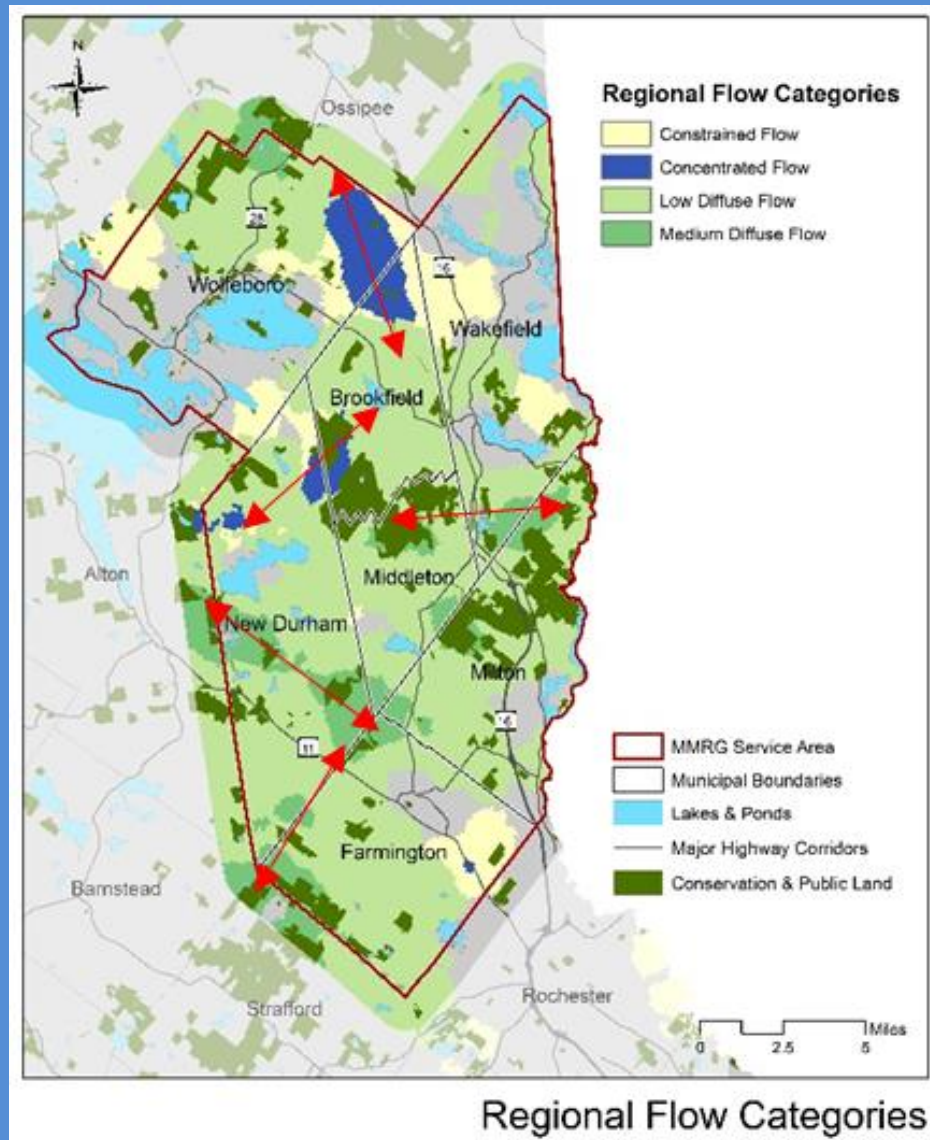
Landscape Connectivity

Data = TNC Eastern
Region Office - 2016

Three Aspects:

- Resilience
- Bio-diversity
- Connectivity

Strong Basis for
Future Greenways



Steep Slopes

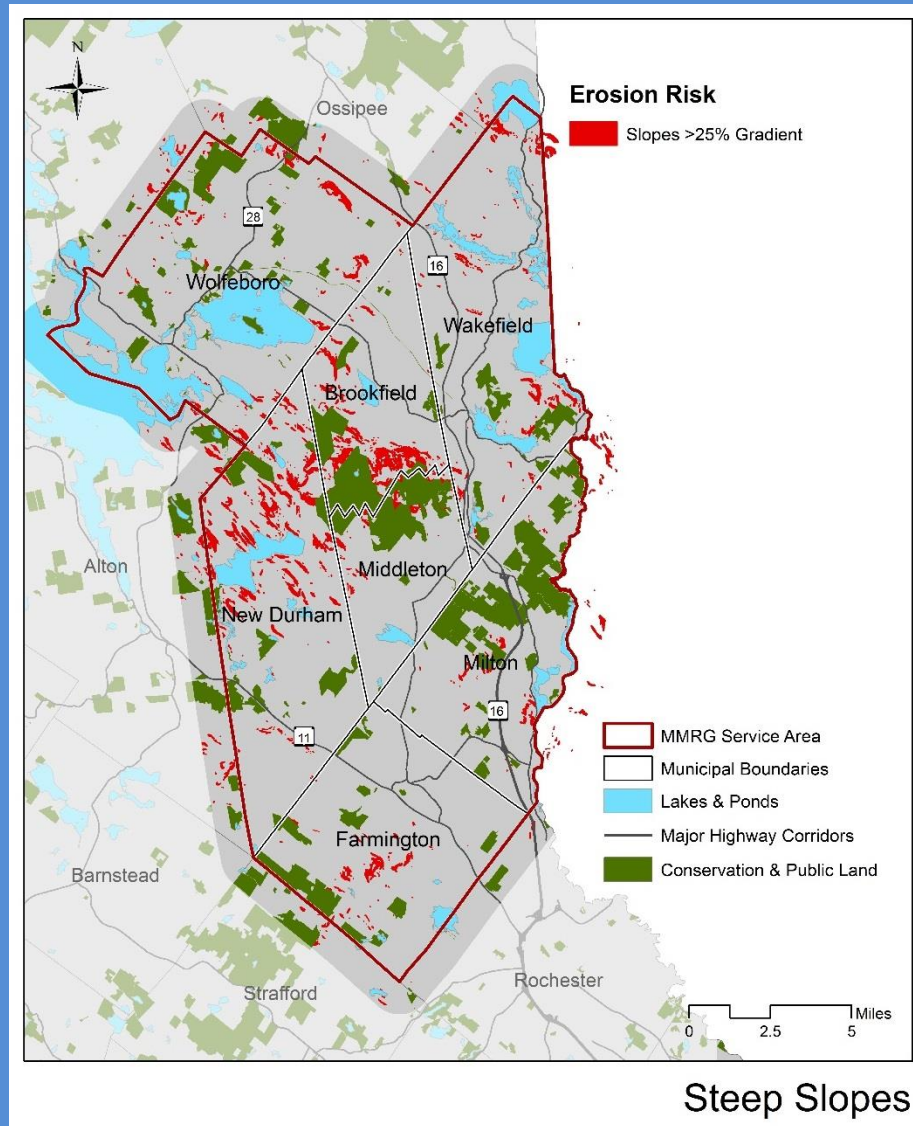
Slopes >25% Grade

Habitat Values

Not Suitable for
Development

~6,300 Acres

29% Protected



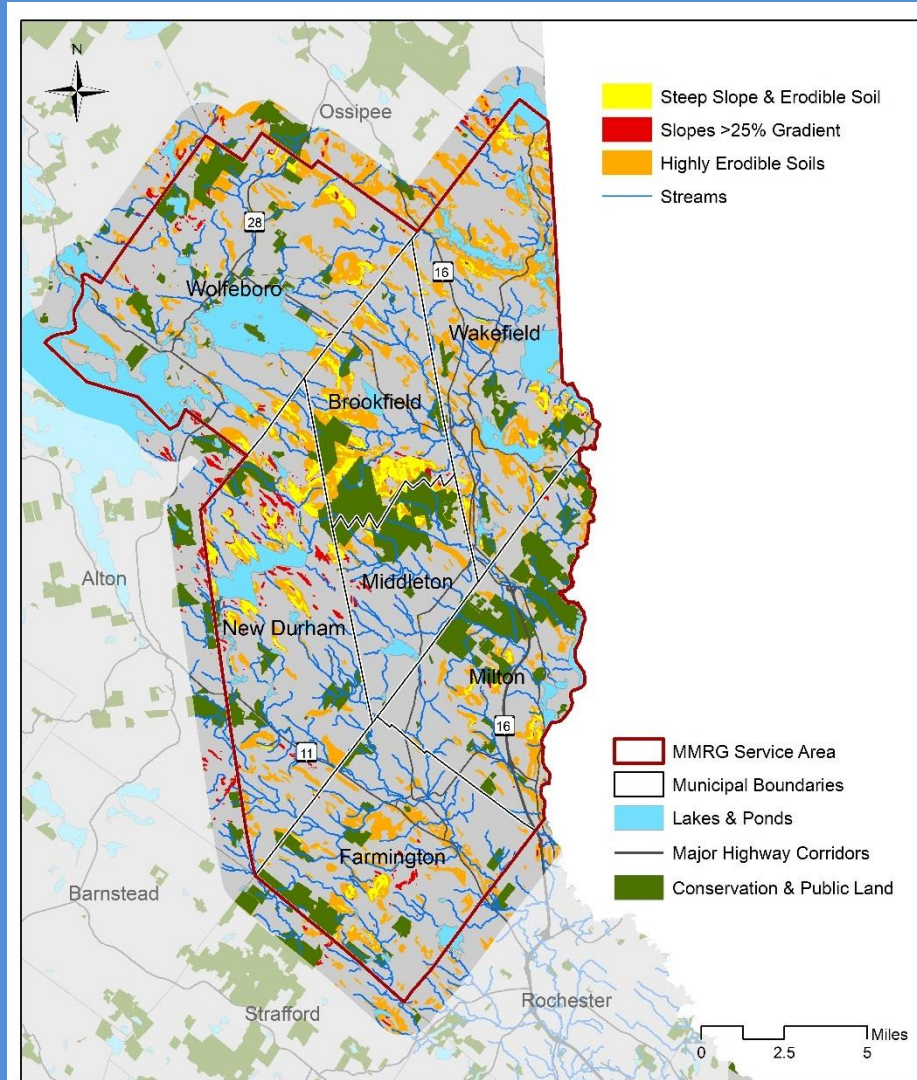
Highly Erodible Soils

NRCS Soils Rating

Sediment & Nutrient
Yield if Disturbed

80% of Erodible Soils
are on Steep Slopes

~27,000 Acres
19% Protected



Elevated Erosion Risk

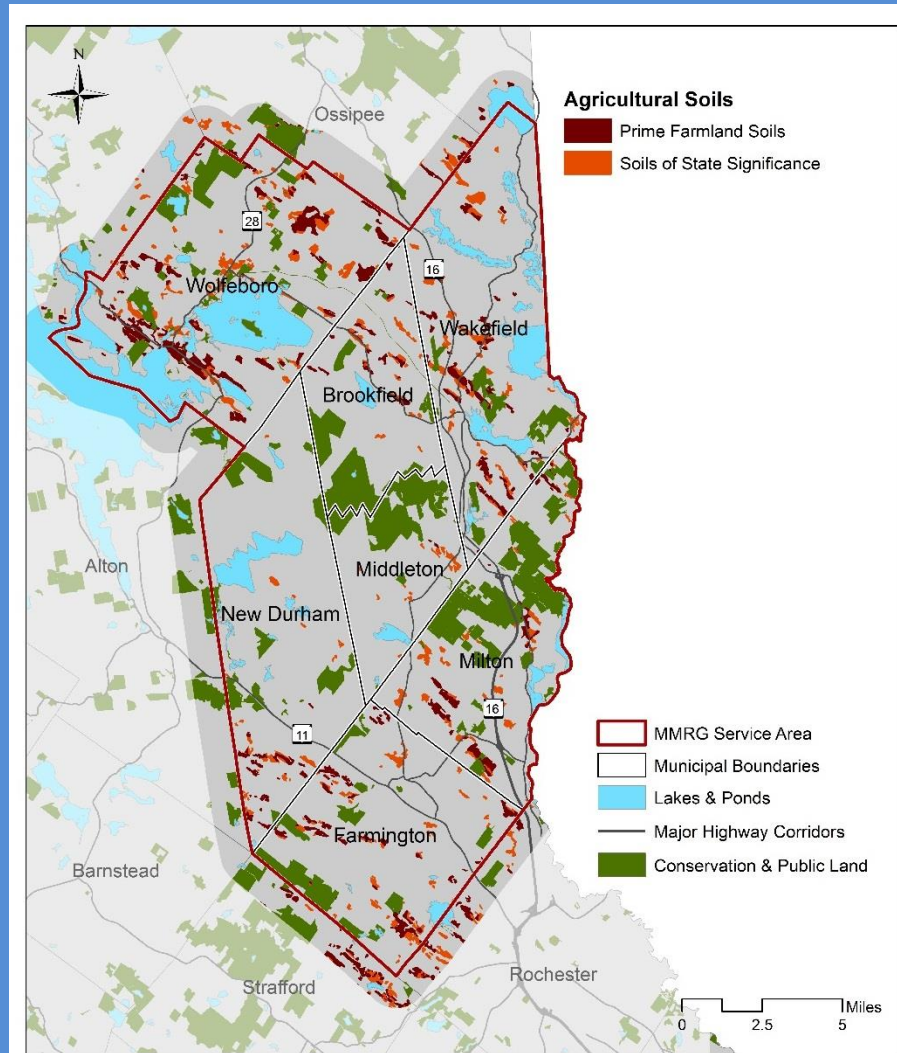
Prime Agricultural Soils

NRCS Soils Rating

Only ~9,100 Acres
or 5% of Study Area

- 50% of Ag Soils Forested Presently
- 20% Already Developed
- 20% Farmed

5% Protected



Prime Agricultural Soils

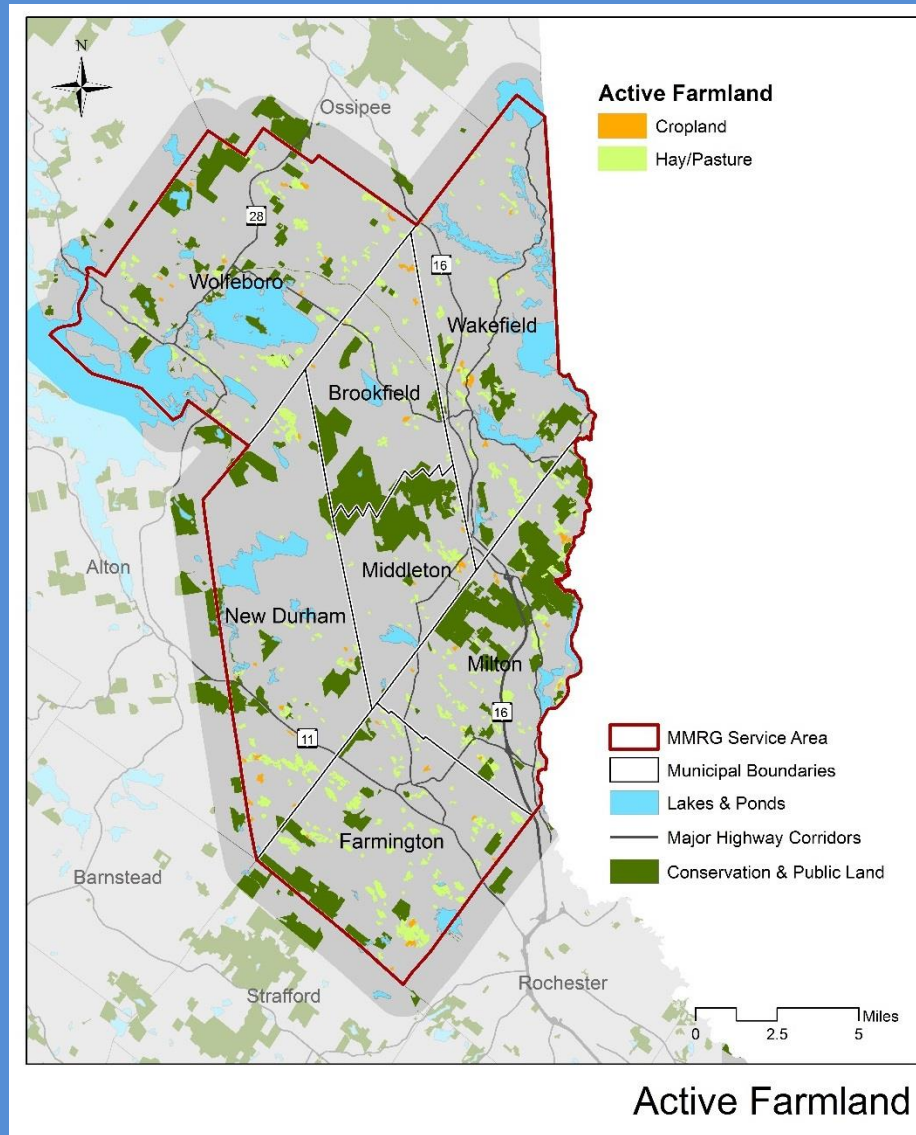
Active Farmland

Based on National
Land Cover Data

~5,200 Acres
or 3% of Study Area

510 Acres Cropland
~4,800 Acres
Hay & Pasture

438 Acres Protected
8% of Farmed Land

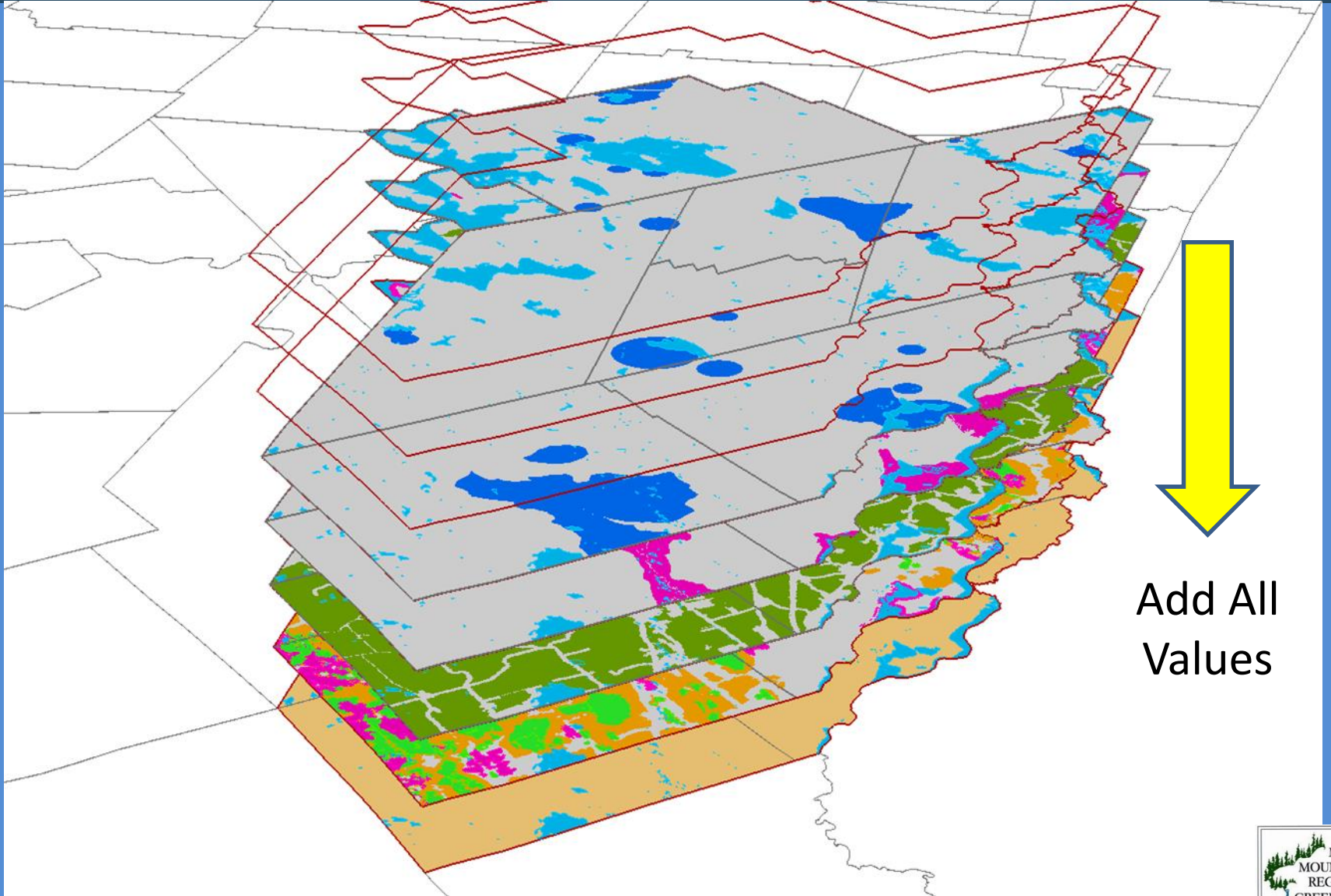


Co-Occurrence Mapping

How Does It Work?



Co-Occurrence Mapping



Add All
Values

Voting Scores in Rank Order

Delphi Voting Scores in Rank Order

| Resource Feature | Average Score |
|---|---------------|
| Critical Lake Watersheds | 7.3 |
| NHWAP Habitat Quality - Tier 1 Best in State | 6.3 |
| Climate Change Resilience >Average Value | 6.1 |
| Drinking Water Protection Areas | 5.0 |
| Riparian Buffers | 4.8 |
| High Quality Stream Watersheds - Best 25% Phosphorus | 4.7 |
| Blocks 5,000 - 10,000 Acres | 4.6 |
| NHWAP Habitat Quality - Tier 2 Best in Region | 4.6 |
| Prime Agricultural Soils | 4.6 |
| Local Connectedness >Average Value | 4.5 |
| Wetlands (Hydric Soils & National Wetlands Inventory) | 4.3 |
| Blocks 50 - 500 Acres | 4.1 |
| Blocks 1,000 - 5,000 Acres | 4.0 |
| Sand & Gravel Aquifers | 4.0 |
| Uncommon Habitat Types | 3.9 |
| Landscape Diversity >Average Value | 3.4 |
| Active Agricultural Land | 3.3 |
| Favorable Gravel Well Areas | 2.6 |
| Blocks >10,000 Acres | 2.5 |
| High Quality Stream Watersheds - Best 25% Nitrogen | 2.2 |
| Blocks 500 - 1,000 Acres | 2.2 |
| Highly Erodible Soils | 2.1 |
| NHWAP Habitat Quality - Tier 3 Supporting Landscapes | 1.9 |
| Floodplains | 1.8 |
| NHDES Designated River Corridor | 1.6 |
| Slopes >25% | 1.6 |
| Prime 1 Productive Forest Soils (Combined) | 1.6 |
| Prime 2 Productive Forest Soils (Combined) | 0.4 |

Co-Occurrence Mapping

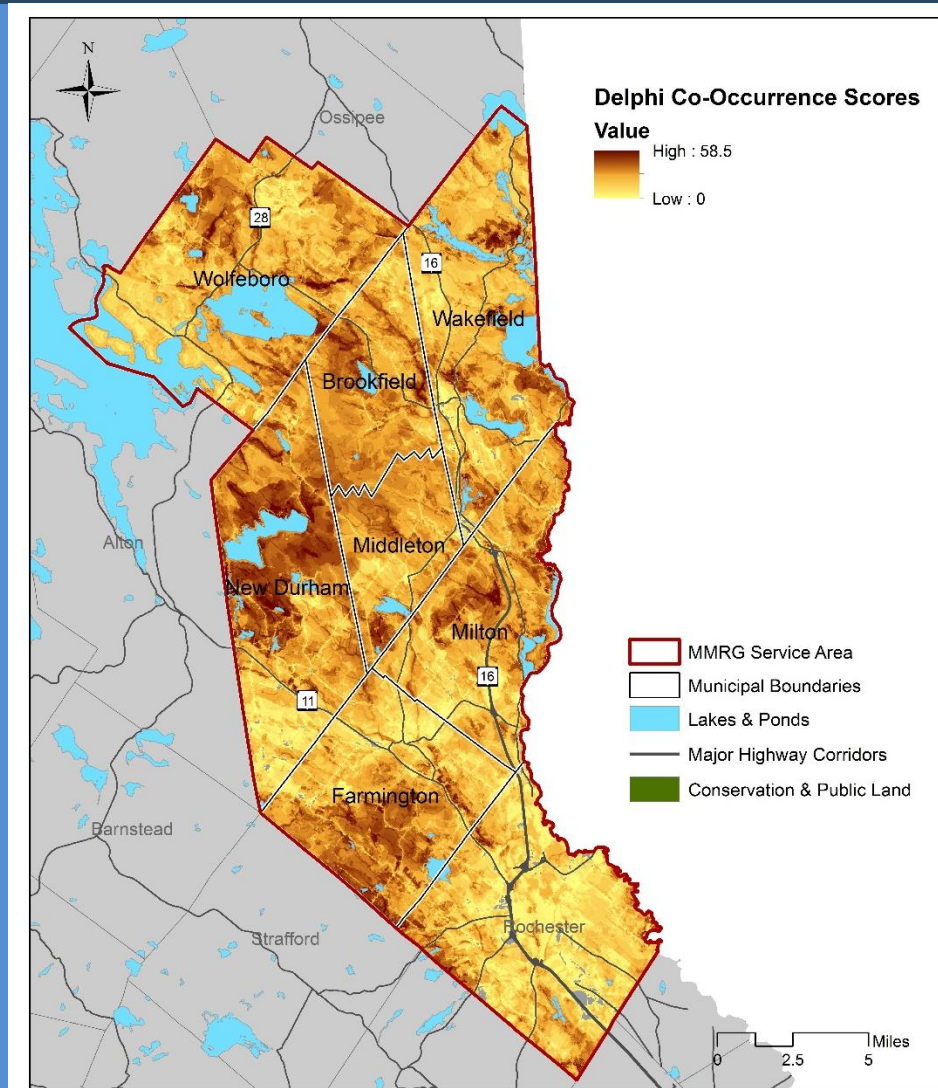
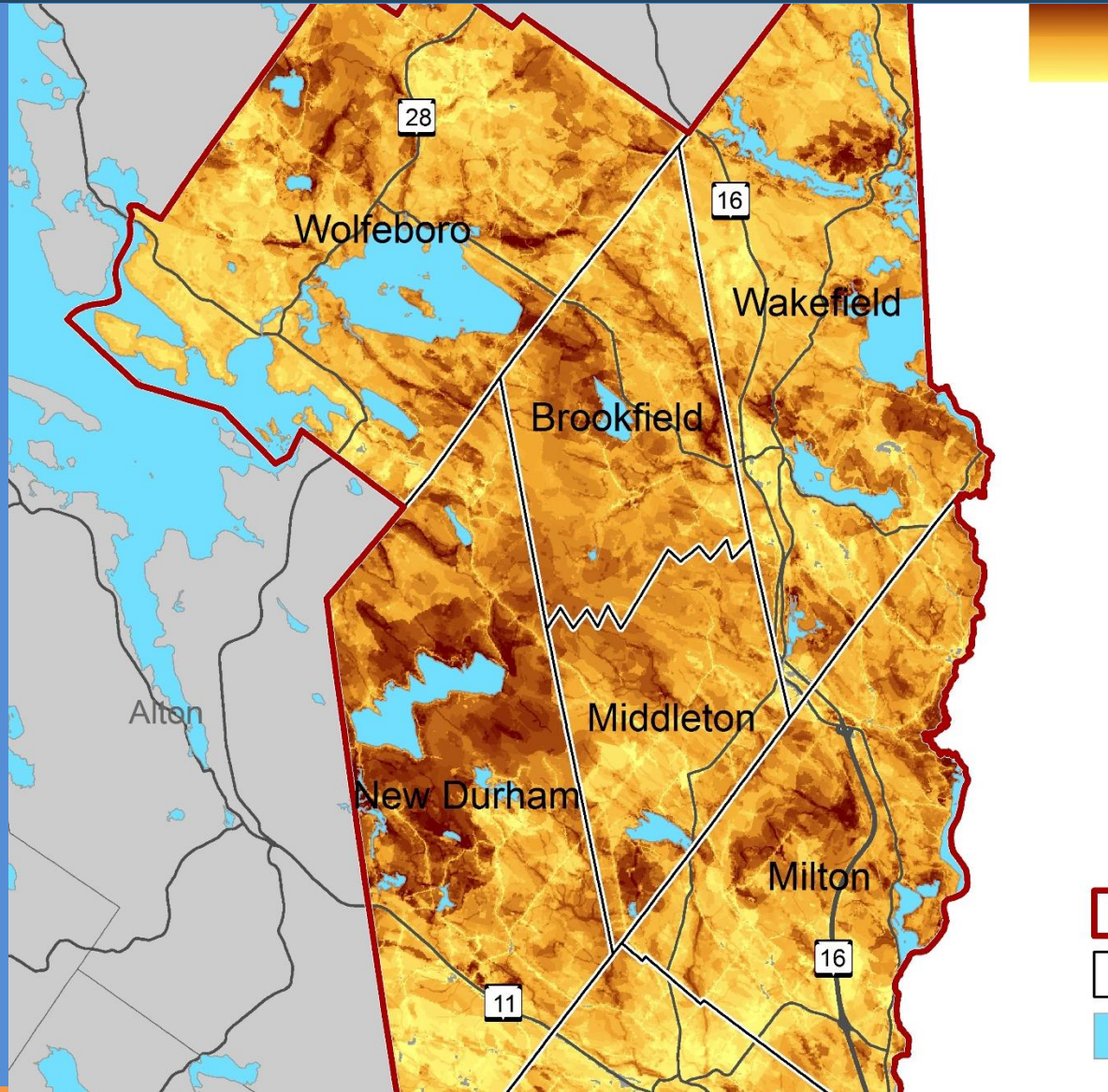


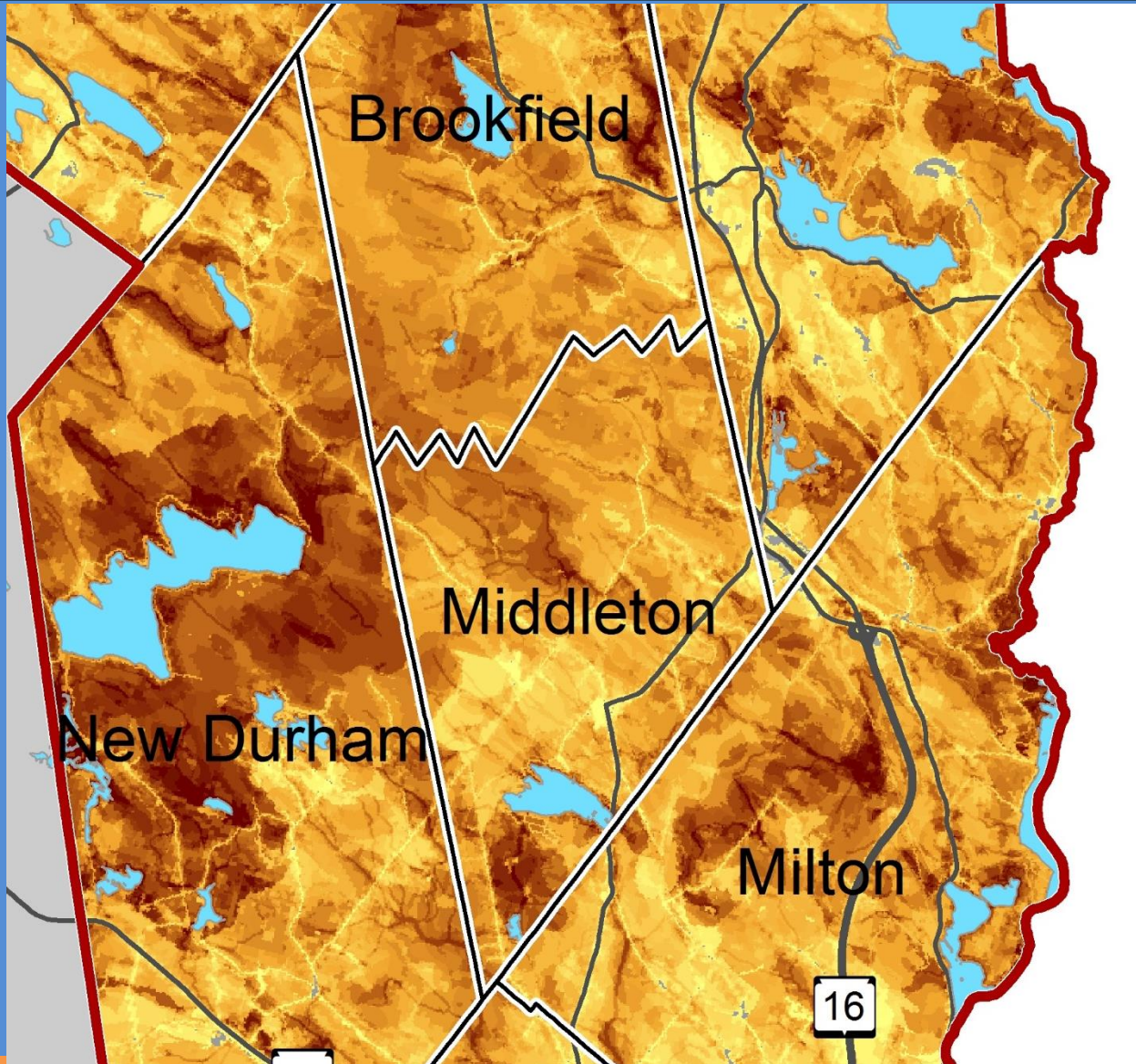
Figure 1

Stretched Classification

Co-Occurrence Mapping



Co-Occurrence Mapping



Co-Occurrence Mapping

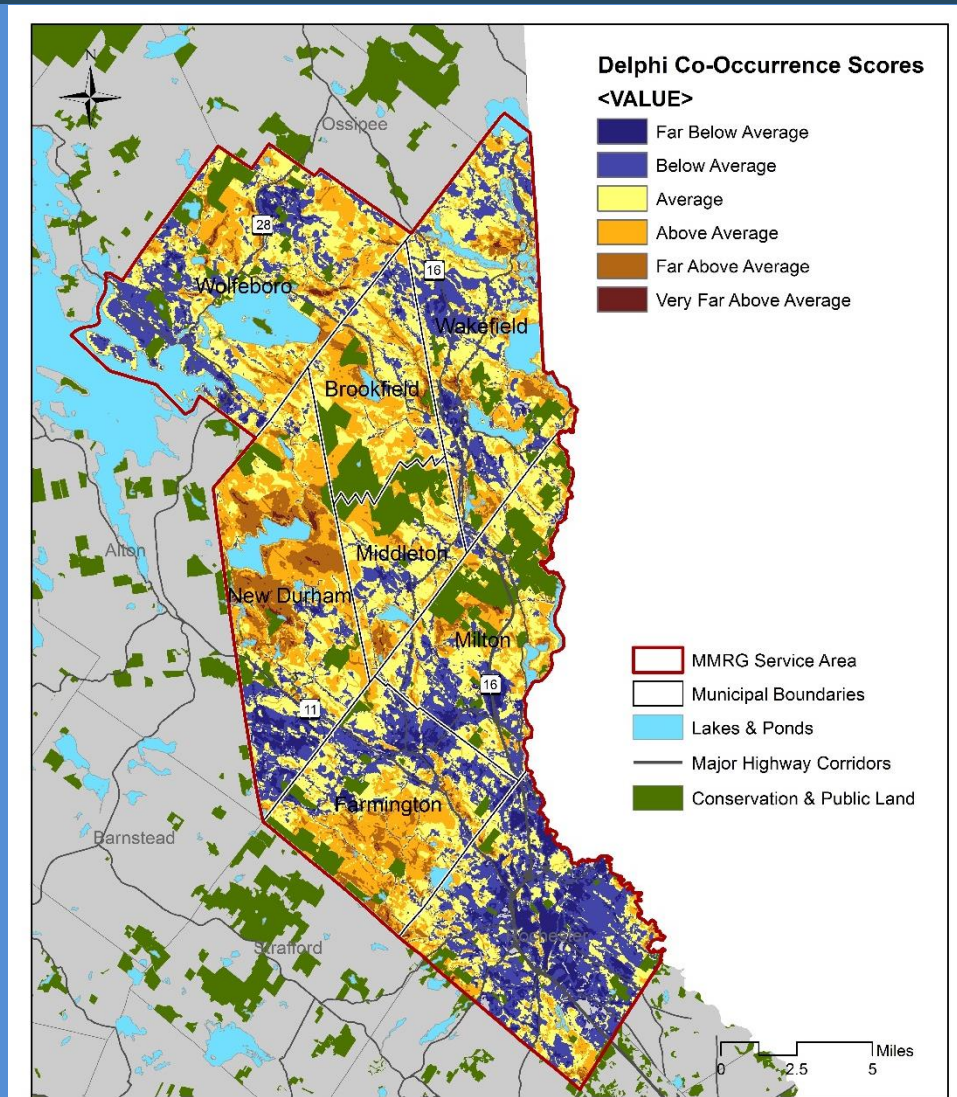


Figure 5

Standard Deviation Classification

Resource Theme Mapping

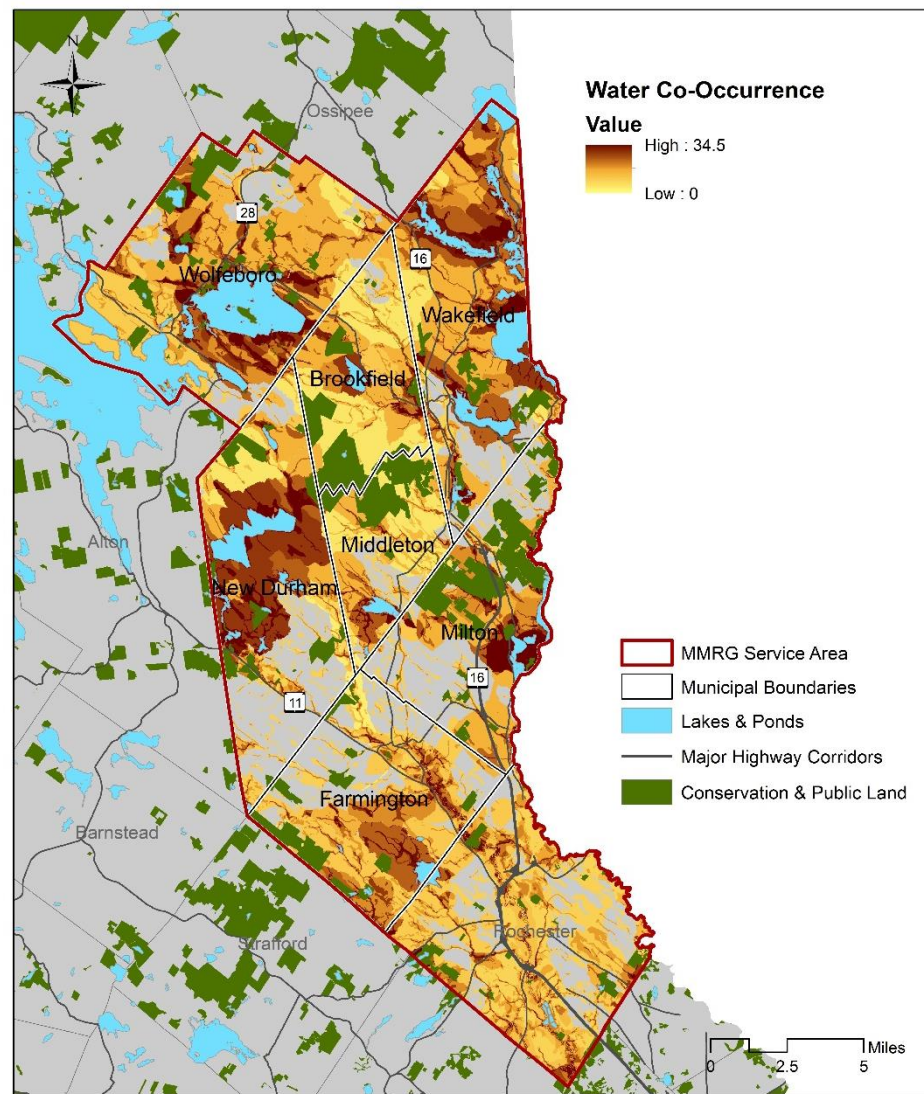


Figure 10

Water Resources

Resource Theme Mapping

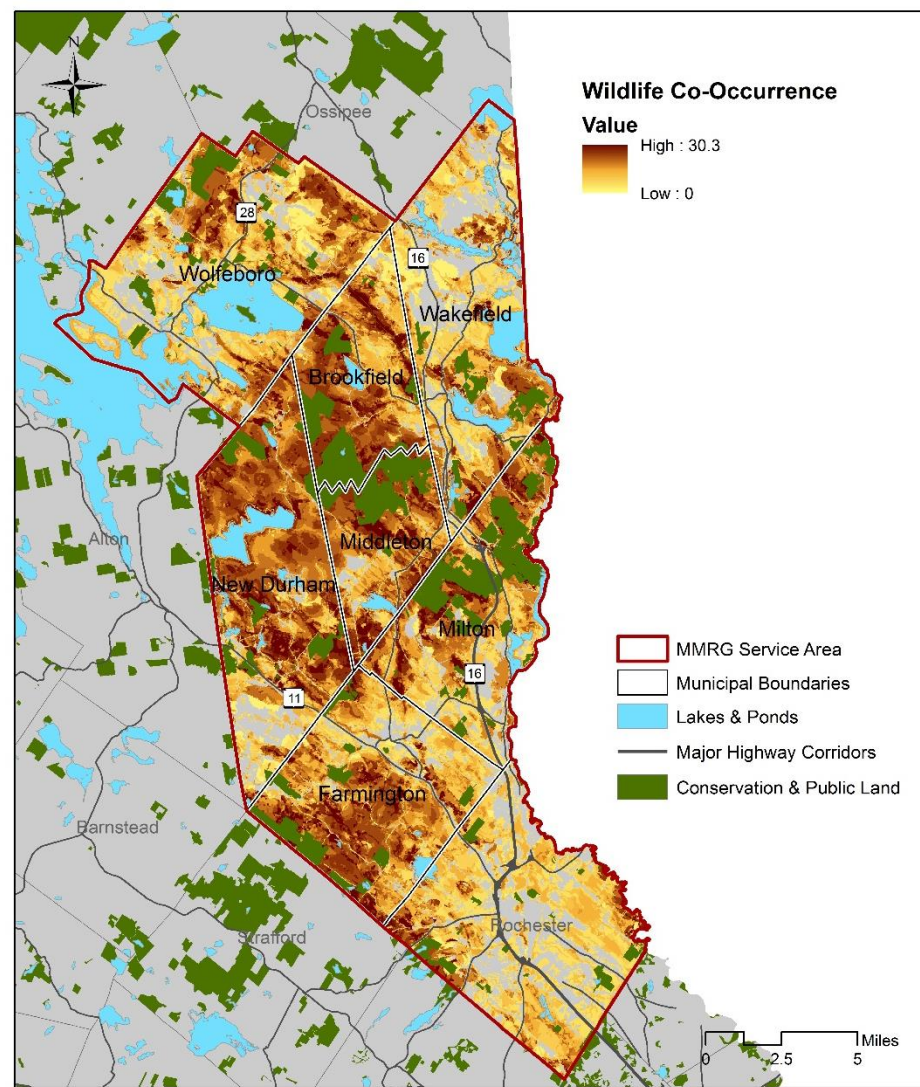
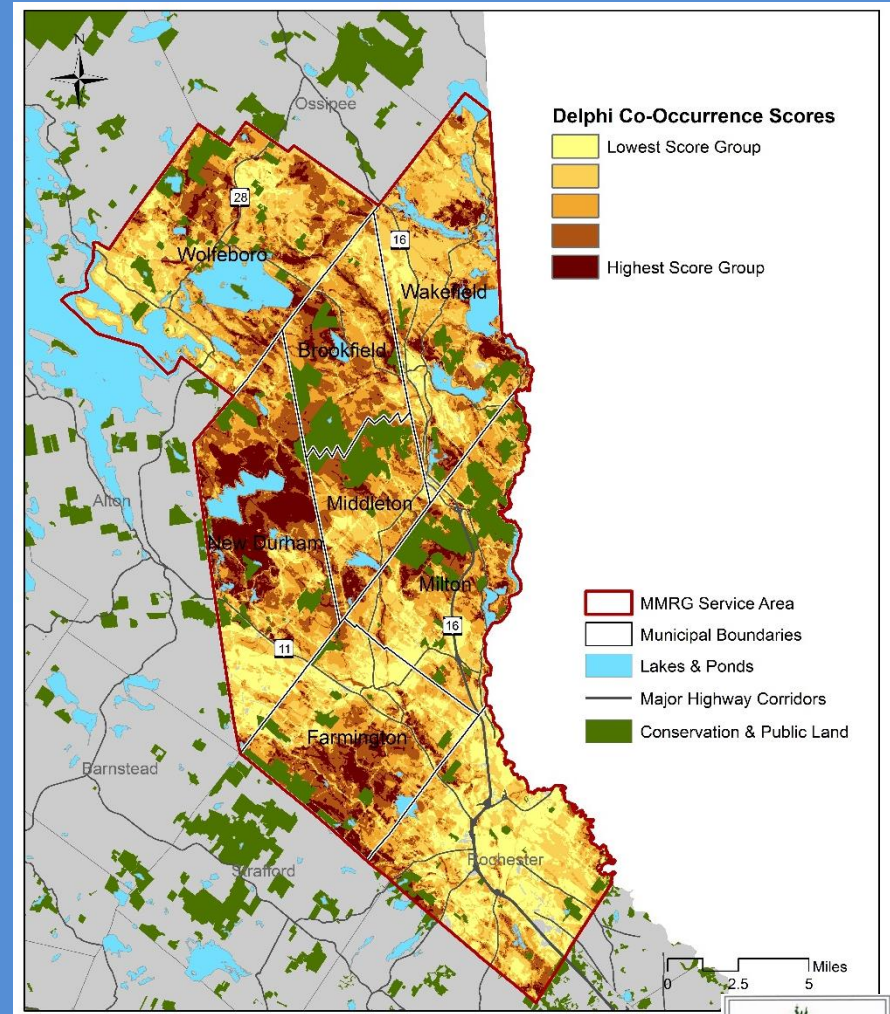


Figure 11

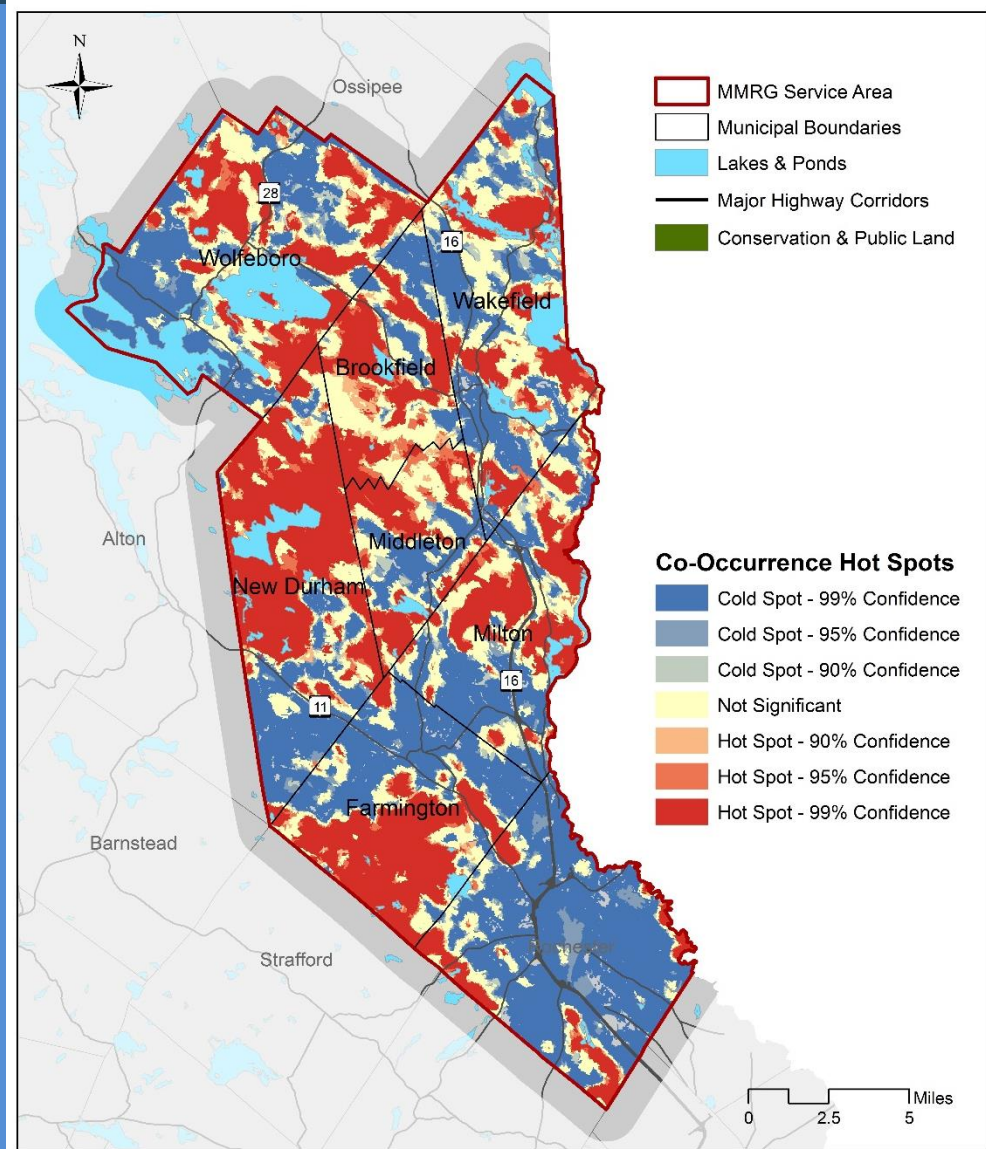
Wildlife Resources

Hot Spots Analysis

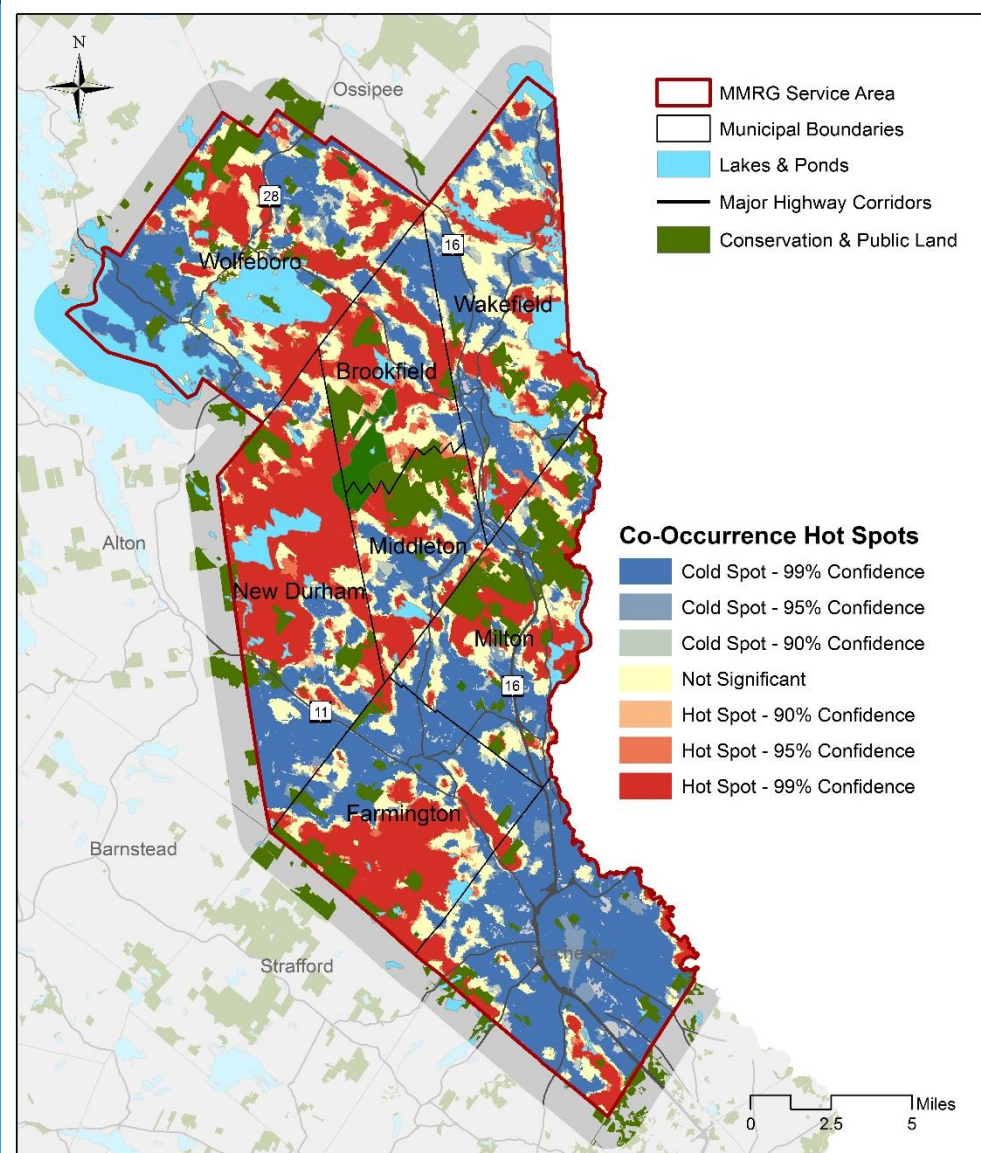
- Runs directly from co-occurrence values
- Examines every grid cell polygon value
- Looks for clustered score patterns
- To be a “hot spot”, a polygon will have a high value AND be surrounded by other high values
- Output is rated for statistical significance



Hot Spots Analysis

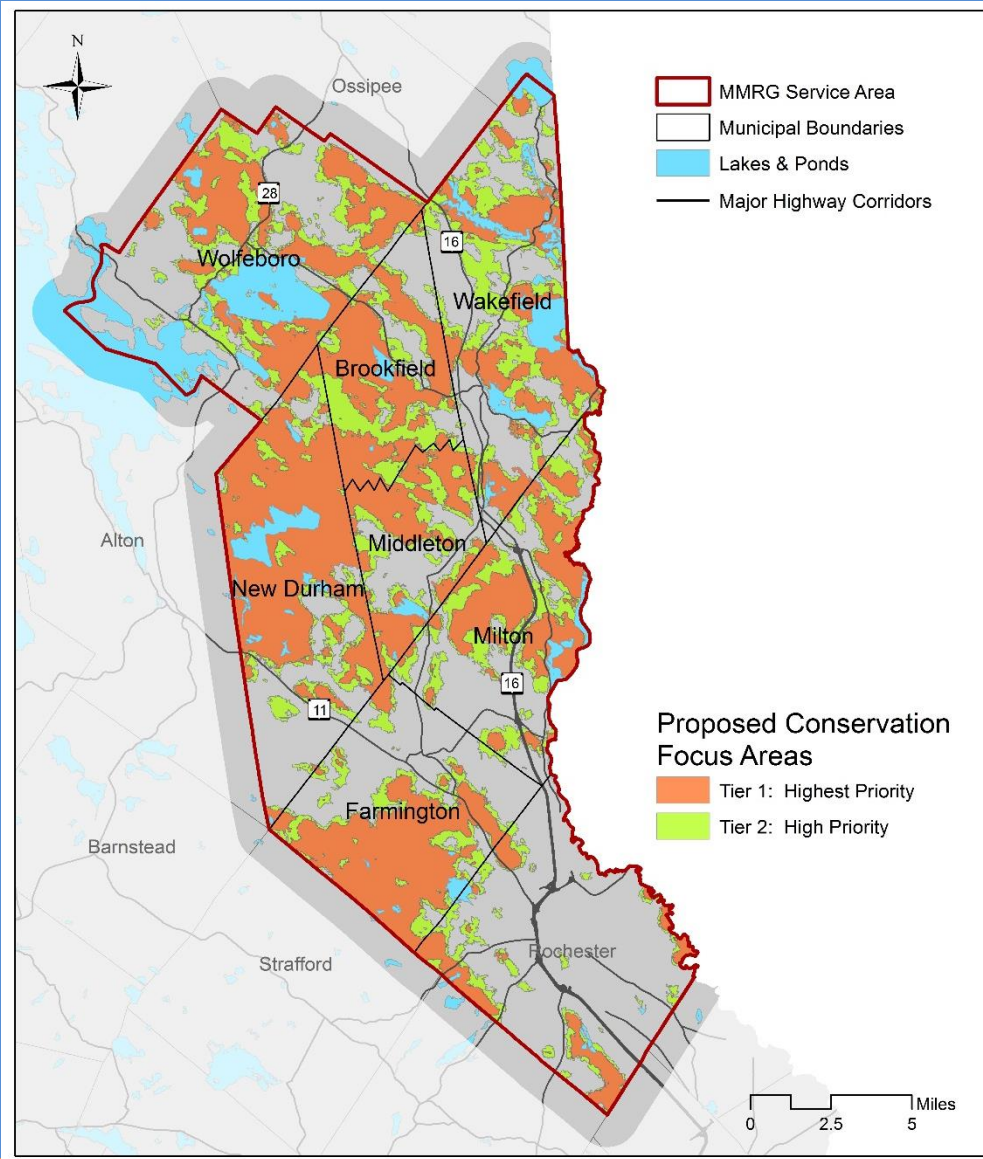


Hot Spots Analysis

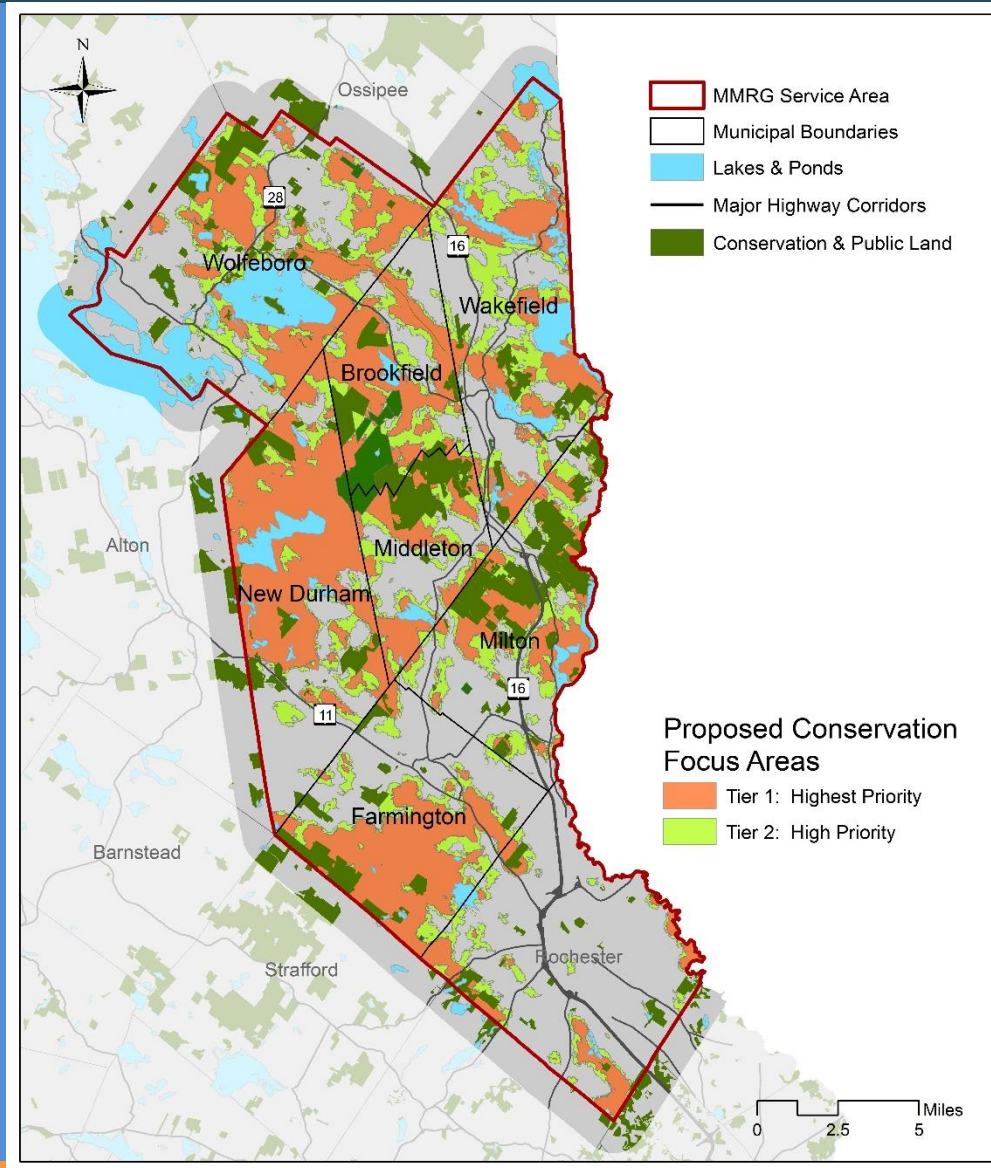


Refined Hot Spots Analysis

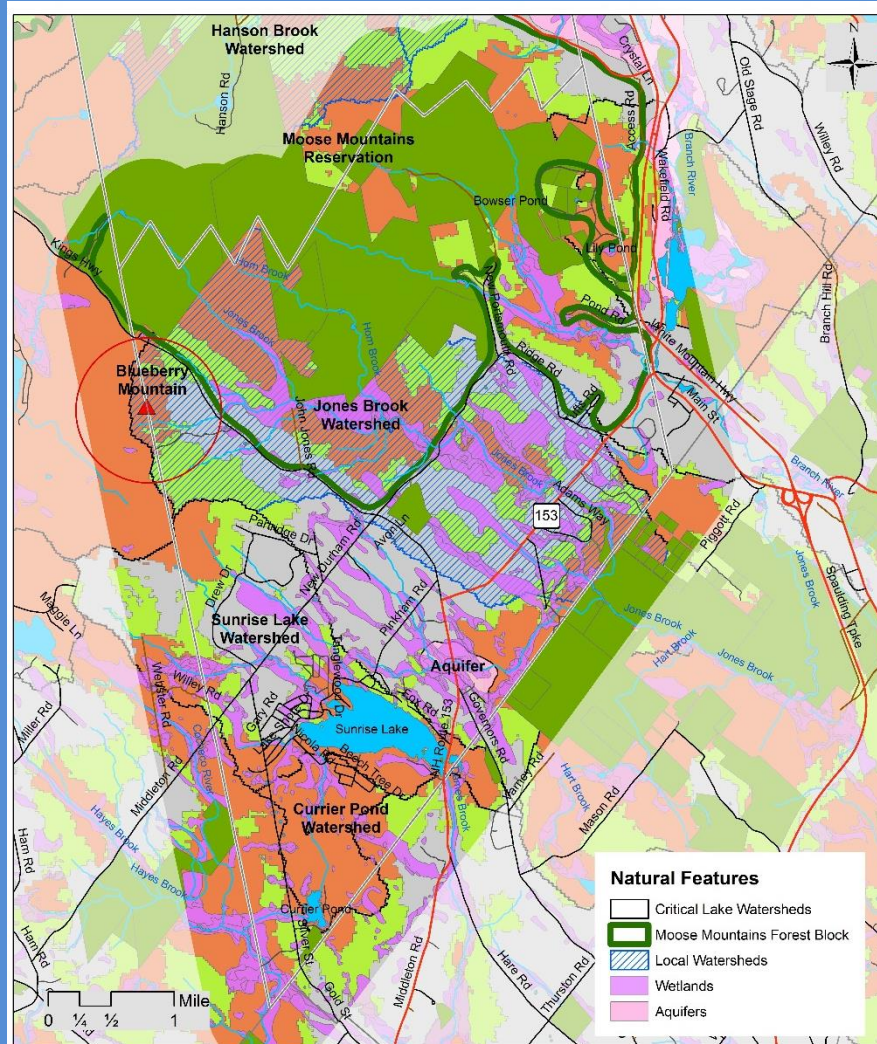
Tier 1: 37%
Tier 2: 19%



Refined Hot Spots Analysis



Place-based Local Values



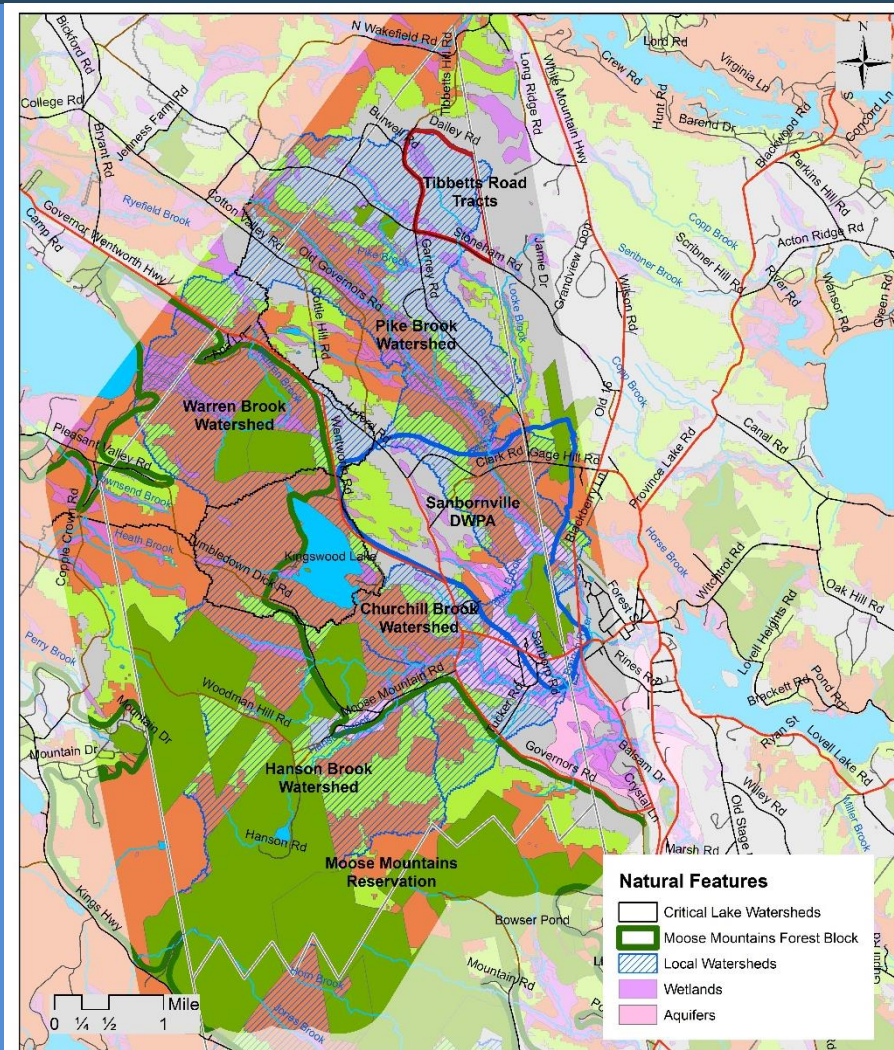
MMRG Conservation Focus Areas

- Conservation & Public Lands
- Tier 1: Highest Priority
- Tier 2: High Priority

Local Conservation Priorities Town of Middleton



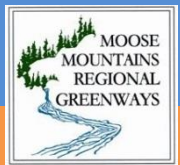
Place-based Local Values



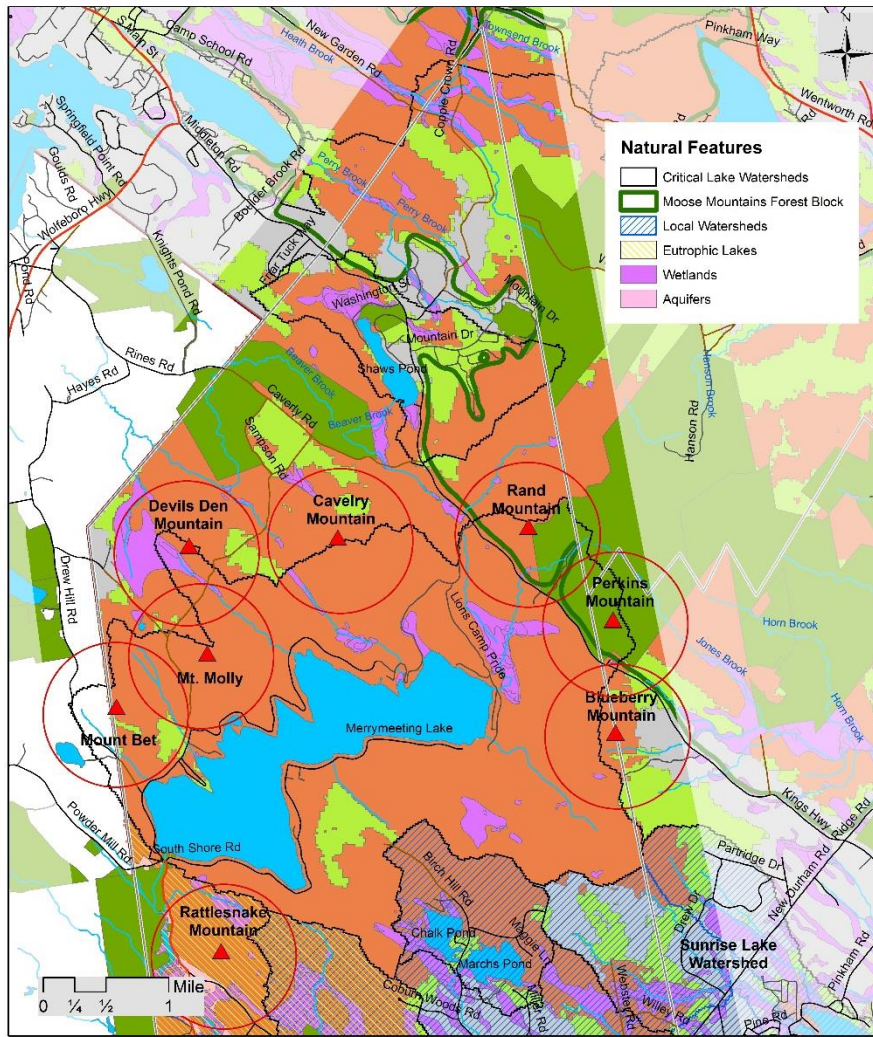
MMRG Conservation Focus Areas

- Conservation & Public Lands
- Tier 1: Highest Priority
- Tier 2: High Priority

Local Conservation Priorities Town of Brookfield



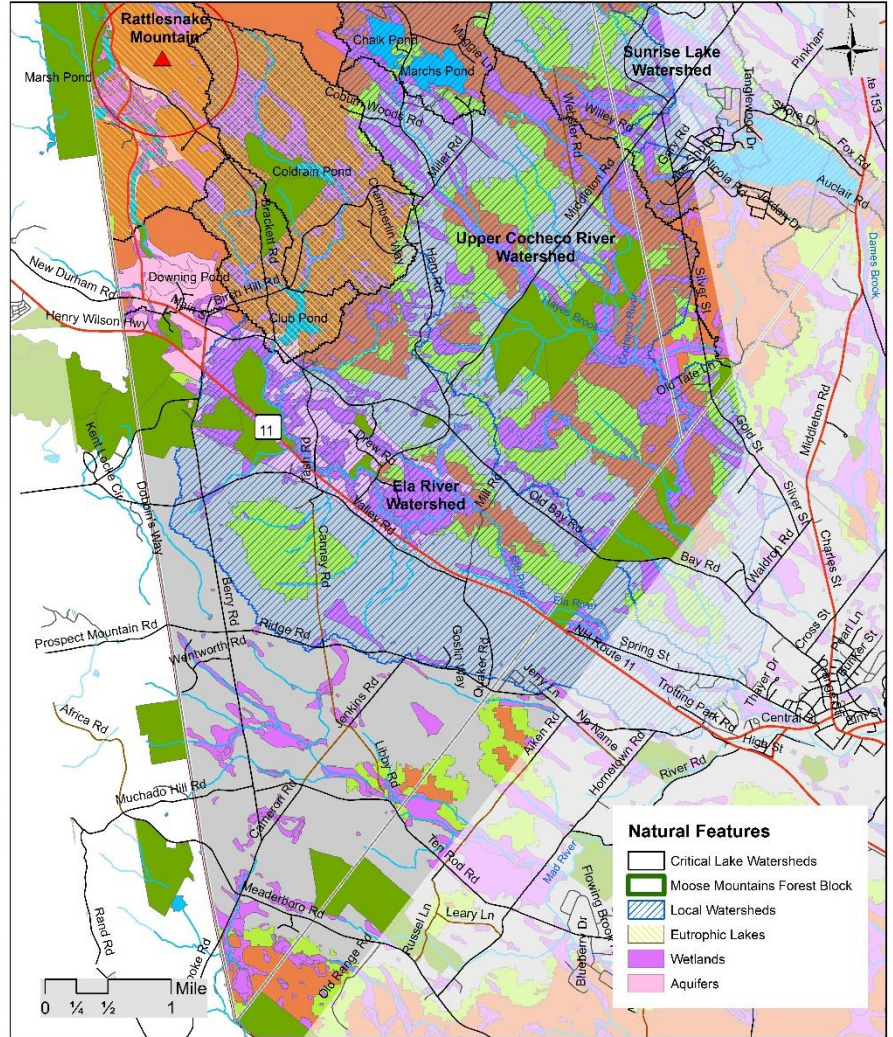
Place-based Local Values



MMRG Conservation Focus Areas

- Conservation & Public Lands
- Tier 1: Highest Priority
- Tier 2: High Priority

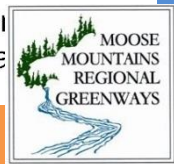
Local Conservation Priorities Town of New Durham (North)



MMRG Conservation Focus Areas

- Conservation & Public Lands
- Tier 1: Highest Priority
- Tier 2: High Priority

Local Conservation Priorities Town of New Durham



Other Action Plan Tracks...

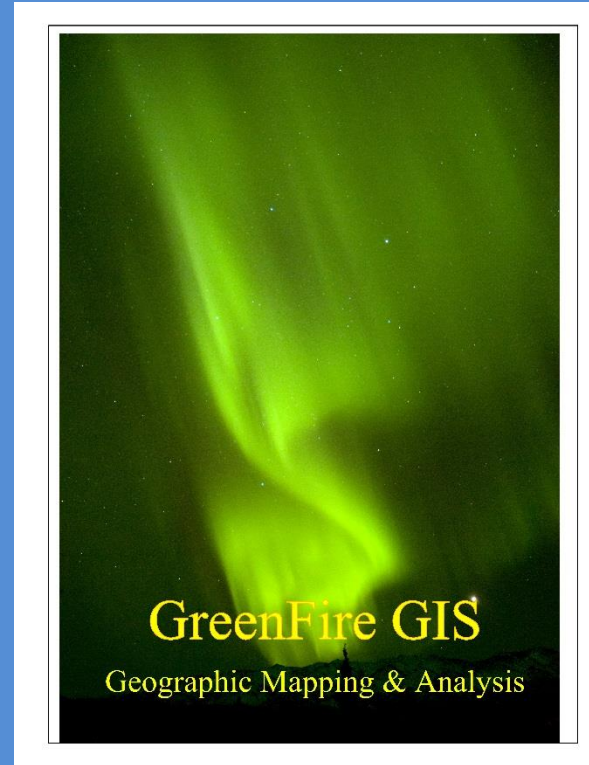
- Threats Analysis
(Population Growth & Development Impacts)
- Trails Mapping
- Connectivity Analysis (Greenways)
- Landownership Patterns Analysis
- Expanding & Linking Existing Conserved Lands



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