



# Aquidneck Island Open Space Mapping Project Final Report

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Aquidneck Island  
Planning Commission





# ACKNOWLEDGMENTS

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# TABLE OF CONTENTS

Executive Summary	5
Project Overview	7
Methods	10
Findings	13
Appendix A <i>Open Space Maps</i>	25
Appendix B <i>Detailed Methods</i>	32
Appendix C <i>Data Access Policy</i>	34

**DISCLAIMER:**

The maps and data in this report are useful for planning purposes but should not be relied upon to determine property, zoning or be used in any way for project design. The Aquidneck Island Planning Commission (AIPC) makes no guarantee of the accuracy or completeness of this data. It has not been fully reviewed for accuracy and is intended to be used for planning purposes only. AIPC assumes no liability or responsibility in the use, or misuse, of this data.

# EXECUTIVE SUMMARY

## Introduction

Aquidneck Island, sitting at the mouth of Narragansett Bay, has a diverse landscape that ranges from the dense urban neighborhoods of Newport to the farmland of Middletown and Portsmouth. Open space is critical to the health of the region; it provides space for food production, wildlife habitat, recreation, and natural beauty. Its presence improves the quality of life for residents and contributes to Aquidneck Island's distinctive character. Many areas of Aquidneck Island retain a rural character, although the island has experienced substantial development over the past twenty years, and much of its former farmland and other open areas are given over to residential and commercial lots.

The Aquidneck Island Planning Commission (AIPC) developed the open space mapping project to create a census of open space on Aquidneck Island. Its major goal was to determine the location, type, and amount of open space on the island. Using a broad definition of open space that encompassed all land free from intensive development, it identified farms, recreation areas, natural areas, vacant land, cemeteries, and other types of open space. It intends this census to provide the island's three municipalities of Newport, Middletown, and Portsmouth with the data they need to plan for and manage their open space areas. The information will also be useful to state agencies, local conservation groups and others interested in the island's open areas.

AIPC used geographic information system (GIS) technology to develop a series of maps and tables that identify and categorize Aquidneck Island's open space areas at the real estate parcel level. It also used GIS to conduct a susceptibility analysis on the identified open space parcels based on a set of criteria developed in collaboration with the project advisory committee. The criteria include public/private ownership, density of existing development, and conservation status. The analysis provides each parcel with a score that describes how sensitive the area is to a change in use .

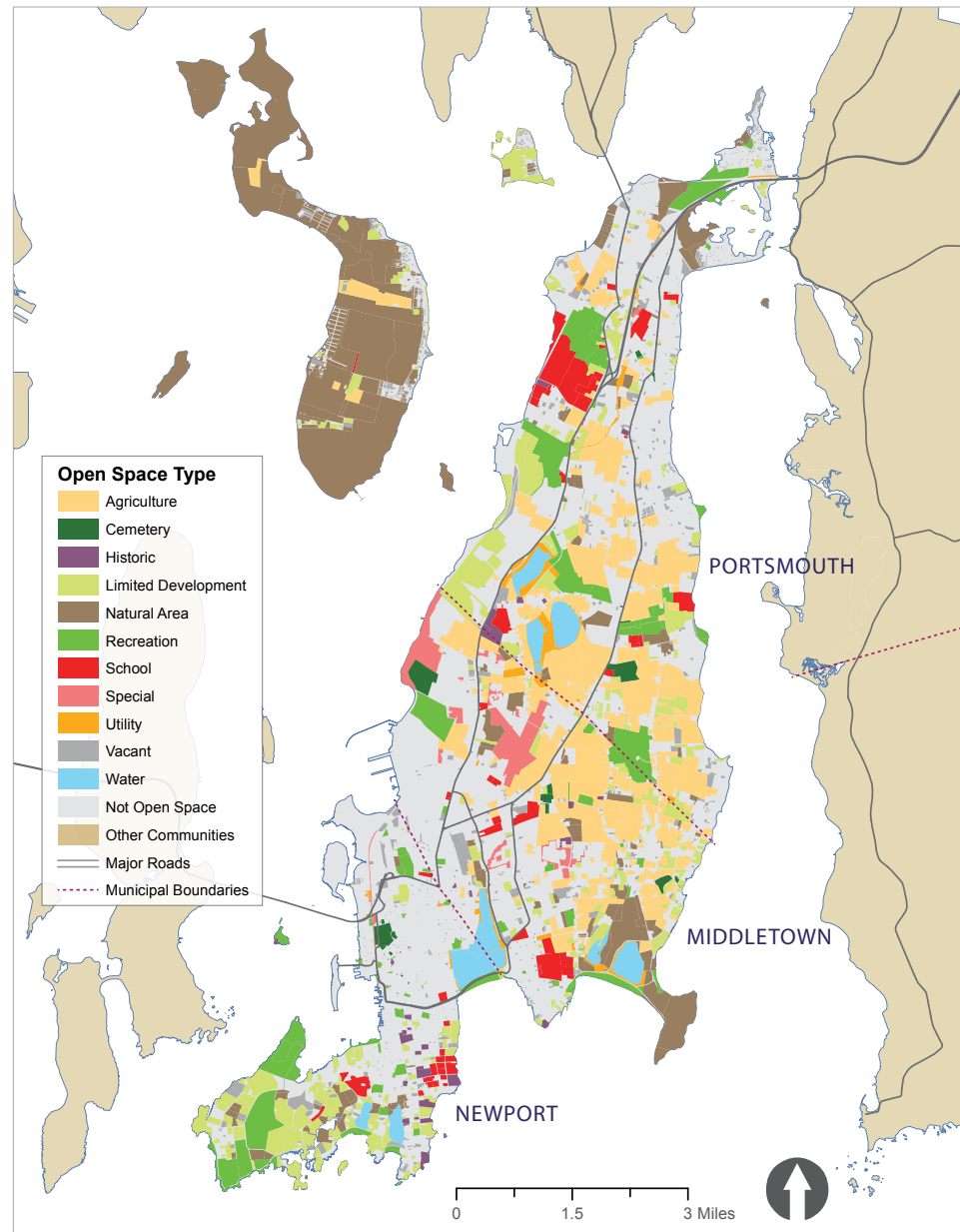


Figure 1: Aquidneck Island Open Space

# EXECUTIVE SUMMARY

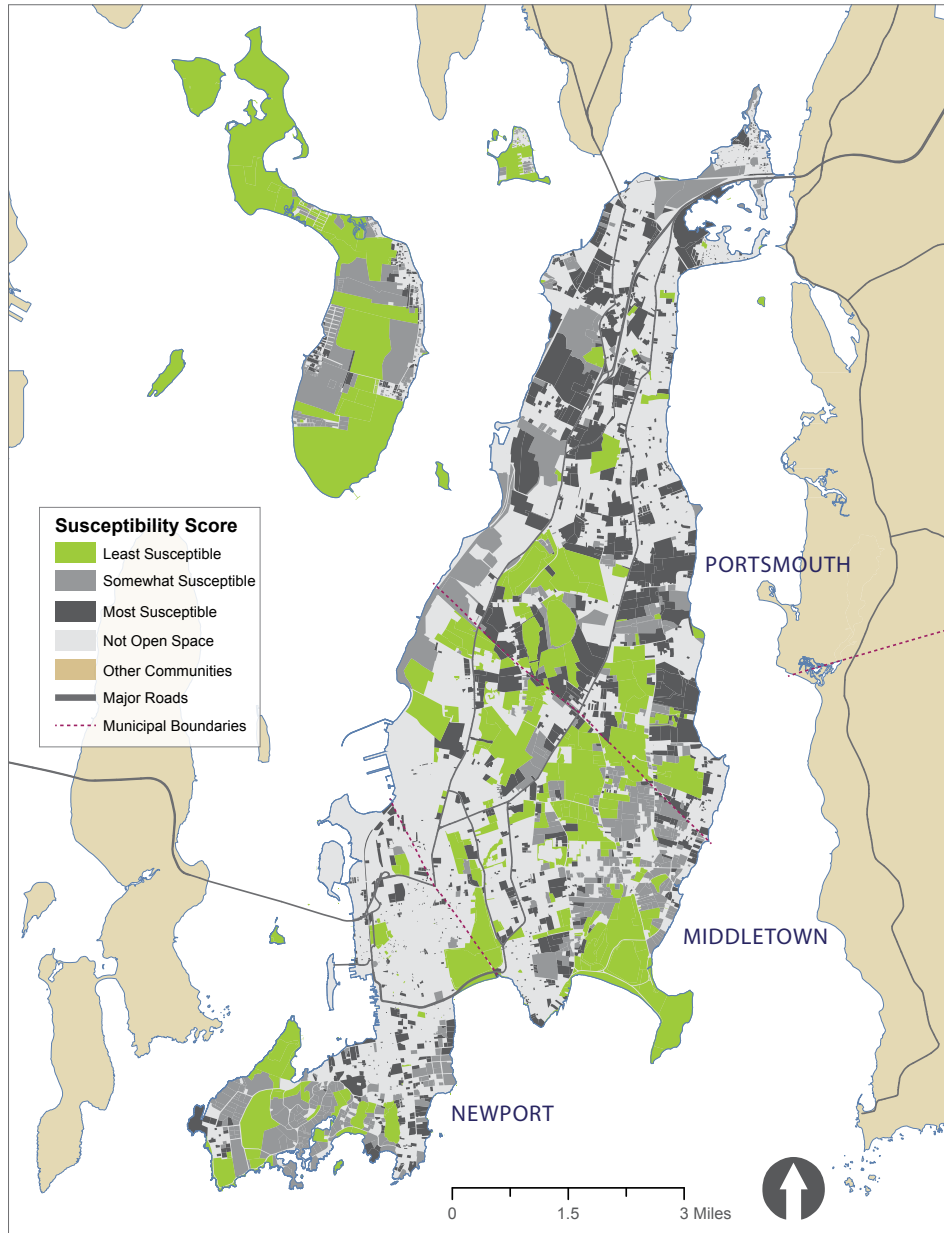


Figure 2: Open Space Susceptibility

## Findings

The results of the open space census show that there are approximately 17,287 acres of open space in the municipalities of Newport, Middletown, and Portsmouth, and 13,623 acres when Portsmouth’s outlying islands are excluded. The susceptibility analysis scored the island’s open space areas on a scale of 1 - 3, with 1 being least susceptible, 2 somewhat susceptible, and 3 most susceptible. The analysis revealed that areas scored as most susceptible accounted for the largest percentage of the island’s open space, with the majority of these areas located in Portsmouth.

AIPC believes the results of the open space mapping project will be a valuable resource for Aquidneck island’s communities as they evaluate recreational opportunities, habitat preservation, watershed protection, and the location of future development.

### AQUIDNECK ISLAND AND ISLANDS

Open Space Type	Count	Area (acres)	Average Size	Percentage
Agricultural	471	4,463.22	9.48	25.82%
Cemetery	27	202.05	7.48	1.17%
Historic	50	173.79	3.48	1.01%
Limited Development	430	2,413.06	5.61	13.96%
Natural Area	445	4,549.82	10.22	26.32%
Recreation	146	1,868.21	12.80	10.81%
School	77	829.13	10.77	4.80%
Special	19	487.52	25.66	2.82%
Utility	51	538.70	10.56	3.12%
Vacant	1353	915.45	0.68	5.30%
Water	11	846.25	76.93	4.90%
TOTALS	3,080	17,287.18	5.6	

# PROJECT OVERVIEW

## Project Summary

Aquidneck Island Open Space Mapping Project was a two phase study that began in January 2011 with the broad goals of identifying and categorizing the island's open areas. In the first phase of the project, AIPC mapped Aquidneck Island's open space at the parcel level, placing each parcel into one of eleven land use categories and identifying publicly-owned and conserved parcels. In the second phase, the organization conducted a susceptibility to change analysis on the identified open space parcels, using eight criteria.

Over the twelve-month study period, the organization worked with a ten member advisory committee to develop a detailed list of goals, a working definition of open space and a data access policy (Appendix B). The committee members also reviewed the draft open space maps for accuracy, and they guided the development of the susceptibility analysis.

The final product of the mapping project is this report, which contains maps and tables that provide a detailed, comprehensive picture of Aquidneck Island's open space. AIPC intends the report to be a resource for the island's municipalities, state agencies, and others with a stake in the future of the island's open areas.

## Goals

AIPC developed a set of goals for the open space mapping project in collaboration with the advisory committee, which guided the course of the work during the study period. The goals provided a framework for completing the project in a timely and efficient manner.

Determine the type, location, and amount of open space on Aquidneck Island.

- Assess the susceptibility to change of Aquidneck Island's open space areas.
- Ensure data on Aquidneck Island's open space are available to its municipalities and other interested organizations.

## Open Space Definition

The project advisory committee helped develop a definition of open space to structure the mapping project's identification and categorization of Aquidneck Island's open areas.

*Open space is an area of land or water that is in its natural state, used for agriculture, or free from intensive development for recreational, residential, commercial, industrial or institutional use.*

## Open Space Categories

As AIPC identified open space areas on Aquidneck Island, certain major categories such as agriculture and recreation emerged, and after discussions with members of the advisory committee, it decided on a system of eleven categories to organize the island's open space for mapping and analysis. These are:

Agriculture, Cemetery, Historic, Limited Development, Natural Area, Recreation, School, Special, Utility, Vacant, and Water.



Norman Bird Sanctuary in Middletown



Sandy Point in Portsmouth

# PROJECT OVERVIEW



Purgatory Chasm in Middletown

## Open Space Category Definitions

### Agriculture

Land in use for agricultural purposes including, cropland, nurseries, and orchards

### Cemetery

Land used primarily as a cemetery

### Historic

Land comprised primarily of open space that has recognized historical value or a historical designation.

### Limited Development

Parcels that contain structures or impervious surfaces but consist primarily of open space. The category includes only parcels where buildings or impervious surfaces cover less than 5% of their area.

### Natural Area

Open space parcels that are in a natural state – free from structures, paving, agriculture, or substantial clearing.

### Recreation

Parcels in use as programmed recreational areas such as playing fields, beaches, golf courses, or parks.

### School

Parcels in use as educational facilities.

### Special

Parcels that do not fit well into any other category. In Newport the parcels containing the Old Colony and Newport rail right of way fall into the special category. In Middletown these are Newport State Airport, portions of Naval Station Newport, and areas classified as “subdivision open space” by the municipality. In Portsmouth, the parcel that contains the town’s wind turbine is in this category.

### Utility

Undeveloped parcels owned or in use by utility companies.

### Vacant

Parcels that contain no structures or impervious surfaces but show indications of alterations by humans.

### Water

Parcels that consist primarily of large ponds or reservoirs.

AIPC recognizes that these categories are not definitive and that many parcels fit into more than one category. For instance, a parcel may contain both forested areas and agriculture. The organization created a secondary land use category to account for some of the inevitable inaccuracy of any categorization system. AIPC used its best judgment to assign a primary category to each open space parcel and used the secondary to further describe parcels that contained more than one type of open space and provide additional detail where necessary.

## Study Area

The study area includes the land area of the municipalities of Newport, Middletown, and Portsmouth, Rhode Island. It encompasses not only Aquidneck Island but also the smaller islands that are a part of each municipality. In Newport these are Rose Island, Goat Island, and Coasters Harbor Island, and in Portsmouth these are Prudence Island, Hog Island, Patience Island, Hope Island, and Dyer Island. Portsmouth’s outlying islands contain substantial amounts of open space.

Aquidneck Island is the largest island in Narragansett Bay with a total area of 37.8 square miles. According to the 2010 United States Census, it had a total population of 58,211 – 17,389 in Portsmouth, 16,150 in Middletown, and 24,672 in Newport. The largest employers are the United States Navy and the Raytheon

# PROJECT OVERVIEW

Company both located on the island's west side, and the major economic sectors on the island are tourism, marine trades, and the defense industry. The City of Newport draws more than a million visitors annually. The island also has an active agricultural sector.

Aquidneck Island has a diverse landscape that ranges from Newport's dense downtown and residential neighborhoods to strip commercial development and beaches in Middletown, and the farms of Portsmouth. The island's open space reflects this varied landscape; it includes neighborhood parks, cemeteries, ponds and reservoirs, historic estates, nature preserves, working farm land, and other open areas, and it serves multiple purposes including recreation, food production, and wildlife habitat. All three communities contain large amounts of conserved land.

## *Newport*

The oldest community in Rhode Island, Newport is home to two state parks – Fort Adams and Brenton Point, beaches, three large ponds, and numerous multi-acre residential lots. Unlike Aquidneck Island's other two municipalities, it contains numerous small parks and playgrounds.

## *Middletown*

Much of Middletown's eastern portion is devoted to agriculture and wildlife habitat (Sachuest Point and Norman Bird Sanctuary). It is also home to beaches and three large ponds, as well as large open areas that are part of Naval Station Newport and the Newport State Airport.

## *Portsmouth*

The ponds and reservoirs that provide some of Aquidneck Island's drinking water are located in Portsmouth. Like Middletown, it contains substantial amounts of agricultural land and wildlife habitat. The town's boundaries encompass five other islands in Narragansett Bay, which are lightly developed.

## Data Sources

AIPC used data from a wide range of state and municipal sources to locate and identify Aquidneck Island's open space.

- *Rhode Island Geographic Information System*  
Land use layer, inland water bodies, schools, impervious surfaces, sewerage areas, water supply areas, roads, and transit routes
- *Rhode Island Department of Environmental Management*  
State and local conserved land
- *City of Newport*  
Real estate parcels, building polygons, assessor's database, and city recreation areas
- *Town of Middletown*  
Real estate parcels, building polygons, RCOS study, assessor's database, and historic properties
- *Town of Portsmouth*  
Real estate parcels, assessor's database



Norman Bird Sanctuary in Middletown



Sandy Point in Portsmouth

# METHODS



Almy Pond in Newport



Eisenhower Park in Newport

## Introduction

Through the Aquidneck Island Open Space Mapping Project, AIPC took a broader view of open space than traditional recreation, conservation, and open space (RCOS) studies, which focus on public recreation areas and both publicly and privately-owned conserved land. The Aquidneck Island project encompasses those areas as well as agricultural land, natural areas, and other areas of limited development that are not conserved or publicly-owned. The goal was to create a detailed, comprehensive view of the island's diverse open space for the municipalities of Newport, Middletown, and Portsmouth. By doing so, AIPC provides the communities with data to aid them in identifying existing and potential recreational areas, siting future residential and commercial development, and determining future land uses.

AIPC used each of the island municipalities' real estate parcel maps as the basis for the identification and mapping of open space. The organization decided that this approach would be the most useful to the island's city and towns because it would produce accurate, detailed information and allow the municipalities to incorporate the results of the project into their existing datasets easily. Aquidneck Island's relatively small size made such a fine-grained analysis feasible.

AIPC used the same method to identify, categorize, and analyze open space in the three island communities, but because each municipality created its GIS parcel data independently, AIPC analyzed each municipality separately to avoid potential problems caused by spatial inconsistencies. There are gaps and areas of overlap at the municipal boundaries, and the communities' plat, lot, and block numbering systems vary.

## Open Space Attributes

The final data tables produced list each parcel separately with columns containing its municipal parcel identifiers and information on the seven attributes AIPC tracked through the mapping project. These are primary and secondary open space types, ownership, conservation status, zoning, and size.

### *Use 1*

The attribute indicates into which of the eleven open space categories the parcel falls.

### *Use 2*

A secondary open space type that provides more detail on a parcel that contains more than one type of open space.

### *Public/Private Ownership*

Indicates whether a parcel is owned by a public or private entity.

### *Public Owner*

Lists the name of public owners of open space parcels.

### *Conservation Status*

Identifies parcels that are publically or privately conserved and provides details on conservation type.

### *Zoning*

Lists the municipal zoning for each open space parcel.

### *Size*

Lists the area (acres) and perimeter (feet) of the parcels.

# METHODS

## Open Space Identification and Categorization

AIPC used the following method, with some variations, to identify and categorize the open space of the three Aquidneck Island municipalities. It overlaid a Rhode Island GIS land use layer produced in 2003-2004 over the real estate parcels of each municipality to assign general open space types. Once the organization established these initial types, it used municipal data, including assessment data and existing RCOS studies to assign parcels to the education, historic, utility, and cemetery open space categories. AIPC used information on buildings and structures provided by the municipalities and data to identify vacant parcels (those free from structures) and areas of limited development (less than 5% lot coverage).

Where possible AIPC provided additional information to identify the open space parcels such as the names of parks and recreation areas and the owners of publically held properties.

Once it identified and categorized the open space parcels, it linked the Rhode Island Department of Environmental Management's data on the state's conserved land to the open space parcels. It performed a final visual check of all of the identified parcels using 2008 orthography to determine the accuracy of the categorization, paying special attention to those labeled as agriculture, vacant, limited development, or natural areas.

## Susceptibility Analysis

The goal of the susceptibility analysis phase was to understand how vulnerable the open space areas identified through the project are to a change in use. AIPC used raster-based GIS to conduct the analysis. It worked with the project advisory committee to develop a list of susceptibility criteria that account for the factors that affect whether land experience a change in use. AIPC used existing GIS, assessment, and real estate

sales data to create a grid for each criterion, which it scored on a scale of 1 to 3, where 1 was least susceptible and 3 was most susceptible. It combined the grids to calculate a combined score, which it reclassified to create a final grid scored from 1 to 3. It overlaid the open space layers created through the project over the final susceptibility grid to determine a score for each open area. Finally, AIPC adjusted the final scores to account for water bodies and other areas where the possibility of change is very low.

### Susceptibility Criteria and Assumptions

#### *Ownership Type*

Privately-owned land is more susceptible than publicly-owned land.

#### *Impervious Surface Density*

Higher density areas are more susceptible to change than lower density areas.

#### *Zoning*

Areas zoned for commercial or high-density residential uses are more susceptible than those zoned for low-density residential or recreational uses.

#### *Water Service*

Areas within Aquidneck Island's water service areas are more susceptible than those outside them.

#### *Land Use*

Commercial, residential, and vacant areas are the most susceptible. Areas in use for agricultural or institutional use are less susceptible, and water, sandy, and rocky areas are least susceptible.

#### *Conservation*

Areas with no conservation protection are most susceptible;



The Glen in Portsmouth



Brenton Point State Park in Newport

# METHODS



Green Animals Topiary Garden in Portsmouth

areas of conservation intent are less susceptible, and areas protected by conservation easements are least susceptible.

### *Proximity to Available Vacant Land*

Areas close to vacant land for sale are most susceptible and areas farthest are least susceptible.

### *Improvement to Land Value Ratio*

Areas where the improvement value is much lower than the land value are most susceptible, and areas where the improvement value is higher than the land value are least susceptible.

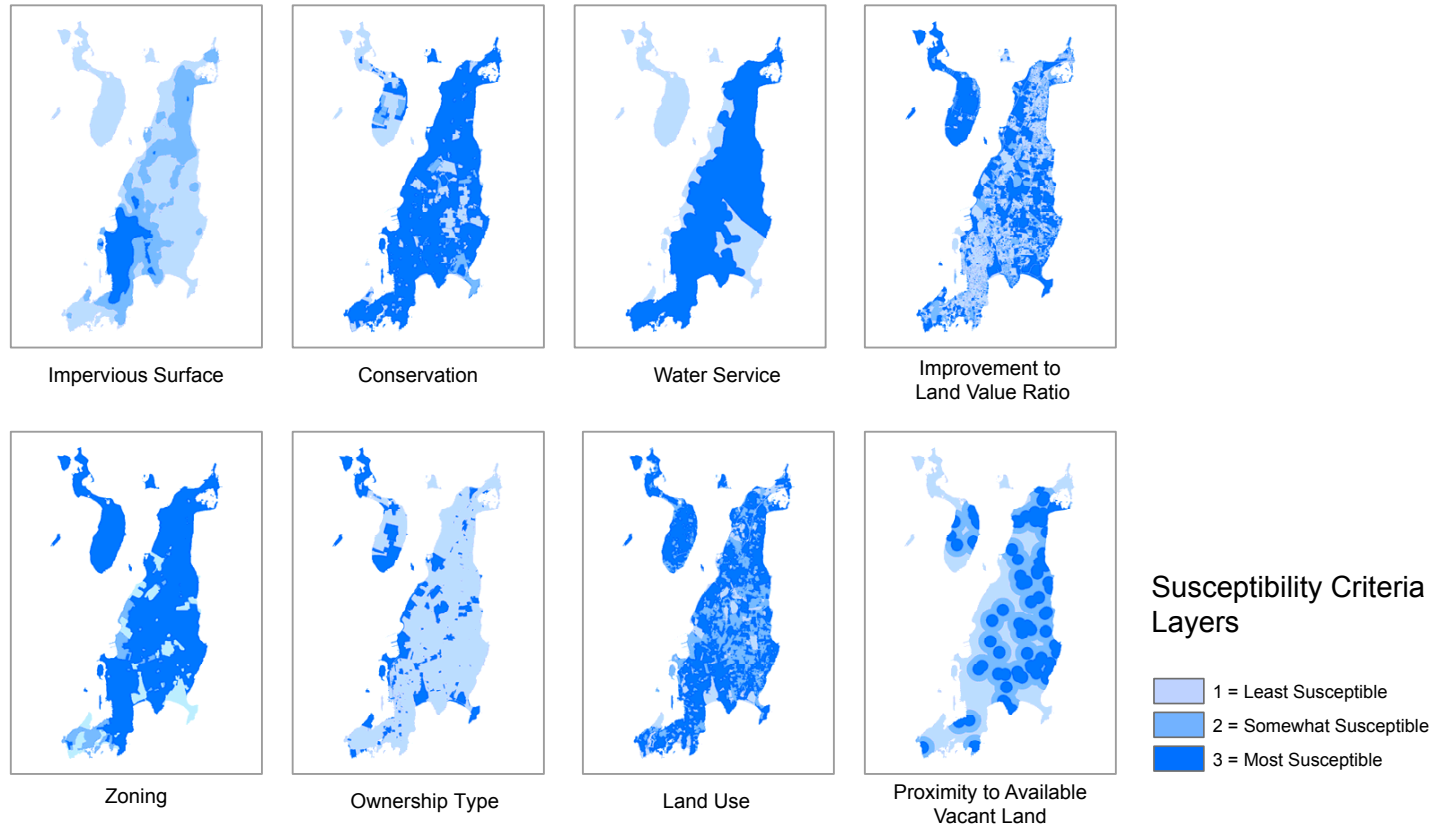


Figure 3: Susceptibility Layers

# FINDINGS

## Key Findings

Through the open space mapping project, AIPC determined that there are 13,623 acres of open space on Aquidneck Island. Vacant lots predominate; there are 1,070 in total, covering 822 acres. They account for 41.9% of the open space parcels on Aquidneck Island but only 6% of the total open space areas.

Agriculture comprises the largest percentage (31.7%) of Aquidneck Island's open space, a total of 4,319 acres (see Table 2). The bulk of the island's farm land is located in a rough band that stretches northwest from the Norman Bird Sanctuary in Middletown across the border into Portsmouth along both sides of East Main Road. In combination with the habitat areas of Sachuest Point and around Gardiner Pond, the band comprises a substantial reservoir of open space on the island. Limited development is the next largest category, accounting for 2,210 acres – 16.2% of the island's open space, with a major concentration in the Ocean Drive area of Newport and other areas scattered across Middletown and Newport.

Close to 70% (9,300 acres) of Aquidneck Island's open space is zoned for residential use (see Table 4). Areas zoned medium-density residential account for 34.5%, including much of Middletown's and Portsmouth's agricultural land. There are 2,500 acres of open space zoned for recreational, open space, or public use. There are clusters of these areas at the end of Ocean Drive in Newport, including two state parks and a large golf course, and along the island's west side, in a strip that includes Wanumetonomy Golf Course and portions of Naval Station Newport.

Seventy-one percent of the island's open space is privately owned, while 28% is owned publicly. The State of Rhode Island is the largest public land owner if Prudence Island and the other outlying islands are included in the analysis, but if they are excluded, the City of Newport, through its ownership of the seven ponds and reservoirs that make up its water supply system, is

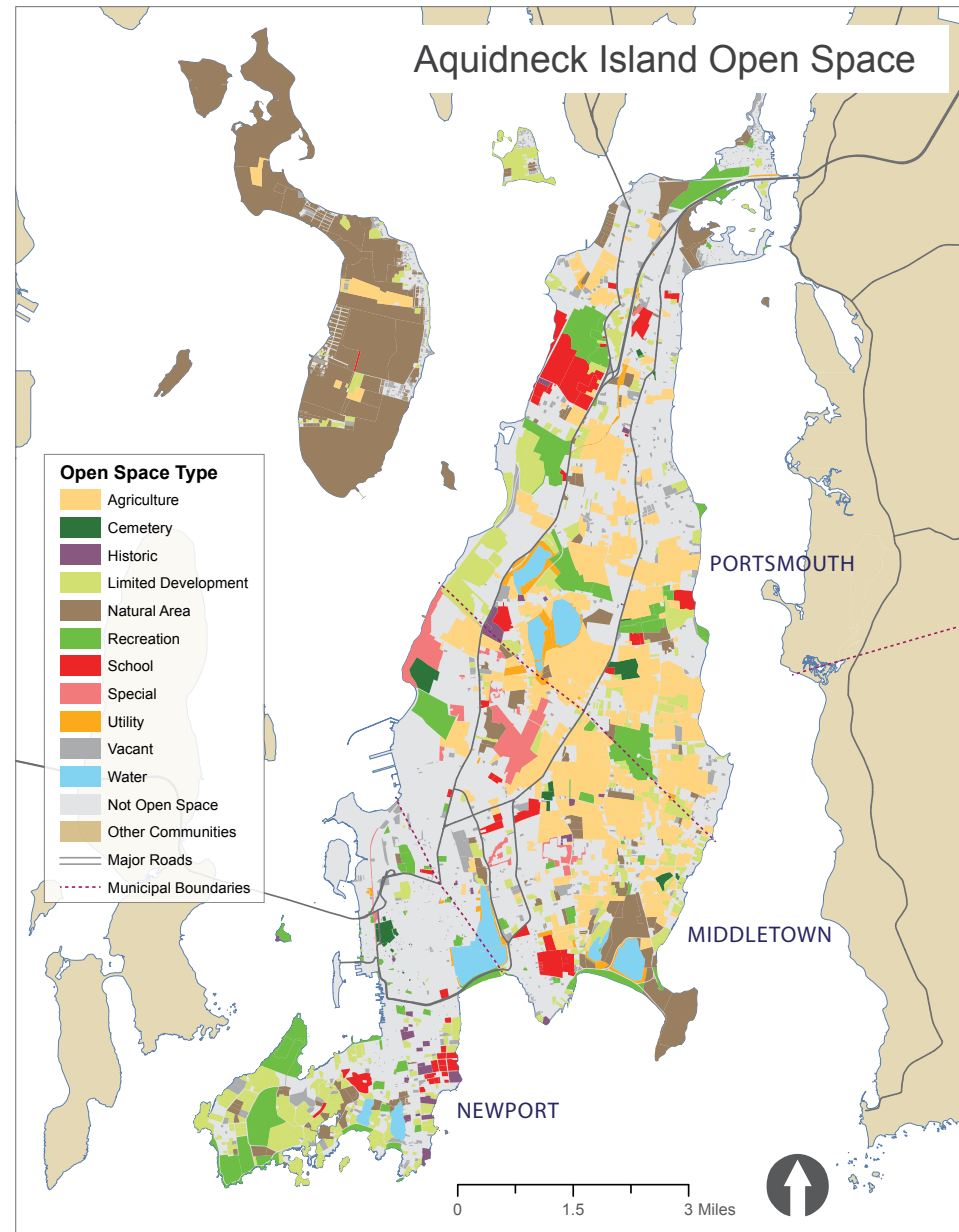


Figure 4: Aquidneck Island Open Space

# FINDINGS



Easton Beach in Newport

the largest public owner. The United States Government, which owns Naval Station Newport and the Sachuest Point National Wildlife Refuge, is also a major land owner.

Areas of the island that lack large open space areas are the dense neighborhoods of Newport between Admiral Kalibus Road and Memorial Boulevard, the sections of residential and commercial development centered on the intersection of East and West Main Roads in Middletown, and a section along Portsmouth's eastern coast that is divided into medium-density residential lots.



Prudence Island in Portsmouth

## AQUIDNECK ISLAND AND ISLANDS

Open Space Type	Count	Area (acres)	Average Size	Percentage
Agricultural	471	4,463.22	9.48	25.82%
Cemetery	27	202.05	7.48	1.17%
Historic	50	173.79	3.48	1.01%
Limited Development	430	2,413.06	5.61	13.96%
Natural Area	445	4,549.82	10.22	26.32%
Recreation	146	1,868.21	12.80	10.81%
School	77	829.13	10.77	4.80%
Special	19	487.52	25.66	2.82%
Utility	51	538.70	10.56	3.12%
Vacant	1353	915.45	0.68	5.30%
Water	11	846.25	76.93	4.90%
<b>TOTALS</b>	<b>3,080</b>	<b>17,287.18</b>	<b>5.6</b>	

Table 1: Study Area Open Space Categories

## AQUIDNECK ISLAND ONLY

Open Space Type	Count	Area (acres)	Average Size	Percentage
Agricultural	467	4,319.18	9.25	31.70%
Cemetery	27	202.05	7.48	1.48%
Historic	50	173.79	3.48	1.28%
Limited Development	401	2,210.34	5.51	16.22%
Natural Area	237	1,330.65	5.61	9.77%
Recreation	146	1,868.21	12.80	13.71%
School	76	824.94	10.85	6.06%
Special	19	487.52	25.66	3.58%
Utility	51	538.70	10.56	3.95%
Vacant	1,070	822.01	0.77	6.03%
Water	11	846.25	76.93	6.21%
<b>TOTALS</b>	<b>2,555</b>	<b>13,623.63</b>	<b>5.3</b>	

Table 2: Aquidneck Island Open Space Categories

## AQUIDNECK ISLAND AND OUTLYING ISLANDS

Zoning	Count	Area (acres)	Average Size	Percentage
Commercial/Industrial	177	1,357.64	7.67	7.85%
Recreation/OS/Public	122	2,503.44	20.52	14.48%
Low Density Residential	489	5,767.95	11.80	33.37%
Medium Density Residential	610	4,601.45	7.54	26.62%
High Density Residential	1,554	2,871.77	1.85	16.61%
No Zoning	128	184.93	1.44	1.07%
<b>TOTAL</b>	<b>3,080</b>	<b>17,287.18</b>		

Table 3: Study Area Zoning

## AQUIDNECK ISLAND ONLY

Zoning	Count	Area (acres)	Average Size	Percentage
Commercial/Industrial	177	1,357.64	7.67	10.17%
Recreation/OS/Public	122	2,503.44	20.52	18.76%
Low Density Residential	406	2,426.13	5.98	18.18%
Medium Density Residential	610	4,601.45	7.54	34.48%
High Density Residential	1,095	2,272.47	2.08	17.03%
No Zoning	128	184.93	1.44	1.39%
<b>TOTAL</b>	<b>2,538</b>	<b>13,346.06</b>		

Table 4: Aquidneck Island Zoning

# FINDINGS

## City of Newport

Areas of limited development cover 831 acres, comprising 34.5% of the city's open space. Land devoted to recreation makes up 27% of the city's open space, covering 650 acres, with an average parcel size of close to eight acres (see Table 5). Newport's areas of limited development and its largest recreation areas, which include Fort Adams, Brenton Point State Park, and Newport Country Club, are concentrated at the city's southern end. Unlike Middletown or Portsmouth, Newport also has numerous small neighborhood parks and playgrounds.

There are more vacant parcels in Newport than any other open space category, although they account for only 8% of the total open space area – at an average lot size of 0.75 acres. These are scattered throughout the city, but there are a number of multi-acre vacant parcels around Ocean Avenue and Harrison Avenue.

Almost all (91%) of Newport's open space is zoned for residential use; 69% is designated low-density residential (R-60, R-80, R120) (see Table 6). The low-density areas are concentrated in the Ocean Drive area of the city. The city has only fifty acres devoted to agriculture, the fewest of the three Aquidneck Island communities, which is not surprising given its urban character. The average size of Newport's open space parcels is 3.29 acres, the lowest on the island. The small parcel size reflects the city's dense street fabric, which differs considerably from those of Middletown and Portsmouth.

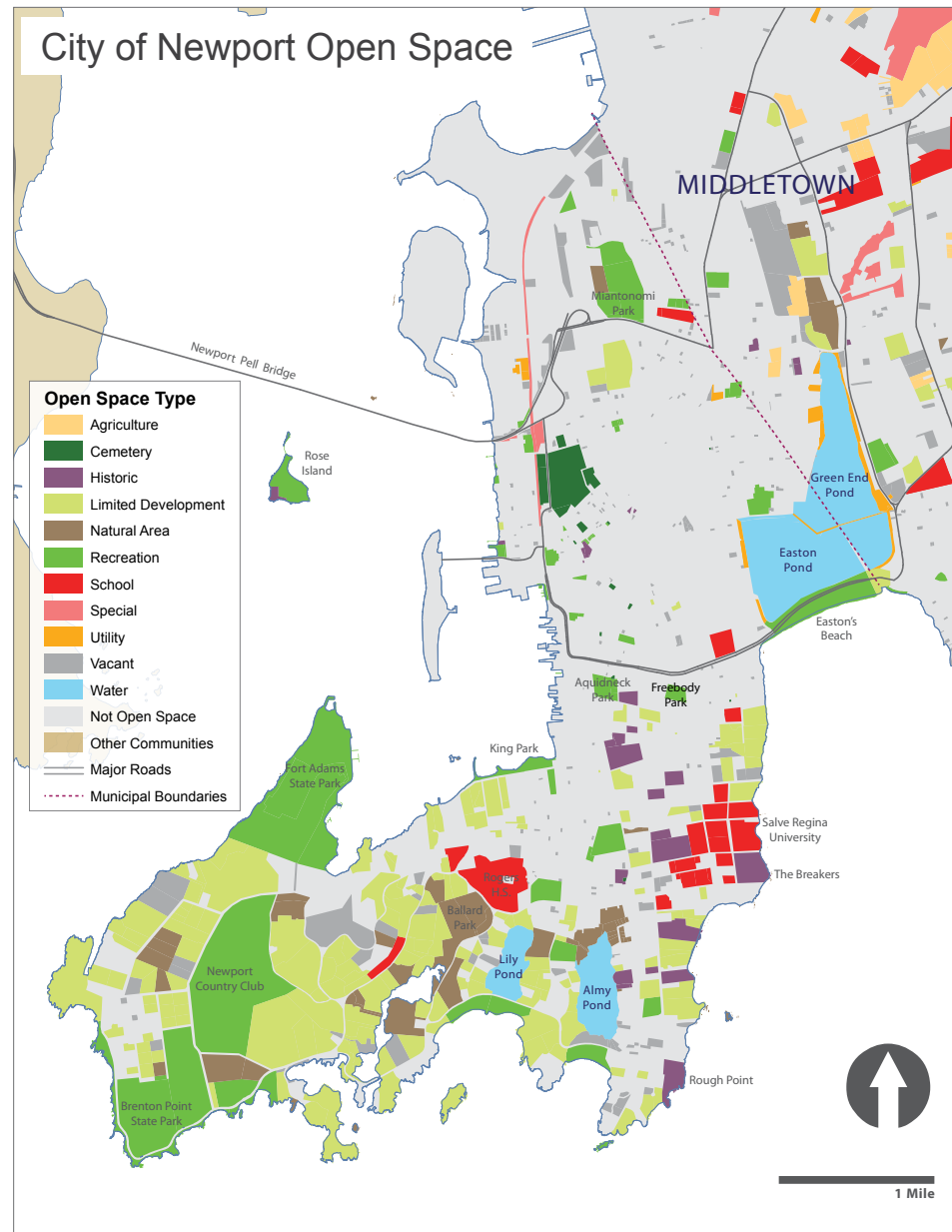


Figure 5: Newport Open Space

# FINDINGS



Sachuest Point in Middletown

## NEWPORT

Open Space Type	Count	Area (acres)	Average Size	Percentage
Agricultural	4	50.04	12.51	2.08%
Cemetery	16	44.35	2.77	1.84%
Historic	28	91.88	3.28	3.82%
Limited Development	176	831.50	4.72	34.54%
Natural Area	126	175.94	1.40	7.31%
Recreation	82	650.77	7.94	27.03%
School	24	127.37	5.31	5.29%
Special	6	14.67	2.44	0.61%
Utility	8	10.20	1.28	0.42%
Vacant	258	195.03	0.76	8.10%
Water	4	215.73	53.93	8.96%
TOTALS	732	2,407.47	3.29	na

Table 5: Newport Open Space Categories

## NEWPORT

Zoning	Count	Area (acres)	Average Size	Percentage
Commercial/Industrial	31	71.12	2.29	2.95%
Recreation/OS/Public	2	5.19	2.60	0.22%
Low Density Residential	259	1,682.39	6.50	69.88%
Medium Density Residential	29	68.49	2.36	2.84%
High Density Residential	298	442.28	1.48	18.37%
No Zoning	113	138.00	1.22	5.73%
TOTAL	732	2,407.47		

Table 6: Newport Open Space Zoning

## Town of Middletown



Prescott Farm in Portsmouth

Middletown's agricultural areas cover 1,859 acres and comprise 39% of the town's open space, much of it on the town's east side. Natural areas, of which Norman Bird Sanctuary and Sachuest Point comprise the bulk, is the next highest category, accounting for 729 acres or 15.4% of Middletown's open space (see Table 7). Of note is the large average parcel size of the town's agricultural and natural areas, 7.2 acres and 12.3 acres respectively, which indicates it contains large areas of unbroken farm and undeveloped land.

Middletown has 311 acres devoted to recreational uses, less

than Newport or Portsmouth. The town lacks large public recreation areas, although both the Norman Bird Sanctuary and the Sachuest Point Wildlife Refuge are in some respects recreational in character. As in Newport, there are more vacant parcels than any other open space category. There are almost as many (256) agricultural parcels, but because the agricultural parcels are so much larger than the vacant parcels, agriculture accounts for 1,859 acres and vacant land only 236 acres.

Middletown has far more of its open space zoned for recreational, open space, or public use than the other two island communities (see Table 8). These areas include not only the natural areas on and around Sachuest Point but also Newport State Airport and portions of Naval Station Newport. Nevertheless, 54% of the open space identified through the project is zoned for residential use, including much of Middletown's farmland.

## MIDDLETOWN

Open Space Type	Count	Area (acres)	Average Size	Percentage
Agricultural	256	1,859	7.26	39.29%
Cemetery	7	103	14.74	2.18%
Historic	13	30	2.28	0.63%
Limited Development	104	423	4.07	8.95%
Natural Area	59	729	12.36	15.41%
Recreation	32	311	9.72	6.57%
School	24	233	9.70	4.92%
Special	12	468	39.01	9.89%
Utility	17	87	5.12	1.84%
Vacant	258	236	0.91	4.99%
Water	4	252	63.07	5.33%
TOTALS	786	4,732	6.02	

Table 7: Middletown Open Space Categories

# FINDINGS

## MIDDLETOWN

Zoning	Count	Area (acres)	Average Size	Percentage
Commercial/Industrial	45	433.61	9.64	9.16%
Recreation/OS/Public	90	1,718.67	19.10	36.32%
Low Density Residential	139	722.75	5.20	15.27%
Medium Density Residential	299	1,456.34	4.87	30.78%
High Density Residential	213	400.33	1.88	8.46%
No Zoning	0	0.00	0.00	0.00%
<b>TOTAL</b>	<b>786</b>	<b>4,731.70</b>		

Table 8: Middletown Open Space Zoning

## Town of Portsmouth

Portsmouth contains 10,148 acres of open space, more than Newport and Middletown combined, although the inclusion of five outlying islands, Prudence Island, Hog Island, Patience Island, Hope Island, and Dyer Island, affects this figure considerably; without the islands, the amount of open space drops 36% to 6,484 acres (see Tables 9 and 10).

The presence of the outlying islands also affects the composition of the town's open space. Natural areas comprise all of Patience Island, Hope Island, and Dyer Island and as well as much of Prudence Island. When these areas are included, natural areas account for the highest percentage (35.9% or 3,644 acres) of Portsmouth's open space. If they are excluded, agriculture is the leading category, covering 2,410 acres or 37% with limited development the next highest at 955 acres or 14.7%. Most of the farmland is located in the south east of the town, close to its border with Middletown. Although the project has categorized the land around the Lawton Valley Reservoir, Sisson Pond, and St. Mary's Pond as utility because of their ownership and use by the Newport Water Department, much of is heavily wooded and could be considered a natural area.

As in Newport and Middletown, small, vacant parcels account for the largest number of parcels in any category in Portsmouth. The average size of the town's vacant lots (outlying islands excluded)

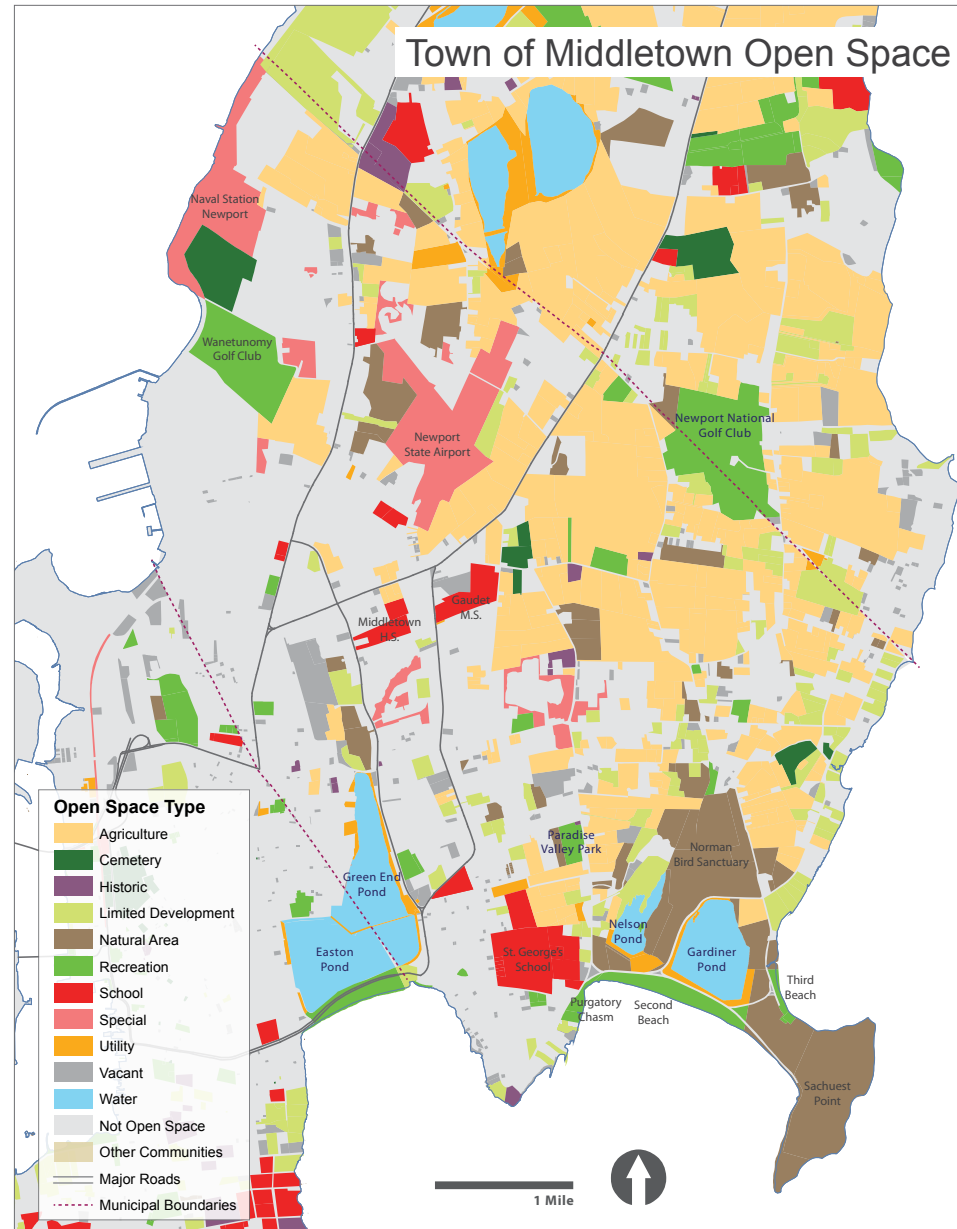


Figure 6: Middletown Open Space

# FINDINGS

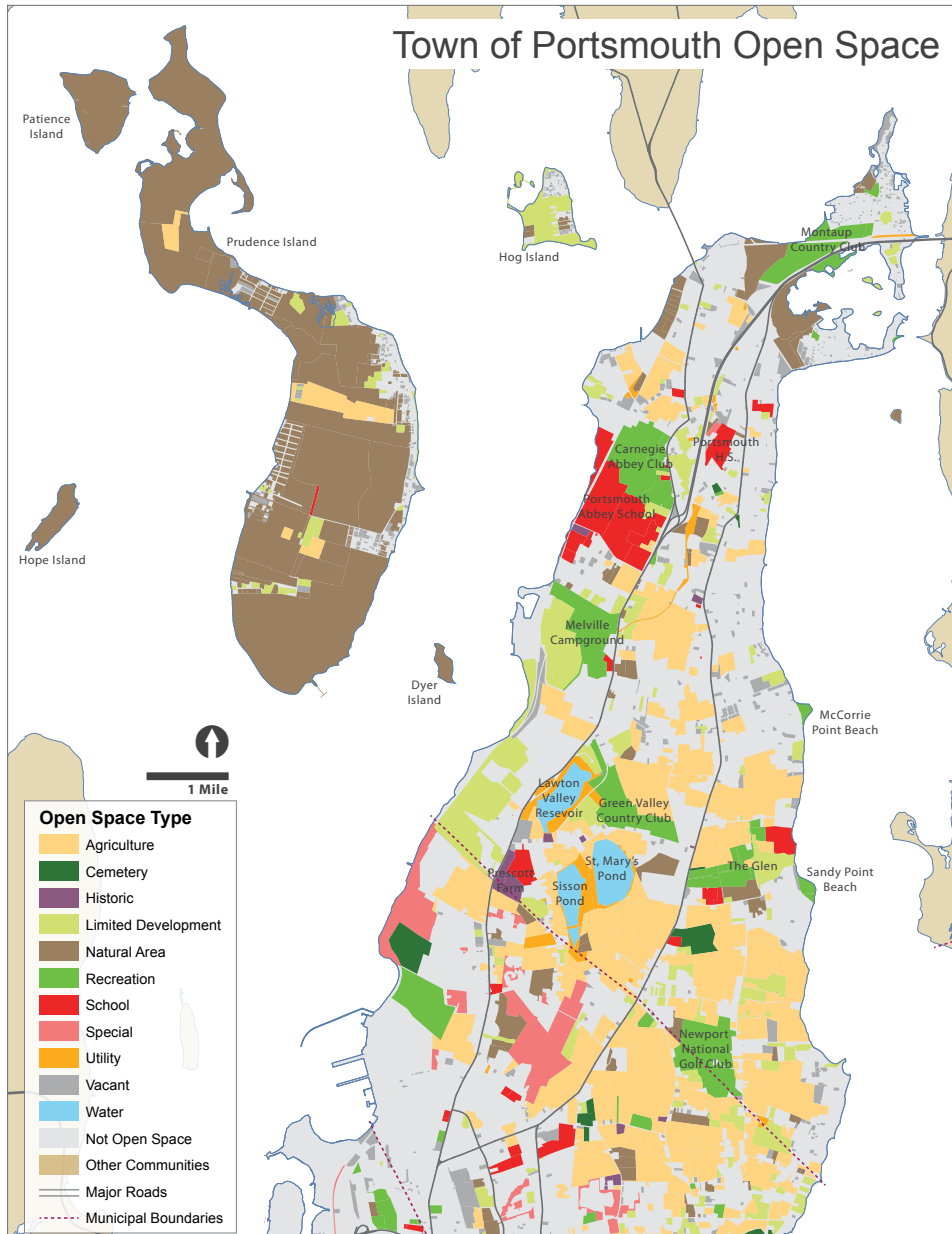


Figure 7: Portsmouth Open Space

is 0.70 acres, the smallest of the three island municipalities, although at 6.25 acres, the average size of Portsmouth’s open space parcels is the largest of the island communities. The majority of Portsmouth’s open space – 4,524 acres or 71% is zoned for residential use; 3,076 acres or 49.5% is zoned medium density residential, while 20 acres is designated for low density residential (see Table 13). Much of Portsmouth’s farm land is zoned for medium-density use, including parcels bordering on the town’s ponds and reservoirs. Although undeveloped, large portions of Prudence Island and Hog Island are zoned for high-density residential use.

**PORTSMOUTH (including outlying islands)**

Open Space Type	Count	Area (acres)	Average Size	Percentage
Agricultural	211	2,554.13	12.10	25.17%
Cemetery	4	54.55	13.64	0.54%
Historic	9	52.21	5.80	0.51%
Limited Development	150	1,158.17	7.72	11.41%
Natural Area	260	3,644.73	14.02	35.92%
Recreation	32	906.49	28.33	8.93%
School	29	468.93	16.17	4.62%
Special	1	4.76	4.76	0.05%
Utility	26	441.39	16.98	4.35%
Vacant	837	484.42	0.58	4.77%
Water	3	378.23	126.08	3.73%
<b>TOTALS</b>	<b>1562</b>	<b>10,148.01</b>	<b>6.49</b>	

Table 9: Portsmouth Open Space Categories

**PORTSMOUTH (Aquidneck only)**

Open Space Type	Count	Area (acres)	Average Size	Percentage
Agricultural	207	2410.09	11.64	37.17%
Cemetery	4	54.55	13.64	0.84%
Historic	9	52.21	5.80	0.81%
Limited Development	121	955.45	7.90	14.73%
Natural Area	52	425.56	8.18	6.56%
Recreation	32	906.49	28.33	13.98%
School	28	464.74	16.60	7.17%
Special	1	4.76	4.76	0.07%
Utility	26	441.39	16.98	6.81%
Vacant	554	390.98	0.71	6.03%
Water	3	378.23	126.08	5.83%
<b>TOTALS</b>	<b>1,037</b>	<b>6484.46</b>	<b>6.25</b>	

Table 10: Portsmouth Open Space Categories

# FINDINGS

## PORTSMOUTH (Including outlying islands)

Zoning	Count	Area (acres)	Average Size	Percentage
Commercial/Industrial	101	852.91	8.44	8.40%
Recreation/OS/Public	30	779.58	25.99	7.68%
Low Density Residential	91	3,362.81	36.95	33.14%
Medium Density Residential	282	3,076.61	10.91	30.32%
High Density Residential	1,043	2,029.16	1.95	20.00%
No Zoning	15	46.94	3.13	0.46%
<b>TOTAL</b>	<b>1,562</b>	<b>10,148.01</b>		

Table 12: Portsmouth Open Space Zoning

## PORTSMOUTH (Aquidneck only)

Zoning	Count	Area (acres)	Average Size	Percentage
Commercial/Industrial	101	852.91	8.44	13.74%
Recreation/OS/Public	30	779.58	25.99	12.56%
Low Density Residential	8	20.99	2.62	0.34%
Medium Density Residential	282	3,076.61	10.91	49.57%
High Density Residential	584	1,429.85	2.45	23.04%
No Zoning	15	46.94	3.13	0.76%
<b>TOTAL</b>	<b>1,020</b>	<b>6,206.89</b>		

Table 13: Portsmouth Open Space Zoning

## Comparison

Agriculture remains a key component of Aquidneck Island's open space, particularly in Middletown and Portsmouth where there is more farmland than any other type of open space. Recreational areas also comprise a substantial portion of each of the three municipalities' open space areas. Portsmouth has the most – 906 acres, and Newport, although it is the smallest of the communities, is next with 650 acres, much of it in Fort Adams State Park, Brenton Point State Park, and the Newport Country Club.

Areas of limited development, parcels on which less than 5% of the lot is covered by development, also are important to the island's open space. Overall, they cover 2,210 acres on Aquidneck Island. In Newport they cover 833 acres, a larger area than any other open space type, and Portsmouth's 955 acres of limited development are second only to agriculture in terms of

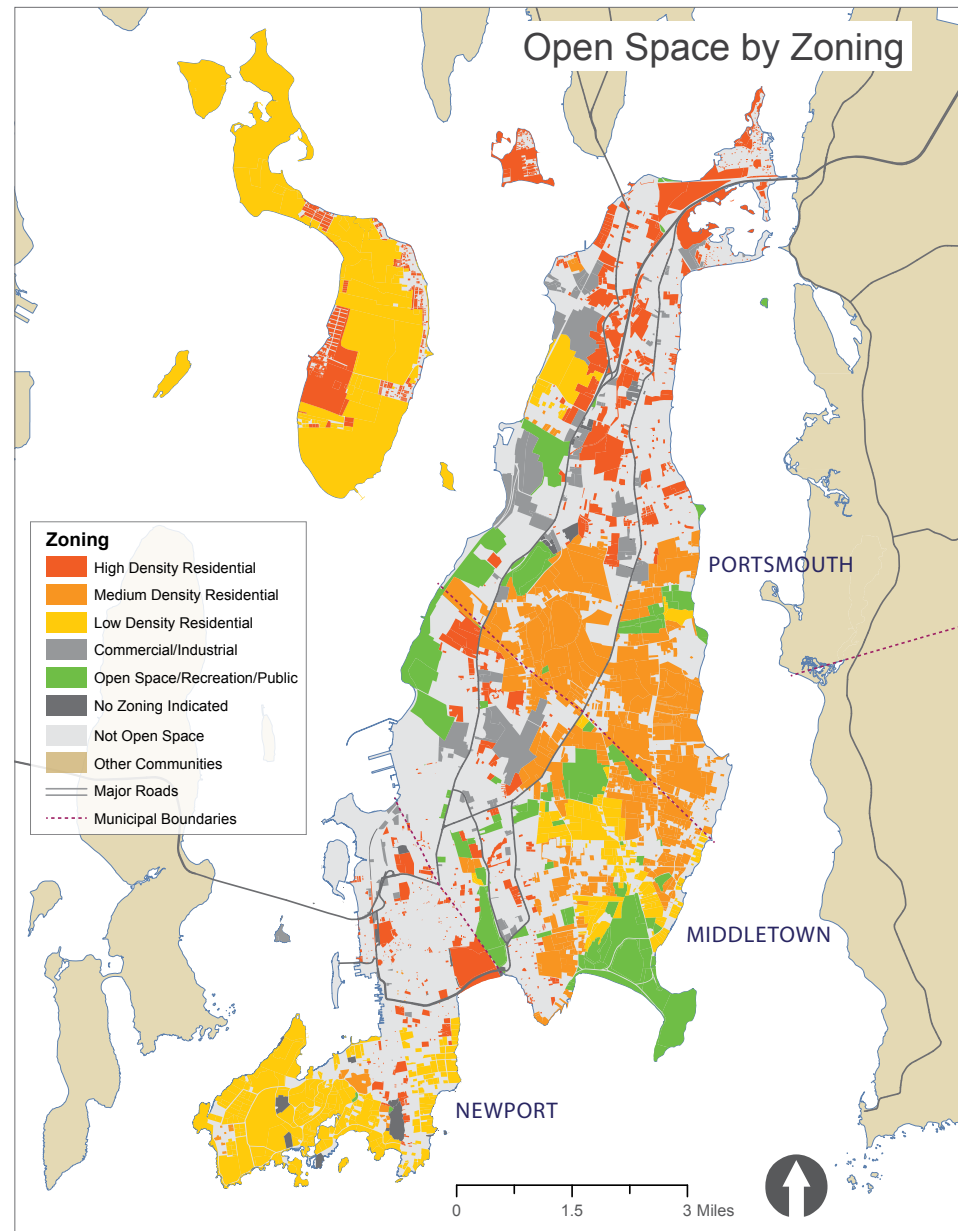


Figure 8: Aquidneck Island Open Space by Zoning

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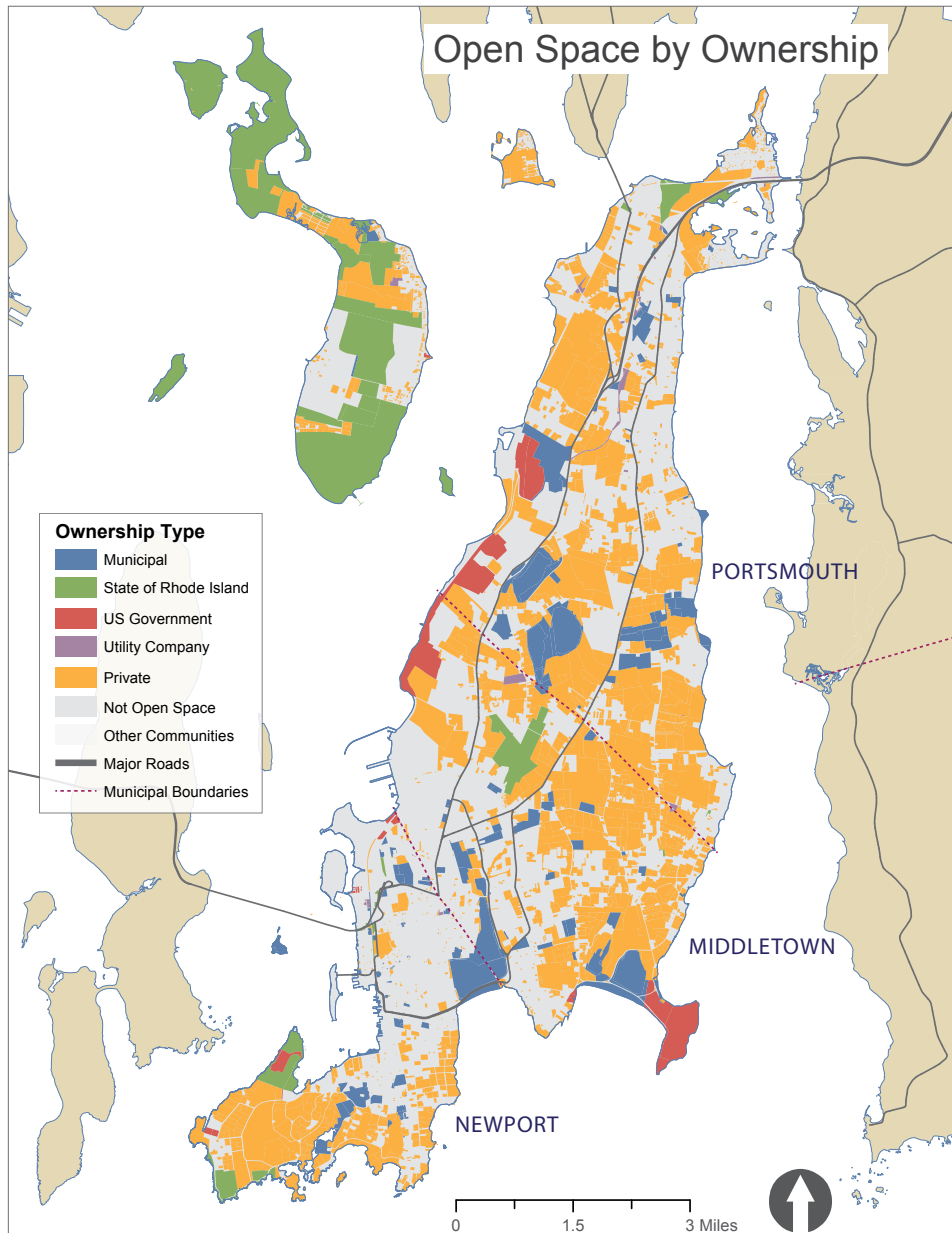


Figure 9: Aquidneck Island Open Space by Ownership

land area.

In all three Aquidneck Island municipalities, the majority of open space is zoned for residential use. In Portsmouth and Middletown, more of the identified open space areas are zoned for medium-density residential than any other category, including much of the island’s agricultural land. In Newport it is low-density residential zoning that accounts for the most open space.

The ratio of privately-owned to publically-owned open space is consistent across the three communities – 70% to 30%, with a similar mixture of municipally-owned, state-owned, and federally-owned parcels (see Table 14). Most of the publically-owned open parcels are accessible to the public, although those that are a part of Naval Station Newport are not.

The average size of open space parcels in both Middletown and Portsmouth is about six acres with a standard deviation of 16-17. The towns’ open space ranges from small vacant lots to the large parcels that are part of Naval Station Newport or are in use for agriculture or wildlife habitat. The average size of Newport’s parcels is 3.3 acres with a smaller standard deviation of 9.5. If the island’s vacant parcels are excluded, the average size of Newport’s open space areas increases to 4.6 acres, Middletown’s to 8.5 acres, and Portsmouth’s to 12.6 acres. Given the large number but total small land area of the vacant parcels, this provides a more meaningful measure of the island’s open space parcels.

**AQUIDNECK ISLAND (including outlying islands)**

Owner	Area (acres)	Percentage
City of Newport	1,553.87	25.21%
Town of Middletown	304.73	4.94%
Town of Portsmouth	573.19	9.30%
State of Rhode Island	2,957.55	47.99%
United States of America	693.16	11.25%
Utilities	80.83	1.31%
<b>TOTAL</b>	<b>6,163.33</b>	

Table 14: Study Area Open Space Ownership

# FINDINGS

## Key Land Use Categories

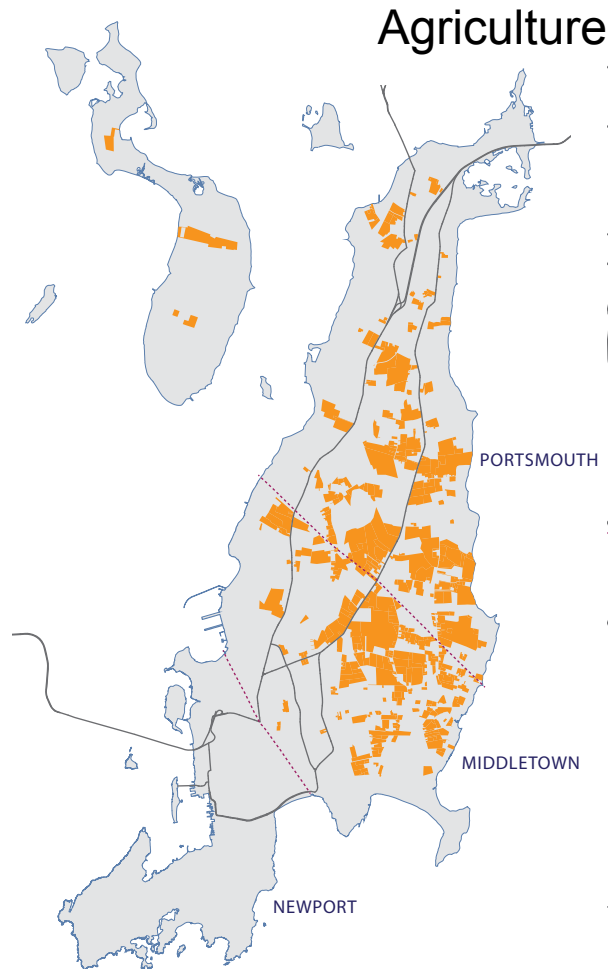


Figure 10: Agriculture

Aquidneck Island's agricultural areas are concentrated in a band that runs from the southeast corner of Middletown up the island's east side and into Portsmouth. Much of Middletown's and Portsmouth's farmland is zoned for medium-density residential use.

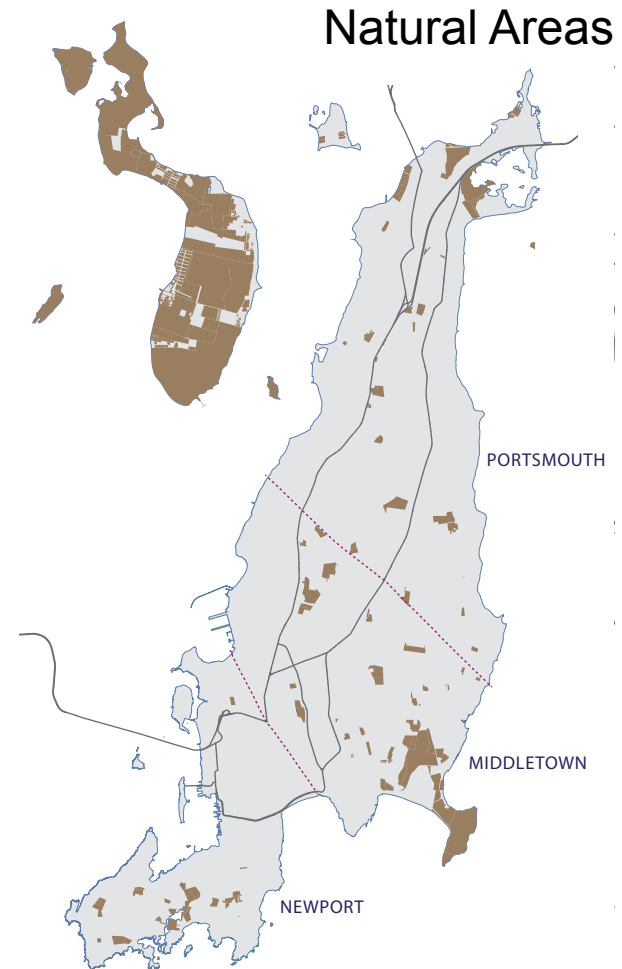


Figure 11: Natural Areas

The largest concentrations of natural areas are on and around Sachuest Point and on Portsmouth's outlying islands - Prudence, Hope, Patience and Dyer.

# FINDINGS

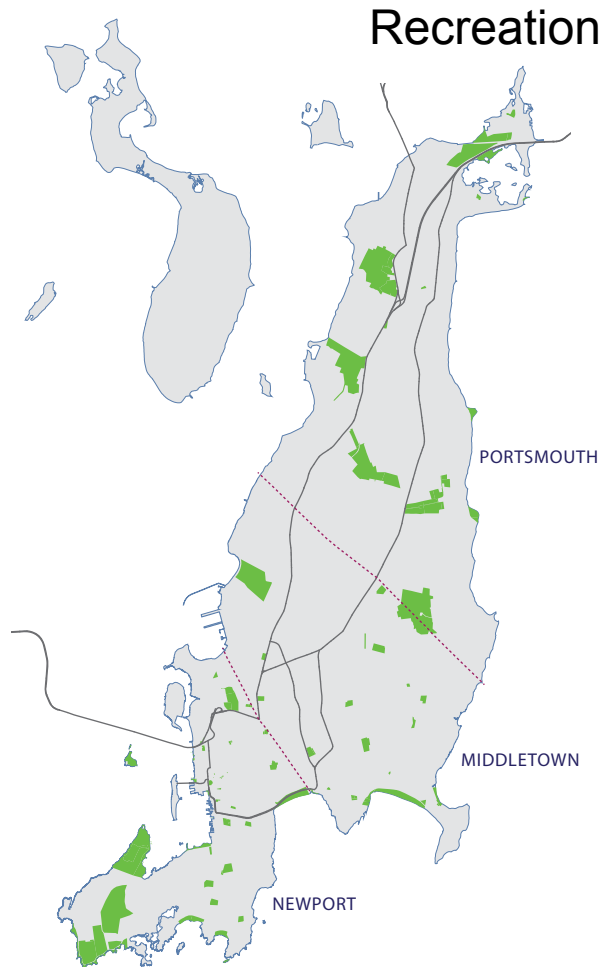


Figure 12: Recreation

Large recreation areas are scattered throughout Aquidneck island, although the greatest concentration is in Newport, where Fort Adams State Park, Brenton Point State Park, and the Newport Country Club are in close proximity.

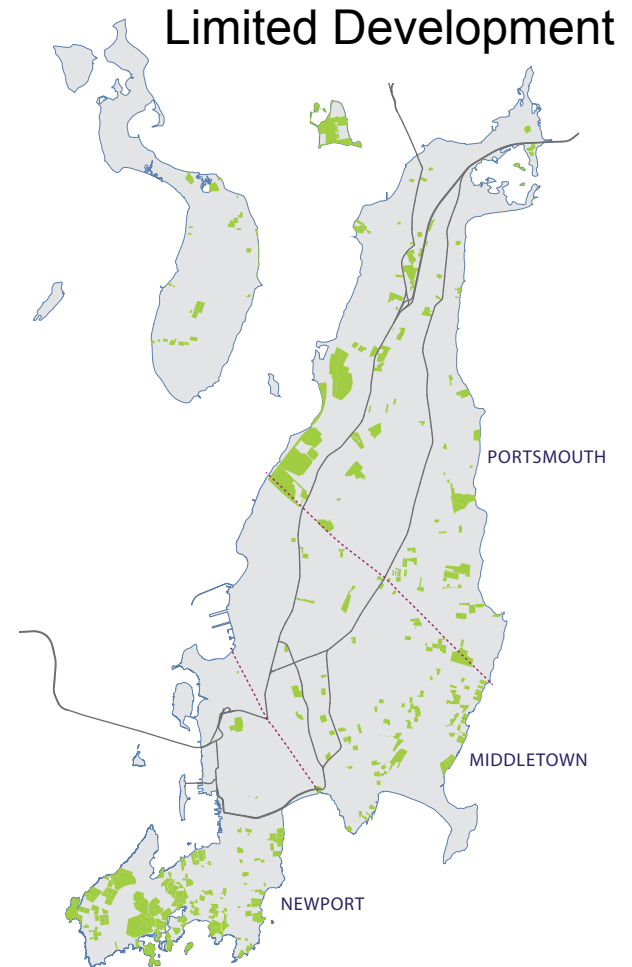


Figure 13: Limited Development

The greatest concentration of limited development is along and around Ocean Drive in Newport and in the same area as much of the city's recreational open space. There are also significant groupings in Portsmouth southwest corner and on the eastern shore of Middletown.

# FINDINGS

## Susceptibility Analysis

The analysis provides a broad view of the susceptibility to change of the open space parcels identified through the project. Although the results of the analysis should be used only as one part of any consideration of the potential changes to Aquidneck Island's open space, they can be useful to understanding the different forces affecting the island's open areas. Overall the analysis showed that areas scored as least susceptible comprise the largest percentage (39%) of the island's open space, with Middletown accounting for 50% of this total. Somewhat susceptible areas comprise 27.1% of the island's open space, and most susceptible account for 33.8% - 70% in Portsmouth.

The areas identified as least susceptible to change are located in distinct clusters centered on the study's area's inland water bodies, state parks, and permanently conserved land. The map shows large conglomerations on and around Sachuest Point in Middletown, on the farmland that straddles the Middletown – Portsmouth boundary, around Portsmouth's reservoir and large ponds, and on Prudence Island.

The areas identified as somewhat susceptible to change are scattered more widely across the island, but still show some distinct clusters. Much of the vacant and limited development land on and around Ocean Drive in Newport falls into this category as do many of the open space parcels identified in Middletown's and Portsmouth's southeast corners.

The areas shown as most susceptible to development do not show the distinct clustering of the other two categories. Many of the small, vacant lots scattered throughout the most intensely developed areas of Newport and Middletown are in the most susceptible category, as are some of the large vacant and limited development areas in both municipalities. Portsmouth has more areas identified as most susceptible than either Newport or Middletown, including large swaths of land along East and West Main roads, and a substantial natural area on Island Park Cove in the north of the town.

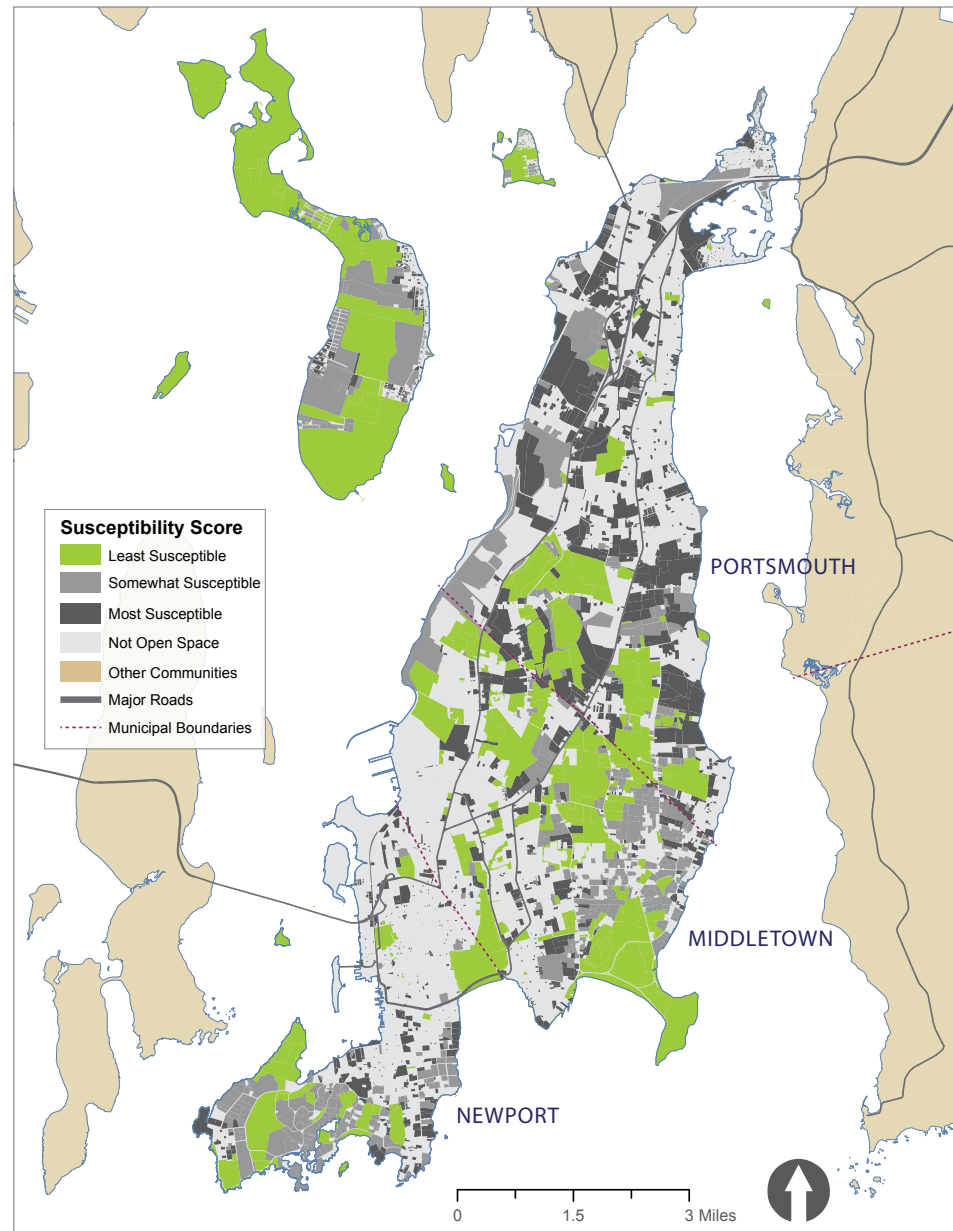


Figure 14: Final Susceptibility Score

# CONCLUSION



St. George's School in Middletown

## Conclusion

The year-long Aquidneck Island Open Space Mapping Project has produced a detailed, comprehensive view of the island's open areas. By using real estate parcels as the basic unit of analysis, AIPC was able to identify and categorize the island's diverse open areas, which range from the small vacant lots in Newport to the large agricultural and institutional parcels in Middletown and Portsmouth. It provides information that should be helpful immediately to the island's municipalities, as they plan for the future.



Cliff Walk in Newport

The maps and data in the final report also offer Aquidneck Island's planners and others a basis for additional analysis and study. Municipalities can use the information to help determine where future development should occur and which open space areas have the most environmental, historic, or scenic value. The data may also be valuable to municipalities as they review existing public recreation opportunities and identify any gaps in access and as they address habitat preservation and water quality issues.