GENERAL APPROACH

The CRA included several distinct steps that built upon each other to better categorize and address the risks that climate change poses to PEP's management goals. This section provides a brief overview of the process. The project's methodologies and findings are detailed in Sections 2 and 3.

Stakeholder Outreach

Stakeholder outreach and involvement were critical parts of the CRA. PEP's strong stakeholder outreach program meant that stakeholder groups could be easily identified and tapped to provide feedback, guidance, and review. The following stakeholder meetings were held during the course of the CRA:

- Kickoff Meeting: January 29, 2018
- Developing Climate-Based CLPS Criteria: September 21, 2018
- Climate Change Vulnerability Assessment: January 7, 2019
- Vulnerability/Risk Assessment and CLPS Criteria Ranking Results: June 5, 2019

The meetings were attended by residents; staffers from towns, villages, and county offices and from regulatory agencies; elected officials; representatives of land use preservation and other non-profit organizations; and business leaders. PEP also consulted directly with its CAC and TAC members to promote outreach goals. Stakeholder comments were incorporated into the CLPS update and the vulnerability and risk assessment. Stakeholder outreach will not end with this report which, along with the tools presented in Section 4, will be distributed and promoted through social media and other channels. Appendix A includes notes and attendee lists from stakeholder meetings.

CLPS Update

To update the CLPS criteria and incorporate climate change, climate considerations were presented to a stakeholder group whose comments and concerns were documented. PEP then developed draft criteria and provided them to the stakeholder group. Additional comments were incorporated into a final set of updated criteria that was presented at the third stakeholder meeting.

To prioritize land for preservation based on the revised CLPS criteria, a ranking tool was developed and applied to individual parcels in the Peconic Estuary by mapping the data available for each criterion and the model projections of inundation levels and marsh migration under selected SLR scenarios. The parcel rankings were presented at the final stakeholder meeting. The data sources for each criterion are described in Section 2. All geospatial data were reviewed in accordance with the quality control checklist in the Quality Assurance Project Plan for this project (Anchor QEA 2017). This review is summarized in Appendix B.

Mapping completed under this project to identify the extent of climate risks informed the development of the new climate-ready CLPS. The ranking strategy to prioritize land use is part of the adaptation toolbox presented in this report. The climate-ready CLPS criteria are in Section 2.

Vulnerability Assessment and Climate Adaptation Action Plan

The vulnerability assessment and climate adaptation action plan are based on the process and tools outlined in *USEPA's Being Prepared for Climate Change: A Workbook for Developing Risk-Based Adaptation Plans* (Workbook; USEPA 2014). The Workbook presents a process for identifying, analyzing, and comparing risks associated with climate change and climate change adaptation planning based on USEPA's experience with watershed management, the NEP, and the Climate Ready Estuaries program. Completing a risk assessment for the Peconic Estuary following the process laid out in the Workbook will enable the management team to address, through adaptation planning, the identified risks to program goals.

After developing a preliminary list of goals for its watershed management plans, PEP reached out to stakeholders to identify estuary-specific climate-based stressors and risks. To determine vulnerability, risks were ranked by their expected effect on PEP's ability to meet its management goals. The final step in the process was to develop a climate action plan to address vulnerabilities. The action plan includes strategies to address risk in a variety of forms and identifies where more work is needed to confront risks. The climate action plan is a "living document" that will be updated periodically to incorporate new climate change science, risks, and adaptation opportunities. Adaptation projects also include monitoring to assess the ability of individual actions to mitigate risks. Results of the vulnerability assessment are presented in Section 3.

SECTION 2:
CLIMATE-BASED CLPS CRITERIA AND RANKING TOOL

This section presents an overview of the new CLPS screening criteria development and prioritization process to account for anticipated changes in coastal conditions related to climate change. The objectives of the new climate-based CLPS criteria include continuing and building on the progress made by the original CLPS criteria so that vulnerabilities continue to be identified. The CLPS Ranking Tool, described in this section, was developed in response to the PEP TAC and CAC members' request for a tool that incorporates spatial mapping of the CLPS criteria datasets to develop measurable land protection goals.

DEVELOPING UPDATED CLIMATE CRITERIA

The revised CLPS criteria were built on the CLPS criteria developed in 2004, which are metrics to prioritize land acquisition and protection. The 2004 criteria are as follows:

- **Shoreline**: Prioritize preservation of land within 1,000 feet of the shoreline of a bay, tidal creek, or the Peconic River
- **Wetlands**: Prioritize preservation of land containing freshwater or tidal wetlands as identified by the U.S. Fish and Wildlife Service's 1994 National Wetlands Inventory
- **Critical Natural Resource Area**: Prioritize preservation of land in areas of particular ecological significance designated by PEP
- **Nitrogen-Stressed**: Prioritize preservation of land in a nitrogen-stressed subwatershed as designated by PEP

The Climate-Based CLPS Criteria Development Meeting of September 21, 2018, kicked off the update process (meeting notes can be found in Appendix A). The goal of the meeting was to develop revised criteria that will protect current and future habitats under climate change scenarios. Meeting facilitators presented the existing CLPS criteria and the anticipated regional climate change effects. They asked the participants to consider that, although the revised criteria will emphasize the health of the Peconic Estuary, stakeholder goals should be incorporated to the extent possible in order to promote the attainment of shared goals.

Participants agreed that PEP should revisit some of the datasets and sources used as a basis of the original criteria. There was also general agreement on the importance of including the existing criteria in the revised CLPS, with the exception of the Nitrogen-Stressed criterion which will need updating following completion of the Suffolk County Subwatersheds Wastewater Plan.[2] Because a primary factor controlling nitrogen loading to the Peconic Estuary is groundwater travel time, it was suggested that this metric be used in lieu of the Nitrogen-Stressed criterion.

The group identified the following additional parameters to be considered in the development of revised criteria:

- Protection/buffering of septic systems under SLR scenarios
- Protection of existing and migrating sandy shorelines
- Protection of natural shorelines, especially those with multiple functioning habitats
- Groundwater table depth
- Zoning lot size in relation to buffers
  - » Identifying sub-parcels
  - » Septic density
- Intensity of use/recharge rates
- Wetland/marsh migration
- Saltwater Intrusion

2) The Suffolk County Subwatershed Wastewater Work Plan study involved the identification of priority watersheds for nitrogen reduction based on nitrogen loading rates and receiving water residence times (Suffolk County 2019). The Work Plan is being used to develop a draft plan which was made available for public review in August 2019.

- Flood/coastal hazards zones under climate change scenarios, Federal Emergency Management Agency (FEMA) 100-year flood plains, New York State Department of Environmental Conservation (NYSDEC) Coastal Erosion Hazard Areas (CEHAs)
- Developed vs. undeveloped parcels

PEP revised the CLPS criteria based on input from the stakeholder group and, to the extent possible given available data and information, on the above parameters identified at the stakeholder meeting. The CLPS Ranking Tool (described below) was developed to prioritize land for protection based on the revised criteria. While the tool is based on available data and information, it is designed to incorporate new criteria as data become available.

Because many of these factors overlap, the revised CLPS criteria were grouped into the following classes:

- **Class 1: Habitat and Water Quality Protection.** The goals of the criteria in this CLPS class are to protect areas that currently support—or are predicted to support in the future—natural habitat (tidal and freshwater wetlands) in Peconic Bay, tidal creeks, and the Peconic River so they can continue to promote biodiversity and filter inputs of land-based nutrients to minimize incidents of dissolved oxygen stress.
- **Class 2: Inundation Areas.** The goals of the criteria in this CLPS class are to identify PEP program areas that would be submerged due to SLR so they may be considered for acquisition and to allow for wetland migration, restoration, or creation.
- **Class 3: Groundwater Protection.** The goals of the criteria in this CLPS class are to protect groundwater and to identify areas that may flood due to rising water tables so they can be prioritized for protection to reduce discharges of nutrients and contaminants into areas where groundwater travel times are short and to minimize damage from flooding. Other goals are to prevent saltwater intrusion into the water table and nonpoint-source pollutant discharges to the Peconic Estuary.

The criteria associated with each class are presented in Figure 3.

Figure 3: Climate-Based CLPS Criteria

Class 1: Habitat and Water Quality Protection

Contains or will contain freshwater or tidal wetlands

Located within 1,000 feet of the shoreline of a bay, tidal creek, or the Peconic River

Located within a Critical Natural Resources Area or a Significant Coastal Fish and Wildlife Habitat

Class 2: Inundation Areas

Located within a present-day flood zone

Located in areas that will become unundated under future sea-level rise projections

Class 3: Groundwater Protection

Located within a zone of groundwater recharge travel time area between 0–25 years

Located in areas with predicted increases in the saltwater interface elevation that will affect groundwater quality and elevation, causing flooding at the surface

Located in special groundwater protection area (100 + year recharge)

CLPS CRITERIA MAPPING

To evaluate the revised CLPS criteria, data representing each criterion were analyzed in a GIS framework. GIS permits a visual assessment of currently protected lands to help managers determine whether they meet new CLPS criteria, in order to identify and prioritize opportunities to protect adjacent unprotected areas and increase habitat connectivity. Mapping also identifies undeveloped areas and vulnerable developed areas that should potentially be targeted for acquisition or buyout.

PEP's approach to incorporating climate change considerations into the revised CLPS criteria included evaluations of impacts under three SLR scenarios. The scenarios were taken from the New York State Community Risk and Resiliency Act (CRRA) SLR projections, which were based on the 2014 ClimAID update (Horton et al. 2014). The CRRA projections were used because they include regional projections for New York State and have been adopted at the state level (6 New York Codes, Rules and Regulations [NYCRR] Part 490, Projected Sea-level Rise). Using accepted state projections ensures consistency with regulatory guidance and state grants. The selection process was also informed by SLR projections from other studies, including those conducted by the Intergovernmental Panel on Climate Change and the National Aeronautics and Space Administration. The CRRA projections for SLR in the Long Island region are presented in Table 1.

Table 1: CRRA Sea Level Rise Projections for the Long Island Region

Decades	Low	Low-Medium	Medium	High-Medium	High
2020s	2	4	6	8	10
2050s	8	11	16	21	30
2080s	13	18	29	39	58
2100	15	21	34	47	72

Note:
Source: 6 NYCRR Part 490, Projected Sea-level Rise. Inches of rise relative to 2000–2004 baseline.

The following SLR projections were selected by PEP for use in this analysis:

2020s: 6 inches | 2050s: 21 inches | 2100: 47 inches

The first projection, based on the medium CRRA projection for the short term, was selected because tide gauge data collected at Montauk appear to be tracking this scenario, having measured an almost 4-inch increase in SLR since 2000 (NOAA 2018). This scenario was used as the current condition because we are closer to the time period of the projection than to the 2000–2004 baseline. The medium- and long-term CRRA SLR projections for the 2050s and 2100 were selected from the medium-high scenario to provide upper bound estimates of SLR for future planning.

The SLR projections and predicted changes in coastal marshes were visualized using the Sea Level Affecting Marshes Model (SLAMM; NYSERDA 2017). SLAMM projections were performed under a grant from the New York State Energy Research and Development Authority (NYSERDA) by Warren Pinnacle Consulting using ClimAID SLR projections for several areas in the state including the Peconic Estuary (NYSERDA 2017). The SLAMM predictions were based on the selected SLR scenarios and other area-specific factors including hydrology and land cover.

The data sources for each criterion and for tax parcels in the Peconic Estuary are presented in Table 2. Figures 4 through 9 show the extent of inundation and marsh migration under each selected SLR scenario based on deterministic[3] SLAMM projections for 6 inches of SLR by 2025, 21 inches by 2055, and 47 inches by 2100. As the figures show, inundation areas (areas projected to flood at least once every 30 days) and marshes are predicted to move inland as a result of SLR. Future estimates of the depth to groundwater are limited to a single scenario, taken from CDM Smith as part of the Suffolk County Subwatersheds Wastewater Plan, in which SLR increases 34 inches; this estimate was considered in the 2100 SLR scenario. Figure 10 shows groundwater depths of 10 feet or less predicted under the 34-inch SLR and depths of 10 feet or less in 2016. Maps for the additional layers that represent additional CLPS criteria are provided in Appendix B.

3) SLAMM simulations are available as likelihood estimates (the probability of inundation and marsh changes under SLR scenarios) or for deterministic estimates of the ClimAID scenarios.

Table 2: Datasets Used in CLPS Analysis

Relevant CLPS Criteria/ Vulnerability Assessment Risk	Dataset	Source
Property boundaries, ownership information, and use codes	Suffolk County Tax Map Data	Suffolk County Real Property Tax Service Agency (2018)
Land use categories	Suffolk County Land Use	Suffolk County (2016)
Freshwater or tidal wetland	National Wetlands Inventory	US Fish & Wildlife Service (2018)
Inundation areas and sea level rise	SLAMM	NYSERDA/Warren Pinnacle Consulting, Inc. (2015)
Present-day flood zone	Digital Flood Insurance Rate Map Database, Suffolk County, New York	FEMA (2009)
Significant habitat and water quality	Significant Coastal Fish and Wildlife Habitats	NYSDOS (2015)
Current groundwater table	Depth to groundwater mapping	USGS (2016)
Rising groundwater table	Depth to groundwater after 34-inch SLR	Suffolk County / CDM Smith (2016)
Surface water protection	Groundwater travel time to surface waters	Suffolk County / CDM Smith (2016)
Special groundwater protection area	Critical Environmental Areas in NYS	NYSDEC (2016)

Figure 4: Inundation 2025 Medium Scenario (6" Sea Level Rise)

Figure 5: Inundation 2055 High-Medium Scenario (21" Sea Level Rise)

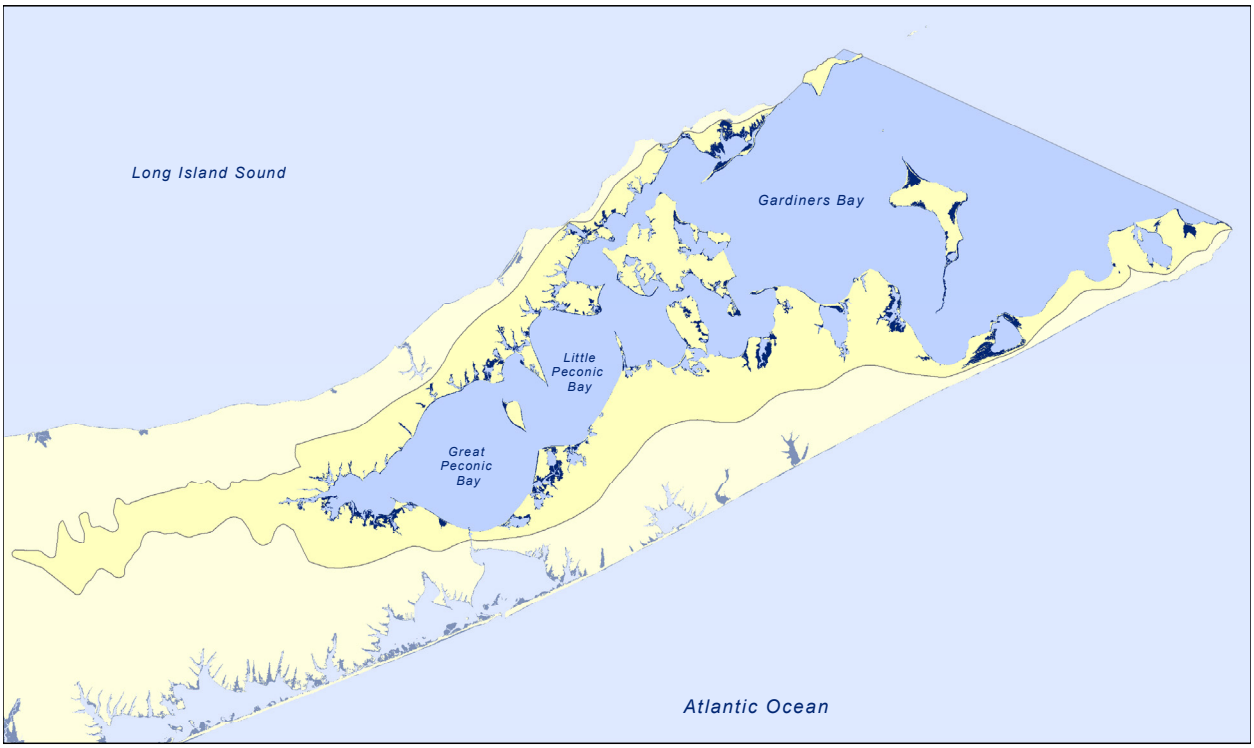


Figure 6: Inundation 2100 High-Medium Scenario (47" Sea Level Rise)

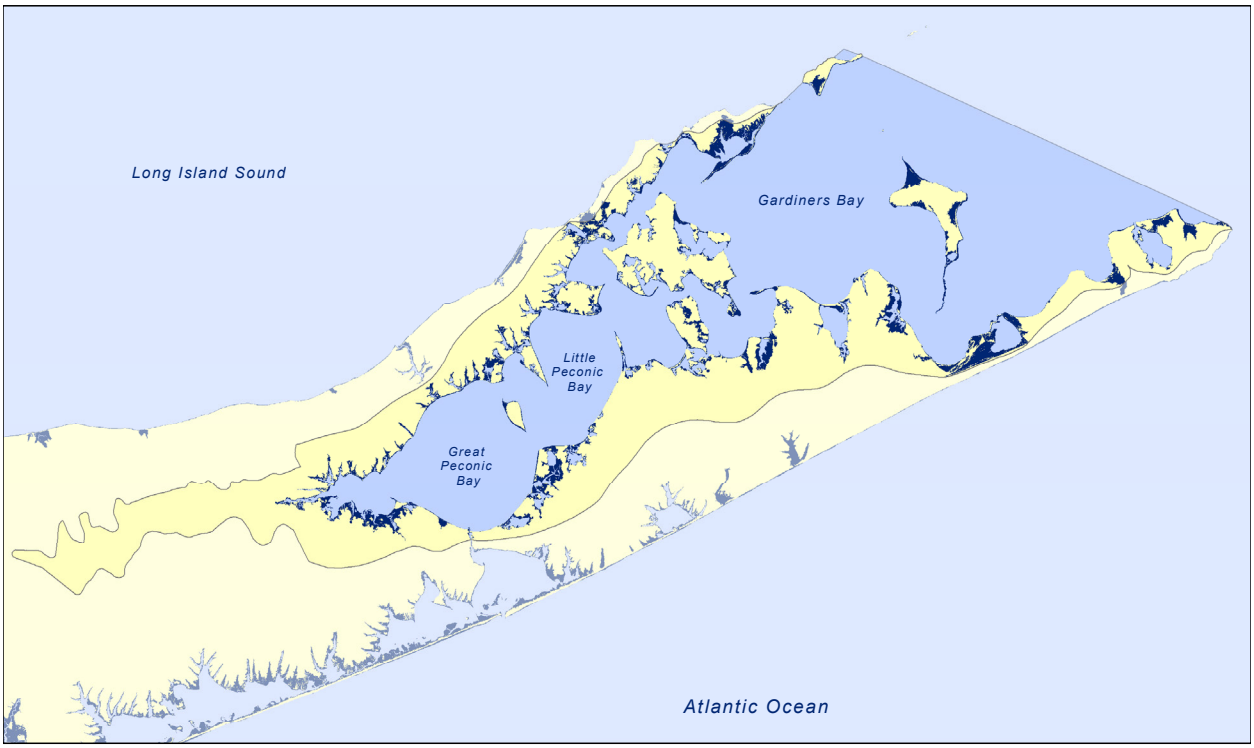


Figure 7: Future Tidal and Fresh Marsh Extent: 2025 Medium Scenario (6" SLR)

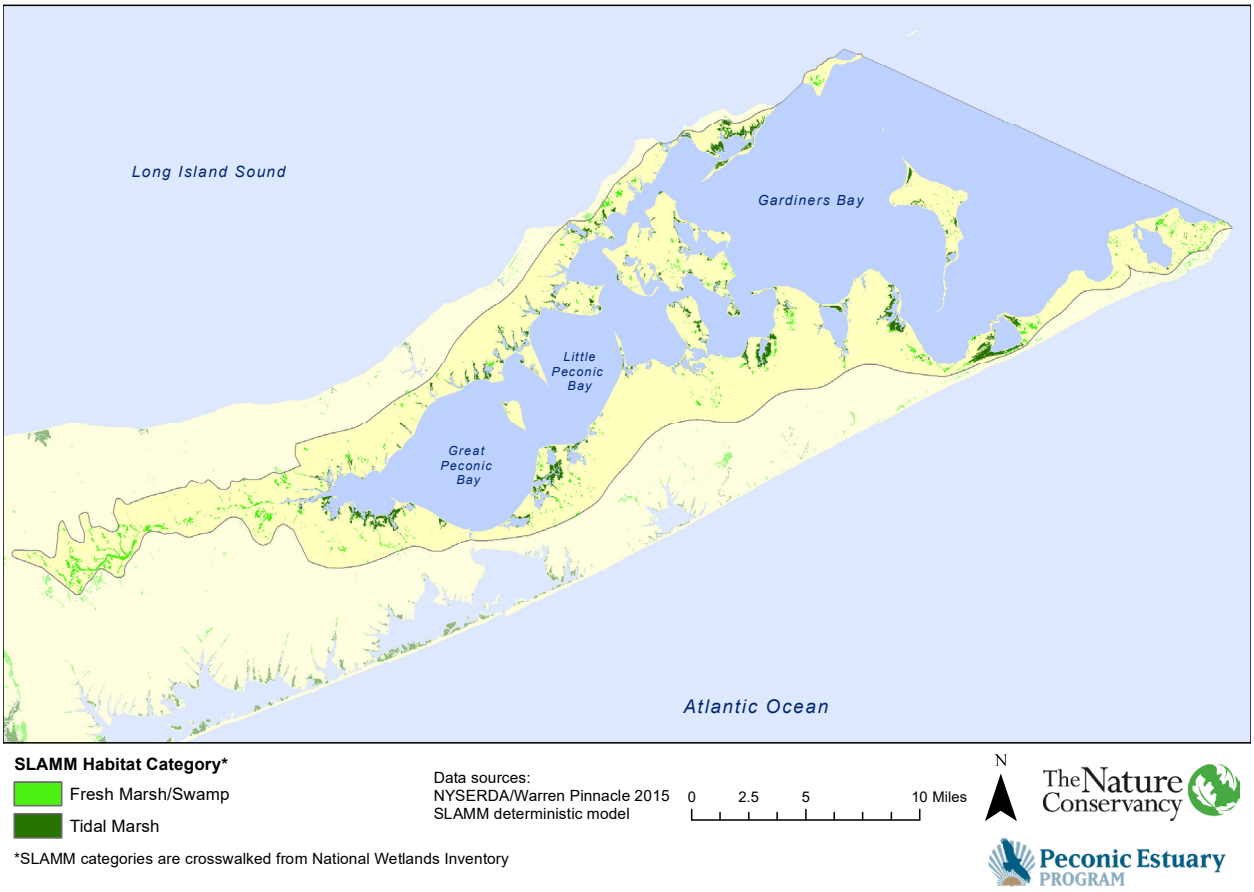


Figure 8: Future Tidal and Fresh Marsh Extent: 2055 High-Medium Scenario (21" SLR)

Figure 9: Future Tidal and Fresh Marsh Extent: 2100 High-Medium Scenario (47" SLR)

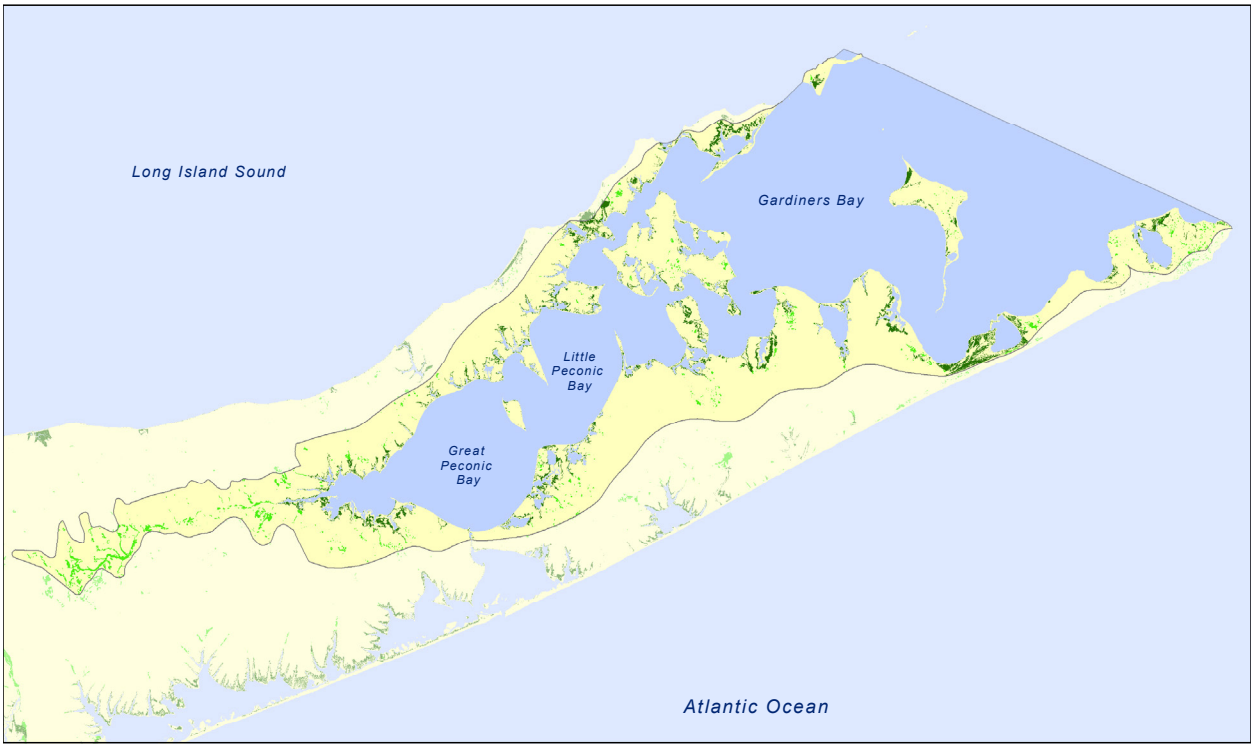
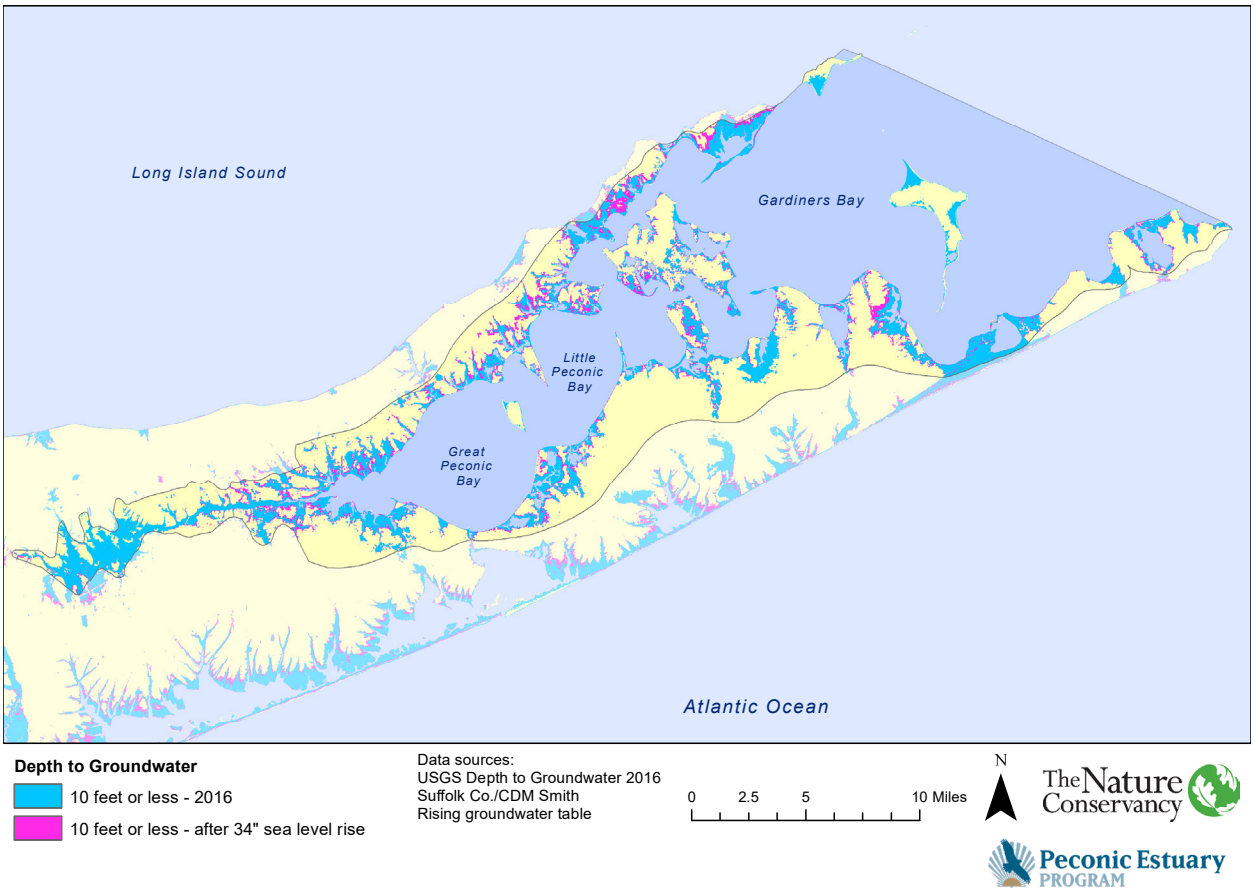


Figure 10: Shallow Depth to Groundwater (10 feet or less)



CLPS RANKING TOOL

The CLPS Ranking Tool provides a means of prioritizing parcels for protection by scoring them according to how many CLPS criteria they meet now or will meet under future SLR scenarios.

The CLPS criteria scoring was developed separately for "Undeveloped,""Developed," and "Agricultural" parcels. Undeveloped parcels include parcels designated on Suffolk County Land Use maps (2016) as "Vacant, Recreation & Open Space." Developed parcels include all other parcels except farmland, which is designated Agricultural on the Suffolk County Land Use maps. The scoring systems are described further at the end of this section.

Stakeholder Feedback

As first presented to stakeholders, the CLPS Ranking Tool designated parcels either "Developed" or "Undeveloped." The undeveloped parcels were parcels marked as Vacant, Recreation & Open Space on the Suffolk Country Land Use maps. Developed parcels were all other parcels including farmland. Many stakeholders questioned designating farmland as being developed.

Farmland is a new category in the CLPS process and did not fit neatly in either category. Although farmland preserves open space, varying levels of commercial development can occur on land zoned as agriculture. However, it is recognized that protected farmland is a distinct category of agriculture and is being pursued by the East End Towns to meet conservation goals. The CLPS Ranking Tool was designed to help decision makers not only decide which lands to acquire, but also evaluate which adaptation strategy is appropriate. For example, it may be possible to purchase additional conservation restrictions or easements on protected farmland in areas mapped as critical for marsh migration. However, it is important to carefully review and understand any existing conservation easements on protected farmland to ensure consistency with current conservation restrictions and requirements. It is also important that decision makers engage with the agricultural community as such strategies are considered.

Based on stakeholder feedback, farmland was categorized as "Agricultural" land and separated from parcels designated as "Developed" in the new CLPS ranking.

Note on Farmland and Conservation

Farmland can be preserved through a number of means, including the following: 1) the purchase of development rights (PDR); 2) the transfer of development rights (TDR); 3) the donation of conservation easements; and 4) the conveyance of a conservation easement as a condition of the approval of a subdivision. In most instances, the protected farmland remains in private hands while the development rights are held by a unit of government or a qualified conservation organization.

The Suffolk County Farmland Preservation Program, which dates from1974, was the first PDR program in the nation and has protected more than 10,500 acres of farmland to date. By the early 1980s, most East End Towns had established PDR programs of their own, usually funded by local bond issues supported by the public. In 1999, the Peconic Bay Region Community Preservation Fund was enacted through state legislation. It enabled the five East End Towns to collect a 2% real estate transfer tax to fund conservation acquisitions, including the protection of farmland as its highest priority. In all of these programs, the value of development rights is established by appraisals that represent the difference between the fair market value of a property based on its "highest and best use" (residential or commercial development) minus the value of the property limited to agricultural use (residual value). In all instances, the municipalities hold development rights documents (i.e., contracts or deeds), which are similar to conservation easements in form. TDR programs are a variation of the PDR concept in which municipalities permanently protect land that has conservation value (such as farmland, community open space, or other natural or cultural resources) by redirecting development that would otherwise occur on this land (known as the "sending zone") to an area planned to accommodate growth and development (known as the "receiving zone"). Such rights can be purchased by municipalities and held in a TDR "bank" for future sale to parties interested in increased residential or commercial density in a receiving zone.

The federal Tax Reform Act of 1976 included incentives to donate development rights on land of conservation value as defined in 170(h) of the Internal Revenue Code (26 U.S. Code § 170). Units of government and qualified conservation organizations (e.g., land trusts and conservancies) can accept donations of interests in real property in the form of perpetual conservation easements to protect shorelines, scenic vistas, endangered flora and fauna, and farmland based on clearly delineated governmental policy at all levels of government. The donor of these rights is eligible for a charitable deduction based on the difference between the value of the property with all its full rights intact (before value) and its restricted value (after value). As of 2016, more than 56

Continued on next page...

million acres nationwide have been protected by gifts of conservation easements. The Peconic Land Trust is a nonprofit, tax-exempt corporation whose mission is to conserve Long Island's working farms, natural lands, and heritage for its communities now and in the future. The Peconic Land Trust is a qualified conservation organization, as defined in the Internal Revenue Code, to acquire conservation easements by gift or purchase and to monitor and enforce those easements in perpetuity. Conservation easements can be tailored to protect the conservation attributes of specific property and to meet the goals, needs, and circumstances of a landowner.

In the late 1980s, the East End Towns began to incorporate clustering in their zoning codes to protect farmland through the subdivision process. Clustering requires that the development density allowed on a specific property be concentrated on a portion of the property, rather than its entirety. Cluster zoning is typically used to protect 35% to 70% of the prime agricultural soils on a farmland parcel through the use of a conservation easement. Such easements are not eligible for a charitable deduction because they are a condition of approval without charitable intent.

The Climate Adaptation Toolbox for Land Use and Municipalities Section on page 83 includes further information on the different strategies available for land use conservation in the Peconic Estuary.

Final Ranking Tool

Modeled after the existing CLPS prioritization strategy (PEP 2004), the CLPS Ranking Tool was modified to accommodate additional criteria organized by class and to incorporate climate change considerations. The prioritization categories for Undeveloped land are distinct from those for Developed and Agricultural land so that priority can be given to groups of Undeveloped parcels and to large Undeveloped parcels. Stakeholders expressed an interest in prioritizing smaller Developed parcels, so no priority was given to parcel aggregates and only limited priority was given to large Developed parcels. The tool assigns a score for each prioritization category and for each SLR scenario for which predictive data are available. Ranking parcels involves adding up the scores for each CLPS criterion a parcel meets; parcels that meet the most criteria will be ranked highest. Instructions for the CLPS Ranking Tool are provided on the following page.

HOW TO USE THE CLPS RANKING TOOL

The scoring system for Undeveloped land is shown in Table 3. The first category is for nearshore land, defined as land within 1,000 feet of the shoreline. If a parcel currently meets this criterion, 1 point is added to its score. If the parcel will also meet this criterion in 2055, under the 21-inch SLR, it gets another point, and it also gets another point if it will meet this criterion in 2100, under the 47-inch SLR.

Category 2, Priority Land Aggregates, is divided into a, b, and c categories, with points of 1, 2, or 3 if the parcel forms an aggregate of at least 10 acres and meets criteria from classes 1, 2, or 3 respectively. But because predictive data are not available for groundwater protection under the 2025 SLR scenario, the maximum number of points for Category 2 in this scenario is limited to 2 because it cannot be shown that a parcel may meet criteria from each of the CLPS protection classes. Points are assigned in the same manner for Category 3 (parcels of at least 10 acres), and Category 4 (parcels adjacent to protected land). The points for each category and SLR scenario are additive. Thus, the maximum score for an Undeveloped parcel is 27.

The scoring for Developed or Agricultural Land is similar, with differences in prioritization Categories 2 and 3. Rather than prioritizing aggregates, Category 2 includes parcels of any size that meet criteria from 1, 2, or 3 classes and Category 3 is limited to parcels that are greater than or equal to 10 acres and meet at least 1 criterion (there is no additional points for large parcel that meet additional criteria). Thus, the maximum score for Developed or Agricultural Land is 22.

Figure 11 shows how the individual scores for the CLPS categories are scored for a hypothetical Undeveloped parcel.

First, the parcel is currently within 1,000 feet of the shoreline and is predicted to be in 2055 and in 2100, so it gets 3 points for category 1. The parcel also meets the criteria for category 2c because it forms an aggregate of >10 acres and it meets at least 1 CLPS criteria from each class ((within the 100-year floodplain, has a tidal wetland, and groundwater table is at a depth of 10 ft or less on parcel), so it gets an additional 3 points added to its score. The parcel is also predicted to contain a freshwater wetland and be inundated by 2055, meeting the criteria for category 2b, so it gets another 2 points.

In 2100, the parcel is no longer predicted to have a tidal wetland, but it is predicted to be inundated and have a groundwater table at a depth of 10 ft or less so it gets another 2 points for category 2b. The parcel is not greater than 10 acres, so it does not get any points for category 3. It is adjacent to protected land greater than 2 acres, and it currently meets criteria for each of the 3 CLPS classes, so it gets 3 additional points, and will also meet both available criteria in 2055 and 2100, so it gets 4 more points. Adding up all these points, this hypothetical parcel gets a total CLPS criteria rank of 17.

Table 3: Undeveloped Land

Undeveloped Land Scoring System			
CLASS	CRITERIA		
	Current (6" SLR)	2055 (21" SLR)	2100 (47" SLR)
Provides Habitat and Water Quality Protection	Contains freshwater or tidal wetland	Will contain freshwater or tidal wetland	Will contain freshwater or tidal wetland
	Located within Significant Coastal Fish and Wildlife Habitat		
Identify Inundation Areas	Located within a flood zone		
	Inundation beyond shoreline	Inundation beyond shoreline	Inundation beyond shoreline
Groundwater Protection	Located within 0 - 25 year groundwater recharge zone		
	10' or less depth to groundwater		10' or less depth to groundwater*
	Located within a special groundwater protection area		

Prioritization Categories		**Score**		**Score**		**Score**
1: Nearshore undeveloped land:	Undeveloped land that is within 1,000' of the shoreline	1	Undeveloped land that will be within 1,000' of the shoreline	1	Undeveloped land that will be within 1,000' of the shoreline	1
2a: Priority land aggregates	Parcels of any size that contains one criterion	1	Parcels of any size that will contain at least one criterion	1	Parcels of any size that will contain at least one criterion	1
	Multiple parcels of any size that contains at least one criterion from two classes and forms an aggregate of >= 10 acres	2	Multiple parcels of any size that will contain one criterion from two classes and forms an aggregate of >= 10 acres	2	Multiple parcels of any size that will contain one criterion from two classes and forms an aggregate of >= 10 acres	2
2c: Priority land aggregates	Multiple parcels of any size that contains at least one criterion from three classes and forms an aggregate of >= 10 acres	3			Multiple parcels of any size that will contain one criterion from three classes and forms an aggregate of >= 10 acres	3
3a: 10 Up	Parcels >=10 acres that contains one criterion	1	Parcels >=10 acres that will contain one criterion	1	Parcels >=10 acres that will contain one criterion	1
3b: 10 Up	Parcels >=10 acres that contains at least one criterion from two classes	2	Parcels >=10 acres that will contain one criterion from two classes	2	Parcels >=10 acres that will contain one criterion from two classes	2
3c: 10 Up	Parcels >=10 acres that contains at least one criterion from three classes	3			Parcels >=10 acres that will contain one criterion from three classes	3
4a: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contains one criterion	1	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion	1	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion	1
4b: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contains at least one criterion from two classes	2	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from two classes	2	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from two classes	2
4c: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contains at least one criterion from three classes	3			Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from three classes	3
Maximum score = 27						

Notes:

Undeveloped = "Vacant, Recreation & Open Space" from Suffolk County Land Use 2016.

"Current" scenario relies on existing base maps (e.g., Significant Coastal Fish and Wildlife Habitat, FEMA mapping, groundwater recharge zones, groundwater protection areas) and the 6" SLR SLAMM estimates for inundation and marsh areas.

**Based on 34" SLR projection included in CDM groundwater model prediction.*

Table 4: Developed and Agriculture Land

Developed or Agriculture Land Scoring System			
CLASS	CRITERIA		
	Current (6" SLR)	2055 (21" SLR)	2100 (47" SLR)
Provides Habitat and Water Quality Protection	Contains freshwater or tidal wetland	Will contain freshwater or tidal wetland	Will contain freshwater or tidal wetland
	Located within Significant Coastal Fish and Wildlife Habitat		
Identify Inundation Areas	Located within a flood zone		
	Inundation beyond shoreline	Inundation beyond shoreline	Inundation beyond shoreline
Groundwater Protection	Located within 0 - 25 year groundwater recharge zone		
	10' or less depth to groundwater	--	10' or less depth to groundwater*
	Located within a special groundwater protection area		

Prioritization categories		**Score**		**Score**		**Score**
1: Nearshore developed land	Land that is within 1,000' of the shoreline	1	Land that will be within 1,000' of the shoreline	1	Land that will be within 1,000' of the shoreline	1
2a: Priority developed land	Parcels of any size that contains one criterion	1	Parcels of any size that will contain at least one criterion	1	Parcels of any size that will contain at least one criterion	1
	2b: Priority developed land	2	Parcels of any size that will contain one criterion from two classes	2	Parcels of any size that will contain one criterion from two classes	2
2c: Priority developed land	Parcels of any size that contains at least contains at least one criterion from three classes	3			Parcels of any size that will contain one criterion from three classes	3
3a: 10 Up	Parcels >=10 acres that contains one criterion	1	Parcels >=10 acres that will contain one criterion	1	Parcels >=10 acres that will contain one criterion	1
4a: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contain one criterion	1	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion	1	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion	1
4b: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contain at least one criterion from two classes	2	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain at least one criterion from two classes	2	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from two classes	2
4c: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contain at least one criterion from three classes	3			Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from three classes	3
4b: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contains at least one criterion from two classes	2	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from two classes	2	Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from two classes	2
4c: Adjacent to Protected	Parcels of any size that are adjacent to protected lands >= 2 acres and contains at least one criterion from three classes	3			Parcels of any size that are adjacent to protected lands >= 2 acres and will contain one criterion from three classes	3
Maximum score = 22						

Notes:

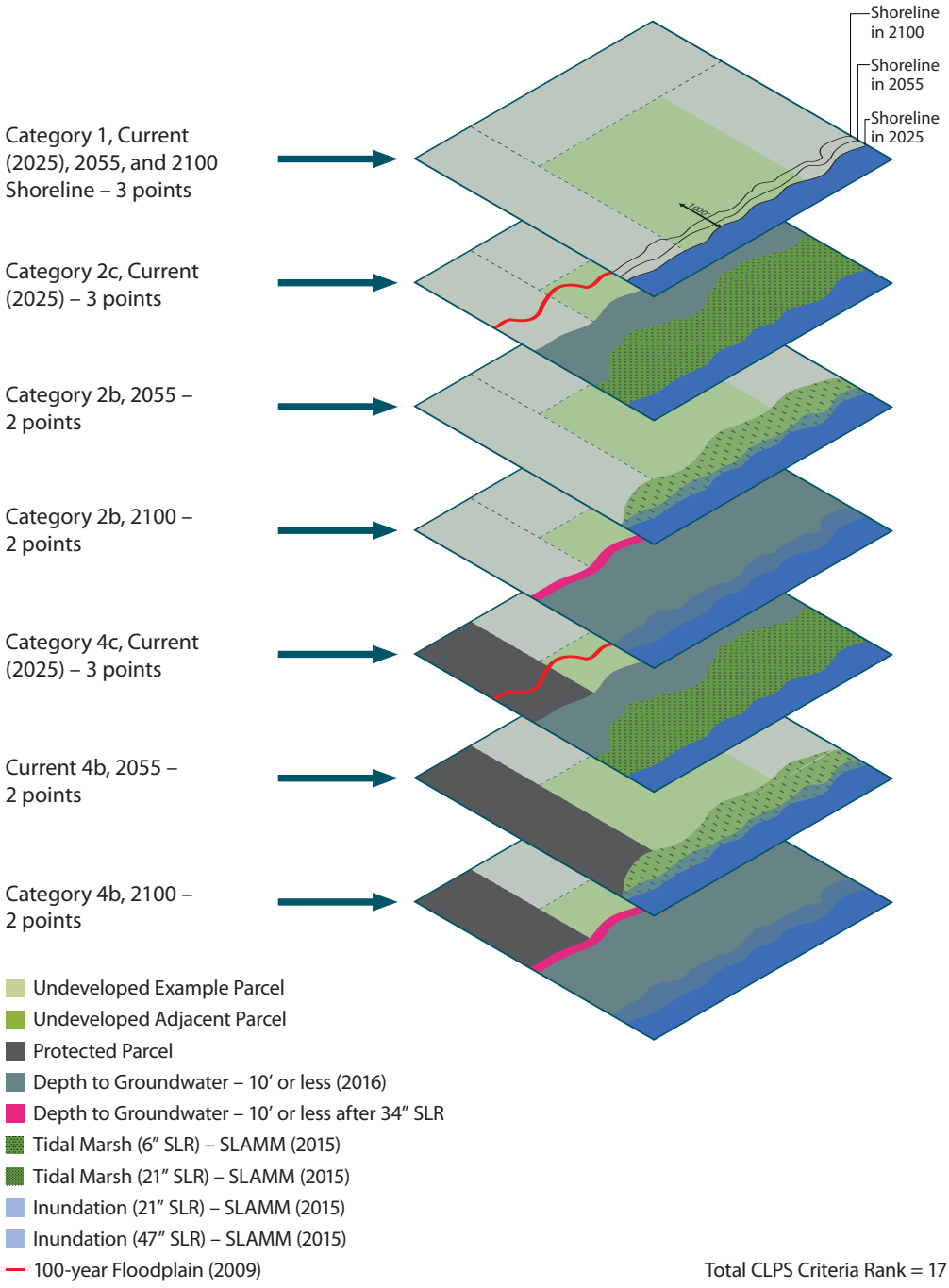
Built = Parcels that are categorized as land uses other than "Vacant, Recreation & Open Space" from Suffolk County Land Use 2016.

Agriculture = Parcels that are categorized as "Agriculture" from Suffolk County Land Use 2016. Contains conservation easements

"Current" scenario relies on existing base maps (e.g., Significant Coastal Fish and Wildlife Habitat, FEMA mapping, groundwater recharge zones, groundwater protection areas) and the 6" SLR SLAMM estimates for inundation and marsh areas.

**Based on 34" SLR projection included in CDM groundwater model prediction.*

Figure 11: CLPS Ranking Tool Example



The distribution of prioritization scores for Undeveloped land is shown in Figure 12. Figure 13 overlays the parcels that are already protected (parcels identified as Vacant or Recreation & Open Space in the Suffolk County Land Use layer and owned by a government entity [village, town, county, state, federal] or a land trust) on the results of the Undeveloped prioritization. A comparison of Figures 12 and 13 shows that most of the Undeveloped land in the highest CLPS prioritization category is already protected. The distribution of prioritization scores for Developed and Agricultural land, with the Protected Open Space parcel overlaid, is shown in Figures 14 and 15, respectively.

Figure 12: Undeveloped Priorization

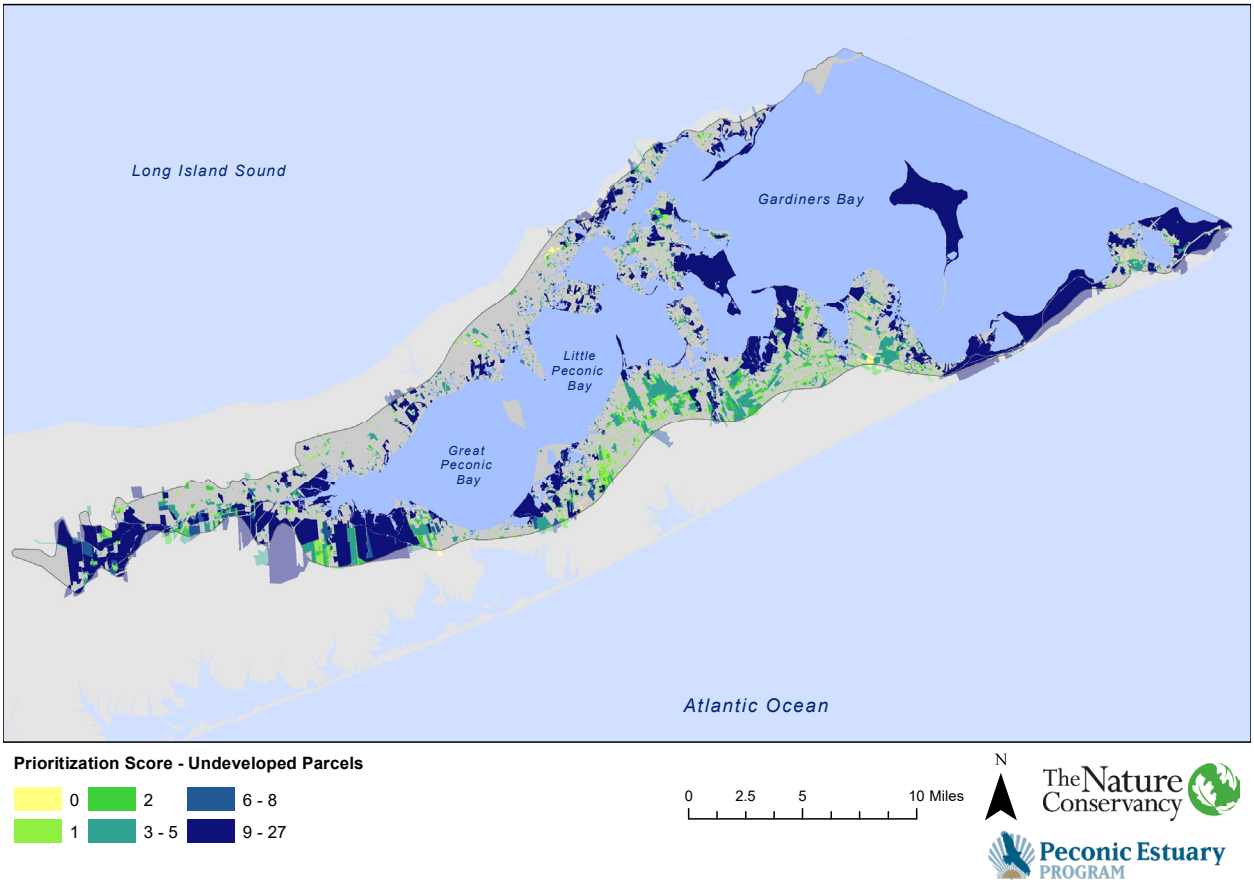


Figure 13: Undeveloped Priorization with Protected Open Space

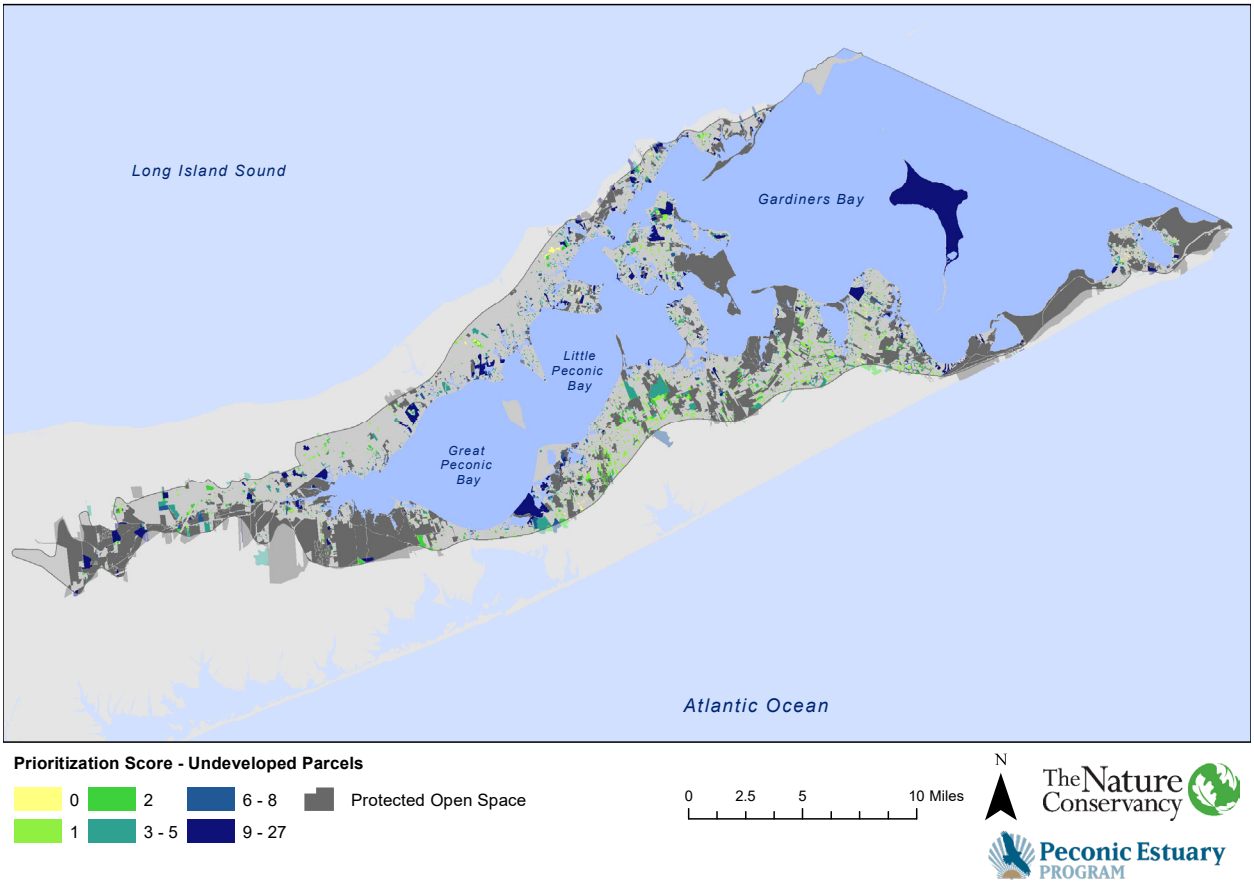


Figure 14: Developed Priorization with Protected Open Space

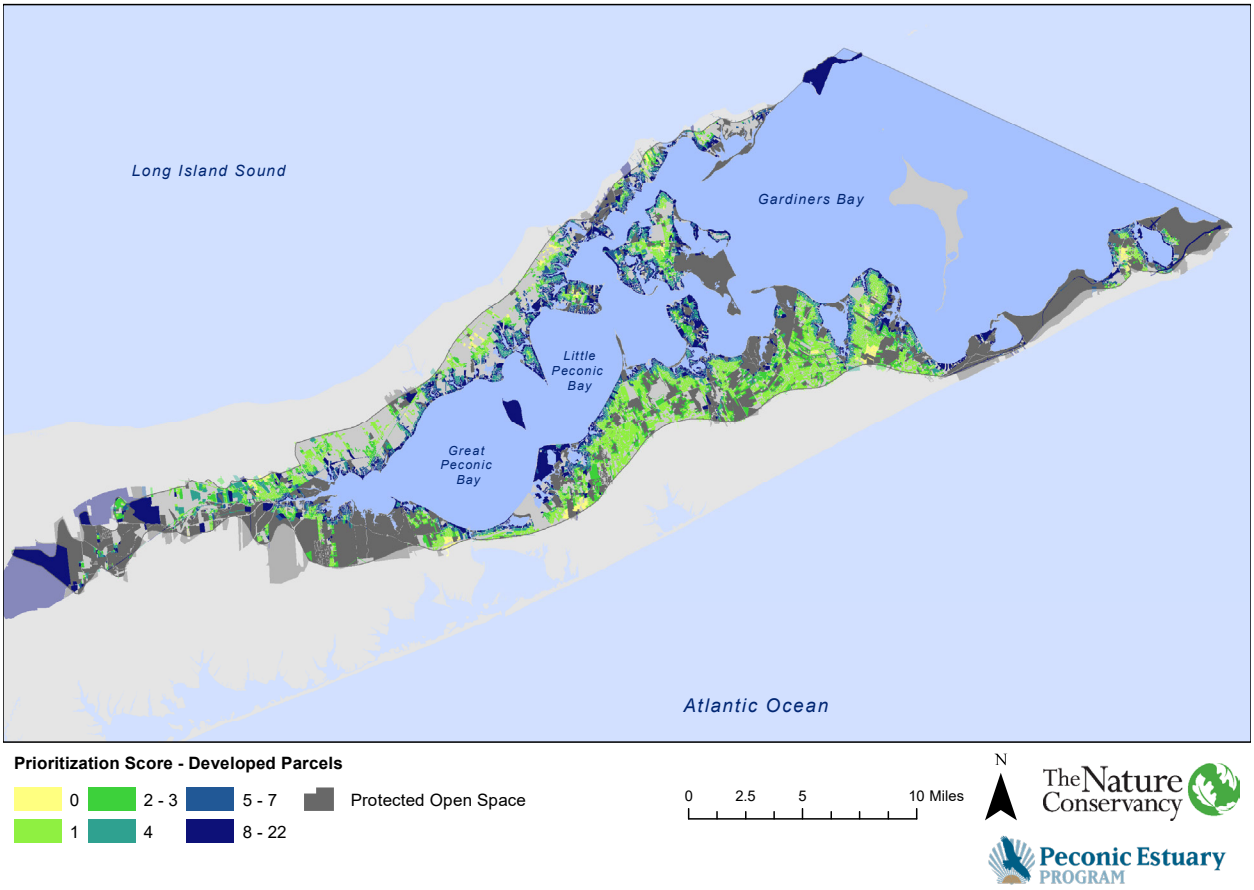
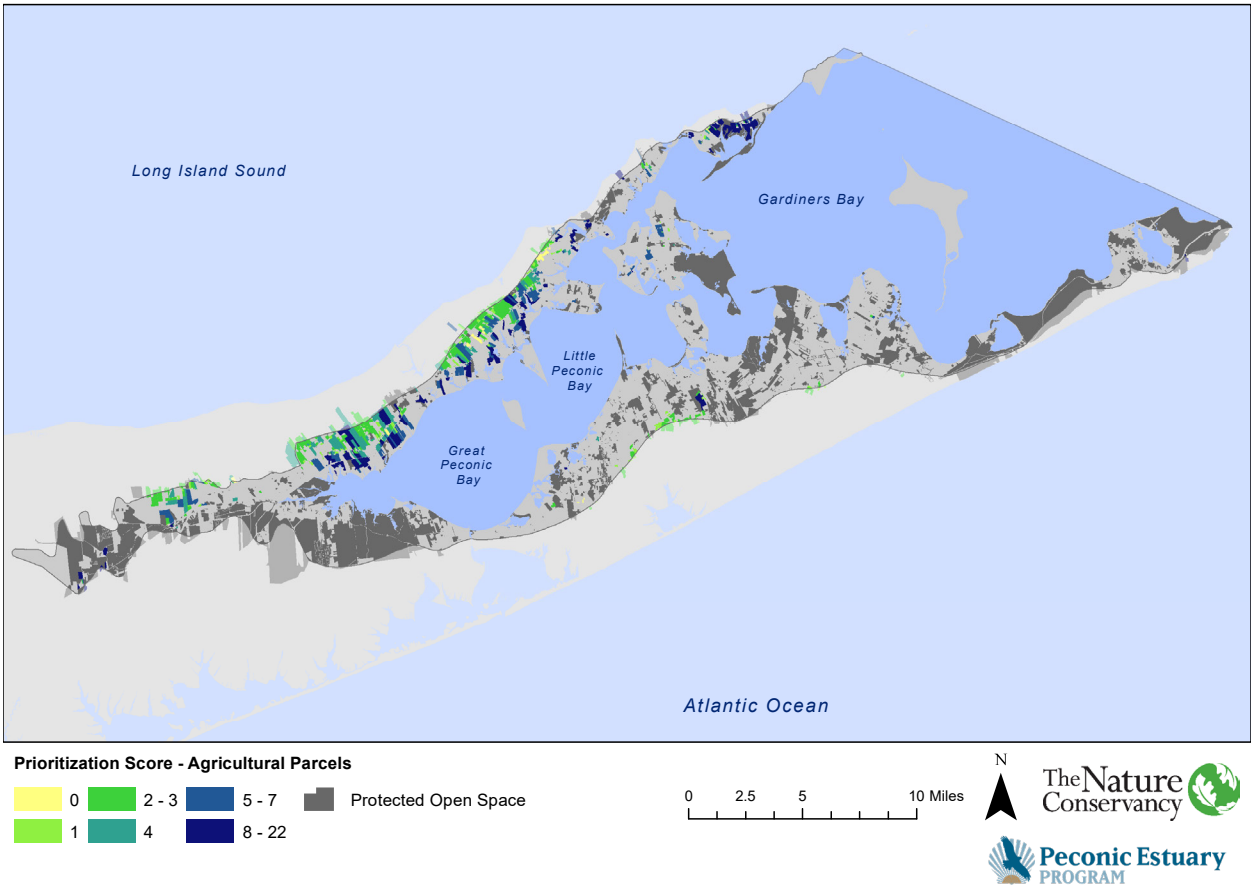


Figure 15: Agricultural Priorization with Protected Open Space



The distribution of scores for 54,963 parcels within the Peconic Estuary boundary and associated watershed is shown in Figures 16, 17, and 18 and in Table 5 for the Undeveloped, Developed, and Agricultural parcels, respectively. Because most of the parcels have a low CLPS ranking, priority parcels can be clearly distinguished.

Of the 10,215 Undeveloped parcels, 4,045 are already protected, and 750 of them have a CLPS criteria ranking score of 9 or higher, indicating there are numerous opportunities to advance climate change resilience in the Peconic Estuary. However, 357 of the 6,170 Undeveloped and unprotected parcels have a CLPS criteria ranking of 9 or higher; these parcels should be the focus of additional resilience measures.

Of the 745 agricultural parcels, 91 ranked 9 or higher and 125 are protected, either through Suffolk County's PDR efforts for farmland or jointly by Suffolk County and one of the towns. Of the 44,003 Developed parcels, 3,633 had CLPS ranking scores of 9 or higher. These parcels should be the focus of other resilience strategies such as land acquisition combined with infrastructure removal and with efforts to ensure their undeveloped portions remain undeveloped so marsh migration and other natural processes can occur.

Table 5: Distribution of Parcels

Parcel Category	Number of Parcels	High Priority Parcels (Rank of 9 or Higher)	Number of Protected Parcels	Protected High Priority Parcels (Rank of 9 or Higher)
Undeveloped	10,215	1,107	4,045	750
Agricultural	745	91	125	-
Developed	44,003	3,633	-	-

Note:
Source: 6 NYCRR Part 490, Projected Sea-level Rise. Inches of rise relative to 2000–2004 baseline.

Figure 16: Count of Undeveloped Parcels by Prioritization Score

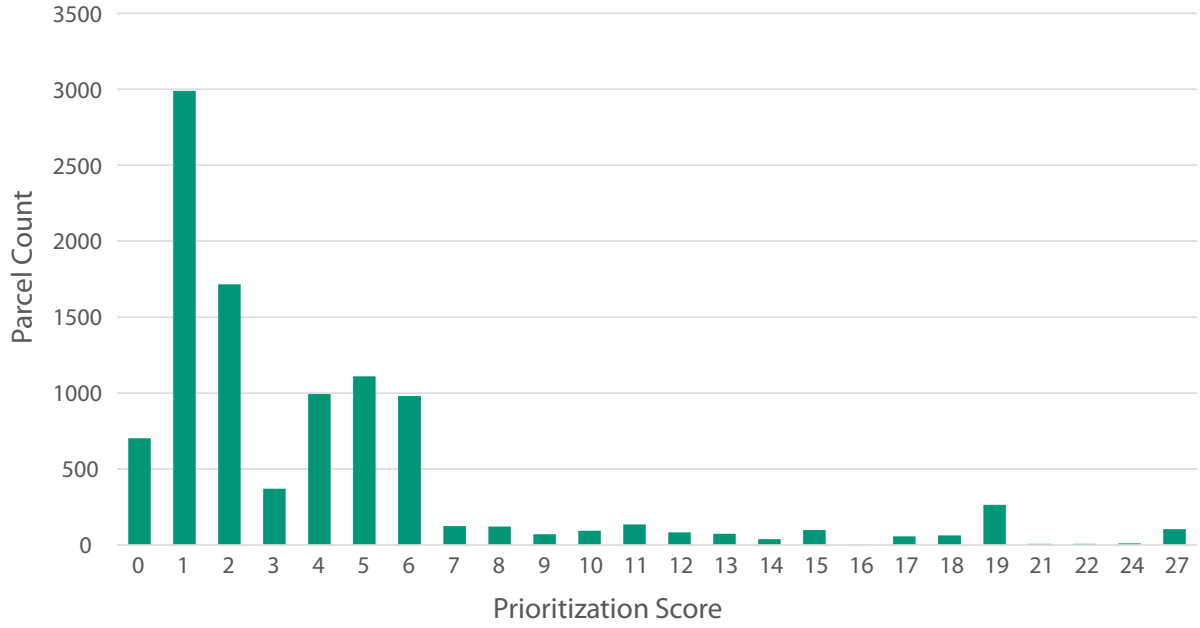


Figure 17: Count of Developed Parcels by Prioritization Score

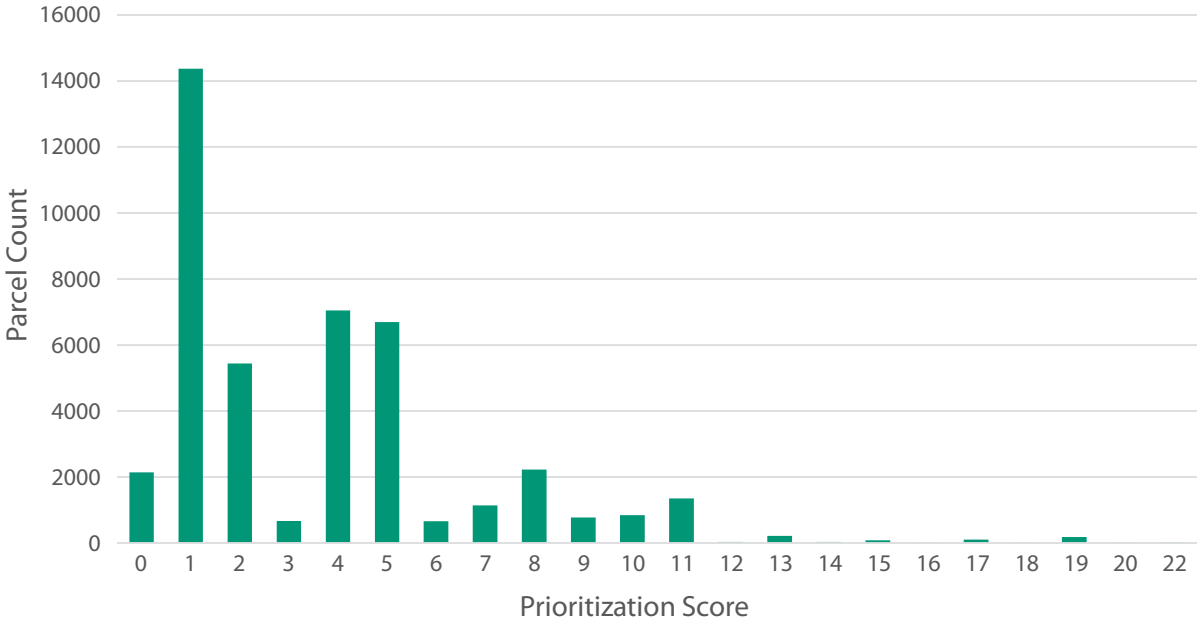


Figure 18: Count of Agricultural Parcels by Prioritization Score