PEP CLPS Ranking Tool Update

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Prepared for

Peconic Estuary Partnership



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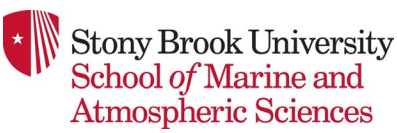


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1. Background

The Peconic Estuary Program (PEP) developed the Critical Lands Protection Strategy (CLPS) in 2004 to identify and prioritize parcels with the greatest potential to protect the health of the Peconic Estuary. The original prioritization criteria included shoreline proximity, location within a nitrogen-impaired subwatershed or Critical Natural Resource Area, wetlands, parcel size, and the potential to aggregate with adjacent protected lands. Municipalities and land stewardship organizations use the CLPS to guide land acquisition decisions, many of which are funded through the Peconic Bay Region Community Preservation Fund (CPF).

The *2019 PEP Climate Vulnerability Assessment and Action Plan* updated the CLPS to incorporate climate-change considerations and produced the CLPS Ranking Tool.

Parcels within the Peconic Estuary watershed were evaluated against established CLPS environmental criteria under current and future sea-level rise (SLR) scenarios. These criteria are organized into three classes and evaluated across up to three time horizons, as summarized in Table 1, with separate scoring methodologies were developed for undeveloped, developed, and agricultural parcels. Using GIS-based analyses, every parcel within the Peconic Estuary watershed was evaluated with final parcel scores calculated from scoring the CLPS environmental criteria as well as four additional user prioritization categories, which account for factors such as shoreline proximity, parcel size, and adjacency to protected land.

Following the 2019 CLPS update, changes in available data, parcel conditions, and user needs highlighted the need for a tool update.

This Fall 2026 update aims to improve the accuracy and usability of the CLPS Ranking Tool by incorporating updated data and enhanced functionality. The update is linked to a new interactive web map that allows users to explore and prioritize conservation lands and is accompanied by a user manual to support application use and interpretation of results. This web map can be accessed here: https://hub.gss.stonybrook.edu/apps/pep-clps2/

Table 1. CLPS criteria classes

Class	Criteria	Horizons
Class 1: **Habitat and Water Quality Protection**	• Freshwater or tidal • Within 1,000 ft of the shoreline • Significant coastal fish and wildlife habitat	Current (6″ SLR), 2055 (21″ SLR), 2100 (47″ SLR)
Class 2: **Inundation Areas**	• FEMA 100-year flood zone • Inundation beyond the shoreline	Current, 2055, 2100
Class 3: **Groundwater Protection**	• 0~25-year groundwater travel time to surface water • Depth to groundwater ≤ 10 ft • Special groundwater protection areas	Current, 2100 (34″ SLR groundwater scenario)

2. Why the Update Was Needed

2.1 Outdated land classification

The 2019 CLPS Ranking Tool classified parcels using the "2016 Suffolk County Land Use" dataset, with ***undeveloped*** land defined as 'Vacant or Recreation & Open Space', ***agricultural*** land defined as 'Agricultural', and ***developed*** land defined as all remaining land-use classes. Because no newer countywide land-use dataset is publicly available, these classifications could not be updated using the original methodology. As a result, changes associated with approximately a decade of land acquisition, development, subdivision, and preservation activities were not reflected in the 2019 CLPS Ranking Tool.

2.2 Amended Sea-level rise projections

Since publication of the 2019 PEP Climate Vulnerability Assessment, New York State amended and adopted updated sea-level rise projections through 6 NYCRR Part 490 in 2024. The regulation establishes region-specific projections for the Mid-Hudson, Lower Hudson–New York City, and Long Island regions over multiple time horizons.

Table 2. Part 490.4 sea-level rise projections (Long Island Region)

Time Interval	Low Projection	Low-Medium Projection	Medium Projection	High-Medium Projection	High Projection	Rapid Ice Melt Projection
2030s	7	8	10	12	14	NA
2050s	13	15	18	**21**	25	NA
2080s	23	26	32	41	48	83
2100	27	32	39	**54**	69	114
2150	42	50	63	94	185	NA

2.3 End-user requirements

The 2019 CLPS products, including a StoryMap and map viewers, were developed as static applications. Potential end-users, including CPF boards, nonprofit partners, and municipalities involved in land acquisition decisions, requested an interactive tool with the ability to:

- Generate map layers for any of the six towns within the Peconic Estuary watershed.
- Adjust the weights assigned to prioritization criteria.
- Modify the classification method used to display total scores for each of the three land-use categories.
- Download GIS datasets for integration into their own mapping systems.

3. What Was Updated

3.1 Evaluation of criteria datasets

Each criterion dataset was evaluated to determine whether a newer release was available and, if so, whether the updated dataset introduced any changes within the Peconic Estuary. The results of this review were summarized in Table 3.

No newer publicly available dataset was identified to replace the 2016 Suffolk County Land Use dataset. Given the importance of maintaining the most current land-use information, which is used to classify lands as undeveloped, developed, or agricultural and to identify protected lands, we selected the Peconic Land Trust (PLT) Master Parcel Database as an alternative data source. PLT actively tracks and maintains parcel-level preservation status, updating records as land protection actions occur. Consequently, the database provides a current and reliable representation of protected lands within the watershed. In addition, the dataset is publicly accessible through ArcGIS Online services, making it a practical and transparent source for ongoing analyses.

Although several datasets have newer versions, most showed no meaningful changes within the Peconic Estuary when compared with the datasets used in the 2019 CLPS tool. We were unable to identify suitable replacements for the simulated-model datasets incorporated into the 2019 CLPS tool, including marsh migration and inundation projections under the 6", 21", and 47" sea-level rise scenarios, as well as groundwater travel time and depth-to-groundwater projections under the 34" sea-level rise scenario. The most recent depth-to-groundwater dataset[*] was itself a modeled product rather than a measured raster, unlike the 2016 dataset.

Under the amended sea-level rise projections in 6 NYCRR Part 490, the simulated 2100 datasets would ideally be regenerated using the 54-inch sea-level rise projection rather than the 47-inch projection applied in the 2019 analysis. This would affect the marsh migration, inundation-beyond-shoreline, and groundwater-depth datasets. However, producing updated datasets would require substantial model redevelopment, recalibration, and rerunning of multiple simulation workflows, which is beyond the scope of a routine data update. Therefore, the original 2019 modeled datasets were retained.

Table 3. Dataset update evaluation

Criterion dataset	Updated dataset available?	Decision
Suffolk County Tax Map (parcels, ownership)	Yes: SC Real Property Tax Service Agency, ca. June 2025	Use attributes via query in the tool (Parcel Details links to the county service)

[*] Welk, R.J., Masterson, K.K, Barclay, J.R., and Jahn, K.L., 2025, Geospatial datasets of factors influencing groundwater emergence flood hazard in Long Island, New York and near coastal areas surrounding Long Island Sound in New York, Connecticut, and Rhode Island: U.S. Geological Survey data release, https://doi.org/10.5066/P9W4QIV5.

Criterion dataset	Updated dataset available?	Decision
Suffolk County Land Use (Undeveloped, Developed, Agricultural)	**No**: Suffolk County Land Use (2016)	Replaced by the Peconic Land Trust (PLT) parcel dataset. See Section 3.2.
Freshwater/tidal wetland (Class 1; current)	Yes: USFWS NWI 2025	No changes in the estuary; keep 2019 data
Marsh migration, SLR 6″/21″/47″ (Class 1)	**No**: SLAMM, NYSERDA/Warren Pinnacle 2015	Keep 2019 data
Inundation beyond shoreline, SLR 6″/21″/47″ (Class 2)	**No**: SLAMM, NYSERDA/Warren Pinnacle 2015	Keep 2019 data
Present-day flood zone (Class 2; current)	Yes: FEMA DFIRM 2025	No changes in the estuary; keep 2019 data
Significant coastal fish & wildlife habitat (Class 1; current)	Yes: NYSDOS 2021	No changes in the estuary; keep 2019 data
Groundwater travel time 0–25 yr (Class 3; current)	**No**: Suffolk County/CDM Smith 2016	Keep 2019 data
Depth to groundwater < 10 ft (Class 3; current)	Yes: USGS 2025 (prev. USGS 2016)	Modeled output; keep 2019 data (the latest *measured* raster)
Depth to groundwater < 10 ft, 34″ SLR (Class 3; 2100)	**No**: Suffolk County/CDM Smith 2016	Keep 2019 data
Special Groundwater Protection Areas (Class 3; current)	Yes: NYSDEC 2026	No SGPA changes; keep 2019 data

3.2 Land classification using the PLT parcel dataset

The 2026 CLPS Ranking Tool classifies land into three scoring categories (Undeveloped, Agricultural, and Developed) using the PLT Parcel Master Database, while also identifying Protected Lands as a separate reporting category. Scoring is performed separately for each land category, consistent with the methodology used in the 2019 CLPS Ranking Tool.

Land classifications are derived from two attributes in the PLT Parcel Master Database: Farmland and MapID. Each parcel is assigned to a single category using the hierarchical classification rules shown in Table 4.

Table 4. Land classification scheme based on the PLT parcel dataset

Land category	Selection condition
Agricultural	Farmland = 'Y'
Undeveloped	MapID = 'Unprotected/Threatened'
Developed	MapID IN ('Developed', 'Unprotected (Partially Developed)', 'Government Services, Religion, Non-Profit, Other', 'Golf Courses', 'Water Utilities')
Protected Lands	MapID IN ('Publicly or Privately Protected', 'Peconic Land Trust Projects')

The comparison between land classifications derived from the PLT Parcel Master Database and those used in the 2019 CLPS Ranking Tool is summarized in Table 5.

Table 5. Parcels within the Peconic Estuary watershed by land category

Land category	2019 CLPS ranking tool (# of parcels)	(acres)	2026 PLT dataset (# of parcels)	(acres)
Protected	4,045	40,846	5,108	51,949
Undeveloped	*6,170	*16,423	4,079	11,262
Developed	44,003	49,918	45,944	55,783
Agricultural	745	11,563	795	12,576
Farmland / Protected			303	6,658
Farmland / Undeveloped			370	4,922
Farmland / Developed			122	995
Total	54,963	118,750	55,131	118,994

* Note: In the 2019 CLPS Ranking Tool, protected lands (4,045 parcels) were included within the undeveloped land category, resulting in a total of 10,215 undeveloped parcels. In this table, protected lands are reported separately to avoid double-counting. It should also be noted that agricultural parcels in the 2026 update may overlap with protected, undeveloped, or developed land classifications.

3.3 CLPS Ranking Tool 2.0 Web Application

To address the end-user requirements described in Section 2.3, an interactive web application, CLPS Ranking Tool 2.0, was developed.

The application accesses a hosted parcel-ranking layer from the Geospatial Center ArcGIS Portal. The ranking layer was generated using the same scoring methodology and criteria datasets employed in the 2019 CLPS Ranking Tool. The principal update is the replacement of the original land-classification layer with a reclassified land layer derived from the Peconic Land Trust Parcel Master Database.

CLPS Ranking Tool 2.0 is available at: https://hub.gss.stonybrook.edu/apps/pep-clps2/

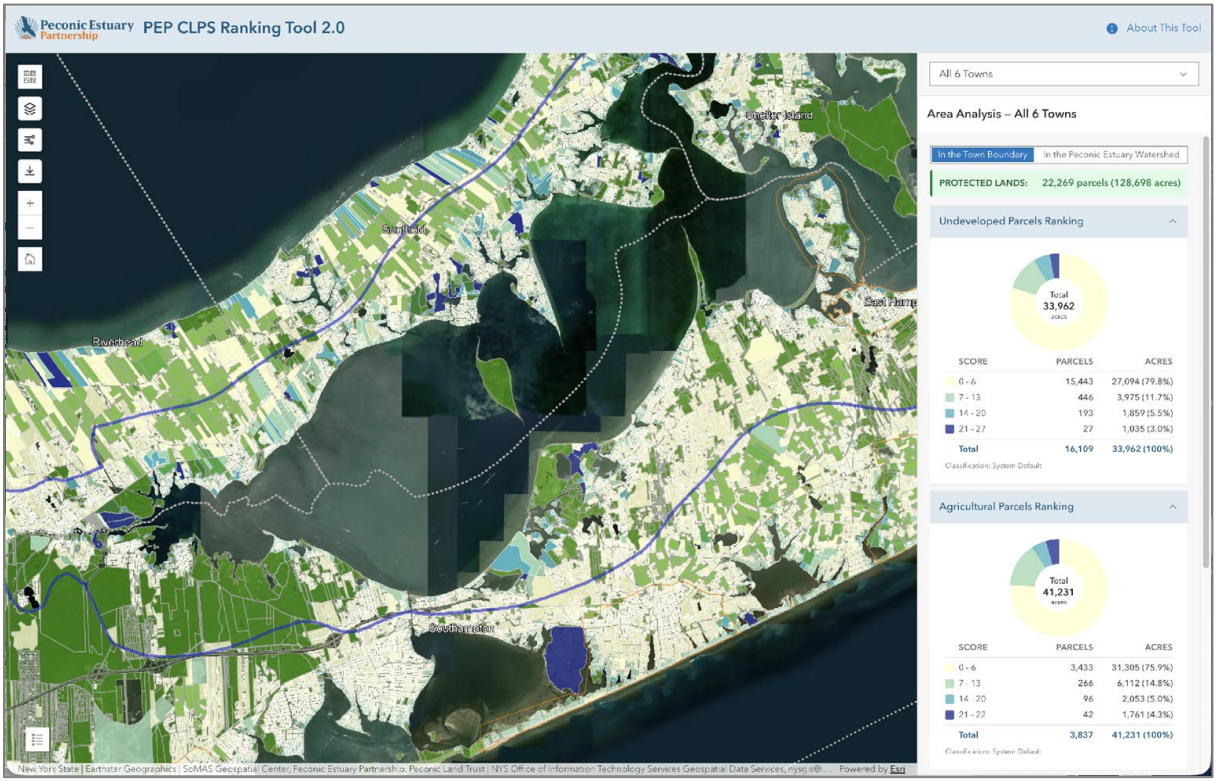


Figure 1. CLPS Ranking Tool 2.0 (https://hub.gss.stonybrook.edu/apps/pep-clps2/)

Key features of the application are summarized in Table 6.

Table 6. CLPS Ranking Tool 2.0 application features

Feature	Description
Town Selector	Filters parcel-ranking layers by town (Brookhaven, East Hampton, Riverhead, Shelter Island, Southampton, Southold, or all six towns combine).

Feature	Description
Analysis Scope	Switches between town boundaries and the Peconic Estuary watershed for both map display and dashboard statistics.
Classification Method	Supports System Default, Manual Breaks, Natural Breaks, Equal Interval, and Quantile classification, with selectable color schemes
User Prioritization Category Weights	Allows users to modify user prioritization category weights using sliders or manual percentage entry. Weighting categories correspond to those used in the 2019 CLPS Ranking Tool.
Sidebar Dashboard	Displays protected-land totals and summary charts showing parcel counts, acreage, and score distributions for visible layers.
Parcel Details	Displays parcel attributes and score components. Parcel IDs link directly to the Suffolk County parcel information service.
Download Layers	Exports ranking layers and protected-lands datasets as GeoPackage, Shapefile, or GeoJSON by town or all 6 towns.

4. Future Data Updates

The following maintenance schedule is recommended for CLPS Ranking Tool 2.0:

Component	Frequency	Source
Parcel base map and land classification (PLT master parcel database)	Annually	PLT parcel database update
Criteria datasets (wetlands, flood zones, SLR, groundwater, habitat, SGPA)	Every 2 years, or when significant updates become available	FEMA DFIRM updates, revised SLAMM/SLR modeling, new groundwater products, NWI updates, and NYSDOS habitat revisions affecting the estuary
Web application	As needed	Bug fixes, user-requested enhancements, ArcGIS SDK upgrades

This maintenance schedule will ensure that CLPS Ranking Tool 2.0 remains current, transparent, and useful for land-acquisition and conservation planning throughout the Peconic Estuary watershed.

Appendix A. CLPS Ranking Tool 2.0 User Guide

This appendix provides a quick guide to the CLPS Ranking Tool 2.0 web application, including its screen layout and main functions: selecting a town and analysis area, reviewing dashboard summaries and parcel details, customizing map displays, adjusting prioritization weights, and downloading data.

A.1 Understanding Key Terms

Parcel scores are based on two components established in the 2019 CLPS methodology: **1) CLPS Criteria Classes**, which use established environmental data to score parcels and cannot be adjusted by users, and **2) User Prioritization Categories**, which incorporate additional conservation factors that users can weigh differently to reflect their own conservation goals.

- **CLPS Criteria Classes:** Three groups of environmental criteria use dot score parcels: Habitat and Water Quality Protection, Inundation Areas, and Groundwater Protection. Environmental datasets determine which criteria each parcel meets under current and future conditions. Cannot be adjusted Learn more about this criteria in the *2019 PEP Climate Vulnerability Assessment and Action Plan*

- **User Prioritization Categories:** Four factors used to score parcels: Nearshore Land, Priority Land, Land Size, and Adjacency to Protected Land. These build on the CLPS criteria by considering additional factors that influence conservation priority.

- **Scores and Rankings:** Each parcel earns points based on the CLPS criteria it meets and the User Prioritization Categories applied. Higher scores indicate higher conservation priority and are used to rank parcels.

- **Weights:** Determine how much each User Prioritization Category contributes to the total score. Users can adjust these to reflect their conservation priorities without changing the underlying environmental data.

- **Map Classes:** Ranges of scores used to group and color parcels on the map. Changing these affects how rankings appear, not the scores themselves.

Example: Using the Tool for Town Conservation Planning

A town planner interested in land preservation and long-term coastal adaptation could use the tool to:

1. **Identify priority parcels** by viewing undeveloped lands and their conservation rankings within their town.

2. **Explore future conditions** by reviewing parcel scores that incorporate shoreline proximity, flood exposure, and sea-level rise.

3. **Adjust conservation priorities** to see how rankings change when greater importance is placed on shoreline proximity, parcel size, or connections to protected lands.

4. **Compare opportunities** by reviewing individual parcel details and townwide conservation patterns.

5. **Support local decisions** by downloading data for use in town GIS, land acquisition planning, and coordination with conservation partners.

The tool helps communities move from regional conservation data to locally informed planning decisions, identifying opportunities to protect land that supports both current environmental priorities and future coastal adaptation.

A.2 Getting Started

Open **https://hub.gss.stonybrook.edu/apps/pep-clps2/** in a current desktop web browser (Chrome, Edge, Firefox, or Safari). No login is required. The application opens showing all six towns, with the map on the left and the dashboard panel on the right (Figure 1 in Section 3.3).

The map shows three ranking layers (**Undeveloped Parcels Ranking**, **Agricultural Parcels Ranking**, and **Developed Parcels Ranking**) together with **Protected Lands**, **Town Boundaries**, and the **Peconic Estuary Program Boundary**. Ranking layers are colored by total score using a common four-class scale (0–6, 7–13, 14–20, 21–27), so the three land types can be compared directly.

The main screen elements are listed in Table A1.

Table A1. CLPS Ranking Tool 2.0 screen elements

Element	Location & icon	Use
Basemap Gallery	Map toolbar (top left) 	Switch the background map (Imagery, Dark Gray Canvas, Light Gray Canvas, Topographic).
Layers	Map toolbar 	Open the Layers list to turn layers on or off and edit the style of the three ranking layers.
User Prioritization Category Weights	Map toolbar 	Change how much each of the four user prioritization categories counts toward a parcel's score.

Element	Location & icon	Use
Download Layers	Map toolbar 	Export the parcel layers as GeoPackage, Shapefile, or GeoJSON.
Zoom in / out, Home	Map toolbar 	Zoom the map, or return to the full study area.
Legend	Bottom left of the map 	Show the score classes and colors of the visible layers.
Select Town	Top of the right panel 	Choose one of the six towns, or All 6 Towns.
Area Analysis / Parcel Details	Right panel	Summary statistics for the current selection, or details of a clicked parcel.
About This Tool	Top right of the header 	Background information about the tool.

A.3 Selecting a Town and Analysis Scope

1. In the **Select Town** list at the top of the right panel, choose a town (Brookhaven, East Hampton, Riverhead, Shelter Island, Southampton, or Southold) or **All 6 Towns**. The map zooms to the town, and the layers and charts are limited to it.
2. Under the panel heading, choose the analysis scope: **In the Town Boundary** (all parcels in the selected town) or **In the Peconic Estuary Watershed** (only parcels inside the watershed).
3. The panel heading reflects the current selection, for example “Area Analysis — Southampton · Peconic Estuary”. The scope applies to the map and to every chart in the panel.

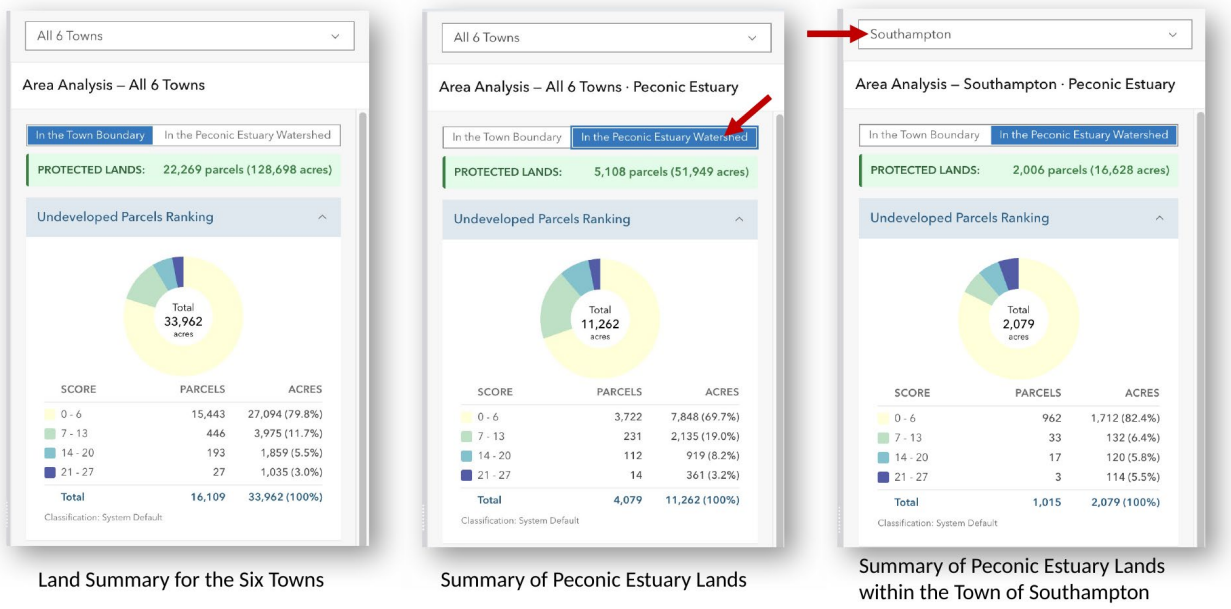


Figure A1. Area Analysis panel: all six towns (left), the Peconic Estuary watershed scope (center), and the watershed within the Town of Southampton (right)

A.4 Reading the Area Analysis Dashboard

When no parcel is selected, the right panel shows the **Area Analysis** dashboard for the current town and scope:

- **Protected Lands** shows the number of protected parcels and their total acreage. The two scope options each display their own total, so the watershed subset can be compared with the whole town.
- A **pie chart** is shown for each ranking layer that is turned on. The center of the chart gives the layer's total acreage.
- The table under each chart lists every score class with its number of **Parcels** and **Acres** (with the percentage of total acreage), followed by a **Total** row. The classification method in use is noted under the table.

Turning a ranking layer off in the Layers list removes its chart from the dashboard; turning it back on restores it.

A.5 Viewing Parcel Details

1. Click a parcel on the map. The parcel is highlighted and the right panel switches to **Parcel Details**.
2. **Parcel Information** shows the Parcel ID (Suffolk County Tax Map Number), acreage, parcel category, and protection type.

3. The land-score block (e.g. **Undeveloped Parcels**) shows the **Total Score** and how it is built up: for each time horizon (Current, 2055, 2100), a bar for each user prioritization category shows the points earned out of the points possible.
4. Click the **Parcel ID** link to open the **Suffolk County Tax Parcel** window, which looks the parcel up in the county's public tax-parcel service (land use, address, municipality, acreage, status, and last update).
5. To return to the Area Analysis dashboard, click the same parcel again or click an empty area of the map.

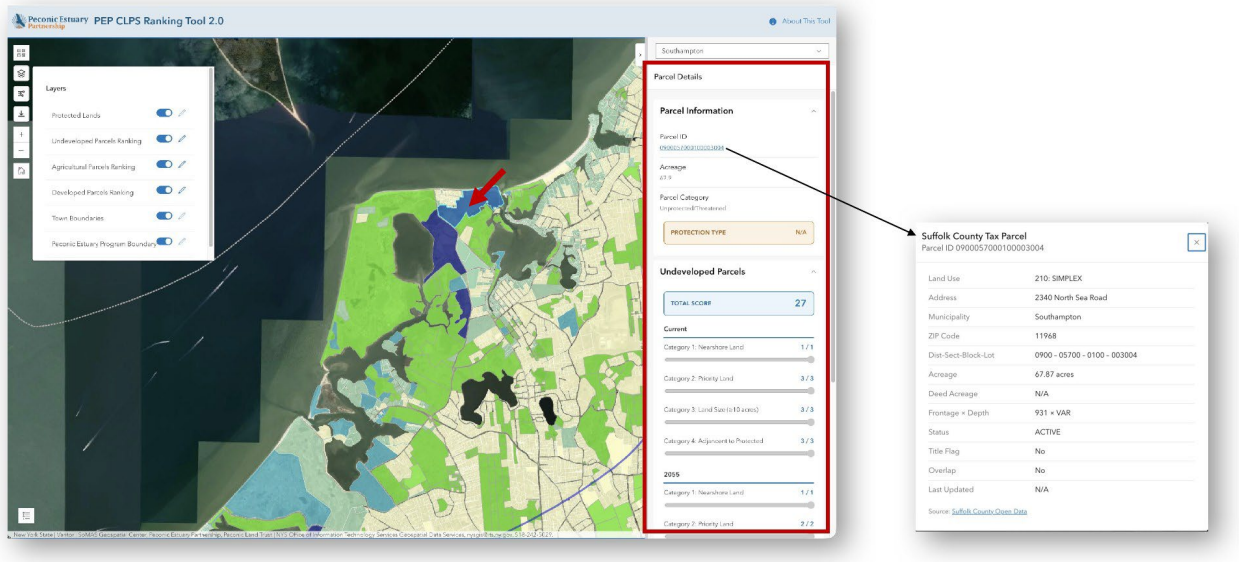


Figure A2. Parcel Details for a selected parcel (left) and the linked Suffolk County Tax Parcel record (right)

A.6 Changing the Color Scheme and Classification Method

Users can change how ranking data appears on the map to make patterns easier to see and compare. These changes do not affect the underlying data.

1. Click **Layers (**  **)** on the map toolbar. Use the switch beside each layer to turn it on or off.
2. Click the **pencil** icon beside one of the three ranking layers to open its style editor.
3. Under **Color Scheme**, select a color ramp to change how values appear on the map. Different colors can make higher and lower rankings easier to distinguish.
4. Under **Method**, choose how values are grouped. Under Classes, select the number of groups displayed.

- **Method**: Changes how values are divided into groups, helping reveal different patterns in the data.
- **Classes**: Fewer groups make broad patterns easier to see, while more groups show smaller differences between values.

The class table (Appearance, Start, End) updates to show the colors and value ranges for each group.

5. Click **Apply** to redraw the layer. The legend and the layer's dashboard chart update to match. Click **Cancel** to close without changes.

Table A2. Classification methods

Method	Description
System Default	The shared four-class scale (0–6, 7–13, 14–20, 21–27) used when the tool opens. Keeps the three ranking layers comparable.
Manual	Starts from the default breaks and lets you type the upper value (End) of each class except the last.
Natural Breaks	Groups similar scores together and places breaks at natural gaps in the data.
Equal Interval	Divides the score range into classes of equal width.
Quantile	Places roughly the same number of parcels in each class.

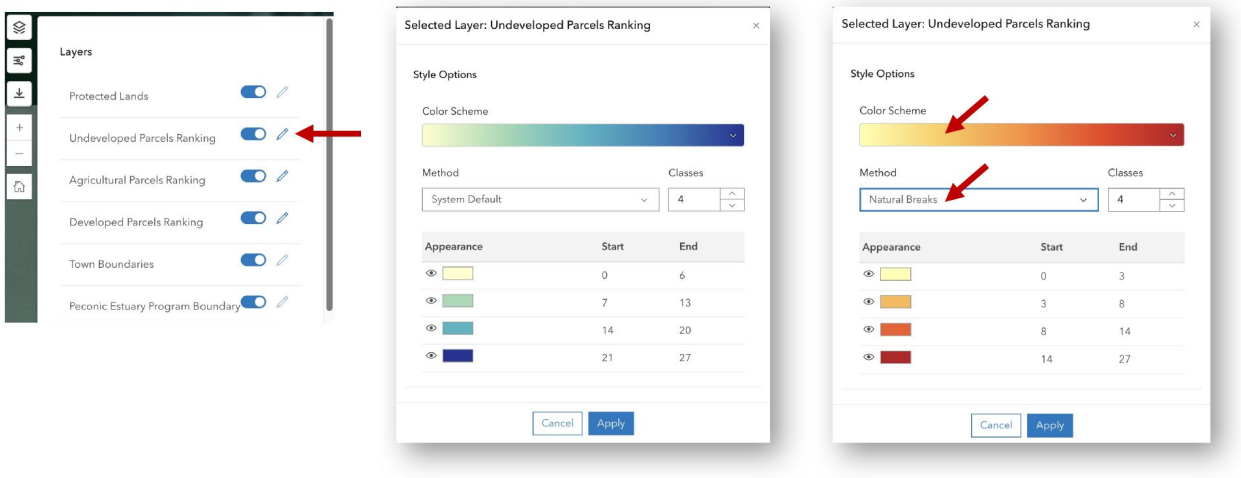


Figure A3. Layers list with the edit (pencil) icon (left), and the style editor with the default settings (center) and with a new color scheme and Natural Breaks (right)

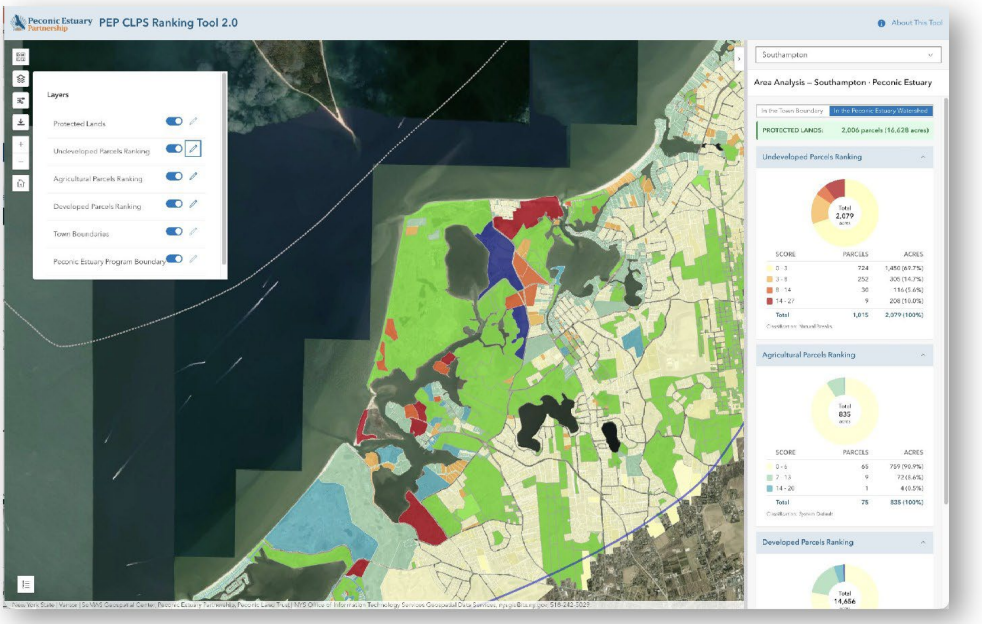


Figure A4. Undeveloped Parcels Ranking redrawn with the new color scheme and classification method

A.7 Adjusting Prioritization Weights to Reflect Conservation Priorities in Parcel Rankings

Each parcel is ranked using four categories, each weighted equally (25%) by default. Users can adjust these weights to see how rankings change when certain conservation priorities, such as shoreline proximity or parcel size, are given more importance.

Table A3. User Prioritization categories

Category	What it prioritizes
Category 1: Nearshore Land	Parcels within 1,000 ft of the shoreline, now and under future sea-level rise.
Category 2: Priority Land	Parcels meeting criteria in one, two, or three of the CLPS criteria classes.
Category 3: Land Size	Parcels of at least 10 acres that meet CLPS criteria.
Category 4: Adjacency to Protected Land	Parcels next to a protected parcel of at least 2 acres that meet CLPS criteria.

How to adjust category weights:

1. Click **User Prioritization Category Weights** ( ) on the map toolbar to the left.
2. Drag a category's slider or type a percentage to change its importance in the overall ranking.. The weights always total 100%, categories you have set are locked in place

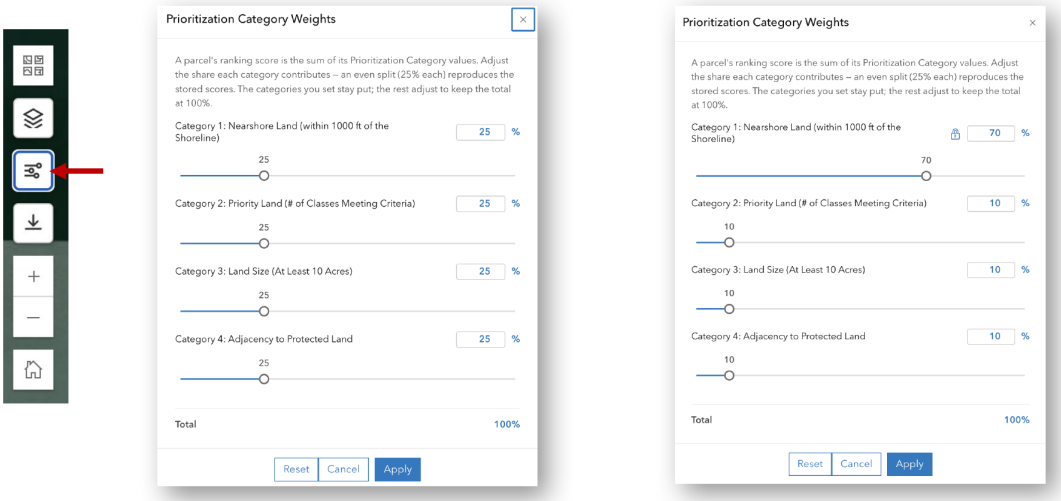
(shown by a lock icon), and the remaining categories adjust automatically. Click a lock icon to release that category.

3. Click **Apply** toupdate parcel rankings, the dashboard charts, and the Parcel Details panel. **Reset** returns all four categories to 25%; **Cancel** closes without changes.

When weights are changed, an amber **CATEGORY WEIGHTS […]** label appears on the dashboard and Parcel Details panel, and scores are labeled Weighted Total Score.

Why use this feature? Adjusting weights allows users to compare different conservation priorities and see which parcels rank higher under different scenarios. This can help inform planning discussions and identify parcels that best align with specific conservation goals.

Note: Changes are temporary and do not affect the original parcel scores. Reloading the map restores the default equal weights.



Equal Weights (Default)

Hypothetical Weights

Figure A5. The User Prioritization Category Weights button and dialog at equal weights (left) and with hypothetical weights of 70/10/10/10 (right)

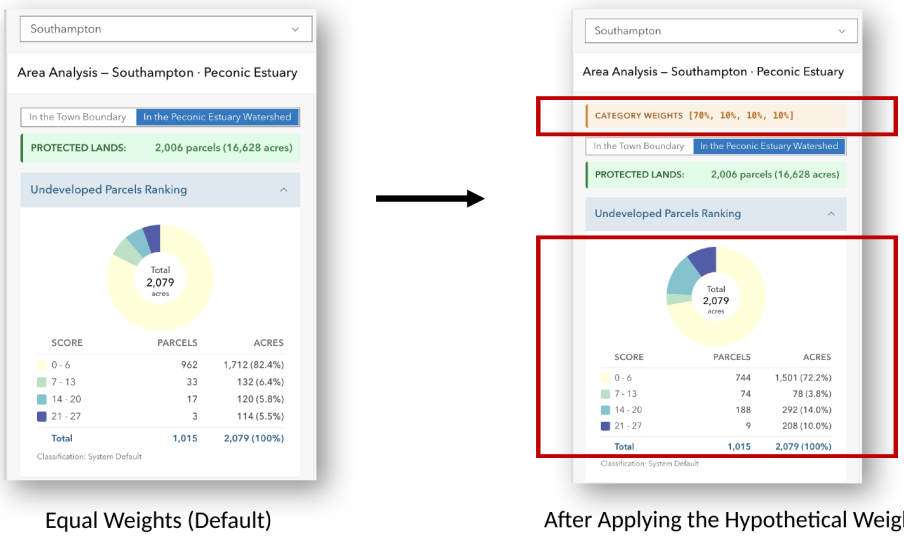


Figure A6. Undeveloped parcels in the Peconic Estuary portion of Southampton at equal weights (left) and after applying the hypothetical weights (right)

A.8 Downloading Layers

1. Click **Download Layers (** **)** on the map toolbar to the left.
2. Choose a **Format**: GeoPackage (recommended), Shapefile, or GeoJSON.
3. Choose a **Town** (or All 6 Towns) and an **Extent**: In the Town Boundary or In the Peconic Estuary Watershed.
4. Check the **Layers** to include: Undeveloped, Agricultural, and Developed Parcels Ranking, and Protected Lands.
5. Click **Download**. A progress bar shows the file being prepared, and the file is saved by your browser when it is ready.

Ranking layers are exported with all parcel attributes plus the current (weighted) score, so a download made after re-weighting carries those scores. Field definitions are in the **Data Dictionary** linked in the dialog.

NOTE: Files are built in your browser, not on a server. An All 6 Towns export with several layers can take a while and use significant memory; keep the tab open until the download starts.

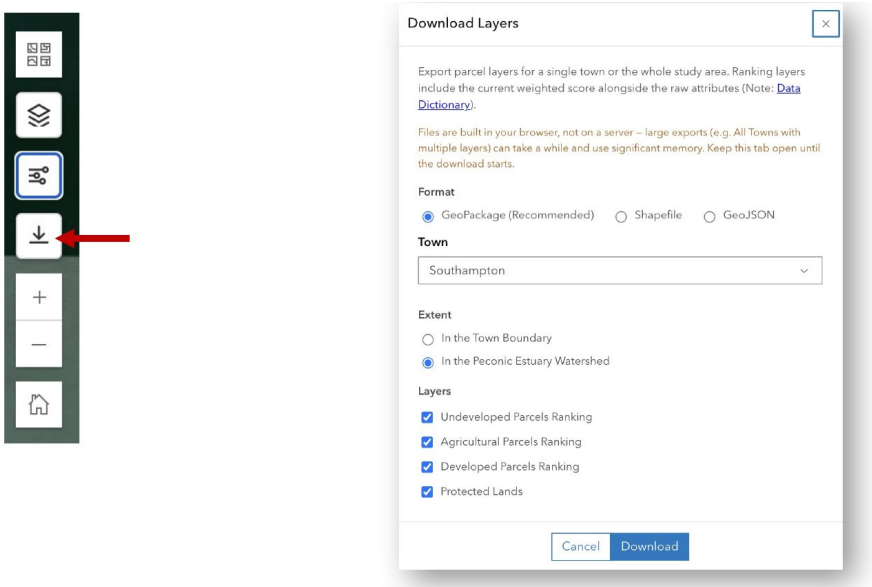


Figure A7. The Download Layers button and dialog