

LONG ISLAND SOUND BLUE PLAN 2019



The following is an extract from Appendix 3 of the Final Draft Version of the Blue Plan (version 1.2 dated September 2019) describing the process to create Significant Human Use Areas (SHUAs)



Long Island Sound Blue Plan

Report presented by the:

Connecticut Department of
Energy and Environmental Protection



Version 1.2
September 2019

Long Island Sound Blue Plan

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Inventory and Blue Plan Advisory
Committee

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The following is an extract from Appendix 3 of the Final Draft Version of the Blue Plan (version 1.2 dated September 2019) describing the process to create Significant Human Use Areas (SHUAs)

Appendix 3. Significant Human Use Areas: Supplemental Information and Maps

Appendix 2: Table of Contents

Figures and Tables	CXXXI
Introduction	CXXXIV
Scope and Process	CXXXV
Goal 1: To include a mix of data that accurately depicts significant human uses in Long Island Sound	CXXXV
Initial Historic, Cultural, & Educational Interests	CXL
Initial Recreational & Quality of Life Interests	CXLI
Initial Navigation, Transportation, Military, Infrastructure, & Commercial	CXLIII
Initial Fishing & Shellfishing Interests	CXLIII
Final SHUA Data Included.....	CXLVII
Goal 2: To render SHUA data in formats easy to understand and interpret	CXLVIII
Hardcopy Maps.....	CXLVIII
Hot Spot Clustering Analysis	CXLVIII
Blue Plan Web Viewer	CXLIX
General SHUA Data Caveats	CL
SHUA Maps and Data Construction Tables	CL

Appendix Figures

Figure 3a-1 Final SHUA map for local, state, and national historic districts under the Areas associated with lighthouses and other historic areas criteria.....	CXC
Figure 3a-2 Final SHUA map for LIS lighthouses under the Areas associated with lighthouses and other historic areas criteria.	CXCIII
Figure 3a-3 Final SHUA map for shipwrecks.	CXCVI
Figure 3a-4 Final SHUA map for open space and public lands, under the Visual and scenic resource criteria.	CXCIX
Figure 3a-5 Final SHUA map for archaeological sites (upland), under the submerged and coastal archaeological areas criteria.	CCIII
Figure 3a-6 Final SHUA map of archaeological areas (LIS), under the submerged and coastal archaeological areas.	CCV
Figure 3a-7 Final SHUA map of potential submerged Holocene sites, under the submerged and coastal archaeological areas criteria.	CCVII
Figure 3a-8 Final SHUA map of water quality sampling sites, under the discrete areas for research, education, and monitoring criteria.	CCX
Figure 3a-9 Final SHUA map of LIS Coastal Observation sites (LISICOS), under the discrete areas for research, education, and monitoring criteria.	CCXIII
Figure 3a-10 Final SHUA map of Sailing Race areas, under the sailing or rowing races criteria.	CCXVI

Figure 3a-11 Final SHUA map of sailing race routes, under the sailing or rowing races criteria.	CCXVII
Figure 3a-12 Final SHUA map for High density recreational boating.	CCXIX
Figure 3a-13 Final SHUA map of mooring fields, also known as boat clusters, under the mooring fields and anchorage area criteria.	CCXXI
Figure 3a-14 Final SHUA map of anchorage areas, under the mooring fields and anchorage areas criteria.	CCXXIV
Figure 3a-15 Final SHUA map of marinas, yacht clubs, etc., under the marinas, yacht clubs, and boat launches criteria.	CCXXVI
Figure 3a-16 Final SHUA map of boat launches, under the marinas, yacht clubs, and boat launches criteria.	CCXXVIII
Figure 3a-17 Final map of potential waterfowl hunting areas, under the Waterfowl Hunting SHUA criteria.	CCXXX
Figure 3a-18 Final SHUA map of dive locations, under the dive sites criteria.	CCXXXIII
Figure 3a-21 Final SHUA map of coastal access sites, under the coastal public use areas criteria.	CCXXXVI
Figure 3a-22 Final SHUA map of individual ocean uses, under the coastal public use areas criteria.	CCXXXVIII
Figure 3a-23 Final SHUA map of open space and public lands, under the coastal public use areas criteria.	CCXL
Figure 3a-24 Final SHUA map of water trails, under the coastal public use areas criteria.	CCXLIV
Figure 3a-25 Final SHUA map of public access beaches, under the coastal public use areas criteria.	CCXLVI
Figure 3a-26 Final SHUA map of migratory waterfowl concentration areas, under the waterfowl hunting criteria.	CCXLIX
Figure 3a-27 Final SHUA map of working waterfronts, under the working waterfronts, ports, and marine commercial areas criteria.	CCLI
Figure 3a-28 Final SHUA map of Fairways and Navigation channels, under the designated navigational channels, fairways, and basins.	CCLIV
Figure 3a-29 Final SHUA map of business and commercial dredging areas, from the Sediment Quality Information Database, under the designated navigational channels, fairways, and basins criteria.	CCLVII
Figure 3a-30 Final SHUA map of designated anchorage areas.	CCLIX
Figure 3a-31 Final SHUA map of restricted areas.	CCLXII
Figure 3a-32 Final SHUA map of Lightering Zones.	CCLXV
Figure 3a-33 Final map of vessel transit lanes.	CCLXVIII
Figure 3a-34 Final SHUA map of open water disposal sites.	CCLXXI
Figure 3a-35 Final SHUA map of underwater cables, under the cables, pipelines, and cable/pipeline areas.	CCLXXIV
Figure 3a-36 Final SHUA map of cable and pipeline areas, under the cables, pipelines, and cable/pipeline areas criteria.	CCLXXVI
Figure 3a-37 Final SHUA map of coastal energy facilities, under the coastal energy generating facilities and transmission facilities.	CCLXXIX
Figure 3a-38 Final SHUA map of recreational fishing activity.	CCLXXXI
Figure 3a-39 Final SHUA map of LIS commercial fishing activity.	CCLXXXIV
Figure 3a-40 Final SHUA map of recreational shellfish beds.	CCLXXXVII
Figure 3a-41 Final SHUA map of aquaculture operations, under the commercial aquaculture locations criteria.	CCXC
Figure 3a-42 Final SHUA map of CT Seaweed licenses, under the commercial aquaculture locations.	CCXCI
Figure 3a-43 Final SHUA map of aquaculture gear areas, under the commercial aquaculture locations criteria.	CCXCII
Figure 3a-44 Final SHUA map of state managed shellfish beds (CT), under the commercial aquaculture locations criteria.	CCXCIII
Figure 3a-45 Final SHUA map of town managed shellfish beds (CT), under the commercial aquaculture locations criteria.	CCXCIV
Figure 3a-46 Final SHUA map of aquaculture sites (NY), under the commercial aquaculture locations criteria.	CCXCVIII
Figure 3a-47 Final concentrations of all Significant Human Uses in Long Island Sound.	CCC
Figure 3a-48 Final concentrations of Significant Historical, Cultural, and Educational Uses in LIS.	CCCIII

Figure 3a-49 Final concentrations of all Recreational Uses in LIS.	CCCVI
Figure 3a-50 Final concentration of all Navigation, Transportation, and Commerce activities in LIS.	CCCIX
Figure 3a-51 Final concentrations of fish and shellfish uses in LIS.	CCCXII
Figure 3a-52 Final concentrations of surface uses and activities in LIS.	CCCXV
Figure 3a-53 Final concentrations of water column uses and activities in LIS.	CCCXVIII
Figure 3a-54 Final concentrations of bottom-land uses and activities of LIS.	CCCXXI

Appendix Tables

Table 3a-1 SHUA Criteria and descriptions.	CLXXV
Table 3a-2 Initial data layers under consideration for areas of Historical, Cultural, and Archaeological significance.	CLXXIX
Table 3a-3 Initial data layers under consideration for areas of Recreational and Quality of Life significance.	CLXXX
Table 3a-4 Initial data layers under consideration for areas of Navigational, Transportation, and Commerce significance.	CLXXXII
Table 3a-5 Initial data layers under consideration for areas of fishing and aquaculture significance.	CLXXXII
Table 3a-6 Final list of human use data layers to be used in the SHUA process.	CLXXXVI
Table 3a-7 Thresholds applied to various SHUA criteria.	CLXXXVII
Table 3a-8 Data construction table for local, state, and national historic districts.	CXCI
Table 3a-9 Data construction table for LIS Lighthouses.	CXCIV
Table 3a-10 Data construction table for Shipwrecks.	CXCVII
Table 3a-11 Data construction table for Parklands and Open Space.	CC
Table 3a-12 Data construction table for Archeological areas (upland).	CCIV
Table 3a-13 Data construction table for archaeological sites (LIS).	CCVI
Table 3a-14 Data construction table for potential Holocene underwater sites.	CCVIII
Table 3a-15 Data construction table for Long Island Sound Water quality sampling sites.	CCXI
Table 3a-16 Data construction table for LIS Integrated Coastal Observation System (LISICOS) sites.	CCXIV
Table 3a-17 Data construction table for Sailing Race Areas and Routes.	CCXVIII
Table 3a-18 Data construction table for High Recreational Boating Areas.	CCXX
Table 3a-19 Data construction table for Mooring Fields.	CCXXII
Table 3a-20 Data construction table for Anchorage Areas.	CCXXV
Table 3a-21 Data construction table for Marinas and Yacht Clubs.	CCXXVII
Table 3a-22 Data construction table for Boat Launches.	CCXXIX
Table 3a-23 Data construction table for waterfowl hunting areas.	CCXXXI
Table 3a-24 Data construction table for dive locations, under the dive sites criteria.	CCXXXIV
Table 3a-25 Data construction table for Coastal Access Sites.	CCXXXVII
Table 3a-26 Data construction table for Individual Ocean Uses.	CCXXXIX
Table 3a-27 Data construction table for Open Space and Public Lands.	CCXLI
Table 3a-28 Data construction table for Water Trails.	CCXLV

Table 3a-29 Data construction table for Public Access Beaches.....	CCXLVII
Table 3a-30 Data construction table for Waterfowl Concentration Areas.....	CCL
Table 3a-31 Data construction table for working water fronts.....	CCLII
Table 3a-32 Data construction table for fairways and navigational channels.....	CCLV
Table 3a-33 Data construction table for dredged areas from the Sediment Quality Information database.....	CCLVIII
Table 3a-34 Data construction table of LIS Anchorages.....	CCLX
Table 3a-35 Data construction table for LIS safety and security zones.....	CCLXIII
Table 3a-36 Data construction table for lightering areas.....	CCLXVI
Table 3a-37 Data construction map for LIS Vessel Traffic areas.....	CCLXIX
Table 3a-38 Data construction table for LIS disposal sites.....	CCLXXII
Table 3a-39 Data construction table for underwater or submarine cables.....	CCLXXV
Table 3a-40 Data construction table for LIS cable and pipeline areas.....	CCLXXVII
Table 3a-41 Data construction table for coastal energy facilities.....	CCLXXX
Table 3a-42 Data construction table for recreational fishing.....	CCLXXXII
Table 3a-43 Data construction table for commercial fishing.....	CCLXXXV
Table 3a-44 Data construction table for recreational shellfish areas.....	CCLXXXVIII
Table 3a-45 Data construction table for all Connecticut commercial aquaculture locations.....	CCXCV
Table 3a-46 Data construction table for NY Aquaculture sites.....	CCXCIX
Table 3a-47 Data construction table of final concentrations of all SHUAs in LIS.....	CCCI
Table 3a-48 Data construction table for Hot Spot Map of Historical, Cultural, and Educational Uses.....	CCCIV
Table 3a-49 Data Construction Table for "Hot Spot" Map of Recreational Uses.....	CCCVII
Table 3a-50 Data Construction Table for "Hot Spot" of Navigation, Transportation, etc. SHUA.....	CCCX
Table 3a-51 Data Construction Table for "Hot Spot" of Fishing and Shellfish SHUAs.....	CCCXIII
Table 3a-52 Data Construction Table for "Hot Spot" Map of all Surface Use SHUAs.....	CCCXVI
Table 3a-53 Data Construction Table for "Hot Spot" Map of all Water Column SHUAs.....	CCCXIX
Table 3a-54 Data Construction Table for "Hot Spot" Map of all benthic and substrate (sea-floor) SHUAs.....	CCCXXII

1. Introduction

As described in the Blue Plan text, the creation of the Significant Human Use (SHUA) areas followed as a corollary to the statutorily mandated Ecologically Significant Areas (CGS § 25-157t(b)) due to the nature of Long Island Sound itself – the richness in ecological resources and services is matched by the importance and relevance of the many ways the Sound is used to benefit the economy, support recreation, and foster culture and knowledge.

The effort to develop SHUA was designed and coordinated by the Blue Plan's *Plan Development Team* (PDT), made up of staff representation from:

- Connecticut Department of Energy & Environmental Protection (DEEP)
- The Nature Conservancy (TNC)
- Connecticut Sea Grant (SG)

During the course of the development process the PDT sought and received a variety of input from the Blue Plan Advisory Committee and various stakeholder groups who provided feedback on the map products as well as additional sources of data to include.

2. Scope and Process

The PDT set two primary goals for the SHUA effort:

- Goal 1: To include a mix of data that accurately depicts significant human uses in Long Island Sound;
- Goal 2: To render it in formats easy to understand and interpret;

a. Goal 1: To include a mix of data that accurately depicts significant human uses in Long Island Sound

Using the Long Island Sound Resource and Use Inventory (v 1.3) and the concurrent efforts of the Policy Development Team as initial sources of data and a framework to work within, the PDT began by identifying potential sources of human-use data and aggregating these into thematic bins. These included both in-water activities that directly related to the Blue Plan Areas of Interest and policy areas (e.g., boating densities, fishing areas, and large Sound-wide infrastructure such as cables and pipelines) as well as shore-based activities and resources (e.g., public open space, archaeological sites, or locations of water-dependent working waterfronts.) The inclusion of upland areas may at first seem counter-intuitive to an effort designed to address marine spatial planning; however, the implications of activities in the water-based policy area may have significant effect on shore-centric areas, such as the potential to land a cable on/or near a cultural resource.

During the spring and summer of 2018, the PDT developed a suite of nearly 80 different potential data layers that could reasonably be used to describe various aspects of human uses for four criteria groups developed by the Policy Team. The table below organizes these via the criteria and sub-criteria constructs the Policy team developed. (Table 3a-1).

Table 3a-1 SHUA Criteria and descriptions.

Criteria	Description
Areas with features of historical, cultural, educational, or research significance	
Areas associated with lighthouses and other historic areas	Lighthouses, waterfront historic districts, or in-water structures of historical significance, excluding wrecks, and areas of Long Island Sound immediately adjacent to such resources.
Shipwrecks	Wrecks of historical or cultural significance.
Visual and Scenic Resources	Views of Long Island Sound’s scenic resources from publicly accessible coastal land. These resources include but are not limited to natural resources or landscapes viewed by the general public, in part for the use, observation, enjoyment and appreciation of natural or cultural visual qualities.
Submerged and Coastal Archaeological Areas	Submerged or coastal locations of archaeological sensitivity and/or significance.
Areas of Tribal Significance	Submerged or coastal locations recognized by Tribes as having historical or cultural significance.
Discrete Areas for Research, Education, and Monitoring	Areas actively and consistently used for research activities, including but not limited to long term monitoring sites, and Sound-dependent experiential educational programming.
Criteria	Description
Areas of substantial recreational and/or “quality of life” value	

Sailing or Rowing Races	Areas consistently used by organized clubs and associations. Including but not limited to racing and training areas, and long-distance sailing race routes.
Marine Events	Recurring marine events including those described in 33 CFR 100.100 Table.
High Activity Recreational Boating Areas	Approximate areas where the density of recreational boating is substantially higher than the overall mean for LIS.
Mooring Fields and Anchorage Areas	Formally designated or traditional mooring fields and anchorages, as designated or managed by NOAA, municipal Harbor Management, or other organizations.
Marinas, Yacht Clubs, and Boat Launches	Locations of marinas, yacht clubs, and boat launches that are within the Blue Plan Area of Interest.
Waterfowl Hunting	Areas in Long Island Sound important for waterfowl hunting, including sea duck habitat.
Dive Sites	Locations in Long Island Sound important for SCUBA activities.
Coastal Public Use Areas	Areas important for public access and use of Long Island Sound for recreational activities including but not limited to swimming, paddling, and wildlife watching.
Criteria	Description
Areas important for navigation, transportation, infrastructure, and economic activity	

Working Waterfronts, Ports, and Marine Commercial Areas	Commercial facilities that are water dependent, or service water dependent uses on Long Island Sound, including but not limited to onshore and offshore terminals and port facilities.
Designated Navigational Channels, Fairways, and Basins	Designated and maintained navigational channels as they appear on the NOAA-published charts and USACE management plans. Also includes authorized privately maintained navigational channels, fairways, and basins, excluding facilities for individual residential use.
Designated Anchorage Areas	Anchorage areas as they appear on the NOAA charts, and are generally used by commercial vessels.
Security Zones and other Designated Areas	Security zones and other operational zones, as designated by the Coast Guard or other appropriate authority.
Areas of Lightering Activity	Areas designated by the Coast Guard for ship-to-ship transfer (lightering), and other areas regularly used for such transfers.
Vessel Traffic Areas	Areas of high traffic use by vessels with AIS transponders including but not limited to ferries and commercial ships. High traffic use is defined by areas that exceed the mean value of transit counts.
Dredged Material Disposal Areas (Active and Historic)	Material disposal sites as they appear on the NOAA charts, in the LIS DMMP, or designated by EPA. Includes areas currently and historically used. Also includes confined aquatic disposal (CAD) cells.
Cables, Pipelines, and Cable/Pipeline Areas	Submerged cable and pipeline infrastructure areas, including but not limited to those indicated on NOAA navigational charts.
Coastal Energy Generating and Transmission Facilities	Coastal energy generating and transmission facilities and associated infrastructure, including areas of Long Island Sound adjacent thereto.

Criteria	Description
Areas important to Fishing and Aquaculture	
Recreational Fishing	Areas significant for recreational fishing, as identified by DEEP Fisheries and the recreational fishing community of Long Island Sound.
Commercial Fishing	Areas of substantial value to the commercial fishing community in Long Island Sound.
Charter and Party Boat Fishing	Areas of substantial value to the charter and party boat industry in Long Island Sound.
Recreational Shellfish Areas	Town and/or state managed recreational shellfishing areas.
Commercial Aquaculture Locations	Shellfish leases, seaweed leases, gear areas, designated natural beds, and any other type of authorized aquaculture venture in CT and NY as applicable.

Below is generalized list of the initial set of map products that were assigned to each major criteria category (Table 3a-2 to Table 3a-5)

Table 3a-2 Initial data layers under consideration for areas of Historical, Cultural, and Archaeological significance.

Name	Source
Christmas Bird Count Circles	Audubon
Research, Monitoring, Educational Institutions	various
Shellfish Sampling Stations	CT Dept Of Agriculture/Bureau of Aquaculture
LIS Trawl Survey Towpaths	CT Dept of Energy & Environmental Protection
LIS WQ Cruise Sampling Stations	CT Dept of Energy & Environmental Protection
Potential Holocene shoreline - 11000BP	CT Office of State Archaeology
Potential Holocene shoreline - 8000BP	CT Office of State Archaeology
Potential Holocene underwater sites	CT Office of State Archaeology
CT Local Historic Districts - LIS	CT State Historic Preservation Office
CT Local Historic Districts - Upland	CT State Historic Preservation Office
CT National Register Historic Districts - LIS	CT State Historic Preservation Office
CT National Register Historic Districts - Upland	CT State Historic Preservation Office
CT State Register Historic Districts - Upland	CT State Historic Preservation Office
CT Historic Feature Points - LIS	CT State Historic Preservation Office
CT Historic Feature Points - Upland	CT State Historic Preservation Office
CT Non-AWOIS Wrecks	CT Office of State Archaeology
CT Archaeological sites - LIS	CT Office of State Archaeology
CT Archaeological sites - Upland	CT Office of State Archaeology
CT Underwater Archaeological Survey Areas	CT Office of State Archaeology
CT State Property	CT Dept of Energy & Environmental Protection

Name	Source
LIS Cable Fund Mapping Priority Areas	CT Dept of Energy & Environmental Protection
AWOIS Obstructions	National Oceanic and Atmospheric Administration - Automated Wreck Info
AWOIS Wrecks	National Oceanic and Atmospheric Administration - Automated Wreck Info
ENC Obstructions (Harbor scale)	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
ENC Wrecks (Harbor scale)	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
Artificial Reefs	Northeast Ocean Data Portal
NY State Parks	NY Dept of Environmental Conservation
NY Shellfish Sampling Stations	NY Dept of Environmental Conservation
NY National Register District - upland	NY State Historic Preservation Office
LIS Coastal Observation sites	University of Connecticut
NUWC Test Range	Northeast Ocean Data Portal

Table 3a-3 Initial data layers under consideration for areas of Recreational and Quality of Life significance.

Name	Source
Christmas Bird Count Circles	Audubon
Areas Open for Hunting	CT Dept of Energy & Environmental Protection
Coastal Access Sites	CT Dept of Energy & Environmental Protection
Migratory Waterfowl Concentration Areas	CT Dept of Energy & Environmental Protection
Dive Locations	Northeast Ocean Data Portal
Marinas, Yacht Clubs, etc.	CT Dept of Energy & Environmental Protection / LIS Cruising Guide
Marine Events	digitized by Blue Plan staff/volunteers

Name	Source
Mooring Fields	digitized by Blue Plan staff/volunteers
Sailing Areas	digitized by Blue Plan staff/volunteers
Sailing Routes	digitized by Blue Plan staff/volunteers
Transient Anchorages	digitized by Blue Plan staff/volunteers
Yacht Clubs	CT Dept of Energy & Environmental Protection / LIS Cruising Guide
Underwater Recreation Sites	Mid-Atlantic Regional Coastal Association Portal
Boat Launches	Northeast Ocean Data Portal
Distance Sailing Races	Northeast Ocean Data Portal
Shore based Ocean Uses	Northeast Ocean Data Portal
Wildlife/Sightseeing Ocean Uses	Northeast Ocean Data Portal
Kayaking Ocean Uses	Northeast Ocean Data Portal
SCUBA Areas	Northeast Ocean Data Portal
Recreational Boating Activities	Northeast Ocean Data Portal
Recreational Boating Routes	Northeast Ocean Data Portal
Recreational Boating Densities	Northeast Ocean Data Portal
Water Trails	Northeast Ocean Data Portal
AWOIS Wrecks	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
ENC Anchorages	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
ENC Wrecks (Harbor scale)	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
Vessel Density - Pleasure Craft/Sailing	Northeast Ocean Data Portal

Table 3a-4 Initial data layers under consideration for areas of Navigational, Transportation, and Commerce significance.

Name	Source
Working Waterfronts	digitized by Blue Plan staff/volunteers
2013 AIS Cargo vessel density	Northeast Ocean Data Portal
2013 AIS Tanker vessel density	Northeast Ocean Data Portal
Cable And Pipeline Areas	Northeast Ocean Data Portal
Ocean Disposal Sites	Northeast Ocean Data Portal
Submarine Cables	Northeast Ocean Data Portal
ENC Anchorages	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
ENC Fairways and Navigation Channels	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
ENC Lightering Zones	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
ENC Restricted Areas	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
Coastal Energy Facilities	National Oceanic and Atmospheric Administration - Marine Cadastre
Danger Zones & Restricted Areas	National Oceanic and Atmospheric Administration - Marine Cadastre
NUWC Test Range	Northeast Ocean Data Portal

Table 3a-5 Initial data layers under consideration for areas of fishing and aquaculture significance.

Name	Source
CT Aquaculture Gear Area	CT Dept Of Agriculture/Bureau of Aquaculture
CT Aquaculture Operations	CT Dept Of Agriculture/Bureau of Aquaculture
CT Recreational Shellfish Beds	CT Dept Of Agriculture/Bureau of Aquaculture
CT Seaweed Licenses	CT Dept Of Agriculture/Bureau of Aquaculture

Name	Source
CT Shellfish Beds-State	CT Dept Of Agriculture/Bureau of Aquaculture
CT Shellfish Beds-Town	CT Dept Of Agriculture/Bureau of Aquaculture
CT Shellfish Bed Classification	CT Dept Of Agriculture/Bureau of Aquaculture
CT Shellfish Sampling Stations	CT Dept Of Agriculture/Bureau of Aquaculture
CT Recreational Fishing Areas	CT Dept of Energy & Environmental Protection
AWOIS Obstructions	National Oceanic and Atmospheric Administration - Automated Wreck Info
AWOIS Wrecks	National Oceanic and Atmospheric Administration - Automated Wreck Info
ENC Obstructions (Harbor)	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
ENC Wrecks (Harbor)	National Oceanic and Atmospheric Administration - Elec. Nautical Charts
VTR Commercial Fishing Landings - Gillnet	NY Geographic Information Gateway
VTR Commercial Fishing Landings - Otter Trawl	NY Geographic Information Gateway
VTR Commercial Fishing Landings - Pots	NY Geographic Information Gateway
VTR Commercial Fishing Landings - Seine	NY Geographic Information Gateway
NY Aquaculture Sites (TMAU)	NY Dept of Environmental Conservation
NY Shellfish Sampling Stations	NY Dept of Environmental Conservation

Once the initial identification and organization of human use map products was complete PDT performed a series of basic processing steps including clipping or selecting element to intersect the LIS Blue Plan Area of Interest, and ensuring all layers conformed to common coordinate and projection system (UTM Zone 18N; NAD83). Additionally, data that spanned both upland and in-water areas (e.g., several historic register and Archeological site layers contained locations that were both on land and in the Sound) were separated into “upland” and “LIS” versions.

The PDT also performed a review of the data for accuracy and completeness and identified several gaps to address. Areas of notable gaps included:

- Activities in New York waters within the sector of aquaculture, where there was significant corresponding data for Connecticut;
- Activities in New York waters within the sector of recreational fishing, where there was significant corresponding data for Connecticut;
- Sound-wide areas dedicated to sailing races;
- Sound-wide Dive areas/locations;
- Sound-wide areas important to commercial fishing interests;
- Connecticut and New York upland areas of public open space beyond examples of state parks and other state-owned property;
- Connecticut and New York working waterfronts.

To fill these gaps the PDT:

- Developed a series of participatory mapping exercises with stakeholders from the recreational fishing, diving, and sailing sectors to help augment voids in their respective mapping data. Through a series of outreach meetings and webinars, the existing data layers were displayed in web-enabled online maps. Users could then add or edit areas based on their expertise and knowledge. The edits occurred both communally (e.g., at meetings or other events) or by individual access to the online maps. The results provided by the members of their respective user communities were integrated into or included with the existing data to more completely represent these uses.
- Contacted the commercial fishing sector. Although they were generally unwilling to provide detailed information on areas or locations significant for their interests in LIS due the proprietary nature of the industry, they did however provide comments and suggestions concerning how best to present the limited data available for the industry. By their recommendations, data from the four types of fishing gear categories (otter trawls, pots, seine, and gillnet) were combined and their landing totals (in pounds) summed to create a singular layer that reflects commercial fishing landings in general rather than by gear type.
- Sought out additional sources of Open Space property data available from DEEP - but were not included in the Resource and Use Inventory - to provide a more complete picture of public open space. These included the CT Protected Open Space Mapping (POSM) data, and a set of CT Municipal Open Space properties that pre-dated POSM. From the POSM inventory, locations flagged as Federal property and Municipal properties whose names contained keywords such as “park”, “town green”, “field” or similar were extracted and added. From the Municipal Open Space inventory, properties flagged as “municipal – open to the public without fee” were extracted and added.

- Worked with volunteers and other DEEP staff to use digital aerial photography, planning reports, and professional experience and knowledge to digitize the locations of working waterfronts.

After the initial compilation of data, QA/QC, and gap filling where possible/practical, the PDT reviewed and analyzed the resulting list of initial layers to assess the overall levels of completeness and representativeness.

Due to the intervening time between when the Resource and Use Inventory was completed and the SHUA development process was fully underway, several datasets provided by source organizations were updated. As a result, the initial versions for commercial boating densities were replaced with more currently available versions.

Some datasets that were part of the initial collections were eliminated; for example, a historic buildings dataset provided by the CT State Historic Preservation Office (CTSHPO) was excluded in favor of a historic district dataset (also provided by CTSHPO) that included over 90% of the buildings. Conversations from CTSHPO confirmed that using both was redundant and the districts data provided a sufficient level of representation.

In other cases, data representing similar topical areas from different sources were modified. Some were combined, as in the case of dive sites and shipwrecks. The location of these originally spanned multiple sources; these were refined and combined into a singular shipwreck map product and a singular dive site map product. Others had records removed where they were better reflected by other sources. For example, certain Coastal Access Sites were removed from that layer as they were already captured in other layers such as Boat Launches or Public Open Space. And many data layers contained records that extended beyond the Blue Plan Area of Interest and were removed.

As a result of input from the formal public comment period from March 20 to June 21, 2019, several data sets were updated. While no map products were removed, several received updates – largely adding elements that were missed and editing locations to reflect a better representation. *Those map products updated by input from the public comment period are reflected in the list below with an asterisk (“*”).*

The tables below indicate the map products that best reflect the significant human use interest within and around Long Island Sound.

The final list (Table 3a-6) of human use map products used in the SHUA process includes:

Table 3a-6 Final list of human use data layers to be used in the SHUA process.

Historic, Cultural, & Educational Interests:	Recreational / Quality of Life Interests:	Navigation, Transportation, Military, Infrastructure, & Commerce Interests:	Fishing/Shellfishing Interests:
LIS Lighthouses	LIS Sailing Routes	CT & NY Coastal Energy Facilities	CT Recreational Shellfish Beds
CT and NY Historic Districts	LIS Sailing Areas *	CT & NY Working Waterfronts	LIS Recreational Fishing Areas *
LIS Wrecks	LIS Mooring Fields *	LIS Anchorages	LIS Commercial Fishing
CT & NY Open Space & Public Lands	LIS Anchorages	LIS Fairways & Navigation Channels	CT Aquaculture Operations
CT Archaeological Sites – upland *	LIS Recreational Boating Density	CT & NY Commercial Dredging Areas	CT Seaweed Licenses
CT Archaeological Sites – LIS *	CT & NY Marinas, Yacht Clubs *	LIS Restricted Areas	NY Aquaculture Sites
LIS Coastal Observing System sites	CT & NY Boat Launches	LIS Lightering Zones	CT Aquaculture Gear Areas
LIS Water Quality Sampling *	CT Waterfowl Hunting Areas	LIS Vessel Transit Count Density	CT Natural Shellfish Beds
LIS Potential Holocene underwater sites	LIS Dive Locations *	LIS Ocean Disposal Sites	CT Shellfish Beds-Towns
	CT Coastal Access Sites	LIS Underwater Cables	CT Shellfish Beds-State
	CT & NY Individual Ocean Uses *	LIS Cable & Pipeline Areas *	
	CT & NY Public Access Beaches		
	LIS Water Trails *		
	CT & NY Open Space & Public Lands		
	CT Migratory Waterfowl Concentration Areas		

Several datasets (such as those representing boating densities and commercial fishing landings) provided coverage of all or nearly all of LIS and also provided data that could support parsing it into areas where the focus or intensity of use could be further explored. The PDT felt that these layers could be analyzed to glean where more substantial areas may occur and thus better reflect “significant” use areas as opposed to all of LIS being deemed significant. After experimentation and informed by similar efforts of the Ecologically Significant Areas approach, the PDT applied the following thresholds in Table 3a-7.

Table 3a-7 Thresholds applied to various SHUA criteria.

LIS Recreational Boating Density	Retain only areas defined by the top 2 out of 5 equal quantity classes.
LIS Vessel Transit Count Density	Retain only areas where the AIS count values were above mean value of 85.
LIS Restricted Areas	Retain only areas flagged as safety / security zones in Code of Federal Regulations, plus Plum Island.
LIS Commercial Fishing	Retain only areas defined by the top 2 out of 5 equal quantity classes.

b. Goal 2: To render SHUA data in formats easy to understand and interpret;

Having finalized the data layers to represent SHUAs, the PDT focused on three distinct ways to present and share the individual layers, a synthesis of groups of layers, and a combination of both.

Hardcopy Maps:

Each SHUA layer was rendered in a standardized format to show it along with the Blue Plan Area of Interest and the Blue Plan Policy area. These were converted into PDFs to provide an easily accessible way to see the data. They are part of the hardcopy and electronic versions of the Blue Plan as part of the Appendices.

Hot Spot Clustering Analysis:

When trying to view multiple SHUA layers at once (e.g., to try and visualize all Fishing and Shellfishing data at once, overlaps between layers can obscure features and become confusing. To address this, the PDT applied a clustering analysis for each of the four criteria groups, (plus a group of all human uses) based on the count (frequency) of human use data layers occurring in a given area. This synthesized the numerous individual layers and presented them as clusters – areas where concentrations of uses can be statistically defined by the levels of frequency counts. The analyses used a spatial statistics process (optimized Getis-Ord G_i^* Hot-Spot Analysis) within Geographic Information System (GIS) software (Esri, 2018). In summary, the method involved:

- 1) Breaking the LIS Area of Interest into grids – one for each of the four criteria groups, plus a fifth group of all human uses. Based on several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used.

- 2) For each of the four criteria group grids:
 - a) Overlay the grid onto the map products from each data group.
 - b) Add column fields to the grid layer – each field reflects each map product.
 - c) For each map product in the criteria group, log the grid cells it intersects by entering a ‘1’ in the selected records for the appropriate map products field.
 - d) Derive a cumulative frequency value for each grid cell (row) by adding the number of ‘1s’ from each map product (field).
- 3) Apply the Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. This results in maps for each criteria group that show:
 - a) Areas where many high frequency grid cells are concentrated (hot spots)
 - b) Areas where many of low frequency grid cells are concentrated (cool spots)
 - c) Areas that are neutral
- 4) Combine the grids from step 2 into a fifth representing the total of all human uses. Calculate frequencies for each grid cell for all map product fields.
- 5) Repeat step 3 to determine clustering for all human uses.

In addition to the original four criteria groups of uses, the same clustering process was repeated by re-organizing the map products into new groups that reflect existing uses that may be susceptible to impacts by future activities occurring either on the bottom substrate, in the water column, or at/above the surface of Long Island Sound.

As above, the clustering maps were also output using a standardized format into easily accessible PDFs that were included in the hardcopy and electronic versions of the Blue Plan as part of the Appendices.

Web Viewer:

Although PDF maps are nearly universally accessible, they are limited in what they can show and do as a result of their static nature and the size of the map itself. Being able to interact with individual data layers or combinations of layers based on specific reasons provides a far more useful approach. To address this issue, the PDT partnered with the University of Connecticut’s Center for Landuse Education and Research (CLEAR) to develop an online web-based viewer to enable stakeholders to view and work with the Significant Human Use Area data (as well as the corresponding Ecologically Significant Areas.) [The Blue Plan Viewer](#), provides users the ability to (UConn Clear, 2019):

- Pan and zoom around a map with supplemental layers (e.g., aerial photos, road networks, town boundaries, water bodies, etc.)
- Selectively turn on and off various Blue Plan data layers;
- Perform an identification to return information about Blue Plan data layers;
- Create basic map layouts and share them via hardcopy and electronically.

General SHUA Data Caveats:

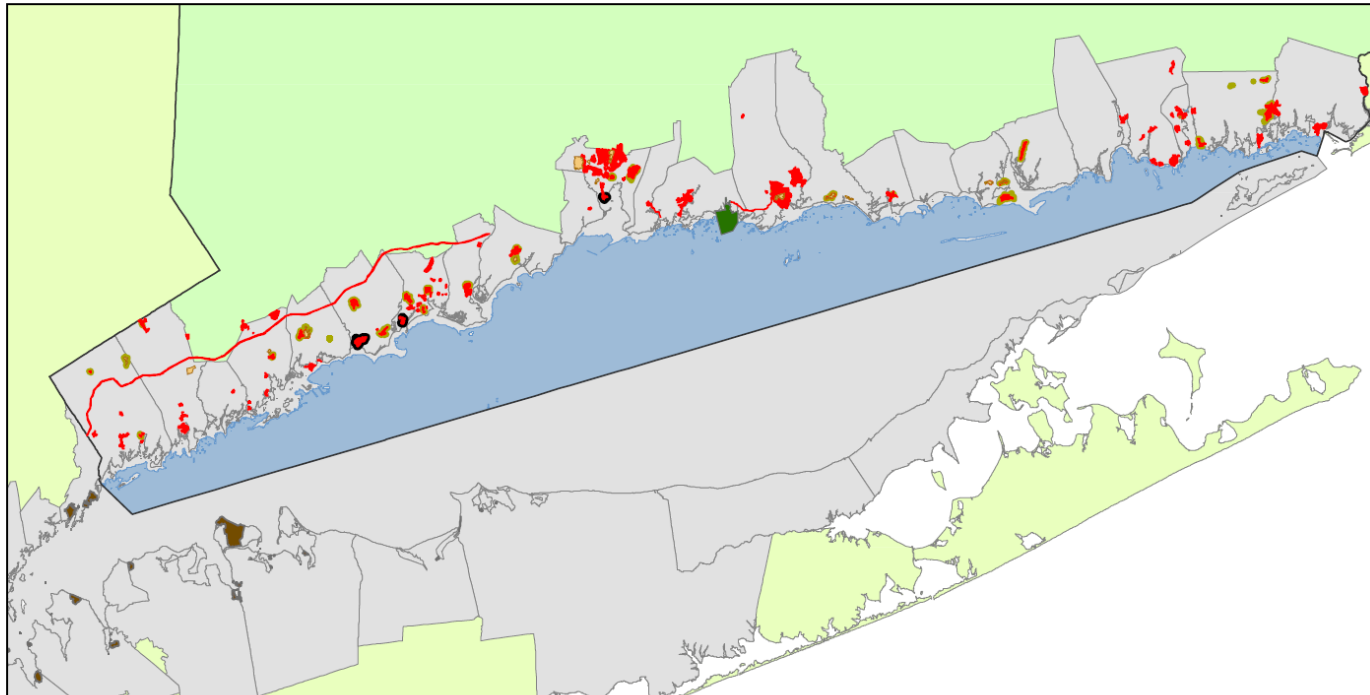
As with any effort that involves the aggregation and manipulation of data from a variety of sources to create new products, it's important to keep in mind some key points.

- There was no on-site/field based ground-truthing employed. QA/QC reviews came mainly from sector-based stakeholder input, the results of the Resource and Inventory assessments, general public comment, and best professional knowledge judgment of the PDT. While the data are considered valid overall, exact boundaries and locations should best be taken conservatively.
- Participatory Mapping results relied exclusively on the expertise of sector-based stakeholders with assistance and review from the PDT. While these results are also considered valid, as noted above, exact boundaries and locations should best be taken conservatively.
- When used for Blue Plan purposes, original source material was often clipped to the Blue Plan Area of Interest or only selected if uses occurred within it. As a result, it is possible there are other locations for particular uses that occur within the vicinity but outside this area; as such they are not reflected here.
- In general human use information was more readily available for Connecticut. Data provided by various New York state agencies and representatives from certain stakeholder groups with knowledge of human use activities in New York waters were included, but due to limited resources the Blue Plan was unable to fully tap into these beyond what was provided and originally identified as part of the Resource and Use Inventory. There is likely additional data from other organizations within New York (e.g., county, town, and village governments, non-profits, etc.) that should be pursued as part of subsequent update processes.

3. Significant Human Use Maps and Data Construction Tables

In the following pages are the SHUA maps organized by criteria, and their corresponding data construction tables. These tables illustrate the data sources, extent, adjustment and processing,

Significant Human Use Area Map: Historic Districts



- | | | |
|---|---|---|
|  CT Local Districts (LIS) |  CT National Register (upland) | CT State Boundary |
|  CT Local Districts (upland) |  CT State Districts (upland) |  Policy Area |
|  CT National Register (LIS) |  NY National Register (upland) |  Area of Interest |

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-1 Final SHUA map for local, state, and national historic districts under the Areas associated with lighthouses and other historic areas criteria.

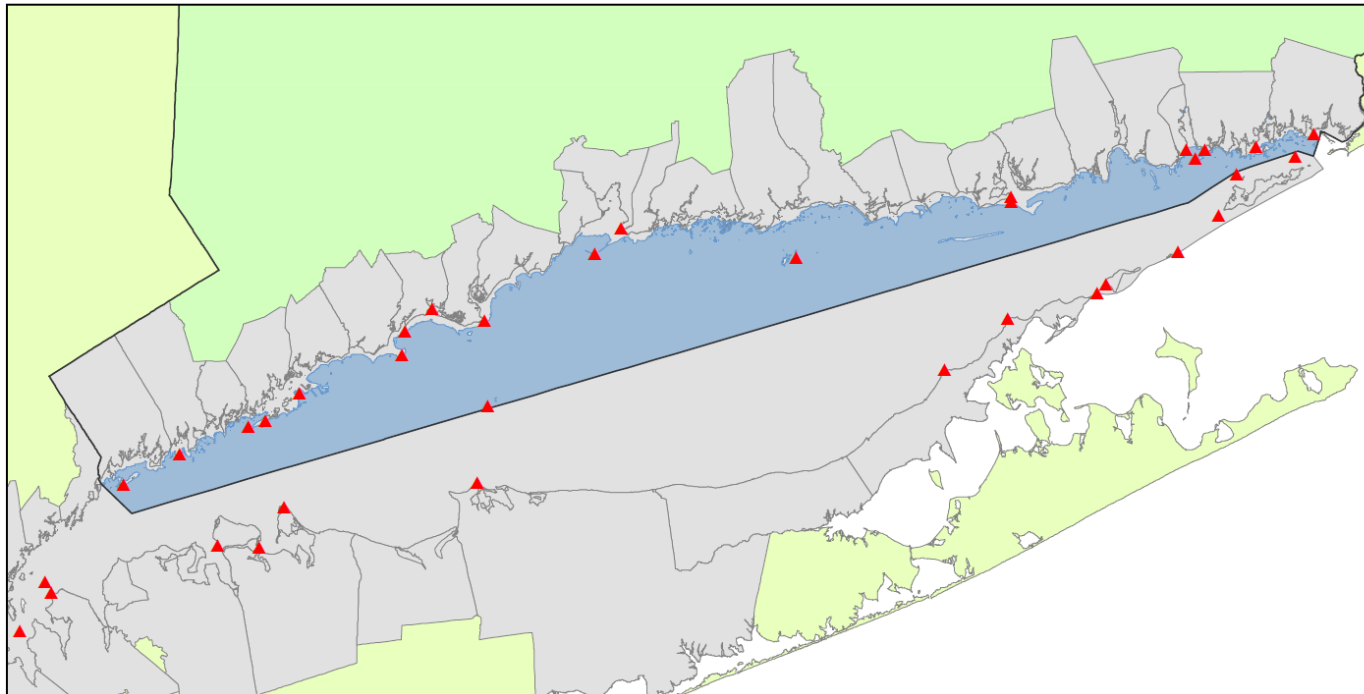
Local, State, and National Historic Districts

Table 3a-8 Data construction table for local, state, and national historic districts.

SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Areas associated with lighthouses and other historic areas
SHUA Sub-criterion Description	Waterfront historic districts, or in-water structures of historical significance (excluding wrecks), and areas of Long Island Sound immediately adjacent to such resources.
Data Source(s)	<p>GIS Data layers from:</p> <ul style="list-style-type: none"> • Local Historic Districts (CT State Historic Preservation Office) • National Register Districts (CT State Historic Preservation Office) • State Register Districts (CT State Historic Preservation Office) <p>GIS Data layer from:</p> <ul style="list-style-type: none"> • National Register Districts (NY State Historic Preservation Office)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>All GIS data were first clipped to the data extent. Any districts defining areas in the waters of Long Island Sound were extracted into new layers so that upland and offshore districts can be identified. All layers were appended into a master layer, retaining the attribute schemes from their original sources. An additional attribute field “BP_Source” was added and populated to identify the source layer of the individual records. Where possible, common field information (name, lat/long, location descriptions, etc.) were compiled into a single field for ease of use.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment, but the “BP_Source” attribute can be used to classify them based on their original data sources.
Date Created	October, 2018

Basic Data Description	A synthesis of several sources of historic districts at the local, state, and national levels for coastal areas in CT and NY.
Additional Information	CT State Historic Preservation Office, NY State Historic Preservation Office (dataset originators) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Lighthouses



- ▲ Lighthouses
- CT State Boundary
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-2 Final SHUA map for LIS lighthouses under the Areas associated with lighthouses and other historic areas criteria.

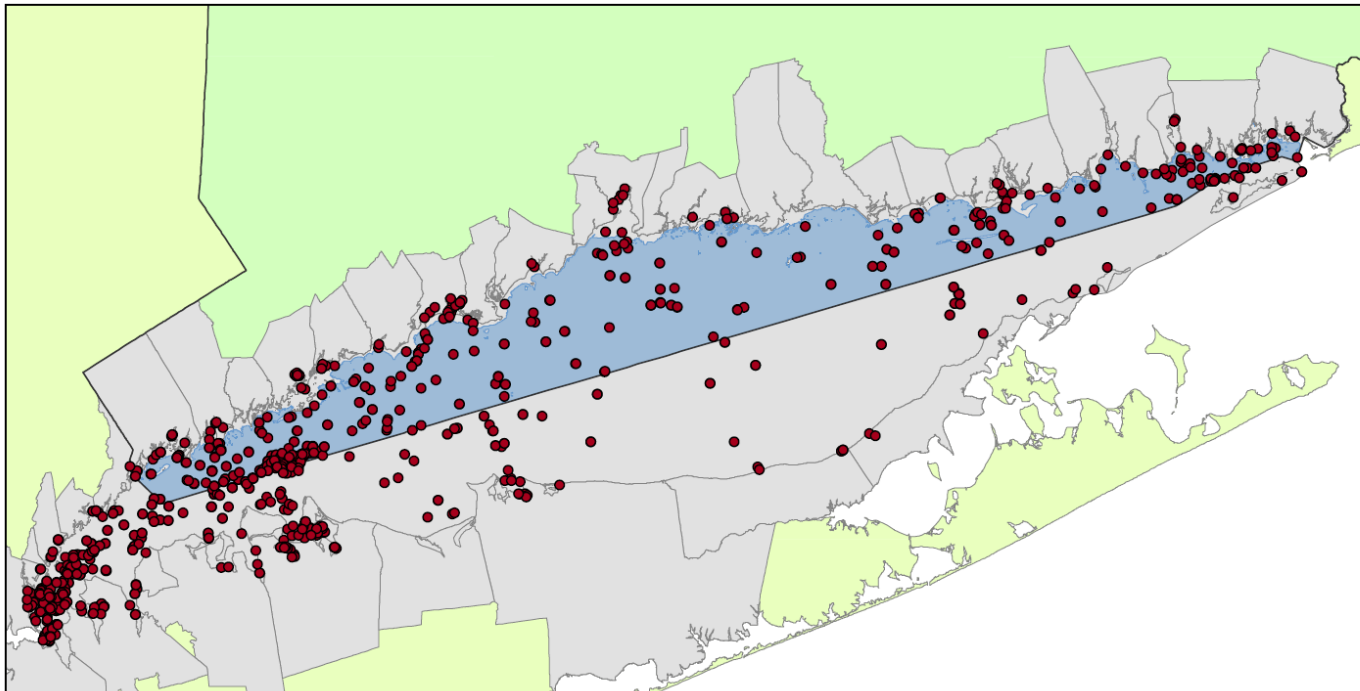
Long Island Sound Lighthouses

Table 3a-9 Data construction table for LIS Lighthouses.

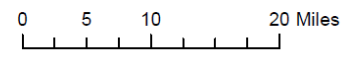
SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Areas associated with lighthouses and other historic areas
SHUA Sub-criterion Description	Lighthouses and areas of Long Island Sound immediately adjacent thereto.
Data Source(s)	<p>GIS data layer:</p> <ul style="list-style-type: none"> National Register of Historic Places (CT State Historic Preservation Office) <p>Websites:</p> <ul style="list-style-type: none"> http://www.birdsandbeacons.com/Lighthouses/LI_Lighthouses.htm http://lighthousefriends.com (Connecticut and New York)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>National Registry GIS data were clipped to the data extent. Existing lighthouses were then selected and exported into a separate layer retaining the same attribute scheme. Using the inventories from the websites, other LIS lighthouses were hand digitized into the new layer approximating their locations using photo imagery and NOAA Nautical Charts as references. Lighthouse names were entered into the “Name” field and the website URL was entered in the “Source” field.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p> <p>When used for Blue Plan purposes, original source material was clipped to the Blue Plan Planning boundary or only selected if uses occurred within it. As a result, it is possible that there are other locations for particular uses that occur outside the planning area, but are not reflected here.</p>

Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes.
Date Created	October, 2018
Basic Data Description	The location of lighthouses in Long Island Sound.
Additional Information	Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Wrecks



- Wrecks
- CT State Boundary
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-3 Final SHUA map for shipwrecks.

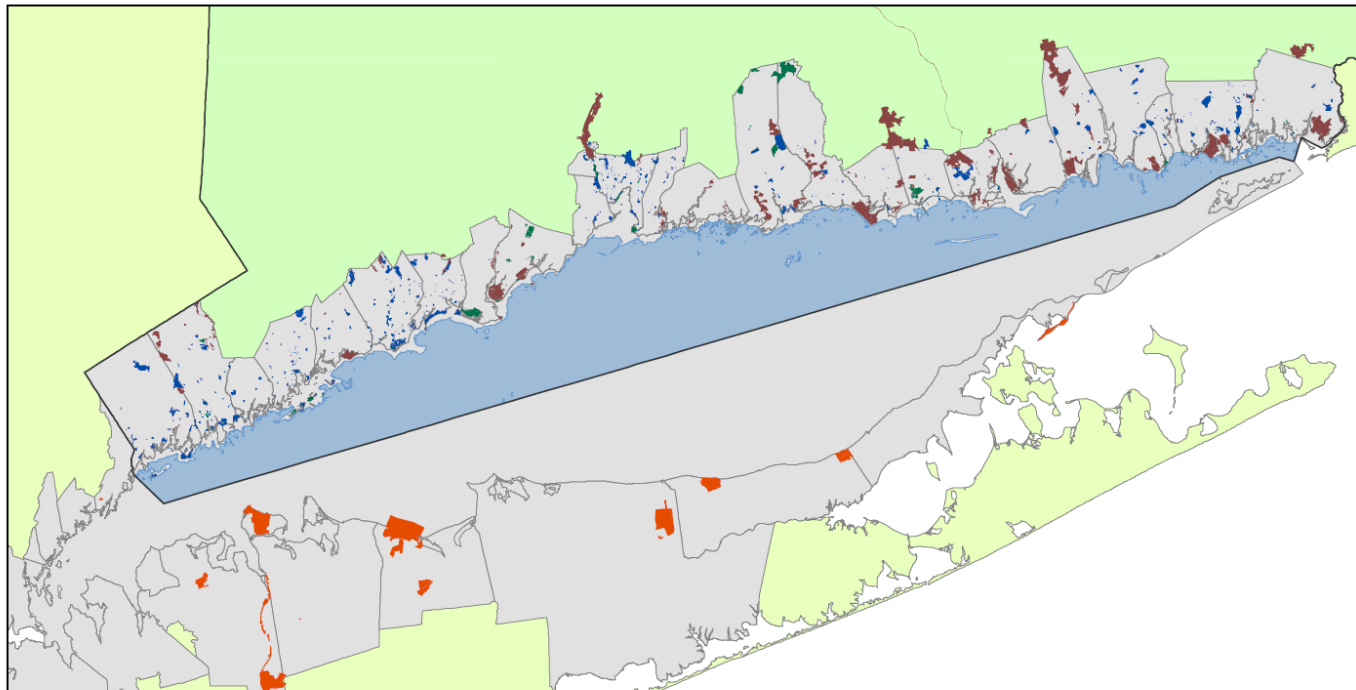
Long Island Sound Shipwrecks

Table 3a-10 Data construction table for Shipwrecks.

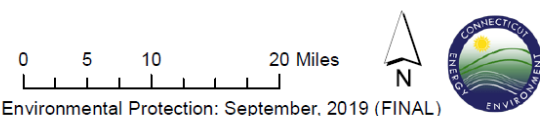
SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Shipwrecks
SHUA Sub-criterion Description	Wrecks of historical or cultural significance.
Data Source(s)	<p>GIS data layers:</p> <ul style="list-style-type: none"> • Historic Feature Points (CT State Historic Preservation Office) • Wrecks (CT State Historic Preservation Office) • Wrecks and Obstructions: NOAA Electronic Nautical Chart (ENC) –Approach scale (https://nauticalcharts.noaa.gov/data/gis-data-and-services.html) • Wrecks and Obstructions: NOAA Electronic Nautical Chart (ENC) –Harbour scale (https://nauticalcharts.noaa.gov/data/gis-data-and-services.html) • Wrecks and Obstructions: NOAA Automated Wreck and Obstruction Information System (https://nauticalcharts.noaa.gov/data/wrecks-and-obstructions.html)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Source data were clipped to the Long Island Sound Blue Plan planning area. For sources that differentiated wrecks from obstructions, obstructions were excluded. NOAA data (ENC and AWOIS) and CT State Historic Preservation Office data (Historic Features) were kept in their entirety. CT State Historic Preservation Office data (wrecks) contained information from NOAA ENC and AWOIS sources – these were removed based on attribute and spatial analysis to eliminate duplicate records. Individual data layers were appended together to form a new composite data layer. The field “BP_Source” was added and populated to identify the source layer for each record. Where possible, common field information (name, lat/long, location descriptions, etc.) were compiled into a single field for ease of use.

	Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment, but the “BP_Source” attribute can be used to classify them based on their original data sources.
Date Created	October, 2018
Basic Data Description	A synthesis of several sources of wreck information for Long Island Sound.
Additional Information	<p>CT State Historic Preservation Office (dataset originator) NOAA Electronic Nautical Chart (ENC) Direct to GIS (dataset originator) NOAA Automated Wreck and Obstruction Information System-AWOIS (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Open Space and Public Land



- CT State Boundary
- Open Space and Public Land
- Policy Area
- Area of Interest
- CT DEEP Property
- CT Protected Open Space
- CT Public Municipal Open Space
- NY State Parks



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-4 Final SHUA map for open space and public lands, under the Visual and scenic resource criteria.

Connecticut and New York Parklands and Open Space

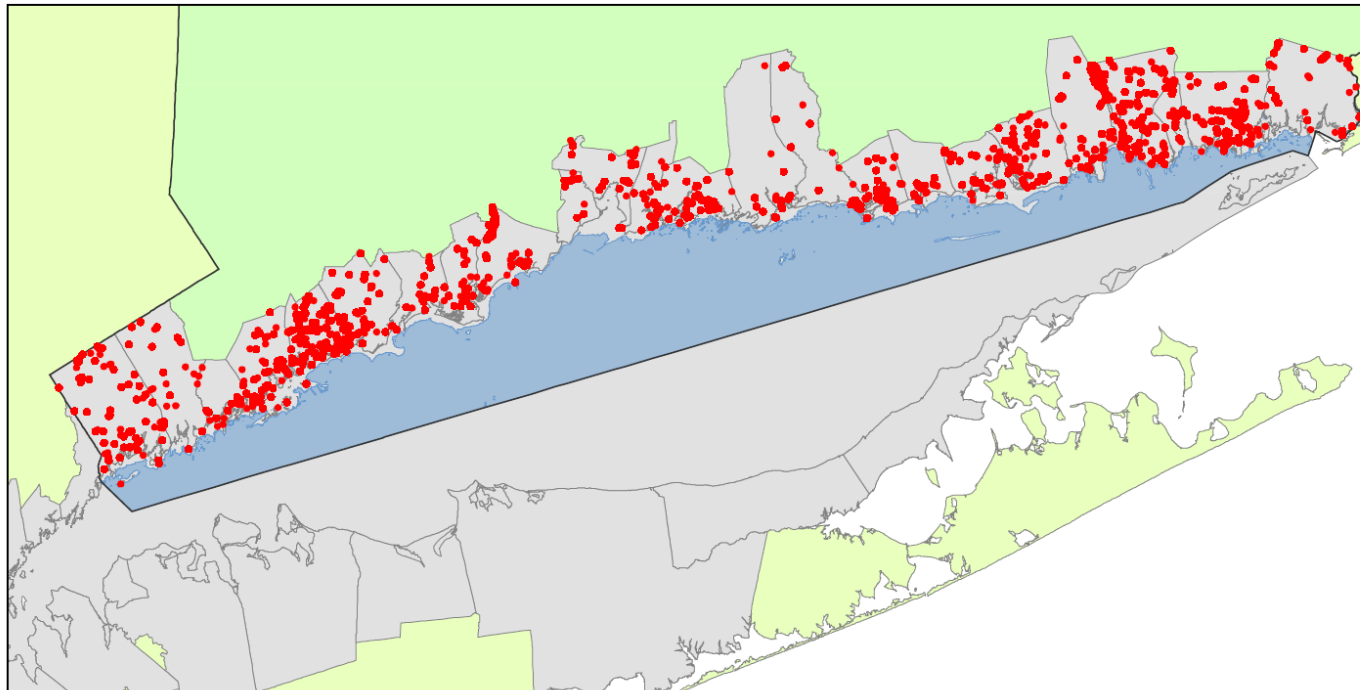
Table 3a-11 Data construction table for Parklands and Open Space.

SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Long Island Sound Visual and Scenic Resources
SHUA Sub-criterion Description	Views of Long Island Sound’s scenic resources from publicly accessible coastal land.
Data Source(s)	<p>GIS data layers:</p> <ul style="list-style-type: none"> • CT Protected Open Space Mapping (CTPOSM) Inventories (CT Dept. of Energy & Environmental Protection) • CT DEEP Property (CT Dept. of Energy & Environmental Protection) • CT Municipal Open Space (CT Dept. of Energy & Environmental Protection) <p>(via https://www.ct.gov/deep/cwp/view.asp?a=2698&q=322898&deepNav_GID=1707)</p> <ul style="list-style-type: none"> • NY State Parks (NYS Office of Parks, Recreation and Historic Preservation)
Data Extent	The Long Island Sound Blue Plan Area of Interest.

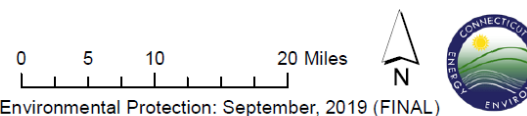
<p>Data Adjustment and Pre-processing</p>	<p>All data were first clipped to the data extent.</p> <p>CTPOSM data were first filtered to identify Open Space Types of Municipal, Municipal with Buildings, or Federal. All Federal properties were retained. Municipal properties were further filtered to retain only those parcels where an entry in the “Offic_Name” field indicated or seemed to indicate it could support public access, natural area preservation/conservation, or general recreation. This could include, but not be limited to parks, recreation areas, town greens, preserves, beaches, open space, etc. No formal or definitive cross-referencing or validations were performed to conclusively verify these.</p> <p>CT DEEP Municipal Open Space data were filtered to focus on parcels classified within the “DESCRIP” field as “municipal, open to the public without fee.” There were further filtered to remove parcels such as cemeteries, churches, or other similar areas that based on best professional judgment, may not best support the intent of providing a location to view the scenery and vistas of Long Island Sound. No formal or definitive cross-referencing or validations were performed to conclusively verify these.</p> <p>New York State Parklands were included in their entirety within the Data extent. No filtering or removals were performed.</p> <p>CTDEEP Property were included in their entirety within the Data extent. No filtering or removals were performed.</p> <p>The final property layers were appended into a master layer, retaining the attribute schemes from their original sources. An additional attribute field “BP_Source” was added and populated to identify the source layer of the individual records. Where possible, common field information (name, lat/long, location descriptions, etc.) were compiled into a single field for ease of use.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
<p>Data Analysis</p>	<p>No additional analysis was performed.</p>
<p>Data Classification</p>	<p>The data are not classified by any attributes to support the SHUA assessment, but the “BP_Source” attribute can be used to classify them based on their original data sources.</p>
<p>Date Created</p>	<p>October, 2018</p>
<p>Basic Data Description</p>	<p>A synthesis of several sources of open space and publicly accessible properties in CT and NY that can serve as vantage points for visual vistas of Long Island Sound.</p>

Additional Information	CT Dept. of Energy & Environmental Protection (dataset originator) NY State Office of Parks, Recreation and Historic Preservation (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm
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Significant Human Use Area Map: Upland Archaeological Sites



- Upland Archaeological Sites
- CT State Boundary
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

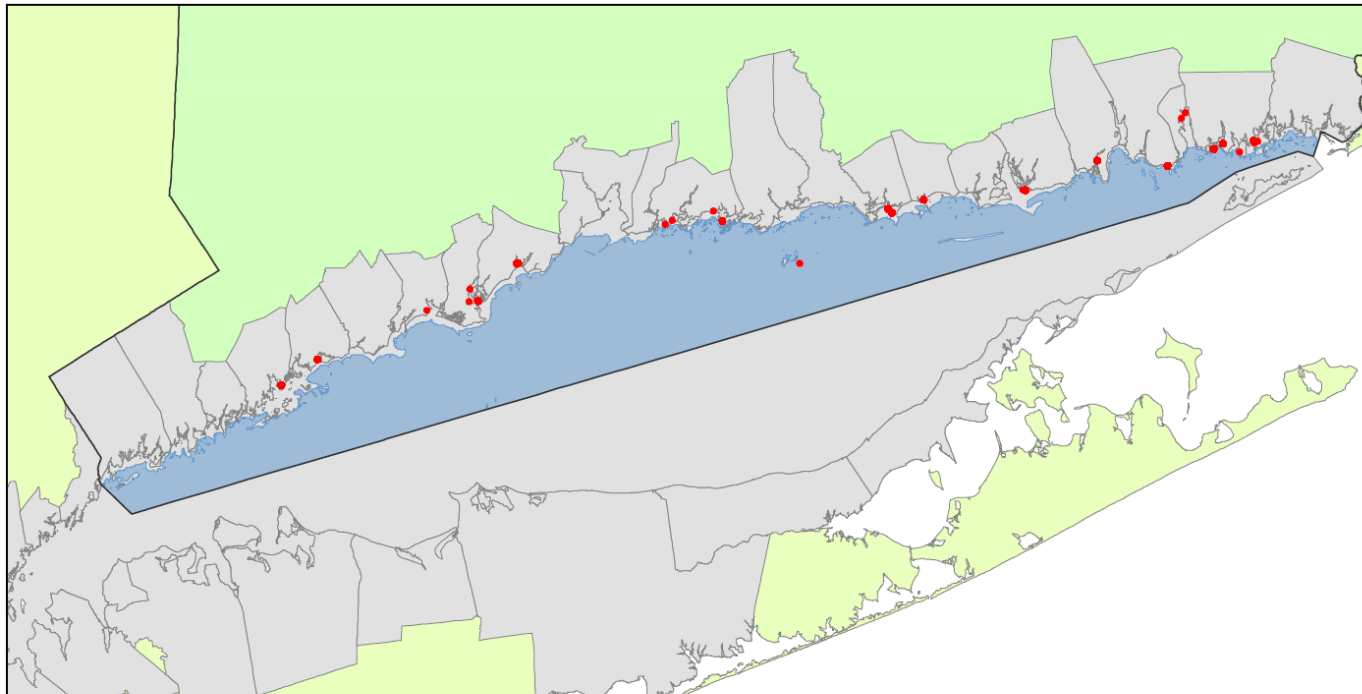
Figure 3a-5 Final SHUA map for archaeological sites (upland), under the submerged and coastal archaeological areas criteria.

Connecticut Archaeologically Sensitive Areas (coastal)

Table 3a-12 Data construction table for Archeological areas (upland).

SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Submerged and coastal archaeological areas
SHUA Sub-criterion Description	Submerged or Coastal locations of archaeological sensitivity and/or significance.
Data Source(s)	GIS Datalayer: <ul style="list-style-type: none"> OSA Site Inventory (CT Office of State Archaeology / State Historic Preservation Office)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	GIS data were provided for the entire state and were clipped to the Data Extent. Resulting sites were buffered by 100ft per the recommendation of the CT State Historic Preservation Office. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment. NOTE: Information provided in the attribute field "SITENO" should be used in referencing any site with CT State Historic Preservation Office.
Date Created	July 2019
Basic Data Description	Upland (land-based) archaeological sites from the CT Office of State Archaeology.
Additional Information	CT Office of State Archaeology/State Historic Preservation Office (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Underwater Archaeological Sites



- Underwater Archaeological Sites
- CT State Boundary
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

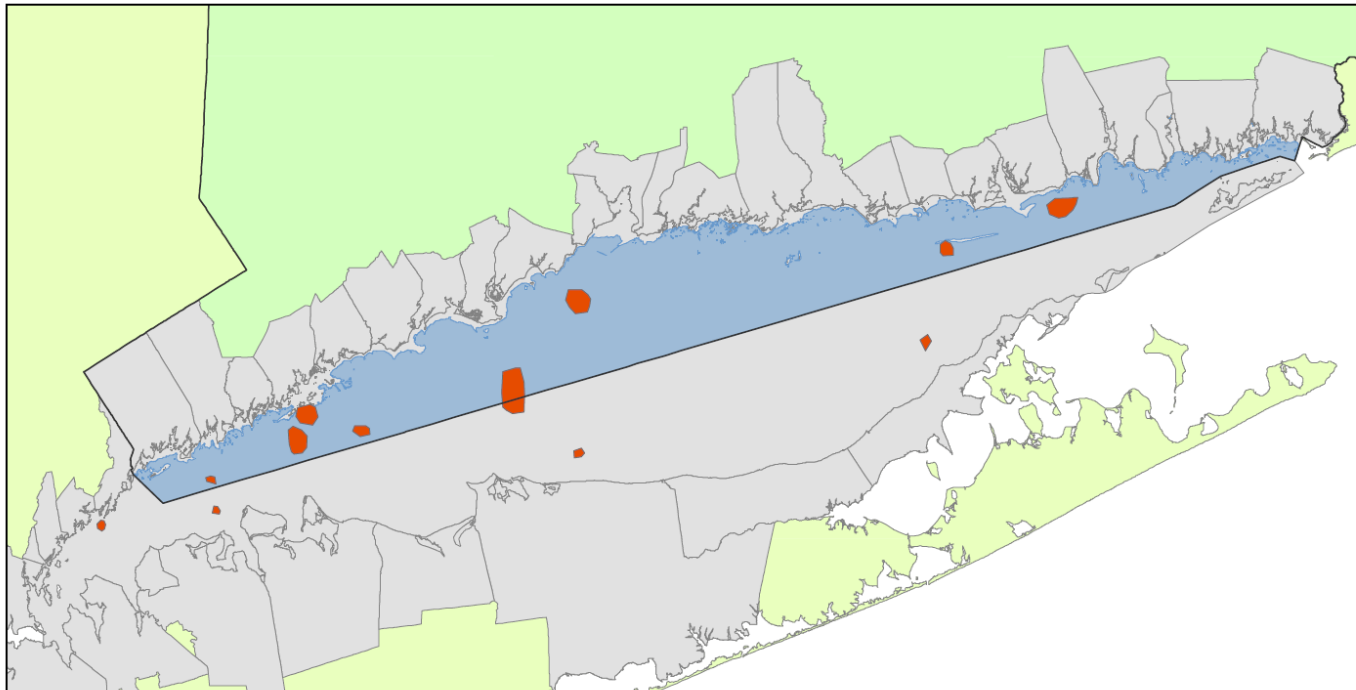
Figure 3a-6 Final SHUA map of archaeological areas (LIS), under the submerged and coastal archaeological areas.

Connecticut Archaeologically Sensitive Areas (submerged)

Table 3a-13 Data construction table for archaeological sites (LIS).

SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Submerged and coastal archaeological areas
SHUA Sub-criterion Description	Submerged locations of archaeological sensitivity and/or significance.
Data Source(s)	GIS Datalayer: <ul style="list-style-type: none"> OSA Site Inventory (CT Office of State Archaeology / State Historic Preservation Office)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	GIS data were clipped to the Data Extent. Resulting sites were buffered by 100ft per the recommendation of the CT State Historic Preservation Office Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment. NOTE: Information provided in the attribute field "SITENO" should be used in referencing any site with CT State Historic Preservation Office.
Date Created	October 2018
Basic Data Description	Inventory of sub-tidal archaeological sites from the CT Office of State Archaeology.
Additional Information	CT Office of State Archaeology/State Historic Preservation Office (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Potential Submerged Holocene Sites



- CT State Boundary
- Potential Submerged Holocene Sites
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-7 Final SHUA map of potential submerged Holocene sites, under the submerged and coastal archaeological areas criteria.

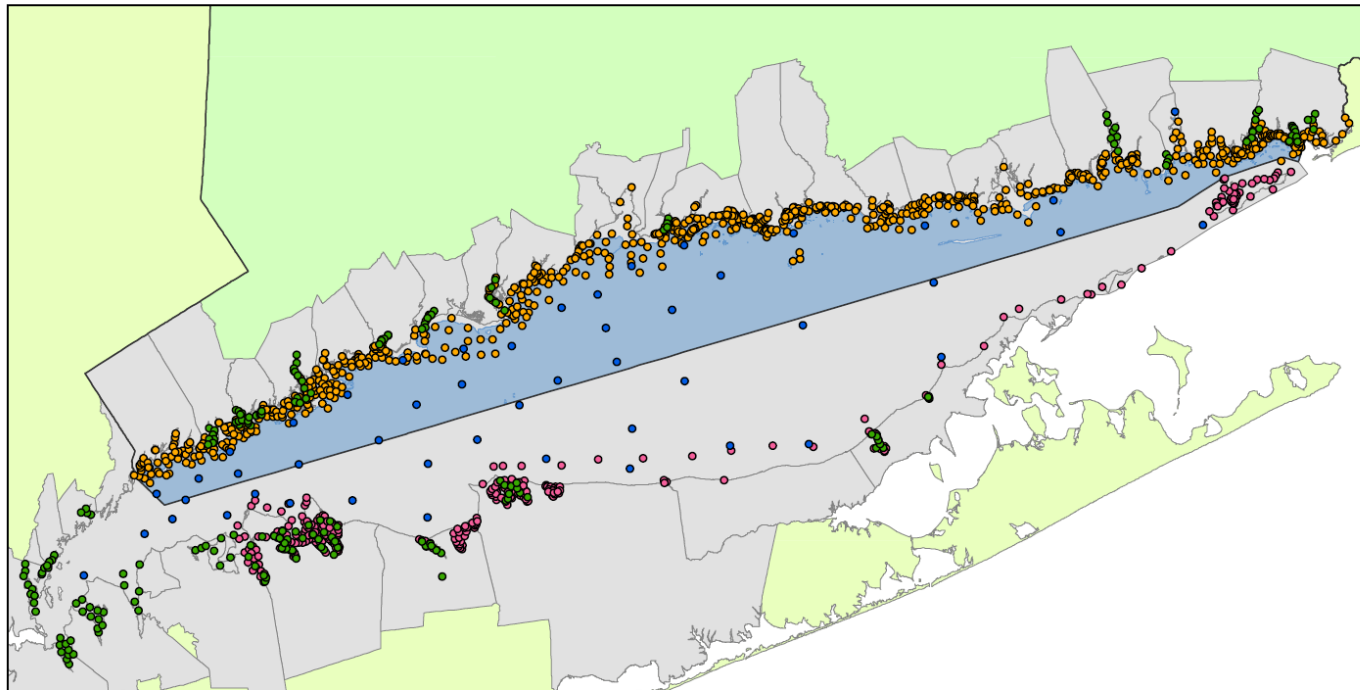
Potential Holocene Underwater Sites

Table 3a-14 Data construction table for potential Holocene underwater sites.

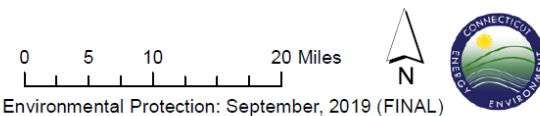
SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Submerged and Coastal Archaeological Areas
SHUA Sub-criterion Description	Submerged locations of archaeological sensitivity and/or significance.
Data Source(s)	<p>Taken from maps and analysis contained in the following:</p> <ul style="list-style-type: none"> • “ARCHAEOLOGICAL AND HISTORICAL RESOURCE STUDY ADRIAEN’S LANDING PROJECT. HARTFORD, CONNECTICUT.” Prepared for the Connecticut Office of Policy and Management By Archaeological and Historical Services, Inc. 2006 • Map provided by Brian Jones, CT Office of State Archaeology, depicting areas lacking Holocene Deposition on approximate 9000 rcBP landsurfaces.
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>The Holocene deposition map was georeferenced onto imagery of the study area. The 11 potential sites were approximated by hand-digitizing them from the source map into a GIS layer. Field attributes were added to identify the site name and sources used.</p> <p>Data layer stored in UTM Zone 18N, NAD83</p>
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes.
Date Created	October, 2018

Data Description	Depicts the potential location of land-based settlement ca. 9000 rcBP prior to those shoreline areas being submerged as Long Island Sound filled in.
Additional Information	Brian Jones, CT Office of State Archaeology (data source originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Water Quality Sampling Sites



- | | | |
|---------------------|---------------------------------|-------------------------|
| — CT State Boundary | Water Quality Sampling Sites | • NY Shellfish Sampling |
| ■ Policy Area | • CT Shellfish Sampling | • UWS Sampling |
| ■ Area of Interest | • CT LIS Water Quality Sampling | |



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-8 Final SHUA map of water quality sampling sites, under the discrete areas for research, education, and monitoring criteria.

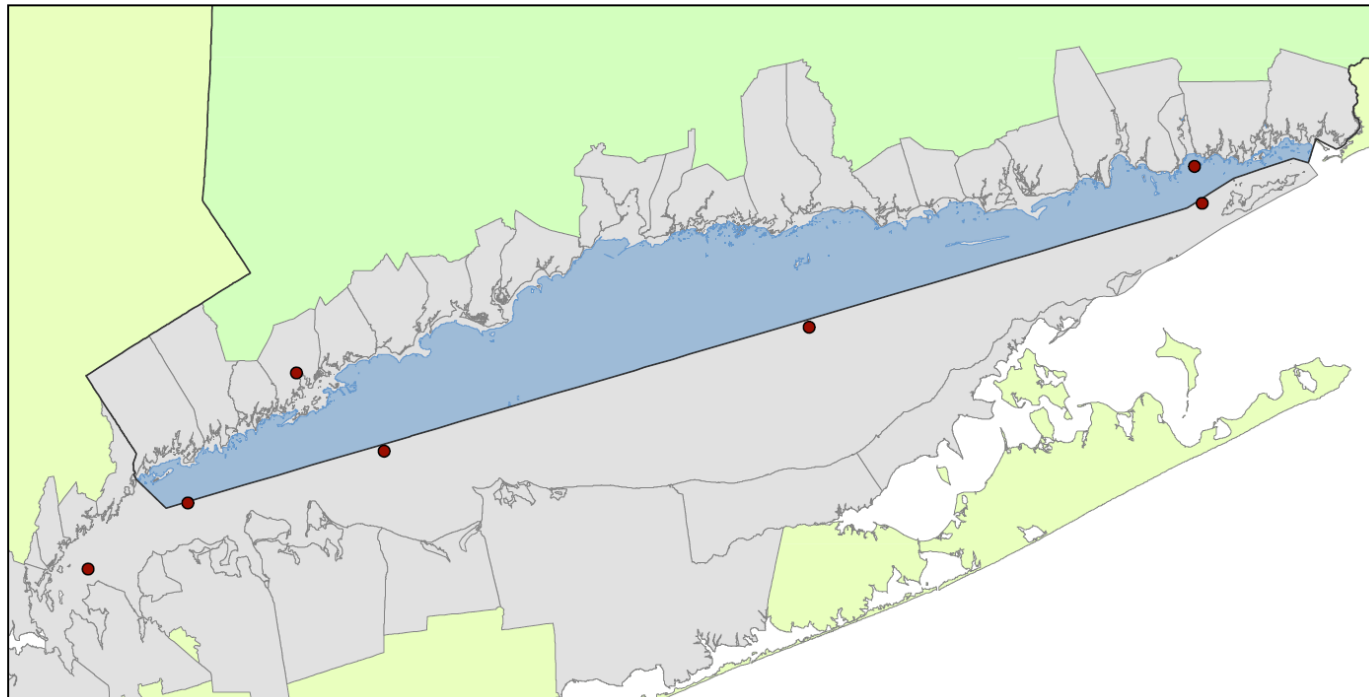
Long Island Sound Water Quality Sampling Sites

Table 3a-15 Data construction table for Long Island Sound Water quality sampling sites.

SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Discrete Areas for Research, Education, and Monitoring
SHUA Sub-criterion Description	Areas actively and consistently used for research activities, including but not limited to long term monitoring sites, and Sound-dependent experiential educational programming.
Data Source(s)	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • Shellfish Sampling Stations (CT Dept. of Agriculture/Bureau of Aquaculture via CT Aquaculture Atlas) • LIS Water Quality Sampling Sites (CT Dept. of Energy & Environmental Protection) • Shellfish Sampling Stations (NY Dept. of Environmental Conservation) • Unified Water Study (UWS) Sampling Sites (CT Fund for the Environment/Save the Sound)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>Data were first clipped to the Data Extent.</p> <p>Data from the LIS Water Quality Sampling sites were filtered to remove instance of LISICOS sites which are addressed in a separate layer. Resulting data was appended into a new layer with the CT and NY Shellfish sampling stations. An additional attribute field “BP_Source” was added and populated to identify the source layer of the individual records. Where possible, common field information (name, lat/long, location descriptions, etc.) were compiled into a single field for ease of use. UWS survey sites provided by CFE/STS were appended to the original set as a result of public comments received.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
Data Analysis	No additional analysis was performed.

Data Classification	The data are not classified by any attributes to support the SHUA assessment, but the “BP_Source” attribute can be used to classify them based on their original data sources.
Date Created	October 2018, updated August 2019.
Basic Data Description	Locations that generally represent significant and long-standing locations of water quality monitoring in Long Island Sound.
Additional Information	<p>CT Dept. of Agriculture/Bureau of Aquaculture (dataset originator)</p> <p>CT Dept. of Energy & Environmental Protection (dataset originator)</p> <p>NY Dept. of Environmental Conservation (dataset originator)</p> <p>CT Fund for the Environment/Save the Sound (dataset provider)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Coastal Observation Sites



- Coastal Observation Sites
- CT State Boundary
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-9 Final SHUA map of LIS Coastal Observation sites (LISICOS), under the discrete areas for research, education, and monitoring criteria.

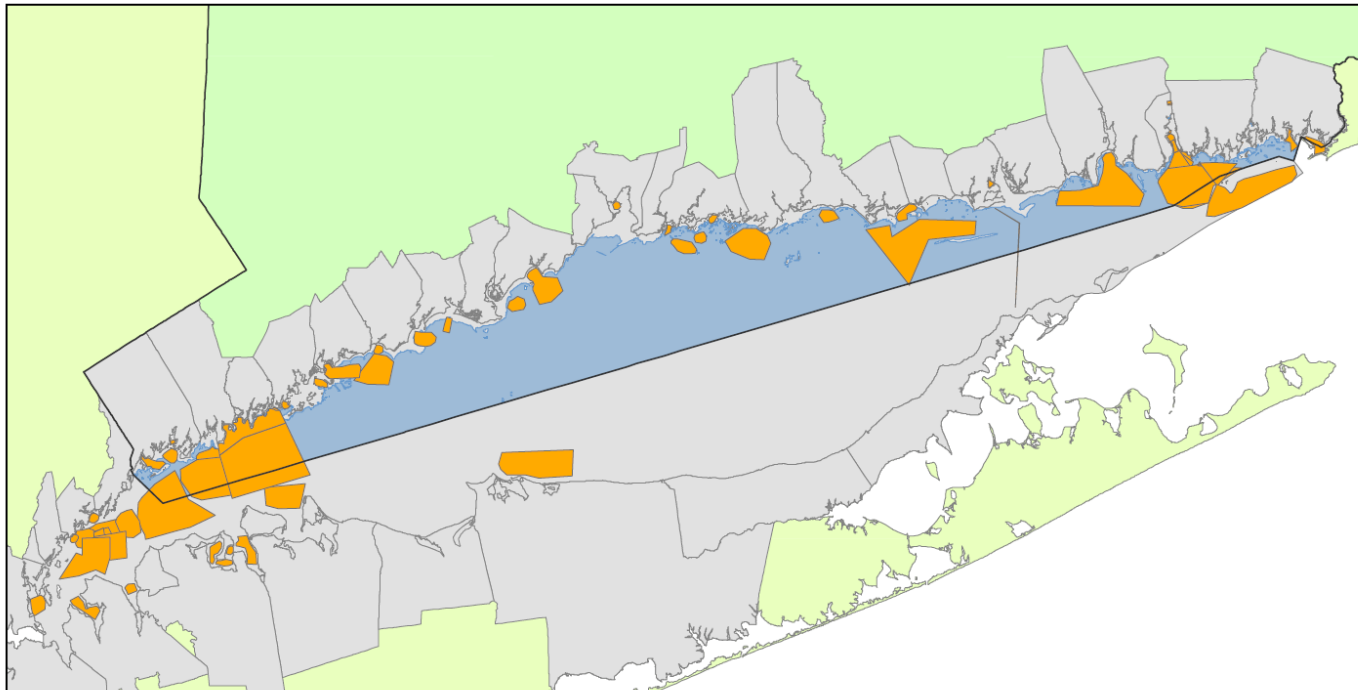
Long Island Sound Integrated Coastal Observation System (LISICOS) Sites

Table 3a-16 Data construction table for LIS Integrated Coastal Observation System (LISICOS) sites

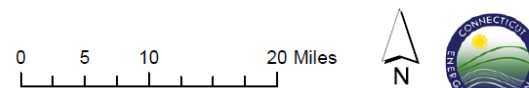
SHUA Criteria	Areas with features of historical, cultural, educational, or research significance
SHUA Sub-criterion	Discrete Areas for Research, Education, and Monitoring
SHUA Sub-criterion Description	Areas actively and consistently used for research activities, including but not limited to long term monitoring sites, and Sound-dependent experiential educational programming.
Data Source(s)	GIS Datalayer: <ul style="list-style-type: none"> Long Island Sound Coastal Environmental Observation Sites (CT Dept. of Energy & Environmental Protection) Long Island Sound Coastal Observation System (LISICOS) Website: <ul style="list-style-type: none"> http://lisicos.uconn.edu/index.php
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Records from “SOURCE” field values for LISICOS extracted into a new layer. Results cross-referenced to LISICOS observation pages to remove sites classified as discontinued. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed. When used for Blue Plan purposes, original source material was clipped to the Blue Plan Planning boundary or only selected if uses occurred within it. As a result, it is possible that there are other locations for particular uses that occur outside the planning area, but are not reflected here.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018

Basic Data Description	Representation of operating locations of buoys supporting the Long Island Sound Integrated Coastal Observation System (LISICOS), a subsystem of the Northeast Regional Association of Coastal and Ocean Observation Systems (NERACOOS).
Additional Information	CT Dept. of Energy & Environmental Protection (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Sailing Race Areas



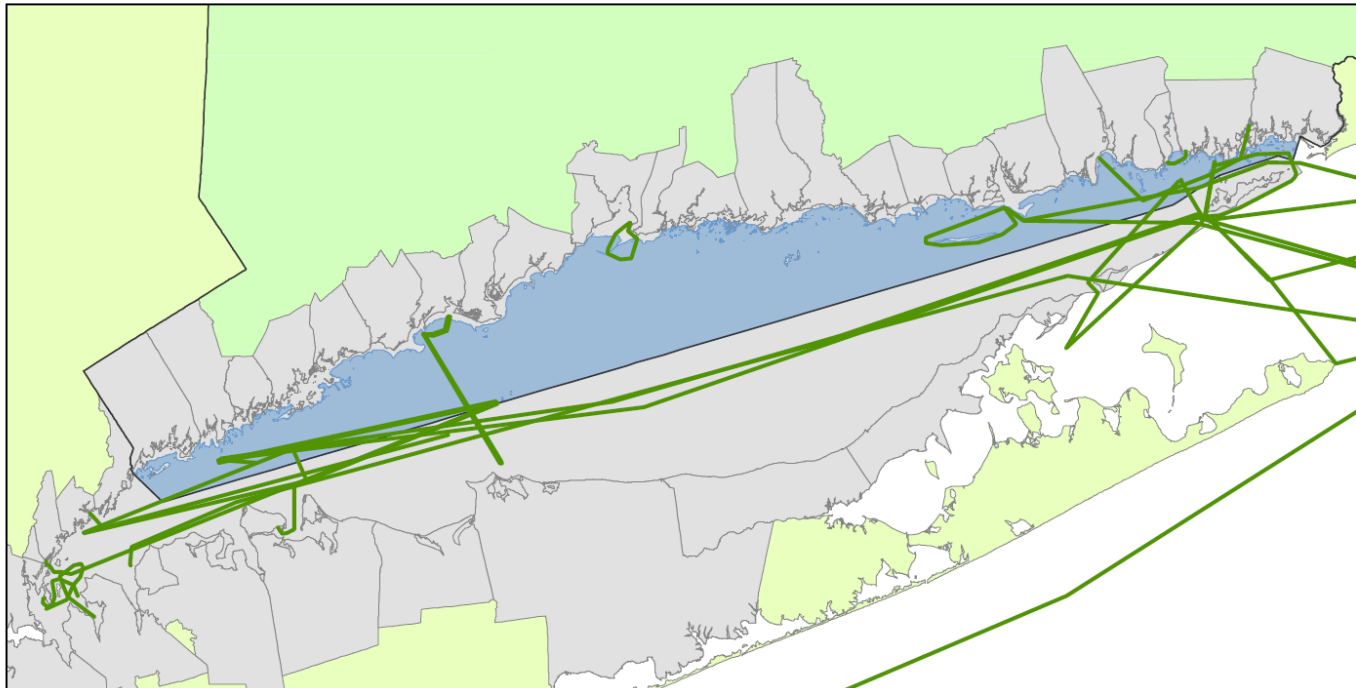
- CT State Boundary
- Sailing Race Areas
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-10 Final SHUA map of Sailing Race areas, under the sailing or rowing races criteria.

Significant Human Use Area Map: Sailing Race Routes



- Sailing Race Routes
- CT State Boundary
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

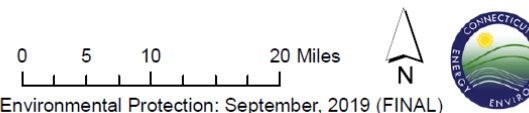
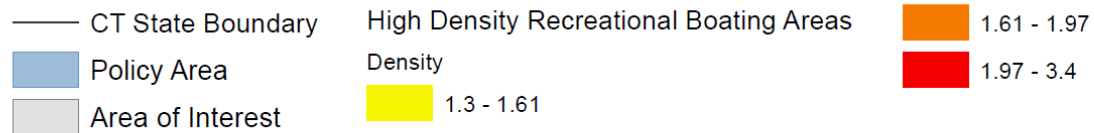
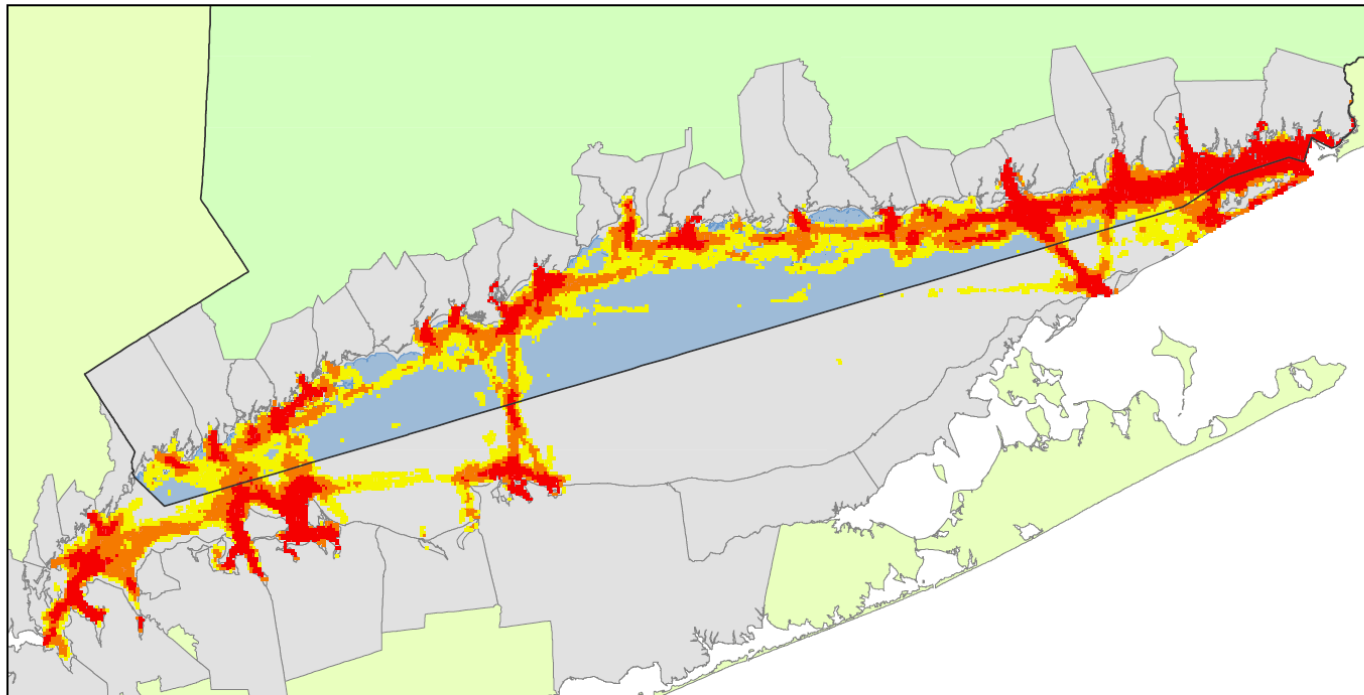
Figure 3a-11 Final SHUA map of sailing race routes, under the sailing or rowing races criteria.

Sailing Race Areas and Routes

Table 3a-17 Data construction table for Sailing Race Areas and Routes

SHUA Criteria	Areas of substantial recreational and/or quality of life value.
SHUA Sub-criterion	Sailing or Rowing Races
SHUA Sub-criterion Description	Areas consistently used by organized clubs and associations. Including but not limited to racing and training areas, and long-distance sailing race routes.
Data Source(s)	Participatory Mapping efforts with racing stakeholder groups and Town of Darien Advisory Commission on Coastal Waters.
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Blue Plan staff engaged local racing stakeholders to discover and map various sailing race routes (lines) and areas (polygons) within the data extent. Attribute field(s) were added to capture (where appropriate) the race name, type, organization, and frequency of events.) Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	August, 2019.
General Web Service Data Description	Areas consistently used by organized clubs and associations for sailing races. Including but not limited to racing and training areas. Areas consistently used by organized clubs and associations for sailing races.
Additional Information	CT Dept. of energy & Environmental Protection Blue Plan Team, Town of Darien Advisory Commission on Coastal Waters (dataset originators) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: High Density Recreational Boating Areas



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

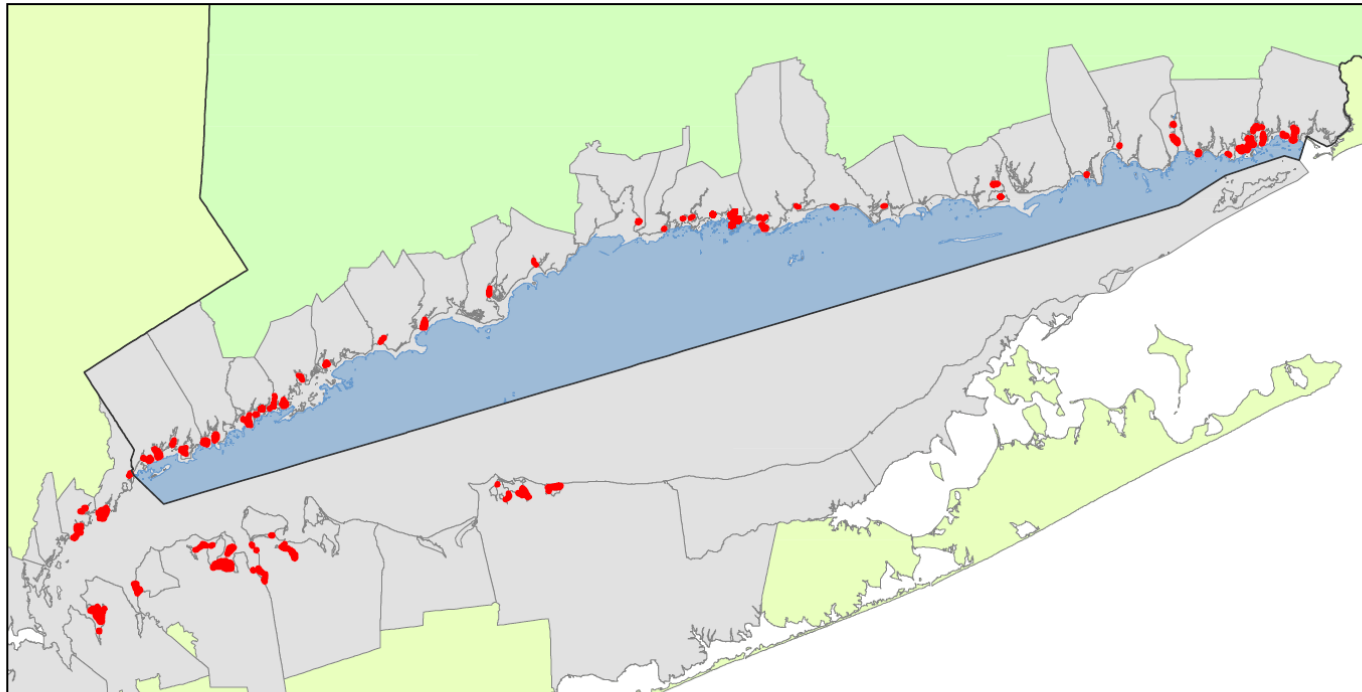
Figure 3a-12 Final SHUA map for High density recreational boating.

High Activity Recreational Boating Areas

Table 3a-18 Data construction table for High Recreational Boating Areas.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	High Activity Recreational Boating Areas
SHUA Sub-criterion Description	Approximate areas where the density of recreational boating is substantially higher than the overall mean for LIS.
Data Source(s)	GIS Data layer: • 2012 Northeast Ocean Regional Recreational Boater Survey – Boating Density data (via Northeast Ocean Data Portal: https://www.northeastoceandata.org/data-explorer/)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent and converted from raster to polygon layer. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	As the data documentation from the survey notes that the values for each grid cell reflect a measure of how much greater than average the boating density is, negative values (where density was lower than average) were removed. The remaining values were classified into five equal quantity classes. The top two classes (e.g., where the cell values exceeded 1.29) were used to depict areas where recreational boating might best be considered “High Activity”.
Date Created	October 2018
General Web Service Data Description	Approximate areas where the density of recreational boating is substantially higher than the overall mean for LIS.
Additional Information	Northeast Ocean Data Portal (dataset provider) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Mooring Fields



- CT State Boundary
- Mooring Fields
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-13 Final SHUA map of mooring fields, also known as boat clusters, under the mooring fields and anchorage area criteria.

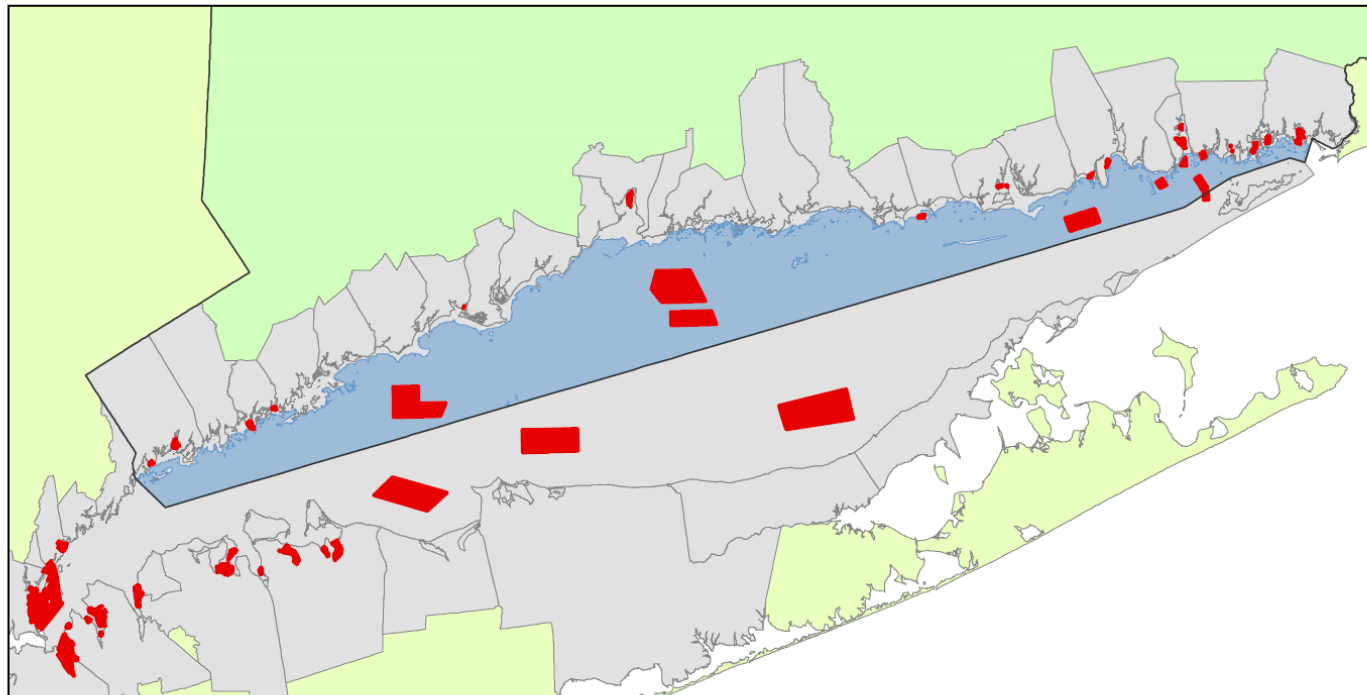
Mooring Fields

Table 3a-19 Data construction table for Mooring Fields.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Mooring Fields and Anchorage Areas
SHUA Sub-criterion Description	Formally designated or traditional mooring fields as designated or managed by NOAA, municipal Harbor Management, or other organizations.
Data Source(s)	<p>GIS Data:</p> <ul style="list-style-type: none"> • 2016 NAIP Summer 4band, 1m Orthophotography (via CT Environmental Conditions Online: https://cteco.uconn.edu) • NOAA Chart Viewer (via https://nauticalcharts.noaa.gov/rnconline/rnconline.html) • Town of Darien Advisory Commission on Coastal Waters <p>CAD data provided by John Lust for Thimble Islands, Branford CT</p>
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>Polygons in this layer were created from the 2016 NAIP aerial imagery available online by the Blue Plan team. Polygons were drawn over areas that display a cluster of more than 5 boats that are obviously at anchor or attached to moorings. This mandated being able to see either an anchor line or mooring ball in association with the majority of boats, a qualification that is intended to exclude areas where boats are simply clustered for an activity such as fishing. Rather, boats at anchor or on moorings are assumed to spend more time stopped in, and originate from, these locations, either for the entire boating season or as transients during a multi-day trip.</p> <p>Data for mooring areas provided by the Town of Darien Advisory Commission on Coastal Waters and by John Lust for Thimble Islands, Branford CT were also added to the inventory.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	August, 2019

General Web Service Data Description	Formally designated or traditional mooring fields as designated or managed by NOAA, municipal Harbor Management, or other organizations.
Additional Information	CT Dept. of Environmental Protection Blue Plan Team, Town of Darien Advisory Commission on Coastal Waters and John Lust (dataset originators) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Anchorage Areas



- CT State Boundary
- Anchorage Areas
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

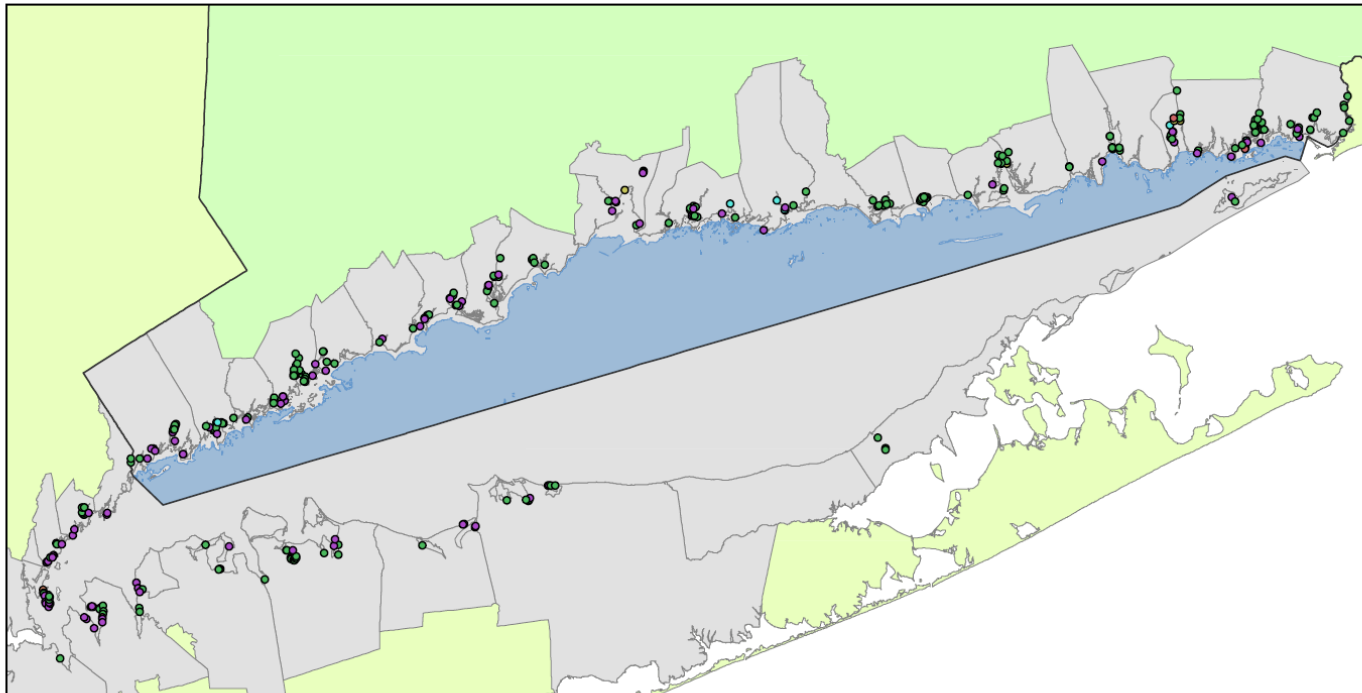
Figure 3a-14 Final SHUA map of anchorage areas, under the mooring fields and anchorage areas criteria.

Anchorage Areas

Table 3a-20 Data construction table for Anchorage Areas.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Designated Anchorage Areas
SHUA Sub-criterion Description	Anchorage areas as they appear on the NOAA charts, and are generally used by commercial vessels.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> Anchorage Areas: NOAA Electronic Nautical Charts (ENC) Direct to GIS – Approach data (via https://nauticalcharts.noaa.gov/data/gis-data-and-services.html)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Where no values appeared in “OBNAM” filed, values of “unnamed/unknown” were added. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October 2018
General Web Service Data Description	Anchorage areas as they appear on the NOAA charts.
Additional Information	NOAA Electronic Nautical Charts (ENC) Direct to GIS (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Marinas, Yacht Clubs, Etc.



Marinas, Yacht Clubs, Etc.

- Marina
- Yacht Club
- Public Pier
- Boat Yard
- Ship Yard
- Boat sales
- CT State Boundary
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

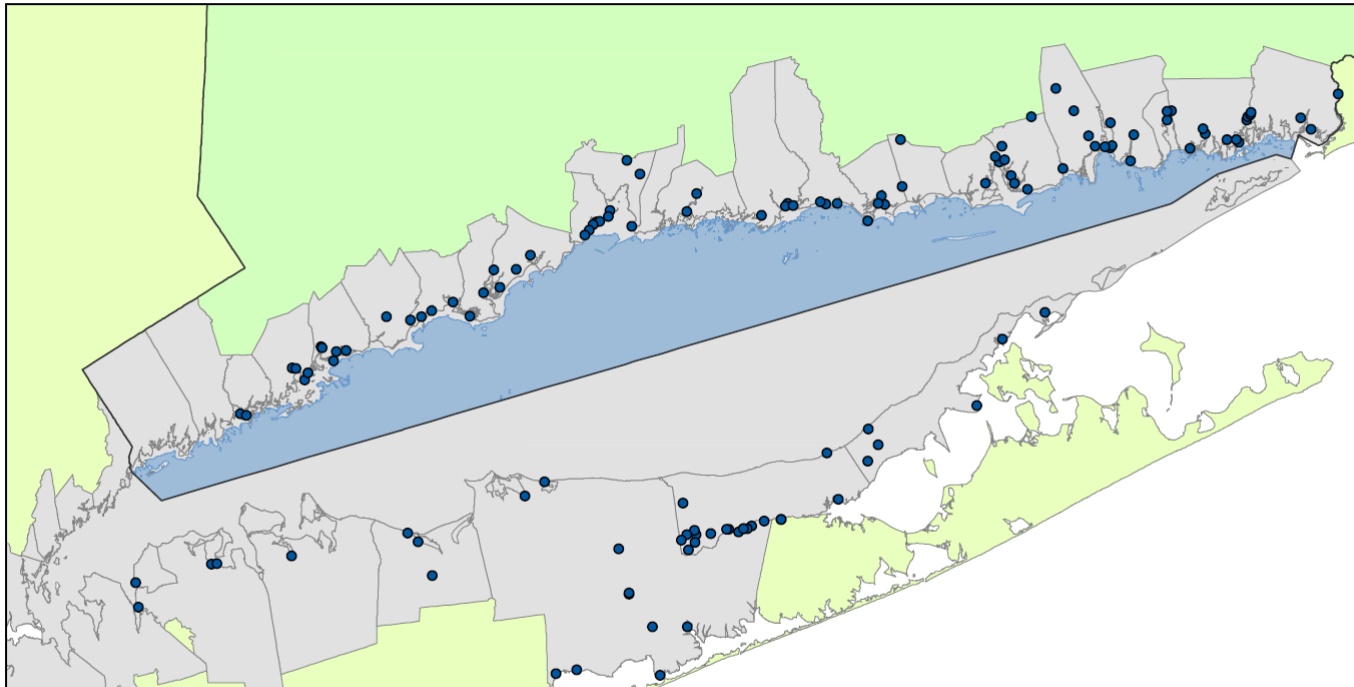
Figure 3a-15 Final SHUA map of marinas, yacht clubs, etc., under the marinas, yacht clubs, and boat launches criteria.

Marinas & Yacht Clubs

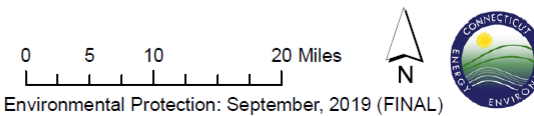
Table 3a-21 Data construction table for Marinas and Yacht Clubs

SHUA Criteria	Areas of substantial recreational and/or quality of life value.
SHUA Sub-criterion	LIS Marinas, Yacht Clubs, and Boat Launches
SHUA Sub-criterion Description	Locations of marinas and yacht clubs that are within the Blue Plan planning area.
Data Source(s)	GIS data layers: <ul style="list-style-type: none"> Connecticut Marina Facilities (CT Dept. of Energy & Environmental Protection Boating Division) New York facilities extracted from 2017 LIS Cruising Guide
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	CT Marina Facilities data were clipped to the data extent. These data were merged in to a new layer along with the cruising guide data for New York to create one unified layer of known marinas and yacht clubs. Data layers stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018.
General Web Service Data Description	Locations of marinas and yacht clubs.
Additional Information	CT Dept. of Energy & Environmental Protection Boating Division & 2017 LIS Cruising Guide (dataset originators) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Boat Launches



- Boat Launches
- CT State Boundary
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

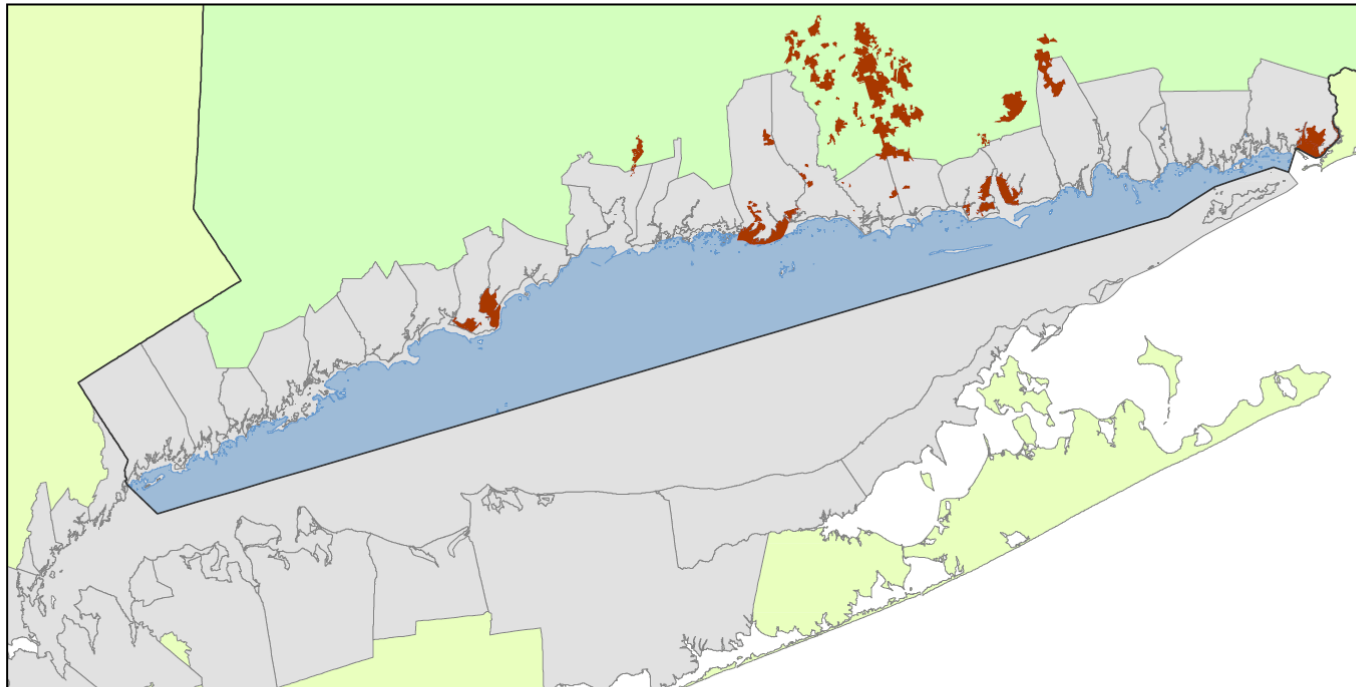
Figure 3a-16 Final SHUA map of boat launches, under the marinas, yacht clubs, and boat launches criteria.

LIS Boat Launches

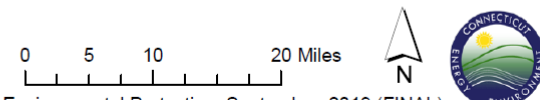
Table 3a-22 Data construction table for Boat Launches.

SHUA Criteria	Areas of substantial recreational and/or quality of life value.
SHUA Sub-criterion	LIS Marinas, Yacht Clubs, and Boat Launches
SHUA Sub-criterion Description	Locations of boat launches that are within the Blue Plan planning area.
Data Source(s)	GIS data layer: Boat Launches (via Northeast Ocean Data Portal: https://www.northeastoceandata.org/data-explorer/)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Boat launch data from the Northeast Ocean Data portal was clipped to the data extent. Data layers stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018.
General Web Service Data Description	Boat launches are state, municipal, local, or privately owned sites that provide boating access to coastal waters, lakes, ponds, and rivers.
Additional Information	Northeast Ocean Data Portal (data provider) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Potential Waterfowl Hunting Areas



- CT State Boundary
- Potential Waterfowl Hunting Areas
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-17 Final map of potential waterfowl hunting areas, under the Waterfowl Hunting SHUA criteria.

Potential Waterfowl Hunting Areas

Table 3a-23 Data construction table for waterfowl hunting areas.

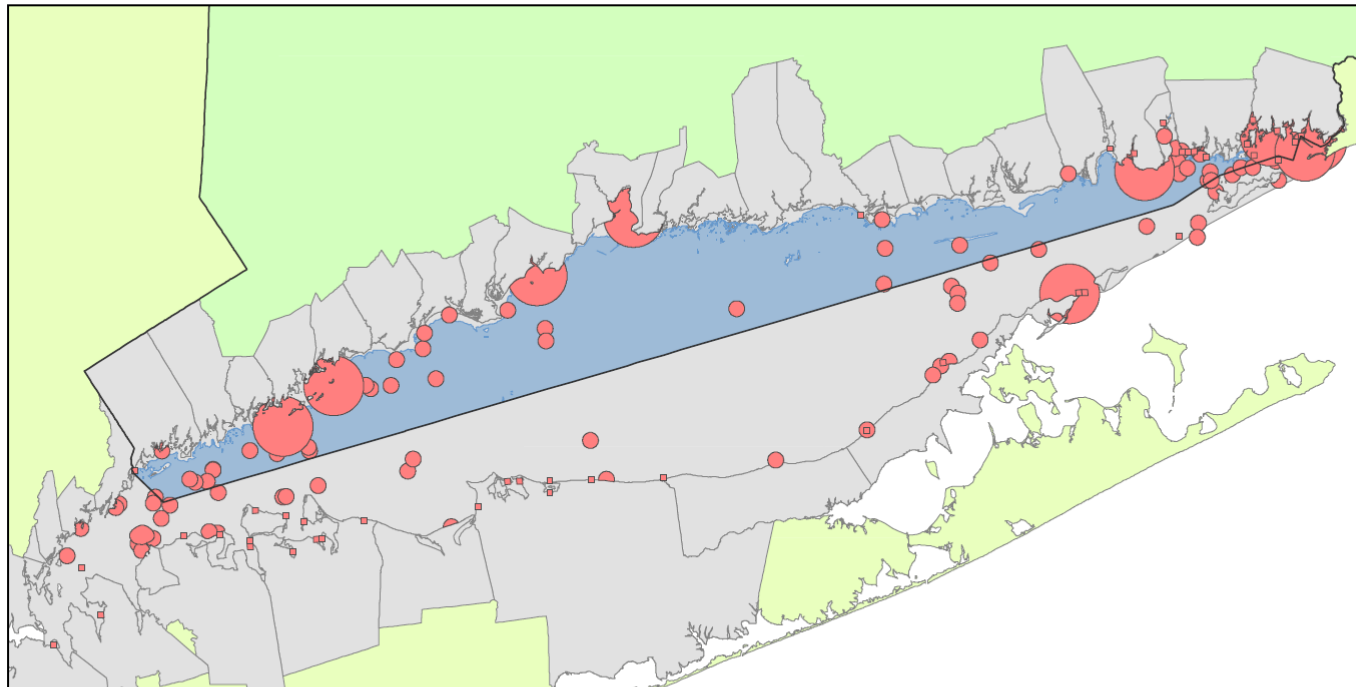
SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Waterfowl Hunting
SHUA Sub-criterion Description	Areas in Long Island Sound important for waterfowl hunting, including sea duck habitat.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> • CT Dept. of Energy & Environmental Protection - Areas Open For Hunting • CT Dept. of Energy & Environmental Protection - Migratory Waterfowl Concentration Areas
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data from each source were clipped to the Data Extent. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	Data from the Areas Open for Hunting layer were selected to include those areas designated as open to waterfowl hunting. As these areas are generally reflective of upland marshes, areas from the Migratory Waterfowl Concentration layer (which typically includes both coastal marshland and offshore areas) that were adjacent to waterfowl hunting areas were also selected. The selected records were merged together into a new layer with the attribute field “BP_Source” used to identify areas from the original source material
Data Classification	The data are not classified by any attributes to support the SHUA assessment, but the “BP_Source” attribute can be used to classify them based on their original data sources.
Date Created	December, 2018
General Web Service Data Description	Areas in Long Island Sound important for waterfowl hunting, including sea duck habitat.

**Additional
Information**

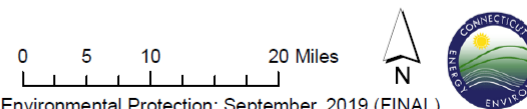
CT Dept. of Energy & Environmental Protection (dataset originators)

Blue Plan Viewer Link: <http://cteco.uconn.edu/projects/blueplan/index.htm>

Significant Human Use Area Map: Dive Areas



- CT State Boundary
- Dive Areas
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-18 Final SHUA map of dive locations, under the dive sites criteria.

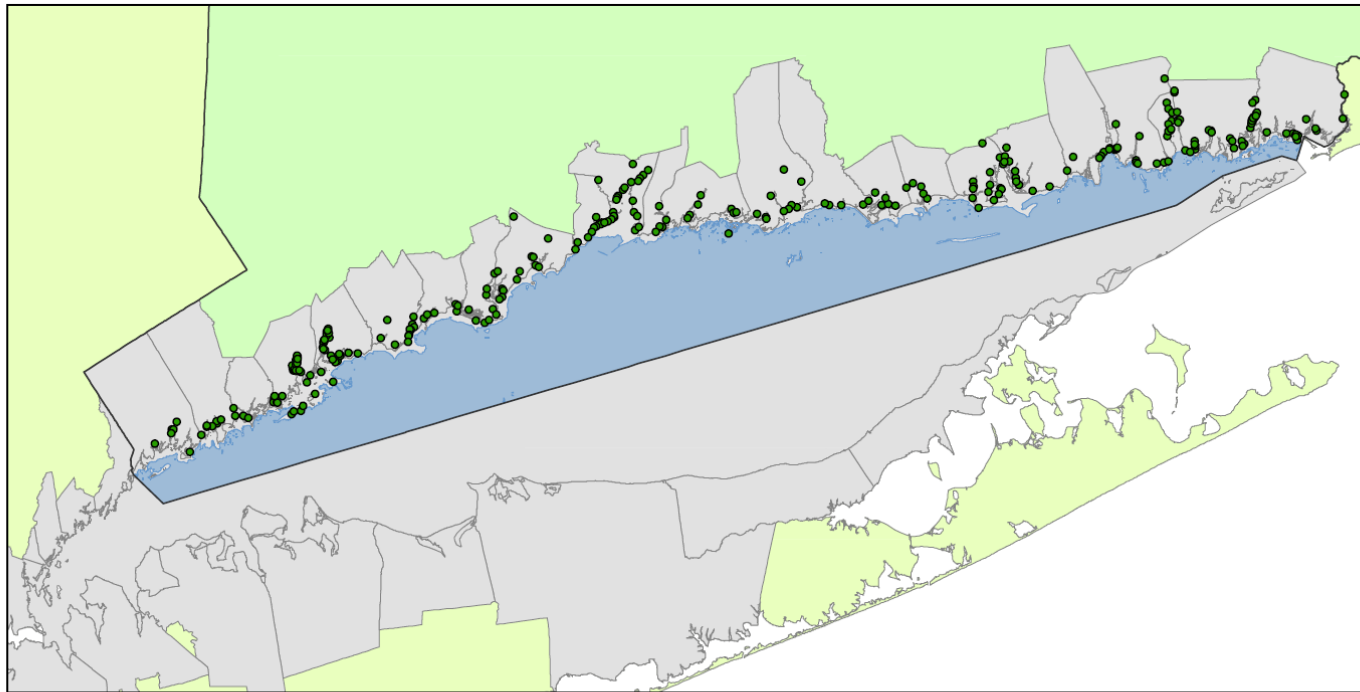
Dive Locations

Table 3a-24 Data construction table for dive locations, under the dive sites criteria.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Dive Sites
SHUA Sub-criterion Description	Locations in Long Island Sound important for SCUBA activities.
Data Source(s)	<p>GIS Data layer:</p> <ul style="list-style-type: none"> • 2015 Northeast Coastal and Ocean Recreational Use Characterization Study - SCUBA Activities (via Northeast Ocean Data Portal: https://www.northeastoceanandata.org/data-explorer/) • Locations of dive sites in LIS provided through a participatory mapping exercise with stakeholders from the LIS diving community <p>Mid Atlantic Coastal and Ocean Recreation Study - Underwater-based Activities (via Mid-Atlantic Regional Coastal and Ocean (MARCO) data portal: https://portal.midatlanticocean.org/)</p>
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>Underwater-based activity data from the NEDOP & MARCO data portals were clipped to the data extent. An online web mapping viewer was created to log point locations provided by stakeholders from the LIS diving community.</p> <p>Data layers stored in UTM Zone 18N, NAD83.</p>
Data Analysis	<p>Based on the list of use types found in the “SiteChar” attribute field and the overall location and extent of the values listed as “unspecified”, locations with the “unspecified” classification in the NEODP data were removed from consideration. The dive sites identified from participatory mapping were given a 1 KM buffer to be consistent with the areas identified within the NEODP and MARCO data sets.</p> <p>The three layers were then merged into one unified layer. Where appropriate, names were consolidated into the “Name” field, and uses/characteristics were consolidated into the “Use” field. Blank values in these two fields (e.g., where there was no corresponding information) were assigned values of “Unspecified”.</p>
Data Classification	N/A

Date Created	August, 2019
General Web Service Data Description	The Recreational Diving Area layer depicts areas important for SCUBA and snorkeling provided by (1) The Northeast Coastal and Marine Recreational Use Characterization Study, (2) The Mid Atlantic Coastal and Ocean Recreation Study, and (3) a Blue Plan participatory mapping exercise with the LIS diving community.
Additional Information	Northeast Ocean Data Portal, Blue Plan participatory mapping, and Mid-Atlantic Regional Coastal and Ocean data portal (dataset originators) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: CT Coastal Access Sites



- CT Coastal Access Sites
- CT State Boundary
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

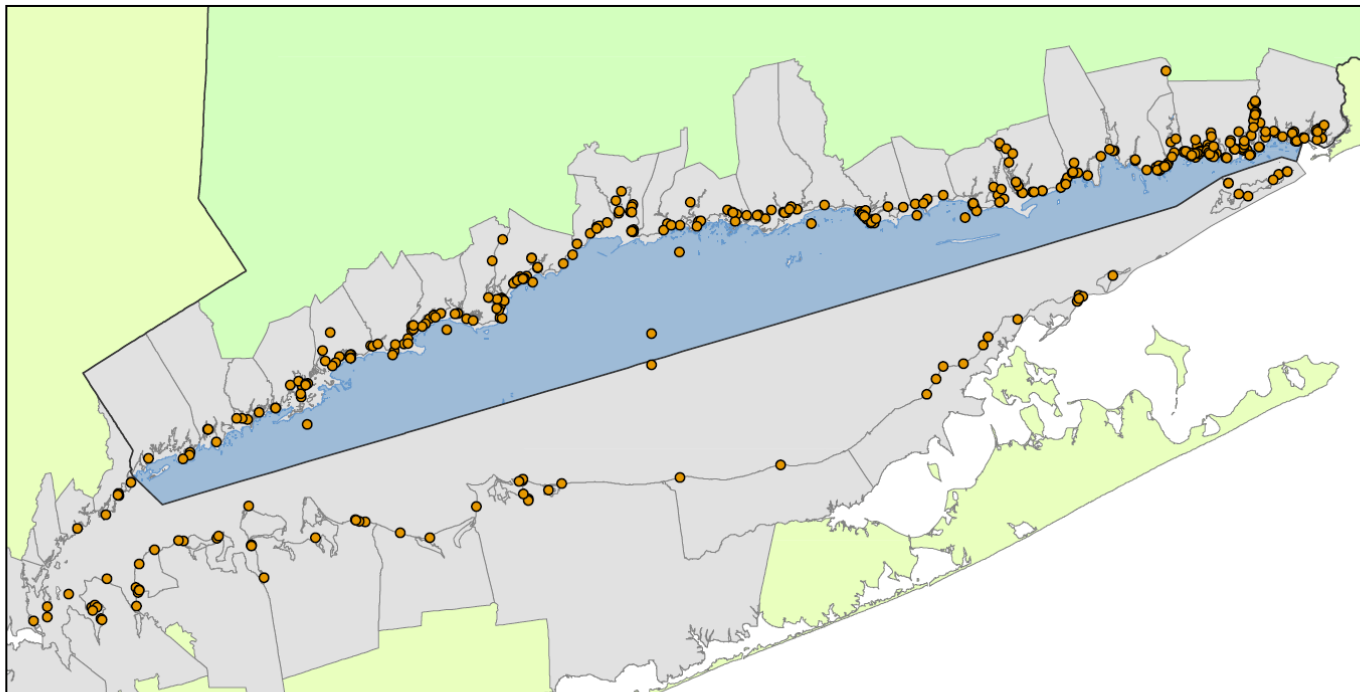
Figure 3a-19 Final SHUA map of coastal access sites, under the coastal public use areas criteria.

Coastal Access Sites

Table 3a-25 Data construction table for Coastal Access Sites.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Coastal Public Use Areas
SHUA Sub-criterion Description	Areas important for public access and use of Long Island Sound for recreational activities including but not limited to swimming, paddling, and wildlife watching.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> Connecticut Coastal Access Sites (CT Dept. of Energy & Environmental Protection)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	The data layer was clipped to the data extent. Data layer was stored in UTM Zone 18N, NAD83.
Data Analysis	The data provide a comprehensive listing of locations along the Connecticut coast providing public access, but there are locations already reflected in other data sets such as “CT & NY Open Space and Parklands” and “Boat Launches”. Therefore, coastal access sites with the same name and in the same general location were removed, leaving the records from the other layers to identify these locations. This prevented the inclusion of multiple instances of the same sites across different layers.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018
General Web Service Data Description	Areas important for public access and use of Long Island Sound for recreational activities including but not limited to swimming, paddling, and wildlife watching.
Additional Information	CT Dept. of Energy & Environmental Protection (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Individual Ocean Uses



- Individual Ocean Uses
- CT State Boundary
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

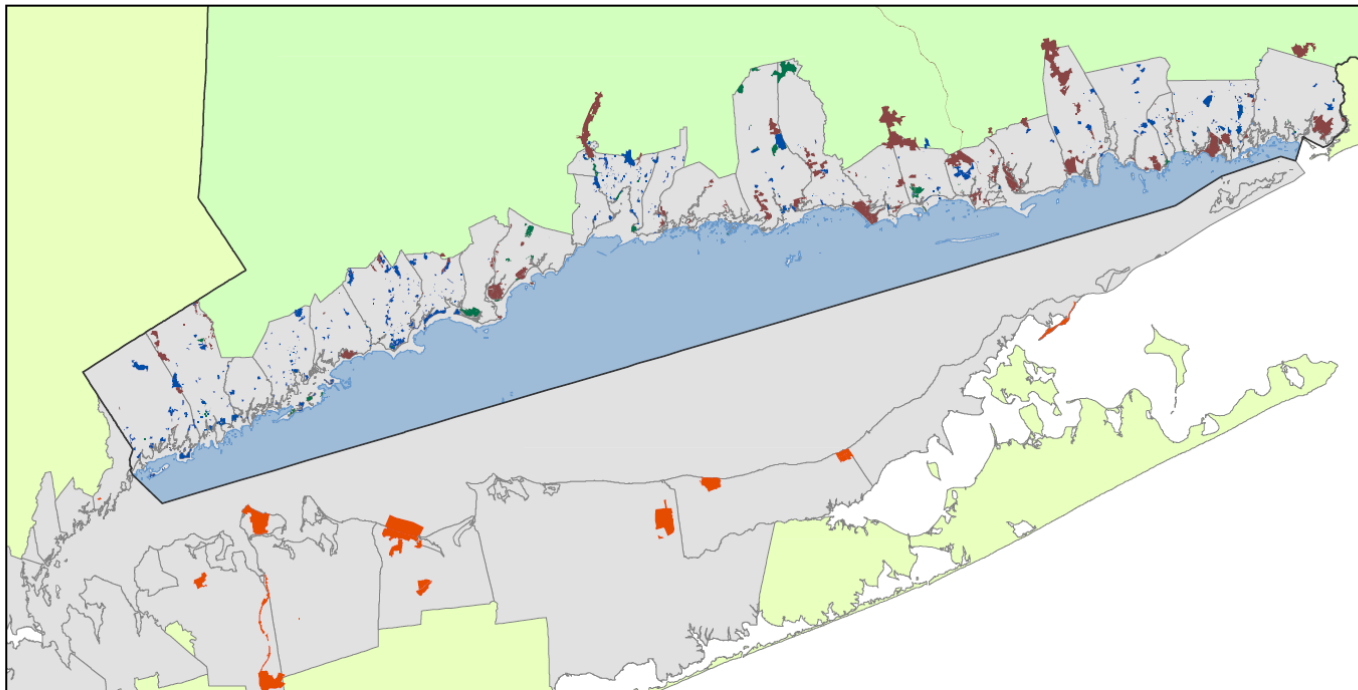
Figure 3a-20 Final SHUA map of individual ocean uses, under the coastal public use areas criteria.

Individual Ocean Uses

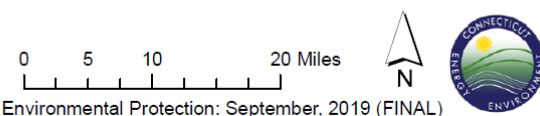
Table 3a-26 Data construction table for Individual Ocean Uses.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Coastal Public Use Areas
SHUA Sub-criterion Description	Areas important for public access and use of Long Island Sound for recreational activities including but not limited to swimming, paddling, and wildlife watching.
Data Source(s)	GIS Data layer: 2015 Northeast Coastal and Ocean Recreational Use Characterization Study – Individual Use Survey components (via Northeast Ocean Data Portal: https://www.northeastoceandata.org/data-explorer/)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Individual Ocean Use activity data from the NEDOP data portal was clipped to the data extent. Data layers stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018
General Web Service Data Description	The Individual Ocean Uses layer depicts activity areas mapped by participants in the Northeast Coastal and Marine Recreational Use Characterization Study. This layer shows the component of the study which focused on individual coastal and ocean recreational uses such as beach going, surfing, board and paddle sports, wildlife viewing, sightseeing, and other activities.
Additional Information	Northeast Ocean Data Portal (dataset provider) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Open Space and Public Land



- CT State Boundary
- Open Space and Public Land
- CT Public Municipal Open Space
- Policy Area
- CT DEEP Property
- NY State Parks
- Area of Interest
- CT Protected Open Space



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-21 Final SHUA map of open space and public lands, under the coastal public use areas criteria.

Open Space and Public Lands

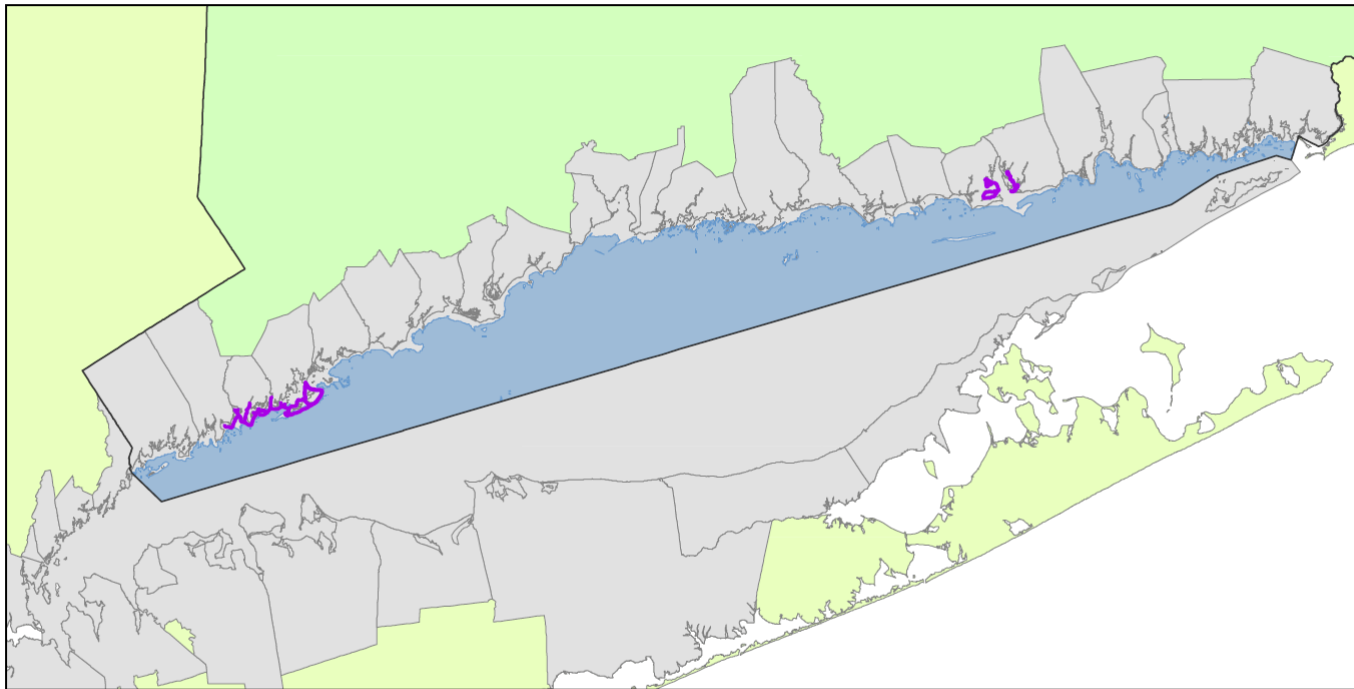
Table 3a-27 Data construction table for Open Space and Public Lands.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Coastal Public Use Areas
SHUA Sub-criterion Description	Views of Long Island Sound’s scenic resources from publicly accessible coastal land.
Data Source(s)	<p>GIS data layers:</p> <ul style="list-style-type: none"> • CT Protected Open Space Mapping (CTPOSM) Inventories (CT Dept. of Energy & Environmental Protection) • CT DEEP Property (CT Dept. of Energy & Environmental Protection) • CT Municipal Open Space (CT Dept. of Energy & Environmental Protection) <p>NY State Parks (NY State Office of Parks, Recreation and Historic Preservation)</p>
Data Extent	The Long Island Sound Blue Plan Area of Interest.

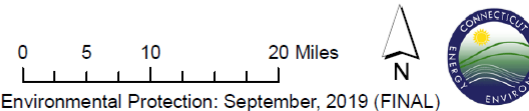
<p>Data Adjustment and Pre-processing</p>	<p>All data were first clipped to the data extent. CTPOSM data were first filtered to identify Open Space Types of Municipal, Municipal with Buildings, or Federal. All Federal properties were retained. Municipal properties were further filtered to retain only those parcels where an entry in the “Offic_Name” field indicated or seemed to indicate it could support public access, natural area preservation/conservation, or general recreation. This could include, but not be limited to parks, recreation areas, town greens, preserves, beaches, open space, etc. No formal or definitive cross-referencing or validations were performed to conclusively verify these.</p> <p>CT DEEP Municipal Open Space data were filtered to focus on parcels classified within the “DESCRIP” field as “municipal, open to the public without fee.” There were further filtered to remove parcels such as cemeteries, churches, or other similar areas that based on best professional judgment, may not best support the intent of providing a location to view the scenery and vistas of Long Island Sound. No formal or definitive cross-referencing or validations were performed to conclusively verify these.</p> <p>New York State Parklands were included in their entirety within the Data extent. No filtering or removals were performed.</p> <p>CTDEEP Property were included in their entirety within the Data extent. No filtering or removals were performed. The final property layers were appended into a master layer, retaining the attribute schemes from their original sources. An additional attribute field “BP_Source” was added and populated to identify the source layer of the individual records. Where possible, common field information (name, lat/long, location descriptions, etc.) were compiled into a single field for ease of use.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
<p>Data Analysis</p>	<p>No additional analysis was performed.</p>
<p>Data Classification</p>	<p>The data are not classified by any attributes to support the SHUA assessment, but the “BP_Source” attribute can be used to classify them based on their original data sources.</p>
<p>Date Created</p>	<p>October, 2018</p>
<p>Basic Data Description</p>	<p>A synthesis of several sources of open space and publicly accessible properties that can serve as vantage points for visual vistas of Long Island Sound.</p>

Additional Information	CT Dept. of Energy & Environmental Protection & NY State Office of Parks, Recreation and Historic Preservation (dataset originators) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm
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Significant Human Use Area Map: Water Trails



- Water Trails
- CT State Boundary
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

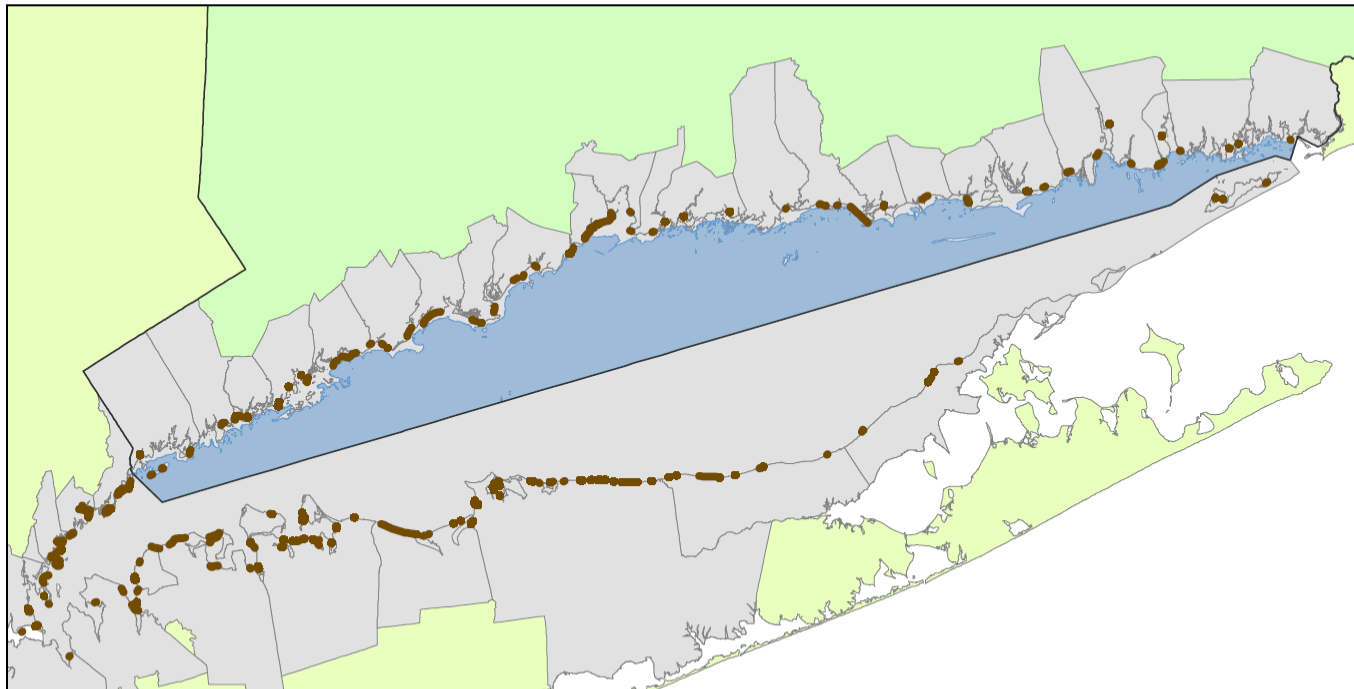
Figure 3a-22 Final SHUA map of water trails, under the coastal public use areas criteria.

Water Trails

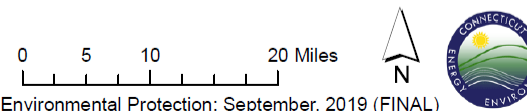
Table 3a-28 Data construction table for Water Trails.

SHUA Criteria	Areas of substantial recreational and/or quality of life value.
SHUA Sub-criterion	Coastal Public Use Areas
SHUA Sub-criterion Description	Areas important for public access and use of Long Island Sound for recreational activities including but not limited to swimming, paddling, and wildlife watching.
Data Source(s)	<p>GIS data layer:</p> <ul style="list-style-type: none"> Water Trails (via Northeast Ocean Data portal: https://www.northeastoceandata.org/data-explorer/) <p>Additional information provided by Town of Darien Advisory Commission on Coastal Waters/</p>
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Water Trails data from the Northeast Ocean Data portal was clipped to the data extent. Data layers stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	August, 2019.
General Web Service Data Description	A water trail is an officially designated water route, or blueway, that is maintained by an agency or association. Water trails are typically used recreationally by paddlers in non-motorized boats such as kayaks or canoes.
Additional Information	<p>Northeast Ocean Data Portal (data provider) Town of Darien Advisory Commission on Coastal Waters (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Public Access Beaches



- CT State Boundary
- Public Access Beaches
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-23 Final SHUA map of public access beaches, under the coastal public use areas criteria.

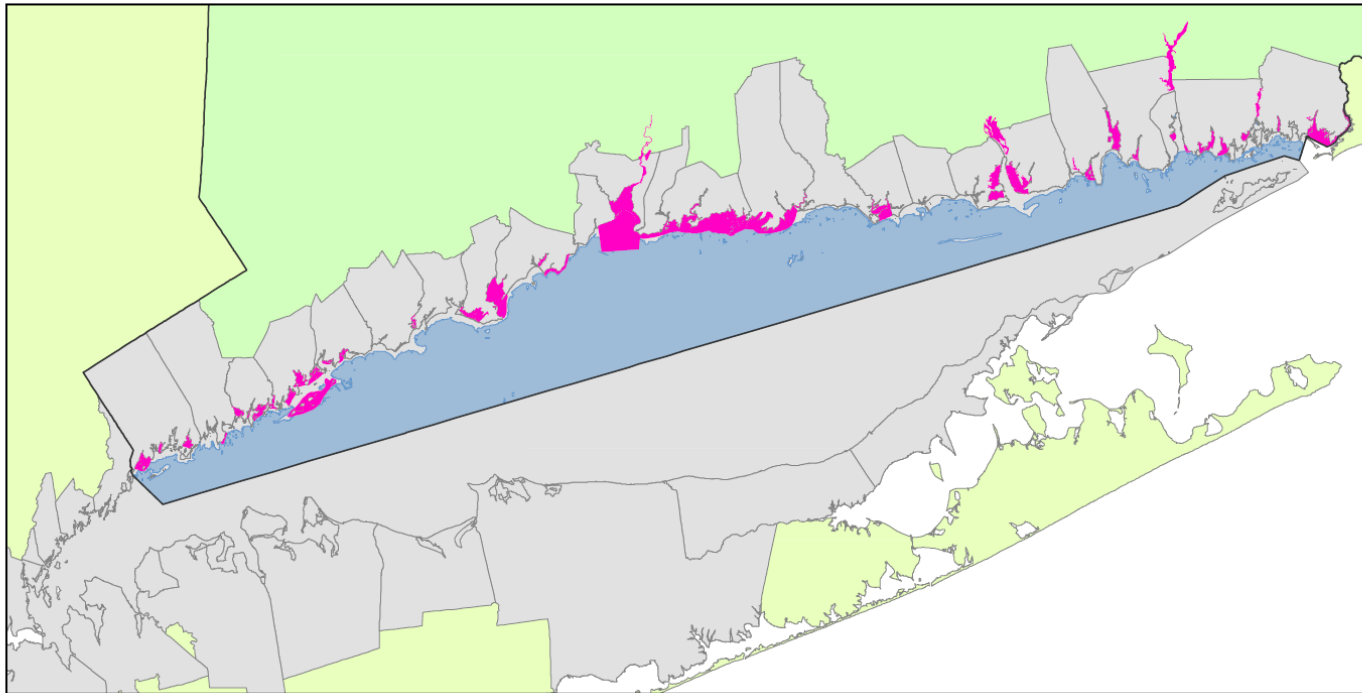
Public Access Beaches

Table 3a-29 Data construction table for Public Access Beaches.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Coastal Public Use Areas
SHUA Sub-criterion Description	Areas important for public access and use of Long Island Sound for recreational activities including but not limited to swimming, paddling, and wildlife watching.
Data Source(s)	<p>GIS Data layer:</p> <ul style="list-style-type: none"> Connecticut & New York Beaches: EPA Beaches Environmental Assessment and Coastal Health (BEACH) Reach Address Database - Beaches NHDPlus Indexed Dataset (via https://www.epa.gov/beaches) <p>Spreadsheet: Connecticut & New York Beaches: EPA BEACON 2.0 Database (via https://www.epa.gov/waterdata/beacon-20-beach-advisory-and-closing-online-notification)</p>
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	The GIS data layers were clipped to the data extent. Data layer was stored in UTM Zone 18N, NAD83.
Data Analysis	The GIS data provided limited usable attribute information to describe beaches overall and more critically identify public from private beaches. Spreadsheet data for public beaches that reflected this information were downloaded separately for Connecticut and New York from the EPA BEACON 2.0 database and joined to the GIS layers based on a common identifier code. The data for Connecticut and New York were then merged together to form a unified layer for the data extent.
Data Classification	The data are not classified by any attributes to support the SHUA assessment, but reflect only those beaches in Connecticut and the north shore of Long Island that are classified as “public” from EPA BEACON 2.0.
Date Created	December, 2018

General Web Service Data Description	Areas identified as publicly accessible beaches.
Additional Information	US Environmental Protection Agency (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: CT Migratory Waterfowl Concentration Areas



- CT State Boundary
- CT Migratory Waterfowl Concentration Areas
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

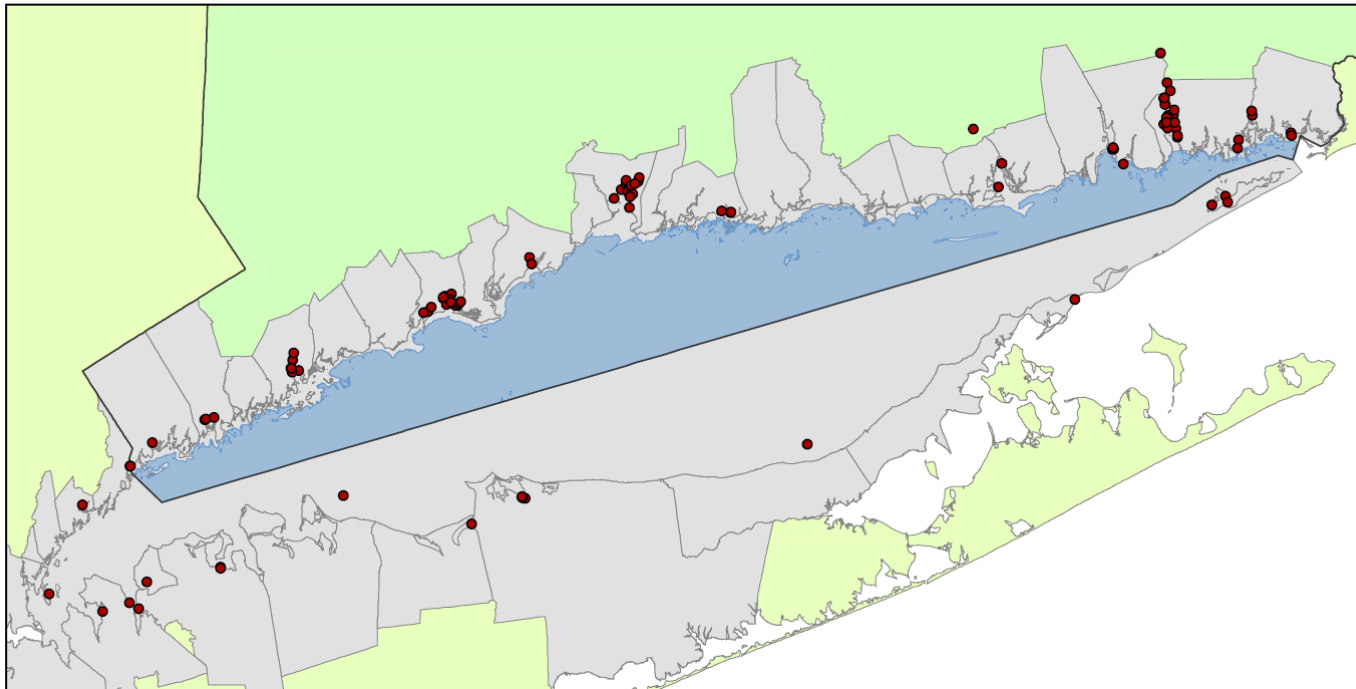
Figure 3a-24 Final SHUA map of migratory waterfowl concentration areas, under the waterfowl hunting criteria.

Waterfowl Concentration Areas

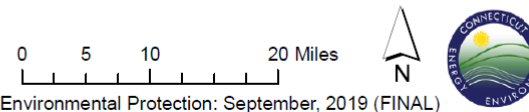
Table 3a-30 Data construction table for Waterfowl Concentration Areas.

SHUA Criteria	Areas of substantial recreational and/or “quality of life” value
SHUA Sub-criterion	Coastal Public Use Areas
SHUA Sub-criterion Description	Areas important for public access and use of Long Island Sound for recreational activities including but not limited to swimming, paddling, and wildlife watching.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> • CTDEEP Migratory Waterfowl Concentration Areas
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data layer was clipped to the Data Extent. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018
General Web Service Data Description	Areas where migratory waterfowl are known to have previously concentrated or are currently concentrated.
Additional Information	CT Dept. Of Energy & Environmental Protection (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Working Waterfronts



- Working Waterfronts
- CT State Boundary
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-25 Final SHUA map of working waterfronts, under the working waterfronts, ports, and marine commercial areas criteria.

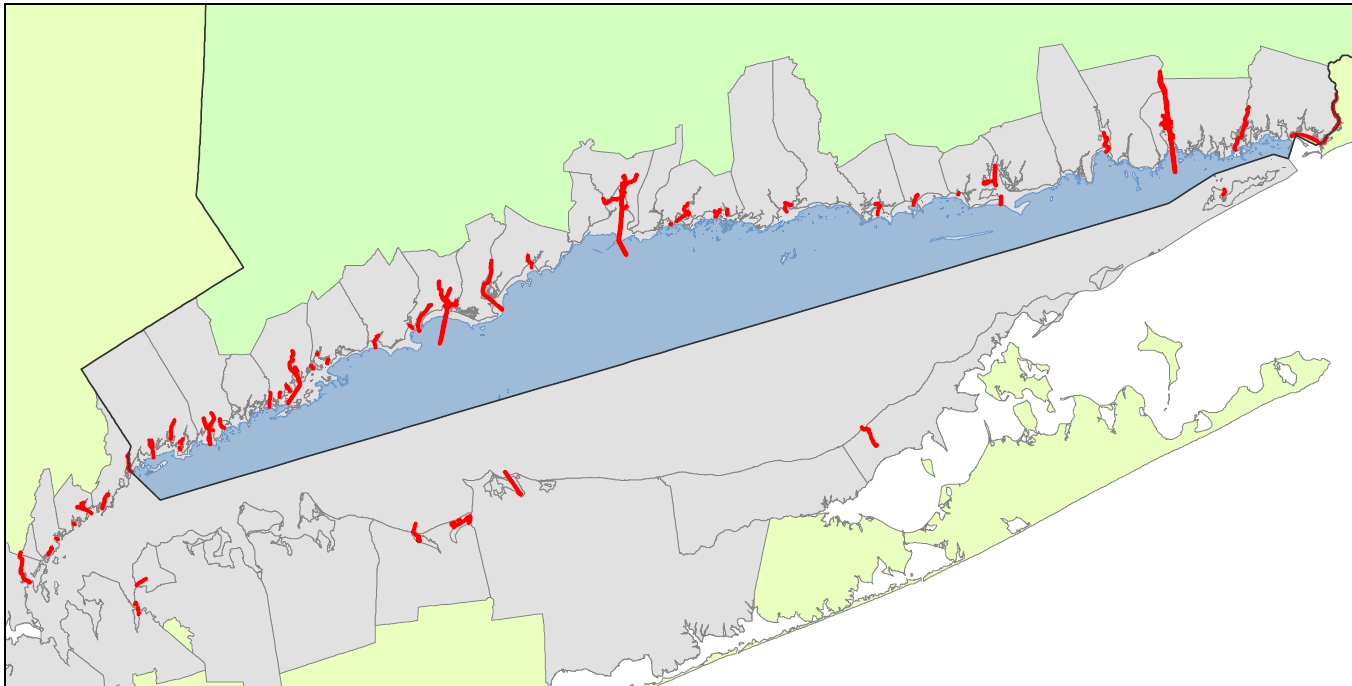
Connecticut and New York Working Waterfronts

Table 3a-31 Data construction table for working water fronts.

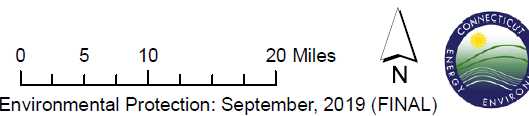
SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criteria	Working Waterfronts, Ports, and Marine Commercial Areas
SHUA Sub-criterion Description	Commercial facilities that are water dependent, or service water dependent uses on Long Island Sound, including but not limited to onshore and offshore terminals and port facilities.
Data Source(s)	<ul style="list-style-type: none"> • Visual inventory/inspection of Aerial Imagery • CT Deep Water Port Strategy Study (CT Office of Policy & Management) • Maptech Embassy Cruising Guide: LIS • Federal Energy Regulatory Commission • US Army Corps - LIS Dredged Material Management Plan • Participatory Mapping from CT Dept. of Energy & Environmental Protection Land and Water Resource Staff
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>Commercial facilities that are water dependent, or service water dependent uses on Long Island Sound, including but not limited to onshore and offshore terminals and port facilities.</p> <p>A point based layer serving as an initial inventory was created from working waterfront facilities requiring dredging identified in the USACE DMMP. This initial dataset was enhanced with points placed on the centroid of parcels identified in OPM’s Deep Water Port Strategy Study. Working waterfront points were also added from Google orthophotography and the Embassy Cruising Guide for LIS.</p> <p>Finally, regulatory staff from the CT Dept. of Energy & Environmental Protection Land and Water Resources familiar with water-dependent coastal waterfronts and facilities reviewed the initial inventory and added locations based on local knowledge/best-professional judgment.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>

Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018.
Basic Data Description	<p>Commercial facilities that are water dependent, or service water dependent uses on Long Island Sound, including but not limited to onshore and offshore terminals and port facilities.</p> <p>When used for Blue Plan purposes, original source material was clipped to the Blue Plan Planning boundary or only selected if uses occurred within it. As a result, it is possible that there are other locations for particular uses that occur outside the planning area, but are not reflected here.</p>
Additional Information	<p>CT Dept. of Energy & environmental Protection (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Fairways and Navigation Channels



- CT State Boundary
- Fairways and Navigation Channels
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-26 Final SHUA map of Fairways and Navigation channels, under the designated navigational channels, fairways, and basins.

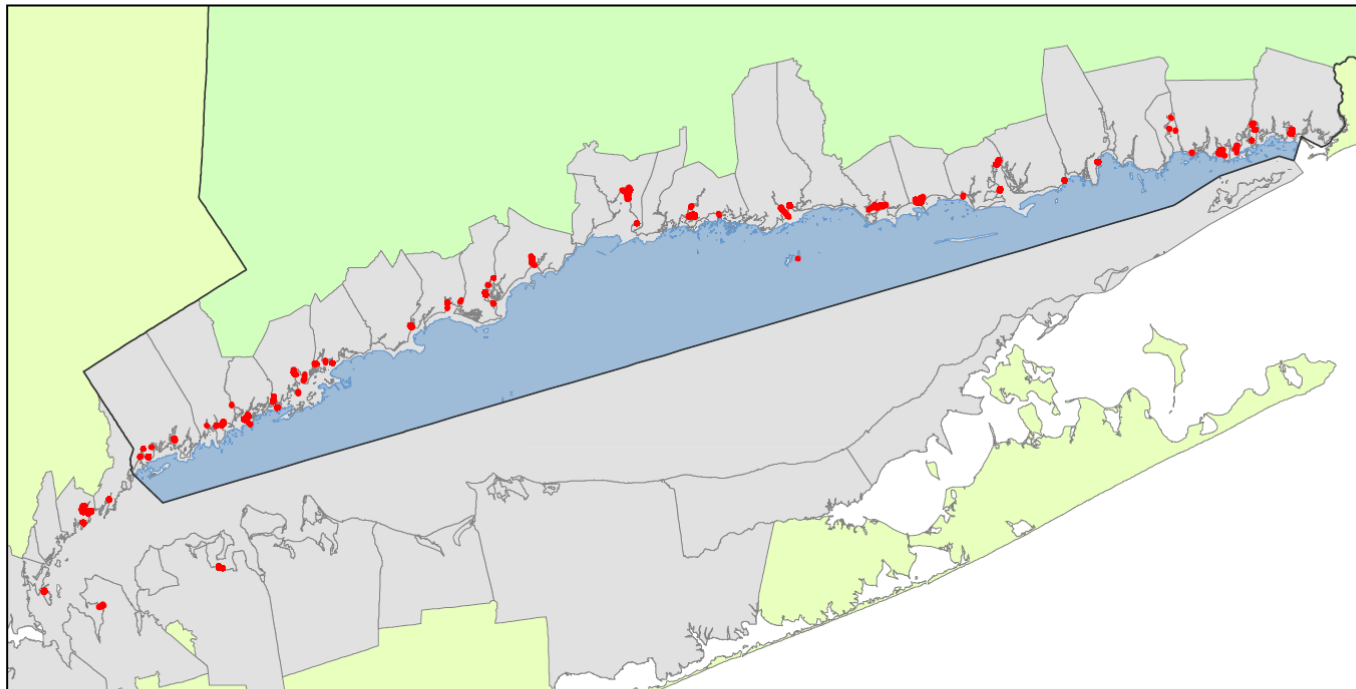
Long Island Sound Fairways and Navigation Channels

Table 3a-32 Data construction table for fairways and navigational channels.

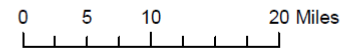
SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Designated Navigational Channels, Fairways, and Basins
SHUA Sub-criterion Description	Designated and maintained navigational channels as they appear on the NOAA-published charts and USACE management plans. Also includes authorized privately maintained navigational channels, fairways, and basins, excluding facilities for individual residential use.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> Fairway Areas: NOAA Electronic Nautical Chart (ENC) Direct to GIS Approach data (via https://nauticalcharts.noaa.gov/data/gis-data-and-services.html)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Areas with no values in the OBJNAM field were flagged as “unnamed/unknown.” Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018
General Data Description	Designated and maintained navigational channels as they appear on the NOAA-published charts.

Additional Information	NOAA Electronic Nautical Chart (ENC) Direct to GIS (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm
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Significant Human Use Area Map: Business and Commercial Dredging Areas



- CT State Boundary
- Business and Commercial Dredging Areas
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

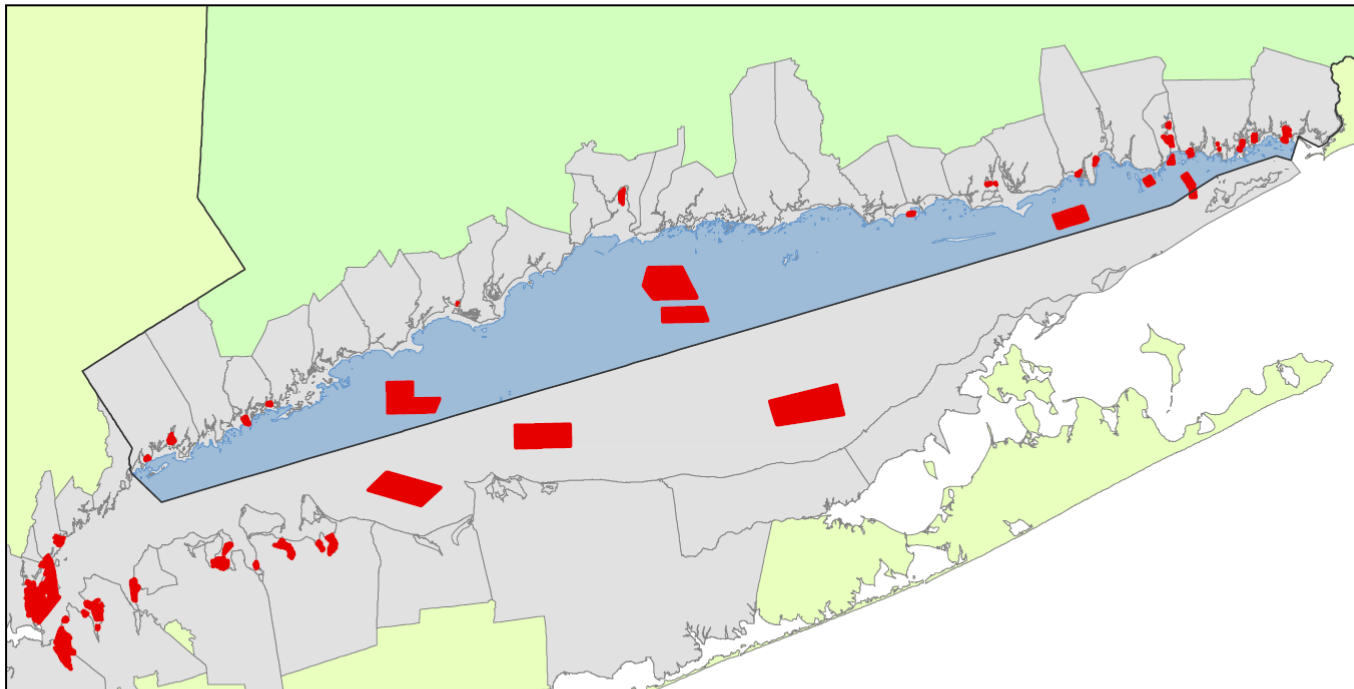
Figure 3a-27 Final SHUA map of business and commercial dredging areas, from the Sediment Quality Information Database, under the designated navigational channels, fairways, and basins criteria.

Sediment Quality Information Database - Dredged Areas

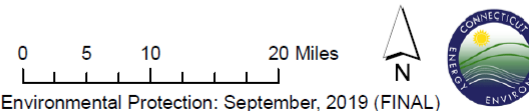
Table 3a-33 Data construction table for dredged areas from the Sediment Quality Information database.

SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Designated Navigational Channels, Fairways, and Basins
SHUA Sub-criterion Description	Designated and maintained navigational channels as they appear on the NOAA-published charts and USACE management plans. Also includes authorized privately maintained navigational channels, fairways, and basins, excluding facilities for individual residential use.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> Dredged footprint areas taken from CT DEEP Sediment Quality Information Database (SQUID)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data represent areas permitted by CTDEEP for dredging or dredged material disposal in Connecticut waters for projects authorized from the late 1980s to 2001. Areas already contained in NOAA ENC datasets as well as areas known or reasonably known to reflect projects from private homeowners were excluded. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018
General Data Description	An approximate inventory of privately maintained navigational channels, fairways, and basins, excluding facilities for individual residential use.
Additional Information	CT Dept. of Energy & Environmental Protection (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Anchorage Areas



- CT State Boundary
- Anchorage Areas
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-28 Final SHUA map of designated anchorage areas.

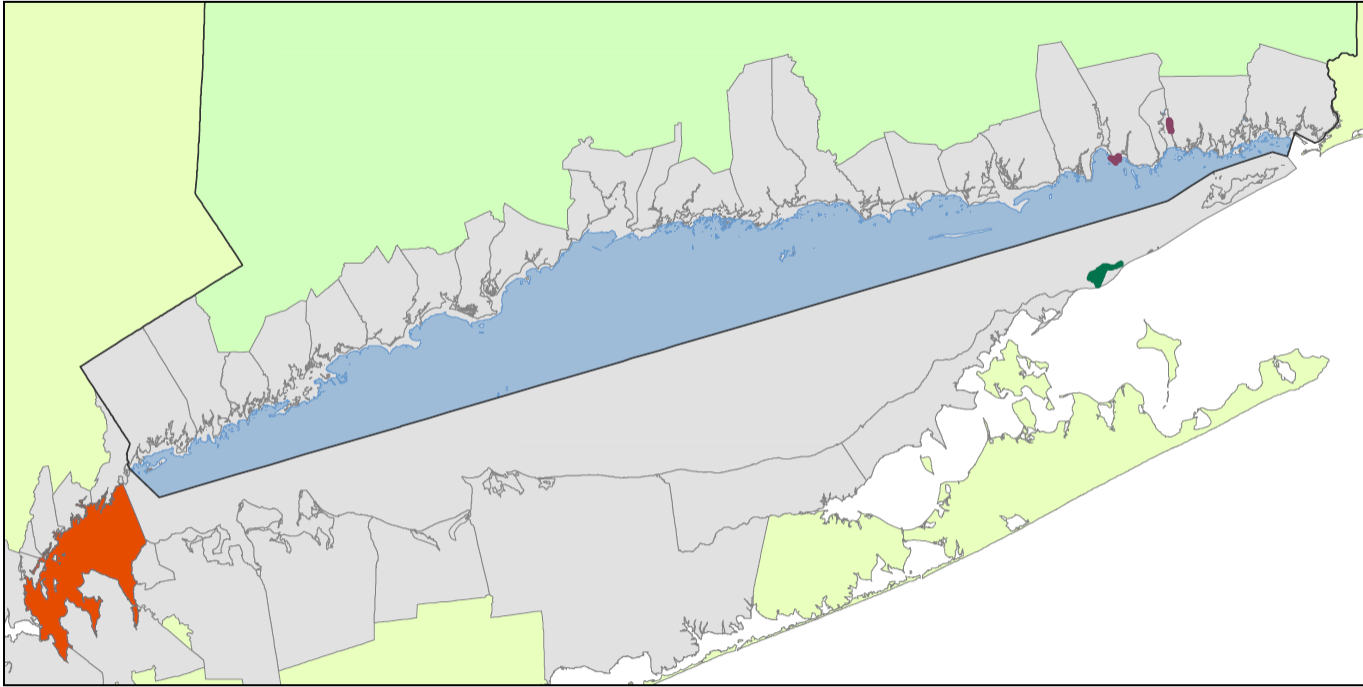
Long Island Sound Anchorages

Table 3a-34 Data construction table of LIS Anchorages.

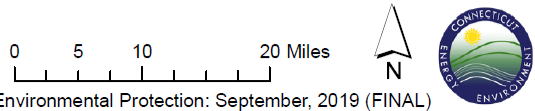
SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Designated Anchorage Areas
SHUA Sub-criterion Description	Anchorage areas as they appear on the NOAA charts, and are generally used by commercial vessels.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> Anchorage Areas: NOAA Electronic Nautical Charts (ENC) Direct to GIS – Approach data (via https://nauticalcharts.noaa.gov/data/gis-data-and-services.html)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Where no values appeared in “OBNAM” filed, values of “unnamed/unknown” were added. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October 2018
General Data Description	Anchorage areas as they appear on the NOAA charts.

Additional Information	NOAA Electronic Nautical Charts (ENC) Direct to GIS (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm
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Significant Human Use Area Map: Restricted Areas



- CT State Boundary
- Policy Area
- Area of Interest
- Restricted Areas
- Plum Island: closed to the public.
- Security zone: 33 CFR 165.154 (Navigation)
- Security zone: 33 CFR 165.169 (Navigation)



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-29 Final SHUA map of restricted areas.

Long Island Sound Safety/Security Zones

Table 3a-35 Data construction table for LIS safety and security zones.

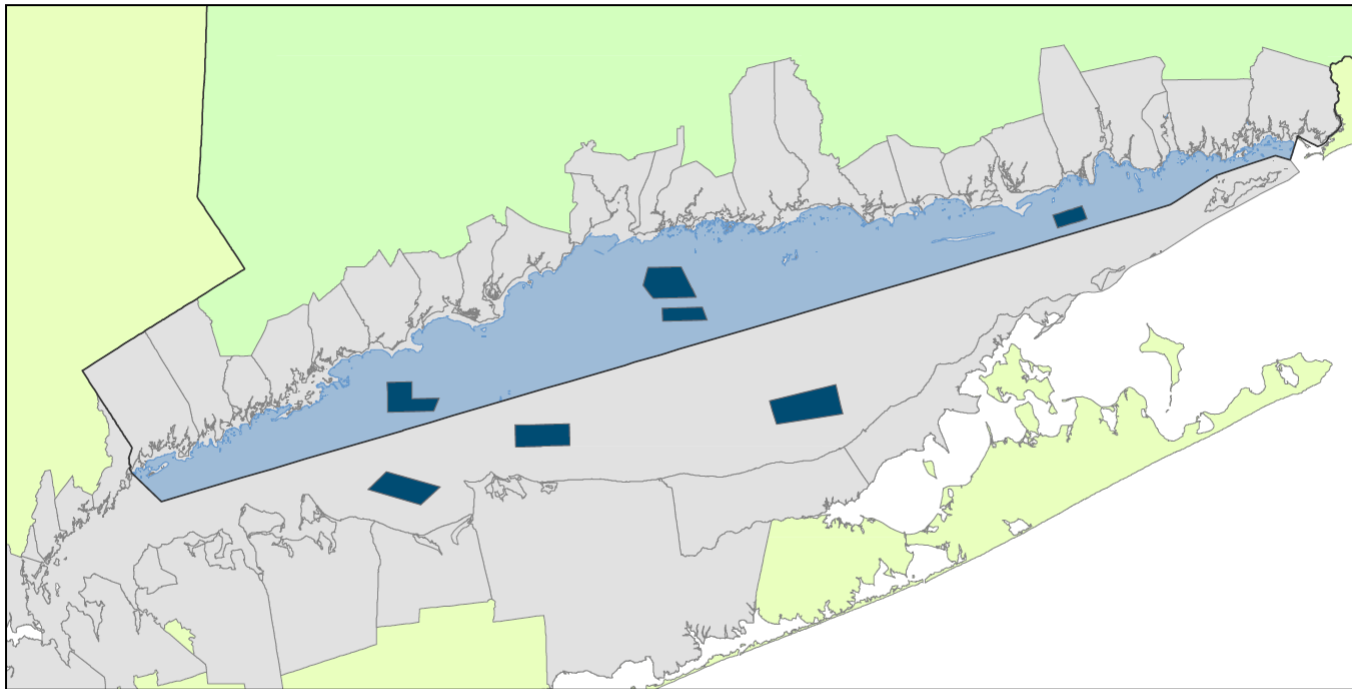
SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Security Zones and other Designated Areas
SHUA Sub-criterion Description	Security zones and other operational zones, as designated by the Coast Guard or other appropriate authority.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> • Restricted Areas: NOAA Electronic Nautical Charts (ENC) Direct to GIS – Approach data (via https://nauticalcharts.noaa.gov/data/gis-data-and-services.html)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	Upon review by the Blue Plan Planning Team, areas designated solely as Regulated Navigation areas per 40 CFR 140 were removed. Areas classified as Security Zones per 33 CFR 165.154 & 33 CFR 165.169 and the restricted access area of Plum Island were retained.
Data Classification	The data are not classified by any attributes to support the SHUA assessment, but the “INFORM” and “CATREA” attributes can be used to classify them based on the specific security zone designation.
Date Created	October 2018
General Data Description	Security zones and other operational zones, as designated by the Coast Guard or other appropriate authority.

**Additional
Information**

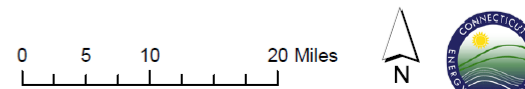
NOAA Electronic Nautical Charts (ENC) Direct to GIS (dataset originator)

Blue Plan Viewer Link: <http://cteco.uconn.edu/projects/blueplan/index.htm>

Significant Human Use Area Map: Lightering Zones



- CT State Boundary
- Lightering Zones
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-30 Final SHUA map of Lightering Zones.

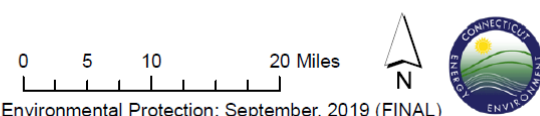
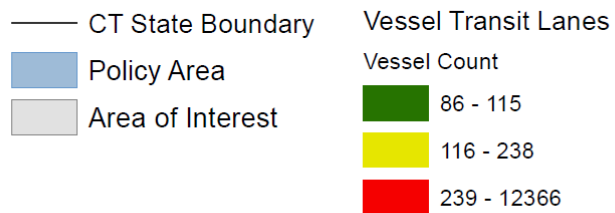
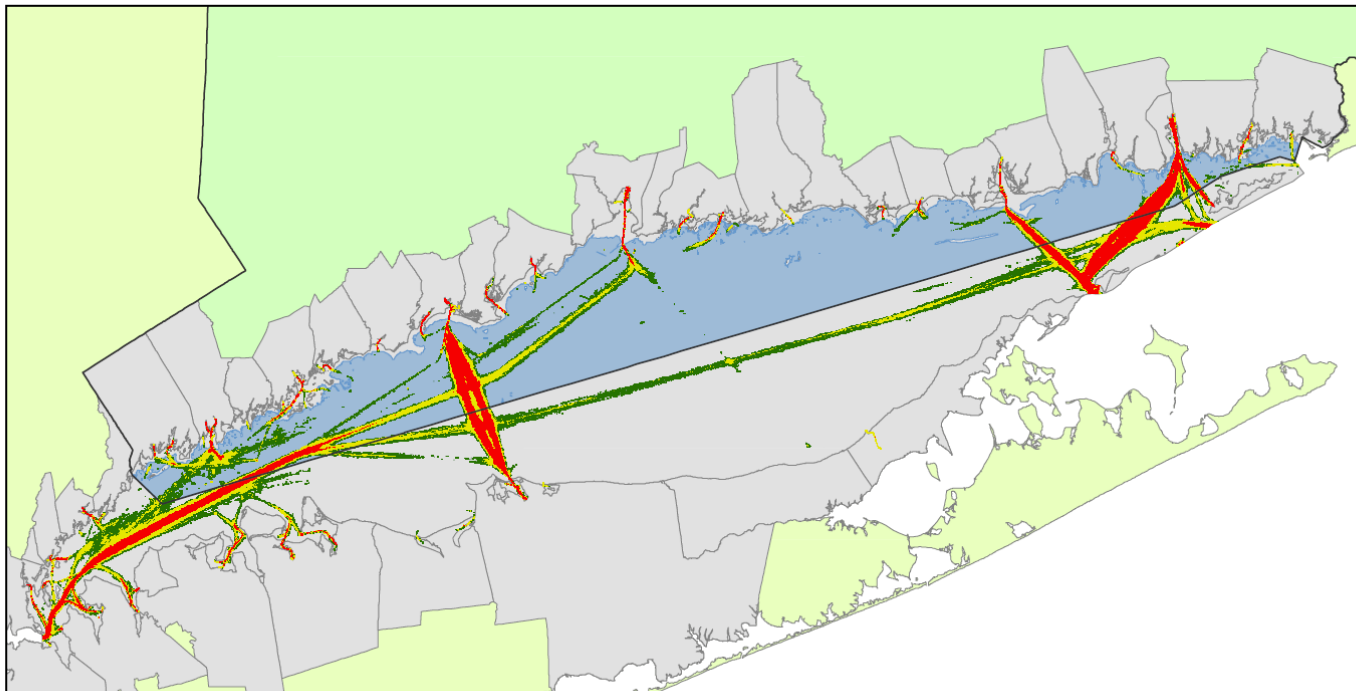
Long Island Sound Lightering Areas

Table 3a-36 Data construction table for lightering areas.

SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-Criterion	Areas of Lightering Activity
SHUA Sub-criterion Description	Areas designated by the Coast Guard for ship-to-ship transfer (lightering), and other areas regularly used for such transfers.
Data Source(s)	<p>GIS Data layer:</p> <ul style="list-style-type: none"> Anchorage Areas: NOAA Electronic Nautical Charts (ENC) Direct to GIS – Approach data (via https://nauticalcharts.noaa.gov/data/gis-data-and-services.html) <p>US Coast Guard LIS Policy Letter 3/1999 – Lightering Zones</p>
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>Data were clipped to the Data Extent.</p> <p>Anchorage areas from the NOAA ENC data corresponding to those identified in the US Coast Guard policy letter were extracted.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October 2018.

General Data Description	Areas designated by the Coast Guard for ship-to-ship transfer (lightering), and other areas regularly used for such transfers.
Additional Information	NOAA Electronic Nautical Charts (ENC) Direct to GIS (dataset originator) US Coast Guard (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Vessel Transit Lanes



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-31 Final map of vessel transit lanes.

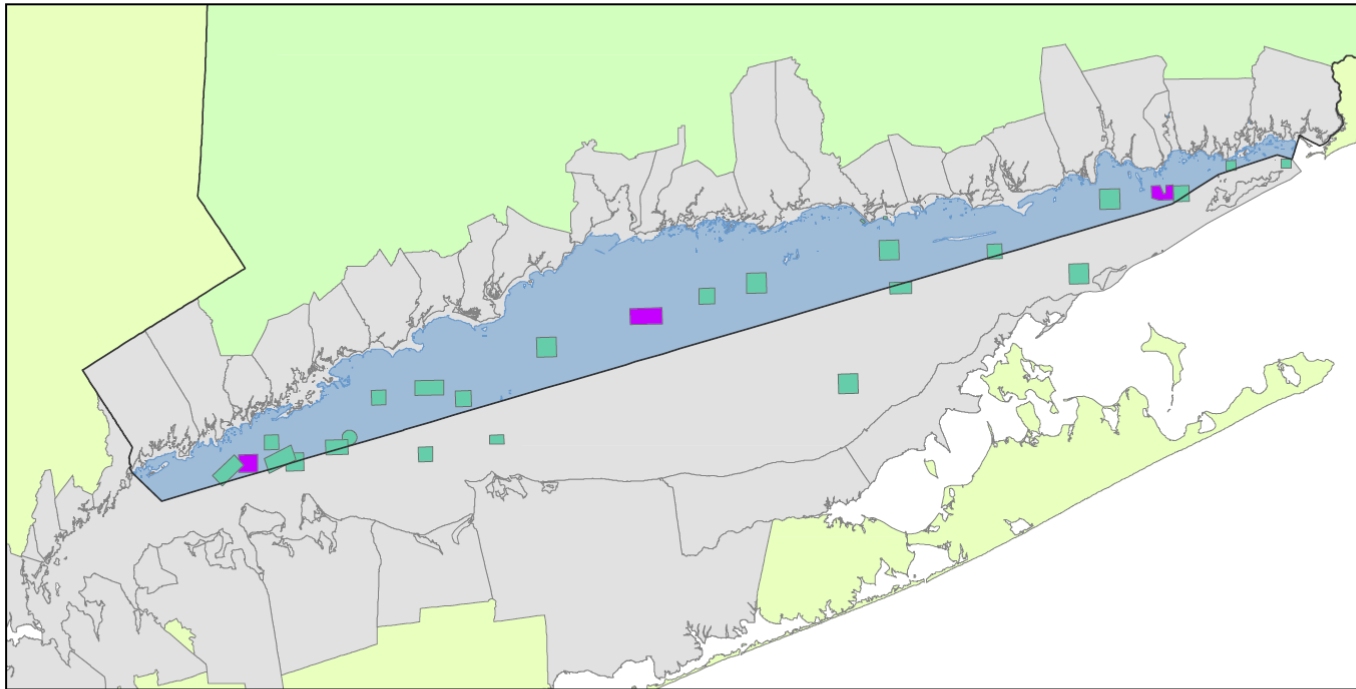
LIS Vessel Traffic Areas

Table 3a-37 Data construction map for LIS Vessel Traffic areas.

SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criteria	Vessel Traffic Areas
SHUA Sub-criterion Description	Areas of high traffic use by vessels with AIS transponders including but not limited to ferries and commercial ships. High traffic use is defined by areas that exceed the mean value of transit counts.
Data Source(s)	GIS data layer: <ul style="list-style-type: none"> 2016 Automated Information System (AIS) All Vessel Transit Counts (Northeast Ocean Data Portal https://www.northeastoceandata.org/data-explorer/)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Raster data were clipped to the Data Extent and converted to shapefile. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	Since the Vessel Transit data covered nearly the entirety of Long Island Sound, the Blue Plan Planning Team explored several different options to establish thresholds that approximated several well-known high-transit routes such as ferry crossings. Values that exceeded the mean transit count of 85 seemed to best differentiate these areas from the rest and captured several other notable lanes (e.g., Ferry transits) through the Sound.
Data Classification	Data values above the mean transit count (85) can be symbolized into 3 quantile classes to visualize relative route intensity
Date Created	October 2018

General Data Description	Areas of high traffic use by vessels with AIS transponders including but not limited to ferries and commercial ships.
Additional Information	Northeast Ocean Data Portal (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Disposal Sites



- | | |
|---------------------|----------------|
| — CT State Boundary | Disposal Sites |
| ■ Policy Area | ■ Active |
| ■ Area of Interest | ■ Inactive |

0 5 10 20 Miles

N

Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-32 Final SHUA map of open water disposal sites.

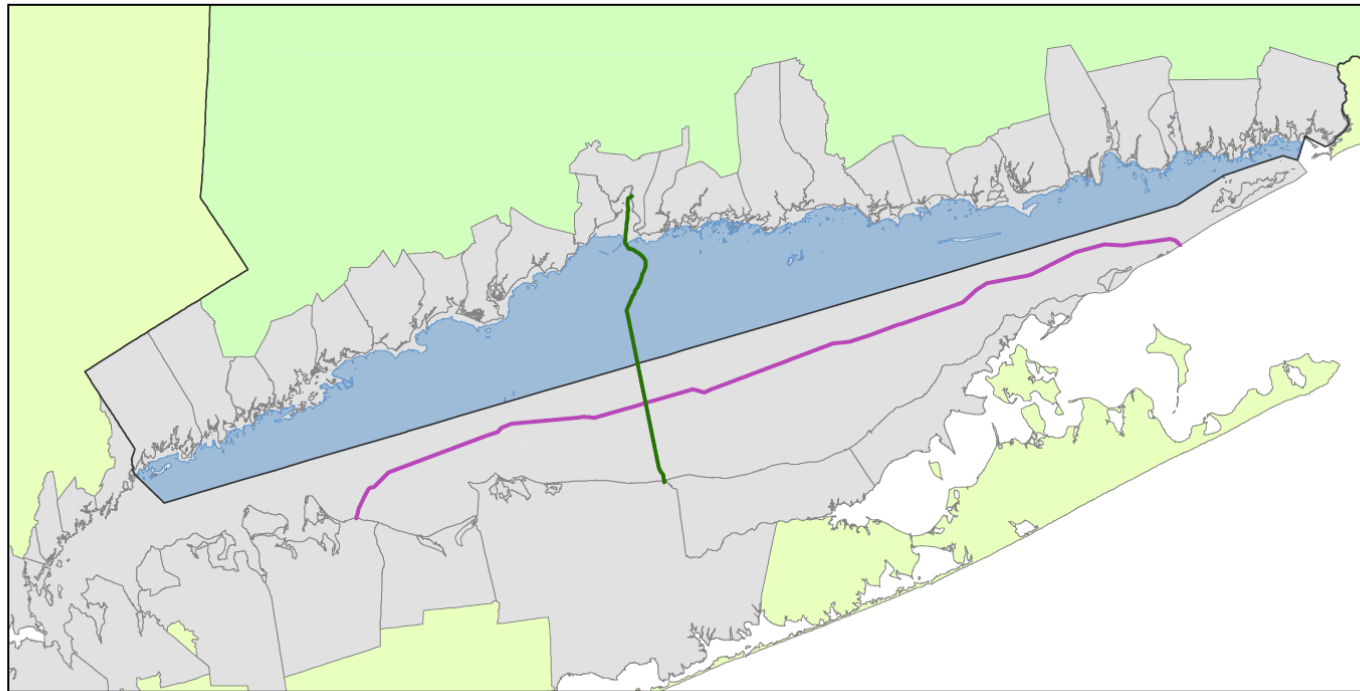
Long Island Sound Disposal Sites

Table 3a-38 Data construction table for LIS disposal sites.

SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Dredged Material Disposal Areas (Active and Historic)
SHUA Sub-criterion Description	Dredged material disposal sites as they appear on the NOAA charts, in the LIS DMMP, or designated by EPA. Includes areas currently and historically used. Also includes confined aquatic disposal (CAD) cells.
Data Source(s)	<p>GIS Data layer:</p> <ul style="list-style-type: none"> Ocean Disposal Sites 2016 (via Northeast Ocean Data Portal: https://www.northeastoceandata.org/data-explorer/) <p>Report:</p> <ul style="list-style-type: none"> Supplemental Environmental Impact Statement for the Designation of Dredged Material Disposal Site(s) in Eastern Long Island Sound, Connecticut and New York (Final). Prepared for: United States Environmental Protection Agency. Prepared by: Louis Berger and University of Connecticut November 2016 (via https://www.epa.gov/ocean-dumping/final-supplemental-environmental-impact-statement-eastern-long-island-sound)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>Data were clipped to the Data Extent. Coordinates for the revised Eastern Long Island Disposal site were taken from the report and used to create a new disposal site feature. Relevant descriptive and source material fields were attributed accordingly and statuses were updated to reflect current active/inactive states.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment, although they can be displayed as Active/Inactive by using the “STATUS” attribute field.
Date Created	October 2018

General Data Description	Dredged material disposal sites as they appear on the NOAA charts, in the Long Island Sound Dredged Material Management Plan (DMMP), or designated by EPA. Includes areas currently and historically used. Also includes confined aquatic disposal (CAD) cells.
Additional Information	Northeast Ocean Data Portal (dataset provider) EPA FEIS for Eastern Long Island Sound (dataset provider) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Underwater Cables



- | | |
|-------------------|---------------------|
| Underwater Cables | — CT State Boundary |
| power line | Policy Area |
| telephone | Area of Interest |

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

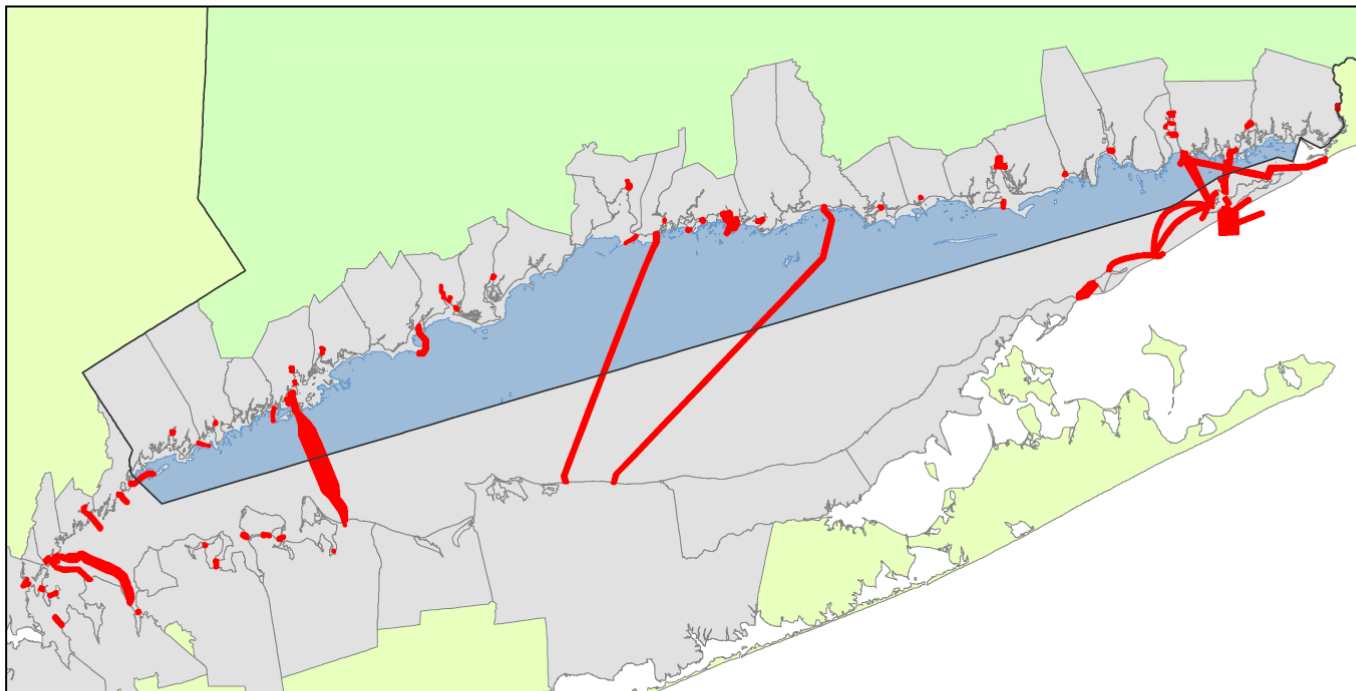
Figure 3a-33 Final SHUA map of underwater cables, under the cables, pipelines, and cable/pipeline areas.

Long Island Sound Submarine Cables

Table 3a-39 Data construction table for underwater or submarine cables.

SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Cables, Pipelines, and Cable/Pipeline Areas
SHUA Sub-criterion Description	Submerged cables, including but not limited to those indicated on NOAA navigational charts.
Data Source(s)	GIS Data layer (identifies specific cables): <ul style="list-style-type: none"> Submarine Cables (Northeast Ocean Data Portal: https://www.northeastoceandata.org/data-explorer/)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018
General Data Description	Approximate location of Submerged cables in Long Island Sound.
Additional Information	Northeast Ocean Data Portal (dataset provider) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Cable and Pipeline Areas



- CT State Boundary
- Cable and Pipeline Areas
- Policy Area
- Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-34 Final SHUA map of cable and pipeline areas, under the cables, pipelines, and cable/pipeline areas criteria.

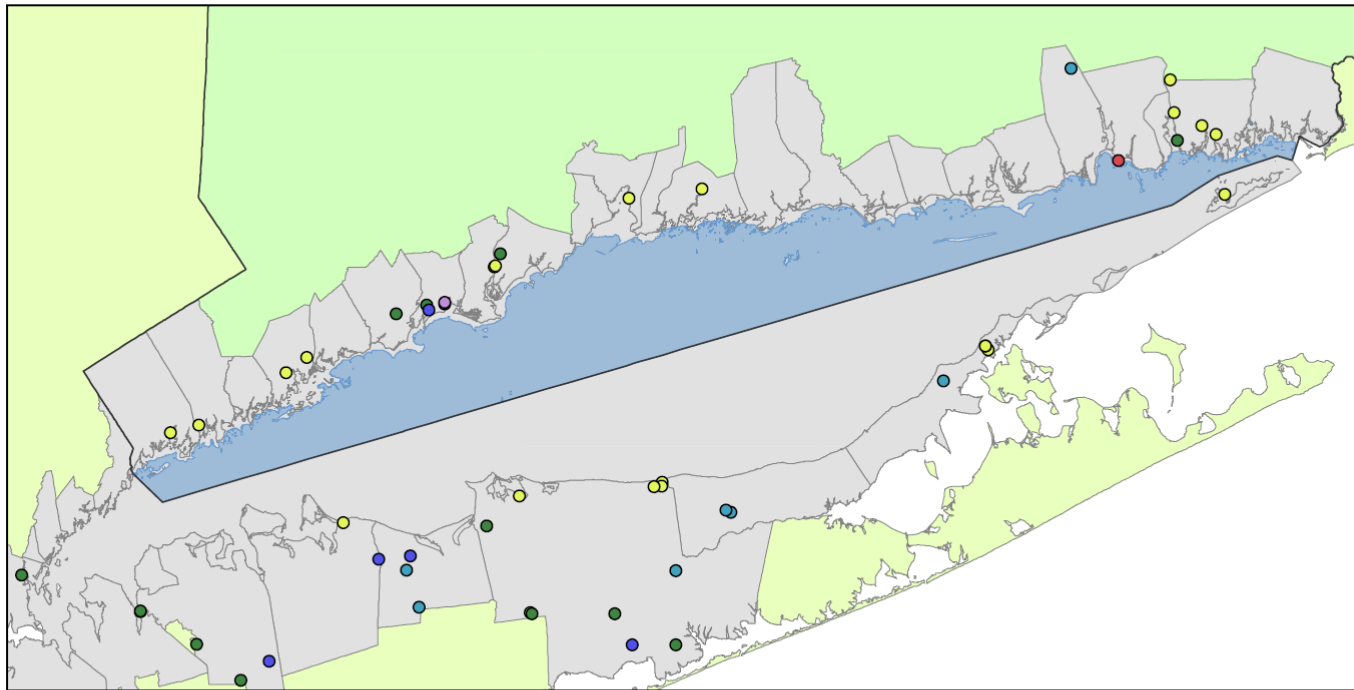
Long Island Sound Cable and Pipeline Areas

Table 3a-40 Data construction table for LIS cable and pipeline areas.

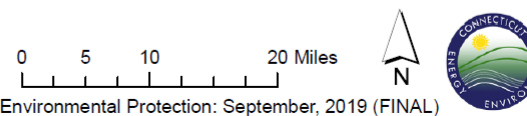
SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Cables, Pipelines, and Cable/Pipeline Areas
SHUA Sub-criterion Description	Submerged cable and pipeline infrastructure areas, including but not limited to those indicated on NOAA navigational charts.
Data Source(s)	GIS Data layer: <ul style="list-style-type: none"> • Cable and Pipeline Areas (via Northeast Ocean Data Portal: https://www.northeastoceandata.org/data-explorer/) • CAD data provided by John Lust for Thimble Islands, Branford CT
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Northeast Ocean Data Portal data were clipped to the Data Extent. Areas were edited to accommodate the locations of additional cable and/or pipeline data provided via CAD files for the Thimble Island area of Branford. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018. Updated August 2019.

General Data Description	Submerged cable and pipeline infrastructure areas.
Additional Information	Northeast Ocean Data Portal (data provider) Thimble Island CAD data from John Lust (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Coastal Energy Facilities



- | | | |
|---------------------------|-----------|---------------------|
| Coastal Energy Facilities | ● Nuclear | — CT State Boundary |
| ● Biomass | ● Oil | ■ Policy Area |
| ● Coal | ● Solar | ■ Area of Interest |
| ● Gas | | |



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

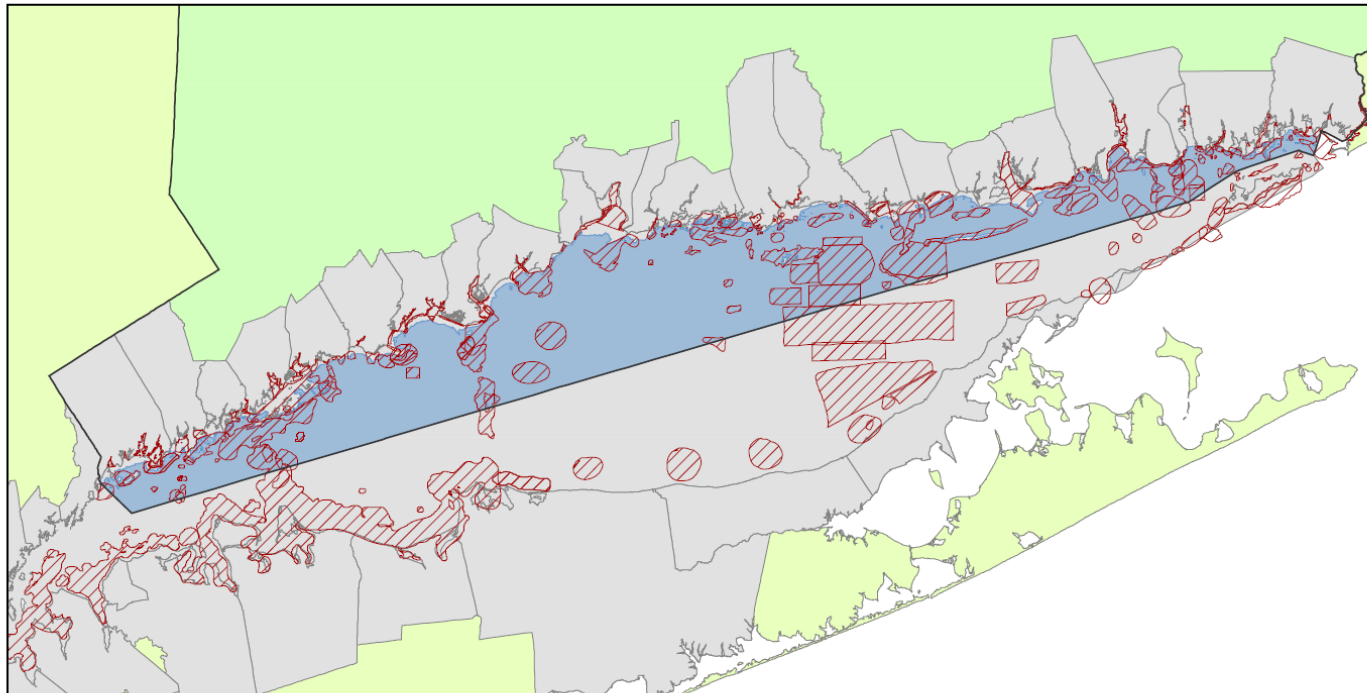
Figure 3a-35 Final SHUA map of coastal energy facilities, under the coastal energy generating facilities and transmission facilities.




Coastal Energy Generating and Transmission Facilities

Table 3a-41 Data construction table for coastal energy facilities.

SHUA Criteria	Areas important for navigation, transportation, infrastructure, and economic activity
SHUA Sub-criterion	Coastal Energy Generating and Transmission Facilities
SHUA Sub-criterion Description	Coastal energy generating and transmission facilities and associated infrastructure, including areas of Long Island Sound adjacent thereto.
Data Source(s)	GIS data layer: <ul style="list-style-type: none"> Coastal Energy Facilities (https://marinecadastre.gov/nationalviewer/)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October 2018.
General Data Description	Coastal energy generating and transmission facilities and associated infrastructure, including areas of Long Island Sound adjacent thereto.
Additional Information	NOAA Marine Cadastre (dataset provider) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Recreational Fishing Areas



- CT State Boundary
-  Recreational Fishing Areas
-  Policy Area
-  Area of Interest

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-36 Final SHUA map of recreational fishing activity.

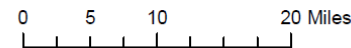
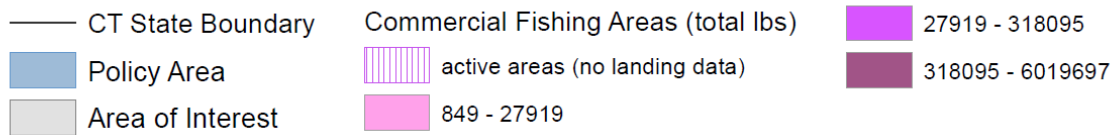
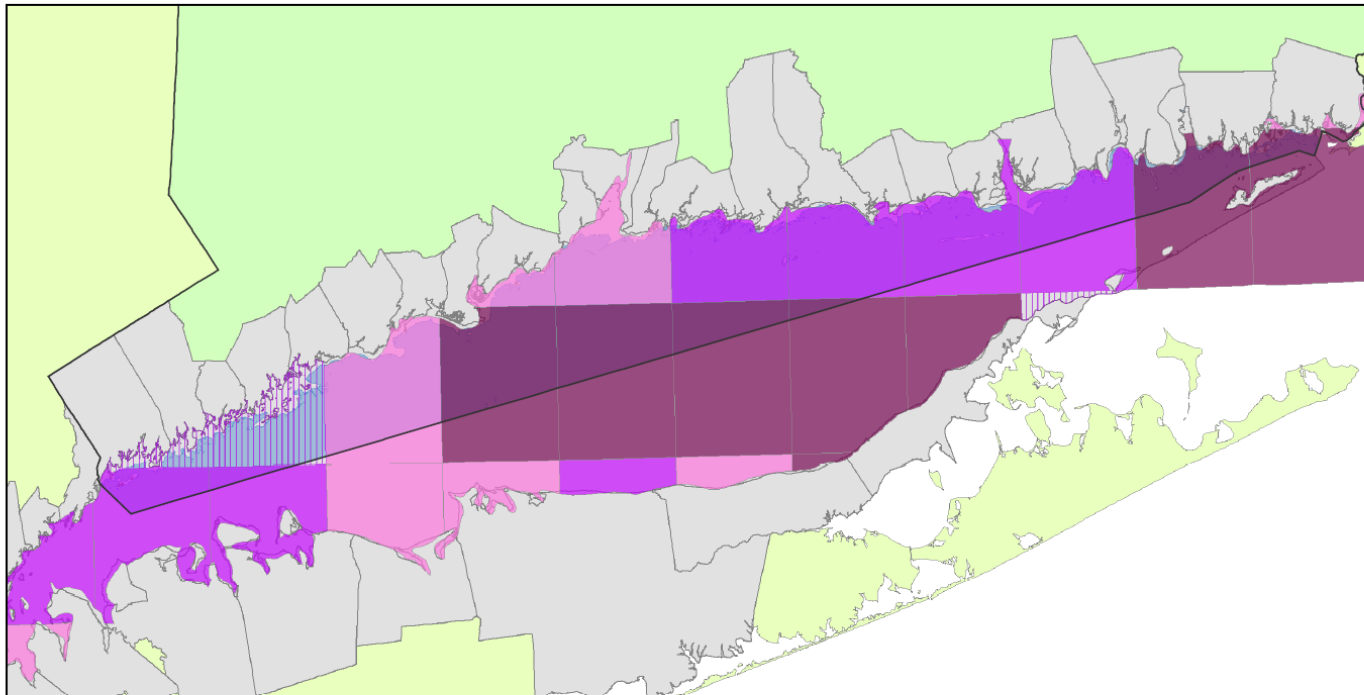
LIS Recreational Fishing

Table 3a-42 Data construction table for recreational fishing.

SHUA Criteria	Areas important to Fishing and Aquaculture
SHUA Sub-criterion	Recreational Fishing
SHUA Sub-criterion Description	Areas significant for recreational fishing, as identified by DEEP Fisheries and the recreational fishing community of Long Island Sound
Data Source(s)	<p>GIS Data layer:</p> <ul style="list-style-type: none"> • Popular places to fish (CT Dept. of Energy & Environmental Protection) <p>Data provided through participatory mapping exercises with LIS recreational fishing community.</p>
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>GIS data layer was clipped to the Data Extent.</p> <p>An online web mapping viewer was created to log locations provided by stakeholders from the LIS recreational fishing community.</p>
Data Analysis	The online web mapping viewer was used during several public meetings to log places and basic information on LIS diving locations. CTDEEP Popular Places to Fish were displayed as starting point overlaid on NOAA Nautical charts for reference. New areas were added based on stakeholder input. All areas should be considered approximate. Data from the mapping exercises were projected in UTM Zone 18N NAD83.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	December, 2018.

General Data Description	Locations of recreational fishing activity were compiled iteratively over time by CT DEEP Marine Fisheries Division Staff and through Blue Plan participatory mapping efforts that engaged the LIS angling community. No assurance of catching fish is implied.
Additional Information	CT Dept. of Energy & Environmental Protection (dataset originator) Blue Plan Participatory Mapping (dataset updates and edits) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Commercial Fishing Areas



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-37 Final SHUA map of LIS commercial fishing activity.

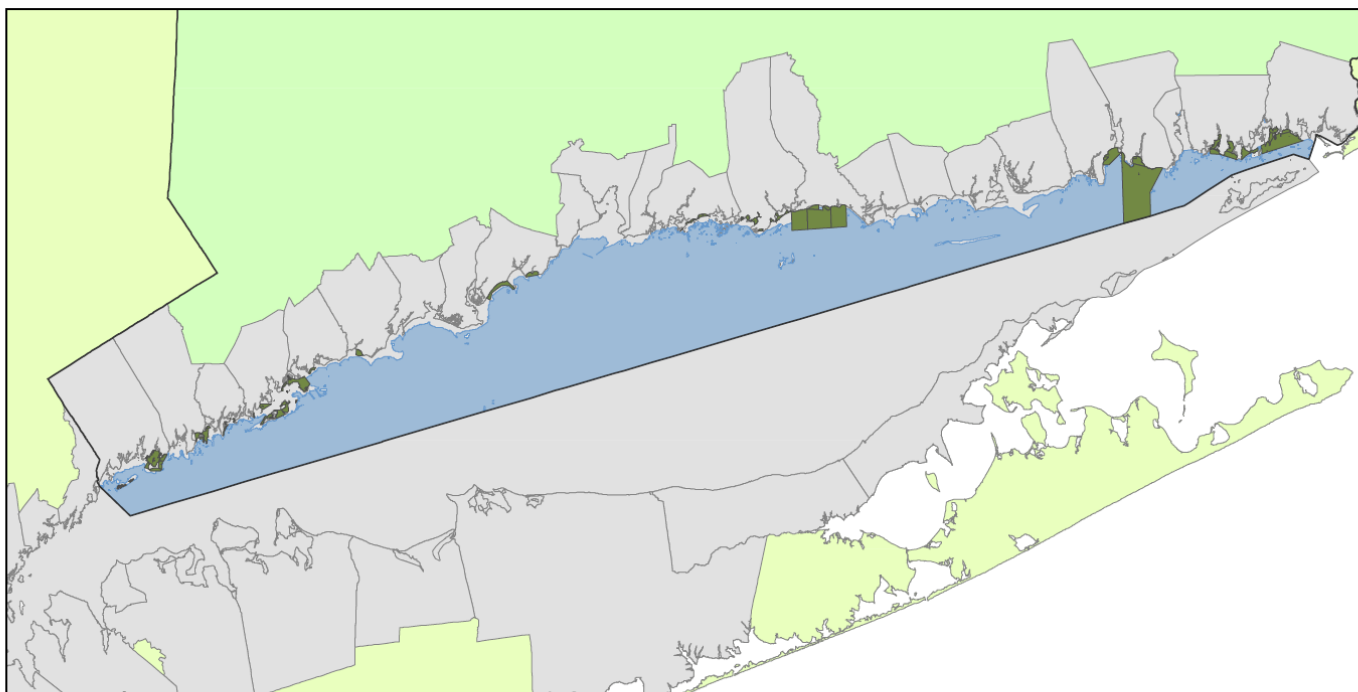
Commercial Fishing

Table 3a-43 Data construction table for commercial fishing.

SHUA Criteria	Areas important to Fishing and Aquaculture
SHUA Sub-criterion	Commercial Fishing
SHUA Sub-criterion Description	Areas of substantial value to the commercial fishing community in Long Island Sound.
Data Source(s)	<p>GIS data layers:</p> <ul style="list-style-type: none"> • 2000-2010 NOAA Vessel Trip Report (VTR) Landings – Gillnet/Seine/Otter Trawl/Pot • (via NY Geographic Information Gateway: http://opdgig.dos.ny.gov/arcgis/rest/services/NYOPDIG/HumanUseData/MapServer/10f)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	<p>Data were clipped to the Data Extent.</p> <p>Data layer stored in UTM Zone 18N, NAD83.</p>
Data Analysis	<p>Conversations with the commercial fishing industry suggested that despite the coarse geographic coverage, combining data from all four landing source layers (gillnets, seine, otter trawls, and pots) would be more reflective of the overall commercial fishing picture for Long Island Sound. The four data layers were merged, then dissolved based on unique grid cells with values for total landing pounds summed accordingly. An attribute field of “Gear Type” was added to log the types of gear used in each grid cell.</p>
Data Classification	<p>After conferring with commercial fishing stakeholders, applying a five-binned quantile classification scheme and taking the top two bins was recommended as a threshold to identify the areas with the highest overall landing pounds during 2000-2010.</p>
Date Created	October, 2018

Basic Data Description:	Commercial fishing landing data from 2000-2010 as provided by the National Marine Fisheries Service.
Additional Information	Michael Fogarty, NOAA NMFS, Northeast Fisheries Science Center (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: CT Recreational Shellfish Beds



- CT State Boundary
- CT Recreational Shellfish Beds
- Policy Area
- Area of Interest

Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-38 Final SHUA map of recreational shellfish beds.

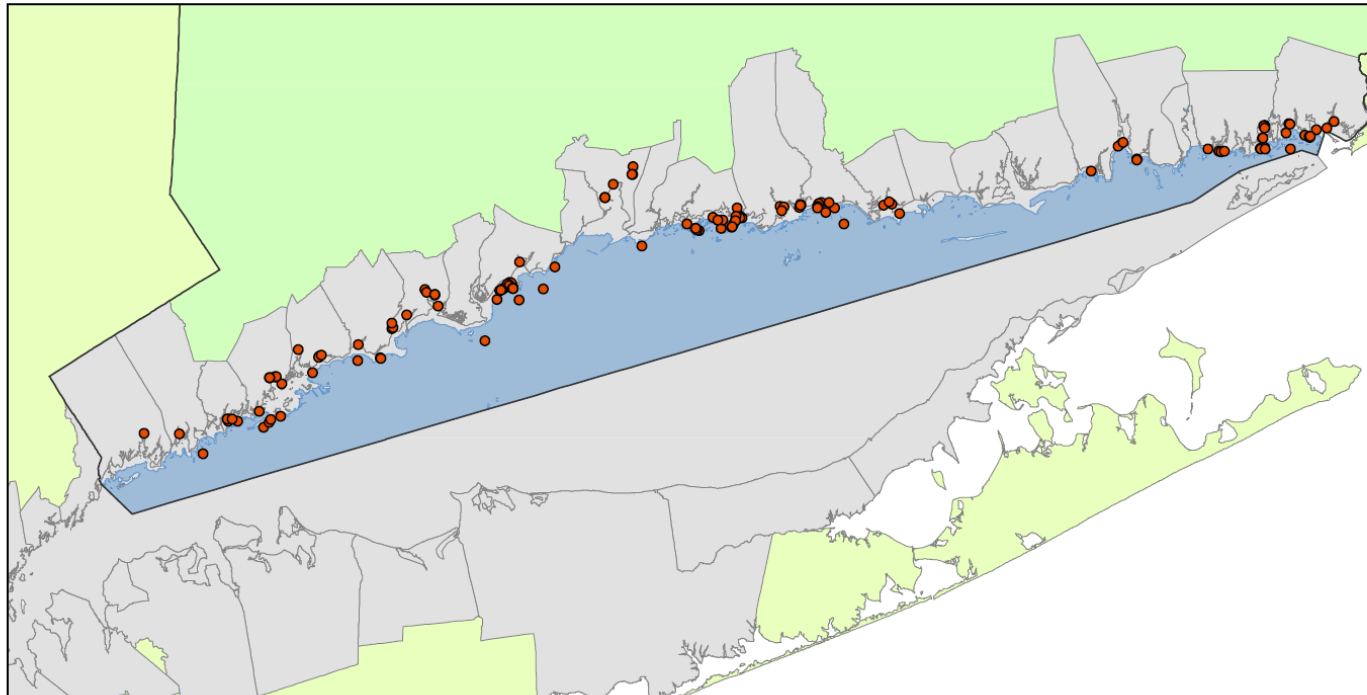
Recreational Shellfish Areas

Table 3a-44 Data construction table for recreational shellfish areas.

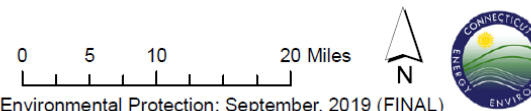
SHUA Criteria	Areas important to Fishing and Aquaculture
SHUA Sub-criterion	Recreational Shellfish Areas
SHUA Sub-criterion Description	Town and/or state managed recreational shellfishing areas in Connecticut.
Data Source(s)	GIS data layer - Connecticut Department of Agriculture Bureau of Aquaculture (DABA): <ul style="list-style-type: none"> • Recreational Shellfish Beds (via https://services7.arcgis.com/9fAJJI91yoj2y4Yi/ArcGIS/rest/services/ConnecticutShellfishOnline2018Draft/FeatureServer)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018.
Basic Data Description	In Connecticut, shellfish are defined as oysters, clams, mussels and scallops; either shucked or in the shell, fresh or frozen, whole or in part. Undesignated Beds under town or state jurisdiction which are not currently designated as “Natural Bed” or leased, licensed or otherwise managed for commercial activity may be managed as “Recreational Beds” by the municipality, where water quality classification permits. These beds may or may not sustain natural shellfish populations.

Additional Information	Kristin Derosia-Banick, Connecticut Department of Agriculture Bureau of Aquaculture Shellfish Program (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm
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Significant Human Use Area Map: CT Aquaculture Operations



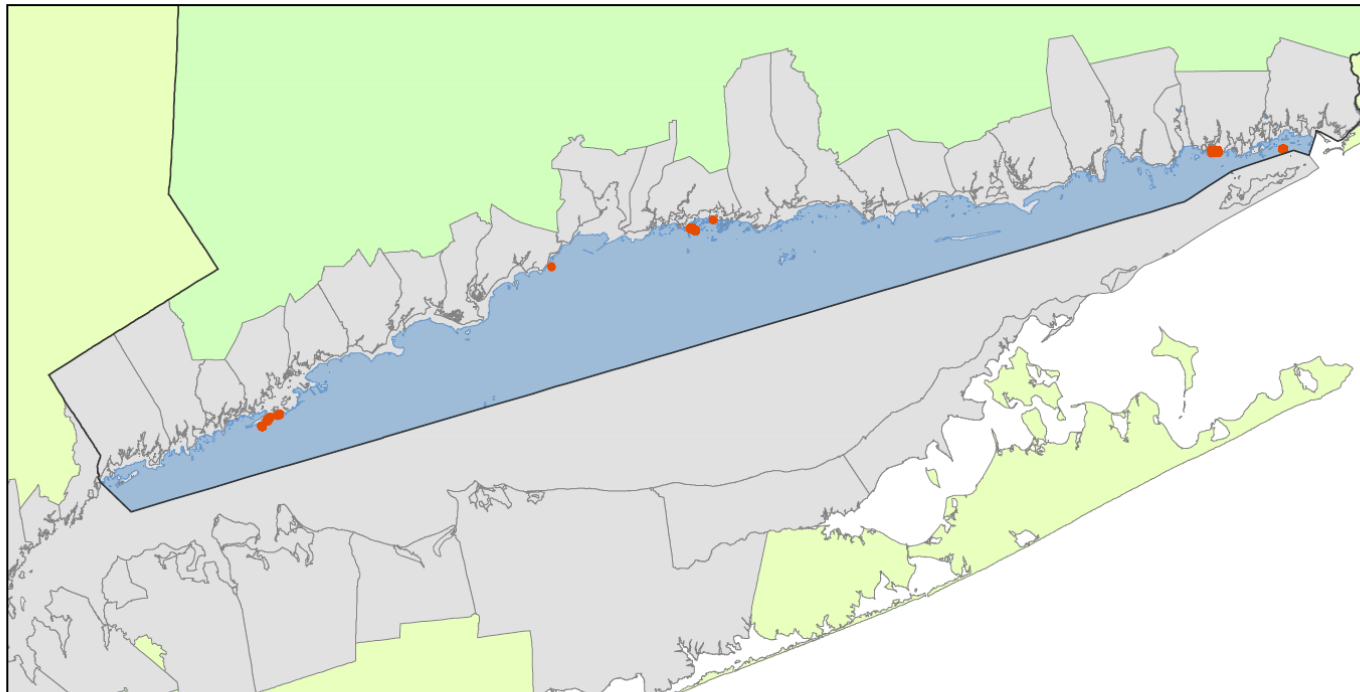
- CT Aquaculture Operations
- CT State Boundary
- Policy Area
- Area of Interest



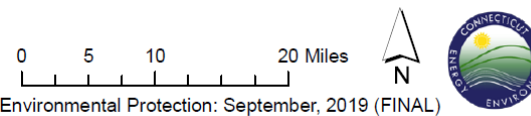
Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-39 Final SHUA map of aquaculture operations, under the commercial aquaculture locations criteria.

Significant Human Use Area Map: CT Seaweed Licenses



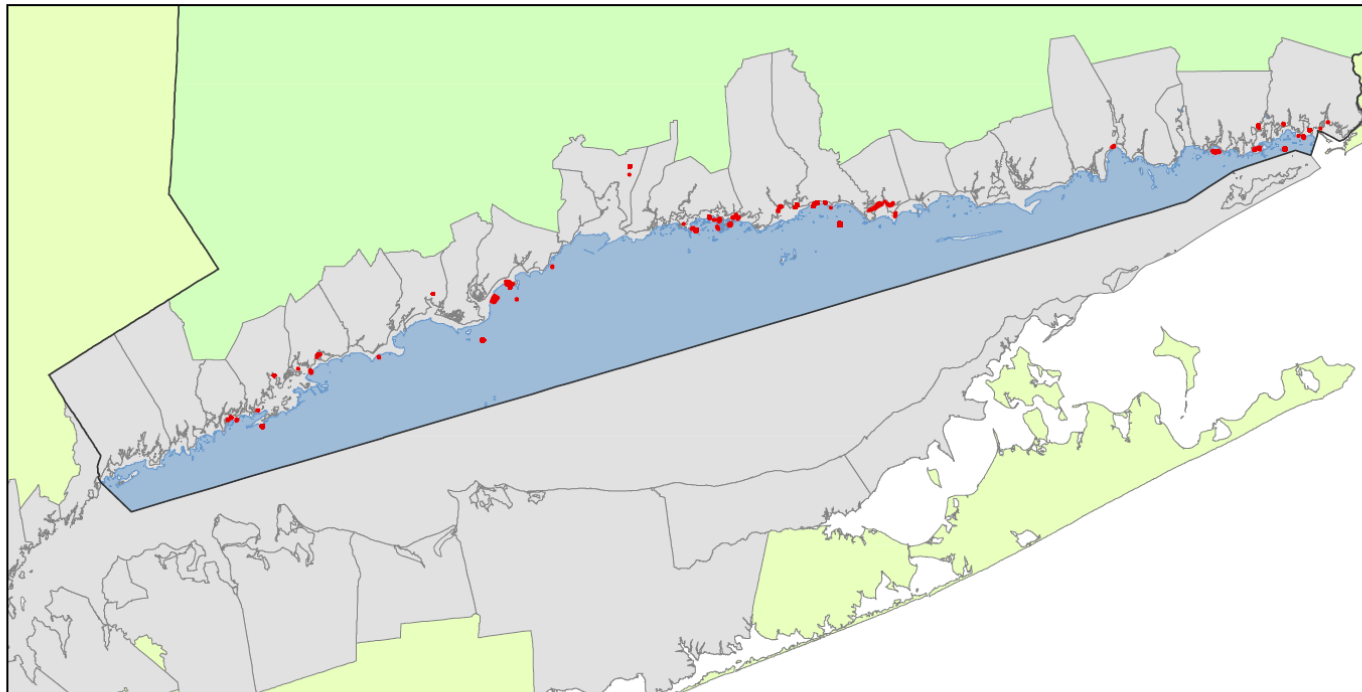
- CT State Boundary
- CT Seaweed Licenses
- Policy Area
- Area of Interest







Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-40 Final SHUA map of CT Seaweed licenses, under the commercial aquaculture locations.

Significant Human Use Area Map: CT Aquaculture Gear Areas



-  CT Aquaculture Gear Areas
-  CT State Boundary
-  Policy Area
-  Area of Interest

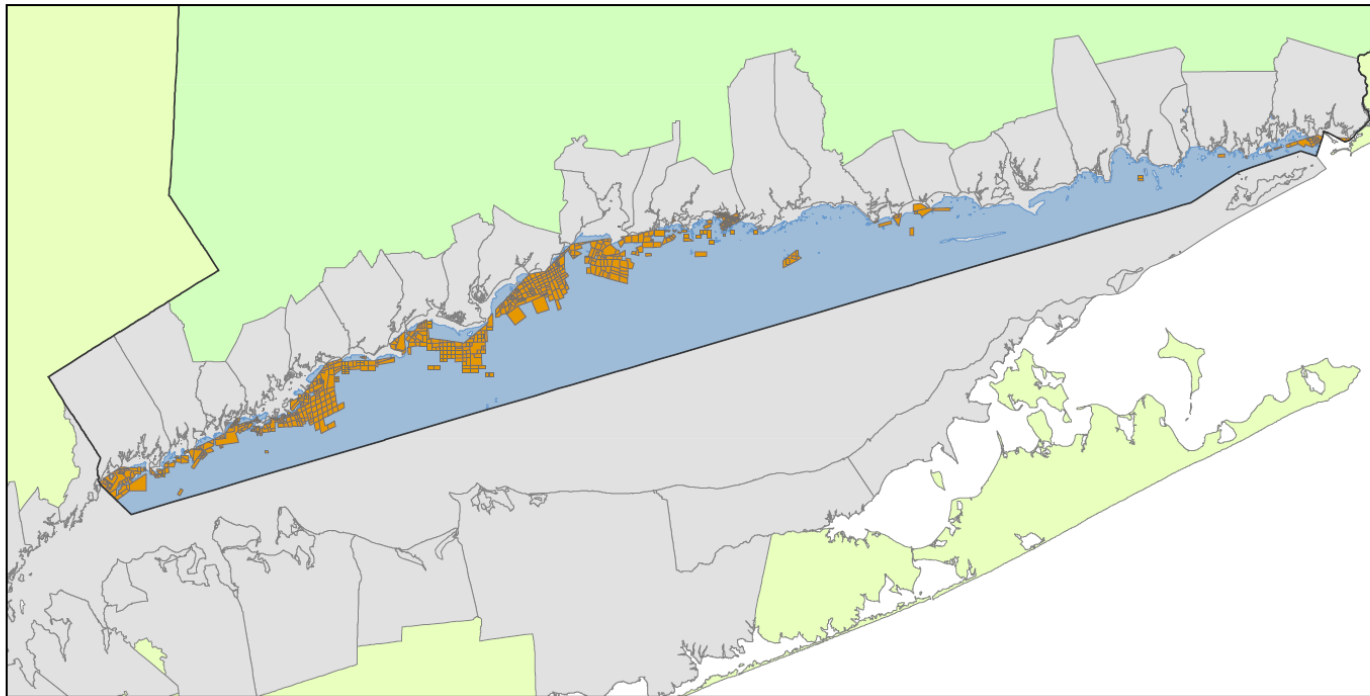
0 5 10 20 Miles



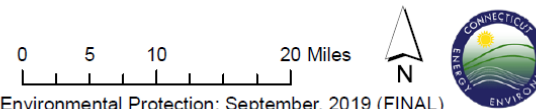
Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-41 Final SHUA map of aquaculture gear areas, under the commercial aquaculture locations criteria.

Significant Human Use Area Map: CT State Shellfish Lease Beds



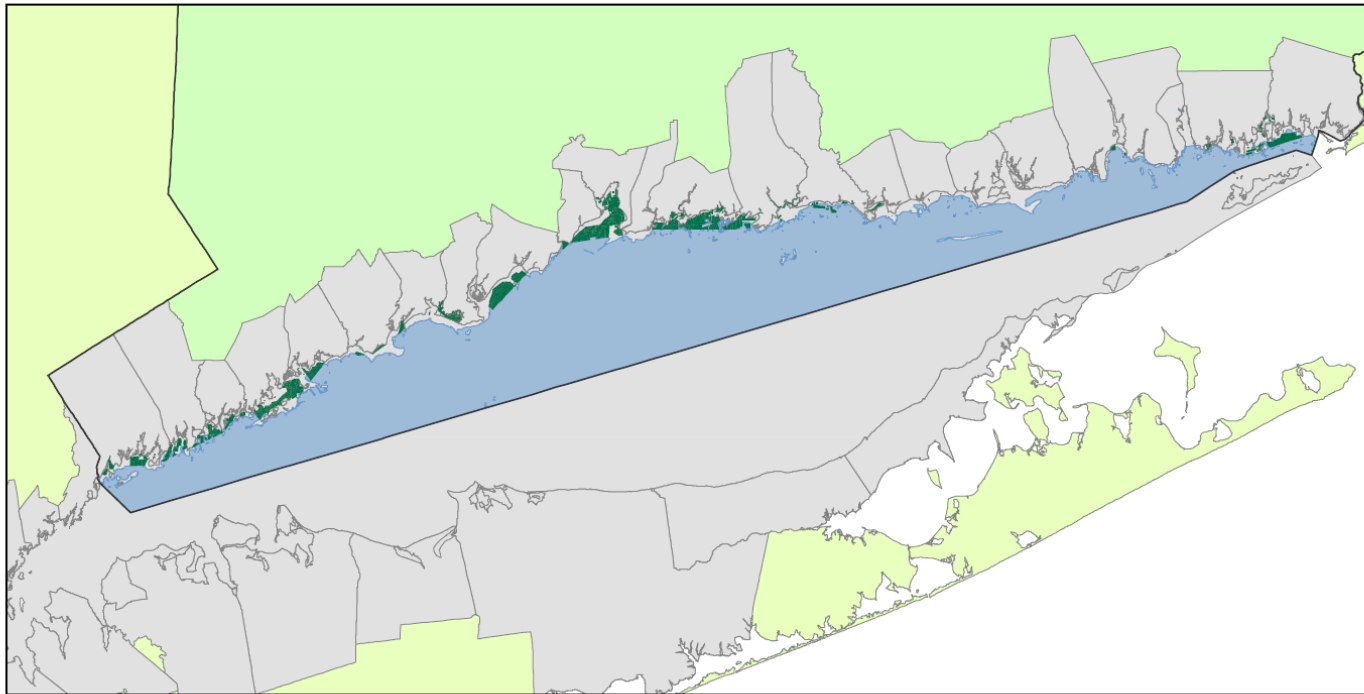
- CT State Boundary
- CT State Shellfish Lease Beds
- Policy Area
- Area of Interest



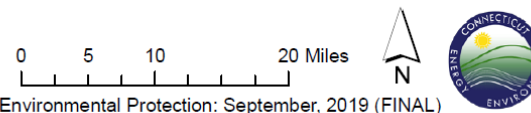
Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-42 Final SHUA map of state managed shellfish beds (CT), under the commercial aquaculture locations criteria.

Significant Human Use Area Map: CT Town Shellfish Beds



- CT State Boundary
- CT Town Shellfish Beds
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-43 Final SHUA map of town managed shellfish beds (CT), under the commercial aquaculture locations criteria.

Connecticut Aquaculture Layers

Table 3a-45 Data construction table for all Connecticut commercial aquaculture locations.

SHUA Criteria	Areas important to Fishing and Aquaculture
SHUA Sub-criterion	Commercial Aquaculture Locations
SHUA Sub-criterion Description	Shellfish leases, seaweed leases, gear areas, designated natural beds, and any other type of authorized aquaculture venture in CT and NY as applicable.
Data Source(s)	GIS Data layers - Connecticut Department of Agriculture Bureau of Aquaculture (DA/BA): <ul style="list-style-type: none"> • Aquaculture Operations (CT Dept. of Agriculture / Bureau of Aquaculture) • Seaweed Licenses (CT Dept. of Agriculture / Bureau of Aquaculture) • Aquaculture Gear areas (CT Dept. of Agriculture / Bureau of Aquaculture) • Town/State Shellfish Lease beds (CT Dept. of Agriculture / Bureau of Aquaculture) • Natural Area Beds (CT Dept. of Agriculture / Bureau of Aquaculture) (via https://services7.arcgis.com/9fAJJI91yoj2y4Yi/ArcGIS/rest/services/ConnecticutShellfishOnline2018Draft/FeatureServer)
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Data were clipped to the Data Extent. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018

**Basic Data
Description**

CT Natural Shellfish Beds:

In Connecticut, shellfish are defined as oysters, clams, mussels and scallops; either shucked or in the shell, fresh or frozen, whole or in part. Natural beds get their name from the fact that shellfish, especially oysters, naturally inhabited the area. Natural beds have specific regulations concerning their use. Use of the natural beds requires a Relay/Transplant License I or II and/or Seed Oyster Harvesting License. These beds cannot be leased or subdivided; they are to remain open to any properly licensed shellfisherman.

CT Aquaculture Operations:

The approximate locations of "Certificate for Aquaculture Operation" permitted facilities/gear via the State of Connecticut Application for Joint Programmatic General Permit (PGP) for Aquaculture Department of the Army General Permit. Permitted projects have undergone review by the State of Connecticut Department of Agriculture Bureau of Aquaculture, the U.S. Army Corps of Engineers New England District, and the Connecticut Department of Energy and Environmental Protection.

CT Seaweed Licenses:

Areas where the Department of Agriculture Bureau of Aquaculture issues non-transferable licenses for the planting and cultivating of seaweed.

CT Aquaculture Gear Areas:

The approximate geographical location of "Certificate for Aquaculture Operation" permitted gear via the State of Connecticut Application for Joint Programmatic General Permit (PGP) for Aquaculture Department of the Army General Permit. Permitted projects have undergone review by the State of Connecticut Department of Agriculture Bureau of Aquaculture, the U.S. Army Corps of Engineers New England District, and the Connecticut Department of Energy and Environmental Protection.

CT State Shellfish Lease Beds:

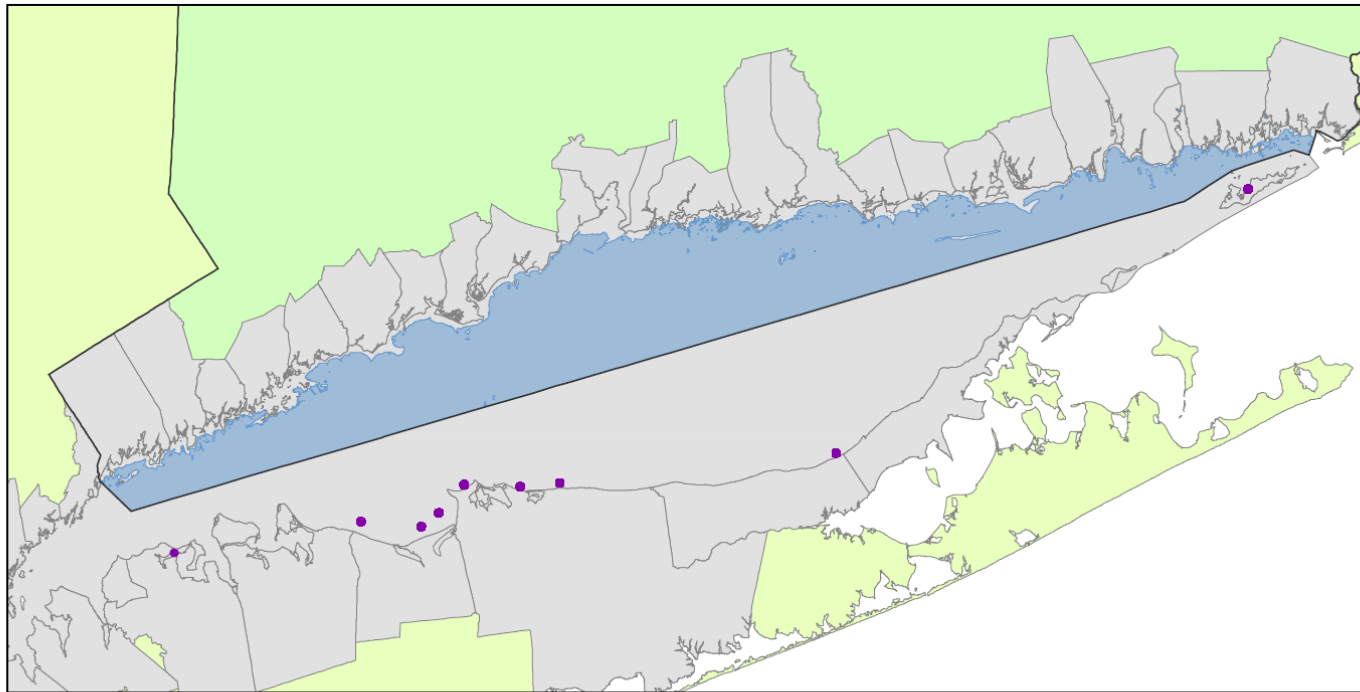
In Connecticut, shellfish are defined as oysters, clams, mussels and scallops; either shucked or in the shell, fresh or frozen, whole or in part. In 1881 a line was established that divides the waters of the state into a northern and southern section. All beds south of this line are State beds.

CT Town Shellfish Lease Beds:

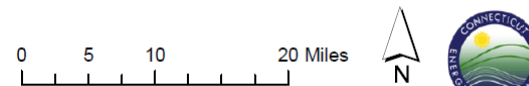
In Connecticut, shellfish are defined as oysters, clams, mussels and scallops; either shucked or in the shell, fresh or frozen, whole or in part. In 1881 the Commissioners line was established that divides the waters of the state into a northern and southern section. Most beds north of this line are town beds except for beds north of the line in Milford, West Haven, and New Haven. Town beds are under town jurisdiction and may be leased, licensed or otherwise managed through the local shellfish commission.

Additional Information	Kristin Derosia-Banick, Connecticut Department of Agriculture Bureau of Aquaculture Shellfish Program (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm
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Significant Human Use Area Map: NY Aquaculture Sites



- CT State Boundary
- NY Aquaculture Sites
- Policy Area
- Area of Interest



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-44 Final SHUA map of aquaculture sites (NY), under the commercial aquaculture locations criteria.

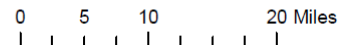
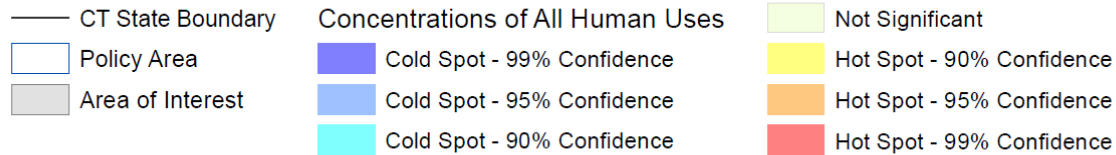
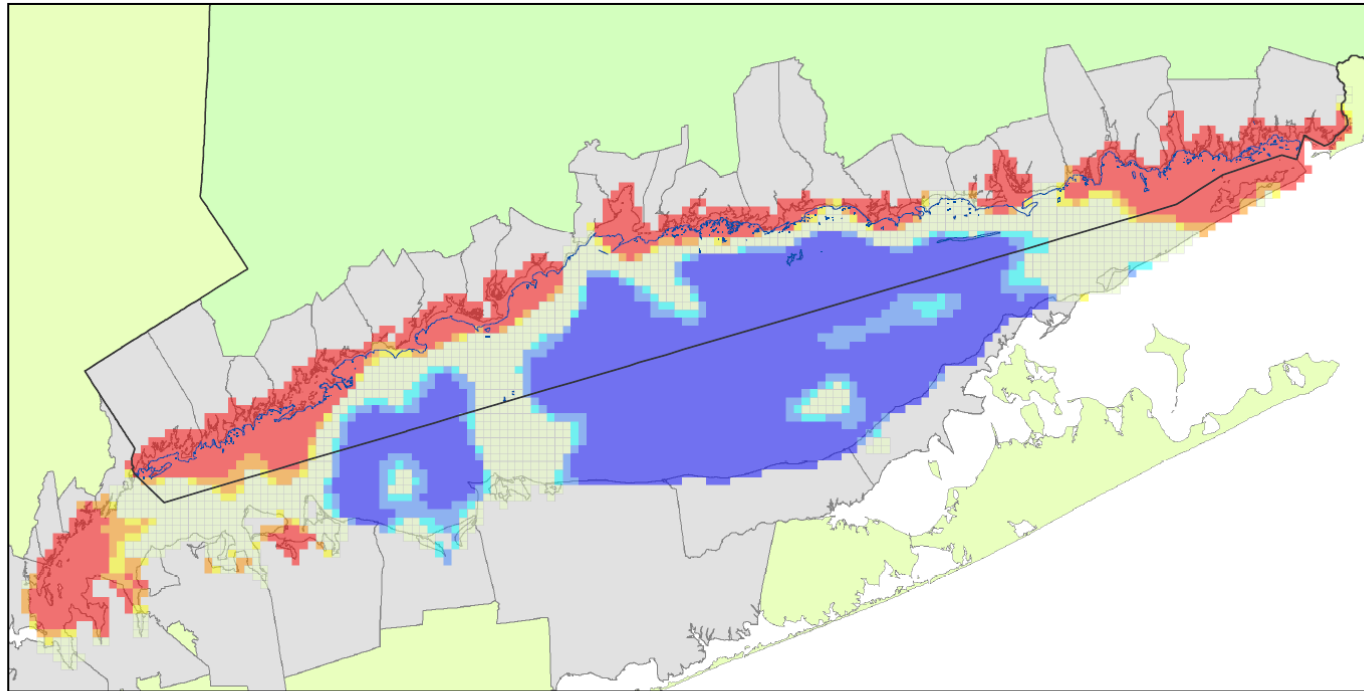
NY Aquaculture Sites

Table 3a-46 Data construction table for NY Aquaculture sites.

SHUA Criteria	Areas important to Fishing and Aquaculture
SHUA Sub-criterion	Commercial Aquaculture Locations
SHUA Sub-criterion Description	Shellfish leases, seaweed leases, gear areas, designated natural beds, and any other type of authorized aquaculture venture in CT and NY as applicable.
Data Source(s)	Information provided from NY Dept of Environmental Conservation on locations for seven Temporary Marine Area Use Assignments (TMAUAs) for aquaculture activities.
Data Extent	The Long Island Sound Blue Plan Area of Interest.
Data Adjustment and Pre-processing	Using information on the center coordinate and total acreage, areas reflecting the aquaculture TMAUAs were generated. Attributes for the assigned NYDEC permit number were also included for reference. Data layer stored in UTM Zone 18N, NAD83.
Data Analysis	No additional analysis was performed.
Data Classification	The data are not classified by any attributes to support the SHUA assessment.
Date Created	October, 2018
Data Description	Information provided from NY Dept. of Environmental Conservation on locations for seven Temporary Marine Area Use Assignments (TMAUAs) for aquaculture activities.
Additional Information	NY Dept. of Environmental Conservation, Marine Resources Division (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

2. Data “Roll-Up” Maps Organized by Concentrations of All Uses, Major Criteria, and Impact Area

Significant Human Use Area Map: Concentrations of All Human Uses



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-45 Final concentrations of all Significant Human Uses in Long Island Sound.

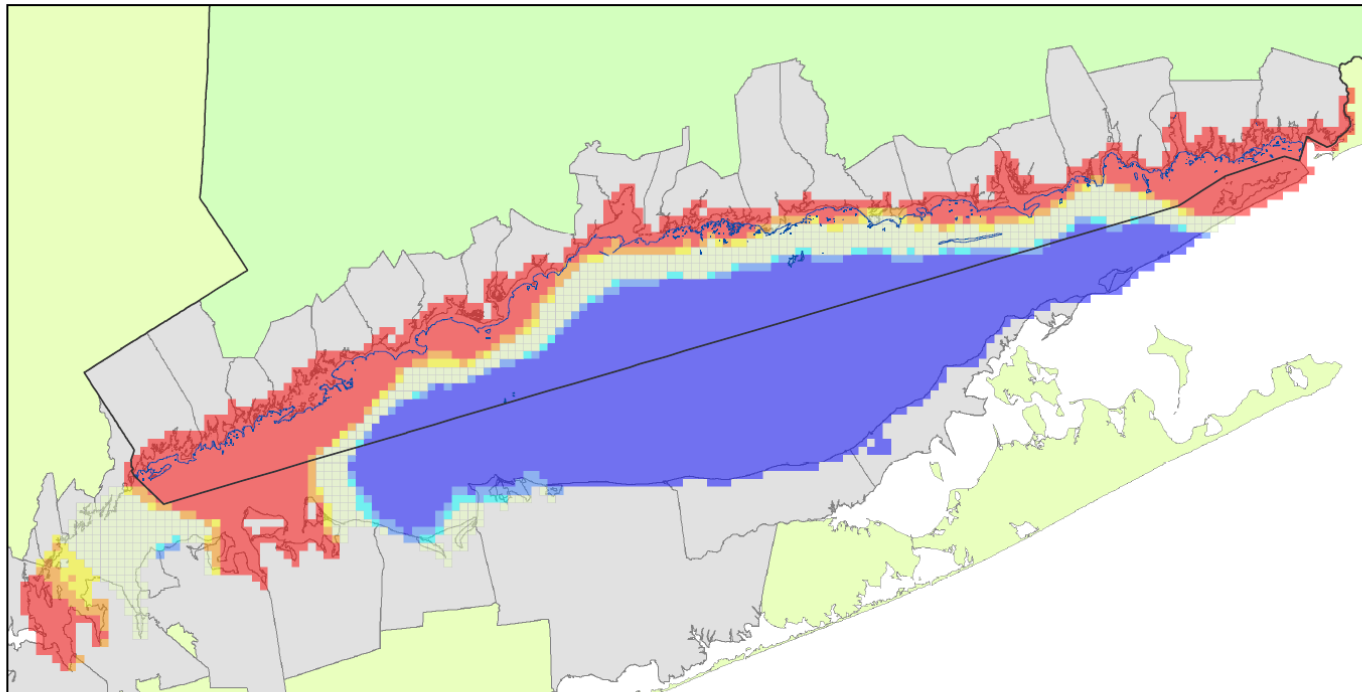
“Hot Spot” Map of all SHUAs

Table 3a-47 Data construction table of final concentrations of all SHUAs in LIS.

SHUA Criteria	Areas important for Recreational Quality of Life, Fishing/Shellfishing, Navigation, Transportation, etc., and Historic, Cultural, and Educational uses.
SHUA Sub-criterion Description	A way to synthesize the location data for multiple layers representing all human use and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of human use data layers in a given location.
Data Source(s)	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • LIS Lighthouses, CT and NY Historic Districts, LIS Wrecks, CT & NY Open Space & Public Lands, CT Archaeological Sites - upland, CT Archaeological Sites - LIS, LIS Coastal Observing System sites, LIS Water Quality Sampling, and LIS Potential Holocene underwater sites; CT Recreational Shellfish Beds; LIS Recreational Fishing Areas; LIS Commercial Fishing; CT Aquaculture Operations; CT Seaweed Licenses; NY Aquaculture Sites; CT Aquaculture Gear Areas; CT Natural Shellfish Beds; CT Shellfish Beds-Towns; CT Shellfish Beds-State; CT & NY Coastal Energy Facilities; CT & NY Working Waterfronts; LIS Anchorages; LIS Fairways & Navigation Channels; CT & NY Commercial Dredging Areas; LIS Restricted Areas; LIS Lightering Zones; LIS Vessel Transit Count Density; LIS Ocean Disposal Sites; LIS Underwater Cables; LIS Cable & Pipeline Areas; LIS Sailing Routes; LIS Sailing Areas; LIS Mooring Fields; LIS Anchorages; LIS Recreational Boating Density; CT & NY Marinas, Yacht Clubs; CT & NY Boat Launches; CT Waterfowl hunting areas; LIS Dive Areas; CT Coastal Access Sites; CT & NY Individual Ocean Uses; CT & NY Public Access Beaches; LIS Water Trails; CT & NY Open Space & Public Lands; CT Migratory Waterfowl Concentration Areas.
Data Extent	The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.
Data Adjustment and Pre-processing	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For all of the human use data: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product.

	<ul style="list-style-type: none"> c) For each map product, log the grid cells it intersects by entering a '1' in the selected records for the appropriate map products field. d) Derive a cumulative frequency value for each grid cell (row) by adding the number of '1s' from each map product (field).
Data Analysis	<p>The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.</p>
Data Classification	<p>The tool creates a standardized classification scheme that identifies:</p> <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Viewer Description	Locations where concentrations can be statistically defined and described by the number of human use data layers in a given location.
Additional Information	<p>CT Dept. of Energy & Environmental Protection (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Concentrations of Historic, Cultural, & Educational Uses



- | | | |
|---------------------|--|-----------------------------|
| — CT State Boundary | Concentrations of Historic, Cultural, & Educational Uses | Not Significant |
| □ Policy Area | ■ Cold Spot - 99% Confidence | ■ Hot Spot - 90% Confidence |
| ■ Area of Interest | ■ Cold Spot - 95% Confidence | ■ Hot Spot - 95% Confidence |
| | ■ Cold Spot - 90% Confidence | ■ Hot Spot - 99% Confidence |

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-46 Final concentrations of Significant Historical, Cultural, and Educational Uses in LIS.

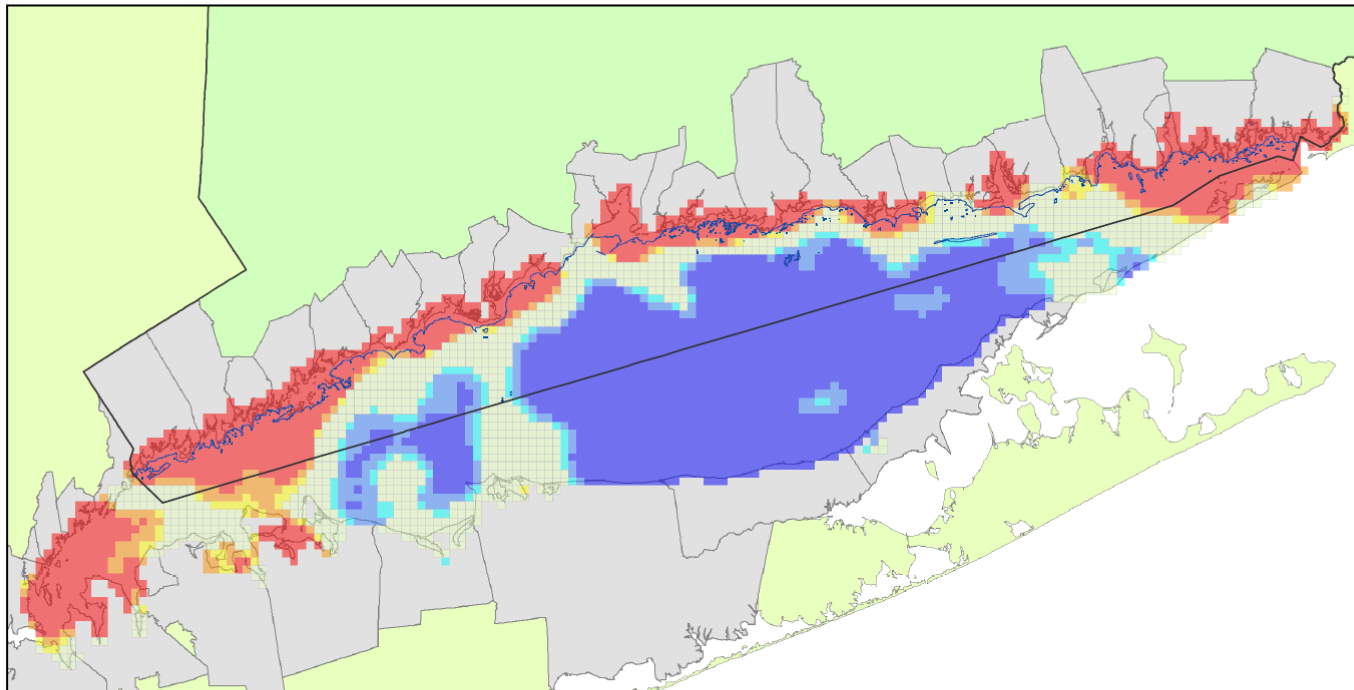
“Hot Spot” Map of all Historical, Cultural, and Educational Uses

Table 3a-48 Data construction table for Hot Spot Map of Historical, Cultural, and Educational Uses

SHUA Criteria	Areas important for Historic Cultural and Educational Uses
SHUA Sub-criterion Description	A way to synthesize the location data for multiple layers representing Historic Cultural and Educational Uses and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of Historic Cultural and Educational data layers in a given location.
Data Source(s)	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • LIS Lighthouses, CT and NY Historic Districts, LIS Wrecks, CT & NY Open Space & Public Lands, CT Archaeological Sites - upland, CT Archaeological Sites - LIS, LIS Coastal Observing System sites, LIS Water Quality Sampling, and LIS Potential Holocene underwater sites
Data Extent	The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.
Data Adjustment and Pre-processing	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For the Historic Cultural and Educational Uses group: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product. c) For each map product, log the grid cells it intersects by entering a ‘1’ in the selected records for the appropriate map products field. d) Derive a cumulative frequency value for each grid cell (row) by adding the number of ‘1s’ from each map product (field).

Data Analysis	<p>The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.</p>
Data Classification	<p>The tool creates a standardized classification scheme that identifies:</p> <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Description	Locations where concentrations can be statistically defined and described by the number of Historic Cultural and Educational use data layers in a given location.
Additional Information	<p>CT Dept. of Energy & Environmental Protection (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Concentrations of Recreational Uses



- | | | |
|---------------------|-------------------------------------|-----------------------------|
| — CT State Boundary | Concentrations of Recreational Uses | Not Significant |
| □ Policy Area | ■ Cold Spot - 99% Confidence | ■ Hot Spot - 90% Confidence |
| ■ Area of Interest | ■ Cold Spot - 95% Confidence | ■ Hot Spot - 95% Confidence |
| | ■ Cold Spot - 90% Confidence | ■ Hot Spot - 99% Confidence |

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-47 Final concentrations of all Recreational Uses in LIS.

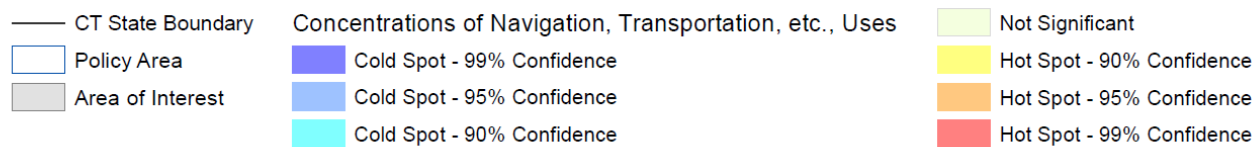
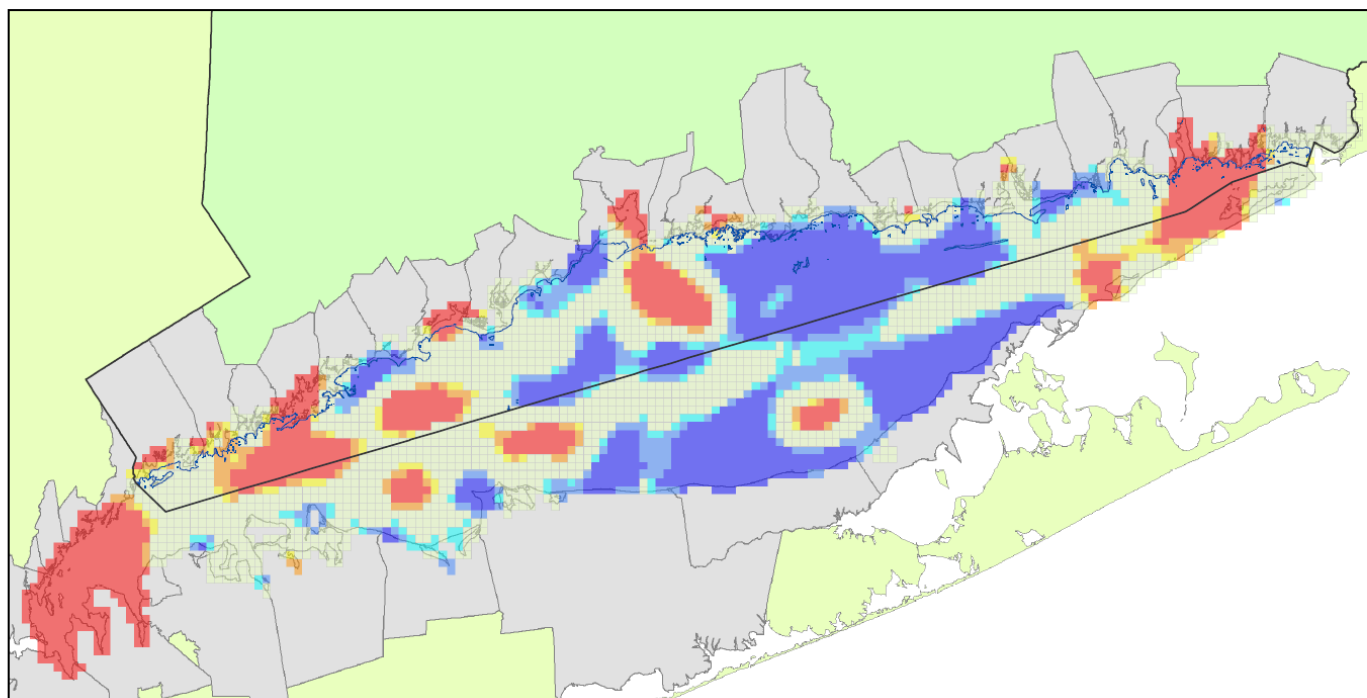
“Hot Spot” Map of all Recreational Uses

Table 3a-49 Data Construction Table for “Hot Spot” Map of Recreational Uses

SHUA Criteria	Areas important for Recreational Quality of Life uses
SHUA Sub-criterion Description	A way to synthesize the location data for multiple layers representing Recreational Quality of Life Uses and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of Recreational Quality of Life data layers in a given location.
Data Source(s)	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • LIS Sailing Routes; LIS Sailing Areas; LIS Mooring Fields; LIS Anchorages; LIS Recreational Boating Density; CT & NY Marinas, Yacht Clubs; CT & NY Boat Launches; CT Waterfowl hunting areas; LIS Dive Areas; CT Coastal Access Sites; CT & NY Individual Ocean Uses; CT & NY Public Access Beaches; LIS Water Trails; CT & NY Open Space & Public Lands; CT Migratory Waterfowl Concentration Areas.
Data Extent	The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.
Data Adjustment and Pre-processing	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For the Recreational Quality of Life Uses group: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product. c) For each map product, log the grid cells it intersects by entering a ‘1’ in the selected records for the appropriate map products field. d) Derive a cumulative frequency value for each grid cell (row) by adding the number of ‘1s’ from each map product (field).

Data Analysis	The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.
Data Classification	The tool creates a standardized classification scheme that identifies: <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Viewer Description	Locations where concentrations can be statistically defined and described by the number of Recreational use data layers in a given location.
Additional Information	CT Dept. of Energy & Environmental Protection (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

**Significant Human Use Area Map:
Concentrations of Navigation, Transportation, etc., Uses**



0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-48 Final concentration of all Navigation, Transportation, and Commerce activities in LIS.

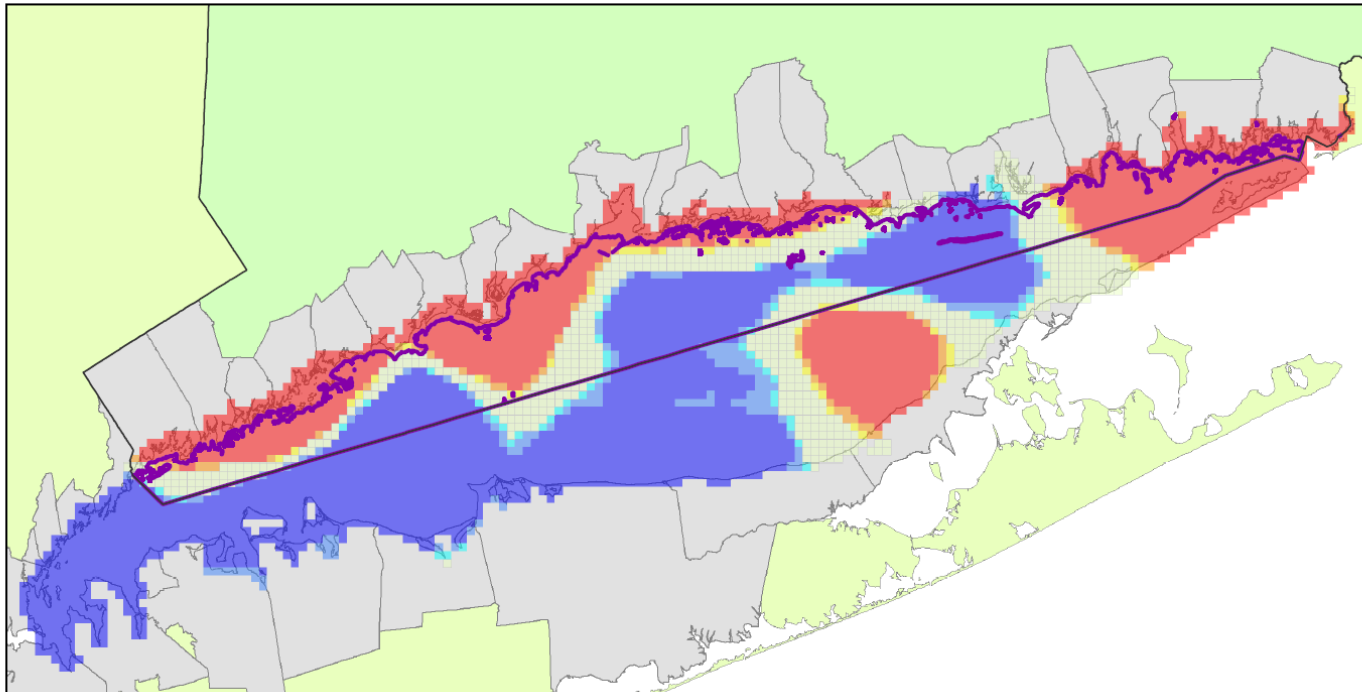
“Hot Spot” Map of all Navigation, Transportation, etc.

Table 3a-50 Data Construction Table for “Hot Spot” of Navigation, Transportation, etc. SHUA

SHUA Criteria	Areas important for Navigation, Transportation, Industry and Commerce uses
SHUA Sub-criterion Description	A way to synthesize the location data for multiple layers representing Navigation, Transportation, Industry and Commerce Uses and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of Navigation, Transportation, Industry and Commerce data layers in a given location.
Data Source(s)	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • CT & NY Coastal Energy Facilities; CT & NY Working Waterfronts; LIS Anchorages; LIS Fairways & Navigation Channels; CT & NY Commercial Dredging Areas; LIS Restricted Areas; LIS Lightering Zones; LIS Vessel Transit Count Density; LIS Ocean Disposal Sites; LIS Underwater Cables; LIS Cable & Pipeline Areas.
Data Extent	The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.
Data Adjustment and Pre-processing	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For the Navigation, Transportation, Industry and Commerce Uses group: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product. c) For each map product, log the grid cells it intersects by entering a ‘1’ in the selected records for the appropriate map products field. d) Derive a cumulative frequency value for each grid cell (row) by adding the number of ‘1s’ from each map product (field).

Data Analysis	<p>The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.</p>
Data Classification	<p>The tool creates a standardized classification scheme that identifies:</p> <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Viewer Description	Locations where concentrations can be statistically defined and described by the number of Navigation, Transportation, Industry and Commerce use data layers in a given location.
Additional Information	<p>CT Dept. of Energy & Environmental Protection (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Concentrations of Fishing & Shellfishing Uses



- | | | |
|---------------------|---|---------------------------|
| — CT State Boundary | Concentrations of Fishing & Shellfishing Uses | Not Significant |
| Policy Area | Cold Spot - 99% Confidence | Hot Spot - 90% Confidence |
| Area of Interest | Cold Spot - 95% Confidence | Hot Spot - 95% Confidence |
| | Cold Spot - 90% Confidence | Hot Spot - 99% Confidence |

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-49 Final concentrations of fish and shellfish uses in LIS.

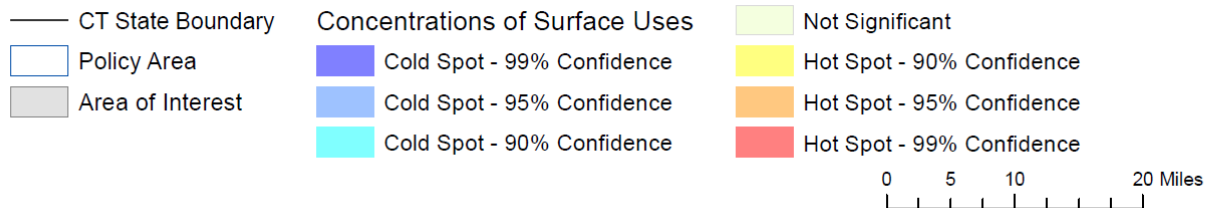
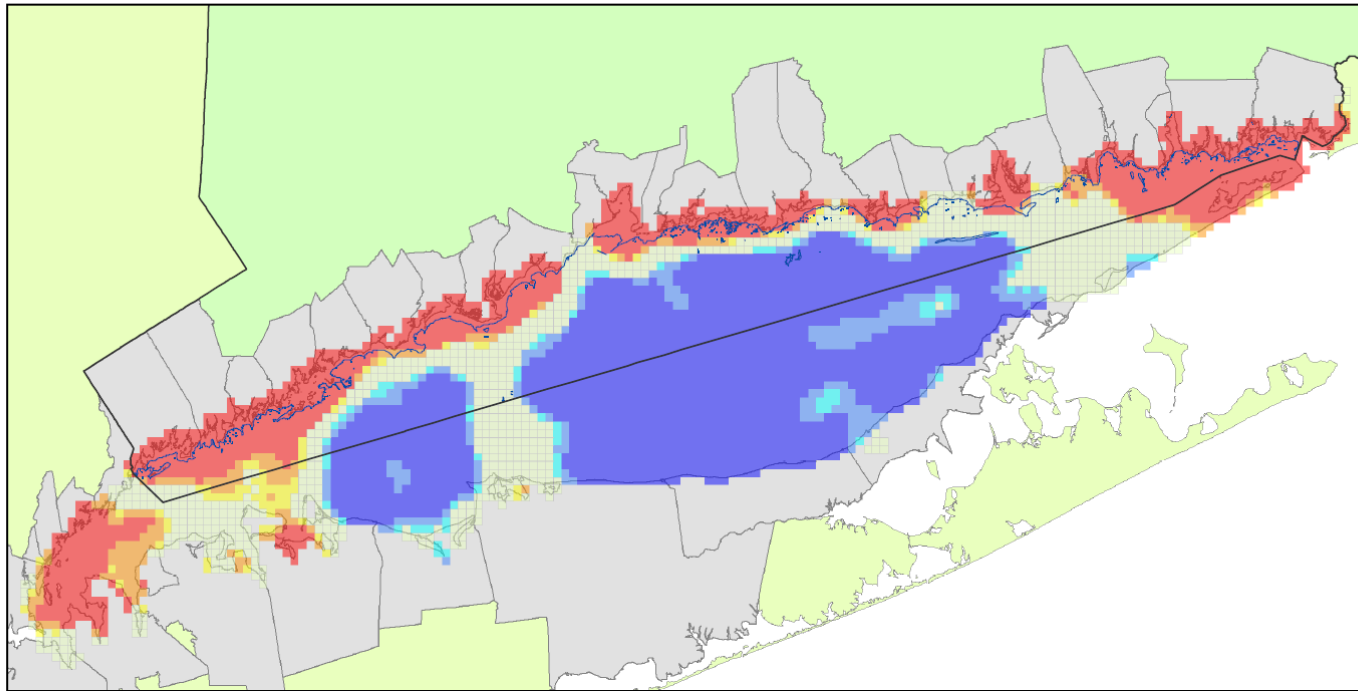
“Hot Spot” Map of all Fishing and Shellfish

Table 3a-51 Data Construction Table for “Hot Spot” of Fishing and Shellfish SHUAs

SHUA Criteria	Areas important for Fishing/Shellfishing uses
SHUA Sub-criterion Description	A way to synthesize the location data for multiple layers representing Fishing/Shellfishing Uses and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of Fishing/Shellfishing data layers in a given location.
Data Source(s)	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • CT Recreational Shellfish Beds; LIS Recreational Fishing Areas; LIS Commercial Fishing; CT Aquaculture Operations; CT Seaweed Licenses; NY Aquaculture Sites; CT Aquaculture Gear Areas; CT Natural Shellfish Beds; CT Shellfish Beds-Towns; CT Shellfish Beds-State
Data Extent	The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.
Data Adjustment and Pre-processing	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For the Fishing/Shellfishing Uses group: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product. c) For each map product, log the grid cells it intersects by entering a ‘1’ in the selected records for the appropriate map products field. d) Derive a cumulative frequency value for each grid cell (row) by adding the number of ‘1s’ from each map product (field).

Data Analysis	<p>The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.</p>
Data Classification	<p>The tool creates a standardized classification scheme that identifies:</p> <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Viewer Description	Locations where concentrations can be statistically defined and described by the number of Fishing/Shellfishing use data layers in a given location.
Additional Information	<p>CT Dept. of Energy & Environmental Protection (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Concentrations of Surface Uses



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-50 Final concentrations of surface uses and activities in LIS.

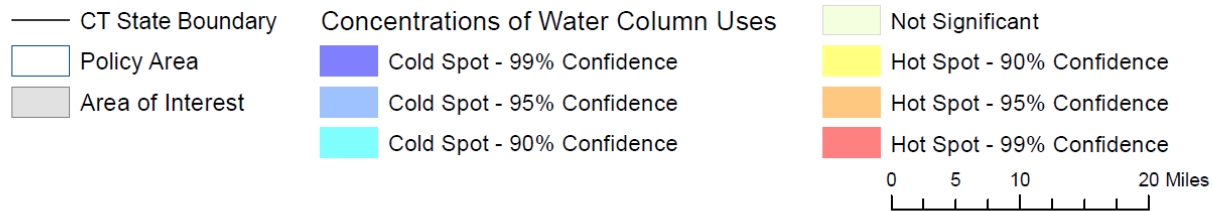
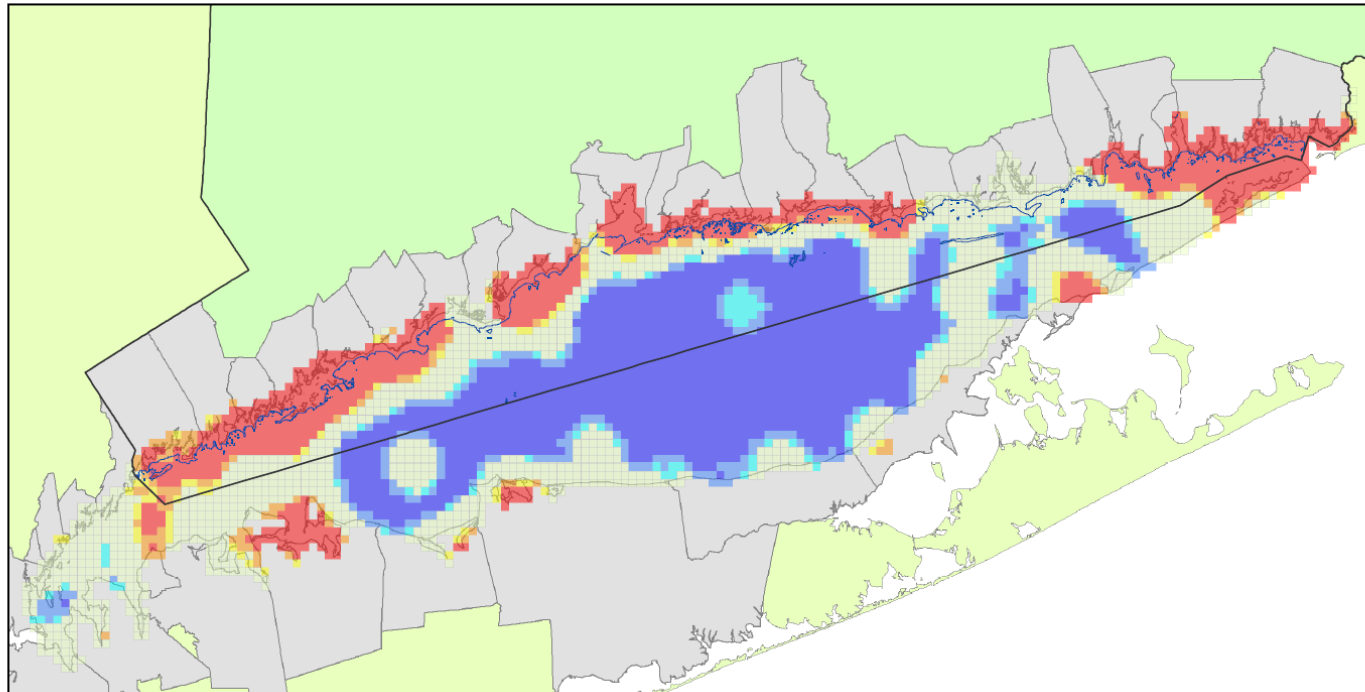
“Hot Spot” Map of all Surface Uses

Table 3a-52 Data Construction Table for “Hot Spot” Map of all Surface Use SHUAs

Description	A way to synthesize the location data for multiple layers representing human uses relevant to the surface of Long Island Sound and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of surface use data layers in a given location.
Data Source(s)	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • Lighthouses; Historic Districts; Wrecks; Open Space / Public Lands; Archaeological sites (upland); LIS Coastal Observation Sites; Water Quality Sampling; Sailing Race Routes; Sailing Race Areas; Mooring Fields; Anchorage Areas; Recreational Boater Density; Marinas and Yacht Clubs; Boat Launches; Potential Waterfowl Hunting Areas; Dive Areas; Coastal Access Sites; Individual Ocean Uses; Public Access Beaches; Water Trails; Migratory Waterfowl Concentration Areas; Working waterfronts; Fairways and Navigation Channels; Business & Commercial Dredging; Coastal Energy Facilities; Restricted Areas; Lightering Zones; Vessel Transit Lanes; LIS Recreational Fishing Activity; LIS Commercial Fishing Activity; CT Aquaculture Operations; CT Aquaculture Gear Areas; CT Seaweed Licenses; NY Aquaculture Sites; CT Shellfish beds: (Natural, Recreational, Town, State).
Data Extent	The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.
Data Adjustment and Pre-processing	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For the Surface Uses: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product. c) For each map product in the criteria group, log the grid cells it intersects by entering either ‘HCE’ ‘RQOL’, ‘NTMIC’, ‘FISH’ or a combination thereof in the selected records for the appropriate map products field.

	d) Derive a cumulative frequency value for each grid cell (row) by totaling the number of entries from each map product (field).
Data Analysis	The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.
Data Classification	The tool creates a standardized classification scheme that identifies: <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Viewer Description	Locations where concentrations can be statistically defined and described by the number of human uses relevant to the surface of Long Island Sound in a given location.
Additional Information	CT Dept. of Energy & Environmental Protection (dataset originator) Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm

Significant Human Use Area Map: Concentrations of Water Column Uses



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-51 Final concentrations of water column uses and activities in LIS.

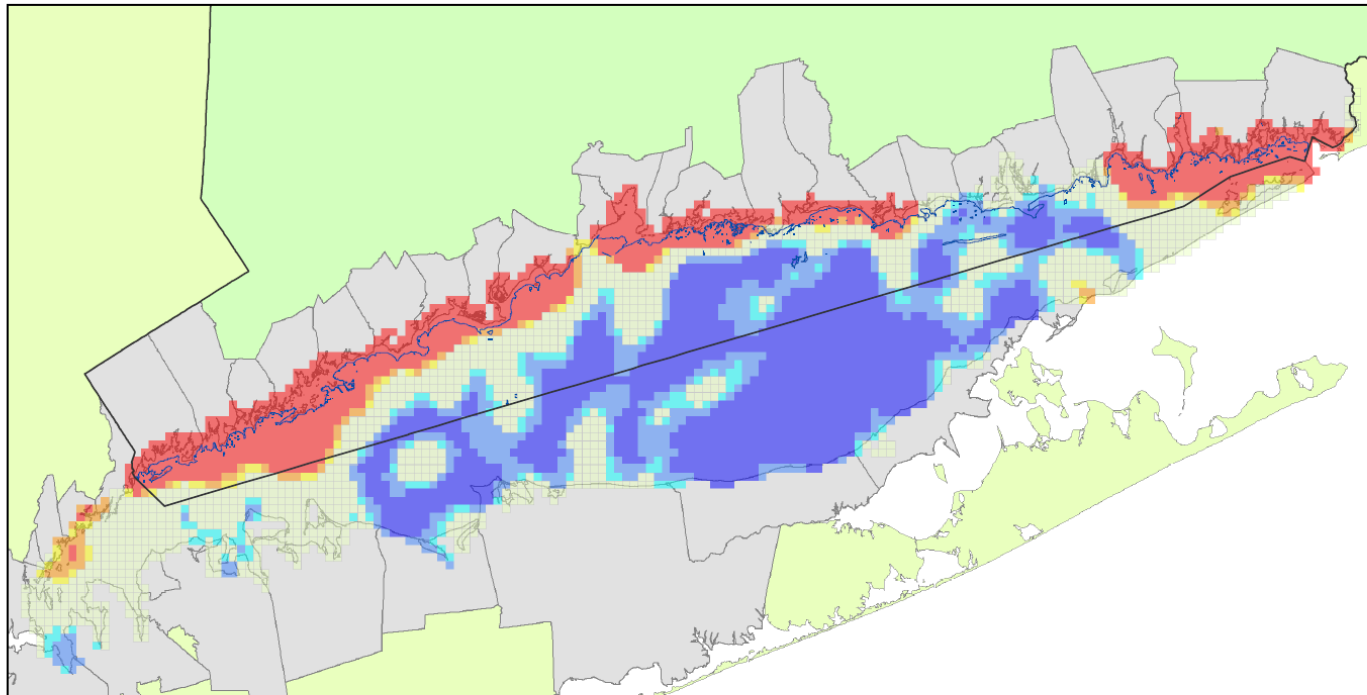
“Hot Spot” Map of all Water Column Uses

Table 3a-53 Data Construction Table for “Hot Spot” Map of all Water Column SHUAs

Description	A way to synthesize the location data for multiple layers representing human uses relevant to the Long Island Sound water column and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of water-column relevant data layers in a given location.
Data Source(s)	GIS Data layers: <ul style="list-style-type: none"> • LIS Coastal Observation Sites; Water Quality Sampling; Dive Areas; CT Aquaculture Operations, CT Aquaculture Gear Areas; CT Seaweed Licenses.
Data Extent	The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.
Data Adjustment and Pre-processing	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For the Water Column Uses: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product. c) For each map product in the criteria group, log the grid cells it intersects by entering either ‘HCE’ ‘RQOL’, ‘NTMIC’, ‘FISH’ or a combination thereof in the selected records for the appropriate map products field. d) Derive a cumulative frequency value for each grid cell (row) by totaling the number of entries from each map product (field).
Data Analysis	The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors

	<p>is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.</p>
Data Classification	<p>The tool creates a standardized classification scheme that identifies:</p> <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Viewer Description	Locations where concentrations can be statistically defined and described by the number of Long Island Sound water column relevant data layers in a given location.
Additional Information	<p>CT Dept. of Energy & Environmental Protection (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>

Significant Human Use Area Map: Concentrations of Sea-floor Uses



- | | | |
|---------------------|---------------------------------|-----------------------------|
| — CT State Boundary | Concentrations of Seafloor Uses | Not Significant |
| □ Policy Area | ■ Cold Spot - 99% Confidence | ■ Hot Spot - 90% Confidence |
| ■ Area of Interest | ■ Cold Spot - 95% Confidence | ■ Hot Spot - 95% Confidence |
| | ■ Cold Spot - 90% Confidence | ■ Hot Spot - 99% Confidence |

0 5 10 20 Miles



Map created by Connecticut Department of Energy & Environmental Protection: September, 2019 (FINAL)

Figure 3a-52 Final concentrations of bottom-land uses and activities of LIS.

“Hot Spot” Map of all Benthos and Substrate Uses

Table 3a-54 Data Construction Table for “Hot Spot” Map of all benthic and substrate (sea-floor) SHUAs

<p>Description</p>	<p>A way to synthesize the location data for multiple layers representing uses relevant to the LIS sea-bottom and present them as clusters – areas where concentrations of uses can be statistically defined and described by the number of relevant bottom use data layers in a given location.</p>
<p>Data Source(s)</p>	<p>GIS Data layers:</p> <ul style="list-style-type: none"> • GIS Data layers: CT Shellfish Beds (Recreational); CT Shellfish Beds (State Managed); CT Shellfish Beds (Town Managed); CT Shellfish Beds (Natural); CT Aquaculture Operations; Wrecks; CT Aquaculture Gear Areas; NY Aquaculture Sites; Archaeological sites (LIS); Potential submerged Holocene sites; Dive Areas; Working Waterfronts; Coastal Energy Facilities; Fairways and Navigation Channels; Underwater Cables; Open Water Disposal Sites; Business & Commercial Dredging Areas; Cable And Pipeline Areas.
<p>Data Extent</p>	<p>The Long Island Sound Blue Plan Area of Interest covering Long Island Sound.</p>
<p>Data Adjustment and Pre-processing</p>	<ol style="list-style-type: none"> 1) Break the Data Extent into a grid. Based several options and best professional judgment to balance individual units that covered both the Sound and the immediate near-shore areas, a 1km x 1km grid size was used. 2) For the LIS Bottom Uses: <ol style="list-style-type: none"> a) Overlay the grid onto the map products. b) Add column fields to the grid layer – each field reflecting each map product. c) For each map product in the criteria group, log the grid cells it intersects by entering either ‘HCE’ ‘RQOL’, ‘NTMIC’, ‘FISH’ or a combination thereof in the selected records for the appropriate map products field. d) Derive a cumulative frequency value for each grid cell (row) by totaling the number of entries from each map product (field).

Data Analysis	<p>The process applied the Optimized Getis-Ord G_i^* spatial statistics process to create statistically determined clusters based on like-frequency counts. The Hot Spot Analysis tool calculates the Getis-Ord G_i^* statistic for each feature in a dataset. The resultant z-scores and p-values tell you where features with either high or low values cluster spatially. This tool works by looking at each feature within the context of neighboring features. A feature with a high value is interesting but may not be a statistically significant hot spot. To be a statistically significant hot spot, a feature will have a high value and be surrounded by other features with high values as well. The local sum for a feature and its neighbors is compared proportionally to the sum of all features; when the local sum is very different from the expected local sum, and when that difference is too large to be the result of random chance, a statistically significant z-score results. Applying the False Discovery Rate (FDR) correction, statistical significance is adjusted to account for multiple testing and spatial dependency.</p>
Data Classification	<p>The tool creates a standardized classification scheme that identifies:</p> <ul style="list-style-type: none"> a) Areas where lots of high frequency grid cells are concentrated (hot spots) b) Areas where lots of low frequency grid cells are concentrated (cool spots) c) Areas that are neutral
Date Created	August 2019
General Data Viewer Description	Locations where concentrations can be statistically defined and described by the number of relevant Long Island Sound sea-bottom use data layers in a given location.
Additional Information	<p>CT Dept. of Energy & Environmental Protection (dataset originator)</p> <p>Blue Plan Viewer Link: http://cteco.uconn.edu/projects/blueplan/index.htm</p>