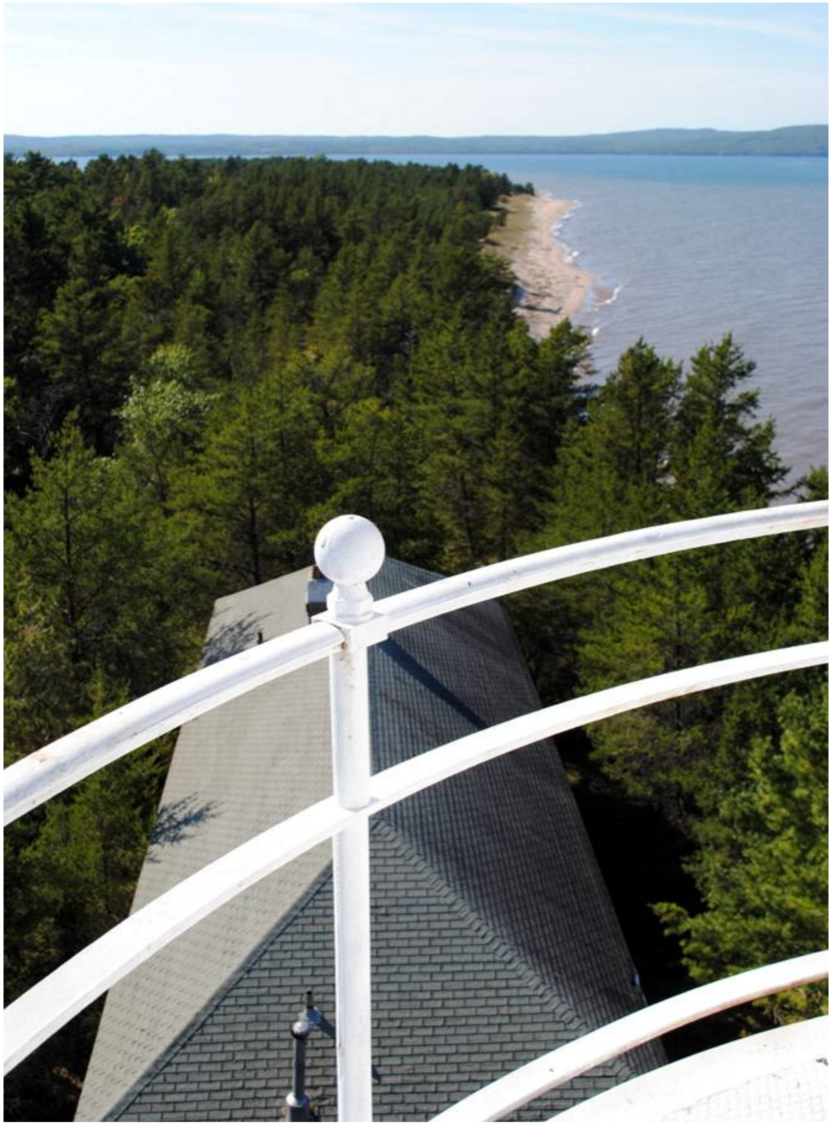
CULTURAL LANDSCAPE REPORT • HISTORIC STRUCTURE REPORT



Apostle Islands National Lakeshore – Bayfield, Wisconsin

VOLUME V OF VI: LONG ISLAND CLR/HSR

APOSTLE ISLANDS NATIONAL LAKESHORE
LIGHT STATIONS OF MICHIGAN ISLAND, OUTER ISLAND, DEVILS ISLAND,
LONG ISLAND AND SAND ISLAND

JULY 2011

CULTURAL LANDSCAPE REPORT, HISTORIC STRUCTURE REPORT AND ENVIRONMENTAL ASSESSMENT

VOLUME V

APOSTLE ISLANDS NATIONAL LAKESHORE

BAYFIELD, WISCONSIN

LIGHT STATIONS OF MICHIGAN ISLAND, OUTER ISLAND, DEVILS ISLAND, LONG ISLAND AND SAND ISLAND

JULY 2011
UNITED STATES DEPARTMENT OF THE INTERIOR

prepared for the
National Park Service

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CULTURAL LANDSCAPE REPORT AND HISTORIC STRUCTURE REPORT

LIGHT STATIONS OF MICHIGAN ISLAND, OUTER ISLAND, DEVILS ISLAND, LONG ISLAND AND SAND ISLAND

APOSTLE ISLANDS NATIONAL LAKESHORE

NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

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CHAPTER 1: INTRODUCTION

ORGANIZATION OF THE VOLUME

This volume presents the overall Light Station History, the Cultural Landscape Report (CLR), and the Historic Structure Report (HSR) for the Long Island Light Station. This document is one of six volumes that present the comprehensive CLR/HSR for five of the six light stations in Apostle Islands National Lakeshore (park or APIS). The five light stations are Michigan Island, Outer Island, Devils Island, Long Island, and Sand Island. The light station at Raspberry Island was addressed previously in a separate report.

This volume presents detailed documentation of the light station's physical evolution and historical development; an evaluation of existing conditions for its associated buildings, structures, features and vegetation; an analysis of the cultural landscape and historic structures; and the recommended treatment for the Long Island Light Station. Supplemental information applicable to all of the light stations, including Long Island, is presented in Volume I, *Introduction and Overall Development History.*

The island history is presented first, followed by the CLR and finally the HSR. Together, the combined CLR/HSR will guide the treatment of the significant resources associated with the Long Island Light Station and provide guidance for the continued management of these resources consistent with the park's General Management Plan (GMP).

STUDY AREA

Long Island is one of seven islands within the park, which includes the six light stations and Gull Island, and provides navigational aid for ships on Lake Superior. The study area encompasses the Long Island Light Station Reservation, and includes the LaPointe Light Tower site, the Original Lighthouse site and the Chequamegon Point site. The National Park Service (NPS) portion of Long Island is presently 2.1 miles-long, 0.23 wide, 297 acres, and is located at the southern edge of the park, approximately 6 miles from Bayfield, Wisconsin and 26 miles from Little Sand Bay. The island is a narrow barrier spit and faces Lake Superior to the north and Chequamegon Bay to the south. A barrier spit is an elongated sand ridge that extends generally parallel to the coast with a narrow connection to the mainland.[1] This means that what is referred to as Long Island is presently not an island, but has been part of a peninsula since the mid-1970s.

The Long Island Light Station Reservation occupies approximately 152 acres at the western end of the barrier spit. Long Island includes three sites; two of the sites are currently active with working navigational aids and one has been abandoned. The active sites are Chequamegon Point and LaPointe. Chequamegon Point is located at the west end of the island and marks the entry into Chequamegon Bay. LaPointe is located along the island's northern shore in the center of the barrier spit; and at the east end of the light station reservation. The abandoned site, known as the Original LaPointe Lighthouse is the location of the first lighthouse on the island, now a ruin, and is located approximately midway between Chequamegon Point and the LaPointe site. The navigational aids on Long Island are the southern-most navigational aids encountered when traveling south toward Ashland, marking the entrance to Chequamegon Bay.

The three sites are surrounded by red pine, hill's oak or jack pine forest; swales with sphagnum-sedge bogs; and areas of dune vegetation. The grounds consist of historic clearings, buildings, structures, features and vegetation.

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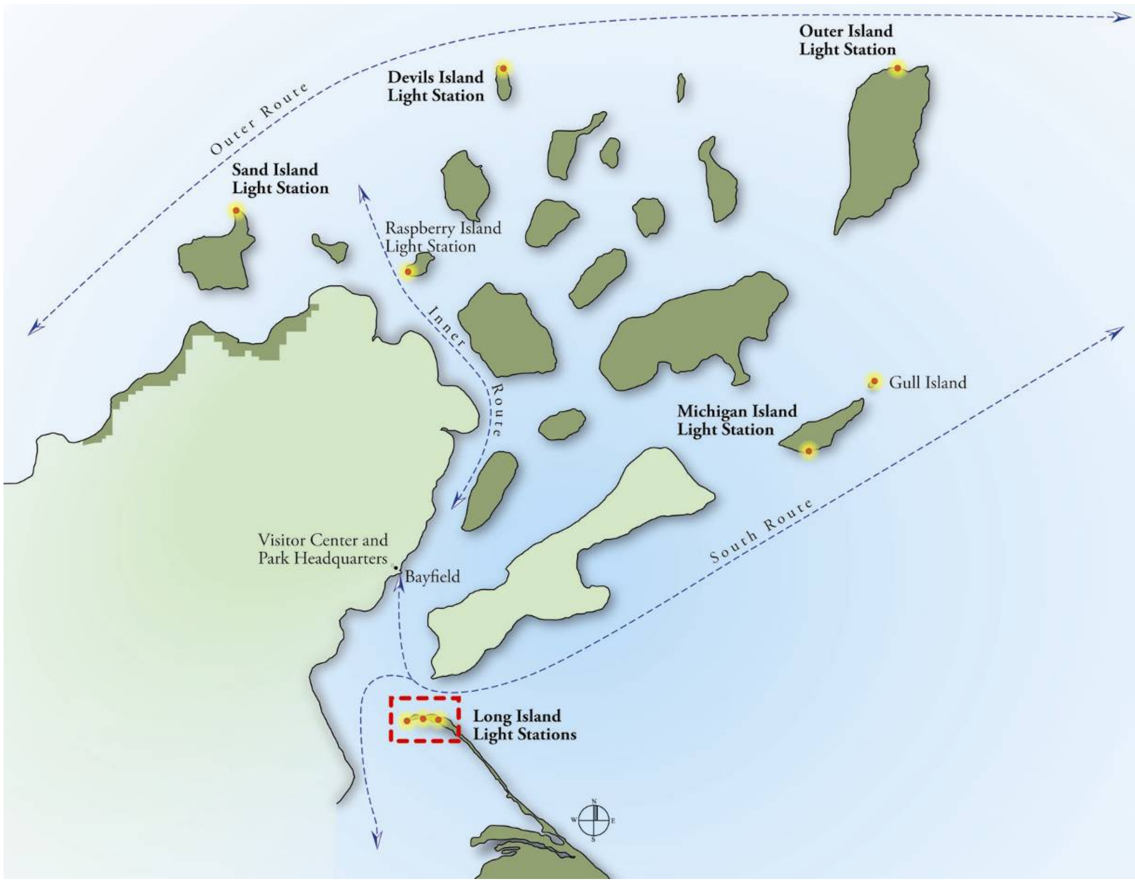
[1] *APIS GMP,* page 169

Today, the island's land use is classified as the Apostle Islands National Lakeshore under the jurisdiction of the NPS. The LaPointe Light Tower and United States Coast Guard (USCG) Culvert Tower at Chequamegon Point continue to serve as aids to navigation with two automated lights and other aids maintained by the United States Coast Guard (USCG). The NPS maintains the site and buildings, and the light station is frequented by visitors and park staff for its cultural and natural resources.



Long Island Light Station Context Map (Source: MBD 2010)

SIGNIFICANCE OF LONG ISLAND

Long Island is important to the Apostle Islands system because of its role in the initiation of the light station development in the Apostle Islands and its essential location in guiding ships into Chequamegon Bay. The history of the Long Island Light Station is intertwined with the first light station in the Apostle Islands built on Michigan Island in 1856. The period of significance for the Long Island Light Station is 1858 to 1964, beginning with the initial development of the light station and continuing until the automation of both towers. The entire 160 acres of the Long Island Light Station Reservation comprises its cultural landscape. However, the majority of its contributing features are consolidated in three sites totaling approximately two acres.

Seven contributing buildings on the List of Classified Structures include the LaPointe Light Tower, Chequamegon Point Light Tower, Triplex, Oil Building, Fog Signal Building Foundation, Original LaPointe Lighthouse Oil Building, and Original LaPointe Lighthouse ruin. Contributing features include the historic clearings, vegetation, organization of buildings and structures, concrete walks, small scale features, Original LaPointe Lighthouse ruin, and Fog Signal Building foundation.

With many of its original features intact and in good condition, the Long Light Station Reservation portrays the history of the light station as an aid to navigation. It continues to convey the development of navigational technology, the story of the people who resided at the light station and its management. Of the six Apostle Island light stations, Long Island best portrays the greatest breadth of history, range of technological advancements and various methods of light station operations and management. The Triplex building on the LaPointe site includes the only example of a 1930s Works Progress Administration (WPA) project on the Apostle Islands light stations.

TREATMENT RECOMMENDATIONS SUMMARY

The treatment recommendations for the Long Island Light Station are focused on revealing the role that the light station has had in the navigational history of the Apostle Islands, and in conveying the historical significance of the light station's cultural landscape and historic structures.

Rehabilitation has been identified as the general treatment approach for the Long Island Light Station, as it is a holistic approach that addresses the island's extant cultural resources and the relationships between those resources. This approach protects those characteristics and features that convey the island's full historical and cultural significance, while allowing for those repairs, alterations, and additions necessary for the compatible use of the island.[2]

Rehabilitation also allows for noncontributing, compatible features to remain, and for the removal or relocation of noncontributing, noncompatible features. While the overall treatment intent of the cultural landscape is one of rehabilitation many individual treatment recommendations focus on preservation of extant features. Specific treatment recommendations include the following.[3]

1) Reestablish a portion of the historic cleared area at the three sites;
2) Reestablish views from Lake Superior and Chequamegon Bay to the light station;
3) Repair circulation features, such as concrete walks;
4) Remove noncompatible features;
5) Rehabilitate the LaPointe Light Tower and Chequamegon Point Light Tower;
6) Preserve the Triplex and Oil Building.

The recommendations for treatment are comprehensive and are intended to address all aspects of the cultural landscape and historic structures. To achieve full implementation of these recommendations a phased approach for construction activities will be required. Initial actions may include basic preservation measures to protect and stabilize contributing features followed by more detailed repair measures as park resources allow.

In addition to recommendations for physical improvements, actions are proposed to provide for improved visitor access, improved efficiency of park operational and maintenance activities, and improved protection of the light station's natural systems.

[2] Page et al 1998
[3] A glossary of terms used to describe treatment recommendations is included in the appendix of this volume.

CHAPTER 2: LIGHT STATION HISTORY

LIGHT STATION HISTORY

Hastily constructed at minimal cost, the first light station at Long Island was completed in 1858 to aid navigation in the South Channel through the Apostle Islands, particularly in the waters around Madeline Island. In 1851, Wisconsin Senator Orasmus Cole, lobbied for a light house at La Pointe on Madeline Island. Lighthouse District Engineer Captain Lorenzo Sitgreaves recommended a site on Long Island, where the light would be visible to ships as they approached the South Channel from the lake. Congress appropriated the requested $5,000 and the Lighthouse Board secured a 152-acre lighthouse reservation for the station on April 28, 1853.[4]

The selected contractors, Sweet, Ransom and Smith of Milwaukee, prepared to build the lighthouse on Long Island. When their work crew arrived, it was redirected by local lighthouse board representative, Abraham Smolk, to Michigan Island. The crew built a lighthouse on Michigan Island, only to find out later that the Michigan Island location had not been authorized by Captain Sitgreaves.

The contractors protested the Captain's rejection of the Michigan Island Lighthouse. The contractors resisted the Captain's insistence that they build on Long Island, but they eventually acquiesced and hastily constructed a wood framed, one-and-a-half story lighthouse on Long Island. The building had a 35-foot tall square wood tower that rose from the roof of the lighthouse. The light was fitted with a fourth order Fresnel lens manufactured by Saulter and Company. Although cheaply constructed with a minimal foundation, the lighthouse survived 38 years as an active lighthouse and 41 years as a dwelling.

The Lighthouse Board made various attempts to improve the building. After only five years the exposed foundation had been compromised by the Island's shifting sands, requiring additional foundation work. In 1869, crushed stone from Raspberry Island was placed around the building foundation. A much more ambitious project in 1896 lifted the entire building onto a new first story of brick and reconfigured the residence into a duplex. A permanent assistant keeper was hired thereafter. Amazingly, the light remained lit throughout the project.

Upon a request in 1887 from the influential Cleveland Vessel Owner's Association, the Lighthouse Board obtained an appropriation from Congress to install a fog signal on Long Island. The Fog Signal Building was constructed in 1890. It was located about three-quarters of a mile to the east of the Lighthouse. The Fog Signal Building measured 22' x 40'. It had a brick foundation, a 40' tall brick chimney and corrugated metal walls and roof. The building had two ten-inch steam whistles powered by coal fired boilers. The whistle first blew on January 3, 1891.

The Lighthouse Board quickly followed the fog signal project with requests for new light towers. Changing shipping routes and increasing traffic required a taller light and additional navigational aids. The Board made plans to replace the diminutive tower with lights to the east and at the west end of the island. (In this text, the eastern light is called the LaPointe Tower LCS ID 101643 and the west end light is called the Chequamegon Point Tower LCS ID 101656.)

The Lighthouse Board's first request for $10,000 for the two new lights in 1890 was unsuccessful. The Board annually repeated this request until Congress finally authorized the expenses on March 2, 1895. Since the western tower was not within the previously established lighthouse reservation, the United States purchased Chequamegon Point at the west end of the island in 1895. Joseph LeBel received $600 for 1.8

[4] Copy of map from a Lighthouse Board Report on file at Apostle Islands National Lakeshore offices.

acres of his land on the point and for a ten-foot wide right-of-way to install a walk between Chequamegon Point and the existing lighthouse.

Construction began in 1896. Joseph Sexton was the keeper on Long Island from 1889 to 1921. His lighthouse keepers log entry states that a construction foreman arrived on July 15, 1896, with a work party.[5] Work ensued throughout the summer on the two new towers and on remodeling the old station until the project ran out of money, and construction ended for that year. Congress appropriated an additional $1,500 on July 14, 1897, and the newly funded work crew returned in August. In the meantime, the keeper had been very busy building wood walks, presumably from the house to the fog signal building and the two towers.

The keeper also helped with construction. On August 31, 1897, he expanded on an earlier comment in the log about what hard work it was to build the towers. On that day he had helped hoist two of the cast iron lantern deck plates from the ground to the top of the LaPointe Tower. He wrote that each deck piece weighed 1,100 pounds.

The 67-foot tall LaPointe Tower was very similar in design to other skeletal iron towers on Lake Superior, such as the Duluth Harbor South Breakwater Inner Light (constructed 1891), the Manitou Harbor Light (1861) and the Plum Island Rear Range Light (1897) on Lake Michigan. The LaPointe Tower cylinder is a set of cast iron sections bolted together. It is supported by a skeletal framework made of cast iron with bell and spigot or pinned connections.[6] The tower parts were cast by Chamblin S. Scott of Richmond, Virginia and cost $3,912.[7] The skeleton was erected on four concrete anchoring pads. A fourth order Fresnel lens made by the Henri Le Paute Company of France shone from the tower. A metal Oil Building (LCS ID 101648) is located close to the LaPointe Tower and was constructed during the 1896-1897 work seasons.

The Chequamegon Point Tower, a 42-foot tall pyramidal skeletal tower, was placed on concrete piers. A central shaft encased weights that originally drove the clock mechanism to turn the lens. Most of the tower is steel. The tower and the shaft were cast by the Fulton Iron and Engine Works of Detroit, Michigan for $862. The Chequamegon Point Tower also had a “Stevens Improved Bronze Fog Bell Striking Machine” that struck a fog bell once every 20 seconds. The bell measured 30” x 40” and weighed 1,200 pounds. (The bell is now on the grounds of the Madeline Island Historical Museum.) The Chequamegon Light was visible for 16 miles, a major improvement over the old lighthouse that at best could be seen 12 miles away. It is similar to the Grand Marais Harbor Inner Range Light built in 1898, and the Grand Marais Light (built 1922 to replace an 1885 light).

The work on both towers was finally completed in October. On October 11, 1897, the construction superintendent moved the Fresnel lens from the original lighthouse to the Chequamegon Point Tower and lit both towers for the first time.

While the light towers were under construction, workers remodeled the old lighthouse into a duplex and constructed a new boat dock on the north side of the island. Apparently the results at the house were not quite so efficient or satisfactory as they were for the two light towers. The masonry work was finished by October 31, but as the keeper went about finishing the interior, he noted in his log on November 5, “What a house. No closets or a good pantry…” Later comments described holes in the floor that you could lose a cat through and new plaster falling from the ceiling. The demands of operating two towers and a fog signal

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5 The log refers to the foreman, who also oversaw construction of the fog signal building in 1890, with a variety of creative spellings. The first name might have been Morris or Maurice and the surname was some version of Lozo, Logo, Lauzon, Louson or Louzon.

6 Tower construction data provided by Martin and Martin Structural Engineers, Lakewood. November 2009.

7 Williams, Judith B. “The Cultural History of Long Island, Wisconsin.” Manuscript on file at the Apostle Islands National Lakeshore. 1995. Page 41.

led to a new position for a second assistant keeper. The duplex was remodeled into a triplex in 1909 and subsequent changes were made in 1914.

Numerous outbuildings were built around the old house. Many were removed, including a barn and chicken coop that were torn down in 1899, sheds, a smoke house, an ice house, two privies, a root cellar and a coal shed.[8] Docks were located on the south side of the island, but no evidence of them remains. A brick oil storage house remains intact.

With the completion of the two towers, the Light Station stretched more than a mile across Long Island. The two light towers were a little more than a mile apart and the keepers quarters were located in between. The route of the walk was realigned to provide a more direct route and the property owner, Joseph LeBel, again agreed to a new right of way for the walks. In 1909, the Lighthouse Board approved use of concrete slab walks.

The keepers used many contrivances to overcome the distance between the lights. Dick Carrier, a former light keeper now residing in Bayfield, remembered there was a telephone system signal that would be sent from the Triplex to Chequamegon Point Tower to turn on the Fog Signal at one point in time. Carrier also reported that bicycles were used on the concrete paths.[9]

The walkways may have been the most formal landscaping features of the Long Island Light Station. Lighthouse Keeper Joseph Sexton planted a garden with potatoes and kept a cow and chickens, although he had to build cribs to protect his garden from the shifting shoreline. Other keepers did not have Sexton's green thumb. Lighthouse keeper, Ben Hudak, who served at Long Island in the 1930s, recalled in an oral history interview that they could not have a garden or plant anything on the island, mostly because of the sandy soil. He noted that wild blueberries and cranberries grew there.[10] The light keepers left other marks on the area. In the July 1897 log the keeper reported he chopped the timber down across the point to get the wind to drive the flies away "...for they are very bad".

The dynamic shoreline caused problems for the station. In 1902 the dock was repaired and extended and the water supply intake for the fog signal was rebuilt to reduce silt build up. In 1911 work crews installed three 32-foot long log cribs filled with crushed stone along the northwest side of the point to protect the Chequamegon Point Tower footings.

New technologies came to Long Island in the 1920s and the 1930s. A diesel engine-driven air diaphone system replaced the old steam powered fog signal whistle in 1925.[11] This was the first air diaphone to be installed in the Apostle Islands. A radio beacon went into commission in October of 1927. The fog signal and beacon were synchronized in 1931. An electric battery-operated lamp (bulb) was installed in the LaPointe Tower in time for the winter of 1934-35. A radio system was installed in September, 1936.[12] Electric lamps were put into commission on both towers on August 3, 1937.

Even with conversions to electricity in the 1930s, the idea of an unmanned station had not taken root by 1938, when a new triplex was constructed to replace the old keepers quarters. A New Deal Public Works Administration Project, the Triplex (LCS ID 101647) was located next to the LaPointe Tower. The plans on file at the Apostle Islands National Lakeshore offices illustrate that the triplex was constructed true to the

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[8] Williams, Judith B. "The Cultural History of Long Island, Wisconsin." Manuscript on file at the Apostle Islands National Lakeshore. 1995. Page 46.
[9] Personal communication from Doug Pratt of the Apostle Islands National Lakeshore staff, February 2010.
[10] Hudak, Ben. Oral History transcription. Interviewed on July 24,1979.
[11] New compressors replaced the old equipment in 1948.
[12] Williams, Judith B. "The Cultural History of Long Island, Wisconsin." Manuscript on file at the Apostle Islands National Lakeshore. 1995. Page 58.

original design and included central water and a water purification system. Each unit had central plumbing and heating.

The keeper's log indicates that a Mr. Ellwell and his helpers arrived on August 9, 1938, and surveyed the building site for the Triplex. On August 31, concrete blocks and cement sacks were unloaded from the lighthouse tender and the crew sank a well. By October 29 there were shingles on the roof. A Mr. Murphy was the contractor. The crews returned in May of 1939 and worked all summer on the project. In the Triplex, Unit C was located at the west end of the building and was the keeper's quarters, while the other two units were for the assistant keepers. On September 1 the keeper moved his furniture into the building, but it does not appear he took up full residence there until the next year when they moved supplies from the old to the new building in June. The Triplex was constructed for about $22,000.

The United States Coast Guard (USCG) assumed responsibility for the lighthouses in 1939. They inherited the almost-completed Triplex project. A boathouse and dock located to the north of the new Triplex were also shown in the 1938 drawings. It appears the boathouse was not completed until 1941.[13] The Light Station was manned until 1964, when the USCG installed automated lights in both towers. A 300 millimeter optic airport beacon replaced the lens in the LaPointe Tower.

Sometime after 1984 the USCG tore down the Fog Signal Building. The foundation remains. The USCG may also have taken down the radio beacon that year.

A 1986 act of Congress added Long Island to the Apostle Islands National Lakeshore. The act also transferred any federal property located within the boundaries of the lakeshore from the USCG to the administrative jurisdiction of the Secretary of the Interior.

In 1987 the USCG attempted to move the Chequamegon Point Tower back from the eroding shoreline. The USCG employed a helicopter with the plan to lift and move the tower back. In the process, the Lighthouse was dragged across the ground, damaging its legs, struts and walkway. The new location has protected the Lighthouse from shoreline erosion. The damage to the structure has been partially repaired. Between 2006 and 2008 the National Park Service hired Nelson Construction of La Pointe, Wisconsin, to straighten and repair the bent legs and to place the tower on new concrete footings. The NPS Historic Structure Preservation Team installed new glass in the Lantern Room.

More work is anticipated as funding becomes available. Future plans include working with the USCG to have the navigation light removed from modern USCG Tower and placed back in the Chequamegon Point Tower, and removing the USCG modern tube/upright culvert tower.

Today's visitor to Long Island sees the two standing lighthouses, an Oil Building, the foundation of the Fog Signal Building and the existing Triplex. With a little exploring the remains of the old residence and associated buildings are also visible. A large amount of data about the original wood lighthouse exists in what are now considered historical archeological remains on Long Island. As the archeological survey of Long Island determined in 1988, and the archives further substantiate, the original wood lighthouse located between the LaPointe Tower and the Chequamegon Point Tower offers unique and potentially very productive opportunities for archeological research that would complement the historical information and interpretation provided in the extant structures. The standing structures and the archeological remains combine to tell the whole story.

[13] Williams, Judith B. "The Cultural History of Long Island, Wisconsin." Manuscript on file at the Apostle Islands National Lakeshore. 1995. Page 61.

HISTORIC EVIDENCE

The historic photos date back to before 1895 and show the original LaPointe tower and quarters, the duplex quarters and an assumed second assistant keepers quarters, the fog signal building, and a dock. For more detailed descriptions of the photos, see the CLR and each building's Chronology of Alterations and Use in the HSR.

There are original construction drawings of the existing LaPointe Light Tower, the Chequamegon Point Tower, and the Triplex. The 1895 LaPointe Light Tower drawing shows a detail of the skeletal supports. (HSR Historic Drawing LI-01) The 1896 drawing of the overall and the drawing of the details of the Chequamegon Point Tower fog signal bell show how and what the bell looked like at the time of installation. (HSR Historic Drawing LI-02 and 03) The 1938 construction set for the Triplex show the details, materials, and overall proposed appearance and layout for the building. (HSR Historic Drawings LI-04 to 12) Other historic drawings depict a wood shed that was built in 1914 (concrete piers with 2x10 wood flooring, two double-hung windows each with two- over two-lites, and a wood five panel, raised, door) (HSR Historic Drawing LI-13) and a coal house that was built in 1927(HSR Historic Drawing LI-14); both buildings are no longer extant.

OVERVIEW OF DEVELOPMENT AND USE

Date	Work Described
1852	Congress authorizes construction of 1st lighthouse in the Apostle Islands originally to be built at LaPointe Harbor on Madeline Island; the proposed location was then moved to Long Island (J. Busch, 2008)
1853	The Lighthouse Board secured a 152-acre lighthouse reservation from Joseph LeBel on Long Island(1853 Drawing with Reservation Boundary)
1858	Original LaPointe Lighthouse was constructed on Long Island and placed into service, wood frame construction with a 35' tower (Historic Photo, 1908, APIS IID4g) One outbuilding was initially constructed, set to the south behind the Lighthouse. Areas to the west of the building were cleared and fenced (Historic Photo, pre-1896, APIS IID4g) Additional outbuildings were added during this period including two privies, an oil house, coal shed, and root cellar; a dock and boathouse were constructed on the south side of the island with a walk/path that led to the Lighthouse (1887 Drawing, Updated in 1931)
Annual Report of 1867	"*La Pointe*. – At this station the shifting of the sand, under the action of the wind, has caused great annoyance, and in order to protect the foundation of the buildings considerable expense has been incurred. The effectual remedy is to cover the surface for a little distance on each side of the buildings with stone, which must be carried there from Raspberry island. This will be done during the next season." ("1867 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
Annual Report of 1869	"*La Pointe*. – The stone for preventing the shifting of the sand around the light-house has been broken up and distributed, and has, thus far, proved effectual. Simultaneously with relighting Michigan Island, the light at La Pointe was changed from white to red." ("1869 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
1875, June 13	"Mr. Charles Dobson arrived with his party to make repairs at this station 6 men in all." Unknown what repairs were made. (John D. Angus, LI (LaPointe) Log,1872-1943)
Annual Report of 1890	*"Chequamegon light and fog-signal. Lake Superior, Wisconsin*. – A light on the east side of the entrance to Chequamegon Bay has been in service since 1858, and the act of October 1, 1888, authorized a fog-signal at a cost of $5,000, and on March 2, 1889, an appropriation was made therefor. This additional aid is much needed. In order, however, to fully meet the requirements of this situation, further improvements are needed. The present light is not clear enough to the inner point to serve as a good guide to clear it, and it is too far from the course of vessels outside to be of the best advantage. The fog-signal should be on the outer beach, about 1-mile east of the present light, and if so established the light also should be

Date	Work Described
	moved to the same location. To mark the inner point towards Houghton a small harbor light and fog bell struck by machinery will meet all requirements. The expenditures necessary are estimated as follows: For removing and rebuilding the main light =$7,500 For the harbor light and bell =2,500 Total estimated cost =10,000 The Board recommends that an appropriation of $10,000 be made therefor." Request repeated for the next two annual reports. ("1890 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
1891	Fog Signal Building, landing crib and water supply well-constructed at a site east of original Lighthouse and placed into service in 1891 (J. Busch, 2008) "La Pointe, Lake Superior, Wisconsin. - The building of this steam fog signal was begun early in October and completed in January 1891. The signal stands about three-fourths of a mile eastward of the light." ("1891Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
Annual Report of 1893 (Chequamegon Point)	*"Chequamegon Light and Fog Signal, Lake Superior, Wisconsin.* - The removing and rebuilding of the main light and the establishment of a harbor light and bell, at a cost not to exceed $10,000, were authorized by the act approved February 15, 1893, but no appropriation therefor has yet been made. The Board recommends that the amount named be appropriated." ("1893 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
1895	Land purchased from LaBel for Light Tower at Chequamegon Point (J. Busch, 2008) *"Chequamegon light and fog signal, Lake Superior, Wisconsin.* – The act approved March 2, 1895, provided $10,000 for moving and rebuilding the main La Pointe light and establishing a harbor bell and light at or near Chequamegon Point. Negotiations for the purchase of a site at the extreme point are in progress." ("1895 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
1896	July 16: "Commenced to raise house." This is the original tower and quarters that were renovated into the duplex structure. Oct 31: "The towers and house is incomplete and lots of work to be done yet. Brought the lens for beacon from Bayfield." (Joseph Sexton, LI (LaPointe) Log,1872-1943)
1897	Original Lighthouse, now used for Keepers Quarters, lifted to a 1-story brick foundation, remodeled to serve as duplex quarters for Keeper and Assistant (Historic Photo, 1904, APIS IID4g) -Towers under construction: Oct 7: "Cleaned bell works at point and put up curtains crossways." Oct 10: Moved lens from "house to point tower," "The lens is badly scratched with emery paper the plate glass is the same." Oct 11: "Lit light in both tower October 11th 1897…" Oct 25: "Boated iron to the signal and boated shingles from signal to house." Easier to transport materials via water than land. Nov 8: "Moved out of the wood shed and cleaned it out for the men to go into for winter quarters. Built a storm shed in front of the tower." Work men stayed on island through winter. (Joseph Sexton, LI (LaPointe) Log,1872-1943) -Outbuildings built, including sheds, coal shed, ice house, two privies and a root cellar (J. Williams, 1995)
Annual Report of 1897	"La Pointe, Lake Superior, Wisconsin. – The house was enlarged sufficiently for the accommodation of two keepers by raising the building and placing under it a brick basement. The rooms were rearranged to make two separate dwellings. A 60-foot skeleton metal tower was purchased under contract. Concrete foundations were placed, and the tower was erected as far as the level of the main deck. A brick oil house was built. Various repairs were made." ("1897 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
1897-1942	Documented painting of the exterior of buildings 26 times; including at times the following buildings: LaPointe Light Tower, specifically mentioned regularly as being painted white

Date	Work Described
	with black trim, railings, and decks (in 1931, it was mentioned that six gallons of white paint were used to paint the Tower); Chequamegon Point Lighthouse, specifically mentioned regularly as painted black on the Watch Room and Lantern sections and white on the legs (in 1900, it was mentioned that the windows were painted white and brown); Oil Building, specifically mentioned that it was first painted, not whitewashed, in 1931, when the whitewash was removed and trim was applied (in 1938, it was mentioned that the building was trimmed with white); and the Triplex's window frames, window screens and door frames were painted in 1938 and 1939. (LI (LaPointe) Log,1872-1943)
1898, Oct 7	"Put up storm house in front of tower." Annual occurrence for both the LaPointe Tower and Chequamegon Point Tower (Joseph Sexton, LI (LaPointe) Log,1872-1943)
Annual Report of 1898	"La Pointe, Lake Superior, Wisconsin. – In October the light was moved from the old tower to the new one at Chequamegon Point. The old lantern and tower were taken down and the roof was boarded and shingled where the tower was removed. Sewers from both sides of the dwelling to the lake were laid, a drive well was put down in the rear of the dwelling, and walk were laid down from the dock to and around three sides of the dwelling. The old shop was removed to the rear of the house and converted into a wood shed. The boathouse was moved from the south to the north side, two cribs were constructed for the boat and landing, and were sunk in position and filled with ballast stone, and boat ways were built. The fourth-order light shown from the tower of the keeper's dwelling, was discontinued on October 11, 1897, and the light was established in the skeleton iron structure built near the fog signal house." ("1898 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
Annual Report of 1899 (Chequamegon Point)	"*Chequamegon Point, Lake Superior*. – The work of moving and rebuilding the main La Pointe tower, and establishing a harbor light and fog bell at Chequamegon Point was finished. A fixed red fourth-order light as a fog bell were on October 11, 1897, established in the structure erected at the extreme end of Chequamegon Point." ("1899 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920)
1901, June 27	"Worked at fog & tower putting on collar on one of the cracked legs." LaPointe Tower has cracked leg. (Joseph Sexton, LI (LaPointe) Log,1872-1943)
1906-1932	Documented whitewash of Oil Building two times (1906 and 1932); in 1931, whitewash was removed from the building. (LI (LaPointe) Log,1872-1943)
1909	May 27: "Lightning struck the tower at the fog signal & put out the light 9:10 P.M. & tore up the slab walk some for about 300 feet and run around the signal." Oct 24: "Steamer 'Amaranth' arrived 8:30 A.M. & landed lightning rod for tower." Nov 22: "Worked at the white light putting on the lightning rod on the tower. Sunk in 8 feet in the sand." (Joseph Sexton, LI (LaPointe) Log,1872-1943) -LaPointe duplex remodeled into three apartments (J. Busch, 2008)
1910-1942	Documented painting of the interior of buildings 16 times; including at times the following buildings: LaPointe Light Tower, specifically mentioned the stair, floors, and Lantern (in 1936, painted "metallic brown" in Tower); Chequamegon Point Lighthouse, specifically mentioned floors, Lantern, and Watch Room; Oil Building's floor; and the Triplex's Unit C's cellar stair. (LI (LaPointe) Log,1872-1943)
1913, July 26	"At 11:45 A.M. had a heavy thunder shower & lightning struck the house and tore up the cement walk and went in the cellar and broke some fruit jars & upset some." (Keeper, LI (LaPointe) Log,1872-1943)
1918, July 27	"There has been landed today a fog bell outfit to be installed soon." This is an electric bell, as seen in references made in September and November in regards to making space for its equipment in the Fog Signal Building as well as "stringing" wires for electrician. (Keeper, LI (LaPointe) Log,1872-1943)
1923-1938	Documented painting of the roof of the Oil Building five times. (LI (LaPointe) Log,1872-1943)
1925	First air diaphone in the Apostle Islands installed (J. Busch, 2008) May 18: "Tested out the new air diaphone installed at this station today." (Keeper, LI (LaPointe) Log,1872-1943)
1927	Radio beacon installed (*Bayfield County Press*, Oct 20, 1927)

Date	Work Described
	Oct 26: "Assisting Millar in installing radio beacon apparatus, etc." (Keeper, LI (LaPointe) Log,1872-1943)
1929, July 5	"… filling in sand at bottom, Chequamegon Point Light Tower." (Keeper, LI (LaPointe) Log,1872-1943)
1931	Radio beacon synchronized with fog signal at LaPointe Light Tower, Oct 15: "Testing out the new device for synchronizing radio & sound signals." (Keeper, LI (LaPointe) Log,1872-1943)
1934	Winter Light installed in LaPointe Light Tower, Sept 20: "Received from the Keeper of Devils Island Lightstation, parts for the winter light to be installed at this station." (Keeper, LI (LaPointe) Log,1872-1943)
1936	Radio system installed at LaPointe Light Tower (N. Howk, Jan 2010)
1937	Chequamegon Point Tower and LaPointe Light Tower converted to electricity, Aug 3: "The electric lights at La Pointe & Chequamegon Point in commission at sunset this evening." (Keeper, LI (LaPointe) Log,1872-1943)
1938	Triplex constructed, replacing previous quarters (LCS, 2009) June 29: "Made excavation on point directed in Letter for Office west of fog signal building. An offset stake was driven in the ground 10 feet from the east corner of proposed first dwelling to be erected." Oct 29: "Took pictures of new dwelling to show shingles laid on roof, etc."
1939	June 6: "Made out final report on new dwelling, P.W.A. project No. 101." June 30: "Last day of the Light House Service today. Will join the U.S. Coast Guard tomorrow." Documented varnishing of floors one time in the Triplex, soon after it was constructed. (Keeper, LI (LaPointe) Log,1872-1943)
c. 1940	LaBel Fish Camp Building on southwest portion of Island still in place (Historic Photo, APIS Archives, IID4g, 1468 #16, DSC01227.JPG)
1941, August	Aug 19: "Repaired windows in old dwelling." Both quarters still remain and are being kept up. Aug 29: "Dwelling leaks in all quarters around windows, doors and vent pipes." Triplex had early moisture infiltration problems. (Keeper, LI (LaPointe) Log,1872-1943)
1964	Fourth Order Fresnel lens replaced with 300mm optic in LaPointe Light Tower (J. Busch, 2008)
1965	Light stations unmanned
1970	Apostle Islands National Lakeshore authorized
c. 1984	USCG removes Fog Signal Building from LaPointe Light Station (Historic Photos, APIS Archives, 1987 Photos)
1986	Congress authorizes addition of Long Island to the Apostle Islands National Lakeshore (N. Howk, Jan 2010)
1987	Chequamegon Point Tower light replaced by navigational beacon, bell removed, and the Tower was moved 100' from original site by the USCG (LCS, 2009)
1988	Triplex ReRoofed with Asphalt Shingles (HSPT Reports, 2009)

CHAPTER 3: CULTURAL LANDSCAPE REPORT

LONG ISLAND EXISTING CONDITIONS

Introduction

The cultural landscape of the Long Island Light Station is a composition of features that remain from its development over the last 153 years as a light station and aid to navigation. As one of six light stations in the Apostle Islands, the Long Island Light Station played an important role in the initiation and development of the system. The intent of the Cultural Landscape Report (CLR), in conjunction with the Historic Structures Report (HSR) is to guide treatment and use of the aboveground resources associated with the light station. The CLR provides park managers with a comprehensive understanding of the physical evolution of the cultural landscape and provides guidance for its management.

The CLR was conducted at a thorough level of research, investigation and documentation. This level of research uses select documentation of known and presumed relevance, including primary and secondary sources that are readily available. The periods of landscape change are described using narrative text, historic photographs and annotated historic drawings and maps. Archeological investigations are not included.[14] A more detailed description of the CLR methodology is presented in Volume I, Chapter 2: *Methodology*.

The light station reservation is the land initially set aside for development of the light station. On Long Island three sites have been developed for navigational aids. These three sites are referred to in the CLR as the LaPointe site, the Original LaPointe Lighthouse site and the Chequamegon Point site. In total these are referred to as the Long Island Light Station.

The CLR begins with a description of the site development of the Long Island Light Station that documents the physical changes that have occurred on the light station reservation and light station sites. The site development is presented by the six periods of landscape change.

The second section presents the existing condition and analysis of the cultural landscape. This section is organized by cultural landscape characteristics. In September 2009, field investigations were conducted to document the existing condition of the cultural landscape characteristics: spatial organization, topography, views and vistas, circulation, buildings, structures, small scale features and vegetation. The documentation of the island's existing condition is illustrated by existing condition plans, diagrams and photographs that document its cultural landscape.

The analysis compares the island's history with its existing condition, and identifies those landscape characteristics that retain integrity and contribute to the significance and integrity of the Long Island Light Station.

The existing condition and period plans were created in AutoCAD using a variety of sources including: historic and current maps and photographs provided by the NPS APIS Archives, field investigations conducted in September 2009, and additional information provided by park staff.

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[14] Page et al. 1998.

SITE DEVELOPMENT

A period of significance of 1852 to 1972 is recommended for the light stations of the Apostle Islands as a whole. This timeframe recognizes the role of the light stations at each island as part of a connected system of navigational aids for Lake Superior. The beginning date is the first act of Congress authorizing construction of the first lighthouse in the Apostle Islands in 1852. The period of significance for the Long Island Light Station begins with the construction of the Original LaPointe Lighthouse in 1858, and ends with the automation of the LaPointe Light Tower in 1964. Six periods of landscape change document the evolution of the Long Island Light Station cultural landscape. Of these, three periods are within the Long Island Light Station's period of significance; these periods are noted by italics.

- Pre-Lighthouse (1852 – 1857)
- *Original LaPointe Lighthouse (1858 – 1889)*
- *Light Towers (1890 – 1938)*
- *Triplex/Coast Guard (1939 – 1964)*
- Automated Light (1965 – 1985)
- National Park Service Period (1986 to present)

The beginning and end of each period of landscape change corresponds to major physical changes related to the site's use, technological advances, and/or governmental control of the island. The periods consider the social history of the island, however physical change in the cultural landscape is the primary rationale in defining the beginning and end of each period.

Brief narrative text, graphic illustrations (where applicable), and historic maps and photographs where available, describe each period of landscape change. Additional information regarding the period of significance for the Apostle Islands light stations is presented in Volume I, Chapter 3: *Context, Current Designations, and Park Significance.*

Pre-Lighthouse (1852 – 1857)

In 1852 Congress authorized the construction of the first lighthouse in the Apostle Islands, intended to be built at La Pointe Harbor on Madeline Island.[15] In 1853, the location was revised to Long Island and the Lighthouse Board secured a 152-acre lighthouse reservation tract, purchasing the land from Joseph LeBel.[16] Before construction began the location was again revised, and the first lighthouse was eventually built on Michigan Island in 1856. There were no physical improvements related to the Long Island light station built during this period.

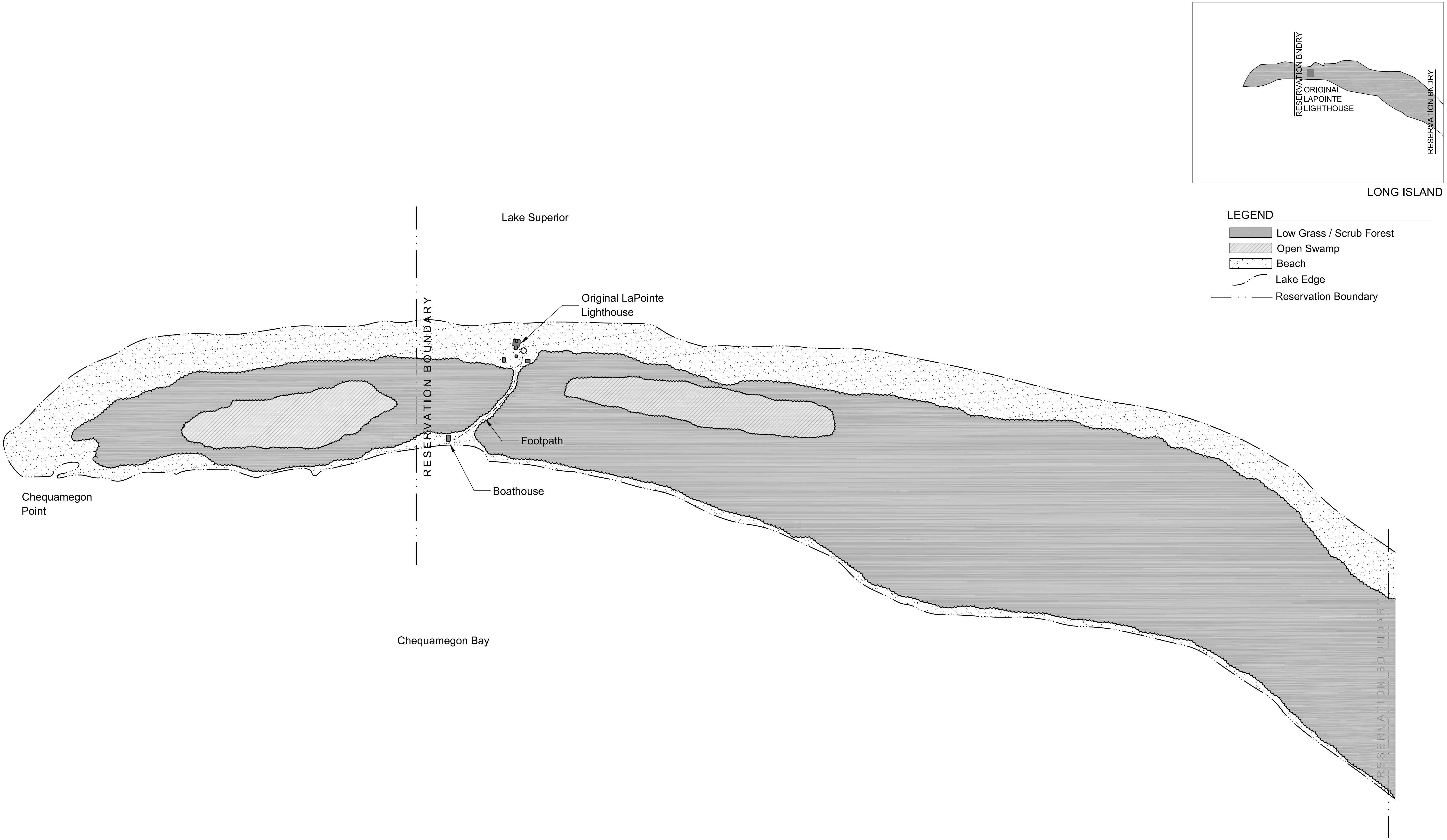
Original LaPointe Lighthouse (1858 – 1889)

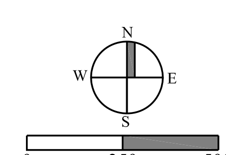
This period (Site Image LI-01) began with the establishment of the light station reservation and the construction of the LaPointe Lighthouse on Long Island in 1858.[17] All of the light station improvements during this period were concentrated in the area immediately surrounding the lighthouse. Joseph LeBel continued to own the remainder of the land on the island (outside the reservation boundary), and operated a seasonal fish camp on the island's western end, near Chequamegon Point. The buildings labeled "fish shanties" can be seen on Site Image LI-02.

[3] Busch, Jane C. "People and Places: A Human History of the Apostle Islands; Historic Resource Study of Apostle Islands National Lakeshore" Bayfield: Apostle Islands National Lakeshore. 2008. Page *124*
[4] Ibid, page 126
[5] Ibid, page 126

The LaPointe Lighthouse was placed into service in 1858. The building was wood frame construction with a 35’ tower located on the northern shore of the barrier spit. A small complex initially included at least one outbuilding, set to the south behind the lighthouse, and the area to the west was cleared and fenced for farm animals. The grounds were expanded during this period with additional outbuildings including privies, an oil building, coal shed, and root cellar. A boathouse was built on the Chequamegon Bay side of the island and was connected to the lighthouse grounds by a footpath (Site Image LI-02).[18]

[6] Gillman, Henry; United States Light House Engineer, *LaPointe Light Station, Wisconsin,* .Drawing No. RHL 1025520, 11-2L-16, c1887

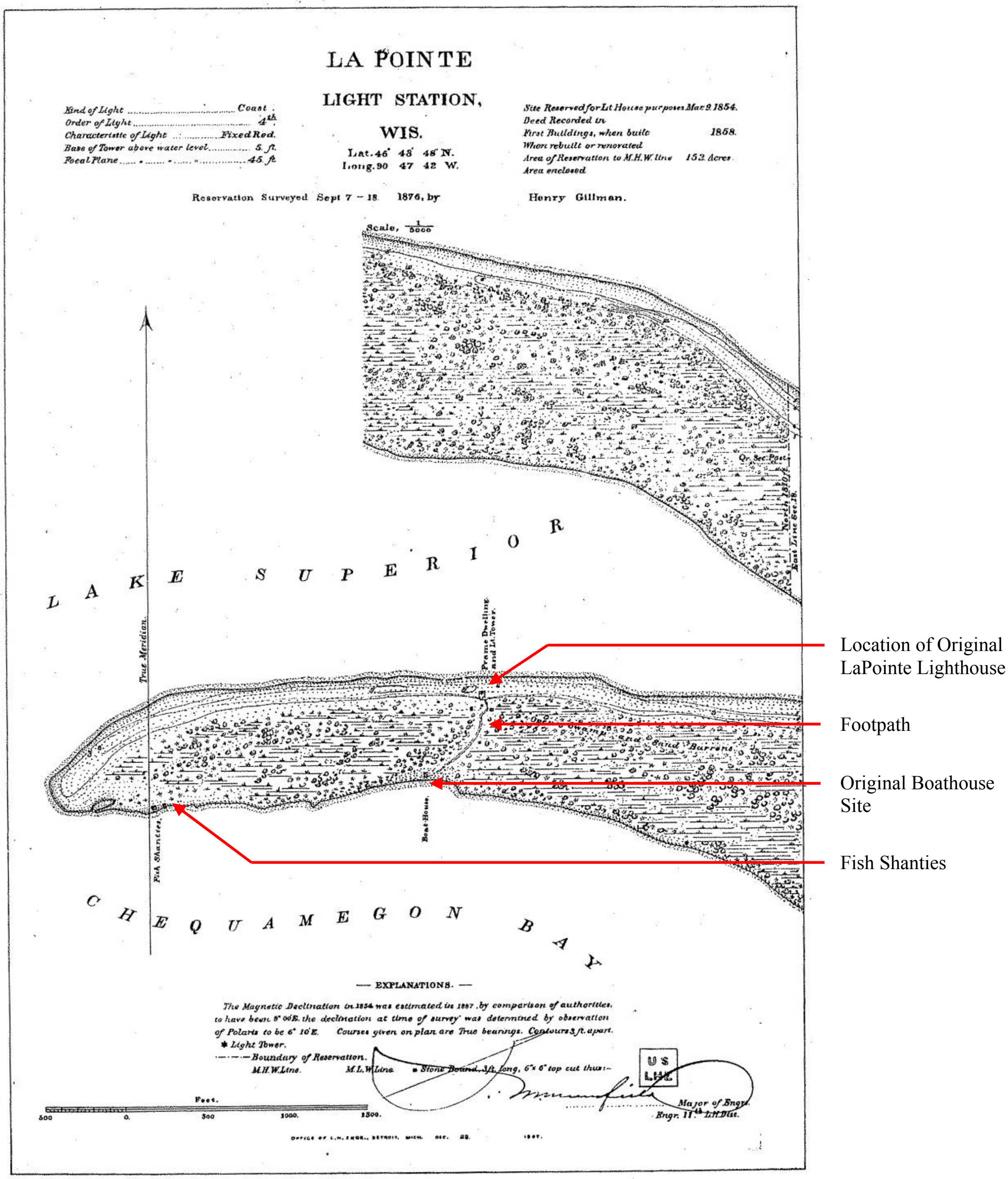




SITE IMAGE LI-01

UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT HISTORIC PERIODS TITLE OF DRAWING LONG ISLAND LIGHT STATION ORIGINAL LAPOINTE LTHOUSE PERIOD: 1858-1889 NAME OF PARK APOSTLE ISLANDS NATIONAL LAKESHORE REGION: MIDWEST COUNTY: ASHLAND STATE: WISCONSIN
JUNE 2011	

LaPointe Lighthouse Historic Survey and Photographs



Site Image LI-02: Survey of Original LaPointe Lighthouse site, 1876; (Source: NPS APIS Archives)

Site Image LI-03: View of first LaPointe Lighthouse from east, 1889 (Source: NPS APIS Archives)

Site Image LI-04: View of Lighthouse from west, c. 1889 (Source: NPS APIS Archives)

Light Towers (1890 – 1938)

The Light Towers period (Site Images LI-05, LI-06, and LI-07) was a time of substantial change for the Long Island Light Station. New structures and improvements changed the composition of the light station from a single lighthouse site to three separate sites spread across the island. The new arrangement of navigational aids was directly related to technological advances in equipment and operations.

In 1890, the addition of the Fog Signal Building at a new site at the eastern edge of the reservation significantly expanded the light station. The Fog Signal was placed into operation in early 1891.[19] The name, LaPointe, now referred to both sites: the Original LaPointe Lighthouse, and the site of the new Fog Signal Building. Improvements associated with the Fog Signal Building included a landing crib, water supply cistern and related water piping. A pipe box was built in 1901, to improve the water supply operation for the fog signal (Site Image LI-09).[20] In 1902, the landing crib at the eastern LaPointe site was repaired and the dock was extended further into Lake Superior.

An additional site was added to the Long Island Light Station during this period at Chequamegon Point, the western tip of the island. The land was purchased in 1895 from Joseph LeBel. This completed the full expansion of the light station sites.

In 1896, construction began on a new cast iron light tower, 67' in height, at the east LaPointe site. The LaPointe Light Tower was located just to the west of the Fog Signal Building and placed into service in 1897.[21] At the western tip of the island the Chequamegon Point Light Tower, was built and placed into service in 1897.[22] In 1911, work crews installed three 32' long log cribs filled with stone along the northwest side of the point to protect the Chequamegon Point Light Tower footings. Remnants of the cribs are extant in the water.

While the new light towers were being erected on the island, the Original LaPointe Lighthouse was improved to serve as a more expansive keeper's quarters. A brick, one-story foundation was built and the original building was raised and set on top of this new foundation. The building was converted into a duplex to provide living quarters for the keeper and assistant keeper. The lighthouse keepers for the two new light towers lived in the rehabilitated Original LaPointe Lighthouse throughout this period, beginning about 1896. Numerous outbuildings were built and removed on the Original LaPointe Lighthouse site. They included a barn and chicken coop that were demolished in 1899, a coal shed, an ice house, two privies, a root cellar and several wooden sheds. A brick Oil Building was built during this period and is extant today. A new boat dock was built near the duplex on the Lake Superior shore of the island, replacing the boat dock on the Chequamegon Bay shore.

The sandy soils on the island made landscaping and gardening difficult but at least one of the keepers, Joseph Sexton (keeper from 1889-1921), was known to have grown vegetables and raised farm animals. Sexton built cribs to protect his garden from the shifting sand dunes. Lighthouse keeper Ben Hudak (keeper in the 1930s), noted in an oral history interview that sandy soil prevented him from gardening, but blueberries and cranberries grew wild on the island.

In 1909, a narrow concrete sidewalk was built to connect the keepers quarters (centrally located in the Original LaPointe Lighthouse) to the LaPointe Light Tower to the east (Site Image LI-13). That was soon followed by a similar concrete walk to the Chequamegon Point site. The right-of-way for the walk was

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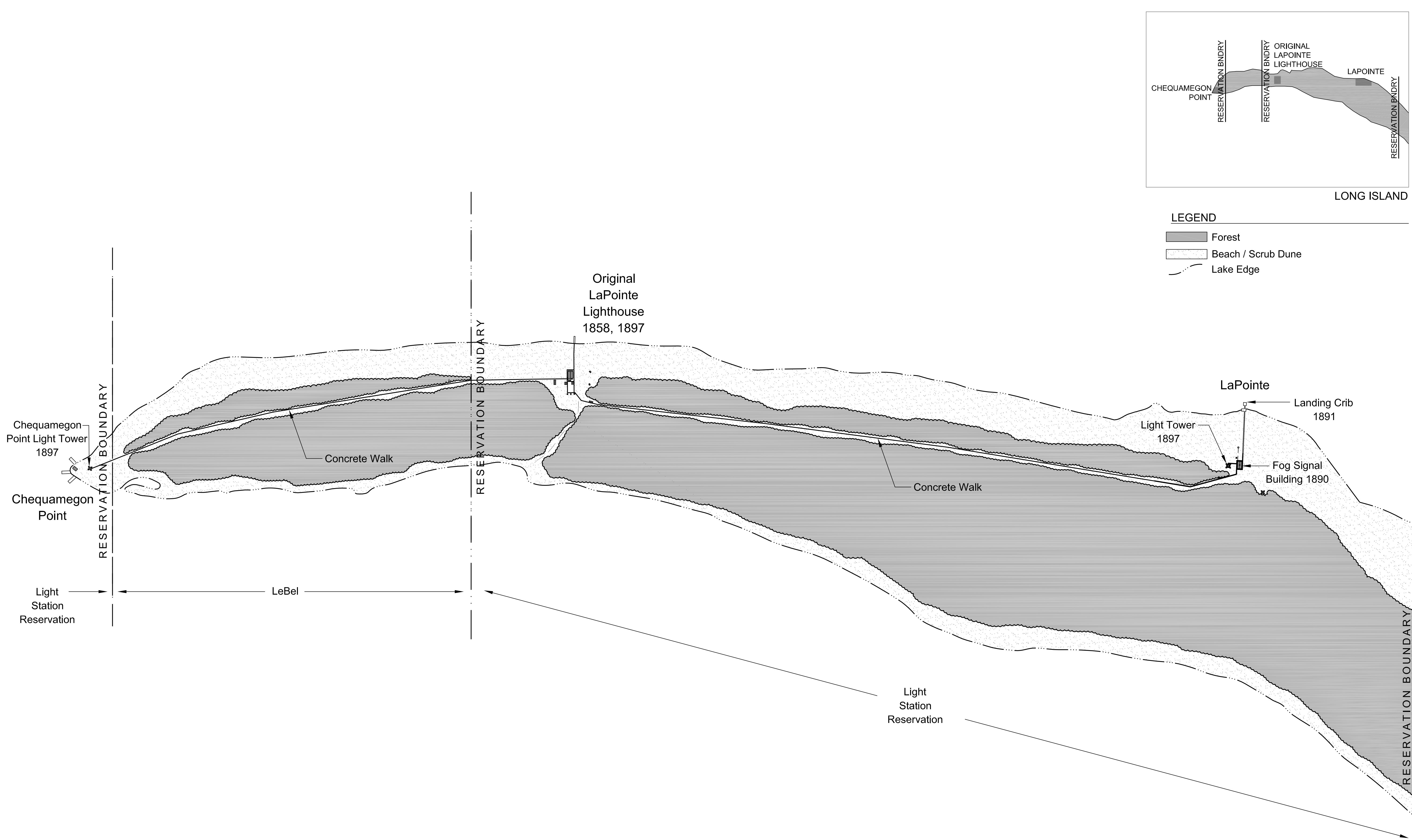
[19] Busch, Jane C. "People and Places: A Human History of the Apostle Islands; Historic Resource Study of Apostle Islands National Lakeshore" Bayfield: Apostle Islands National Lakeshore. 2008. page 132
[20] T.H.M.; Location of LaPointe Fog Signal Landing Crib and Well, APIS Archives, Drawing No. RHL 1025511, 1896
[21] Busch, page 131
[22] Ibid

purchased from Joseph LeBel. The sidewalk linked the three light stations and allowed the lighthouse keepers to travel more efficiently between the three sites.

By 1927, a steel framed radio beacon was built at the LaPointe site, southeast of the Fog Signal Building. This tower brought a new technology to the light station and added a second tall, vertical element to the LaPointe site. In 1936, a steel framed radio antenna tower was built north of the Fog Signal Building, adding a third vertical element to the LaPointe site. The footings for both towers are extant today.



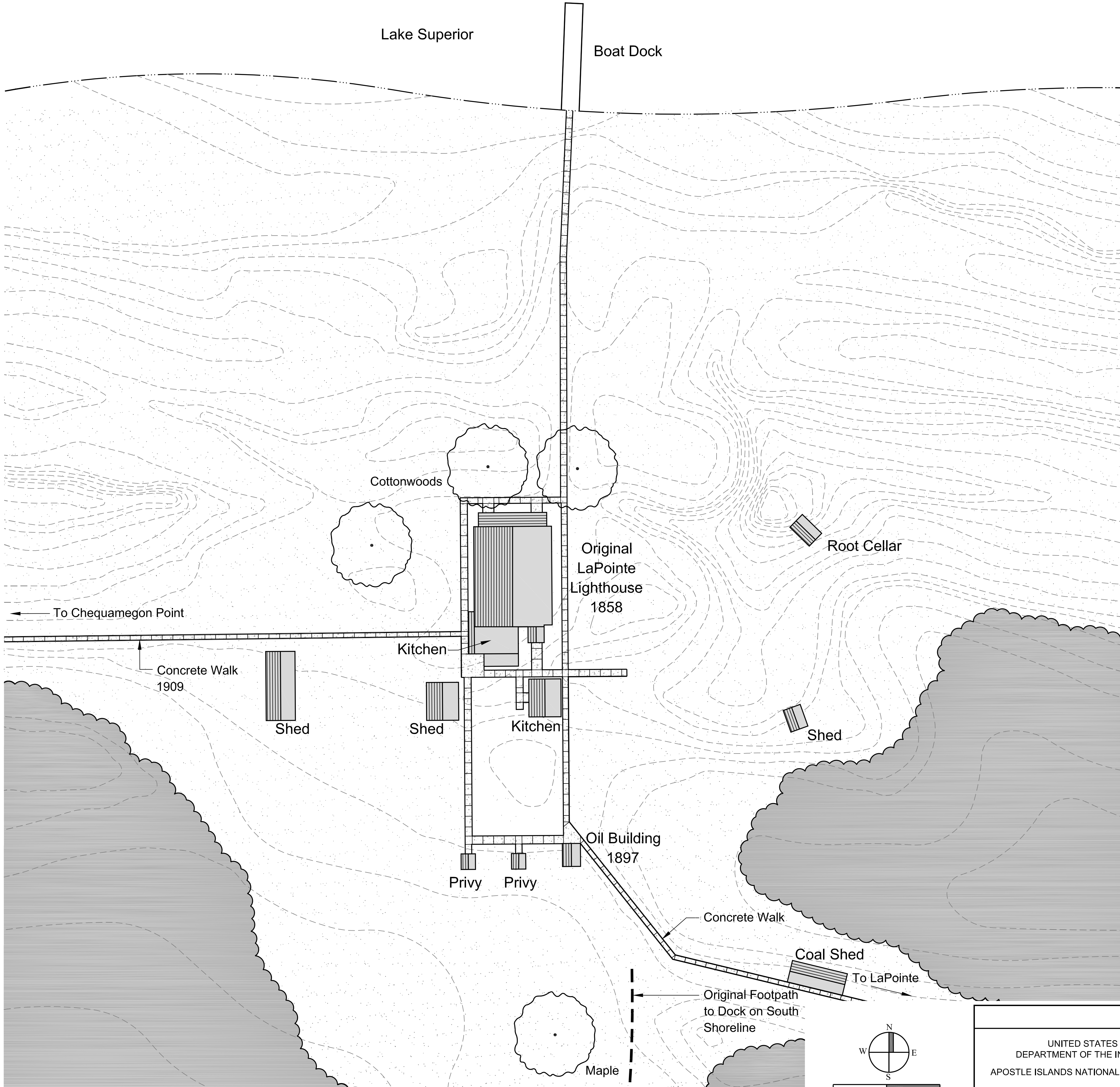
SITE IMAGE LI-05

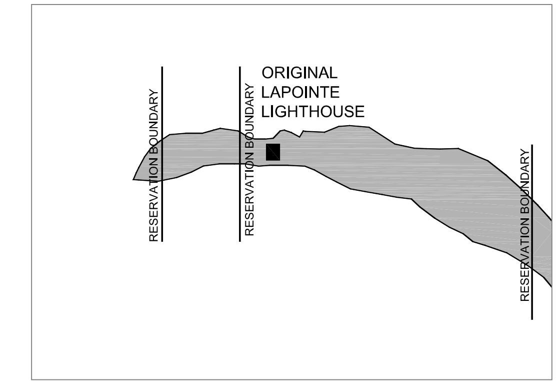
UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
HISTORIC PERIODS
TITLE OF DRAWING
LONG ISLAND
LIGHT TOWERS PERIOD: 1890-1938
NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN





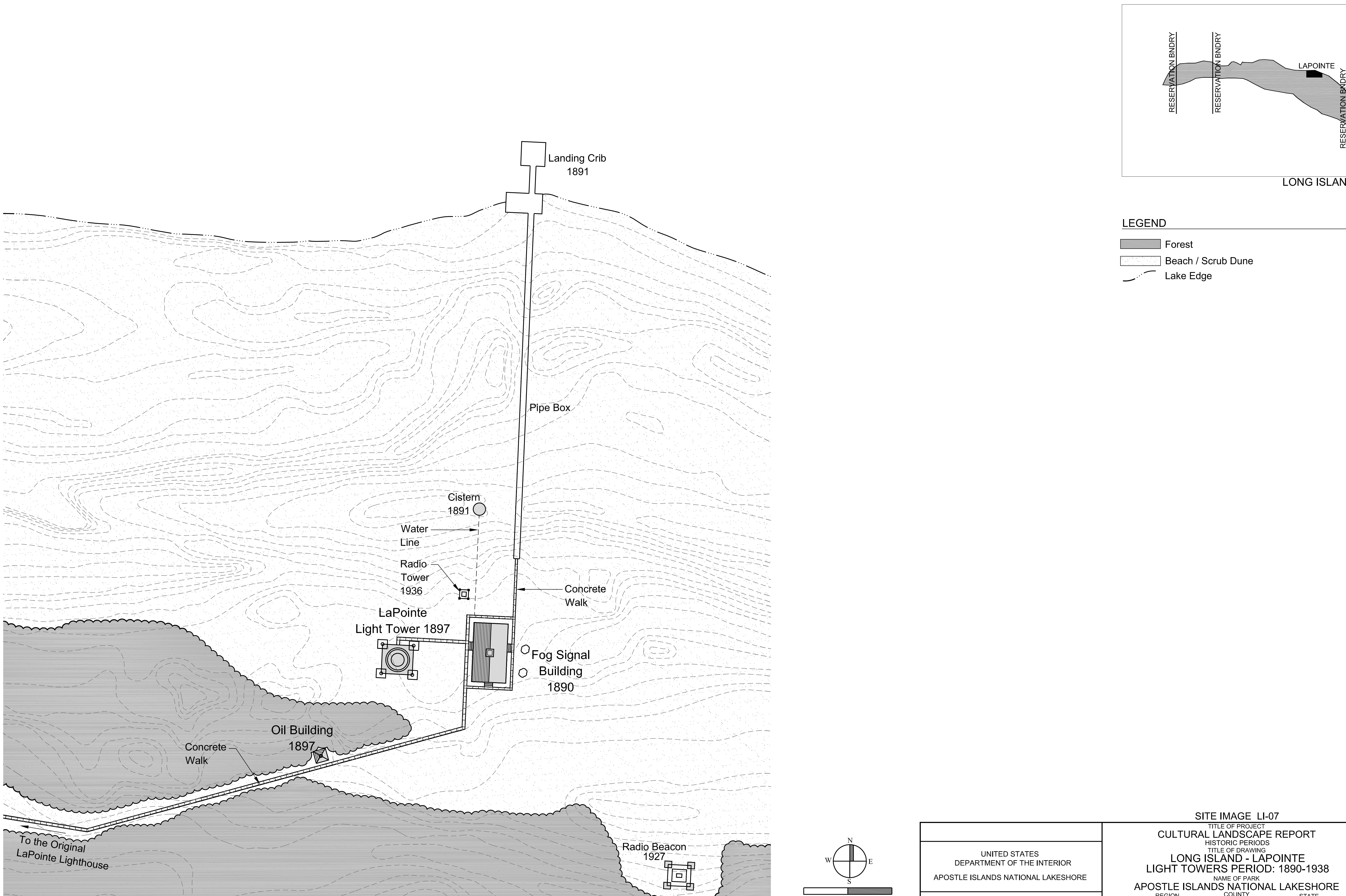
LONG ISLAND

LEGEND

- Forest
- Beach / Scrub Dune
- Lake Edge

SITE IMAGE LI-06

UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT HISTORIC PERIODS TITLE OF DRAWING LONG ISLAND - ORIGINAL LAPOINTE LIGHTHOUSE LIGHT TOWERS PERIOD: 1890-1938 NAME OF PARK APOSTLE ISLANDS NATIONAL LAKESHORE
JUNE 2011	REGION: MIDWEST COUNTY: ASHLAND STATE: WISCONSIN



SITE IMAGE LI-07

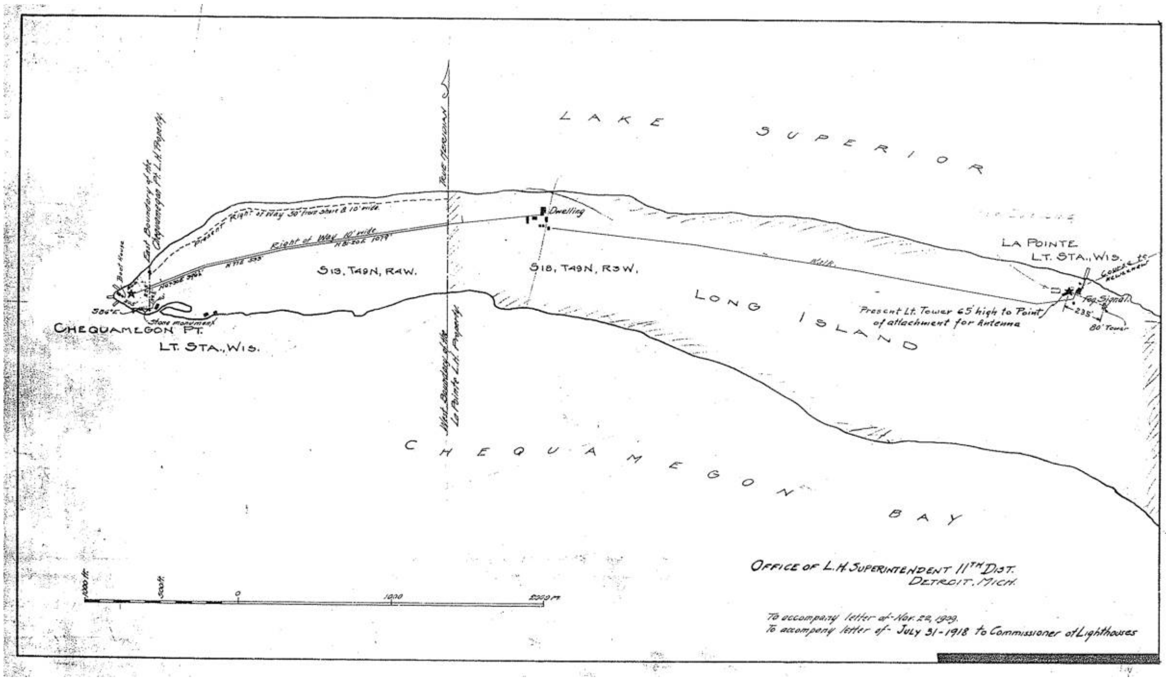
UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

JUNE 2011

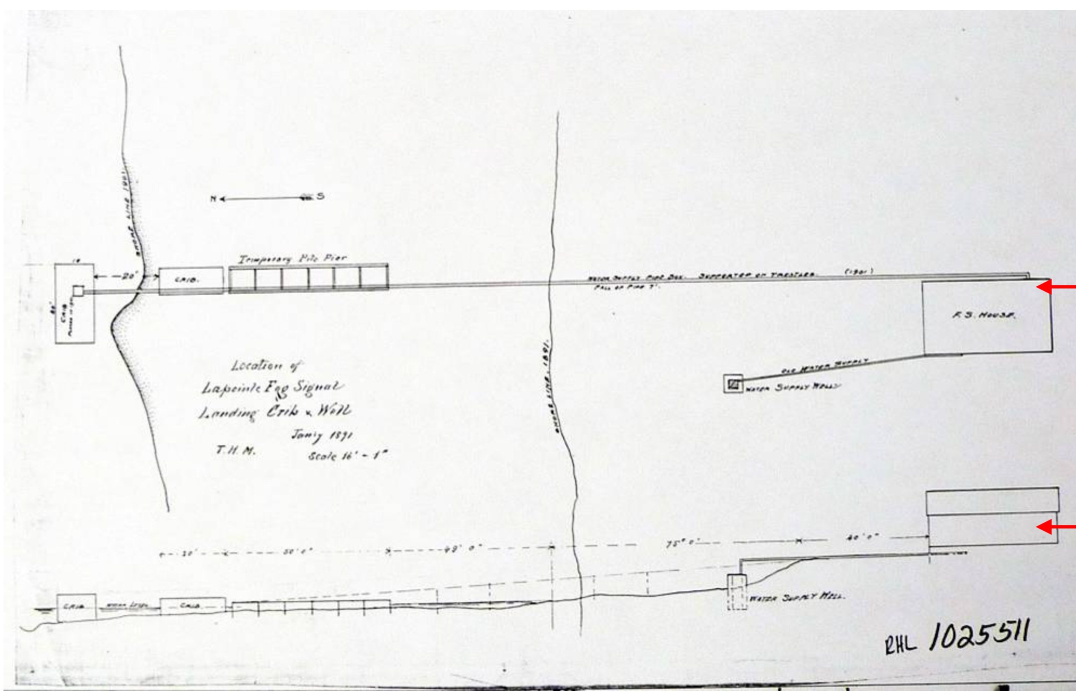
TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
HISTORIC PERIODS
TITLE OF DRAWING
LONG ISLAND - LAPOINTE
LIGHT TOWERS PERIOD: 1890-1938
NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN

Light Towers Historic Surveys and Photographs



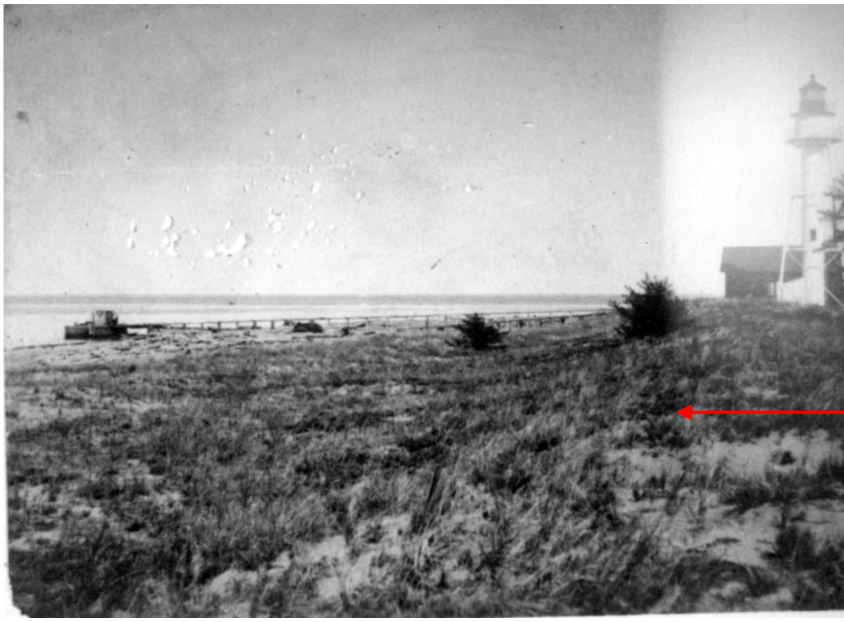
Site Image LI-08: Survey of Long Island showing the three sites and connecting walk, c. 1909-1918 (Source: NPS APIS Archives)



Plan of Fog Signal Building, Pipe Box, and Landing Cribs

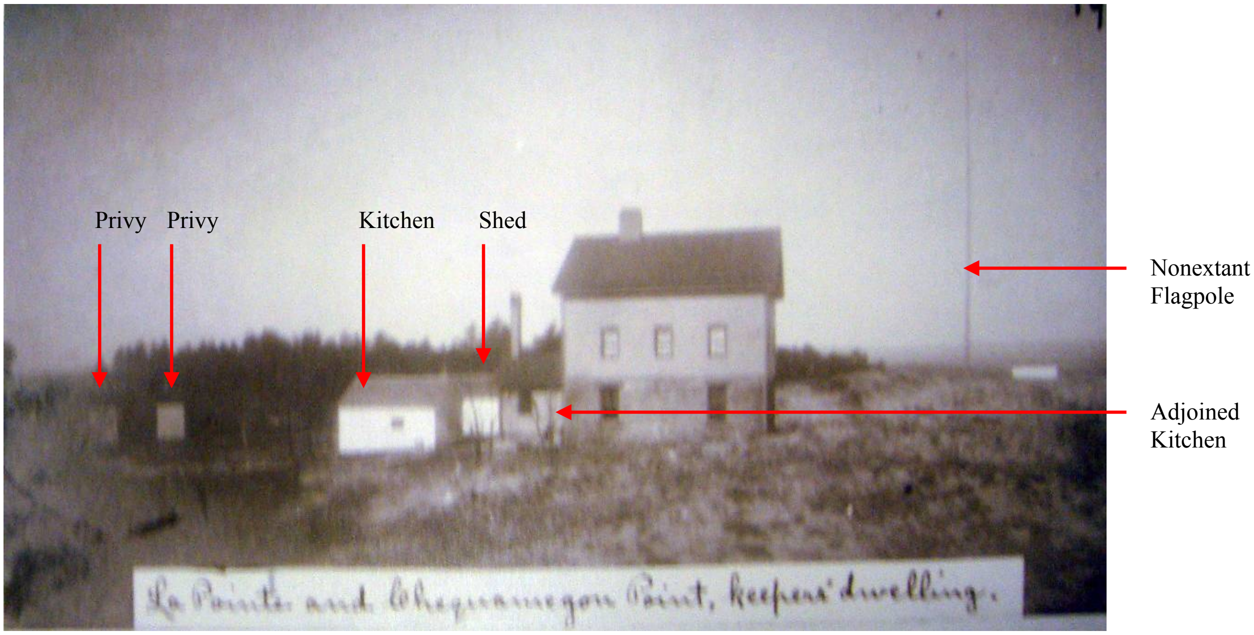
Section of Fog Signal Building, Pipe Box, and Landing Cribs

Site Image LI-09: From right to left: Fog Signal Building, cistern, pipe box, and landing crib, c. 1896, 1901 (Source: NPS APIS Archives)



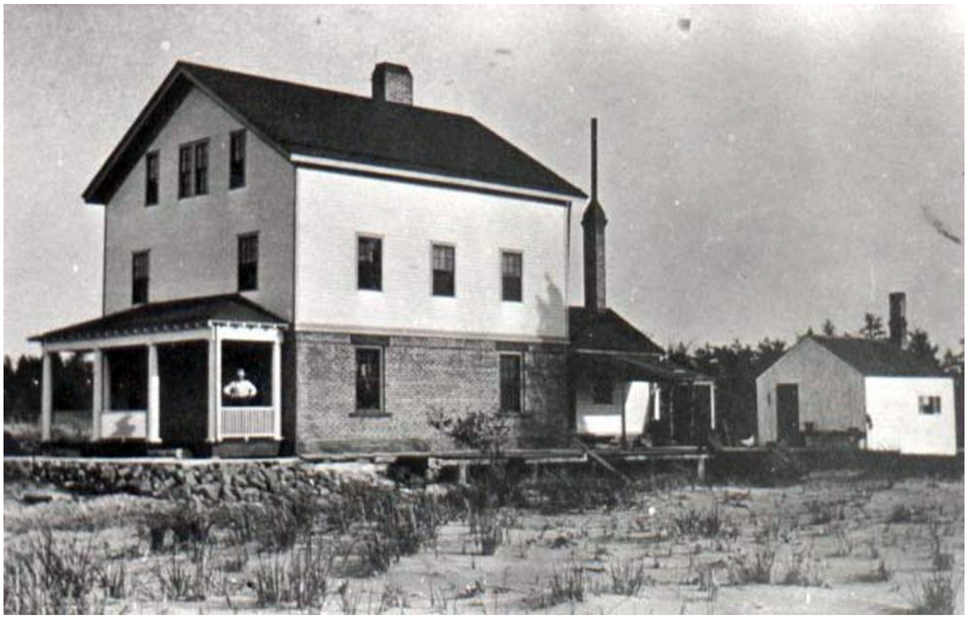
Site Image LI-10: LaPointe Light Tower, Fog Signal Building, pipe box and landing crib from west, c. 1904 (Source: NPS APIS Archives)

Site Image LI-11: LaPointe Light Tower, Fog Signal Building and pipe box from north; cistern at right, c. 1913 (Source: NPS APIS Archives)



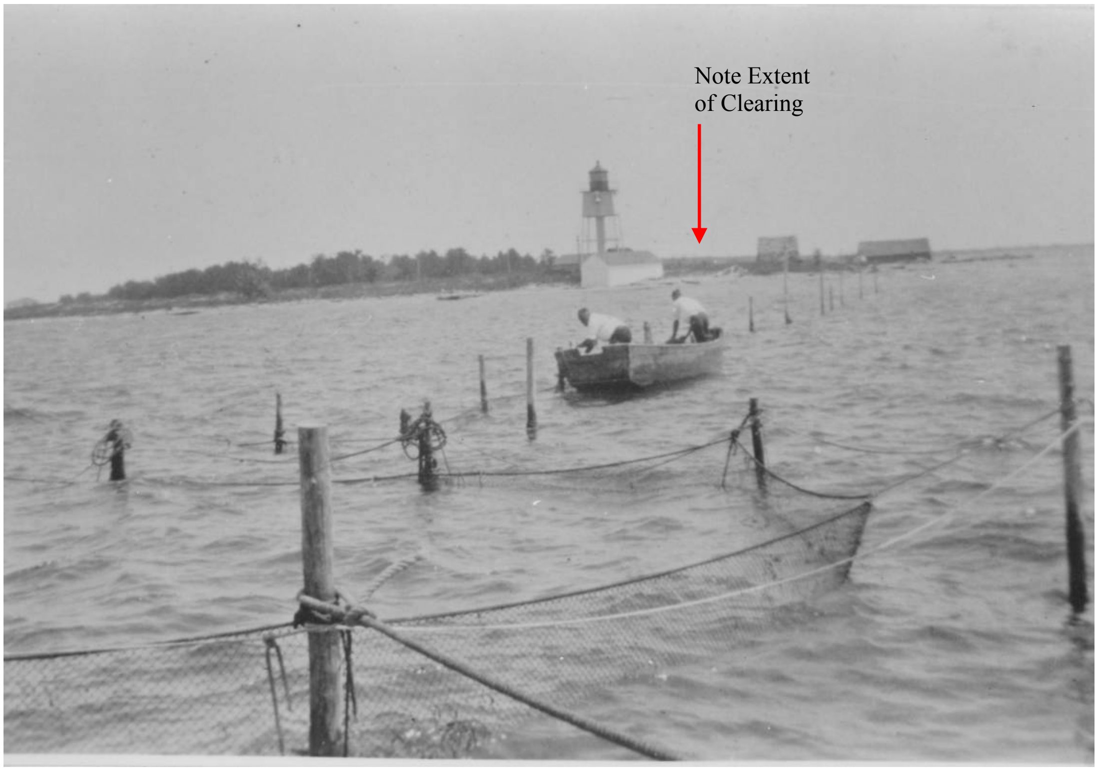
Site Image LI-12: Keepers Quarters (Original LaPointe Lighthouse) raised on a one story brick foundation with kitchens and privies at left, c. 1904 (Source: NPS APIS Archives)

Site Image LI-13: Concrete slab walk linking the light stations, c. 1910 (Source: NPS APIS Archives)



Site Image LI-14: View of Keepers Quarters (Original LaPointe Lighthouse) from west, c. 1910 (Source: NPS APIS Archives)

Site Image LI-15: View of Keepers Quarters (Original LaPointe Lighthouse) from Lake Superior with front porch, boat dock and tree plantings, c. 1920 (Source: NPS APIS Archives)



Site Image LI-16: View of Chequamegon Point from Lake Superior with Chequamegon Point Light and three nonextant structures, date unknown (Source: NPS APIS Archives)

Triplex/Coast Guard (1939 – 1964)

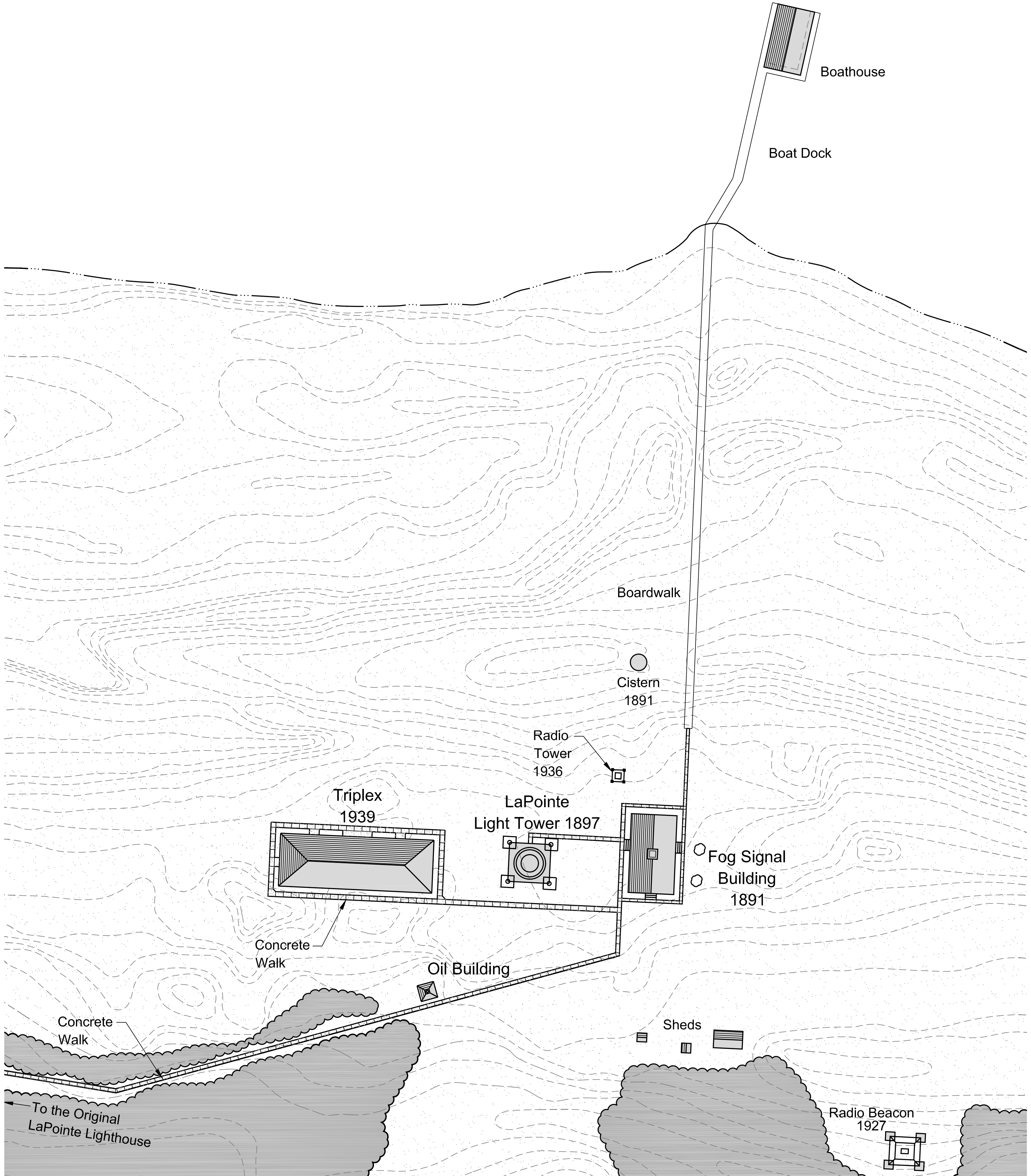
This Triplex/Coast Guard period (Site Image LI-17) began with the construction of the Triplex residential building on the LaPointe site. After its completion in 1939, the residences for the lighthouse keepers were moved from the Original LaPointe Lighthouse to the Triplex. The Triplex was a New Deal Public Works Administration project, initiated in 1938 and completed in 1939. The Triplex provided housing for three families, adding a residential use to the LaPointe site. At this same time, the United States Coast Guard (USCG) took over management of the lighthouses in the Apostle Islands including the Long Island Light Station. The period continued until 1964 when both light towers (Chequamegon Point and LaPointe) were automated and the need for a manned presence was no longer required. [23]

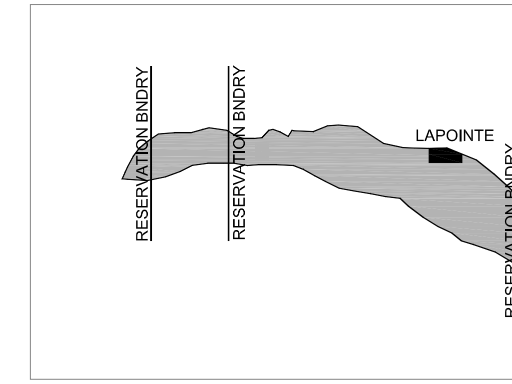
A new boat dock was also constructed during this period. It extended further out into Lake Superior than the previous landing and a boathouse was built on the dock over the water.

The construction of the Triplex made the eastern LaPointe site the center of light station activities as it became the primary residence, housing three families of lighthouse keepers. Additional structures and features were constructed at the LaPointe site during this time. Many of the small scale features were built after the USCG took over management of the station and remain today.

After the completion of the Triplex the Original LaPointe Lighthouse was abandoned. The building and its surrounding features fell into disrepair as they were no longer required for light station operations.

[23] Busch, Jane C. "People and Places: A Human History of the Apostle Islands; Historic Resource Study of Apostle Islands National Lakeshore" Bayfield: Apostle Islands National Lakeshore. 2008, page 149.

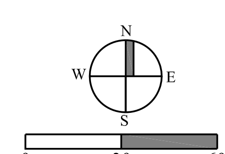




LONG ISLAND

LEGEND

- Forest
- Beach / Scrub Dune
- Lake Edge

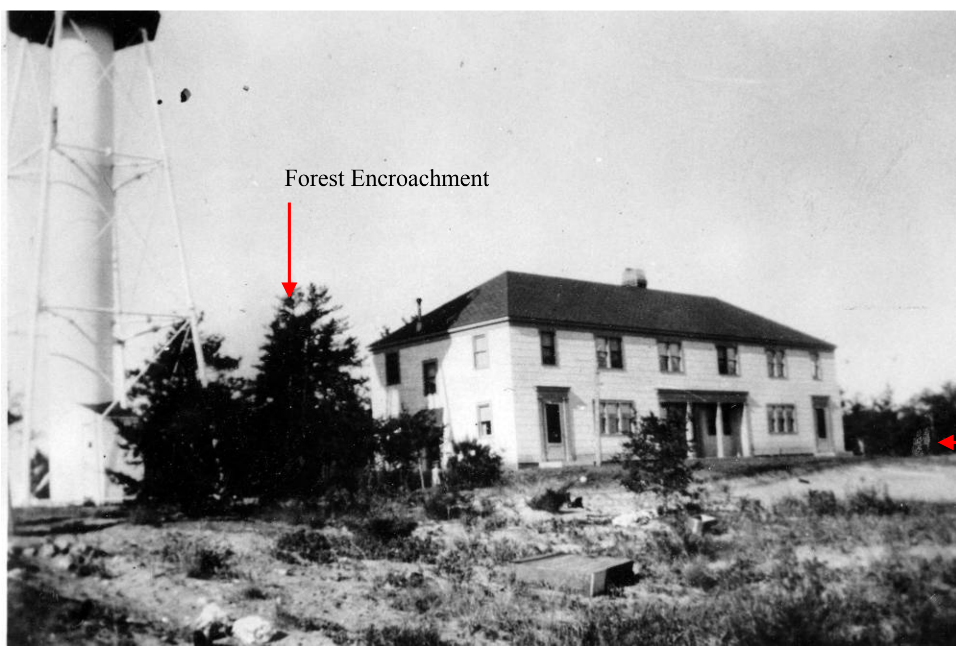


SITE IMAGE LI-17

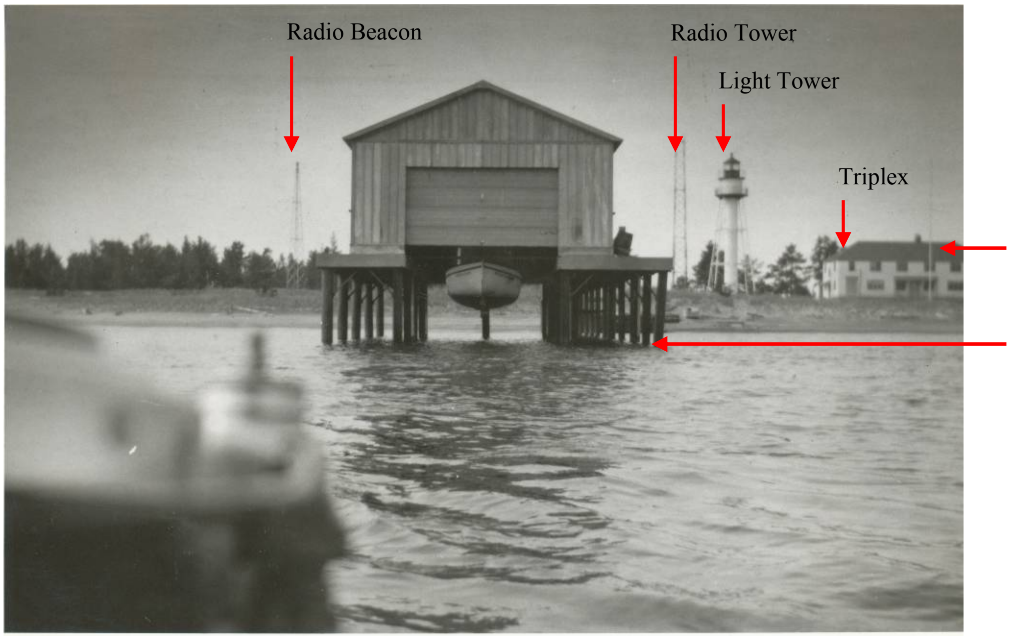
UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT HISTORIC PERIODS TITLE OF DRAWING LONG ISLAND - LAPOINTE TRIPLEX / COAST GUARD PERIOD: 1939-1965 NAME OF PARK APOSTLE ISLANDS NATIONAL LAKESHORE
JUNE 2011	REGION: MIDWEST / COUNTY: ASHLAND / STATE: WISCONSIN

Triplex/Coast Guard Photographs

Site Image LI-18: View of LaPointe grounds from Lake Superior, showing from left, the Fog Signal Building, Radio Tower, Light Tower, and Triplex, c. 1943-1945 (Source: NPS APIS Archives)



Site Image LI-19: Triplex with Light Tower on left, c. 1942 (Source: NPS APIS Archives)

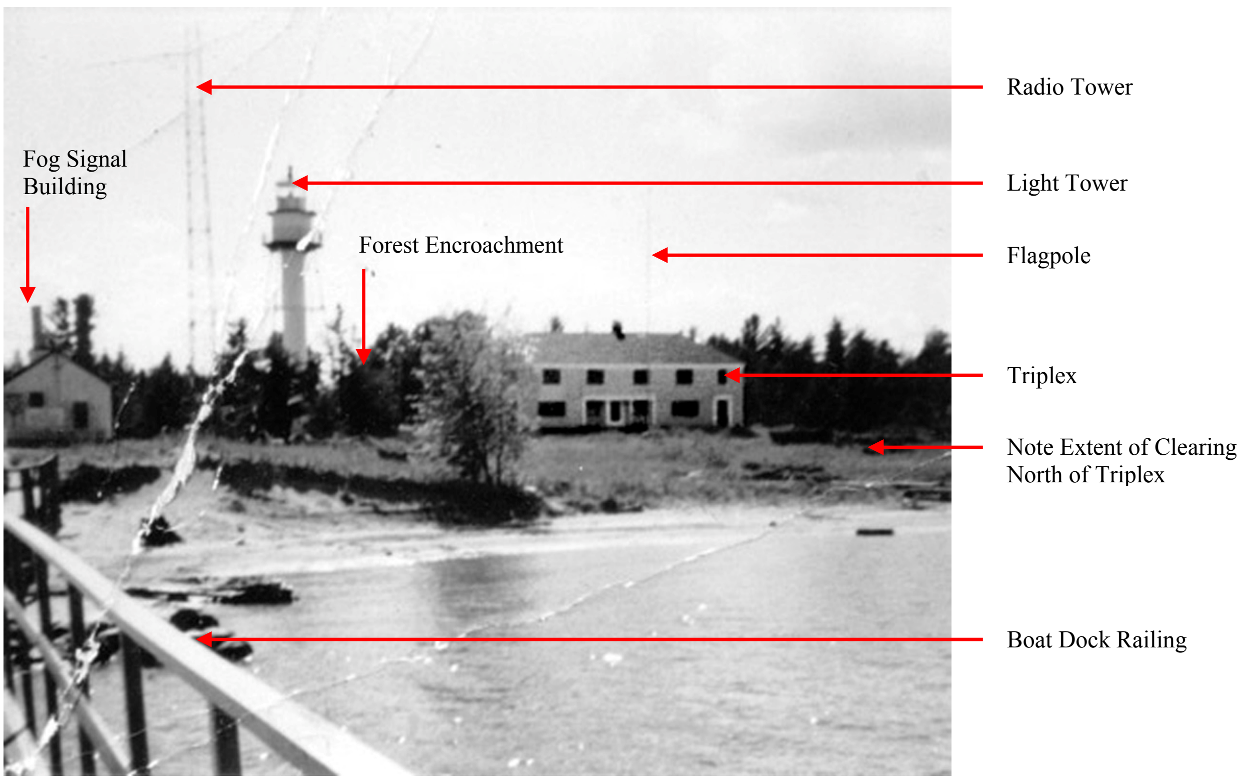


Site Image LI-20: View of LaPointe, boat house, dock and grounds from Lake Superior, c. 1943 (Source: NPS APIS Archives)

Automated Light Period (1965 – 1985)

This period began with the automation of the LaPointe Light Tower and the Chequamegon Point Light Tower, eliminating the need for light keepers on the island. During this period only a few improvements were added to the LaPointe and Chequamegon Point sites and no improvements were added to the Original LaPointe Lighthouse site as it was previously abandoned. The primary physical changes during this period were associated with the degradation and loss of features. The Fog Signal Building was demolished by the USCG in 1984 and the steel radio tower was also removed in the 1980s. The foundations of both of these elements are extant today. During this period the open, cleared areas of the reservation were gradually reduced as the adjacent forest encroached into the grounds of the three sites. The forces of nature continued to affect the light station with wave action constantly reshaping the sandy shoreline.

Automated Light Photographs



Site Image LI-21: View of LaPointe grounds from boat dock, c. 1969 (Source: NPS APIS Archives)

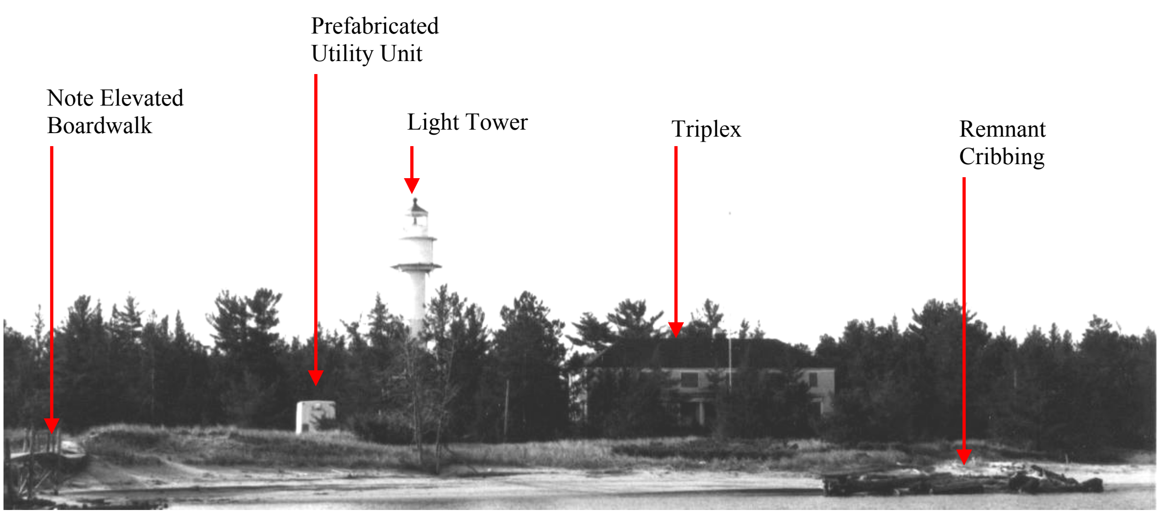
National Park Service Period (1986 to present)

Long Island was not included in the Apostle Islands National Lakeshore when it was originally established in 1970. In 1986, Long Island was added to the National Lakeshore, beginning the NPS period that continues to present day. This period brought about changes in the landscape that were primarily related to island access, resource protection and visitor use.

The most significant changes were in 1987, when the USCG relocated the Chequamegon Point Light Tower approximately 100' inland to protect it from the shifting shoreline. The tower was damaged in the move. That same year, the light was transferred to a second steel light tower at Chequamegon Point, the USCG Culvert Tower, located approximately 60'west of the Chequamegon Point Light Tower. In 2006, the Chequamegon Point Light Tower was reset on new concrete foundations constructed with the exact dimensions of the original concrete foundations. The original footings are extant in the Tower's original location but partially submerged in Lake Superior.

The current boat dock at the LaPointe site was built in 2000, on the steel pipe framing of the previous dock from the Triplex/Coast Guard period.

Park Service Photograph



Site Image LI-22: View of LaPointe site from Lake Superior, c. 1987 (Source: NPS APIS Archives)

ENVIRONMENTAL CONTEXT

The Long Island Light Station is located on the western end of a barrier spit. It is 2.1 miles-long, 0.23 miles wide and 297 acres in size. The maximum elevation above the lake is 10'.[24] Because Long Island is a barrier spit, it has vegetation communities typical of a sandscape unlike the other light stations in this study. Sandscapes typically include a beach without vegetation, active dunes, intertidal hollows (sometimes with ephemeral ponds or pools), stabilized dunes or beach ridges (often covered by pine forest), and often a filled-in lake basin with either bog or alder thicket vegetation.[25] Plant communities in sand dune areas are dominated by dune vegetation such as beach grass, beach pea, speckled alder (*Alnus rugosa*), quaking aspen, and white birch.[26] Presettlement forests on Long Island were dominated by red pine (*Pinus resinosa*), white pine, white birch, and quaking aspen on the ridges.[27] The island was extensively logged for timber in the late 19th and early 20th centuries. The present forest is dominated mostly by red pine (*Pinus resinosa*), jack pine (*Pinus banksiana*), and oak (*Quercus* sp.). The area around LaPointe site (the eastern light tower) has been cleared periodically. Nearby plant communities include jack pine forest and pine barrens.[28] The area around Chequamegon Point site (the western light tower) is a mixture of dunes with junipers and jack pine forest.[29]

Because Long Island is presently connected to the mainland as part of a peninsula, its wildlife is fairly representative of what is present on the mainland.[30] Common mammal species include red squirrel (*Tamiasciurus vulgaris*), snowshoe hare (*Lepus americanus*), deer mouse (*Peromyscus maniculatus*), masked shrew (*Sorax cinereus*), boreal redback vole (*Clethrionomys gapperi*), beaver (*Castor canandensis*), raccoons (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), coyotes (*Canis latrans*), bobcats (*Lynx rufus*), and black bear (*Ursus americanus*). A variety of migratory birds use the island for foraging, nesting, and as a stop-over during migration. Long Island is particularly important for waterfowl, passerines, and shorebirds, including the piping plover (*Charadrius melodus*), which is a federally and state endangered species.[31] The U.S. Fish and Wildlife Service has designated a large portion of Long Island as critical habitat for piping plover.

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[24] National Park Service (NPS). 2006. Apostle Islands National Lakeshore Website. Island Statistics. Last updated August 23, 2006. Available at http://www.nps.gov/apis/parkmgmt/upload/island%20statistics.PDF. Accessed December 7, 2009.
[25] Nuhfer and Dales 1987 as cited in Judziewicz and Koch 1993
[26] National Park Service (NPS). 2009.
[27] Judziewicz and Koch 1993
[28] National Park Service (NPS). 2009.
[29] National Park Service (NPS). 2009.
[30] ibid
[31] National Park Service (NPS). 2006. Apostle Islands National Lakeshore Website. Island Statistics. Last updated August 23, 2006. Available at http://www.nps.gov/apis/parkmgmt/upload/island%20statistics.PDF. Accessed December 7, 2009.

EXISTING CONDITION ASSESSMENT AND LANDSCAPE ANALYSIS

The existing condition assessment and landscape analysis for the Long Island Light Station are presented in this section. The light station reservation and the three individual sites within it are documented as one entity through the landscape characteristics that together comprise its cultural landscape. The presentation of the existing condition assessment and analysis is organized by landscape characteristics: spatial organization, topography, views and vistas, and circulation/accessibility; and identifies those buildings, structures, small scale features and vegetation that contribute to the cultural landscape of the light station. An overview of the CLR methodology is presented in Volume I, Chapter 2: *Methodology.*

The landscape characteristics for the Long Island Light Station are as follows. Their associated character-defining features contribute to the overall integrity of location, design, materials, workmanship, setting, association, and feeling.

- Spatial Organization - is the arrangement of elements creating the ground, vertical and overhead planes that define and create space, including the arrangement of topography and buildings.
- Topography – is the three-dimensional configuration of the landscape surface characterized by features and orientation; including bluffs, cliffs, slopes and drainages.
- Views and Vistas – are features that create or allow a range of vision which can be natural or designed and controlled; these include views of the light stations from Lake Superior and views from the light towers and lighthouses.
- Circulation – are spaces, features, and materials that constitute systems of movement.
- Buildings - buildings that are either currently or were historically habitable are presented in the Historic Structure Report.
- Structures - are smaller nonhabitable buildings or significant features (now or historically) such as privies, tramways, and outbuildings.
- Small Scale Features – elements that provide detail and diversity combined with function and aesthetics; including paving; structural remnants; tram tracks; site walls; signs; and walls of building ruins.
- Vegetation – Indigenous or introduced trees, shrubs, vines, ground covers, and herbaceous materials; including lawns, and landscape garden areas.

The existing condition of the Long Island Light Station is presented first as a paragraph description. Annotated photographs support the condition assessment. The following criteria were used to evaluate condition:

- **GOOD –** The features of the landscape do not require intervention; only minor or routine maintenance is needed at this time.
- **FAIR –** Some deterioration, decline, or damage is noticeable; the feature may require immediate intervention; if intervention is deferred, the feature will require extensive attention in a few years.
- **POOR** – Deterioration, decline, or damage is serious; the feature is seriously deteriorated or damaged, or presents a hazardous condition; due to the level of deterioration, damage, or danger the feature requires extensive and immediate attention.

The landscape analysis, presented as narrative text, follows and provides an evaluation of the significance and integrity of each characteristic. The landscape analysis compares the site history with its existing condition to identify and evaluate those landscape characteristics that retain integrity and contribute to the significance of the light station.

The cultural landscape of the Long Island Light Station has integrity as it retains the majority of its character-defining features and buildings that depict its role in the initiation and development of navigational aids in the Apostle Islands. The most important features include the buildings, navigational equipment and concrete walks as these defined the operation of the light station.

Spatial Organization

The spatial organization at the Long Island Light Station is of two distinct scales - the organization of the reservation with its three sites and the organization of each of the sites individually.

Existing Condition. The spatial organization of the light station is defined by the linear composition of three sites linked by a circulation corridor. This configuration follows the natural narrow shape of the sandspit. Today the connecting circulation route is an informal footpath that generally follows the overhead electric line, linking the LaPointe site to Chequamegon Point. The footpath passes the heavily forested Original LaPointe Lighthouse site at approximately the mid-point between the two but does not connect to it. Each of the three sites has a distinct organization that is formed by the natural landscape and the arrangement of its buildings, structures and features.

The LaPointe grounds are arranged around its central focus, the 67' tall LaPointe Light Tower. Buildings, structures and small scale features are located in a loose radial pattern around the tower. Concrete walks and boardwalks extend from the tower and connect to each other in an organized but asymmetrical pattern. Most of the features are in a cleared area around the tower and fog signal building foundation. The overall feeling is one of enclosure as the site is surrounded by the encroaching pine forest. The spatial organization of the LaPointe site is in poor condition.

The Original LaPointe Lighthouse site is embedded in a pine and oak forest with rolling topography. The grounds are approximately 400' from the Lake Superior shoreline. The extant features are arranged around the ruin of the Original LaPointe Lighthouse, forming a loose geometric ring of structures. The grounds are heavily forested and no cleared area is extant. The spatial organization of the Original LaPointe Lighthouse site is in poor condition.

The Chequamegon Point site lacks clear definition and features are arranged in a loosely organized manner. The two light towers, the original Chequamegon Point Light Tower and the USCG Culvert Tower, have been located for visibility and stability in the shifting sandscape of Chequamegon Point. A cleared area is maintained around the towers. The spatial organization of the Chequamegon Point site is in fair condition.

Analysis. The spatial composition of the light station reservation has been diminished from the light station's period of significance. While each of the individual sites exists today, the linear concrete walk and corridor that formerly connected the sites has been obscured. The loss of the connecting corridor makes each site more isolated from the others than they were during the period of significance. The organization of the three sites connected by a circulation feature is an attribute that is unique to the Long Island Light Station within the Apostle Islands system. Overall the spatial organization of the Long Island Light Station has been altered by the encroachment of the island's forest vegetation, the shifting sands of the barrier spit, the total loss of the cleared area at the Original LaPointe Lighthouse and the obscuring of the original connecting corridor. Spatial organization of the light station is a contributing feature.

The LaPointe site retains the organization of buildings, structures, and small scale features from the period of significance, but has been degraded by the loss of the cleared area of the grounds. During the period of significance the cleared area extended around all of the structures, small scale features, and buildings. Today, much of the grounds are covered with forest vegetation, obscuring the structures and features to the south of the tower and the site is no longer open to the Lake Superior shoreline (Site Image LI -24). Once

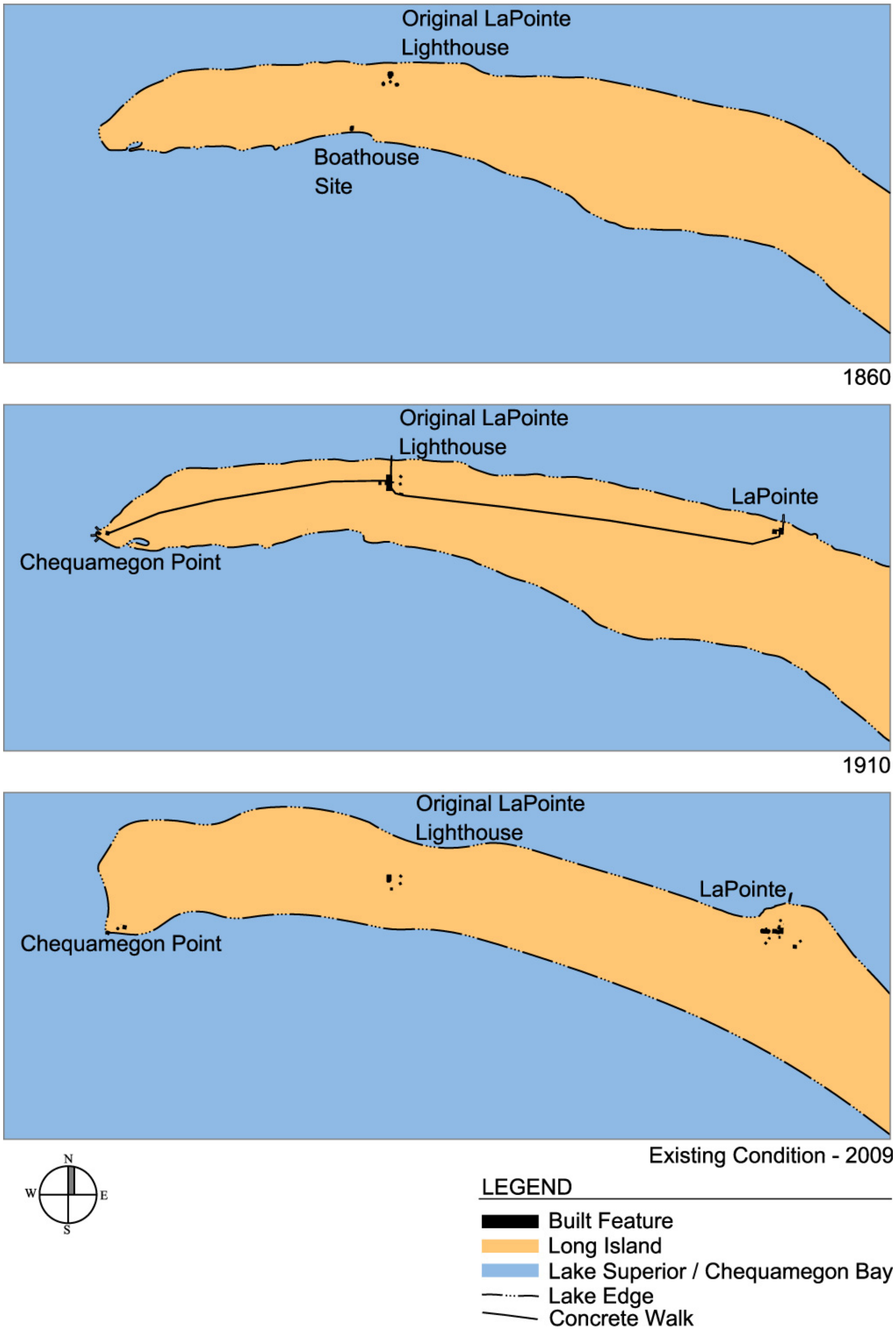
the island was no longer operated as a manned light station with a light keeper, the forest vegetation was not cleared regularly. During the period of significance, approximately nine acres at the LaPointe site were open and clear of trees. The cleared area has been reduced by about five acres due to forest encroachment and the shifting shoreline of Lake Michigan.

The shifting Lake Superior shoreline has greatly reduced the distance between the buildings and structures and the waters edge. The encroachment of forest vegetation and the loss of the Fog Signal Building, Radio Tower, and Radio Beacon have diminished the integrity of the LaPointe site.

The spatial organization of the Original LaPointe Lighthouse site has been diminished primarily due to the encroachment of the forest and complete loss of cleared area around the lighthouse ruin (Site Image LI-25). Due to the dynamic nature of Long Island, the north shoreline is further away from the site than during the early historic periods. Historic maps and photographs indicate that the shoreline was between 50’ to 150’ from the Original LaPointe Lighthouse. Today the shoreline is approximately 400’ from the lighthouse ruin and no longer visible from the site. In addition, the loss of structures (privies and kitchens) and small scale features (concrete walks) that defined the site has diminished the spatial organization of the grounds.

The spatial organization of the Chequamegon Point site is diminished by the loss of structures (boathouse), the relocation of the Chequamegon Point Light Tower, the addition of the USCG Culvert Tower and the encroachment of the surrounding forest.

Spatial Organization Diagrams and Photographs



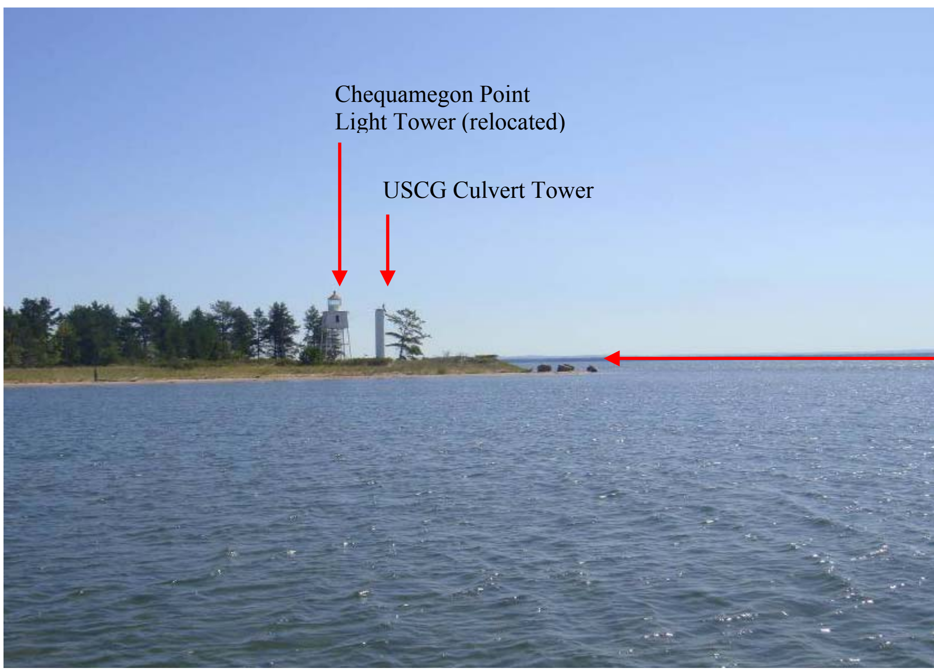
Site Image LI-23: Spatial Organization of the Long Island Light Station, note dynamic form of island. (Source: MBD)

Site Image LI-24: View of LaPointe grounds from Lake Superior showing diminished spatial organization; top, c. 1969 (Source: NPS APIS Archives); below, 2009 (Source: MBD P1020369.jpg)

Site Image LI-25: View of Original LaPointe Lighthouse showing diminished spatial organization by encroaching vegetation; top, c. 1920 (Source: NPS APIS Archives); below, 2009 (Source: MBD DSC01285.jpg)

Site Image LI-26: View of LaPointe grounds from east showing diminished spatial organization by encroaching forest vegetation, 2009 (Source: MBD DSC_0180.JPG)

Site Image LI-27: View of Chequamegon Point grounds from west showing original concrete footings for Chequamegon Point Light Tower, Chequamegon Point Light Tower, and USCG Culvert Tower, 2009 (Source: MBD DSC_0022.JPG)



Site Image LI-28: View of Chequamegon Point showing diminished spatial organization and encroaching forest vegetation. Three nonextant structures visible in top image; top, c. Light Tower Period (Source: NPS APIS Archives); below, 2009 (Source: MBD DSC01260.jpg)

Topography

Existing Condition. In contrast to the other islands in the Apostle Island National Lakeshore, Long Island is a barrier spit that is primarily composed of low ridge and swale topography, typical of sandy dunes and beaches. The interior of the island rises to approximately 10’ above the edge of Lake Superior and consists of dune vegetation, scrub forest and areas of low wetlands. The topography is extremely dynamic, affected by weather conditions and Lake Superior. The topography of the Long Island Light Station is in good condition.

Analysis. All three of the Long Island Light Station sites are located on or near dynamic sandy landscapes. The Lake Superior shoreline of the island is constantly reshaped by the natural forces of weather and water. Historic photographs and maps indicate the shoreline has changed significantly since the initial light station development on the island.

The dynamic nature of the island has changed the Original LaPointe Lighthouse site from a shoreline location to pine barren, rolling dune character that is now over 400’ from the water. This change from natural forces has affected the character and visibility of the site.

The topography of the LaPointe site has changed in the same manner but to a lesser degree. The area between the grounds and shoreline has decreased and the shoreline is closer to the buildings and structures than during the period of significance.

At Chequamegon Point, the shifting sandscape at the tip of the island has changed significantly enough to necessitate the relocation of the original light tower approximately 170’ further inland (northeast).

The topography of the island and each site continues to be dynamic, constantly changing with natural forces. This movement of topography has been ongoing prior to construction on the Long Island Light Station and is part of its historic character. The topography of the Long Island Light Station is a contributing feature.

Topography Photographs

Site Image LI-29: Northern shoreline of Long Island, 2009 (Source: MBD DSC01389.JPG)

Site Image LI-30: Dune topography near Chequamegon Point, 2009 (Source: MBD DSC_0073.JPG)

Site Image LI-31: Inland topography near the Original LaPointe Lighthouse, 2009 (Source: MBD DSC01281.JPG)

Views and Vistas

Existing Condition. The three sites at the Long Island Light Station were located near the north shoreline of the island to be visible from Lake Superior. Notable views to the Long Island Light Station include those of the LaPointe Light Tower and Chequamegon Point Light Tower visible to passing ships and boats on Lake Superior. Notable views from the island include: south over Chequamegon Bay from the Chequamegon Point site; north over Lake Superior and to Madeleine Island from the LaPointe Light Tower and the northern shoreline at the LaPointe site. Long Island is visible from the mainland and from Madeline Island. Views of the light station from Lake Superior vary in condition from good (Chequamegon Point) to fair (LaPointe) to poor (Original Lighthouse).

Analysis. Views to the navigational aids on Long Island are important contributing features and have been diminished since the period of significance. The extent of views to and from two of the three sites of the Long Island Light Station have been reduced due to the encroachment of forest vegetation and the dynamic nature of the shifting shoreline.

Views to Chequamegon Point from Lake Superior and Chequamegon Bay remain much as they have been since the late 1890s. These are important views of historic navigational aids.

The Original LaPointe Lighthouse site is no longer visible from Lake Superior due to the growth of forest vegetation, the shifting of the shoreline further from the site, and the degradation of the Original LaPointe Lighthouse from a 35' tall structure to a low ruin.

At the LaPointe site, views from Lake Superior to the Triplex and LaPointe Light Tower are greatly obscured by vegetation. Historic photographs indicate that the Triplex was clearly visible from the water and boat dock until 1965. Today, the Triplex is not visible from Lake Superior due to encroaching forest vegetation. The LaPointe Light Tower remains visible above the trees. Views from the LaPointe Light Tower over Lake Superior, adjacent islands, and over Long Island remain intact due to the height of the tower. However, neither the Chequamegon Point Light Tower nor the Original LaPointe Lighthouse are visible today from the LaPointe Light Tower. Night sky views from Long Island looking toward Madeline Island are diminishing as more development and light occurs on Madeline Island.

The views and vistas to and from the Long Island Light Station are contributing features.

Views and Vistas Photographs

Site Image LI-32: View to Chequamegon Point from Lake Superior, with extant concrete footings visible on beach, 2009 (Source: MBD P1020330.JPG)

Site Image LI-33: View to LaPointe Light Tower from Lake Superior, note encroaching vegetation, 2009 (Source: MBD P1020372.JPG)

Site Image LI-34: View from LaPointe Light Tower to the west, towards Chequamegon Point and the mainland beyond, 2009 (Source: MBD DSC_0158.JPG)

Site Image LI-35: View from LaPointe Light Tower to the north, towards Madeleine Island, 2009 (Source: MBD DSC_0160.JPG)

Circulation

The circulation feature addresses overall access and patterns of circulation in the cultural landscape. Individual features such as concrete walks and boat docks are presented in the small scale features and structures sections.

Existing Condition. Circulation on the Long Island Light Station is related to boat access and pedestrian circulation routes on the light station. One boat dock exists on the light station at the LaPointe site. Small boats land and access the island as weather and shoreline conditions permit. The boat dock is used by NPS staff and visitors in small pleasure boats. The dock cannot be accessed by large day-cruise boats. Informal boat landing also occurs along the sandy beaches.

Pedestrian circulation consists of a natural surface footpath linking Chequamegon Point to the LaPointe site as well as informal beach routes. The primary footpath linking the three sites roughly follows the overhead electrical lines. Remnants of the narrow concrete walk that originally connected the three sites are extant at each site, but are not visible in the areas in between the sites. It is not known if the walk is covered by sand dunes or nonextant.

At the LaPointe site, circulation between buildings and structures is by narrow concrete walks. The grounds are connected to the boat dock on the north shoreline (Lake Superior) by a footpath and the floating boardwalk. There are remnants of a wooden boardwalk north of the Fog Signal Building foundation. The boardwalk was oriented along the water supply for the fog signal building and led to the original, nonextant boat dock. The grounds are connected to the south beach (Chequamegon Bay) by a footpath covered, in places, with corrugated metal. The footpath leading west across the island following the overhead electric line, originates west of the Triplex.

At the Original LaPointe Lighthouse site, extant concrete walks are found intermittently around the perimeter of the Original LaPointe Lighthouse ruins and a few extant portions of concrete walks that originally connected the Original LaPointe Lighthouse with the Oil Building can be found under the sand. The footpath following the overhead electric line is located approximately 60’ north of the Original LaPointe Lighthouse ruin.

At the Chequamegon Point site, remnants of concrete walks laid out in a northeast/southwest alignment are located in the vicinity of the Chequamegon Point Light Tower. The cross-island footpath leads northeast into the forest, following the overhead electric line. Stone remnants of the former landing cribs can be seen off the west shoreline.

Overall, circulation at the Long Island Light Station is in poor condition.

Analysis. Circulation and access on Long Island has diminished from the patterns and access points developed during the Light Towers period. Primary transit to the island was historically, and continues to be by boat, and by foot on the light station. Two significant impacts to the original circulation patterns at the Long Island Light Station have occurred. The deterioration and loss of boat landings and docks on the island, and the loss of the connecting walk between the sites.

Since the initial development of the light station, at least four boat landing sites have been used, each developed with a landing structure or dock. All of these access points were used to facilitate the operations and maintenance of the light station. The first was located on the Chequamegon Bay shoreline near the Original LaPointe Lighthouse. This was later removed and replaced with a wooden boat dock directly in front of the Original LaPointe Lighthouse on the Lake Superior shore. In 1911, a landing crib was added to Chequamegon Point to help protect the shoreline from erosion and facilitate boat landing. Remnants of the cribs remain today. At LaPointe, a series of landing cribs and boat docks have been built in generally the

same location along the Lake Superior shoreline. The extant boat dock at LaPointe is the only functional landing structure. The dynamic nature of the sandy shoreline and the harsh conditions of Lake Superior has contributed to the frequent construction and loss of landing sites and structures on the light station.

During the Light Towers and Triplex/Coast Guard periods a narrow, linear concrete walk linked all three of the light station sites. This walk and connecting corridor made operation of the light station more efficient for light keepers travelling between the sites by foot or bicycle. Remnants of this walk exist at the three sites but are not visible in the areas between the sites. This linear connecting circulation feature is an element unique to the Long Island Light Station and is a contributing feature. The current footpath following the overhead electric lines detracts from the cultural landscape as it is a new pattern not present during the period of significance.

At the LaPointe site, concrete walks connected buildings and structures on the site. The concrete walks were preceded by wooden plank walks, laid on the ground surface. The remnant boardwalk indicates a pattern of circulation on the site leading from the fog signal building foundation directly north to the shoreline and former dock-landing crib location. The circulation system at the LaPointe site is the most visibly intact of the three sites and is a contributing feature.

Concrete walks are extant at the Chequamegon Point site but the relocation of the tower has altered the original circulation pattern. Only small portions of concrete walks are visible at the Original Lighthouse site.

Extant features of the historic circulation system, consisting of concrete walks at each of the three sites; the boat dock and wooden boardwalk at the LaPointe site; and the submerged landing cribs at Chequamegon Point are contributing features.

Accessibility (ABAAS). Accessibility on the light station, including its buildings and structures, is limited due to physical barriers and a lack of ABAAS compliant improvements. Barriers to universal accessibility include: the lack of an accessible trail between the three sites on the light station; lack of an accessible trail from the LaPointe bock dock to the LaPointe grounds; steps leading into and through buildings and structures; and the narrow width of site walks. The grounds of the three sites, while generally flat, present accessibility barriers as the sandy soil is difficult to walk on and does not constitute an outdoor accessible route. The buildings present individual accessibility barriers and are discussed in the HSR. The Park Service is currently developing a park-wide Accessibility Self Evaluation and Transition Plan separate from this project to address visitor accessibility requirements related to ABAAS and Section 504 of the Rehabilitation Act. At the time of this report the plan is in progress.

Circulation Photographs

Site Image LI-36: Footpath near Chequamegon Point site, 2009 (Source: MBD IMG_9410.JPG)

Site Image LI-37: Extant concrete walk at the LaPointe site, 2009 (Source: MBD DSC01349.JPG)

Site Image LI-38: Extant remnants of the boardwalk at the LaPointe site leading from the Fog Signal Building foundation to the shore, 2009 (Source: MBD DSC01372.JPG)

Site Image LI-39: Footpath leading south from LaPointe site to Chequamegon Bay shoreline, 2009 (Source: MBD DSC01353.JPG)

Buildings

The Long Island buildings include: the LaPointe Light Tower, Triplex Residence, Oil Building, and Chequamegon Point Light Tower. For information regarding these buildings refer to the Historic Structure Report for the Long Island Light Station. The extant ruins, buildings and structures at the Original LaPointe Lighthouse site are presented under Structures section.

Structures

The structures on the Long Island Light Station provide a human scale to the island and convey important history and use of the light station. Each of the three sites is presented individually with a physical description of each major structure and its condition followed by an analysis. The analysis includes a determination of whether the structure is contributing or noncontributing. Structures are summarily listed in Table LI-1.

LaPointe Site

Structures at the LaPointe site include the boat dock, Fog Signal Building foundation, utility unit (fiberglass generator hut) and shed.

Boat Dock

Existing Condition. A boat dock is located on the Lake Superior shoreline directly north the LaPointe Light Tower. The dock is approximately 80’ long and 8’ wide and is built of steel pipe framing with a concrete deck. In 2009, the south end of the dock was approximately 15’ from the shoreline. Due to the nature and location of the boat dock, this dock and its predecessors have frequently been damaged or destroyed by the harsh wave and ice action of Lake Superior. The dock is used for landing small boats by visitors and park staff. The dock is in fair condition but has functionality issues related to the fluctuation of the water depth and shifting shoreline.

Analysis. The original boat landing at the LaPointe site, during the Light Towers period, was located approximately 30’ to the west of the existing dock and was directly related to the piping and water supply for the fog signal. The boat landing consisted of stone cribs used for landing and water collection connected to the land with a wooden dock. The existing boat dock location has been in place since the Triplex/Coast Guard period and was more elaborately constructed with a more extensive dock system and boathouse at the end of the dock. Railings lined both sides of the dock. The boathouse was lost prior to the NPS period, but the second finger and railings remained at least through 1987 (Site Image LI-40). Since the time of the Triplex there have been multiple repairs, modifications and the rebuilding of the boat dock and boathouse. The current boat dock was built in 2000 on the structural framing of the previous dock. The boat dock is considered a noncontributing feature due to its multiple alterations and repairs outside the period of significance, but is compatible due to its historic location.

Boat dock planning work is currently under study by the NPS under separate but related projects, including the Great Lakes Restoration Initiative.

Fog Signal Building Foundation

Existing Condition. The Fog Signal Building foundation is a brick and concrete foundation approximately 40' by 22' and elevated 24" above adjacent grade. The foundation includes concrete steps on the east, south, and west sides up to the finish floor elevation and remnants of the brick chimney. The foundation is in fair condition as a remnant structure.

Analysis. The Fog Signal Building was the first building built at the LaPointe site in 1890 at the beginning of the Light Towers period. This began the expansion of the light station on the LaPointe site. The wood frame building remained in place until it was demolished by the USCG in 1984. The extant remains of the foundation are important to the history of the light station and the cultural landscape since it is one of the first features constructed at the LaPointe site. The alignment of the original sidewalk and boardwalk leading to the original (nonextant) dock can be seen north of the foundation. The extant foundation provides a visible remnant of the Fog Signal Building at the LaPointe grounds and is a contributing feature.

Shed

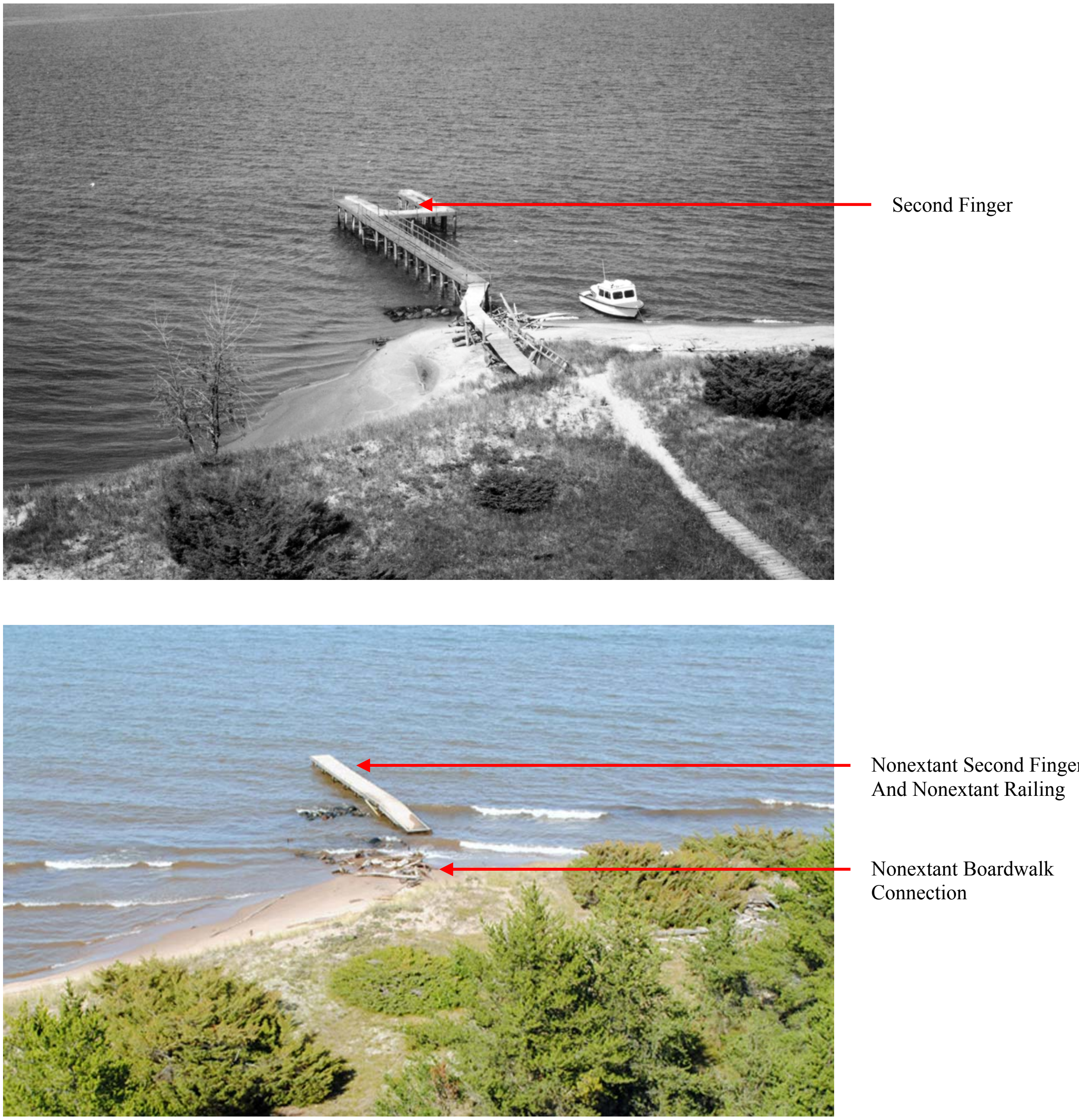
Existing Condition. A small wood framed shed is located in the forested area to the southeast of the Light Tower. The shed is approximately 10'×10' in size with wooden vertical siding and a corrugated metal roof. The shed is in poor condition.

Analysis. No documentation was found regarding the shed. The structure appears to be from the period of significance and is a contributing feature.

Table LI-1: Structures – LaPointe Site

Feature	Site Image #	Description	Condition	Contributing? /Rationale
Boat Dock (c. 2000)	LI-40, LI-41	see above	Fair	Noncontributing; Compatible, See text
Fog Signal Building Foundation (c. 1891)	LI-42, LI-43	see above	Fair	Contributing; See text
Shed (unknown date)	LI-44	see above	Poor	Contributing; See text
Utility Unit (1970-1987)	LI-45	Prefabricated fiberglass enclosure on concrete footings, approx. 16' x 10' in size. Electric power to unit. Similar to units once present on Devils Island.	Good	Noncontributing; Noncompatible, added outside the period of significance

LaPointe Site Structures Photographs



Site Image LI-40: Boat dock at LaPointe as viewed from LaPointe Light Tower; top, 1987; below, 2009 (Source: MBD DSC_0150.JPG)

Site Image LI-41: Boat dock at LaPointe, 2009 (Source: APIS LaPointe Boat Dock.JPG)

Site Image LI-42: Fog Signal Building foundation, 2009 (Source: MBD DSC01356.JPG)

Site Image LI-43: Fog Signal Building foundation as viewed from LaPointe Light Tower, 2009 (Source: MBD DSC_0152.JPG)

Site Image LI-44: Wooden shed, 2009 (Source: MBD P1020349.JPG)

Site Image LI-45: Prefabricated utility unit, 2009 (Source: MBD DSC01416.JPG)

Original LaPointe Lighthouse Site

Structures at the Original LaPointe Lighthouse site include the ruins of the Original LaPointe Lighthouse, the Oil Building, a shed, a root cellar and several collapsed structures related to the Original LaPointe Lighthouse site.

Original LaPointe Lighthouse

Existing Condition. The brick, first floor foundation of the Original LaPointe Lighthouse (and former Keepers Quarters) is presently in ruin. Brick walls vary in decay from a full height of about 10' to approximately window height (3' +/-). Stone lintels are present in most windows and a concrete foundation for the kitchen and back porch exists. The interior walls have remnants of lath and plaster wall finishes. The footprint of the ruin is approximately 45'x 30'. Bricks found in the area are marked 'SB Co'. No extant portions of the second floor wood construction remain. The ruin is located in a thickly vegetated scrub forest with forest growth both surrounding it and within the footprint of the ruin. The Original LaPointe Lighthouse ruin is in poor condition.

Analysis. The Original LaPointe Lighthouse ruin dates to 1897 when the Original LaPointe Lighthouse was raised and placed on the one-story brick foundation. At that time, the former lighthouse was rehabilitated as a duplex dwelling for light keepers. In 1909, it was again rehabilitated into a triplex dwelling. The Original LaPointe Lighthouse ruin is one of the few features remaining that is linked to the Original LaPointe Lighthouse site on the Long Island Light Station. The story of this lighthouse, the second navigational aid built in the Apostle Islands is important to the history of the Apostle Islands. The encroachment of forest vegetation adjacent to and inside the ruin is accelerating the rate of deterioration of the structure. The ruin and small scale features around it are contributing features.

Oil Building

Existing Condition. The Oil Building is located approximately 80'south of the Original LaPointe Lighthouse ruin. The building is brick masonry construction, approximately 8'x 6', with a steel door (nonlocking), metal roofing and stone lintels. The exterior of the building is intact with the roofing, masonry and steel door in place. The interior of the building is in poor condition as the floor is in disrepair. In general the Oil Building is in good condition.

Analysis. The Oil Building dates to 1897 when the lighthouse was first rehabilitated. The Oil Building is in the best condition of any of the structures, buildings or small scale features at the Original LaPointe Lighthouse site and is a contributing feature.

Privy

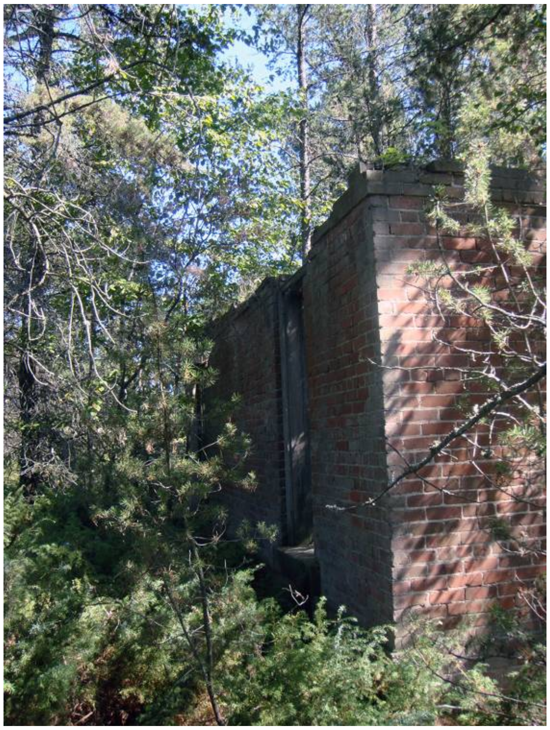
Existing Condition. The privy is located in the forested area to the southeast of the Original LaPointe Lighthouse ruin. The privy is approximately 10'×15' in size with vertical, wooden siding and a corrugated metal roof. The privy is intact but in poor condition.

Analysis. The privy dates to the period of significance and is important as the only wooden structure remaining intact and upright at the Original LaPointe Lighthouse site. The privy is one of several out buildings that were built on the site and is a contributing feature.

Table LI-2: Structures – Original LaPointe Lighthouse Site

Feature	Site Image #	Description	Condition	Contributing? /Rationale
Original LaPointe Lighthouse Ruin (c. 1897)	LI-46 LI-47	see above	Poor	Contributing; See text
Oil Building (c. 1897)	LI-48	see above	Good	Contributing; See text
Privy (1890 – 1938)	LI-49	see above	Poor	Contributing; See text

Original LaPointe Site Photographs



Site Image LI-46: Original LaPointe Lighthouse ruin, 2009 (Source: MBD IMG_9419.JPG)

Site Image LI-47: Original LaPointe Lighthouse ruin, 2009 (Source: MBD DSC01300-nw.JPG)

Site Image LI-48: Oil Building, 2009 (Source: MBD DSC01306.JPG)

Site Image LI-49: Privy, 2009 (Source: MBD DSC01306.JPG)

Chequamegon Point Site

Structures at Chequamegon Point include the USCG Culvert Tower. Several small wood construction buildings formerly existed on the site, but none remain.

USCG Culvert Tower

Existing Condition. The USCG Culvert Tower is a steel light tower approximately 45' in height located approximately 60' west of the Chequamegon Point Light Tower. Electricity to the tower is provided via the overhead electric line from the LaPointe site.

Analysis. The automated culvert tower was erected by the USCG and is currently the only functioning light at Chequamegon Point. The tower is a compatible feature as a navigational aid but considered a noncontributing feature as it was constructed in 1987, outside the period of significance.

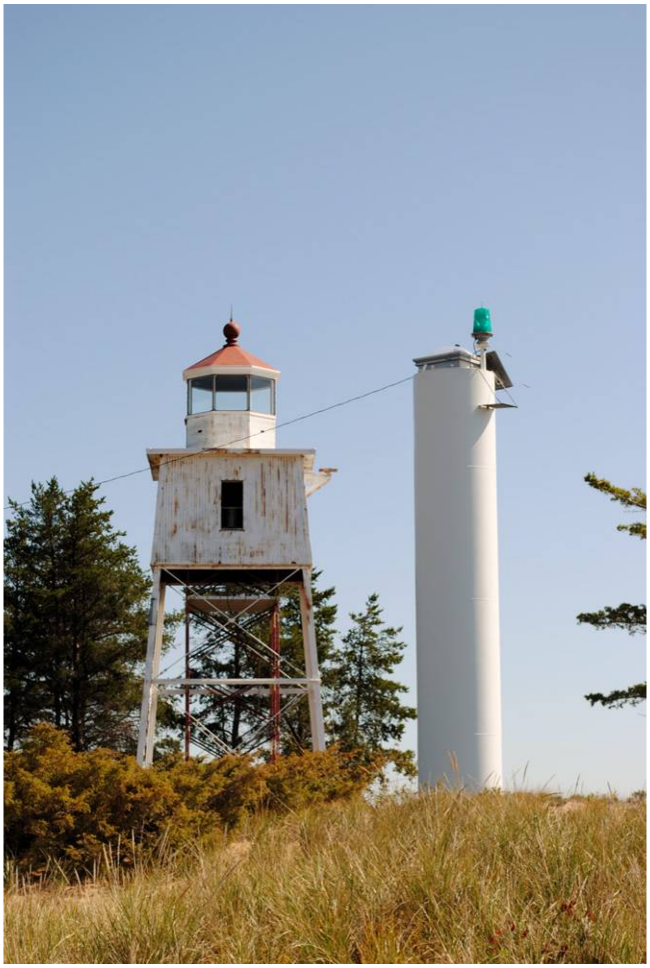
Nonextant Boathouse/Sheds

A historic photograph (Site Image LI-28) shows three structures on the shoreline at Chequamegon Point. No remnant materials were found related to these structures.

Table LI-3: Structures – Chequamegon Point Site

Feature	Site Image #	Description	Condition	Contributing? /Rationale
USCG Culvert Tower (c.1980)	LI-50	see above	Good	Noncontributing; contemporary Noncompatible
Nonextant Boathouse and Sheds	LI-28	see above	N/A	N/A

Chequamegon Point Site Photograph



Site Image LI-50: Chequamegon Point Light Tower (left) and USCG Culvert Tower (right), 2009 (Source: MBD DSC_0057.JPG)

Small Scale Features

The small scale features at the Long Island Light Station include concrete walks, concrete footings, a cistern, signs and other small site elements. The small scale features range in condition from good to poor. The following describes the contributing small scale features that are important to the light station's history of navigation. They are the features that convey the development of navigational technology and influenced the manner in which the station operated. At the Long Island Light Station these notable features include concrete walks, concrete footings of nonextant towers, the cistern and piping, and remnant boardwalk. Descriptions and analysis of individual features are organized by the three individual sites and described below. Additional descriptions of other individual features, both contributing and noncontributing, and their respective condition are included in Table LI-4.

LaPointe Site

Concrete Walks

Existing Condition. Similar to several of the Apostle Islands light stations, the concrete walks appear to be constructed of precast slabs 2.5'×4'×4" thick with some smaller units also installed. The units have a fine aggregate finish and tooled edges. Other portions of the concrete walks appear to have been poured in place to infill odd shapes and address building edges. The shifting sands of Long Island have covered many of the walks. Additional walks may be uncovered with further investigation. Overall the concrete walks are in good condition with only a few slabs showing significant cracking and spalling along the edges.

Analysis. The concrete walks on the grounds were installed during the Light Towers (1890-1938) and Triplex/Coast Guard periods (1938-1965) many of them following the previous layout of wood planks typical of the Apostle Islands. Historic photographs indicate the concrete units were placed on top of the ground surface with no excavation. The walks are directly related to the unique operation of the three connected sites of the light station. The production and installation of the precast units was common to the other light stations and conveys the interrelationship of the light stations. The concrete walks are important to the light station due to their installation during the period when the light station was at its most active. The concrete walks are contributing features.

Concrete Footings

Existing Condition. There are two sets of concrete footings on the LaPointe site. Concrete Footings – A (Radio Beacon) are located north of the Fog Signal Building foundation and Concrete Footings – B (Radio Antennae) are in the forest approximately 120' southeast of the Fog Signal Building foundation.

Concrete Footings – A, four footings spaced at 6' on center in a square pattern, each with a 2' square base, narrowing to 1.5' square at the top at 4' above grade. The vertical edges have a 1" chamfer. The top of each footing has galvanized mounting bolts and base plates. Concrete Footings – A are in good condition.

Concrete Footings – B, four footings with 4' × 4'square bases, spaced at 8' on center in a square pattern. The footings rise approximately 3-4" above adjacent grade and each have a 12" × 12" centered concrete platform with a metal support. Concrete Footings – B are in fair condition.

Analysis. The concrete footings are important to the cultural landscape because their installation occurred during the period of significance and they represent an advance in navigational aid technology at the light station. Concrete Footings – B are the footings for the radio beacon erected in 1927, and Concrete Footings – A are the base of the radio tower erected in 1936. Both steel frame towers were taller than the 67'

LaPointe Light Tower, and the absence of these two vertical elements today alters both the site's spatial organization and views to the grounds from Lake Superior from the period of significance. Both towers were removed in the 1980s and their concrete footings are important contributing features marking the locations of two nonextant towers.

Cistern

Existing Condition. The cistern is located approximately 75' north of the Fog Signal Building foundation and is surrounded by encroaching vegetation. It is 8' in diameter, 2' above grade, and is brick with a concrete cap. Depth of the cistern is unknown. The cistern is in good condition.

Analysis. The cistern is one of the oldest extant features at the LaPointe site, built in 1891 after the Fog Signal Building in 1890. The cistern was part of a water supply system necessary for the operation of the fog signal. In 1901 the water supply system was improved and the cistern continued to be used for water storage. The cistern is a contributing feature and represents some of the earliest construction at the LaPointe site. The cistern is currently hidden from view under encroaching vegetation, and has trees growing directly adjacent to it that could potentially cause damage to the cistern. The loss of the cistern would diminish the integrity of the cultural landscape.

Remnant Boardwalk

Existing Condition. The remnant boardwalk is located approximately 100' north of the Fog Signal Building foundation. The boardwalk is constructed with milled wood planking and is 4' wide and approximately 40' in length. The boardwalk is in poor condition.

Analysis. Throughout the historic periods at the LaPointe site, several boardwalks have existed connecting the Fog Signal Building to the shoreline and landing cribs/docks. These have included that both elevated boardwalks and wood planks laid directly on the sandy surface. The various boardwalks, while different in appearance, all followed the same general alignment, leading straight north from the concrete walk east of the Fog Signal Building to the shoreline. There are large portions of the boardwalk missing both north and south of the extant boardwalk; however it remains in its historic alignment and is a contributing feature.

Table LI-4: Small Scale Features – LaPointe Site

Feature	Site Image #	Description	Condition	Contributing? /Rationale
Concrete Walks (1909- 1938)	LI-51, LI-52	Concrete walks, 30"-36" in width connecting buildings and site improvements	Good	Contributing; see text
Concrete Footings – A (c. 1936)	LI-53	Four concrete footings, rising approx. 4' above grade. Former location of steel frame radio tower (visible in Historic Image LI-14).	Good	Contributing; see text
Concrete Footings – B (1927)	LI-54	Four concrete footings in forested area southeast of light station. Footings are 4' x 4' square, 3-4" above adjacent grade. Former location of steel frame radio beacon tower.	Fair	Contributing; see text

Cistern (c. 1891)	LI-55	Round, brick cistern, 8' diameter with concrete cap, 2' above ground, depth below ground unknown	Good	Contributing; see text
Remnant Boardwalk (1897- 1938)	LI-56	Remnant wooden boardwalk, 48" width. Location of boardwalk aligns with concrete walk to east of Fog Signal Building foundation.	Poor	Contributing; see text
Flagpole (c. 1939)	LI-57	Steel flagpole (fallen) with cleat on 36" x 36" concrete base	Poor	Contributing; related to Triplex, installed during period of significance
Rubble Pile (unknown)	LI-58	Rubble pile containing corrugated metal sheeting and wood – source of material unknown, possibly debris from Fog Signal Building	Poor	Contributing; from period of significance
Pipe Crib (c. 1940)	LI-59	Galvanized piping imbedded in beach – remnant of former water source for Triplex residence from Lake Superior	Fair	Contributing; related to fog signal water supply, from period of significance
Septic Bed (1938 – 1970)	LI-60	Triplex septic system		Contributing; related to Triplex, from period of significance
Utility Box (1970 – 2009)	LI-61	Electrical transformer - switch box	Good	Noncontributing; contemporary Noncompatible
Floating Boardwalk (2009)	LI-62	4' wide wooden boardwalk placed on dune	Fair	Noncontributing; contemporary improvement Compatible; nonpermanent installation
Footpath	NA	Footpath to Chequamegon Bay covered with corrugated metal sheets	Fair	Contributing; from period of significance
Fuel Tank	LI-63	Metal fuel tank located south of Fog Signal Building Foundation	Fair	Noncontributing-compatible; installed after the period of significance

LaPointe Site Small Scale Feature Photographs

Site Image LI-51: Concrete walk south of LaPointe Light Tower, 2009 (Source: MBD DSC01349.JPG)

Site Image LI-52: Concrete walk east of Triplex, 2009 (Source: MBD DSC01343.JPG)

Site Image LI-53: Concrete footings (A) for nonextant steel frame radio tower northeast of LaPointe Light Tower, 2009 (Source: MBD P1020343.JPG)

Site Image LI-54: Concrete footings (B) for nonextant radio beacon tower, 2009 (Source: MBD DSC01408.JPG)

Site Image LI-55: Concrete and brick cistern, 2009 (Source: MBD DSC01401.JPG)

Site Image LI-56: Remnant of wooden boardwalk between Fog Signal Building foundation and water, 2009 (Source: MBD DSC01372.JPG)

Site Image LI-57: Flagpole on north side of Triplex Building, 2009 (Source: MBD DSC01340.JPG)

Site Image LI-58: Rubble pile west of Fog Signal Building foundation, 2009 (Source: MBD P1020347.JPG)

Site Image LI-59: Pipe crib at edge of water, 2009 (Source: MBD DSC01397.JPG)

Site Image LI-60: Septic bed, 2009 (Source: MBD P1020344.JPG)

Site Image LI-61: Utility box, 2009 (Source: MBD DSC01411.JPG)

Site Image LI-62: Floating boardwalk, 2009 (Source: MBD P1020345.JPG)

Site Image LI-63: Fuel tank, 2009 (Source: MBD DSC01354.JPG)

Original LaPointe Lighthouse Site

Existing Condition. The extant small scale features at the Original LaPointe Lighthouse site include portions of concrete walks and a below ground root cellar. Visible portions of concrete walks are adjacent to the Original Lighthouse ruin and the Oil Building. The root cellar is located to the east of the Original Lighthouse ruin and is constructed of logs with a sheet metal roof that is partially covered with soil and forest debris. The root cellar is extant but mostly buried and in poor condition. Descriptions of the individual small scale features are presented in Table LI-5.

Analysis. The portions of concrete walks are similar to the precast found at the LaPointe site and on other light stations in the Apostle Islands. The root cellar is collapsed and buried but provides insight into the operation of the light station and the lives of the keepers and their families. The extant small scale features Original LaPointe Lighthouse site are contributing features. Field investigations for the CLR were limited and it was noted in the 1988 archeological survey of Long Island that this site may be a productive site if further archeological investigations are to occur.

Table LI-5: Small Scale Features – Original LaPointe Lighthouse Site

Feature	Site Image #	Description	Condition	Contributing? /Rationale
Concrete Walks (1897 – 1909)		Concrete walks at structure edges	Fair	Contributing; see text
Root Cellar (1891 – 1938)	LI-64	Buried root cellar with exposed roofing and framing	Poor	Contributing; see text

Original LaPointe Lighthouse Site Photograph

Site Image LI-64: Root cellar east of Original LaPointe Lighthouse ruin, 2009 (Source: MBD IMG_9424.JPG)

Chequamegon Point Site

Existing Condition. The small scale features at Chequamegon Point include concrete walks, concrete footings, and landing crib remnants. Power poles for the overhead electric line begin at the LaPointe site and connect to the USCG Culvert Tower. Descriptions of the individual small scale features are presented in the table below.

Analysis. The portions of concrete walks extant on the site represent the terminus of the sidewalk that once linked the LaPointe site to Chequamegon Point. Small portions of the walk are visible and others may be buried under the shifting sand. The concrete footings located at the water's edge formerly held the Chequamegon Point Light Tower. The tower was moved inland to its current location but the footings remain in place on the beach and in the water. Just off the beach, in the water, remnants of former wood and stone landing cribs can be seen. The concrete walk, original concrete footings, and landing crib remnants are all contributing features.

Table LI-06: Small Scale Features – Chequamegon Point Site

Feature	Site Image #	Description	Condition	Contributing? /Rationale
Concrete Walks (c. 1909)	LI-65	Portions of concrete walk located in the vicinity of the original light tower. Portions of sidewalk covered by dunes. Portions of walk broken.	Fair	Contributing; from period of significance, relates to operation of light station.
Concrete Footings (c. 1897)	LI-66	Four concrete footings approximately 4'x4'x4' in size located at beach edge and in water. Footings remain from previous Light Tower location.	Fair	Contributing; from period of significance relates to navigational aid.
Rubble Crib Remnants (1897 – 1910)	LI-67	Stone rubble remnants of landing cribs	Poor	Contributing; from period of significance
Power Poles	LI-68	Power poles for the electric line	Good	Noncontributing; outside period of significance Compatible

Chequamegon Point Site Small Scale Feature Photographs

Site Image LI-65: Concrete walk at Chequamegon Point, 2009 (Source: MBD DSC01349.JPG)

Site Image LI-66: Concrete footings remain from the former location of the Chequamegon Point Light Tower, 2009 (Source: MBD DSC_0021.JPG)

Site Image LI-67: Rubble landing crib remnants at Chequamegon Point, 2009 (Source: MBD DSC_0049.JPG)

Site Image LI-68: Typical power pole for electric line, 2009 (Source: MBD DSC_0088.JPG)

Vegetation

Existing Condition. Long Island is a barrier spit with ridge and swale topography, and sandy soil that supports red pine (*Pinus resinosa*), jack pine (*Pinus banksiana*), and oak (*Quercus* sp.) and contains swales dominated by sphagnum-sedge bogs. Extensive areas of the island are covered in dune vegetation dominated by beach grass (*Ammophila breviligulata*). Long Island also includes maintained areas, and historically cleared areas that have been infiltrated by the adjacent forest.

The three sites (LaPointe, Original LaPointe Lighthouse and Chequamegon Point) have differing settings and vegetation characteristics. The LaPointe grounds are enclosed with natural forest vegetation, primarily pine, enclosing the site. The Original LaPointe Lighthouse site is completely overgrown with the naturalized forest of oak and pine. Chequamegon Point is in an open landscape of low dune vegetation. The only remnants of planted species are several cottonwoods *(Populus sp.)* and a single cultivar maple *(Acer sp.)* found in the forest at the Original LaPointe Lighthouse site. Similar to the Michigan Island Light Station, periwinkle (*Vinca minor*), a known invasive plant, can be found in the forest near the light station development.

The vegetation features, primarily related to the cleared area at the LaPointe and Original LaPointe Lighthouse sites are in poor condition. The vegetation features at Chequamegon Point are in good condition.

Analysis. Historic drawings and photographs indicate a significantly larger cleared area on the reservation existed than exists today. Since the Light Towers period (1890–1938), the cleared area of the light station has continued to decline from approximately 13.6 acres at the end of the period to approximately 2 acres in 2009. During the Light Towers and Triplex/Coast Guard periods the light station grounds were maintained as low dune/beach grass vegetation. The historic corridor connecting the three sites was maintained native soil or sand. Today, this connection has been completely lost to encroaching forest vegetation.

At the LaPointe site, approximately 9.5 acres immediately surrounding the Triplex, LaPointe Light Tower, and Fog Signal Building was historically an open clearing that was maintained primarily for visibility to and from the grounds. Today, approximately 4 acres of the original cleared area is extant. In total, approximately 55% of the open area present during the period of significance has been lost to the shifting shoreline and the growth of vegetation, primarily pine trees. The most notable loss is the open area between the grounds and shoreline of Lake Superior. Little evidence was found of domestic landscape or garden plantings on the LaPointe site.

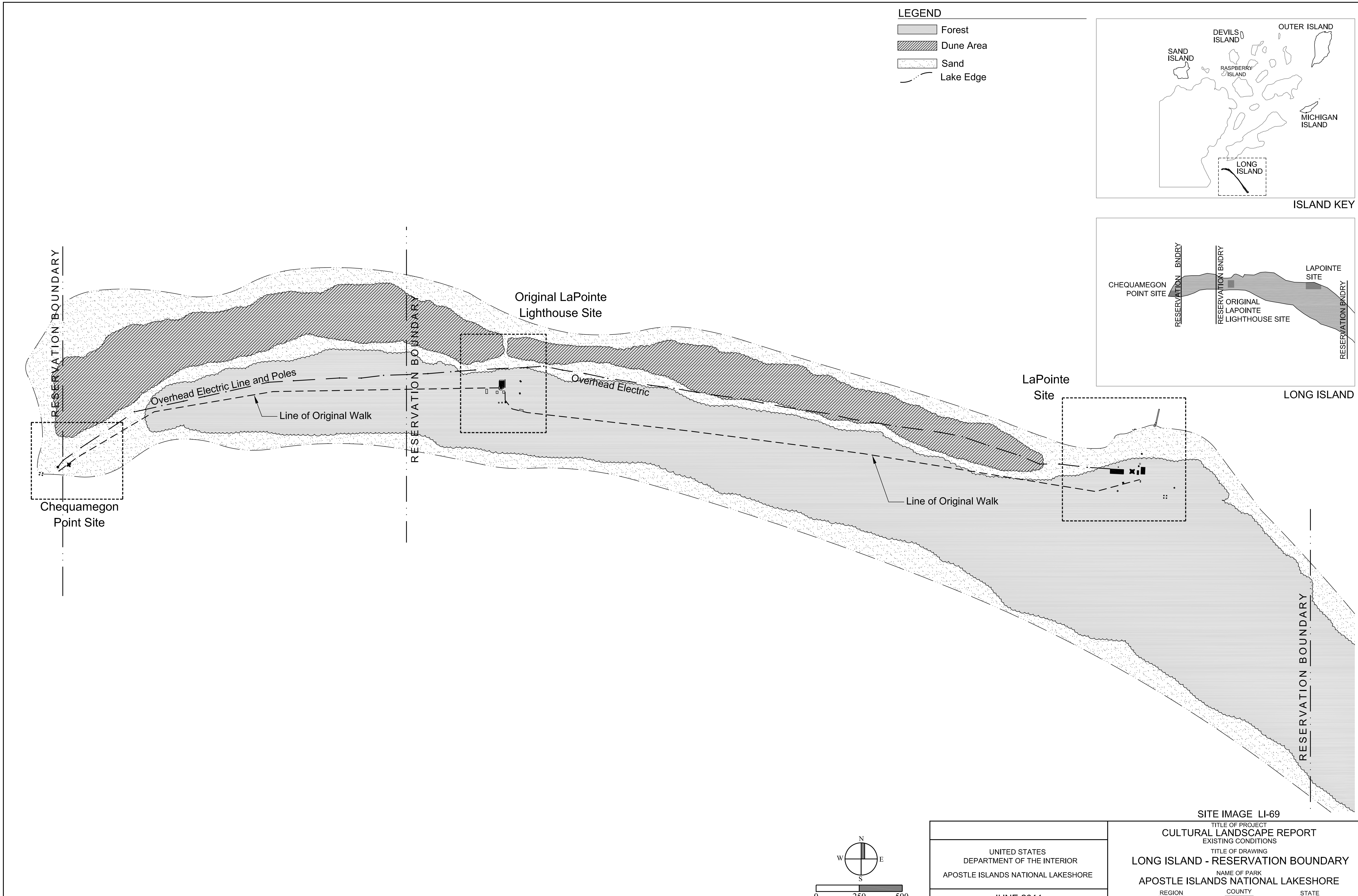
Historic photographs indicate a substantial area around the Original LaPointe Lighthouse was cleared of, or lacked forest vegetation. Today, the Original LaPointe Lighthouse retains none of that cleared area and the grounds have been completely overgrown with naturalized forest vegetation. As previously presented, the relationship of the grounds to the Lake Superior shoreline has dramatically changed since the Lighthouse was first built. Although the sandy soil made gardening difficult, historic photographs indicate several domestic tree plantings along the sides of the lighthouse/keepers quarters. Historic documents refer to vegetable gardens in stone cribs were planted by the keepers and their families. Several cottonwoods and maples extant on the site closely correspond with historic photographs and may be original plantings or descendents of original plantings. These plantings are contributing features.

At Chequamegon Point, the site remains cleared as it was during the period of significance. The area has remained low dune vegetation with minimal forest encroachment from the east.

Periwinkle (*Vinca minor*) has encroached into the surrounding forest. No documentation was found as to where periwinkle was planted historically at the Long Island Light Station but it was commonly used as an ornamental ground cover at other light stations.

Long Island is very dynamic and the vegetation community is very fragile. Plants that hold the sand together are very sensitive to disturbance and areas quickly become denuded of both vegetation and plant litter, greatly increasing erosion.

The cleared area of the light station sites are an important contributing feature. The relationship between the extent of the cleared area and forest vegetation on the reservation has changed significantly since the period of significance. The extensive encroachment of forest vegetation diminishes the integrity of the cultural landscape.



SITE IMAGE LI-69

UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE

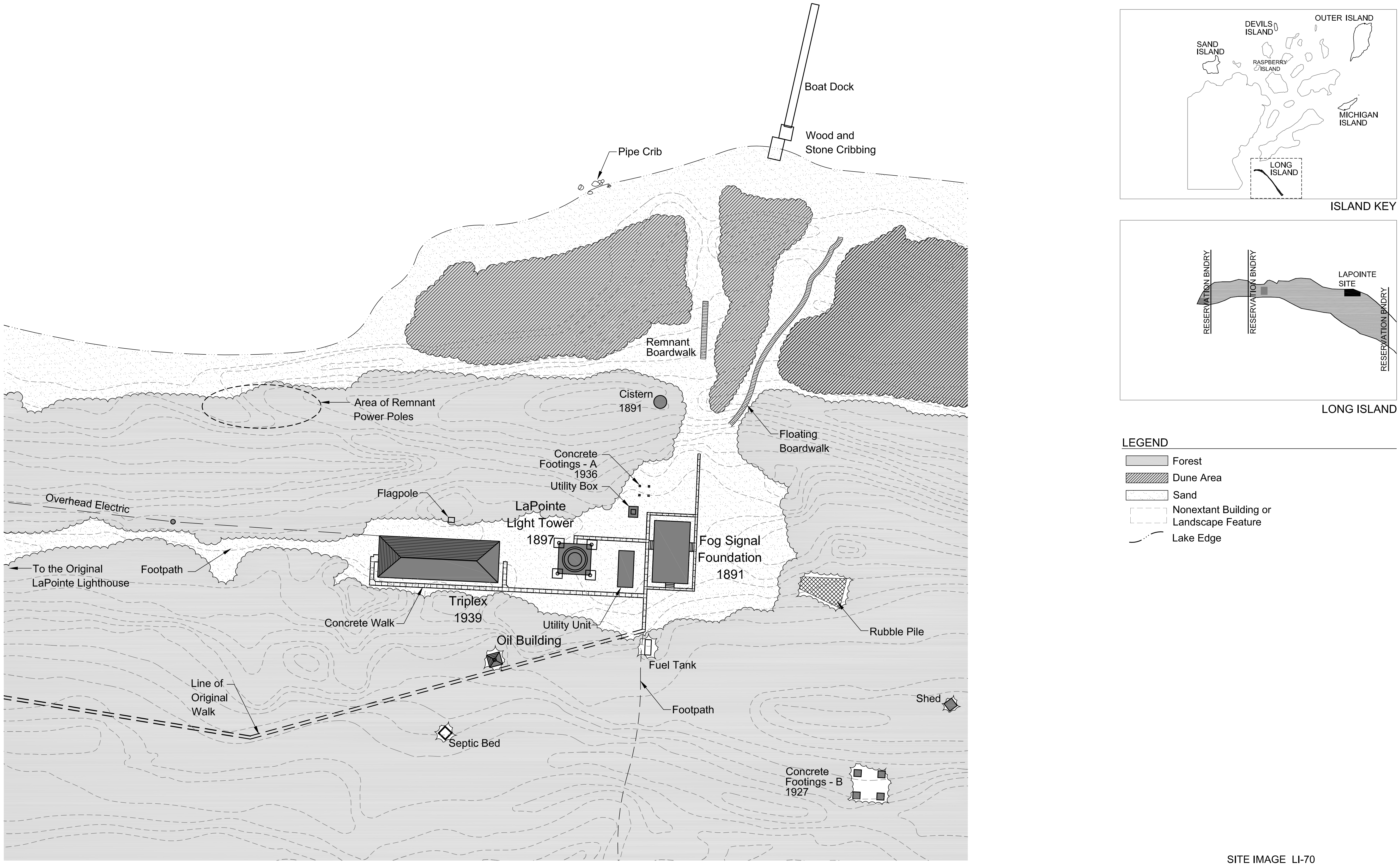
JUNE 2011

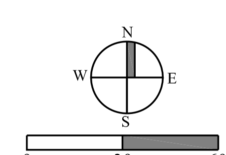
TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
EXISTING CONDITIONS

TITLE OF DRAWING
LONG ISLAND - RESERVATION BOUNDARY

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN





SITE IMAGE LI-70

UNITED STATES
DEPARTMENT OF THE INTERIOR

APOSTLE ISLANDS NATIONAL LAKESHORE

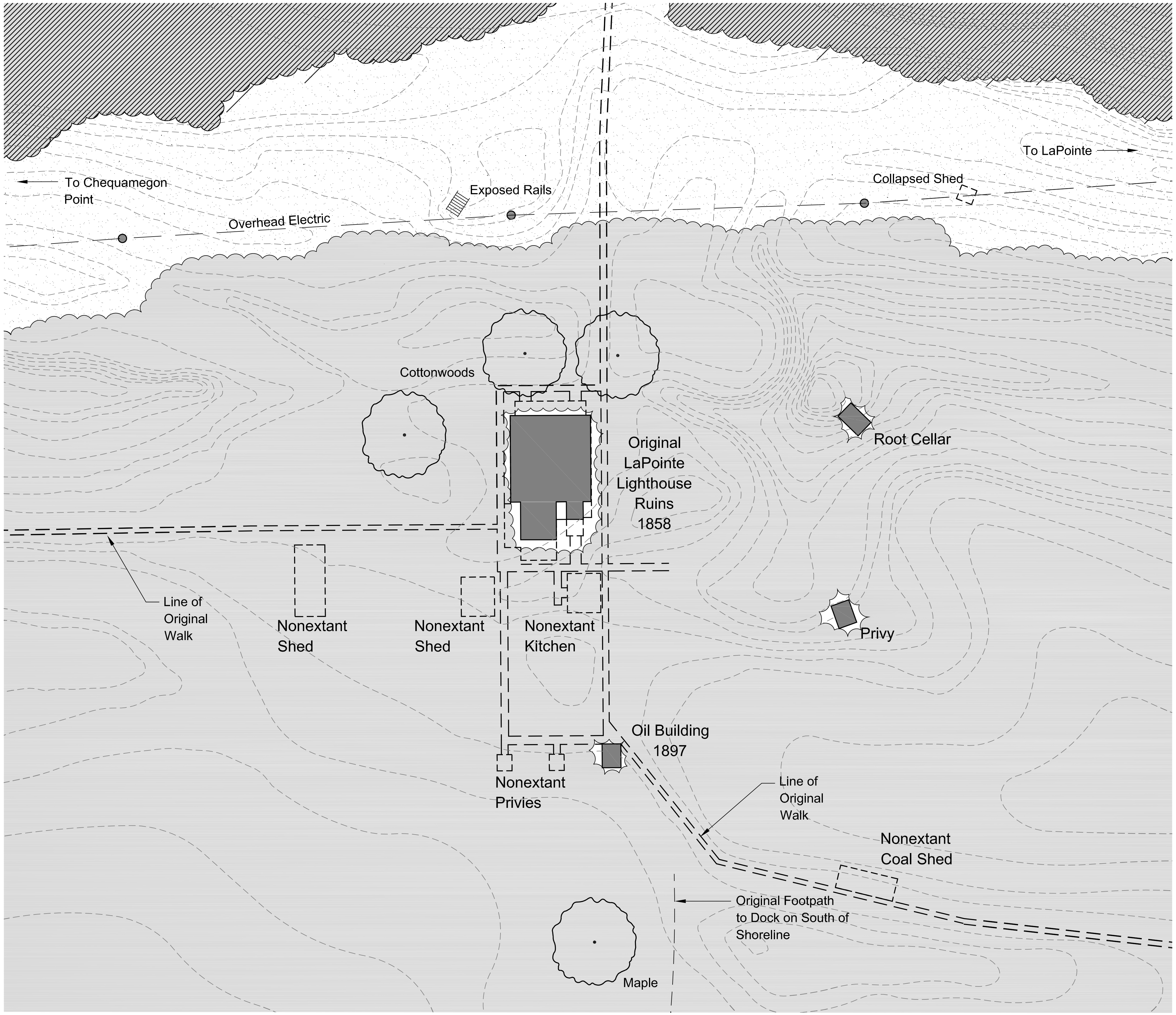
JUNE 2011

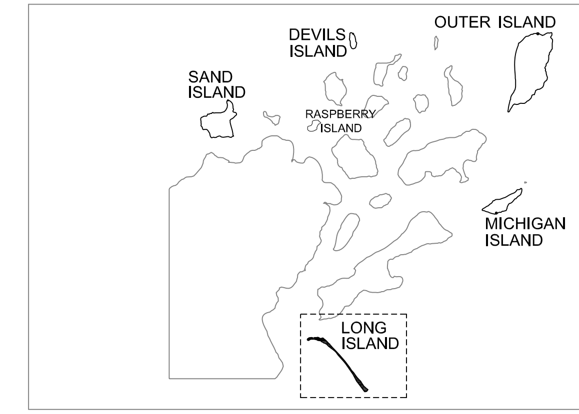
TITLE OF PROJECT
CULTURAL LANDSCAPE REPORT
EXISTING CONDITIONS

TITLE OF DRAWING
LONG ISLAND - LAPOINTE SITE

NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE

REGION	COUNTY	STATE
MIDWEST	ASHLAND	WISCONSIN





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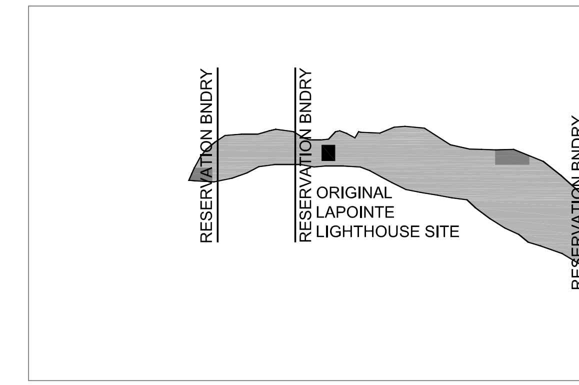
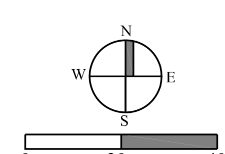


LONG ISLAND

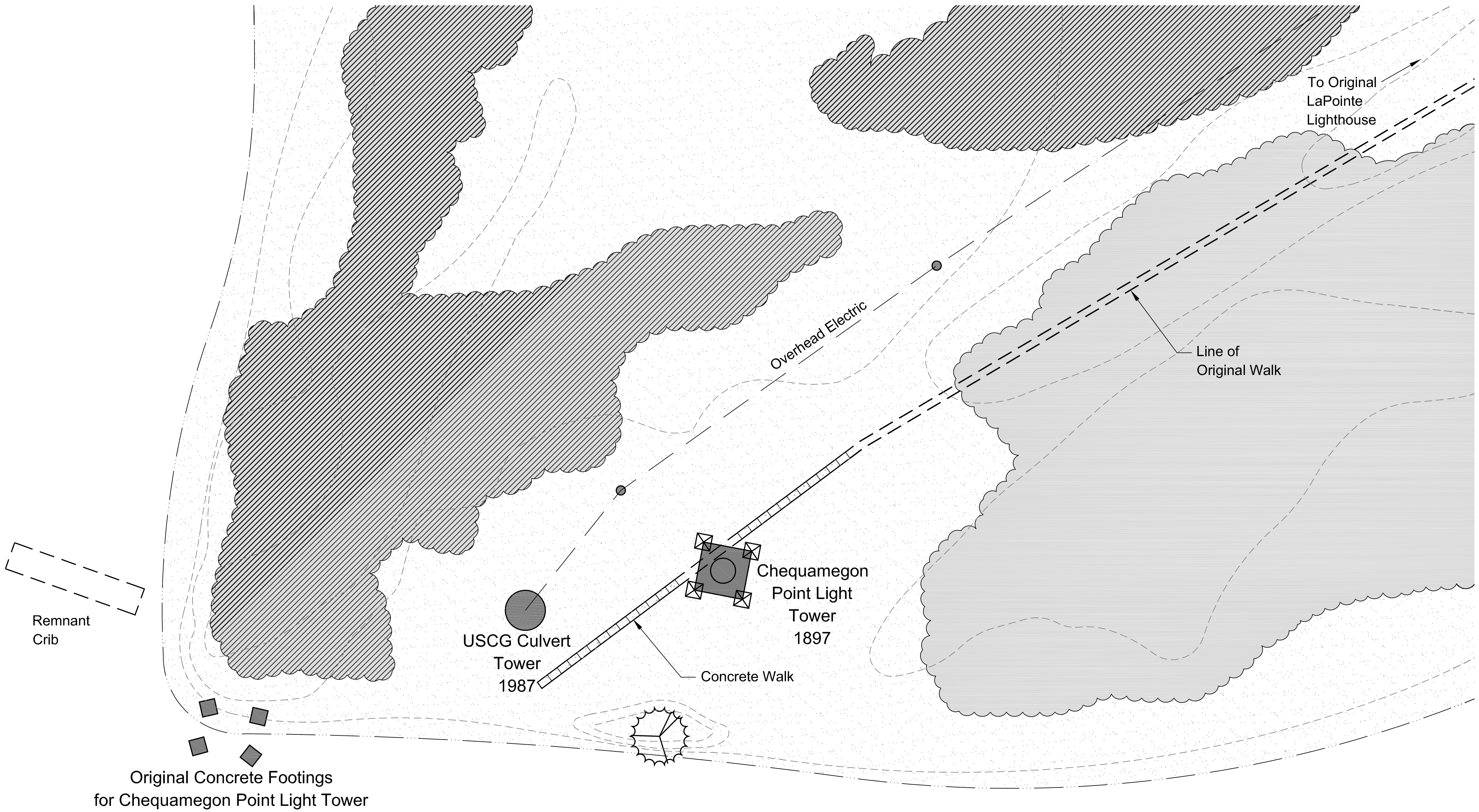
LEGEND

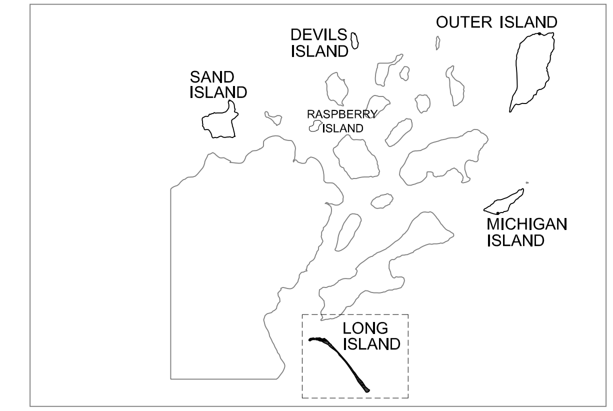
- Forest
- Dune Area
- Sand
- Deciduous Tree
- Nonextant Building or Landscape Feature



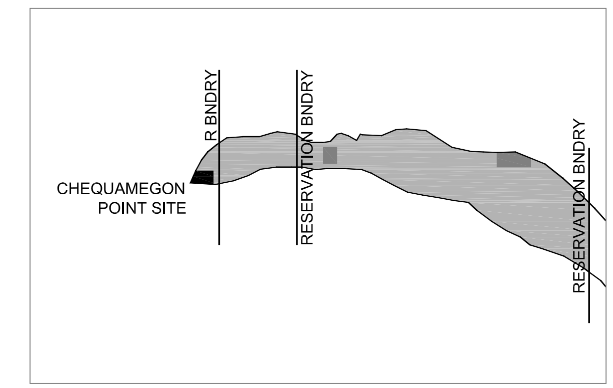
SITE IMAGE LI-71

UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT EXISTING CONDITIONS TITLE OF DRAWING LONG ISLAND-ORIGINAL LAPOINTE LTHOUSE SITE NAME OF PARK APOSTLE ISLANDS NATIONAL LAKESHORE
JUNE 2011	REGION MIDWEST · COUNTY ASHLAND · STATE WISCONSIN





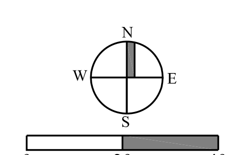
ISLAND KEY



LONG ISLAND

LEGEND

- Forest
- Dune Area
- Sand
- Evergreen Tree
- Nonextant Building or Landscape Feature
- Lake Edge



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UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT CULTURAL LANDSCAPE REPORT EXISTING CONDITIONS TITLE OF DRAWING LONG ISLAND - CHEQUAMEGON POINT SITE NAME OF PARK APOSTLE ISLANDS NATIONAL LAKESHORE
JUNE 2011	REGION: MIDWEST COUNTY: ASHLAND STATE: WISCONSIN

LONG ISLAND LIGHT STATION CLR TREATMENT

Introduction

In conjunction with the HSR the treatment section of the CLR recommends a strategy for the long-term management of the cultural landscape and historic structures of the Long Island Light Station. The strategy is based on the analysis of the cultural landscape's characteristics, the history and period of significance for the light station, the existing condition of the historic features, and contemporary use of the light station. A general management philosophy of rehabilitation has been identified as the appropriate approach for the treatment of the cultural landscape. Rehabilitation will allow for repairs, alterations, and additions that will be necessary for the compatible use of the light station, and will preserve the characteristics and features that convey the light station's historical, cultural and architectural values.[32] The recommended treatment will enable the park to preserve the contributing features of the cultural landscape, while allowing for specific alterations to accommodate contemporary use and interpretation of its history.

TREATMENT GOALS

- Preserve extant contributing cultural resources
- Reestablish missing resources
- Reveal the cultural landscape by representing the important characteristics from the period of significance
- Improve understanding of the overall system of light stations in the Apostle Islands for both visitors and park staff by incorporating interpretation of landscape resources that have been repaired or reestablished
- Aid in preserving the natural resources of the light station reservation by monitoring and controlling invasive plant material and directing visitor use

TREATMENT TERMINOLOGY

The following terms are used frequently in the CLR for actions that address the cultural landscape and its features, and are defined below. A more detailed glossary is presented in the Glossary of Terms at the end of this volume.

Maintain. Maintain includes the standard maintenance practices (mowing, pruning, thinning of vegetation, painting and cleaning of small scale features) that are necessary to retain a feature or area as a contributing resource. Maintenance activities are usually not classified as repair, however minor repair such as replacement of posts or railings or segments of paving are included.

Plant. Plant or planting includes the planting or removal and replanting of landscape material and vegetation as part of maintenance activities, or the restoration of missing landscape planting features.

Reestablish. The measures necessary to depict a feature or area as it occurred historically. Reestablish may include replacement of missing features (such as replacement of a pattern of planting) or a missing quality (e.g., reestablishment of a view).

Relocate. Relocate includes the removal and resetting of features in new locations. This is usually associated with noncontributing features.

[32] Landscape Lines.

Remove. The actions required to remove nonhistoric or noncontributing features. This is usually associated with noncompatible features in the landscape.

Repair. Repair includes the measures necessary to maintain features, components of features, and materials that require additional work. These may include repairing declining structures, small scale features (e.g., repair of a railing) or landscape plantings (e.g., repair mass planting by adding infill plantings). Features that are repaired shall match the original in design, color, texture, and where possible, material.

Restore. The measures necessary to depict a feature or area as it occurred historically. Restoration may include repair of a feature so that it appears as it did historically.

Retain. These are actions that are necessary to allow for a feature (contributing or noncontributing) to remain in place in its current configuration and condition.

Stabilize. Stabilize refers to immediate measures (more extensive than standard maintenance practices) that are needed to prevent deterioration, failure, or loss of features.

PREFERRED TREATMENT ALTERNATIVE

Three treatment alternatives were considered during the development of the CLR/HSR. The CLR/HSR presents only the Preferred Treatment Alternative. The other treatment alternatives considered are presented in the Environmental Assessment.

Intent of Preferred Treatment Alternative

The Long Island Light Station is significant to the Apostle Islands system of light stations because: 1) it represents the development of navigational aids along the southern shipping route to Ashland and Bayfield; 2) its intertwined relationship with the Michigan Island Light Station; and 3) it clearly depicts improvements in navigational and light station technology. The lives of the keepers and their families were impacted by the progression of new navigational technologies made evident by the historic features of the cultural landscape. By preserving, rehabilitating, or reestablishing these features, the treatment approach of the CLR/HSR strives to clearly depict the story of the Long Island Light Station.

The intent of the preferred treatment is to rehabilitate the cultural landscape of the Long Island Light Station to portray the period of navigational history the light station best represents within the system. The period of significance for the Long Island Light Station (1858 –1964) begins with the establishment of the Original LaPointe Lighthouse, and ends with automation of the LaPointe Light Tower. The extant contributing features best represent the Light Towers (1890-1938) and Triplex/Coast Guard (1939–1964) periods described in the Site Development section of this chapter. The treatment approach for the contributing features emphasizes these periods when the light station was in its most vibrant state. Recommendations also include the restoration of landscape features lost since the period of significance.

Preferred Treatment Alternative (Site Image LI-75, Site Image LI-76, Site Image LI-77, Site Image LI-78)

The treatment measures are intended to preserve and rehabilitate the cultural landscape features. This requires a variety of actions that may be accomplished by either a series of preservation steps implemented over time or as a one-time action paired with future maintenance. Emphasis should be placed on the preservation and/or rehabilitation of the contributing features that most strongly define the character of the landscape as outlined above.

Specific treatment measures are depicted in a series of plan drawings and are accompanied by detailed narrative descriptions, organized by landscape characteristics and presented as follows.

SPATIAL ORGANIZATION/VIEWS AND VISTAS

Spatial organization is a key feature of the cultural landscape and is primarily defined at the Long Island Light Station by the relationship between the light station grounds and Lake Superior; and the relationship between buildings, structures, circulation features and the cleared area of the light station. The arrangement of buildings and structures has remained intact; however the cleared area of the three sites and the historic connecting corridor have been substantially changed and reduced from the period of significance. The encroachment of forest vegetation into the historically cleared areas of the reservation has reduced the cleared area immediately around the LaPointe and Original LaPointe Lighthouse sites and changed the open character of these areas. The views from Lake Superior and Chequamegon Bay to the grounds and navigational aids are also an important component of the cultural landscape and have been changed by the encroachment of forest vegetation, most notably at the LaPointe grounds. This encroachment of forest vegetation has diminished the integrity of the cultural landscape.

Additional information regarding the means and methods of clearing forest vegetation is presented in Volume I, Chapter 5: *Management Issues* and under the vegetation section.

The treatment recommendations include 1) preserving the existing organization of buildings, structures, and site features; 2) reestablishing the cleared area of the landscape to better depict its condition during the period of significance; 3) clearing to maintain fire buffers at buildings; 4) clearing of historic circulation routes; and 5) maintaining views from the lake and bay to the light station by removal of trees along the shoreline. Individual treatment measures are presented as follows:

Vegetation clearing to reestablish portions of the cleared area may be undertaken on an incremental approach addressing the most critical and beneficial areas of clearing areas first. Emphasis should be placed areas that most strongly define the character of the landscape listed below in order of priority:

- Clearing for fire protection adjacent to existing buildings and structures;
- Clearing to reestablish the view from Lake Superior to the LaPointe site;
- Clearing to prevent deterioration of contributing structures or small scale features such as the sheds and root cellar;
- Incremental clearing at the Original LaPointe Lighthouse site to stabilize the ruin and reestablish a portion of the historic cleared area;
- Clearing along the connecting corridor leading away from each site to indicate the direction of the nonvisible or nonextant connecting concrete walk;
- Clearing to reestablish a portion of the historic cleared area at each site;

Light Station Clearing

Reestablish the cleared area of the three sites to a condition that better represents the period of significance, specifically the Light Towers period (1890–1938). Clearing includes the careful removal of forest vegetation (trees and large shrubs) that have encroached on the grounds of the sites. At the LaPointe and Original LaPointe Lighthouse sites clearing includes the removal of forest trees in a portion of the historically cleared area and allowing establishment of low dune/beach grass vegetation found adjacent to each site. The low dune vegetation may contain beach grasses, junipers and other native species, as well as areas of bare sand. Further study is required to develop a specific species list and plan for revegetation, that will be suitable and noninvasive, and guidelines for removal of forest vegetation. Regular maintenance and protection of the cleared areas will be required as the dune vegetation and soils are sensitive to disturbance and overuse. Maintenance primarily includes the manual removal of trees, control of invasive or undesirable vegetation, and protection of sensitive areas from foot traffic.

The clearing work at the Original LaPointe Lighthouse site may be approached on an incremental basis with the first step being the removal of vegetation from the ruin itself and future steps expanding the cleared area of the site to a size (e.g. 30' around ruin) that the Park deems maintainable. Any clearing done at this site will help to increase the understanding of the history and use of the light station. Emphasis should be placed on areas that most strongly define the character of the landscape listed below in order of priority:

- Clearing for fire protection adjacent to existing buildings and structures;
- Clearing to prevent deterioration of contributing structures or small scale features such as the root cellar and Original Lapointe Lighthouse ruin;
- Clearing to reestablish the connecting corridor;
- Clearing to reestablish historic cleared areas;

Reestablish Connecting Corridor

This treatment measure is intended to reestablish and reestablish the linear connecting corridor between the three sites to a condition that better represents the period of significance, specifically the Light Towers period (1890-1938).

The treatment includes the removal of forest vegetation that has encroached into the historic alignment of the connecting corridor, to better depict the light station as it was during the period of significance. The corridor is intended to follow the historic line of the concrete walk that formerly connected the sites during the period of significance. Clearing includes the removal of forest trees and shrubs in an 8' wide corridor, along the historic alignment to accommodate an informal footpath of native soil or sand. Regular maintenance and protection of the corridor will be required as the dune vegetation and soils are sensitive to disturbance and overuse. Maintenance primarily includes the manual removal of trees, control of invasive or undesirable vegetation, and protection of sensitive areas from foot traffic.

Reestablishing the connecting corridor between the three sites may be approached on an incremental basis with the first step being the reestablishment of the visual line away from each site as a way of indicating the historic use and form of the corridor. Future steps expanding the length of the corridor and connecting the sites may be done on a basis that the park deems maintainable. Clearing work shall avoid areas of wetlands.

Clearing for Fire Prevention

Maintain cleared areas, free of trees, to achieve a buffer of approximately 50' from the Triplex, LaPointe Light Tower, and Chequamegon Point Light Tower.

CIRCULATION/ SITE ACCESSIBILITY

The loss of circulation patterns and features on the Island has diminished the integrity of the cultural landscape. The preferred treatment alternative focuses on reestablishing the primary circulation route between the light station sites and preserving the extant, contributing circulation features.

The circulation patterns on the light station were changed during the Light Towers period (1880-1938) with the expansion of the light station to include two additional sites, one east and one west of the Original LaPointe Lighthouse grounds. A connecting corridor and concrete walk was established between the sites to support the operations and maintenance of the light station. The light station has had several boat landing structures during its history. The boathouses that once existed at all three sites are no longer extant and one boat dock remains.

The circulation features help to define the arrangement of the site and are important to the integrity of the cultural landscape. The treatment measures focus on retaining and reestablishing primary circulation patterns and reestablishing or preserving the circulation features. Actions important to maintaining the integrity of the light station include reestablishing the connecting corridor between the three sites, retaining the location of the LaPointe boat dock, and preserving concrete walks throughout the station.

LaPointe Site

Maintain all concrete walks in current locations and configurations to preserve historic circulation patterns. Retain the boat dock in its current location. Retain extant, remnant boardwalk to preserve the historic circulation pattern at LaPointe and allow for the temporary, floating boardwalk to be installed and relocated as necessary as the shoreline/sand dunes shift. Maintain the cleared corridor for the footpath leading from the LaPointe grounds to Chequamegon Bay and retain the sheet metal covering on the path.

Original LaPointe Lighthouse Site

Treatment measures at the Original LaPointe Lighthouse grounds are limited to reestablishing the corridor for the connecting footpath between the sites and maintaining existing concrete walks found on the site. Additional noninvasive site investigations should be done to determine if concrete walks are present beneath the sand.

Chequamegon Point Site

Treatment measures at the Chequamegon Point grounds are limited to reestablishing the corridor for the connecting path between the sites and maintaining existing concrete walks found on the site.

Accessibility (ABAAS)

An Accessibility Self Evaluation and Transition Plan (Plan) separate from the CLR/HSR is being developed to provide an overall plan for the six light stations in the Apostle Islands – Raspberry, Michigan, Outer, Devils, Long, and Sand islands. This work is intended to address the park as a whole and the accessibility requirements related to visitor services to be achieved at each individual light station. At the time of this report the Plan is in progress. The CLR/HSR incorporates several standard recommendations into each of the light station's plans to prepare the light station grounds and buildings for the implementation of recommendations from the transition plan.

Recommendations for the Long Island Light Station are:

- Provide programmatic access to the Long Island story at the light station and APIS Visitor Center in Bayfield.

Further discussion regarding the overall accessibility approach for the system of light stations is included in Volume I, Chapter 5: *Management Issues.*

STRUCTURES

There are numerous structures on the light station that provide a human scale to the cultural landscape while conveying important details regarding the history and use of the light station. Treatment recommendations are described in detail for structures and are organized by site. In general the recommendations for these features are focused on preserving all of the contributing structures.

LaPointe Site

Boat Dock

Repair and maintain the boat dock to a working condition in its current location and configuration. The boat dock should be repaired as needed and determined by NPS. Boat dock planning work is currently under study under separate but related projects. Further discussion regarding boat docks is included in Volume I, Chapter 5: Management Issues.

Fog Signal Building Foundation

Maintain the foundation of the original fog signal building to prevent further deterioration of the feature. Treatment measures are as follows:

- Remove all vegetation on top of and adjacent to the foundation;
- Repair mortar and brick masonry where needed (new mortar to match existing);
- Clean and seal surface foundation cracks that may lead to increased deterioration.

Shed

Repair the shed by implementing the following treatment measures to stabilize and protect the shed from accelerated deterioration:

- Repair roof the shed with new roofing material;
- Provide new door to secure the interior of the shed from weather and wildlife;
  Paint of the shed exterior – protect from weather.

Original LaPointe Lighthouse Site

Structures at the Original LaPointe Lighthouse grounds include the ruins of the Original LaPointe Lighthouse, the Oil Building, a wooden shed, a root cellar and several remnant structures related to the Original LaPointe Lighthouse site.

Original Lighthouse Ruin

Stabilize the lighthouse ruin and make repairs related to visitor and operations safety. Treatment measures are as follows.

- Remove trees and shrubs from within the ruin that may potentially impact structural stability of the feature;
- Repair mortar in targeted areas to maintain stability and reduce the rate of deterioration (new mortar to match existing);
- Remove hazardous wood material from walls or flooring of the interior space and store for future use;
- After vegetation removal, level existing base material and rubble on interior of ruin to fill hazardous holes – do not remove material or excavate;
- Monitor deterioration of ruin on an annual basis to determine if further stabilization is required;
- Undertake archeological investigations as presented in Areas of Further Investigation.

Oil Building

Repair the Oil Building by implementing the following treatment measures:

- Secure the door with a locking latch;
- Paint the metal trim and door;
- Replace the floor joists and flooring (new material to match existing);
- Clean and paint the interior walls and ceiling.

Privy

Stabilize the privy by implementing the following treatment measures to reduce the rate of deterioration.

- Repair roof the privy with new roofing material;
- Repair and secure the door.

Chequamegon Point Site

USCG Culvert Tower

The culvert tower should be removed from the island after the completion of the repairs to the Chequamegon Point Tower. The return of the light to the Chequamegon Point Tower is subject to USCG approval.

SMALL SCALE FEATURES

There are numerous small scale features on the light station that provide a human scale to the cultural landscape while conveying important details regarding the history and use of the light station. Treatment recommendations are described in detail for notable, contributing small scale features and are organized by site. Treatment recommendations noncontributing features are presented in Table LI-7. In general the recommendations for these features are focused on preservation and include:

- Retain all contributing small scale features;
- Retain noncontributing, compatible features including park and trail signs;
- Remove noncontributing, noncompatible features.

Concrete Walks

Concrete walks exist at all three sites. Repair and maintain all concrete walks in the current, historic locations. Repair includes the removal and replacement of isolated, severely cracked sections. Replacement of damaged sections shall be completed with precast units matching the dimensions of the existing concrete slabs, poured and finished prior to installation. The mix, aggregate size and finish of the replacement sections should be similar to the historic material. Maintenance includes vegetation removal and minor leveling to eliminate trip hazards. At each site, use noninvasive methods to locate any walks that have been buried by sand but can be easily uncovered.

LaPointe Site

The LaPointe site contains both contributing and noncontributing small scale features. All of the contributing small scale features including, pipes along shore, pipe cribs, and rock cribs in the lake shall be retained and preserved. These contributing features directly relate to the technology and operation of the light station

Cistern and Piping

The brick and concrete cistern and associated piping was part of the original water supply to the fog signal. These features shall be preserved with the following measures:

- Remove vegetation adjacent to the cistern;
- Repair mortar joints and make minor masonry repair to the cistern (new mortar to match existing);
- Alter the concrete top to allow for a compatible, lockable cover;
- Retain all galvanized water supply piping in place.

Flagpole

Repair flagpole, by straightening if feasible, or cutting and reattaching with a sleeve, Repaint the pole, replace hardware and halyard and reset the pole on the extant concrete base.

Concrete Footings – A and B

Retain all concrete footings in the current locations. The footings mark the former locations of the radio antennae tower and radio beacon tower on the site.

Rubble Piles

Retain and protect all rubble piles. See Areas of Further Investigation - Archeological Features for additional information.

Original LaPointe Lighthouse Site

Root Cellar

Protect the root cellar by removing any vegetation that may be damaging buried portions of the structure and directing water away from structure. Provide additional noninvasive site investigations to determine extent and condition of buried structure.

Remnant Shed

Retain shed remnants, protect from vandalism. See Areas of Further Investigation for additional information.

Chequamegon Point Site

Retain all contributing small scale features including the remnants of rubble landing cribs and the concrete light tower footings located in the water along the shoreline.

The following table (Table LI-7) provides recommendations for small scale features identified as noncontributing.

Table LI-7. Small Scale Features (Noncontributing)

Feature	Compatible?	Status
Overhead Electric Line and Poles	Noncontributing Compatible	Remove – After electric power is no longer required for USCG Culvert Tower
Floating Boardwalk	Noncontributing Compatible	Retain – Allow for relocation as dunes shift
Fuel Tank	Noncontributing Compatible	Remove
Utility Units	Noncontributing Noncompatible	Remove

VEGETATION

As previously presented under Spatial Organization the cleared area of the light station sites have been substantially reduced from the period of significance. This treatment recommendation includes the removal of forest vegetation at each site to reestablish a portion of each cleared area and provide a fire protection buffer for buildings and structures.

Maintain newly cleared areas as dune vegetation. Further study is required to develop a specific species list and plan for revegetation, that will be suitable and noninvasive, and guidelines for removal of forest vegetation. In general all clearing work shall be done in a selective and noninvasive manner to protect and preserve existing understory and dune vegetation. Further discussion on means and methods of clearing are discussed in Volume I, Chapter 5: *Management Issues.*

The light station reservation and individual sites should be monitored for the presence and growth of invasive plants. Remove periwinkle (*Vinca minor*) that has encroached into the surrounding forest. Do not introduce any potentially invasive plant material into the light station light station. Isolated wetland areas occur in several areas on the light station primarily along the connecting corridor between Chequamegon Point and the Original Lighthouse site. Wetland areas shall not be disturbed.

Historically, domestic landscape and garden plantings played a minor role in the cultural landscape of the Long Island Light Station. Historic documents indicate the lighthouse keepers and their families planted vegetable gardens in cribs at the Original LaPointe Lighthouse grounds. No extant remains of these gardens have been found to date and no historic photographs were found during this study. No recommendations are made regarding domestic plantings.

AREAS OF FURTHER INVESTIGATION

Archeological Investigations

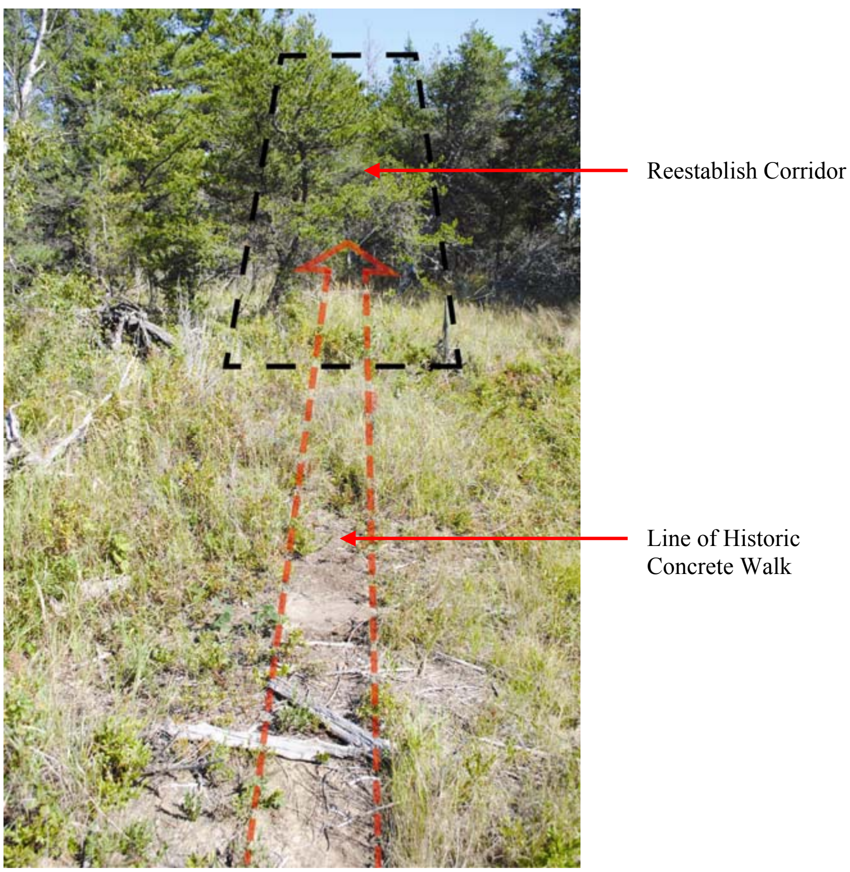
Complete an archeological survey for all known resources in the light station reservation using nondestructive investigations to document the extent of buried or nonvisible cultural resources that exist across the Island. Consider using ground penetrating radar and other noninvasive measures to assist in locating resources. If a comprehensive survey for the entire Island is not possible, complete archeological investigations for proposed projects in advance of any other work on the project, including demolition. In compliance with the National Historic Preservation Act, and in consultation with the NPS Midwest Archeological Center, undertake archeological investigations for all projects, as appropriate to their scale, impacts, and extent of ground disturbance.

Concrete Walks

Further investigation should be undertaken to locate the concrete walk connecting the three sites. It is possible, although no formal documentation exists, that a portion of the walk remain in place, nonvisible, buried beneath the sand.

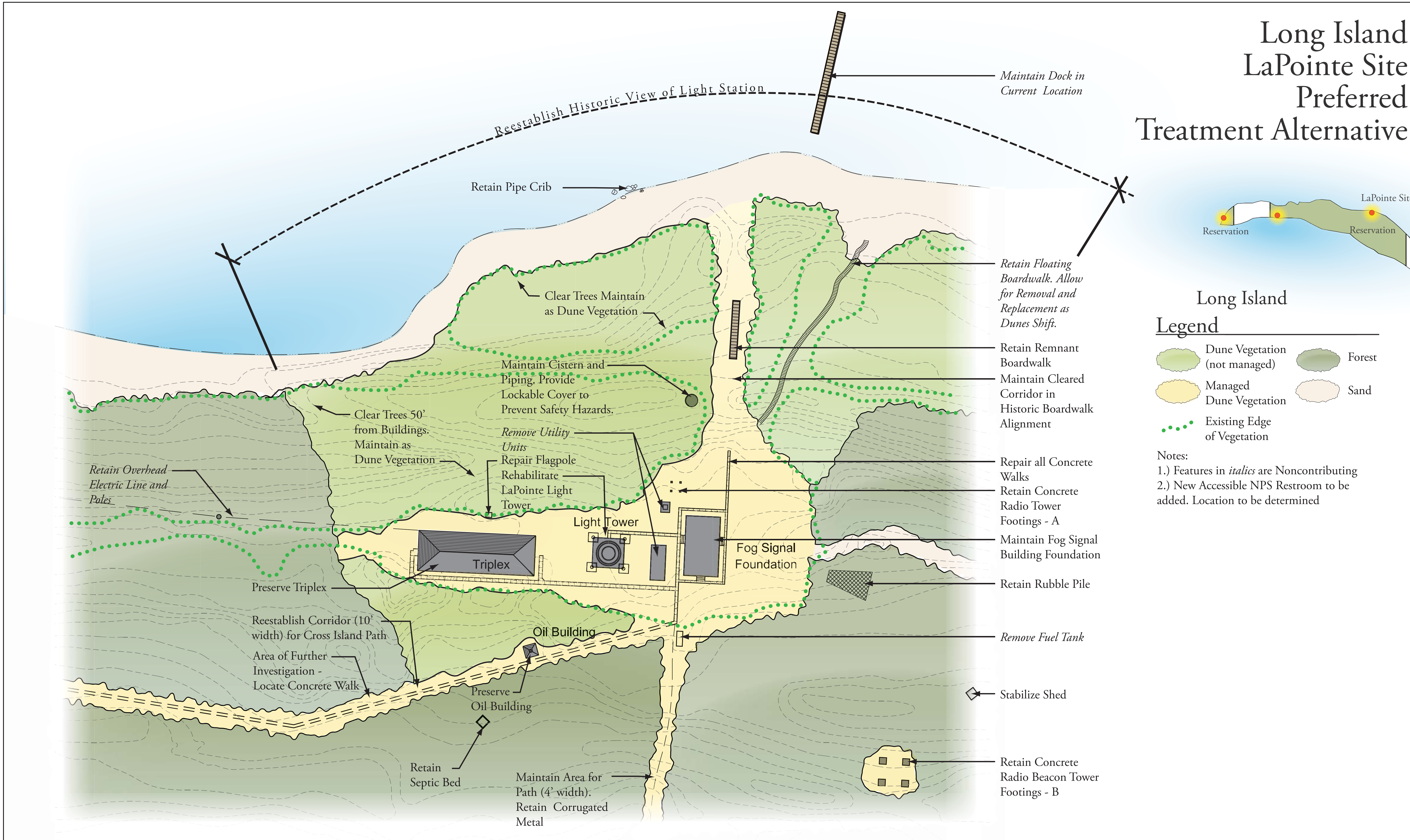
Treatment Images

Site Image LI-73: Typical low dune vegetation on Long Island, 2009 (Source: MBD DSC_0073.JPG)



Site Image LI-74: Reestablish the cleared corridor between the three sites and uncover extant concrete walks, 2009 (Source: MBD DSC_0068_ANNOTATED.JPG)

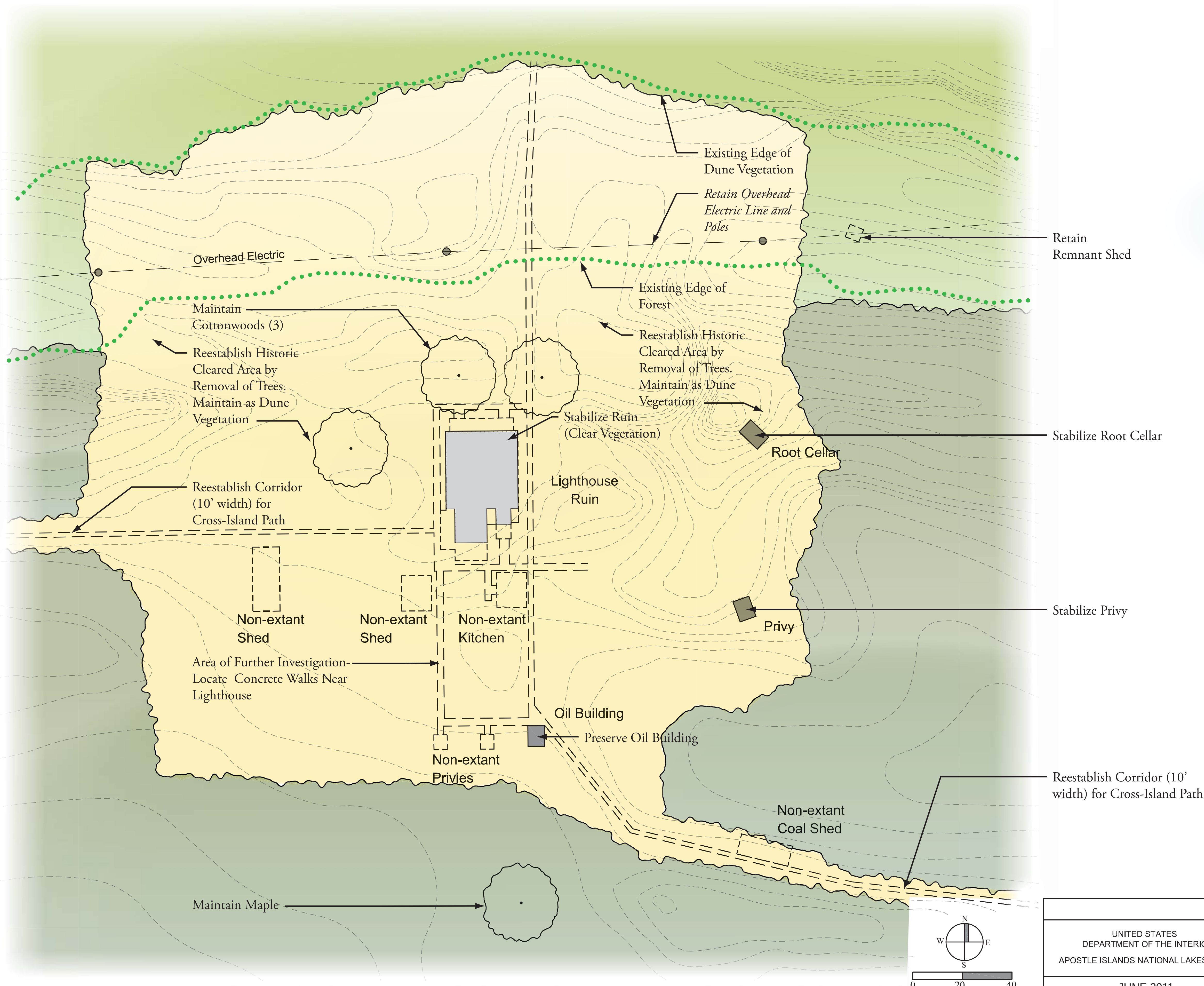

Long Island Reservation
Preferred
Treatment Alternative
Original LaPointe
Lighthouse Site
LaPointe Site
Chequamegon Point
Site
Long Island
Legend
Dune Vegetation
(not managed)
Forest
Managed
Dune Vegetation
Beach/
Sand
Note: Features in *italics* are Noncontributing
Lake Superior
Chequamegon Bay
HISTORIC
RESERVATION BOUNDARY
HISTORIC
RESERVATION BOUNDARY
HISTORIC
RESERVATION BOUNDARY
Original LaPointe
Lighthouse Site
LaPointe Site
Chequamegon Point
Site
Retain Overhead
Electric Line and Poles
Retain Overhead
Electric Line and Poles
Reestablish Corridor
(10' width) for
Cross-Island Path
Reestablish Corridor
(10' Width) for
Cross-Island Path
N
W
E
S
0
250
500
SITE IMAGE LI-75
UNITED STATES
DEPARTMENT OF THE INTERIOR
APOSTLE ISLANDS NATIONAL LAKESHORE
JUNE 2011
TITLE OF PROJECT
HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT
& ENVIRONMENTAL ASSESSMENT
TREATMENT ALTERNATIVES
TITLE OF DRAWING
LONG ISLAND - RESERVATION BOUNDARY
NAME OF PARK
APOSTLE ISLANDS NATIONAL LAKESHORE
REGION
MIDWEST
COUNTY
ASHLAND
STATE
WISCONSIN

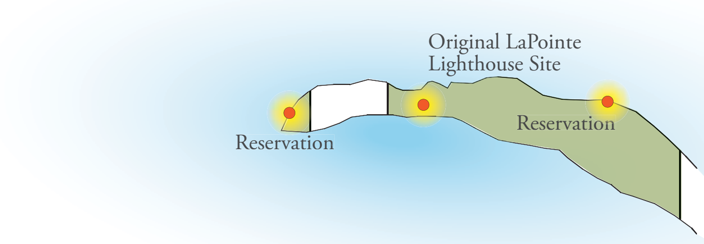


SITE IMAGE LI-76

UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT TREATMENT ALTERNATIVES TITLE OF DRAWING LONG ISLAND - LAPOINTE LIGHT STATION NAME OF PARK APOSTLE ISLANDS NATIONAL LAKESHORE
JUNE 2011	REGION MIDWEST · COUNTY ASHLAND · STATE WISCONSIN

Long Island Original LaPointe Lighthouse Preferred Treatment Alternative





Long Island

Legend

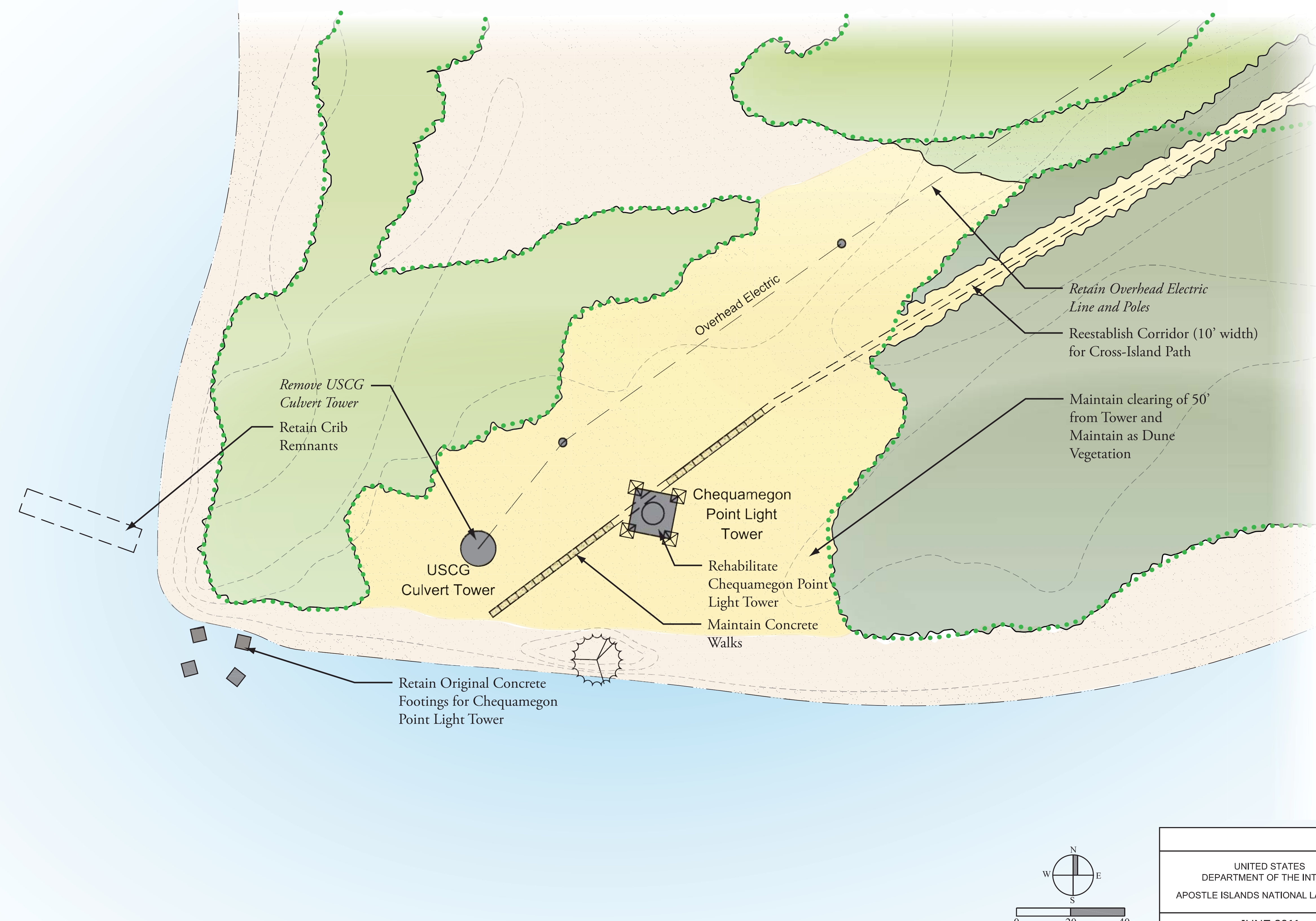
- Dune Vegetation (not managed)
- Forest
- Managed Dune Vegetation
- Existing Edge of Vegetation

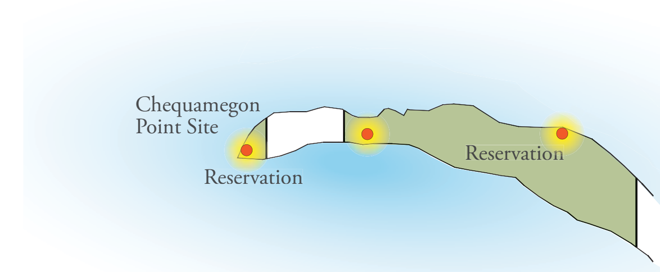
Note: Features in *italics* are Noncontributing

SITE IMAGE LI-77

UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT: HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT TREATMENT ALTERNATIVES TITLE OF DRAWING: LONG ISLAND - ORIGINAL LAPOINTE LIGHTHOUSE NAME OF PARK: APOSTLE ISLANDS NATIONAL LAKESHORE	
JUNE 2011	REGION: MIDWEST	COUNTY: ASHLAND — STATE: WISCONSIN

Long Island Chequamegon Point Preferred Treatment Alternative





Long Island

Legend

- Dune Vegetation (not managed)
- Sand/ Beach
- Managed Dune Vegetation
- Forest
- Existing Edge of Vegetation

Note: Features in *italics* are Noncontributing

SITE IMAGE LI-78

UNITED STATES DEPARTMENT OF THE INTERIOR APOSTLE ISLANDS NATIONAL LAKESHORE	TITLE OF PROJECT HISTORIC STRUCTURE REPORT, CULTURAL LANDSCAPE REPORT & ENVIRONMENTAL ASSESSMENT TREATMENT ALTERNATIVES TITLE OF DRAWING LONG ISLAND - CHEQUAMEGON POINT SITE NAME OF PARK APOSTLE ISLANDS NATIONAL LAKESHORE
JUNE 2011	REGION MIDWEST · COUNTY ASHLAND · STATE WISCONSIN

CHAPTER 4: HISTORIC STRUCTURE REPORT

LONG ISLAND INTRODUCTION

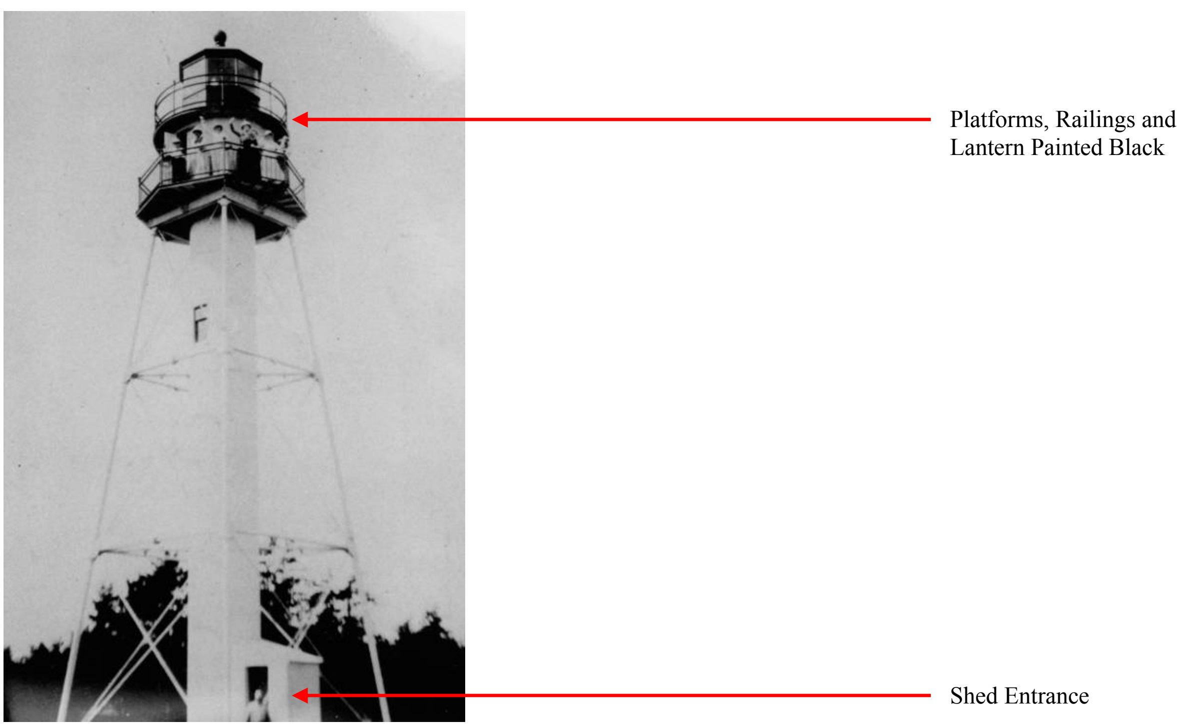
The following sections commence the HSR for Long Island. The disciplines of Architecture, Structural, Mechanical (HVAC and plumbing), Electrical and Environmental Engineering are addressed individually (refer to Volume I, Chapters 1 and 2 for more details on report organization and methodology). Long Island's extant buildings include:

- LaPointe Light Tower
- Chequamegon Point Tower
- Triplex
- Oil Building

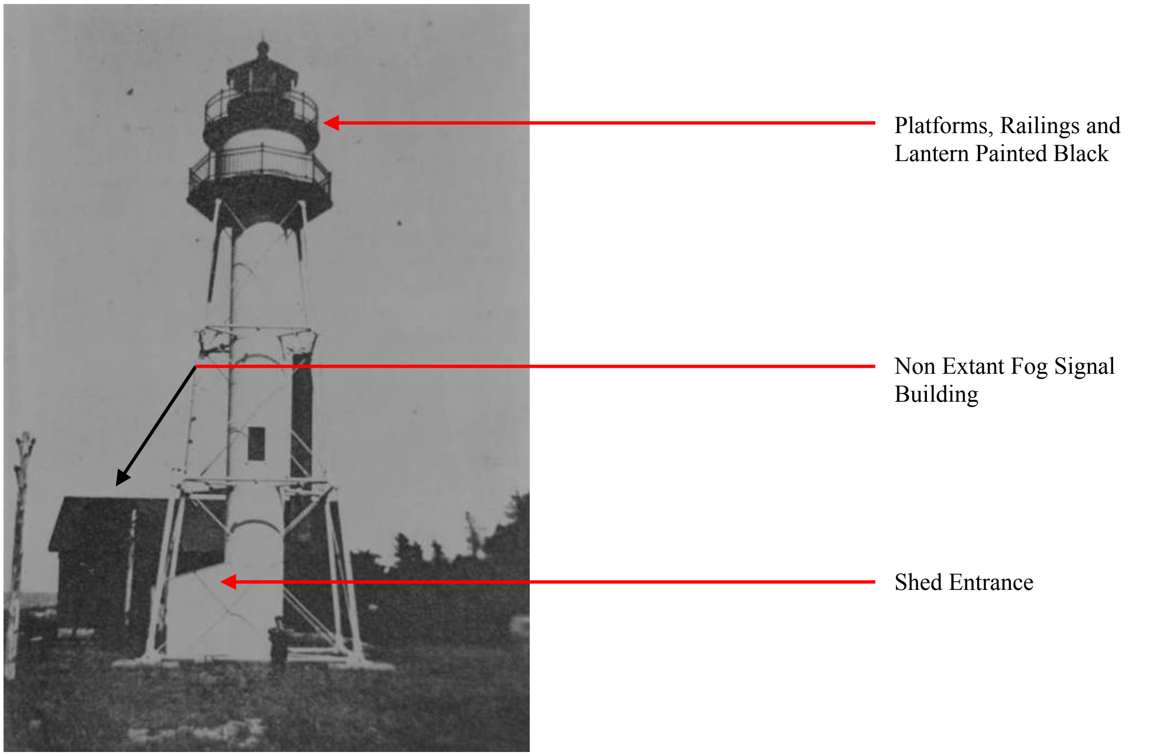
Original construction of each building is discussed, followed by its specific history/chronology of alterations (determined by studying historic photos, historic drawings, examining park records and archives and on site investigations and observations by the Study Team).

The Physical Description section describes the current conditions, by discipline and by component, as observed on site during the September 2009 site visit. Each component has been given a condition rating (as outlined in Volume I, Chapter 2: Methodology) in the Condition Assessment section. Treatment Recommendations are based on the Preferred Alternative of the May 2010 Value Analysis/CBA conducted at the park. The Triplex recommendations have been revised to reflect decisions made following the second Value Analysis of December 2010 and are more in keeping with preservation versus rehabilitation.

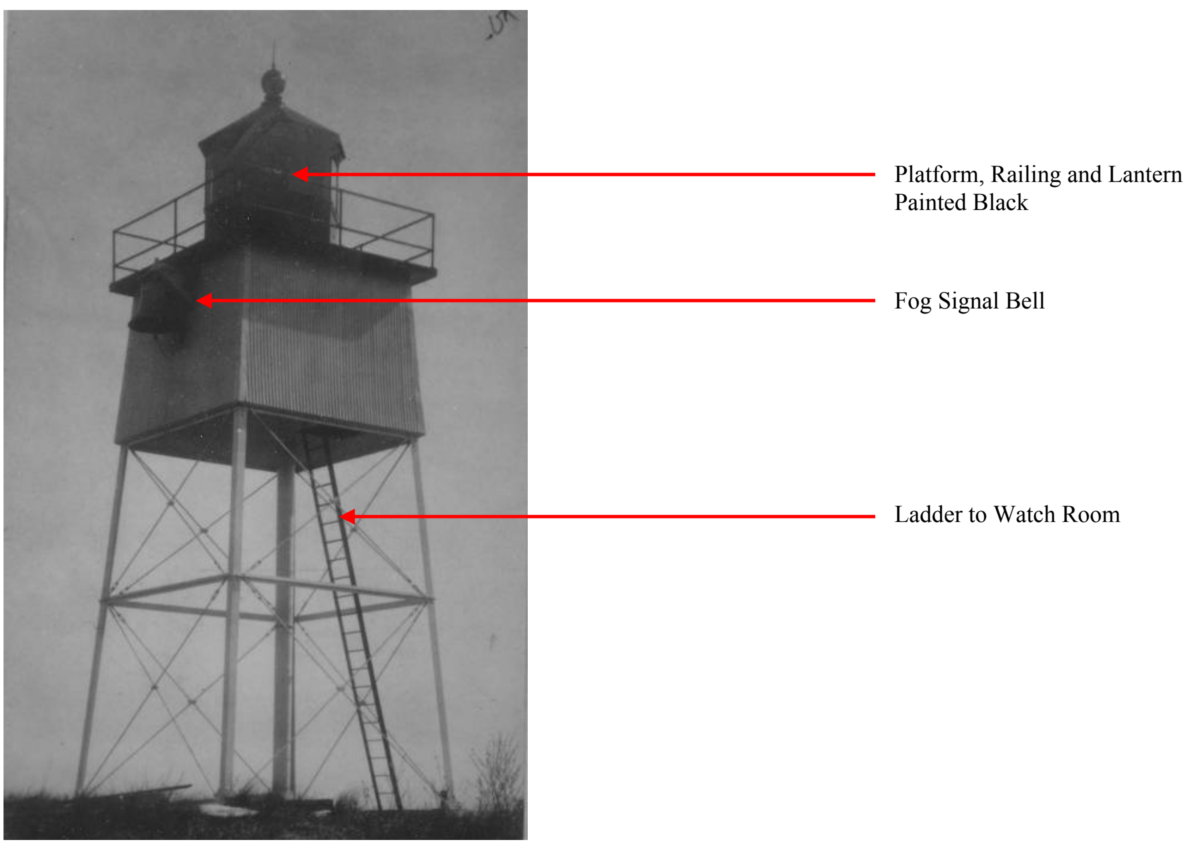
Historic Photographs



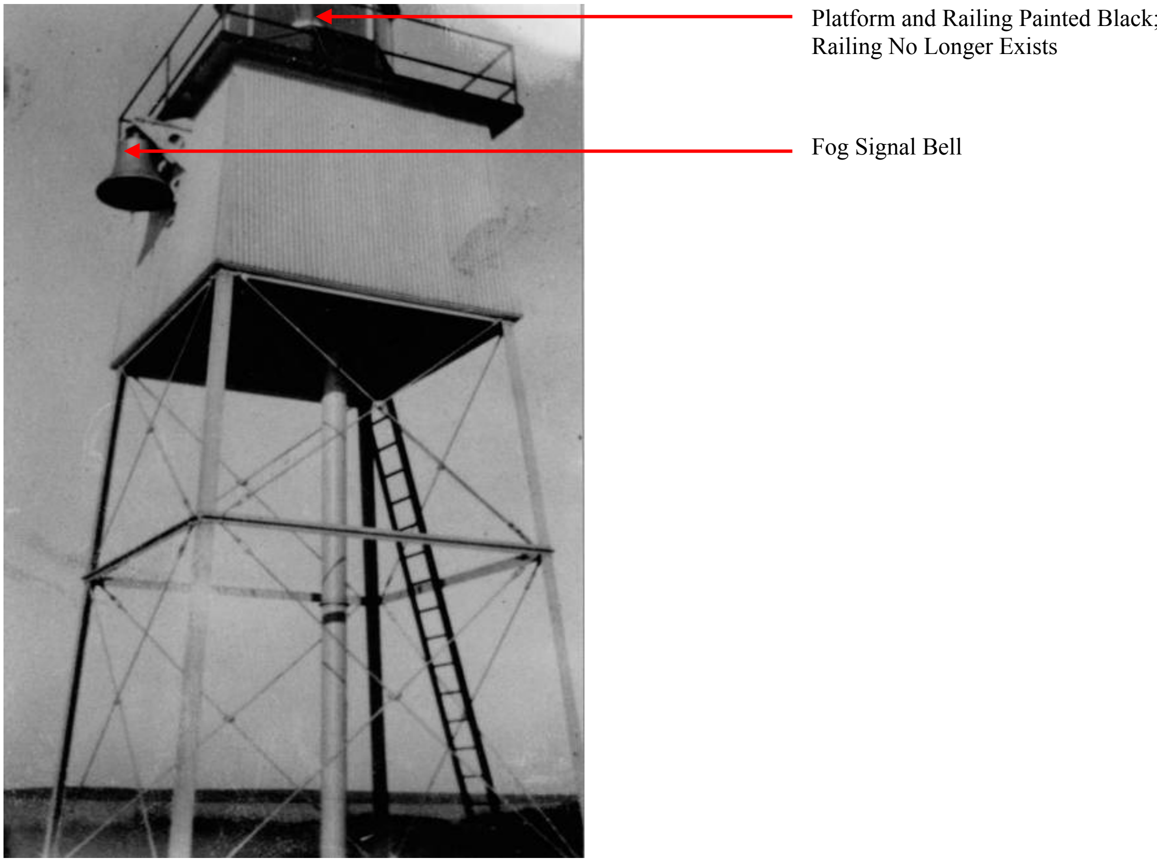
Historic Image LI-01: LaPointe Metal Tower, c.1900 (Source: NPS APIS Archives)



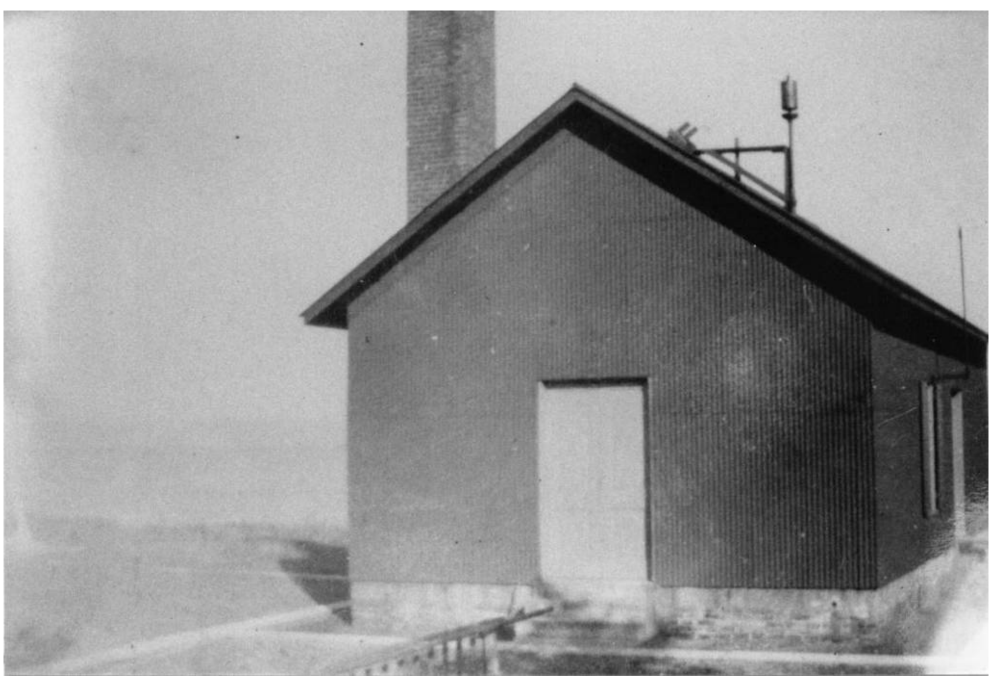
Historic Image LI-02: LaPointe Tower, c. 1910 (Source: NPS APIS Archives)



Historic Image LI-03: Chequamegon Point Tower, c. 1910 (Source: NPS APIS Archives)



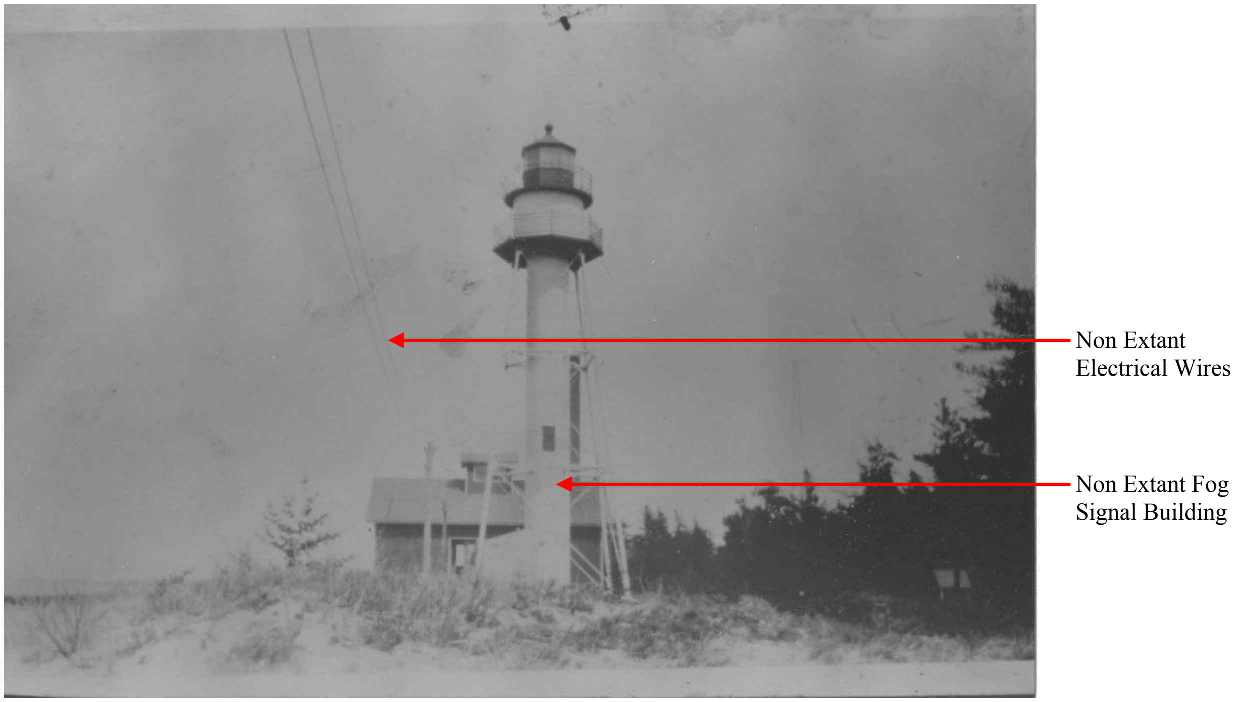
Historic Image LI-04: Chequamegon Point Tower, c. 1910 (Source: NPS APIS Archives)



Historic Image LI-05: Fog Signal Building with steam whistle, pre-1925 (Source: NPS APIS Archives)

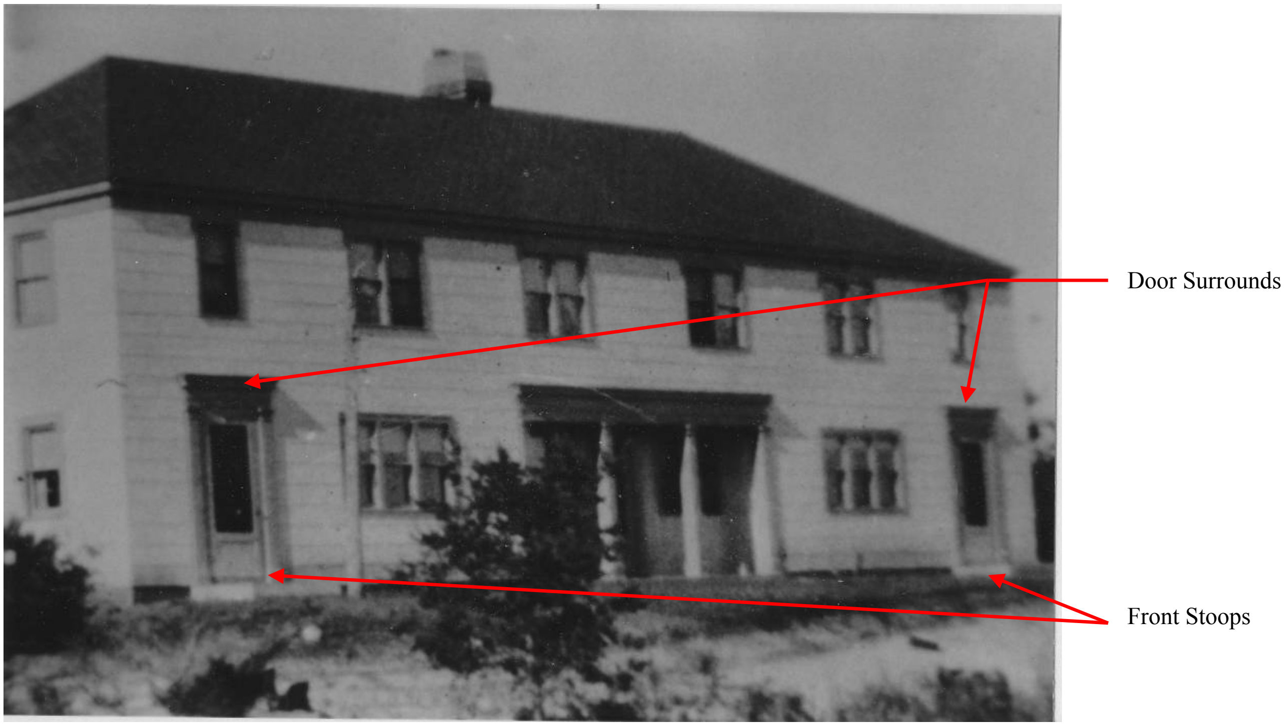
Historic Image LI-06: Fog Signal Building, c. 1930 (Source: NPS APIS Archives)

Historic Image LI-07: Chequamegon Point Tower and cleared land, c. 1930 (Source: NPS APIS Archives)

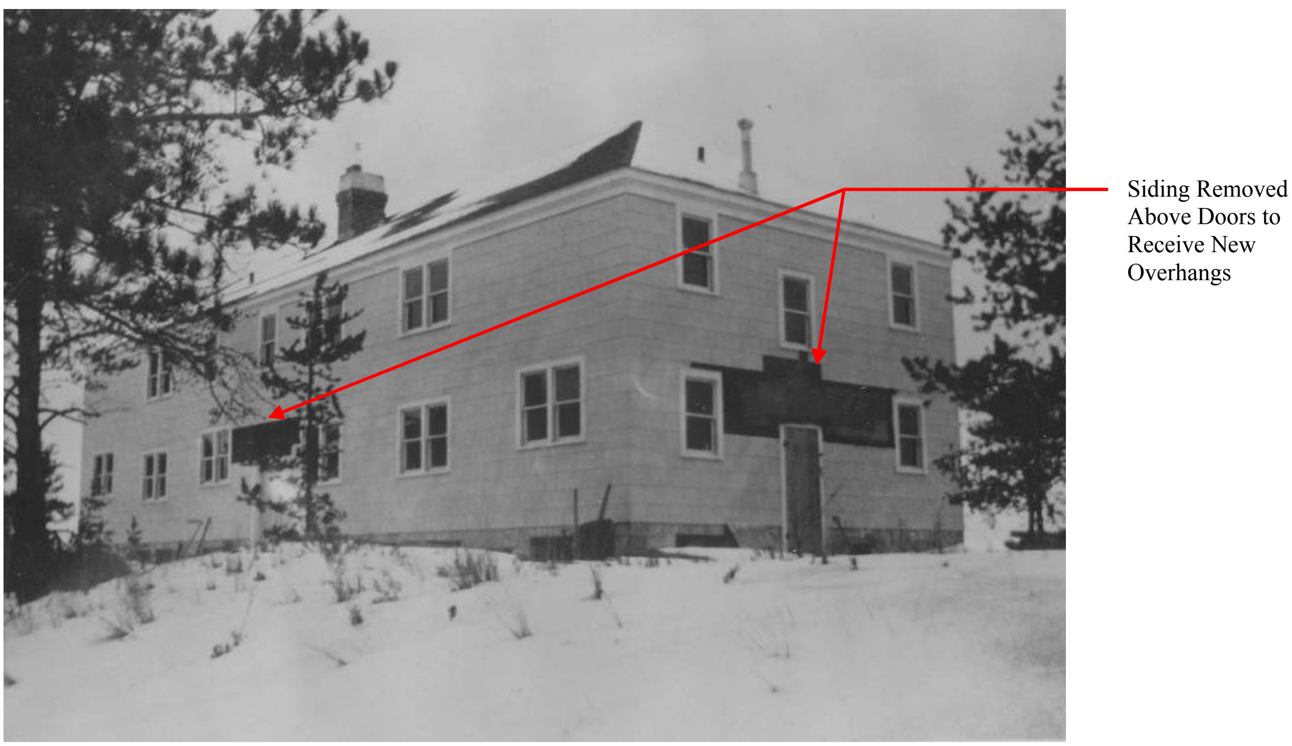


Historic Image LI-08: LaPointe Tower and Fog Signal Building, c. 1940 (Source: NPS APIS Archives)

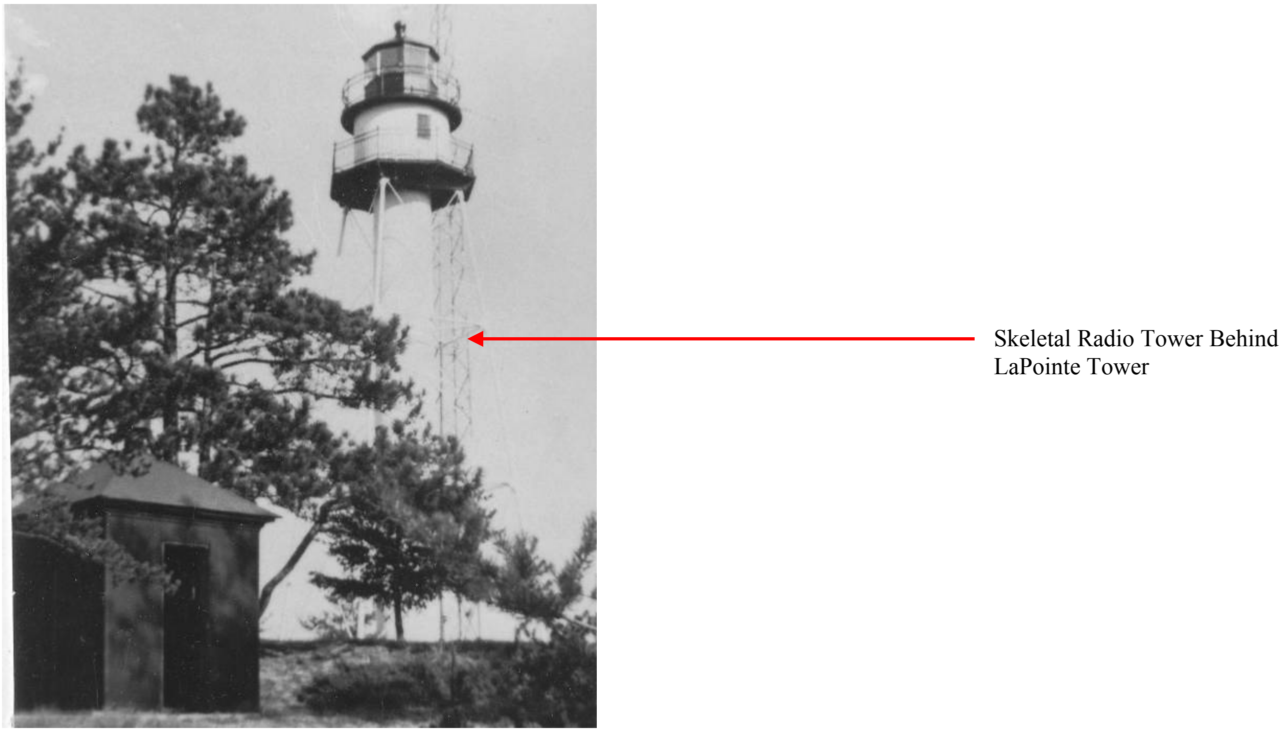
Historic Image LI-09: LaPointe Tower and Fog Signal Building, c. 1940 (Source: NPS APIS Archives)



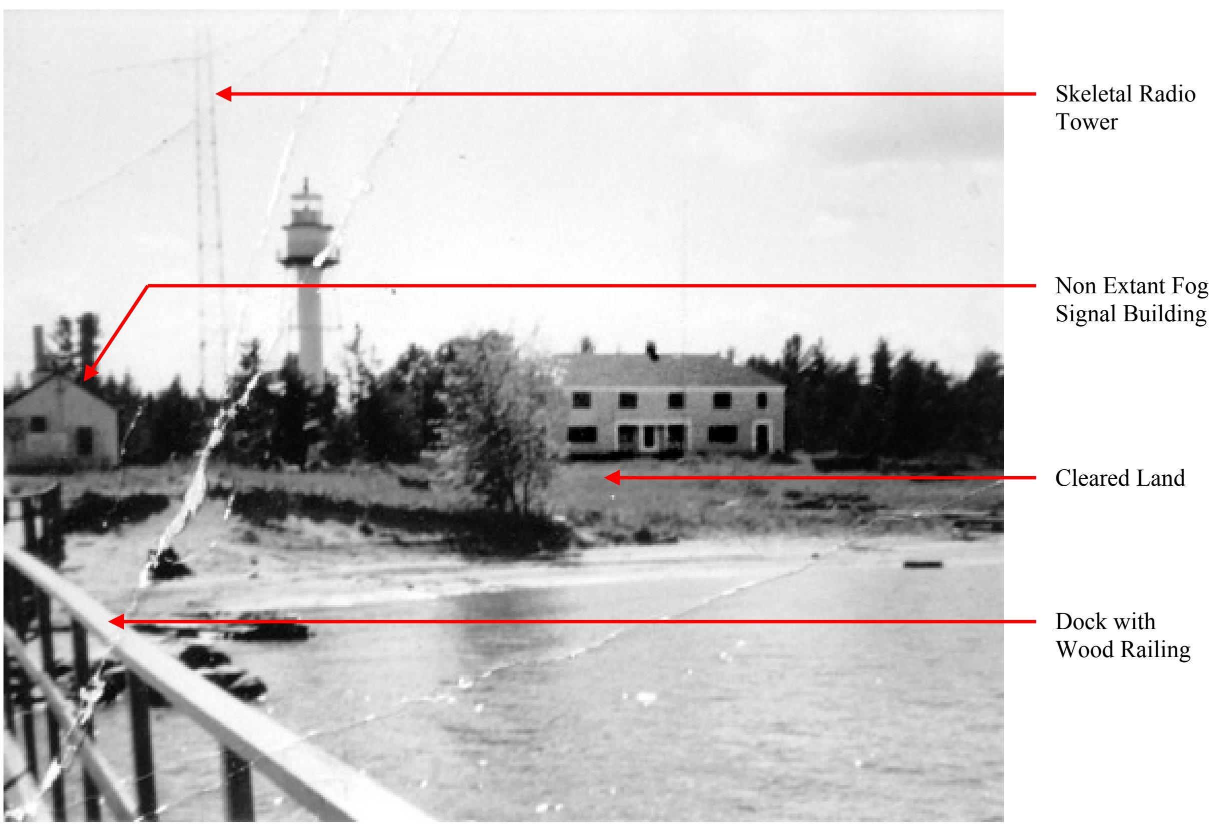
Historic Image LI-10: Triplex, north elevation, 1942 (Source: NPS APIS Archives)



Historic Image LI-11: Triplex, south and east elevations, c. 1945 (Source: NPS APIS Archives)



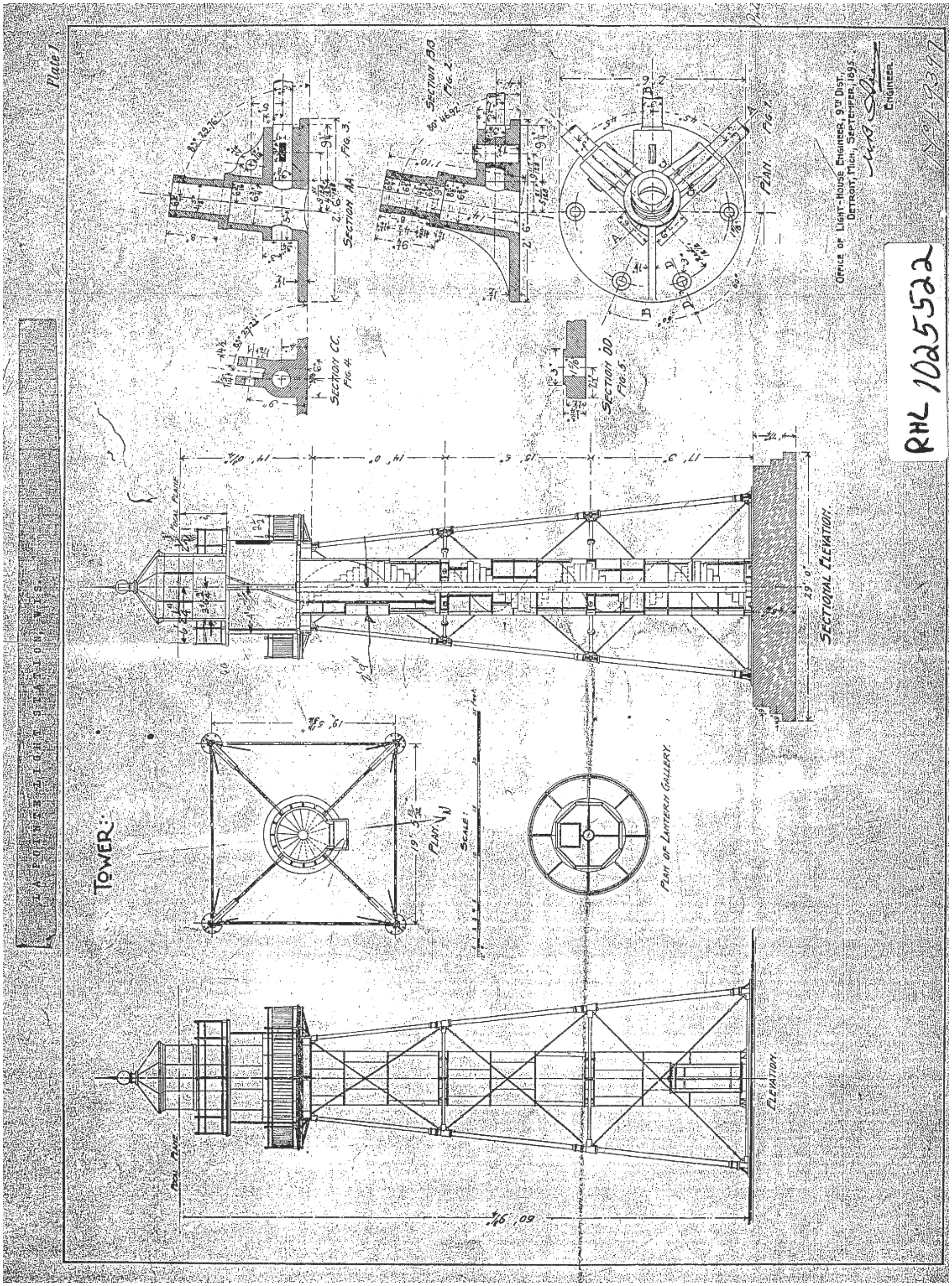
Historic Image LI-12: Oil Building, c. 1950 -1987 (Source: NPS APIS Archives)



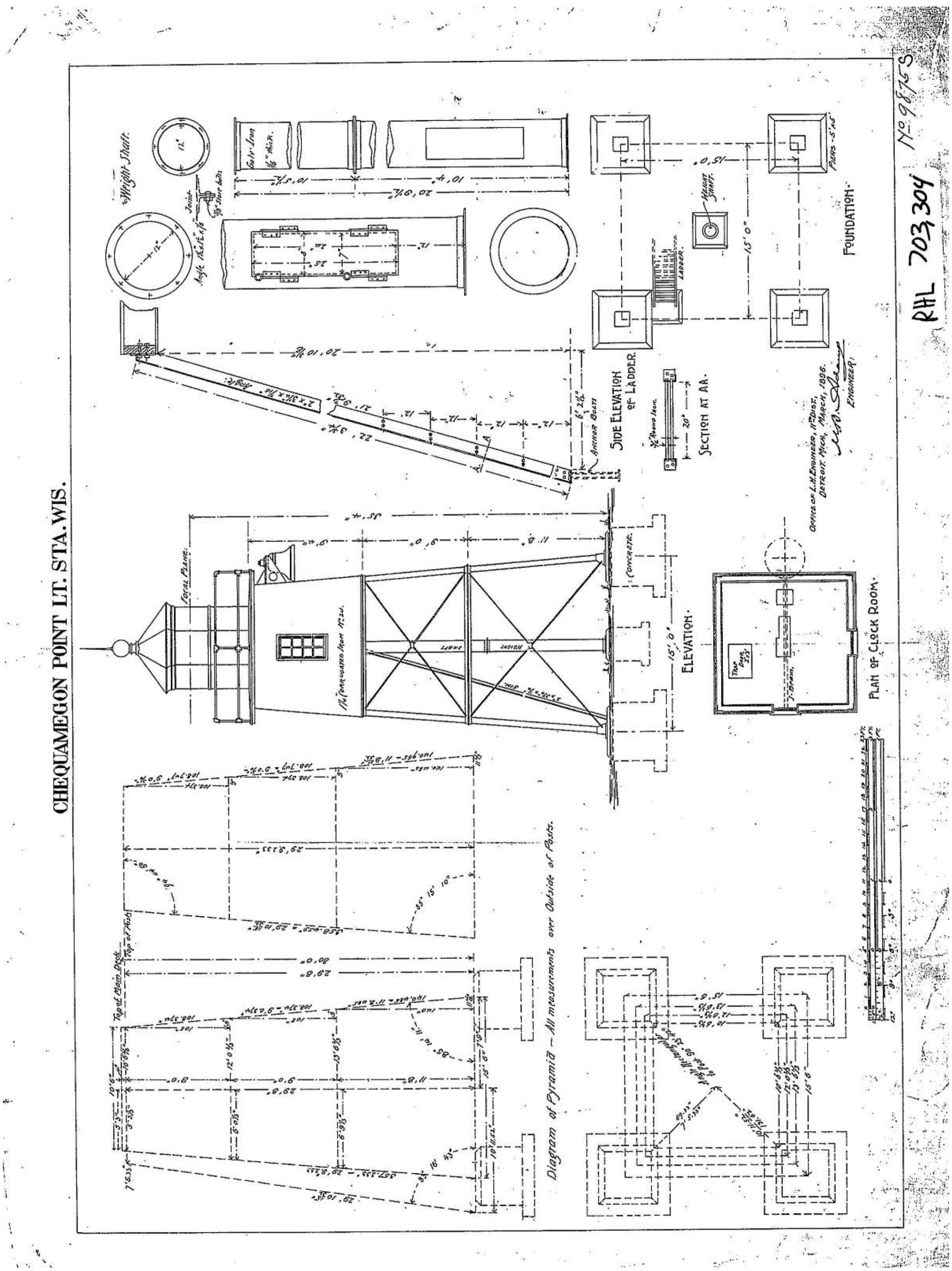
Historic Image LI-13: Fog Signal Building, skeletal tower, LaPointe Tower, and Triplex, 1969 (Source: NPS APIS Archives)

Historic Image LI-14: LaPointe Tower without skeletal radio tower, 1987 (Source: NPS APIS Archives)

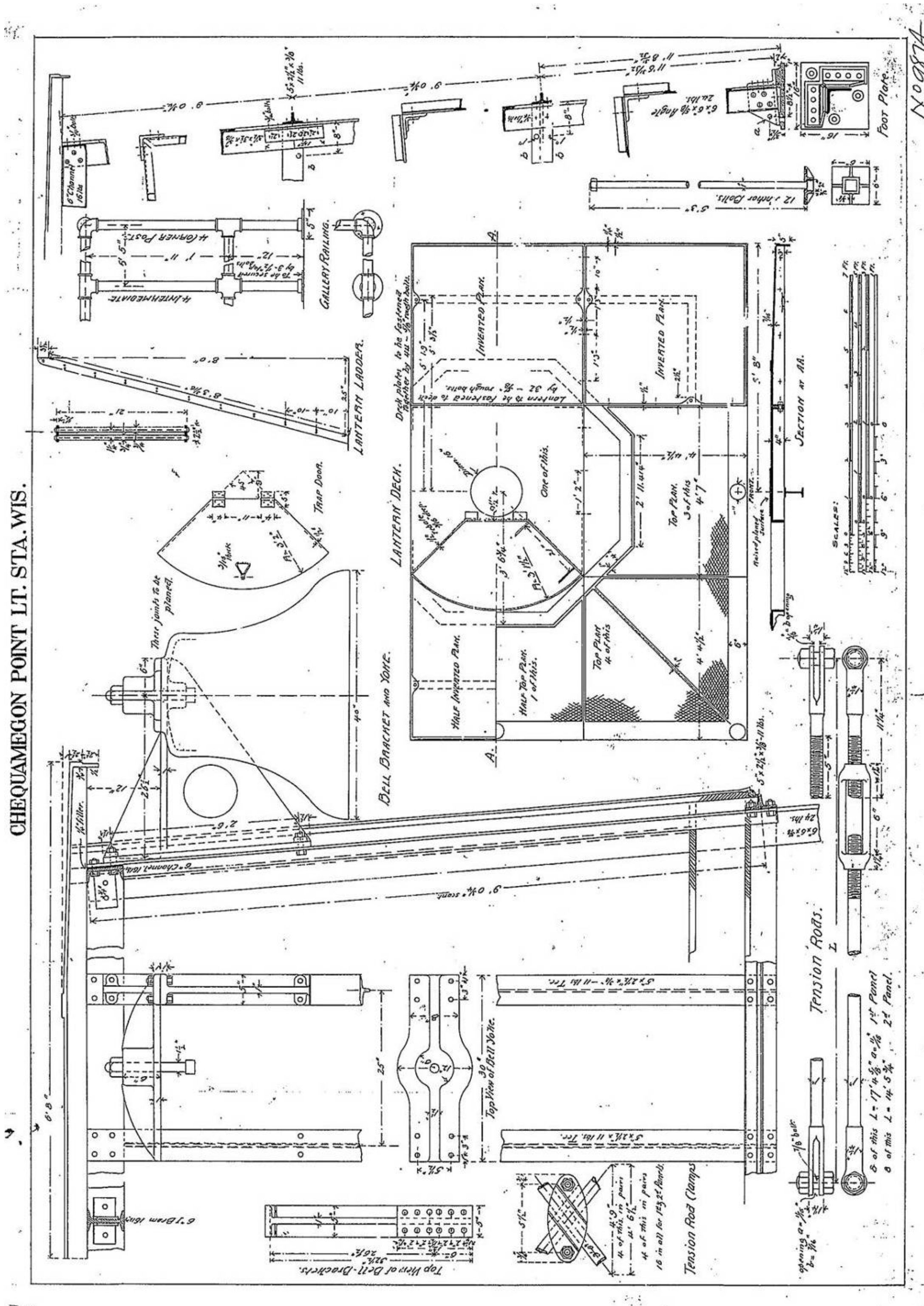
Historic Drawings



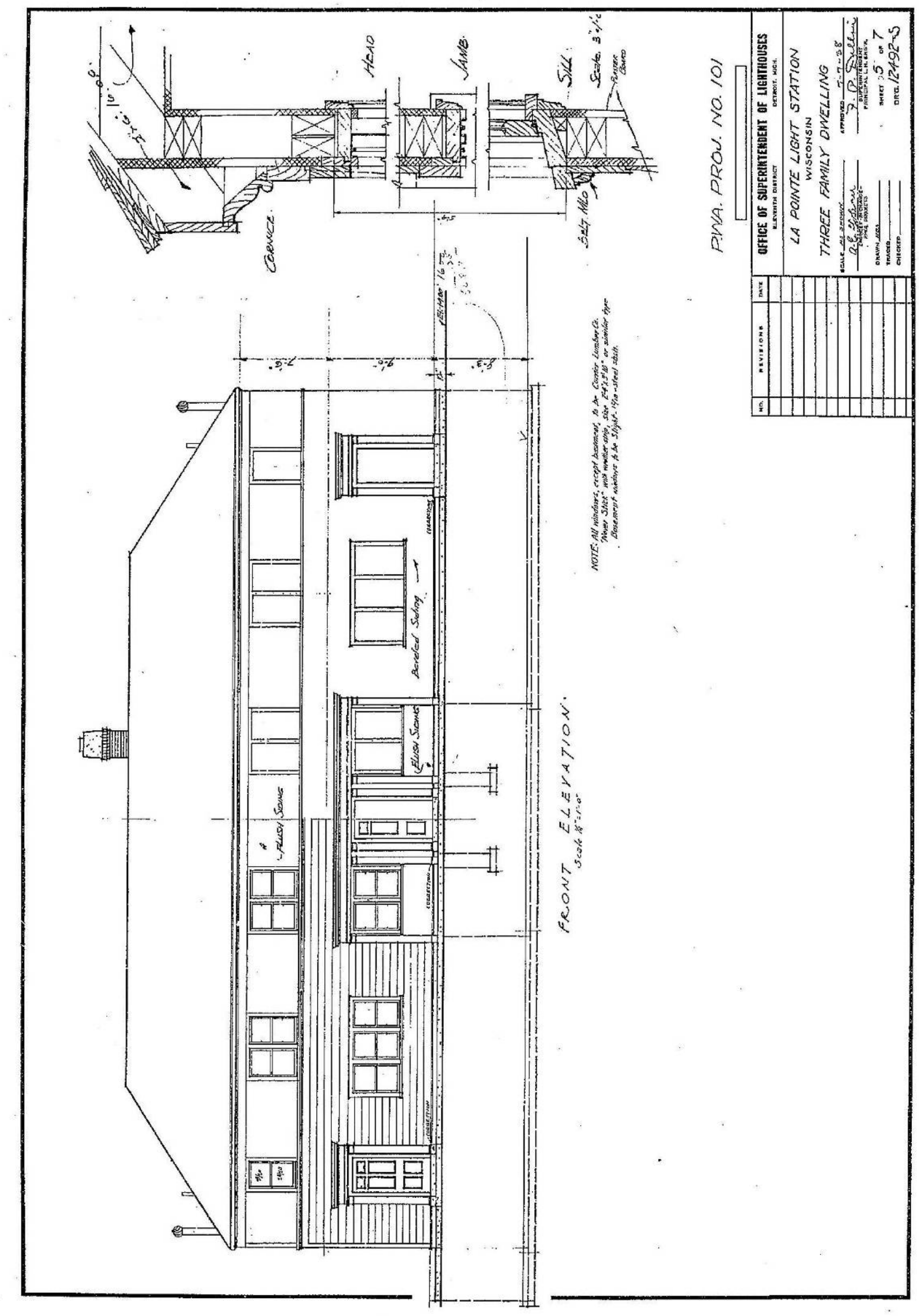
Historic Drawing LI-01: 1895 original construction drawing of LaPointe Tower



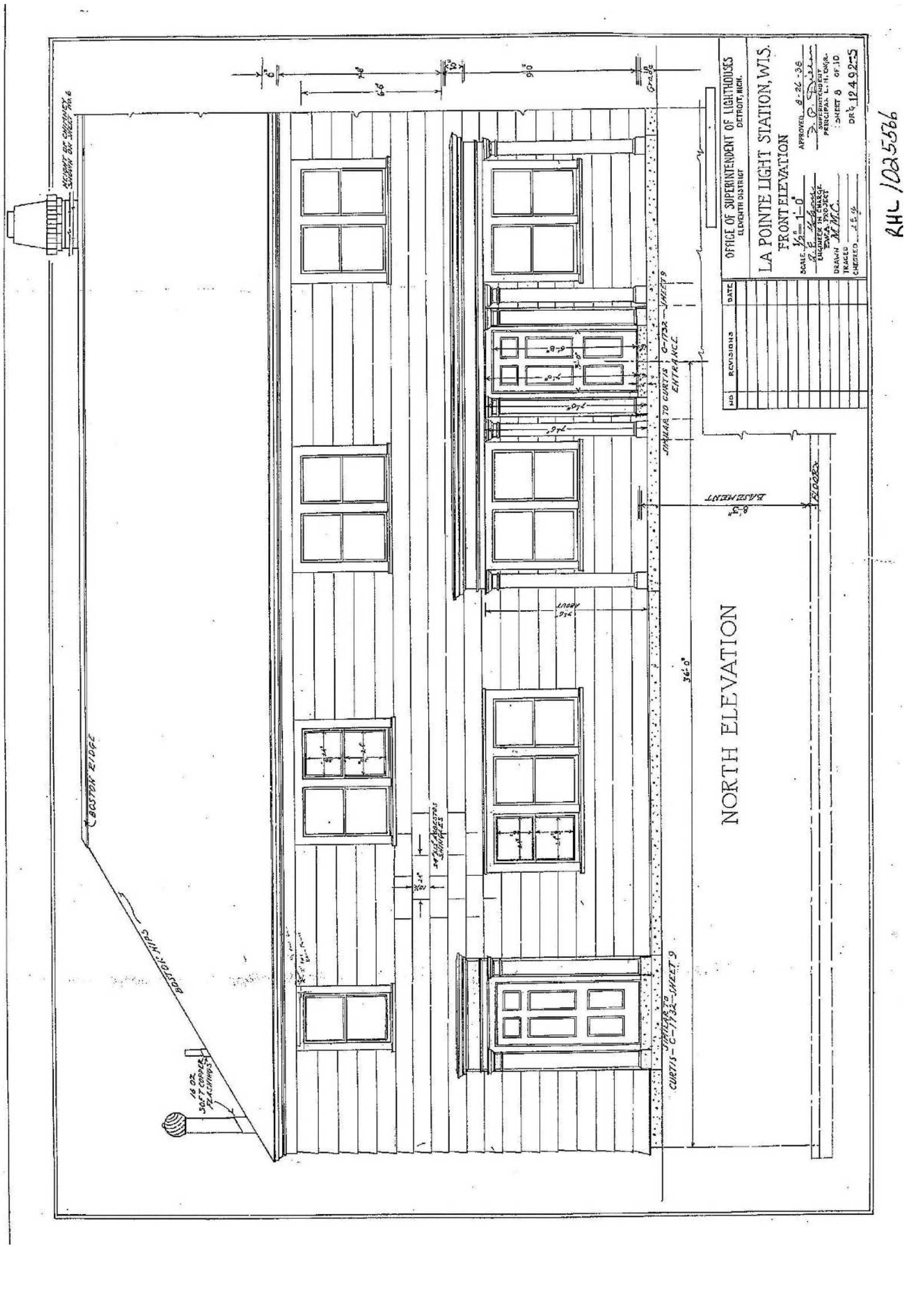
Historic Drawing LI-02: 1896 original construction drawing of Chequamegon Point Tower



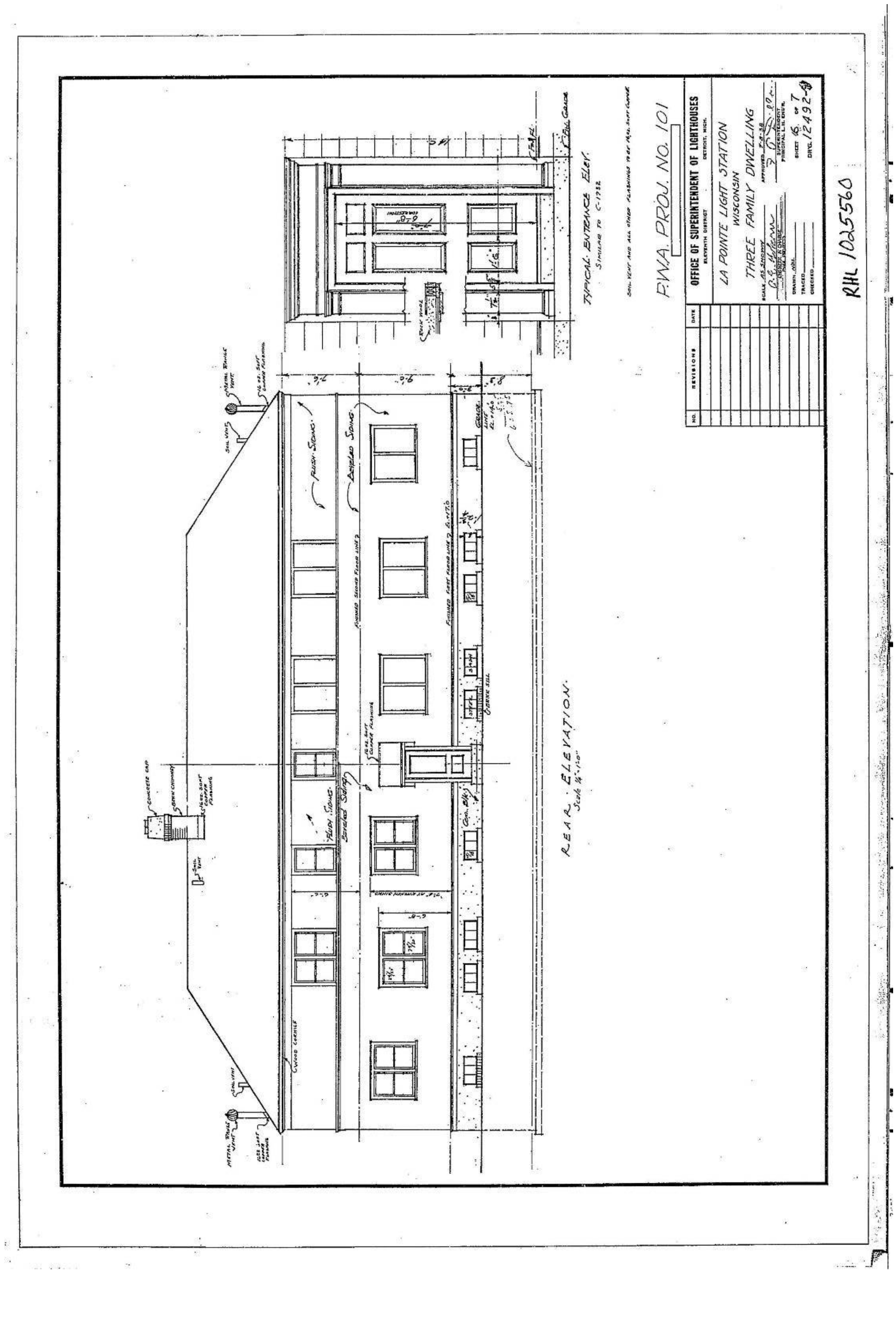
Historic Drawing LI-03: Detail of Fog Signal Bell on Chequamegon Point Tower (most likely 1896)



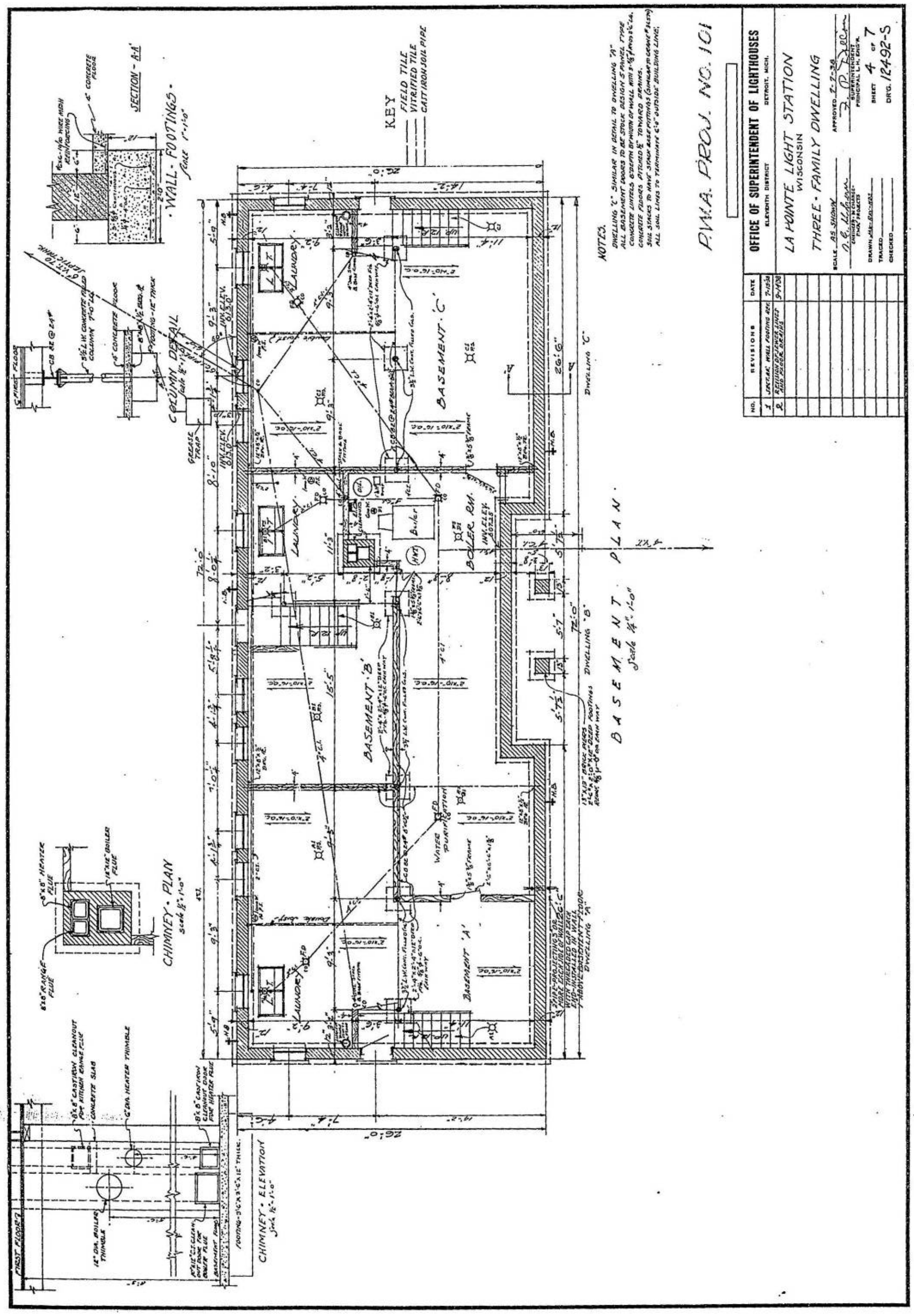
Historic Drawing LI-04: Triplex front elevation, 1938 construction set (Note: asbestos siding installed to second floor window height varied from historic drawing LI-05)



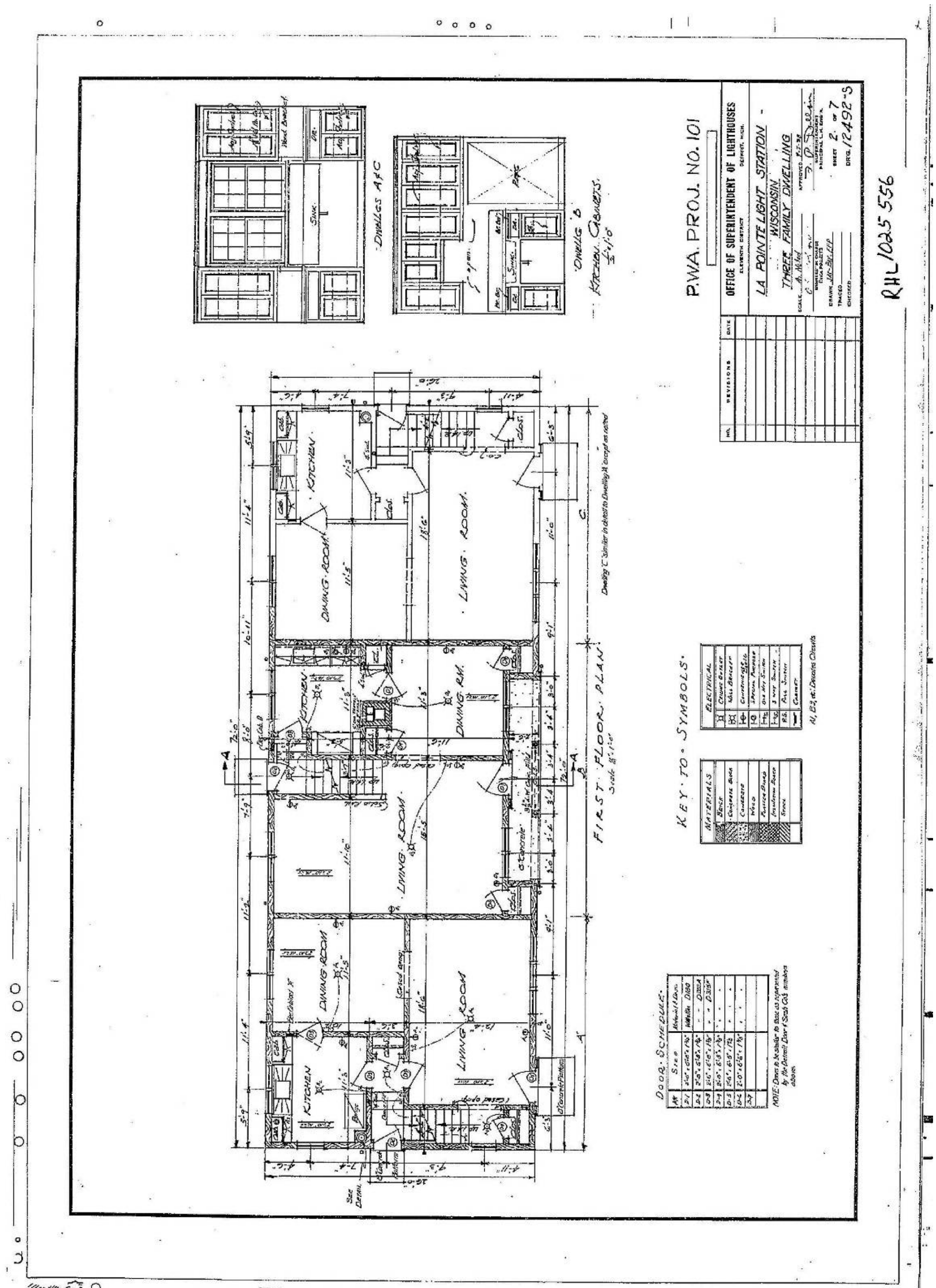
Historic Drawing LI-05: Triplex front elevation detail, 1938 construction set
(Note: asbestos siding of entire facades vs. historic drawing LI-04's partial siding)



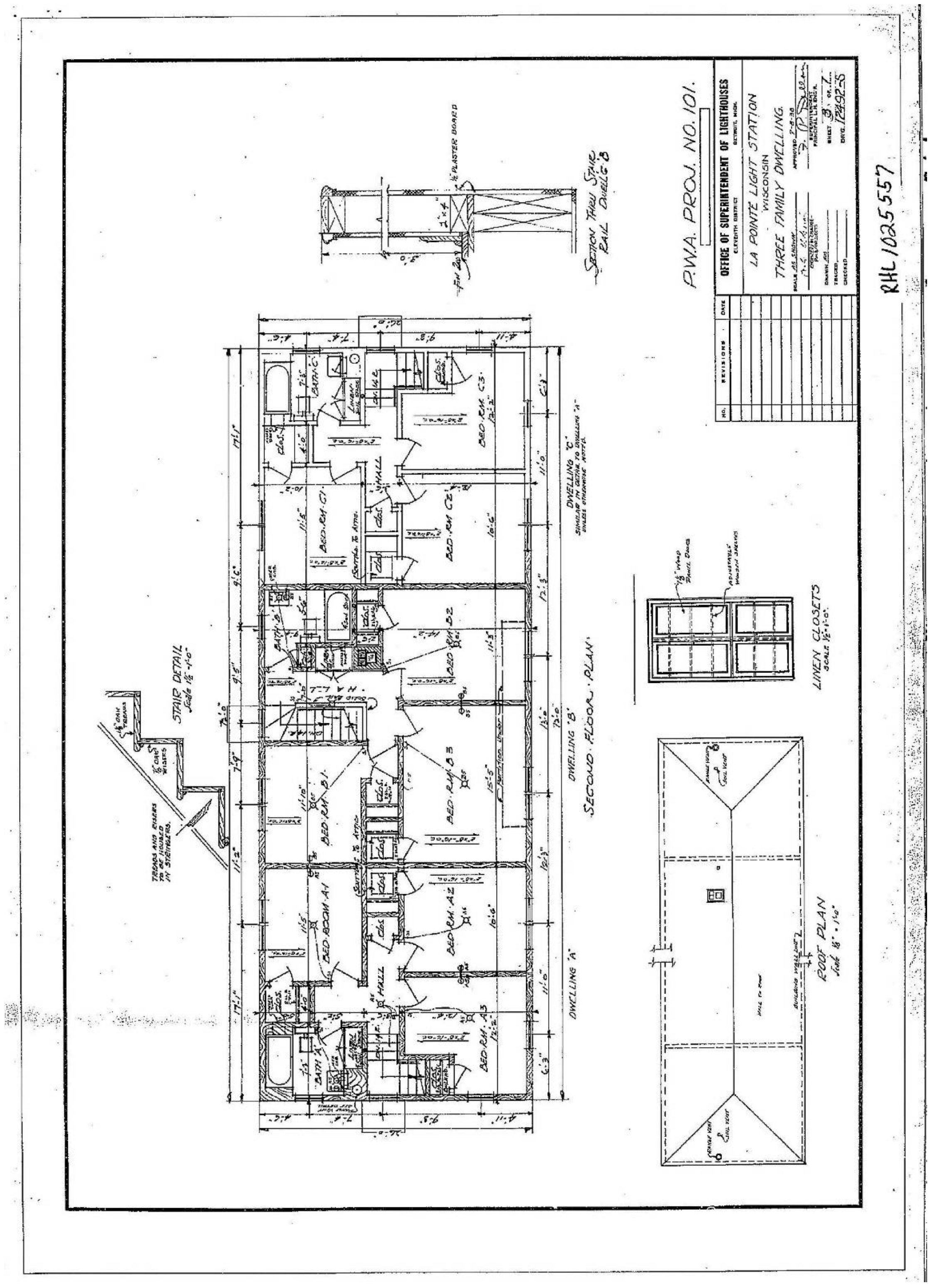
Historic Drawing LI-06: Triplex rear elevation, 1938 construction set



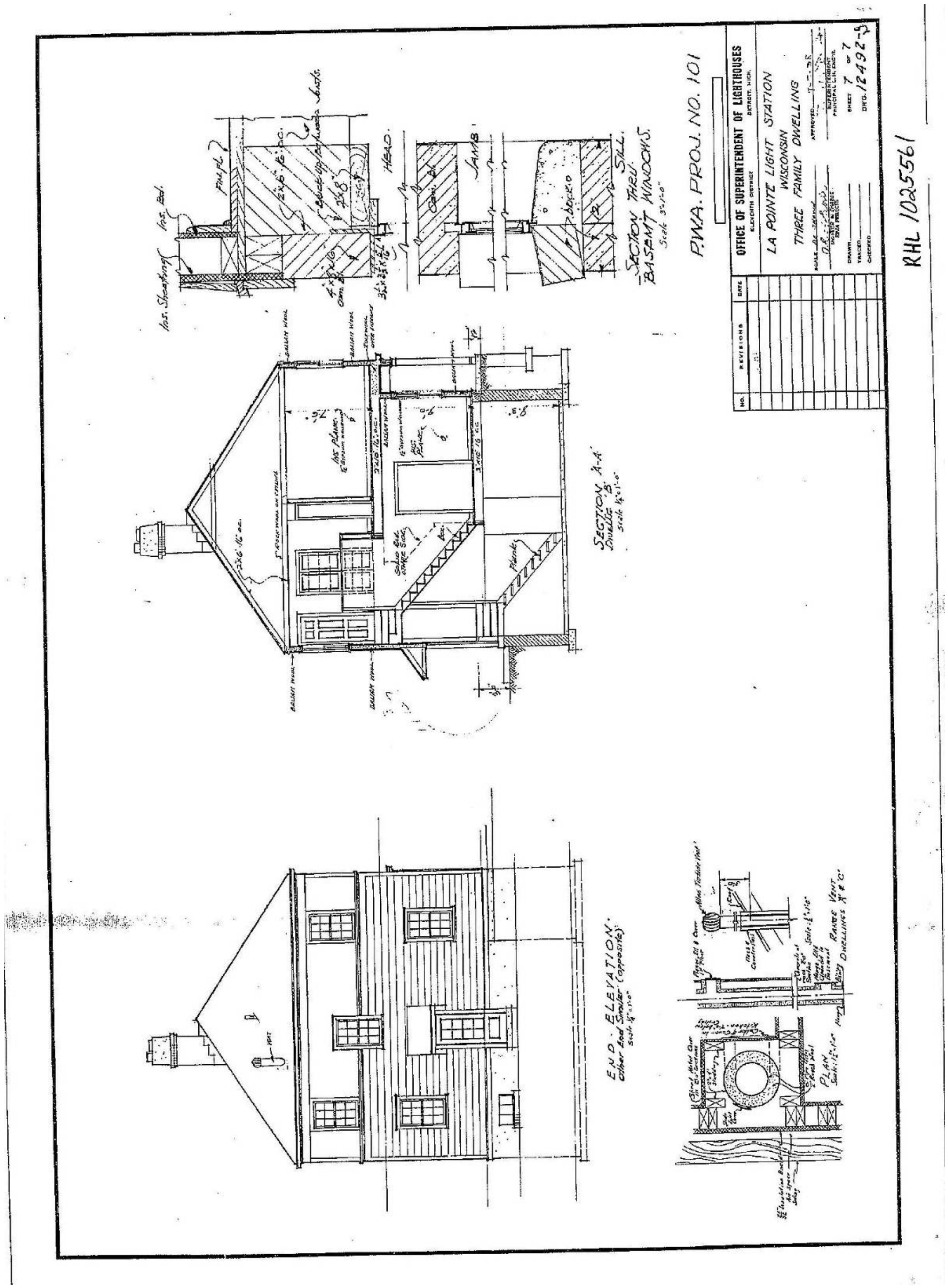
Historic Drawing LI-07: Triplex basement plan, 1938 construction set



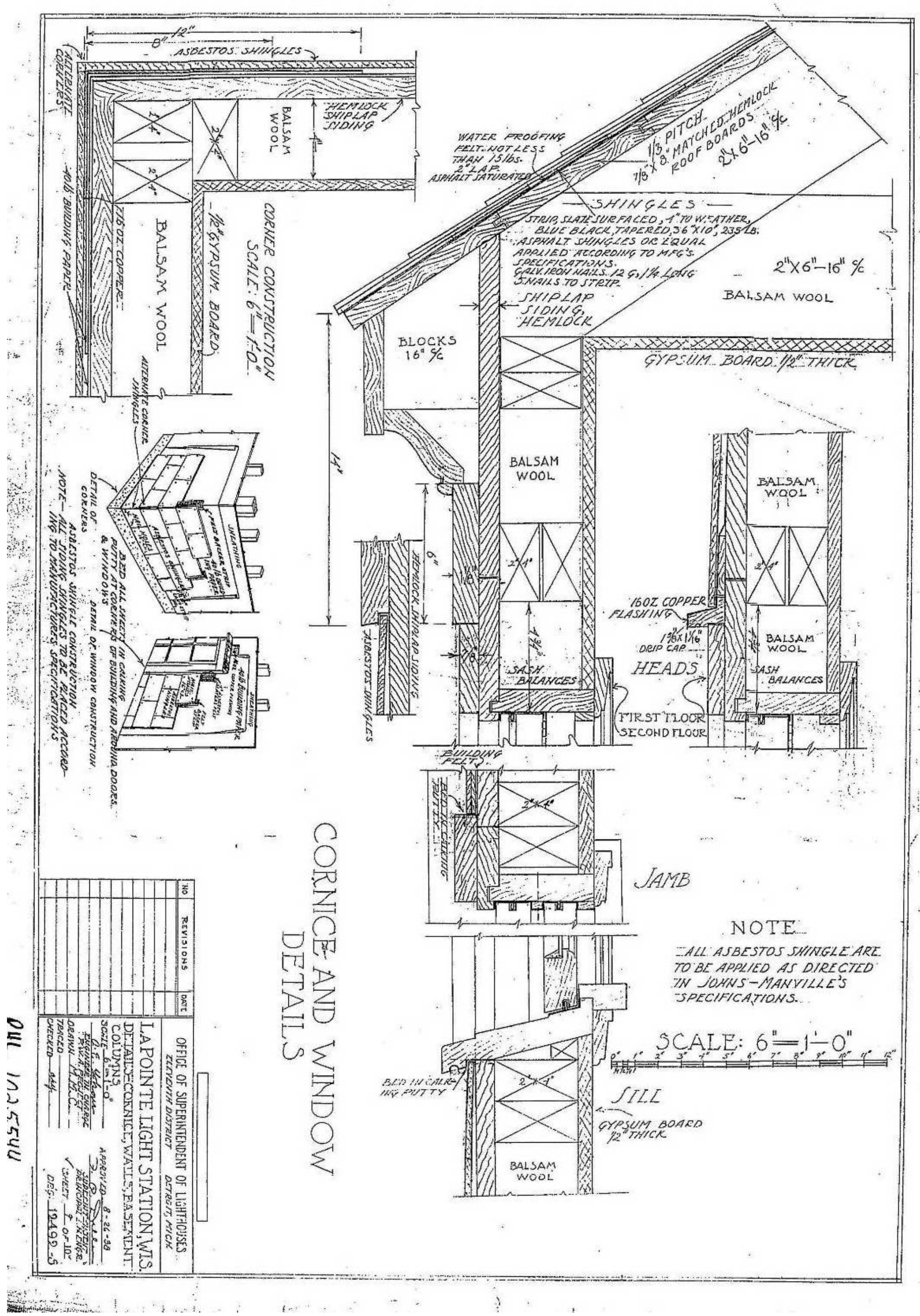
Historic Drawing LI-08: Triplex first floor plan, 1938 construction set



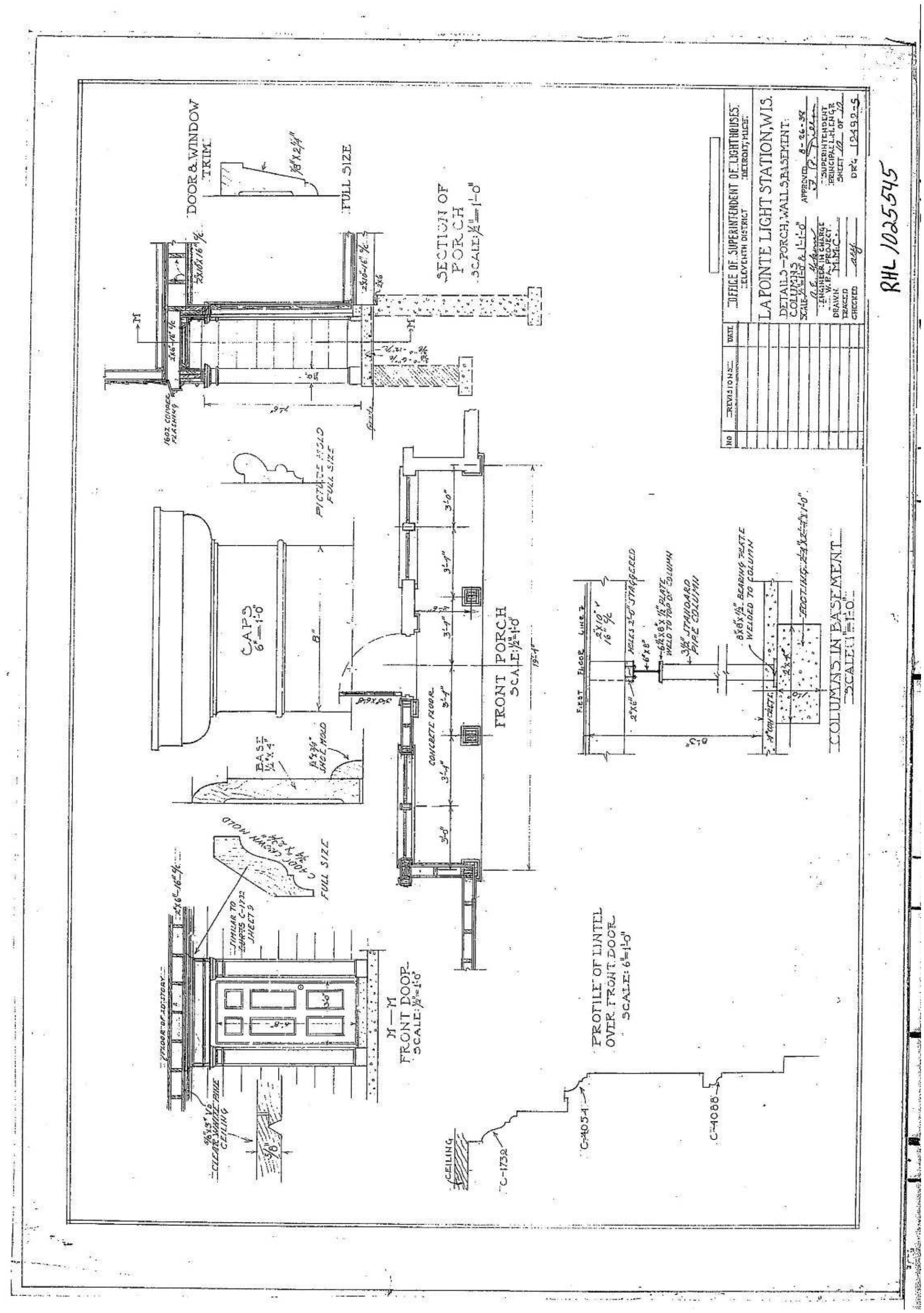
Historic Drawing LI-09: Triplex second floor plan, 1938 construction set



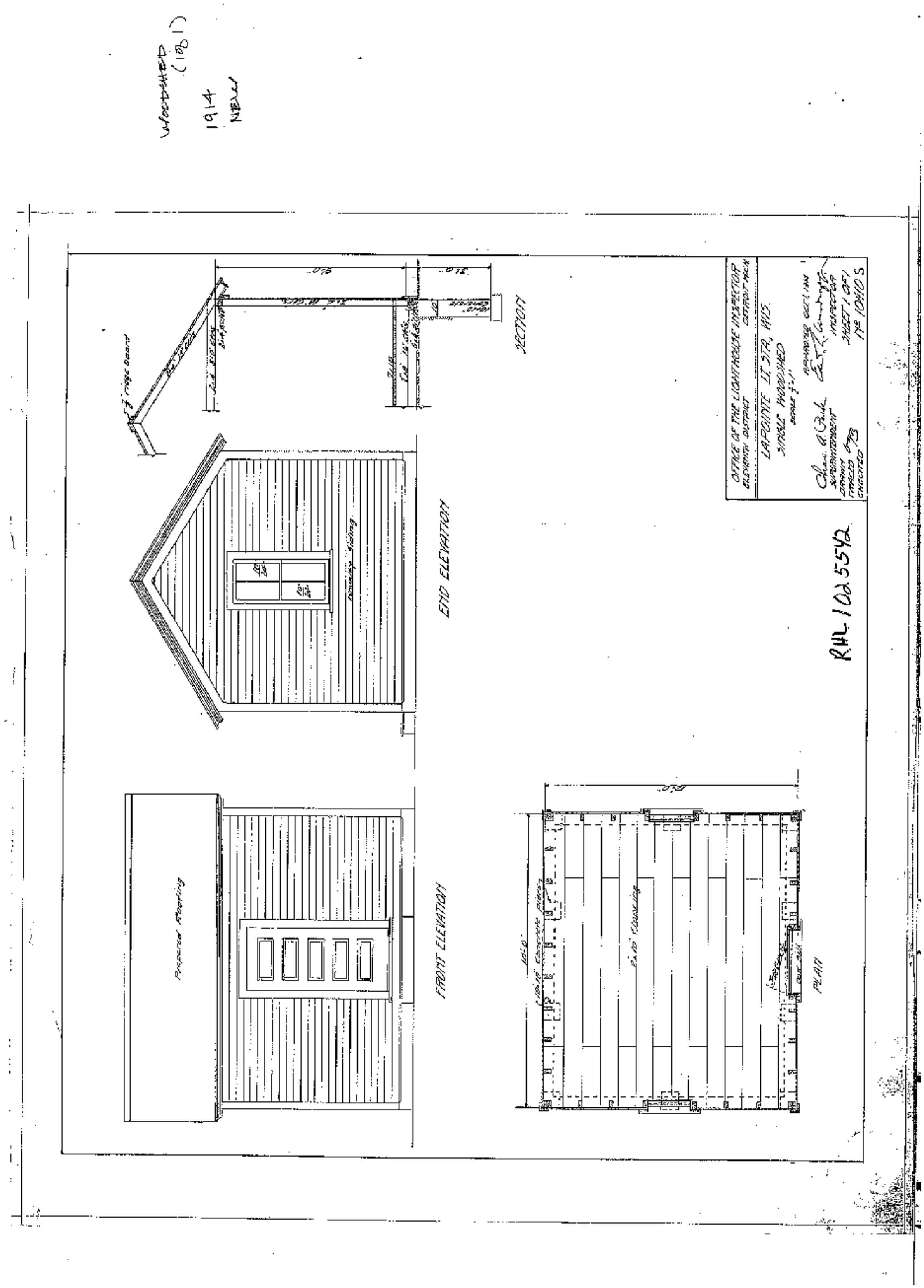
Historic Drawing LI-10: Triplex section and elevation, 1938 construction set



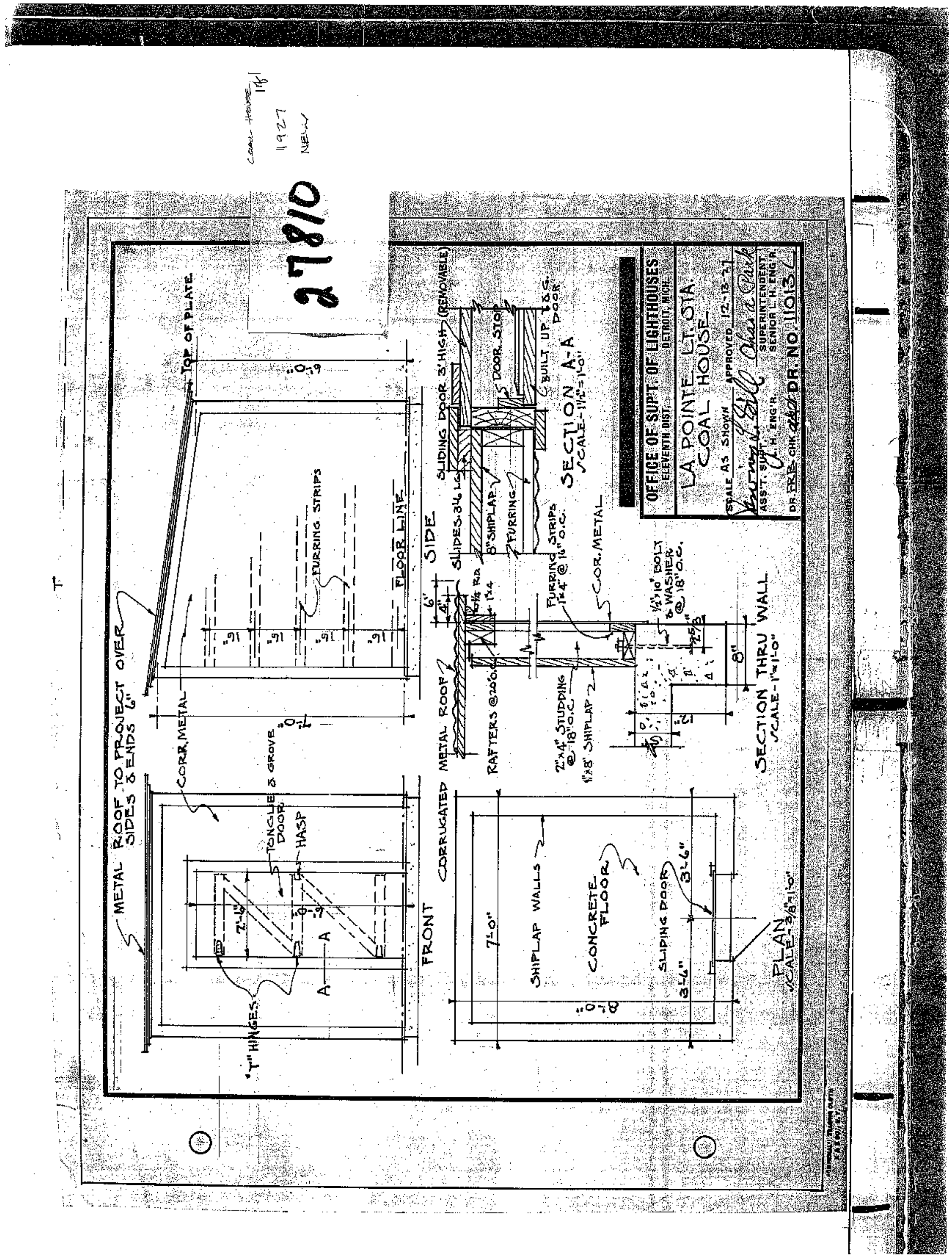
Historic Drawing LI-11: Triplex details, 1938 construction set



Historic Drawing LI-12: Triplex porch details, 1938 construction set



Historic Drawing LI-13: Single woodhouse, 1914 construction drawing

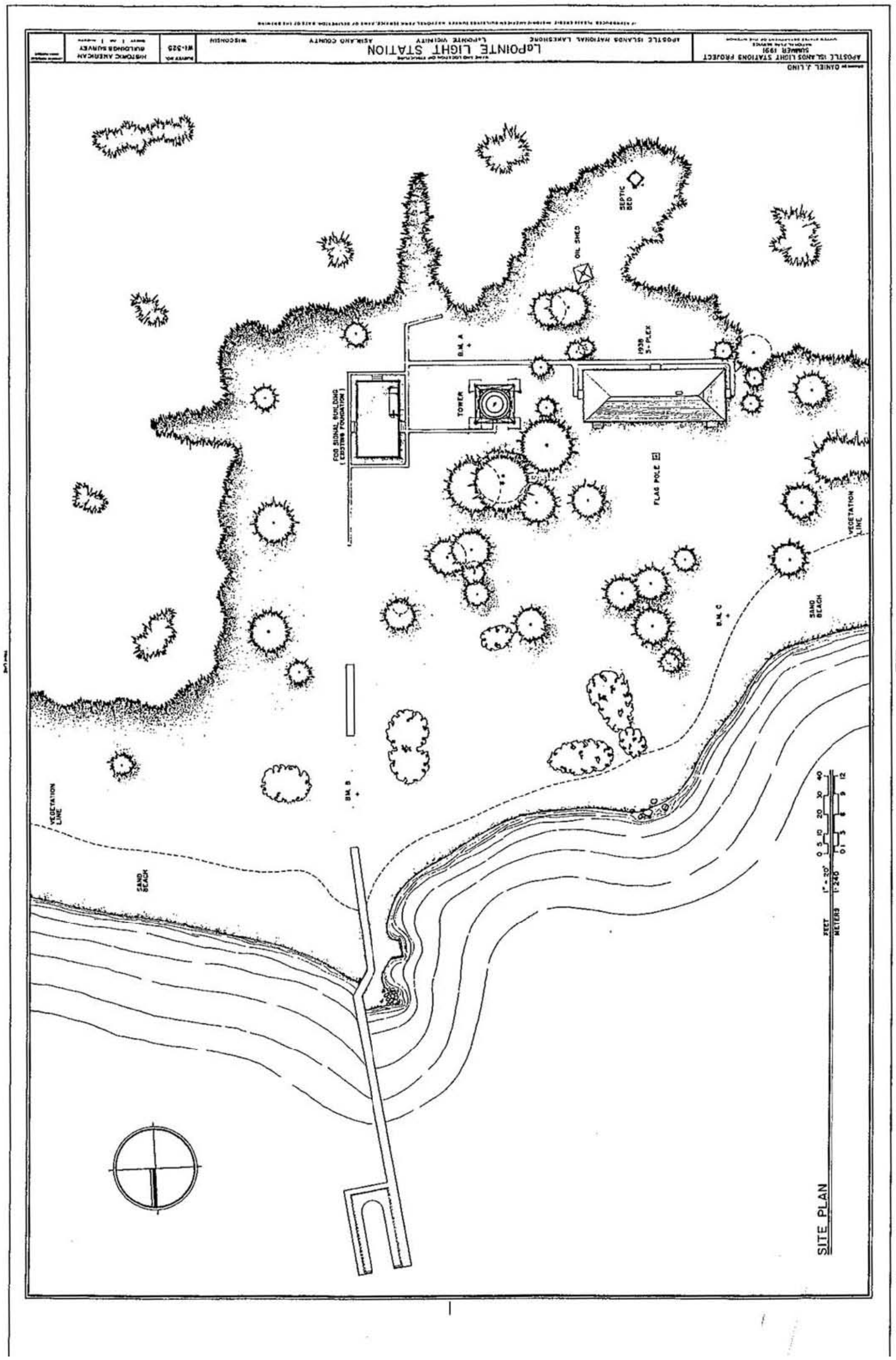


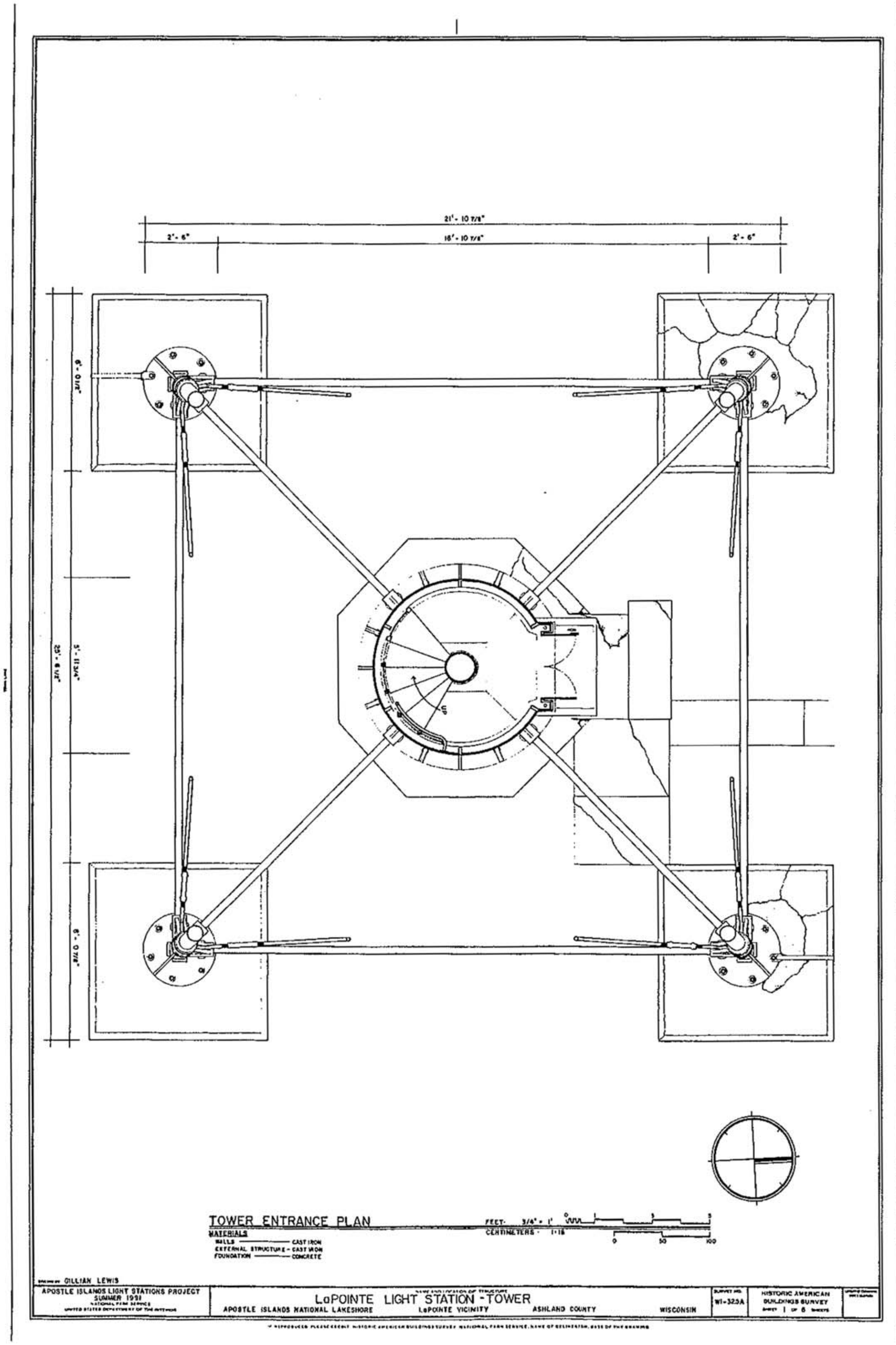
Historic Drawing LI-14: Coal house, 1927 construction drawing

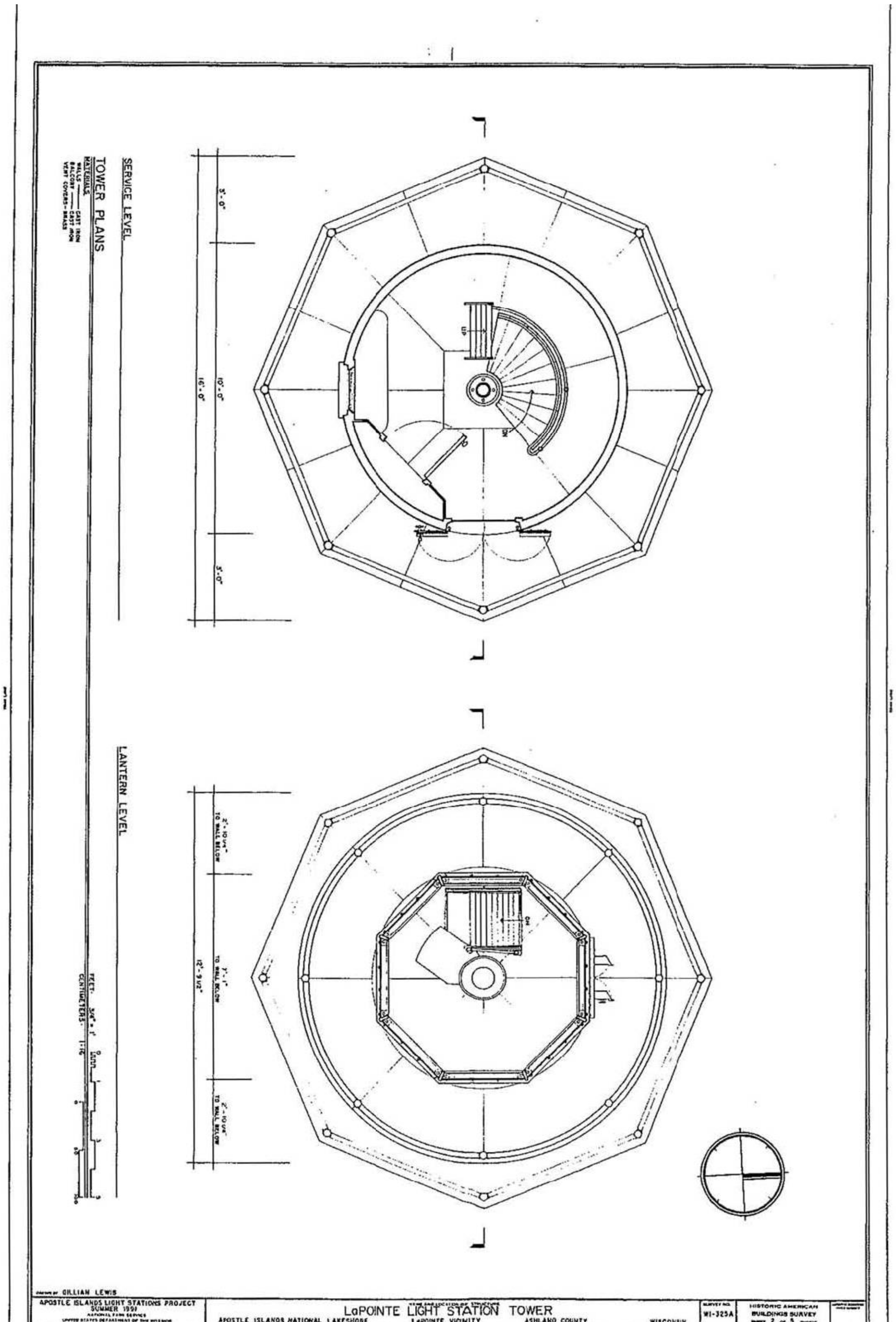
Existing Condition Drawings

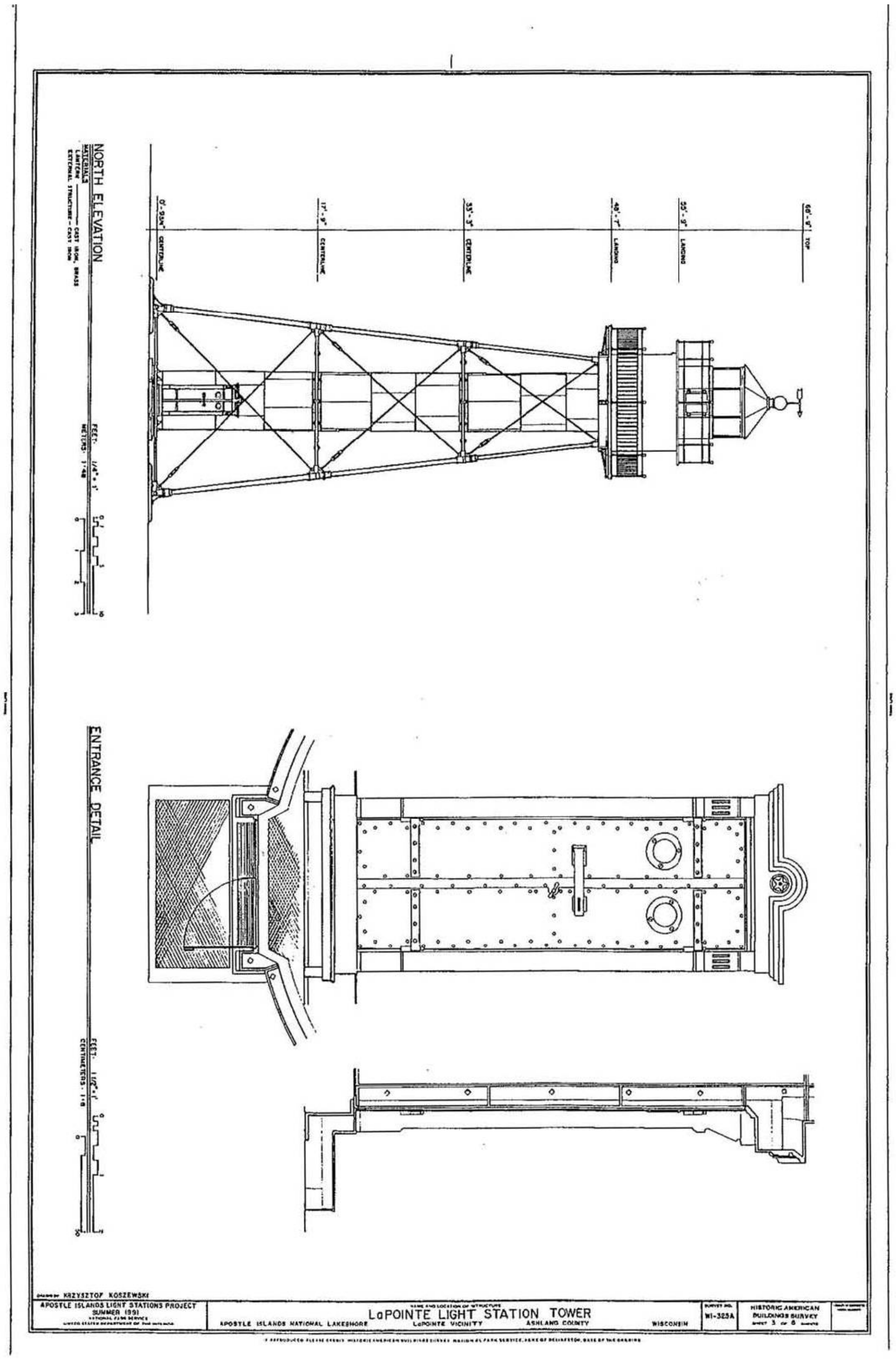
The primary and secondary buildings on Long Island were documented in the summer of 1990 by a team from the Historic American Buildings Survey (HABS). Since 1933, multi-format surveys in cooperation with government agencies have recorded the built environment in the United States. Measured drawings, large-format photographs and written histories have defined the survey technique for historic structures. The HABS collection currently contains detailed surveys on more than 38,600 historic structures. The following eleven drawings contain the measured drawings produced by the HABS survey from 1990.

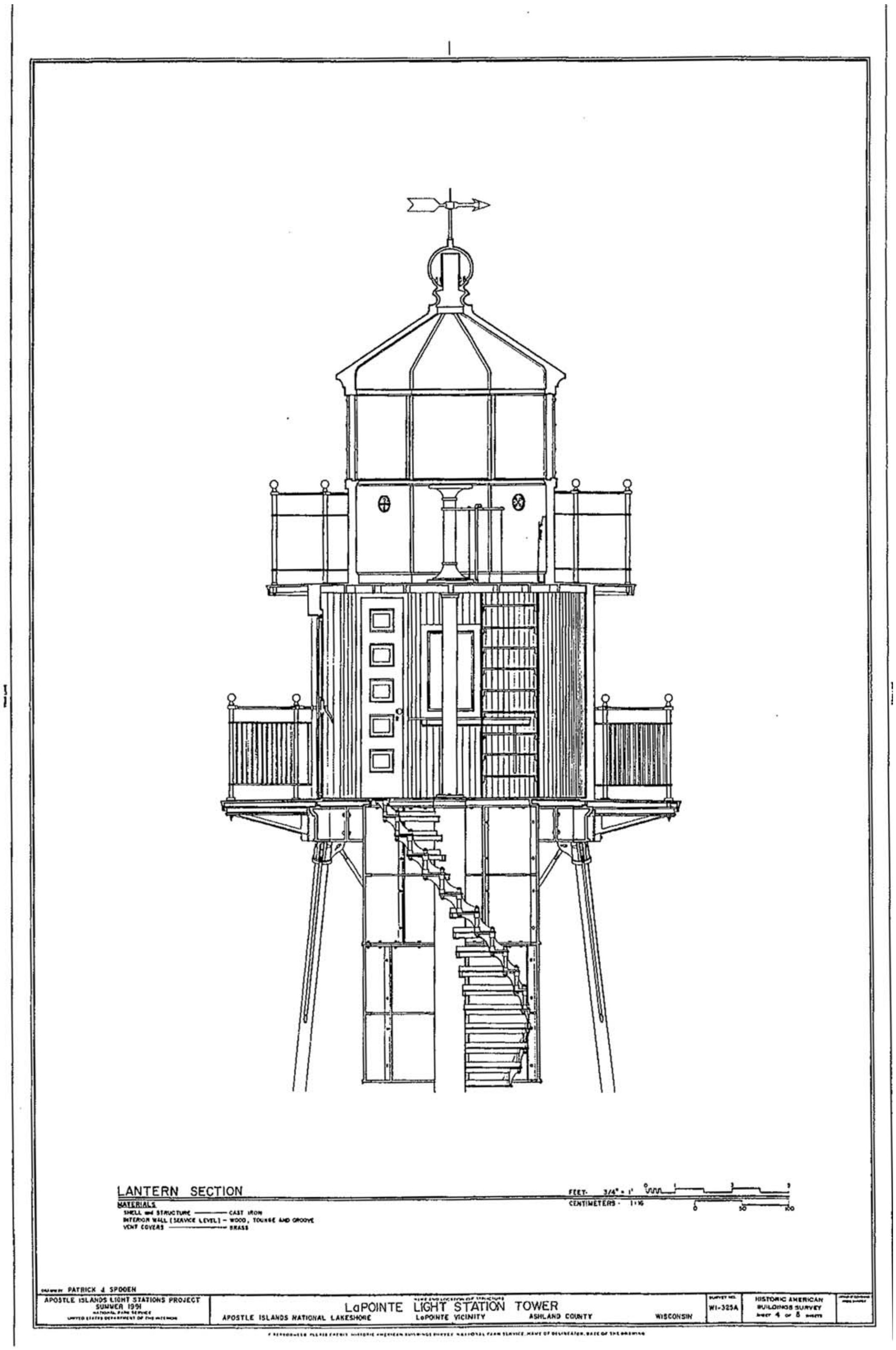
Typically, utilitarian buildings are not included in the HABS survey. In September of 2009, the architects and historic preservation specialists from Anderson Hallas Architects, PC surveyed the Oil Building on Long Island. These measured drawings have been included following the HABS drawings.


LaPOINTE LIGHT STATION
APOSTLE ISLANDS NATIONAL LAKESHORE
ASHLAND COUNTY
WISCONSIN
HISTORIC AMERICAN BUILDINGS SURVEY
APOSTLE ISLANDS LIGHT STATIONS PROJECT
SITE PLAN
TOWER
FOG SIGNAL BUILDING (EXISTING FOUNDATION)
OIL SHED
SEPTIC BED
1938 3-PLEX
FLAG POLE
B.M. A
B.M. B
B.M. C
SAND BEACH
SAND BEACH
VEGETATION LINE
VEGETATION LINE
FEET
METERS

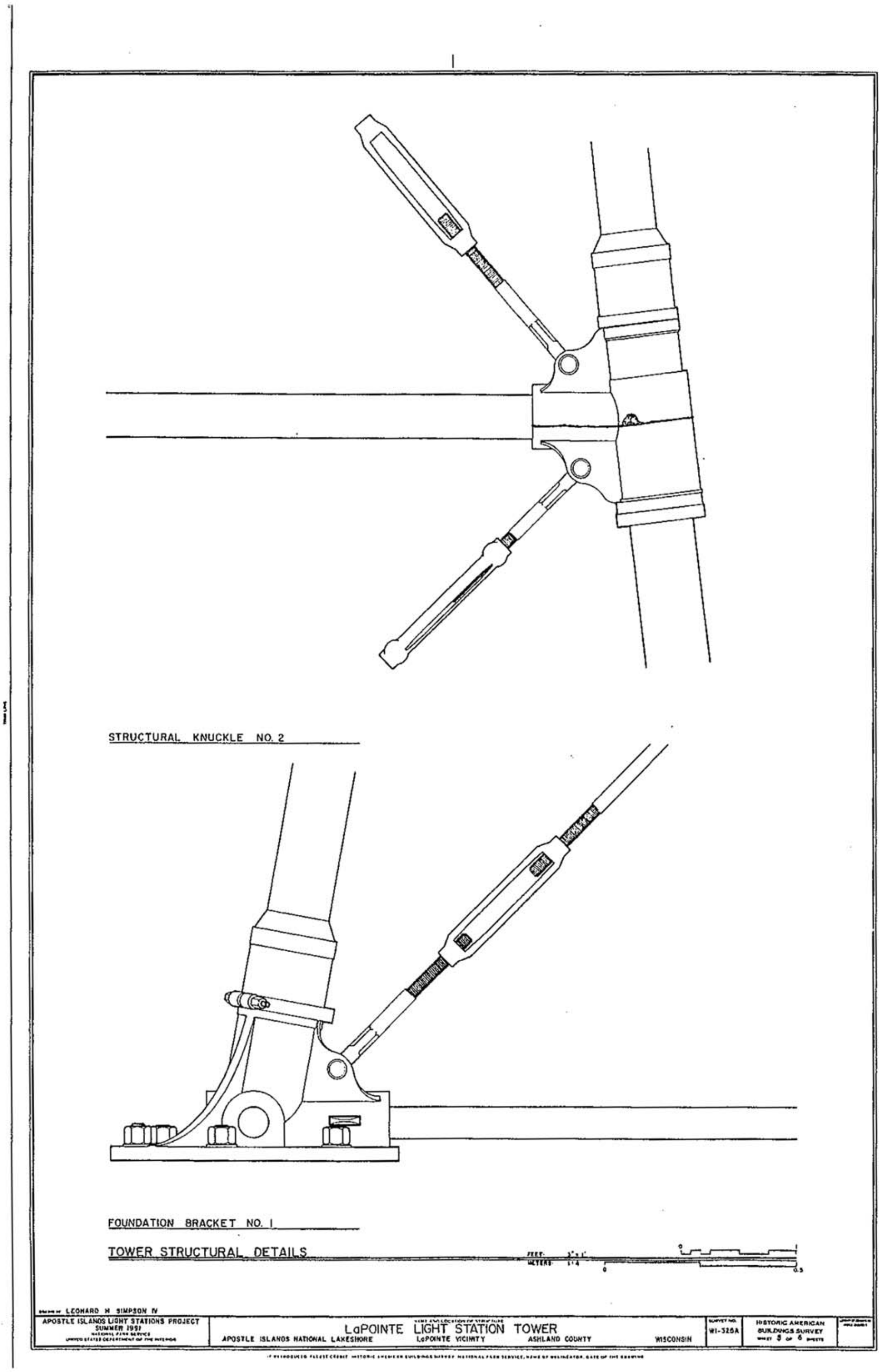

21' - 10 7/8"
2' - 6"
16' - 10 7/8"
2' - 6"
TOWER ENTRANCE PLAN
FEET 3/4" = 1'
CENTIMETERS 1:16
MATERIALS
WALLS — CAST IRON
EXTERNAL STRUCTURE - CAST IRON
FOUNDATION — CONCRETE
GILLIAN LEWIS
APOSTLE ISLANDS LIGHT STATIONS PROJECT
SUMMER 1991
LaPOINTE LIGHT STATION - TOWER
APOSTLE ISLANDS NATIONAL LAKESHORE
LaPOINTE VICINITY
ASHLAND COUNTY
WISCONSIN
WI-325A
HISTORIC AMERICAN
BUILDINGS SURVEY
1 OF 6

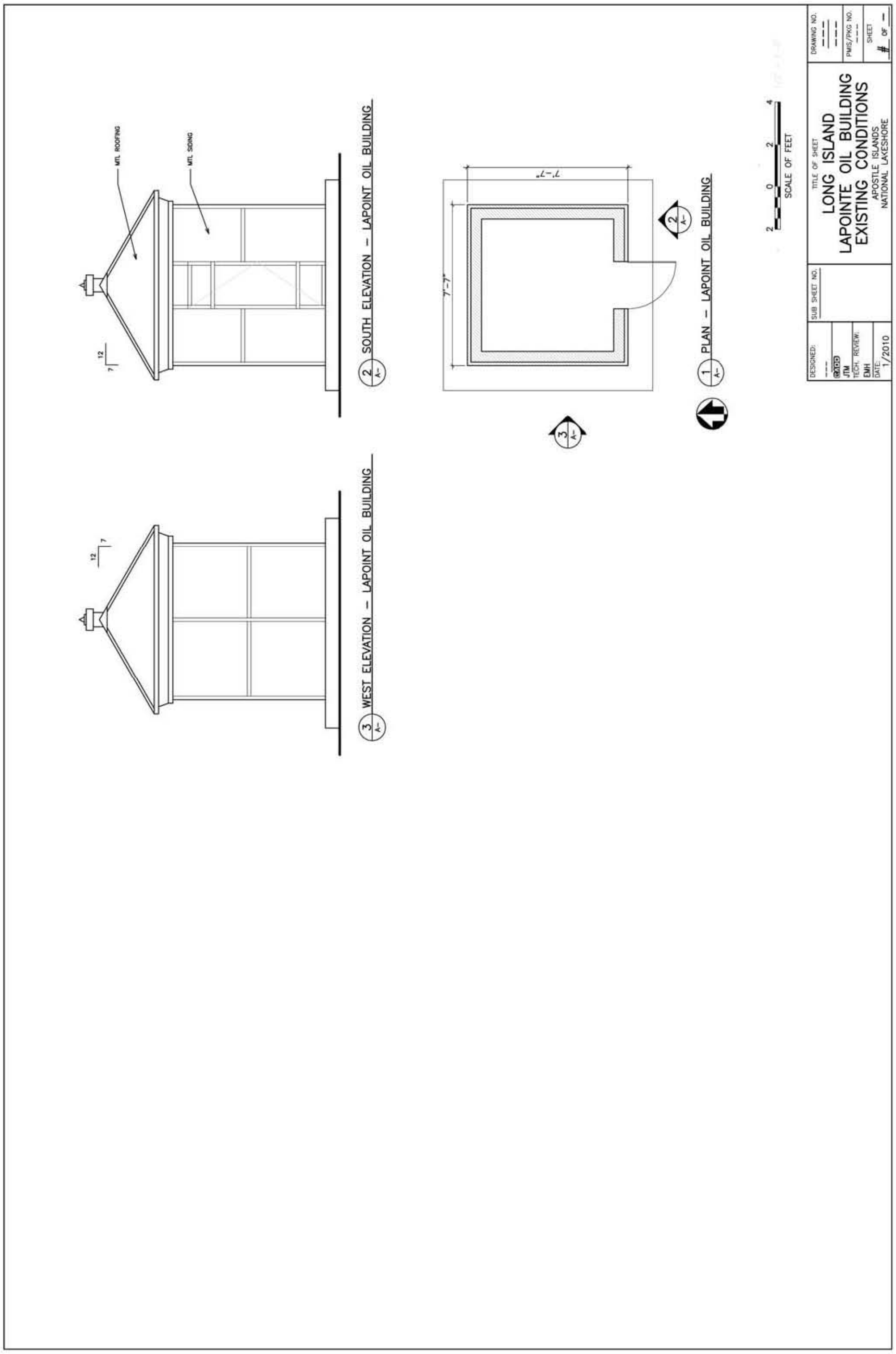

SERVICE LEVEL
TOWER PLANS
LANTERN LEVEL
GILLIAN LEWIS
APOSTLE ISLANDS LIGHT STATIONS PROJECT
SUMMER 1991
NATIONAL PARK SERVICE
LaPOINTE LIGHT STATION TOWER
APOSTLE ISLANDS NATIONAL LAKESHORE
LaPOINTE VICINITY
ASHLAND COUNTY
WISCONSIN
WI-325A
HISTORIC AMERICAN BUILDINGS SURVEY


NORTH ELEVATION
ENTRANCE DETAIL
KRZYSZTOF KOSZEWSKI
APOSTLE ISLANDS LIGHT STATIONS PROJECT
SUMMER 1991
LaPOINTE LIGHT STATION TOWER
APOSTLE ISLANDS NATIONAL LAKESHORE
LaPOINTE VICINITY
ASHLAND COUNTY
WISCONSIN
WI-323A
HISTORIC AMERICAN BUILDINGS SURVEY



LANTERN SECTION
MATERIALS
SHELL and STRUCTURE — CAST IRON
INTERIOR WALL (SERVICE LEVEL) – WOOD, TOUNGE AND GROOVE
VENT COVERS — BRASS
FEET- 3/4" = 1'
CENTIMETERS - 1:16
0
50
100
PATRICK J. SPOOEN
APOSTLE ISLANDS LIGHT STATIONS PROJECT
SUMMER 1991
LaPOINTE LIGHT STATION TOWER
APOSTLE ISLANDS NATIONAL LAKESHORE
LaPOINTE VICINITY
ASHLAND COUNTY
WISCONSIN
WI-325A
HISTORIC AMERICAN
BUILDINGS SURVEY
4
8


STRUCTURAL KNUCKLE NO. 2
FOUNDATION BRACKET NO. 1
TOWER STRUCTURAL DETAILS
LEONARD H SIMPSON IV
APOSTLE ISLANDS LIGHT STATIONS PROJECT
SUMMER 1991
LaPOINTE LIGHT STATION TOWER
APOSTLE ISLANDS NATIONAL LAKESHORE
LaPOINTE VICINITY
ASHLAND COUNTY
WISCONSIN
WI-326A
HISTORIC AMERICAN
BUILDINGS SURVEY
5
6


MTL ROOFING
MTL SIDING
2 SOUTH ELEVATION — LAPOINT OIL BUILDING
3 WEST ELEVATION — LAPOINT OIL BUILDING
7'-7"
7'-7"
1 PLAN — LAPOINT OIL BUILDING
SCALE OF FEET
DESIGNED:
JTM
TECH. REVIEW:
EMH
DATE:
1/2010
SUB SHEET NO.
TITLE OF SHEET
LONG ISLAND
LAPOINTE OIL BUILDING
EXISTING CONDITIONS
APOSTLE ISLANDS
NATIONAL LAKESHORE
DRAWING NO.
PMIS/PKG NO.
SHEET

LAPOINTE LIGHT TOWER

Chronology of Alterations and Use

Original Construction

In 1858, the first LaPointe Lighthouse was put into service. This early version of the LaPointe Tower remained active for almost 40 years. (Historic Image LI-01) The opening of the iron mines resulted in changing water traffic patterns and in 1895, funds were appropriated for the construction of a larger tower further east of the original tower and a new tower on the western tip of the island. The LaPointe Light Tower is 67' tall, a cast iron cylinder within a cast iron skeletal framework, and was manufactured by Chamblin S. Scott of Richmond, Virginia.

Historic drawings from the construction of the Tower in 1895 show that the original concrete plinth was stepped (three risers, the two upper risers were 9" high each), and 4'7 ¼" from grade to the finished floor. Today, the plinth is in disrepair as the concrete has cracked and weathered badly and the steps have mostly disappeared, covered by the shifting sand. (Historic Drawing LI-01)

The Tower's early years are captured in two photos circa 1900 and 1910, and two 1940s images of the Tower and Fog Signal Building. (Historic Images LI-01 and LI-02, Historic Images LI-08 and LI-09)

Significant Alterations / Current condition

Alterations to the LaPointe Light Tower were minor and have consisted primarily of changes in light technology. Wick lamps were replaced by incandescent oil vapor lamps in 1914. A battery-operated winter light was installed in 1934 and a radio system was added in 1936. In 1937, the Tower was converted to electricity and in 1964, the fourth order Fresnel lens was replaced by a 300mm optic on the outside of the lantern. Most recently, a LED beacon was installed (May 2009) inside the lantern. It is powered by three 12-volt batteries charged by a photovoltaic array.[33]

The only mechanical components in the Tower are the passive air vents at the top of the Tower.

Presently, the alternating current power systems in the Tower have been disconnected.

The Tower and braces are currently in fair condition, but the foundation is in poor condition.

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[33] N. Howk, January 2010

Summary of Documented Work on the Building

Date	Work Described	Source of Information
1897	Aug 31: "Worked all day on the large tower [LaPointe] hoisting…Got 2 of the lantern deck plats [plates] on each piece weighed 11 hundred pounds. It was a heavy hoist." Sept 8: "…the working men has got the hoisting all done and the roof on the tower." Sept 10: "Helped to put the plate glass in the high tower at signal." Sept 19: "Landed planks for walks and some lime and tin Rifs [roofs?]." Oct 11: "Lit light in both tower October 11th 1897…" Oct 25: "Boated iron to the signal and boated shingles from signal to house." Easier to transport materials via water than land. Nov 8: "Built a storm shed in front of the tower."	Joseph Sexton, LI (LaPointe) Log,1872-1943
Annual Report of 1897	"La Pointe, Lake Superior, Wisconsin…A 60-foot skeleton metal tower was purchased under contract. Concrete foundations were placed, and the tower was erected as far as the level of the main deck."	"1897 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920
1898, Oct 7	"Put up storm house in front of tower."	Joseph Sexton, LI (LaPointe) Log,1872-1943
1899, Aug 30	"Put up the storm house in front of the tower at signal."	Joseph Sexton, LI (LaPointe) Log,1872-1943
1900	Sept 29: "Puttied the storm house today with putty & red lead." Oct 2: "Painted the storm house in front of the tower outside."	Joseph Sexton, LI (LaPointe) Log,1872-1943
1901	May 3: "Painted storm house inside and out white." June 27: "Worked at fog & tower putting on collar on one of the cracked legs."	Joseph Sexton, LI (LaPointe) Log,1872-1943
1909	May 7: "Lightning struck the tower at the fog signal & put out the light 9:10 P.M. & tore up the slab walk some for about 300 feet and run around the signal." Oct 24: "Steamer 'Amaranth' arrived 8:30 A.M. & landed lightning rod for tower." Nov 20: "Worked at the lightning rod putting in the pipes in the ground." Nov 22: "Worked at the white light putting on the lightning rod on the tower. Sunk in 8 feet in the sand."	Joseph Sexton, LI (LaPointe) Log,1872-1943
1914	Wick lamps replaced by incandescent vapor oil lamps	J. Williams, 1995
1923, June 13	"Received door for tower, white light [LaPointe Tower], P.M."	Keeper, LI (LaPointe) Log,1872-1943
1928, November 12	"Drilling holes in trapdoor, white light lantern [LaPointe Tower], etc."	Keeper, LI (LaPointe) Log,1872-1943
1930, August 12	"Fitting window sash in tower, white light [LaPointe Tower]; removed clockwork from the Seth Thomas clock, [used for] radio beacon, ready for shipment."	Keeper, LI (LaPointe) Log,1872-1943
1932, September	Sept 6: "Removed one plate glass in lantern in the white light and red light, replaced new plate glass,	Keeper, LI (LaPointe) Log,1872-1943

Date	Work Described	Source of Information
	P.M." Sept 30: "Removed a broken plate glass from the lantern, white light [LaPointe Tower] and put in a new plate glass."	
1934	Battery-operated winter light installed, Sept 20: "Received from the Keeper of Devils Island Lightstation, parts for the winter light to be installed at this station." Installed in LaPointe Tower.	Keeper, LI (LaPointe) Log,1872-1943
1936	Radio system installed Nov 20: "In cleaning up the lens after the smoke up on the 17, it was noted that all to [the?] prism (4) in the top row were cracked, three in the second row and one in the third row—from top." Smoke up occurred in LaPointe Tower.	J. Williams, 1995; Keeper, LI (LaPointe) Log,1872-1943
1937	Converted to electricity, Aug 3: "The electric lights at La Pointe & Chequamegon Point in commission at sunset this evening."	Keeper, LI (LaPointe) Log,1872-1943
1964	Fourth-order Fresnel lens replaced with 300mm optic airport beacon	J. Busch, 2008
2009, May	LED beacon installed in Tower	NPS Records, 2009

General Physical Description

The Tower has a cylindrical cast iron core with an exterior cast iron frame and a metal stair within the core. It is bolted to poured concrete pads and has a metal door on the north elevation.

Physical Description -- Architecture

Architecture – Roof
The roof is made of cast iron, painted red, with a finial vent at the apex. The cast iron panels are 5/8" thick. (LI-LT-16)

Architecture – Walls and Wall Finishes
Cast iron exterior and interior walls, both painted white, with bolts on the interior. The walls are original to the structure. The watch room, where the ships ladder is located to access the lantern room, has 3 ½" beadboard, painted white, as the wall finish. The beadboard is original to the Tower.

A sample of the paint taken at the interior wall indicates that the oldest layer of paint is a charcoal color, possibly a factory-applied prime finish, with an orange-red layer that was typical for red lead prime paint used on metals.

Architecture – Windows
Slider Window. This window is a retrofit and is a single wood sash with a Plexiglas or similar product glazing. The window glazing slides up and down in the original steel frame. This window has no finish and is not original to the building.

Architecture – Doors
Lantern Walk Access Doors. These are a paired, built-up steel plate doors and are original to the Tower. Each door has a turn latch and two coach hinges (steel hinges without holes). The dimension for each panel is 1'-2" x 2'-8" x 3 ½". (LI-LT-09)

Hatch Door to Lantern Level. This hatch opening is steel plate and is original to the Tower. The hatch has a metal catch and two heavy-duty hinges. The dimensions of the hatch are 2'-0" x 2'-4". (LI-LT-12)

Watch Room Storage Door. This door is a wood, raised, five-panel and is original to the Tower. The door has a ceramic knob and two ball-tipped hinges. There is also wood trim with a bead that is ¾" x 3". The dimensions for the door are 2'-0" x 7'-0" x 1 3/8". (LI-LT-08)

Watch Walk Access Doors. These two panels are made of 1/8" plate metal and are original to the Tower. Each door has two strap hinges, and a handle throw that controls the top thrust and bottom thrust bolts simultaneously. There is an interior wood trim with bead that is ¾" x 3". The dimension for each panel is 1'-1" x 6'-5" x 5/16". (LI-LT-09)

Entry Doors. These double doors are made of 1/8" metal plate and are original to the Tower. Each door has two strap hinges, one 6" porthole-style lite, and a padlock with an original strap and catch. The door surrounds are Italianate in character. There is also a concrete stoop at the eastern face. The dimensions for each door are 1'-1" x 6'-9" x 5/16". (LI-LT-04)

Architecture – Walk and Railing
Lantern Level. The diamond plate metal deck is 2'-8" wide. Metal rails are located at 6 ½", 2'-5", and 3'-2" above the deck. The lower two rails are ½" x 2" bar stocks, while the upper rail's bar stock is capped by a shaped 2 ½" metal rail piece. Metal posts are 1 ¾" diameter with ball finials at +/- 4'-10" on center. All metal is painted and original to the structure. (LI-LT-19)

Watch Room. The diamond plate metal deck is 2'-8" wide. Metal rails are located at 6 ½", 2'-5", and 3'-3" above the deck. The lower two rails are ½" x 2" bar stocks, while the upper rail's bar stock is capped by a shaped 2 ½" metal rail piece. Metal posts are 1 ¾" diameter with ball finials at +/- 5'-10" on center and metal pickets are ¾" diameter at 5 ½" on center. All metal is painted and original. (LI-LT-10)

Architecture – Lantern
The lantern has an octagonal cast iron plate structure with bolted attachments. The height of the plate structure is 3'-7" A.F.F. The glazing is 2'-11" high with 2'-8" wide sections. The frame is 1 ¼" x 3 ¼". There are also four intake air vents that are controlled by revolving brass dampers. There is an exhaust vent located in the ceiling with about a 1' diameter. (LI-LT-13 and 14)

Architecture – Ceiling Finish
The interior of the cast iron roof is the ceiling in the lantern room. The octagonal roof shape is visible as the metal structural members are exposed. The ceiling is painted gray over white. (LI-LT-15)

The watch room's ceiling is the underside of the cast iron floor for the lantern room. It is painted white.

Architecture – Floor
The Tower is supported by poured concrete pads. These are original to the Tower. The watch room and lantern room floors are cast iron.

Architecture – Stairs
This spiral staircase is cast iron and painted gray. The stair's treads are 4" deep at their shallowest and 11" deep at their deepest. The treads are 2'-0" wide and the rise is 8". The metal pipe railing (painted gray) is 3'-0" above nosing and has a 1" diameter. The brackets supporting the railing are located about 6'-0" on center. (LI-LT-05) The ships ladder located at the top of the stairs has a 7/8" pipe rail at the lantern level. The ladder treads are 2'-0" wide and ½" thick and 2 ½" deep. The ladder risers are 9". Both stairs and ships ladder are original to the tower. (LI-LT-11)

Architecture – Accessibility
The building is currently not accessible due to the 2'-2" wide double door opening and the greater than 12" elevation change from grade to the concrete foundation floor.

Physical Description -- Structural

Structural – Foundation
The foundation system consists of concrete footings under each leg of the tower bracing and the center cylinder.

Structural – Floor Framing
The floor of the center cylinder is the center concrete footing.

The floors of the Tower watch room and lantern are constructed of cast iron plates that are bolted together. The plates of the lantern floor are supported on the walls of the watch room. The plates of the watch room floor are supported on the center cylinder and the exterior braces. The watch room and lantern are accessed via a spiral cast iron stair in the center cylinder.

Structural – Roof Framing
The roof of the lantern is constructed of cast iron panels that are bolted together. The panels are supported on the walls of the lantern.

Structural – Wall Framing
The walls of the center cylinder, watch room and lantern are cast iron panels that are bolted together. The walls of the lantern are supported on the lantern floor. The walls of the center cylinder are supported on the center concrete footing.

Structural – Lateral System
Lateral stability for the tower is provided by four sets of exterior cast iron braces that are interconnected with horizontal bracing and x-bracing. The braces are attached to the concrete footings.

Structural – Load Requirements
The required floor load capacity of the lantern is 100 psf, the required floor load capacity watch room is 40 psf and the required roof snow load capacity is 32 psf.

Physical Description -- Mechanical

Mechanical – Plumbing Systems
None in the building.

Mechanical – HVAC
There are passive air vents at the top of the Tower.

Mechanical – Fire Suppression
There is no fire suppression system in the building.

Physical Description -- Electrical

Electrical – System Configuration
The alternating current power systems in the Tower have been disconnected. The remnants of a feed to the Tower enter the Tower near the base and extend up the Tower stair tube to a junction box near the top. It is unknown what purpose these circuits fed in the past, however it appears as though they fed lighting and some automated equipment.

Other electrical equipment in the Tower consists of the USCG (United States Coast Guard) Light Beacon system. This consists of 3-12 volt dc batteries that feed power to a LED powered beacon. The system employs a small flat panel PV array located at the top of the Tower.

Electrical – Wiring Devices
None in the Tower.

Electrical – Conductor Insulation
Abandoned conductors in the Tower are rubber insulated copper.

Electrical – Overcurrent Protection
Overcurrent protection is disconnected.

Electrical – Lighting Systems
None in the Tower.

Electrical – Telecommunications
None in the Tower.

Electrical – Fire Alarm System
None in the Tower.

Electrical – Lightning Protection
LaPointe Light Tower has a single air terminal on top of the Tower. No grounding conductors were observed. Two of the four legs of the Tower had metallic straps bonded to the structure which appeared to be connected to an underground grounding rod or perhaps to the reinforcing in the concrete base. No bonding jumpers were observed between the Tower leg structural members.

Physical Description -- Hazardous Materials

Landmark Environmental collected seven bulk samples from a total of seven different types of suspected asbestos containing materials (ACMs) at Long Island. Of the seven suspect ACMs that were sampled and analyzed, none resulted in concentrations of greater than one percent (positive for asbestos).

Hazardous Materials – Asbestos
The following suspected ACMs were not sampled due to inaccessibility or park limitations or concerns regarding potential for damage to structure. Asbestos is assumed to be present at the following locations:

1. Caulk (Caulking may be present at window and door penetrations, which can also include gasket applications between the window assembly and the structure).

Suspect ACMs within the LaPointe Light Tower were observed to be in good condition.

Hazardous Materials – Lead Containing Paint (LCP)
LCP is identified at the Long Island LaPointe Light Tower in an interior paint sample, in the “Red Lead” Prime Coat. LCP is assumed to be present at the following locations:

1. Interior Painted Surfaces, and,
2. Exterior Painted Surfaces.

Based on the estimated dates of construction of the various structures and the available testing data LCP is assumed to be present throughout the structure. The confirmed LCP was observed to be in fair to poor condition and the assumed LCP was observed to be in poor condition.

In some areas corrosion is observed to have contributed to loose/flaking LCP on the exterior painted surfaces of the structure. Paint chip debris was observed on the ground surface in the vicinity of the Tower.

Hazardous Materials – Lead Dust
Wipe sampling for lead dust analysis was not conducted in the LaPointe Light Tower because it is a noninhabited structure.

Hazardous Materials – Lead in Soils
Historical paint maintenance activities such as manual scraping, power-washing, sanding, abrasive blasting or the general poor and peeling condition of exterior LCP may have created the potential to impact the surrounding soil. Areas of the surface soils adjacent to the structure were observed to have LCP debris and additional areas may exhibit LCP debris or lead-contaminated soils, but are not observable due to vegetative cover surrounding the structure. Preliminary lead-in-soil sampling was performed to assess whether these near-structure soils contain lead concentrations above applicable soil standards.

One four aliquot soil sample was collected from ground surface inside the Tower braces. One four aliquot soil sample was collected from ground surface outside the Tower braces.

1. Analysis of the composite sample from inside Tower braces resulted lead concentrations below the reporting limit of 17 milligrams of lead per kilogram of soil (mg/kg).
2. Analysis of the composite from outside the Tower braces resulted in 3,002.6 mg lead/kg of soil.

Hazardous Materials – Mold

Inspections of the structure were performed to identify the readily ascertainable visual extent of the mold growth. Moisture testing in building materials was not performed nor was sampling of building materials performed for microbial analysis. Mold was not visually identified in the LaPointe Tower.

Character Defining Features

Mass/Form. Exterior braced conical cast iron tower with double service deck.

Exterior Materials. Cast iron all painted white except the lantern roof panels which are red.

Openings. Double entrance doors and surround; rectangular sheet glass at the lantern.

Interior Materials. Exposed cast iron panels and bead board paneling – all painted white.

General Condition Assessment

In general, the LaPointe Light Tower is in fair condition with the exception of a few elements. The retrofit window is in poor condition as the Plexiglas (or similar product) that is used as its glazing is hazy and its wood frame is brittle. The spiral metal stairs, the metal walls and railing, the metal ships ladder, the metal lantern members, and the metal doors all are experiencing rusting issues. Other than these above mentioned elements, the LaPointe Light Tower is in fair condition.

Structurally, the Tower is in fair condition. There is cracking of the footings, cracks in the leg segments of the braces and delaminations on the cast iron wall panels. All of the cracks in the leg segments of the Tower are located in the enlarged ends (bells) of the leg segments. The cracks may be due to the prying action of the joint elements that are inside the belled ends.

Mechanically, the only attributes are passive air vents at the top of the Tower that are in fair condition.

Electrically, alternating current equipment in the Tower has been disconnected from any source of power. Raceways and wiring remaining in the Tower are in poor condition.

The following section is a discipline-by-discipline, component-by-component condition assessment of the Tower. Refer to Volume I, Chapter 2: Methodology for definitions of the condition ratings.

Condition Assessment -- Architecture

Architecture – Roof
<u>*Condition:*</u> *Good*
The cast iron roof is in good condition with minor patches of rust.

Architecture – Walls and Wall Finishes
<u>*Condition:*</u> *Fair to Poor*
Metal walls have some rust and alligatored paint throughout. A gap exists at the joint at the top of the wall to the lantern. Also, there is delamination on one cast panel at the west quadrant lower member. The next panel over has a smaller delamination patch. The interior room with the painted beadboard as the wall finish is in fair condition with several holes for previous conduit/equipment.

Architecture – Window
<u>*Condition:*</u> *Poor*
Slider Window. This window is in poor condition as the wood is brittle, the Plexiglas product is hazy, and it is not operable. The original window function was most likely spring pin catch.

Architecture – Doors
<u>*Condition:*</u> *Fair to Poor*
Lantern Walk Access Doors. These paired doors have stiff hinges and one of the latches is inoperable. The other latch is sluggish.

Hatch Door to Lantern Level. This hatch opening is in poor condition as the top portion is rusting and very deteriorated.

Watch Room Storage Door. This door is in fair condition as the paint is peeling, the hinges are rusting, and the knob operates sluggishly.

Watch Walk Access Doors. These doors are rusted, the lever does not throw the top and bottom throw bolts, and the hinges are sluggish.

Entry Doors. The bases of these entry doors are rusted. Overall, they are in fair condition.

Architecture – Walk and Railing
<u>*Condition:*</u> *Good to Fair*
Lantern Level. There is minor rusting on the upper walk.

Watch Room. The walk and railing are in good condition.

Architecture – Lantern
<u>*Condition:*</u> *Fair*
The lantern members are in fair condition as there is alligatored and peeling paint, all cast iron members are rusting, one pane of glass is cracked, and there is a bullet hole. The glazing seals are loose and damaged.

Architecture – Ceiling Finish
<u>*Condition:*</u> *Fair*
The interior of the metal roof's gray paint is failing and the white paint beneath it is badly alligatored. The structural members show areas of rust, though it does not appear to be a structural concern. The watch room's cast iron ceiling (the underside of the lantern room's floor) similarly has areas of rust and flaking paint. Overall, the ceilings in the lantern and watch rooms are in fair condition.

Architecture – Floor
<u>*Condition:*</u> *Fair to Poor*
The concrete pads have some cracks from stress. Refer to the structural assessment for the foundation below for the condition assessment. The watch and lantern rooms' cast iron floors are in fair condition with some rust visible and flaking paint.

Architecture – Stairs
<u>*Condition:*</u> *Fair*
The spiral stair and railing are in fair condition as the surface is badly rusted (not a structural issue) and the paint is failing throughout. The ships ladder also has rusting metal and alligatored paint.

Architecture – Accessibility
Condition: *Poor*
This building is not accessible.

Condition Assessment -- Structural

Structural – Foundation
Condition: *Unknown*
The visible portions of the concrete footings are in poor condition. The footings are severely cracked and several have surface deterioration and vegetation growing in the cracks (LI-LT-20 and 21).

Structural – Floor Framing
Condition: *Good*
The floors of the center cylinder, watch room and lantern are in good condition.

Structural – Roof Framing
Condition: *Good*
The roof framing is in good condition.

Structural – Wall Framing
Condition: *Good*
The walls of the center cylinder and watch room are in good condition. However, small areas of delamination were observed (LI-LT-22 and 23). The walls of the lantern are in good condition.

Structural – Lateral System
Condition: *Fair*
The exterior braces are in fair condition. Cracks were observed in the belled ends of several of the leg segments. The cause of the cracks could not be determined. The cracks could be due to corrosion of the braces, corrosion of hidden structural elements within the belled ends or binding of the joined elements due to differential movement. Some of the cracks had been drilled to relieve the stresses at the tip of the crack (LI-LT-24 and 25).

Structural – Load Requirements
Condition: *Good*
The roof and floor framing have adequate capacity to support the required loads.

Condition Assessment -- Mechanical

Mechanical – Plumbing Systems and Fire Suppression
Condition: *N/A*

Mechanical – HVAC
Condition: *Fair*
The passive air vents at the top of the Tower are in fair condition, but do not provide adequate ventilation to prevent condensation.

Condition Assessment -- Electrical

Electrical – System Configuration
<u>Condition:</u> *Poor and Good*
Alternating current equipment in the Tower has been disconnected from any source of power. Raceways and wiring remaining in the Tower are in poor condition.

The USCG Beacon systems, including photovoltaic collector, batteries, and beacon assembly, appear to be in good condition.

Electrical – Wiring Devices
<u>Condition:</u> *N/A*

Electrical – Conductor Insulation
<u>Condition:</u> *Poor*
Conductors are abandoned.

Electrical – Overcurrent Protection
<u>Condition:</u> *Poor*
Overcurrent protection for the Tower does not exist. It may have been disconnected and removed when the feed from Madeline Island was removed.

Electrical – Lighting Systems, Telecommunications, and Fire Alarm System
<u>Condition:</u> *N/A*

Electrical – Lightning Protection
<u>Condition:</u> *Poor*
Lightning protection is old and inadequate. The absence of grounding conductors and bonding conductors indicates that the system is not adequate. The history of the Tower indicates past lightning strikes have done significant damage to the Tower and to the concrete sidewalks adjacent to the structure. This indicates improper bonding to earth at the Tower.

Condition Assessment -- Hazardous Materials

Refer to ‘Physical Description -- Hazardous Materials’ for detailed descriptions of locations and conditions of hazardous materials.

Ultimate Treatment and Use

The Tower began construction in 1896 simultaneously with the Chequamegon Point Tower but both came to a halt due to lack of funding. The towers were restarted in early 1897 to be completed by June of that year. The LaPointe Light Tower's Fresnel lens was replaced with a 300mm optic in 1964, and by 1965, the Tower was no longer manned.

The Tower is currently not open to the public and maintains a functioning light. The proposed use for the Tower is for guided visitor access with an emphasis on preserving the structure.

Rehabilitation is the recommended treatment for the building.

Requirements for Treatment

Compliance requirements for treatment currently include laws, regulations, and standards as outlined by the NPS and listed in Volume I, Administrative Data section of this report.

The recommended treatments are tailored to the Preferred Alternative as the outcome of the Value Analysis/CBA for the project. As individual buildings are rehabilitated, specific alternatives will present themselves during design and construction. The following section is a discipline-by-discipline, component-by-component description of the treatments proposed for the rehabilitation of the building. Refer to Volume I, Chapter 2: Methodology for the priority rating definitions.

Treatment Recommendations -- Architecture

Architecture – Roof
Priority: *Moderate*
Repair areas of rust, prepare and repaint roof, fascia and cornice.

Architecture – Walls and Wall Finishes
Priority: *Moderate (Exterior); Low (Interior)*
Exterior. Patch areas of rust and delamination, prepare and repaint exterior walls.

Interior. Patch holes at beadboard, paint.

Architecture – Window
Priority: *Moderate*
Remove and replace the existing window with a new wood casement window with single pane glass. Prepare, paint and ensure smooth operation. Having an operable window will help facilitate ventilation and mitigate moisture issues on the interior of the tower.

Architecture – Doors
Priority: *Moderate*
Remove rust and patch as necessary to maintain surface integrity. Prepare and repaint all doors. Repair hinges, latches and levers to ensure smooth operation. Operable doors will be required if the public is to access the Tower and will facilitate ventilation and mitigate moisture issues of the Tower's interior.

Architecture – Walk and Railing
Priority: *Low; Severe (Railing)*
Remove rust and patch as necessary to fill resultant gaps. Prepare and repaint. Investigate alternatives to discretely upgrade the existing railing to become a code compliant guardrail.

Architecture – Lantern
Priority: *Severe*
Scrape, prep and repaint all cast members. Replace cracked and otherwise damaged panes. Glass shall be clear, non-reflective and with a visual light transmittance of not less than 72%. Verify tight seals for all lantern glazing. Verify proper operation of all ventilation components.

Architecture – Ceiling Finish
Priority: *Low*
Scrape, prepare and repaint ceilings. Coordinate with Lantern work. Monitor rust at structural members.

Architecture – Floor
Priority: *Low*
Refer to Structural foundation section below. Scrape, patch areas of rust, prepare and repaint cast floors.

Architecture – Stairs
Priority: *Moderate*
Scrape, remove rust and patch surfaces as necessary. Prepare and repaint stairs and ships ladder.

Architecture – Accessibility
Priority: *Low*
Provide program access through interpretive exhibits and waysides at the Visitor Center.

Treatment Recommendations -- Structural

Structural – Foundation
Priority: *Low*
Surface cracking of the footings indicates that the concrete mat may be deteriorating. The cracking may also be leading to corrosion or loss of uplift capacity of the anchor bolts. The condition of the concrete and the anchor bolts should be evaluated further.

Structural – Floor Framing
Priority: *Low*
No recommendations at this time.

Structural – Roof Framing
Priority: *Low*
No recommendations at this time.

Structural – Wall Framing
<u>Priority:</u> *Low*
The small areas of delamination on the walls of the center cylinder and lantern room should be investigated further.

Structural – Lateral System
<u>Priority:</u> *Unknown*
The cracks in the belled ends of several of the leg segments should be investigated further.

Treatment Recommendations -- Mechanical

Mechanical – Plumbing Systems and Fire Suppression
<u>Priority:</u> *N/A*

Mechanical – HVAC
<u>Priority:</u> *Moderate*
The existing passive air vents at the top of the Tower do not provide sufficient ventilation to prevent condensation and moisture damage inside the Tower. Additional passive ventilation is recommended.

Treatment Recommendations -- Electrical

Electrical – System Configuration
<u>Priority:</u> *Low*
No recommendations at this time.

Electrical – Wiring Devices
<u>Priority:</u> *N/A*

Electrical – Conductor Insulation
<u>Priority:</u> *Low*
No recommendations at this time.

Electrical – Overcurrent Protection
<u>Priority:</u> *Low*
No recommendations at this time.

Electrical – Lighting Systems, Telecommunications, and Fire Alarm System
<u>Priority:</u> *N/A*

Electrical – Lightning Protection
<u>Priority:</u> *Moderate*
Existing lightning protection is old and its effectiveness has not been established. It is recommended that a LPI (Lightning Protection Institute) certified inspector perform an inspection of the lightning system and provide findings and recommendations in accordance with LPI-175.

Treatment Recommendations -- Hazardous Materials

Hazardous Materials – Asbestos
Priority: *Low*
Recommend sampling of suspect asbestos containing materials, including adhesives.

Hazardous Materials – Lead-Containing Paint and Lead Dusts
Priority: *Moderate*
Recommend stabilization or abatement of Lead-Containing Paint. Sampling for lead dust is not recommended.

Hazardous Materials – Lead In Soils
Priority: *Moderate*
Recommend further soils characterization to confirm applicable regulatory requirements.

Hazardous Materials – Mold/Biological
Priority: *Low*
No recommendations at this time.

Hazardous Materials – Petroleum Hydrocarbons
Priority: *Low*
No recommendations at this time.

Alternatives for Treatment

The following are several considerations of alternatives for the proposed treatments:

1. If it is decided to allow public access to the catwalk, careful study will be needed for introducing a code compliant guard rail at the Tower walk that will not be visually disruptive to the historic character nor be a long term maintenance burden for park staff.
2. Further investigation of the structural components may result in a more critical set of treatment recommendations once more data is available.

Assessment of Effects for Recommended Treatments

The following table includes an analysis of the major treatment recommendations which affect Section 106 Compliance:

Recommended Treatment	Potential Effects	Mitigating Measures	Beneficial Effects
1. Add new ventilation elements (i.e. replace sash with secure louvers)	Removal of character defining feature (sash) and replacing with a modern material	Verify operation and efficiency of existing ventilation elements prior to introduction of new.	- Increased ventilation will aid in the preservation/ longevity of the historic fabric
2. Additional Hazardous Testing and Mitigation	Mitigation of hazardous material may require removal of historic materials.	Any mitigation will need to be evaluated for benefit and implemented sensitively to minimize damage to the resource.	- Improves safety for visitors and staff - Removes hazards from the cultural resource

LaPointe Light Tower Photographs, 2009

LI-LT-01: View from ground, 2009 (Source: AH IMGP2998)

LI-LT-02: Lantern, 2009 (Source: AH IMGP3005)

LI-LT-03: Exterior structure detail (Source: AH IMGP3026)

LI-LT-04: North entry door (Source: AH 100_9810)

LI-LT-05: Stair and railing (Source: AH 100_9814)

LI-LT-06: Stair railing detail (Source: AH 100_9815)

LI-LT-07: Watch room interior walkway and railing (Source: AH 100_9807)

LI-LT-08: Watch room storage door (Source: AH 100_9806)


LI-LT-09: Watch walk access door, walkway and railing (Source: AH 100_9808)


LI-LT-10: Watch walk walkway and railing (Source: AH 100_9804)


LI-LT-11: Watch room interior ladder to lantern (Source: AH 100_9805)


LI-LT-12: Lantern hatch (Source: AH 100_9801)

LI-LT-13: Lantern glazing (Source: AH 100_9800)

LI-LT-14: Lantern detail and vent (Source: AH 100_9799)

LI-LT-15: Lantern ceiling (Source: AH 100_9798)

LI-LT-16: Lantern roof (Source: AH IMGP2997-A)

LI-LT-17: Lantern level roof trim and glazing detail (Source: AH IMGP2996)

LI-LT-18: Lantern level door, walkway and railing (Source: AH 100_9796)

LI-LT-19: Lantern level walkway and railing (Source: AH IMGP2993)

LI-LT-20: Deteriorated footing (Source: Martin/Martin)

LI-LT-21: Deteriorated footing (Source: Martin/Martin)

LI-LT-22: Surface delamination (Source: Martin/Martin)

LI-LT-23: Surface delamination (Source: Martin/Martin)

LI-LT-24: Cracked brace (Source: Martin/Martin)


LI-LT-25: Cracked brace (Source: Martin/Martin)

CHEQUAMEGON POINT TOWER

Chronology of Alterations and Use

Original Construction

The Chequamegon Point Tower was constructed in 1896. It is a pyramidal skeletal tower of iron and steel, 42’ tall, and was manufactured by Fulton Iron and Engine Works in Detroit, Michigan. When the original LaPointe Tower and lantern were removed, the lantern was reused at the Chequamegon Point Tower. The Tower also included a fog bell that was run by clockwork.[34] In 1911, 32’ long log cribs were installed to protect the Tower’s footings.

In August of 1937, both towers on Long Island were converted to electricity. In 1987, the Chequamegon Point Tower light was deactivated and replaced by a navigational beacon mounted on a metal cylinder. That same year, the United States Coast Guard (USCG) moved the Tower approximately 100’ back from the water’s edge due to threatening wave action that was a concern for the concrete footings.

Original construction drawings from 1896 show a metal ladder as the method of accessing the Tower’s watch room (labeled “Clock Room” on the drawing) and a metal bell acting as the fog signal. The watch room is noted as having 1 ¼” corrugated iron siding. The height from grade to the service level entrance hatch is 20’10 3/8”. A detailed drawing shows the fog bell and how it was attached to the Tower as well as the lantern deck dimensions. (Historic Drawing LI-02 and 03)

Significant Alterations / Current condition

Significant alterations to the Chequamegon Point Tower consist of the deactivation of the light and movement of the tower by the USCG in 1987. Between 1998 and 2009, the Historic Structure Preservation Team of the NPS rehabilitated the Chequamegon Point Tower by installing a concrete foundation, straightening the bent support leg, replacing the broken cast iron upper deck plates, and installing glazing in the lamp room. Most of these repairs were needed after the damage inflicted on the Tower by the 1986 move.

The Tower does not contain any mechanical systems.

There are no alternating current electrical systems inside the Tower.

The Tower is still in poor condition as it is in a partially-reconstructed state. The lantern level is inaccessible as the ladders have been removed and stored for the current rehabilitation work. The structure appears to be presently stable (see structural assessment).

[34] Busch, Jane, “People and Places: A Human History of the Apostle Islands,” 2008

Summary of Documented Work on the Building

Date	Work Described	Source of Information
Annual Report of 1890 (Chequamegon Point)	*"Chequamegon light and fog-signal. Lake Superior, Wisconsin*. – A light on the east side of the entrance to Chequamegon Bay has been in service since 1858, and the act of October 1, 1888, authorized a fog-signal at a cost of $5,000, and on March 2, 1889, an appropriation was made therefor. This additional aid is much needed. In order, however, to fully meet the requirements of this situation, further improvements are needed. The present light is not clear enough to the inner point to serve as a good guide to clear it, and it is too far from the course of vessels outside to be of the best advantage. The fog-signal should be on the outer beach, about 1-mile east of the present light, and if so established the light also should be moved to the same location. To mark the inner point towards Houghton a small harbor light and fog bell struck by machinery will met all requirements. The expenditures necessary are estimated as follows: For removing and rebuilding the main light =$7,500 For the harbor light and bell =2,500 Total estimated cost =10,000 The Board recommends that an appropriation of $10,000 be made therefor." Request repeated for the next two annual reports.	"1890 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920
Annual Report of 1893 (Chequamegon Point)	*"Chequamegon Light and Fog Signal, Lake Superior, Wisconsin*. - The removing and rebuilding of the main light and the establishment of a harbor light and bell, at a cost not to exceed $10,000, were authorized by the act approved February 15, 1893, but no appropriation therefor has yet been made. The Board recommends that the amount named be appropriated." Repeated in 1894	"1893 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920
Annual Report of 1896 (Chequamegon Point)	*"Chequamegon Point, Lake Superior, Wisconsin*. – Negotiations for the purchase of a light-house site were opened in July and finished on March 18, 1896, requests to be made for the consent of the State to the purchase. Plans and estimates were	"1896 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920

Date	Work Described	Source of Information
	made for the work of moving and rebuilding the main light at La Pointe, Wis., and establishing a light and fog bell at Chequamegon Point. Contracts were made for the construction and delivery of the metal work for the Lapointe light tower, Wisconsin, and for the construction and delivery of the metal work for an iron beacon at Chequamegon Point. Bids were obtained for furnishing the material for the construction of this light, and the material was ordered. The matter of obtaining the consent of the State to the purchase of the site required at this point was in the hands of the governor. It has not been found practicable to complete the important improvements at this station as directed by the act approved March 2, 1895, within the limits of the appropriation made for the purpose. It is therefore recommended that an additional appropriation of $1,500 be made for completing the work and moving and rebuilding the main Lapointe light and establishing a harbor bell and light at or near Chequamegon Point, Lake Superior, Michigan."	
1897	Sept 9: "Putting lining in the small tower." Sept 19: "Landed planks for walks and some lime and tin Rifs [roofs?]." Oct 7: "Cleaned bell works at point and put up curtains crossways." Oct 10: Moved lens from "house to point tower," "The lens is badly scratched with emery paper the plate glass is the same." Oct 11: "Lit light in both tower October 11th 1897…" Oct 25: "Boated iron to the signal and boated shingles from signal to house." Easier to transport materials via water than land.	Joseph Sexton, LI (LaPointe) Log,1872-1943
Annual Report of 1897 (Chequamegon Point)	"Chequamegon Point, Lake Superior, Wisconsin. – The title papers to the site and right of way were recorded, the abstract of title was completed, and a certificate was obtained showing the consent of the legislature to the purchase. Concrete piers for the metal beacon were put in, the	"1897 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920

Date	Work Described	Source of Information
	frame was raised, and studding, joists, and sheathing of the clock room of the tower were put up, the deck plate, railing, and the outside iron work of the lantern were placed, and storm panes set. Work was closed on October 30, 1896, for lack of funds. The sundry civil appropriation act approved June 14, 1897, appropriated $1,500 for completing the work of moving and rebuilding the main La Pointe light and establishing a harbor bell and light at or near Chequamegon Point, Lake Superior, Wisconsin. Work will be undertaken at an early date. NOTE – This light was established October 11, 1897."	
Annual Report of 1898	"La Pointe, Lake Superior, Wisconsin. – In October the light was moved from the old tower to the new one at Chequamegon Point. The old lantern and tower were taken down and the roof was boarded and shingled where the tower was removed.…The fourth-order light shown from the tower of the keeper's dwelling, was discontinued on October 11, 1897, and the light was established in the skeleton iron structure built near the fog signal house."	"1898 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920
1899, October 19	"Fixed up the storm house in front of the coa[s]t light [Chequamegon Point] today."	Joseph Sexton, LI (LaPointe) Log,1872-1943
Annual Report of 1899 (Chequamegon Point)	*"Chequamegon Point, Lake Superior.* – The work of moving and rebuilding the main La Pointe tower, and establishing a harbor light and fog bell at Chequamegon Point was finished. A fixed red fourth-order light as a fog bell were on October 11, 1897, established in the structure erected at the extreme end of Chequamegon Point."	"1899 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920
Annual Report of 1904 (Chequamegon Point)	"*Chequamegon Point, Lake Superior, Wisconsin*. –Three cribs 12 feet wide and 32 feet long, placed 100 feet between centers and rising 3 feet above water level, were built on the northwest side of the point to protect the site of the beacon from further erosion. The cribs were built of logs filled with stone and decked with 3-inch plank."	"1904 Annual Report of the Lighthouse Board," La Pointe Light Station in Lighthouse Establishment Annual Reports 1850-1920
	"Put in a new glass in the red light	Joseph Sexton, LI (LaPointe)

Date	Work Described	Source of Information
1907, September 23	[Chequamegon Point].”	Log,1872-1943
1918, July 27	“There has been landed today a fog bell outfit to be installed soon.” This is an electric bell, as seen in references made in September and November in regards to making space for its equipment in the Fog Signal Building as well as “stringing” wires for electrician.	Keeper, LI (LaPointe) Log,1872-1943
1927, September 8	“One lens prism dropped out, when cleaning the lens at Chequamegon Point Lightstation.”	Keeper, LI (LaPointe) Log,1872-1943
1928, May 7	“Repaired lens prism, red light [Chequamegon Point]…”	Keeper, LI (LaPointe) Log,1872-1943
1929, July 5	“… filling in sand at bottom, Chequamegon Point Light Tower.”	Keeper, LI (LaPointe) Log,1872-1943
1932, September 6	“Removed one plate glass in lantern in the white light and red light, replaced new plate glass, P.M.”	Keeper, LI (LaPointe) Log,1872-1943
1937	Converted to electricity, Aug 3: “The electric lights at La Pointe & Chequamegon Point in commission at sunset this evening.”	Keeper, LI (LaPointe) Log,1872-1943
1986	Light replaced by navigational beacon, fog signal bell removed	J. Busch, 2008
1986	USCG moved Tower approx. 100’ from original site	J. Busch, 2008
2006	Installed new footings, straightened bent leg support	HSPT Reports, 2009, D. Pratt, Jan 2010
2007	Replaced broken cast iron upper deck plates with new cast iron plates	HSPT Reports, 2009
2008	Lamp room glazing replaced	HSPT Reports, 2009

Notable Actions with Unknown Dates

Date Range	Work Described
c. 1910-2009	Gallery railing at lantern deck missing (Historic Photos)

General Physical Description

The Tower has a rectangular metal base on a metal frame with an enclosed watch room and lantern room. The roof is pyramidal and is made of metal. A metal ladder (currently removed and in storage on-site) reached the watch room from grade.

The Tower underwent rehabilitation beginning in 2006 to 2008. The project had been on hold for one year when these observations were made. The exterior wall (with interior paneling) had been reconstructed, but windows and floor had not been rebuilt. The watch room was observed from scaffolding.

Physical Description -- Architecture

Architecture – Roof
Neither the lantern room nor the roof was accessible.

Architecture – Walls and Wall Finishes
The metal skeleton tower with corrugated iron siding at the watch room and metal casing at the lantern level are all original to the Tower. At the watch room, there is interior 3 ¼" vertical bead board paneling. The framing for the wall finish is 2x4 (actual) at 24" on center. The interior and exterior were partially reconstructed in 2008 and work is currently continuing. (LI-CLS-02)

Architecture – Windows
Double-Hung Windows. There are two of these types of windows in the Tower, both with original and modern attributes. Original construction drawings indicate eight-lite casement windows. (Historic Drawing LI-02) Both existing double-hung windows have pulleys as the window system was designed for two pulleys (for upper and lower sash). The trim for both windows is 1"x 3" wood with a bead edge. (LI-CLS-04 and 05)

Architecture – Doors
There is a pie-shaped hatch between the watch room and lantern level that was not accessed during the site observations. (LI-CLS-06)

Architecture – Walk and Railing
The walk was inaccessible. There was no railing in-situ at the time of the site investigation. Historic photos show a simple metal pipe railing.

Architecture – Lantern
Inaccessible. Currently, the interior ladder and railing used to access the lantern from the watch room are being stored by the NPS Preservation Team. The large exterior ladder to access the watch room is currently located at the site.

Architecture – Ceiling Finish
The ceiling finish for the watch room is cast iron with ribs, painted white. The ceiling is original to the Tower.

Architecture – Floor
The top layer flooring of watch room (which was removed at start of the rehabilitation) was maple tongue and groove, but it was deteriorated. It is unknown if this flooring was original to the Tower. The floor of the lantern was inaccessible. Refer to the structural condition assessment.

Architecture – Stairs
None in-situ. Historic photos show a metal ladder from grade up to the watch room. Park personnel indicated the ladder was stored on site, however it was not observed at the time of the site investigation.

Architecture – Accessibility
This building is currently not accessible as the only way to reach the watch room is by scaffolding.

Physical Description -- Structural

Structural – Foundation
The foundation system consists of a new concrete footing under each of the four legs.

Structural – Floor Framing
The floor of the watch room is in the process of being replaced.

The floor of the lantern is constructed of cast iron plates that are bolted together. The plates are supported on the four legs of the Tower.

Structural – Roof Framing
The roof of the lantern is constructed of cast iron panels that are bolted together. The panels are supported on the walls of the lantern.

Structural – Wall Framing
The walls of the lantern are metal panels that are bolted together. The walls are supported on the lantern floor. The walls of the watch room were measured to be FS 2x4 studs, spaced up to 20" on center. The studs bear on horizontal framing members between the legs of the Tower. Attachments between the studs and the Tower framing could not be observed. The studs are sheathed with 1x solid wood siding.

Structural – Lateral System
Lateral stability for the Tower is provided by the four exterior legs that are interconnected with horizontal bracing and x-bracing. The legs are attached to the concrete footings.

Structural – Load Requirements
The required floor load capacity of the lantern is 100 psf, the required floor load capacity of the watch room is 40 psf and the required roof snow load capacity is 32 psf.

Physical Description -- Mechanical

Mechanical – Plumbing Systems
None in the Tower.

Mechanical – HVAC
None in the Tower.

Mechanical – Fire Suppression
None in the Tower.

Physical Description -- Electrical

Electrical – System Configuration
There are no alternating current electrical systems inside the Tower. There is evidence that the adjacent overhead power line was once terminated on the Tower, but insulators have been removed leaving the bare metallic insulator support. The overhead line which previously fed the Chequamegon Tower extends from the vicinity of the LaPointe Tower to the vicinity of the Chequamegon Tower. The line is no longer energized.

Electrical – Wiring Devices
None in the Tower.

Electrical – Conductor Insulation
None in the Tower.

Electrical – Overcurrent Protection
None in the Tower.

Electrical – Lighting Systems
None in the Tower.

Electrical – Telecommunications
None in the Tower.

Electrical – Fire Alarm System
None in the Tower.

Electrical – Lightning Protection
Chequamegon Point Tower has a single air terminal on top of the Tower. No grounding conductors were observed. No grounding connections were observed at the base of the Tower, and no bonding jumpers were observed between Tower leg structural members.

Physical Description -- Hazardous Materials

Landmark Environmental collected seven bulk samples from a total of seven different types of suspected asbestos containing materials (ACMs) at Long Island. Of the seven suspect ACMs that were sampled and analyzed, none resulted in concentrations of greater than one percent (positive for asbestos).

Hazardous Materials – Asbestos
No Suspect ACMs were readily observable at the Light Station structure. Asbestos is assumed to be present in any material that is not metal or wood.

Asbestos is assumed to be present in:

1. Caulk - Caulking may be present at window and door penetrations, which can also include gasket applications between the window assembly and the structure.

2. During the site assessment access to the Chequamegon Point Tower was not possible due to fall protection concerns as unverified scaffolding was the only means of entry to the Tower.

Hazardous Materials – Lead Containing Paint

Detectable lead is assumed to be present at the following locations:

1. Interior Painted Surfaces, and,
2. Exterior Painted Surfaces.

Hazardous Materials – Lead Dust

Wipe sampling for lead dust analysis was not conducted in the Tower because this is a noninhabited structure and because of the limited accessibility.

Hazardous Materials – Lead in Soils

One three aliquot soil sample was collected from ground surface at approximately 3’ from the Tower braces. One aliquot was collected from each of three sides and composited for analysis.

1. Analysis of the composite drip line soil sample resulted in 1,743.5 mg lead/kg of soil.

A discarded lead-acid battery was observed in the vicinity of the Chequamegon Point Tower. The NPS reported that numerous discarded batteries had historically been observed in an approximate two acre area in the vicinity where the remnant battery was observed and that collection efforts and battery removal had previously been undertaken. There is a potential that these discarded batteries may have also contributed to lead-in soils contamination in the area.

Hazardous Materials – Mold

Inspections of the structure were not performed to identify the readily ascertainable visual extent of the mold growth. Moisture testing in building materials was not performed nor was sampling of building materials performed for microbial analysis.

Character Defining Features

Mass/Form. A simple steel supported rectangular service room with octagonal lantern above.

Exterior Materials. Steel supports, corrugated metal panels, cast iron lantern all painted white except the lantern roof panels which are red.

Openings. Wood double-hung windows (missing) at service level; rectangular sheet glass at lantern level.

Interior Materials. Exposed wood framing.

General Condition Assessment

In general, the Chequamegon Point Tower condition is currently unknown/fair due to the limited access into the watch room and lantern levels. It appears to be mostly in fair condition on the exterior and on the interior with the exception of a few elements. The park is currently in progress to complete this rehabilitation.

Structurally, the Chequamegon Point Tower is currently being rehabilitated and is in good condition.

There are no mechanical or electrical systems in the Tower.

The following section is a discipline-by-discipline, component-by-component condition assessment of the building. Refer to Volume I, Chapter 2: Methodology for definitions of the condition ratings.

Condition Assessment -- Architecture

Architecture – Roof
<u>Condition:</u> *Good*
The roof of the lantern appears to be in good condition. This assessment is based on photos from the ground and the structural assessment. The roof of the watch room was not observed.

Architecture – Walls and Wall Finishes
<u>Condition:</u> *Fair to Poor*
The metal skeleton tower with corrugated metal exterior paneling and metal casing is in fair condition as the metal is rusting with visible rust stains. The interior at the watch room level has beadboard in poor condition since it is partially missing in the room and the paint is alligatored. The exposed wood framing is in fair condition.

Architecture – Windows
<u>Condition:</u> *Fair*
Double-Hung Windows. These two windows are in fair condition as they are a composite of modern and original elements. One window does not have a sash and one window has a nonhistoric wood and Plexiglas product sash.

Architecture – Doors
<u>Condition:</u> *Unknown*
Inaccessible.

Architecture – Walk and Railing
<u>Condition:</u> *Unknown*
Inaccessible.

Architecture – Lantern
<u>Condition:</u> *Unknown*
Inaccessible.

Architecture – Ceiling Finish
<u>Condition:</u> *Fair*
The ceiling finish for the watch room is in fair condition as there is rusting along the ceiling and the ribs.

Architecture – Floor
<u>Condition:</u> *Unknown*
The watch room floor was removed for rehabilitation activities by the park. The lantern floor was not observed. Refer to the structural assessment.

Architecture – Stairs
<u>Condition:</u> *Unknown*
None. The ladder was not in-situ and not observed.

Architecture – Accessibility
<u>Condition:</u> *Poor*
This building is currently not accessible.

Condition Assessment -- Structural

Structural – Foundation
<u>Condition:</u> *Good*
The visible portions of the concrete footings are in good condition.

Structural – Floor Framing
<u>Condition:</u> *Under Construction and Good*
The floor of the watch room is in the process of being replaced. The floor of the lantern is in good condition.

Structural – Roof Framing
<u>Condition:</u> *Good*
The roof of the lantern is in good condition.

Structural – Wall Framing
<u>Condition:</u> *Good*
The walls of the watch room and lantern are in good condition.

Structural – Lateral System
Condition: *Good*
Lateral stability of the Tower is good.

Structural – Load Requirements
Condition: *Good*
The roof and floor framing have adequate capacity to support the required loads.

Condition Assessment -- Mechanical

N/A

Condition Assessment -- Electrical

Electrical – System Configuration, Wiring Devices, Conductor Insulation, Overcurrent Protection, Lighting Systems, Telecommunications, and Fire Alarm System
Condition: *N/A*

Electrical – Lightning Protection
Condition: *Poor*
Lightning protection is old and is in poor condition. The absence of grounding conductors and bonding conductors indicates that the system is not adequate.

Condition Assessment -- Hazardous Materials

Refer to ‘Physical Description -- Hazardous Materials’ for detailed descriptions of locations and conditions of hazardous materials.

Ultimate Treatment and Use

Construction of the Tower began in 1896 simultaneously with the LaPointe Light Tower, but both came to a halt due to lack of funding. The towers were restarted in early 1897 to be completed by June of that year.

In 1987, the USCG moved the Tower approximately 100' from its original site due to concerns about erosion. The move caused damage to the Tower's structure.

The park is currently in the midst of a rehabilitation of the Tower. At the time of the site visit in September of 2009 the structure was open to the elements. The timeframe for completion is unknown due to funding. All treatment recommendations defer to the park's current rehabilitation work.

The Tower is currently not open to the public and is to remain as such in the future. The park is interested in working with the USCG to reinstall the existing modern optic back into the Tower.

Rehabilitation is the recommended treatment for the Tower.

Requirements for Treatment

Compliance requirements for treatment currently include laws, regulations, and standards as outlined by the NPS and listed in Volume I, Administrative Data section of this report.

The recommended treatments are tailored to the Preferred Alternative as the outcome of the Value Analysis/CBA for the project. As individual buildings are rehabilitated, specific alternatives will present themselves during design and construction. The following section is a discipline-by-discipline, component-by-component description of the treatments proposed for the rehabilitation of the building. Refer to Volume I, Chapter 2: Methodology for the priority rating definitions.

Treatment Recommendations -- Architecture

Architecture – Roof
Priority: *Low*
The roof was not accessible but there do not appear to be any recommendations at this time beyond that the park is completing their current rehabilitation project.

Architecture – Walls and Wall Finishes
Priority: *Low*
Scrape, prepare and paint the exterior corrugated siding and lantern. (The lantern walls were not accessible.) The park shall complete their current rehabilitation project.

Architecture – Windows
Priority: *Severe*
Reconstruct the missing window sash, scrape, sand and paint. Remove and replace the Plexiglas with glass which shall be clear, non-reflective and with a visual light transmittance of not less than 72%. Verify operability of all sash. The park shall complete their current rehabilitation project. If not addressed, the opening at the missing sash will contribute to the degradation of the building's interiors and current rehabilitation efforts.

Architecture – Doors
<u>*Priority:*</u> *Unknown*
Inaccessible.

Architecture – Walk and Railing
<u>*Priority:*</u> *Unknown*
The walk and railing were not accessible. The park will address both features in the current rehabilitation project.

Architecture – Lantern
<u>*Priority:*</u> *Unknown*
The lantern was not accessible. The park will address the lantern in the current rehabilitation project.

Architecture – Ceiling Finish
<u>*Priority:*</u> *Low*
Scrape, prep and paint the ceiling.

Architecture – Floor
<u>*Priority:*</u> *Unknown*
Inaccessible.

Architecture – Stairs
<u>*Priority:*</u> *Unknown*
Inaccessible.

Architecture – Accessibility
<u>*Priority:*</u> *Low*
Provide program access through interpretive exhibits and waysides at the Visitor Center.

Treatment Recommendations -- Structural

Structural – Foundation
<u>*Priority:*</u> *Low*
No recommendations at this time.

Structural – Floor Framing
<u>*Priority:*</u> *Low*
No recommendations at this time.

Structural – Roof Framing
<u>*Priority:*</u> *Low*
No recommendations at this time.

Structural – Wall Framing
<u>*Priority:*</u> *Low*
No recommendations at this time.

Structural – Lateral System
<u>*Priority:*</u> *Low*
No recommendations at this time.

Treatment Recommendations -- Mechanical

N/A

Treatment Recommendations -- Electrical

Electrical – System Configuration
<u>*Priority:*</u> *Low*
The historic Tower has been disconnected from power line extending to the vicinity of the LaPointe Tower. There is no power source available for the historic Tower. An existing USCG culvert tower resides in close proximity to the historic Tower. It is recommended to move the USCG light and power equipment from the culvert tower to the historic Tower and remove the culvert tower. The existing de-energized overhead power line should be left in place for historic context.

Electrical – Wiring Devices, Conductor Insulation, Overcurrent Protection, Lighting Systems, Telecommunications, and Fire Alarm System
<u>*Priority:*</u> *N/A*

Electrical – Lightning Protection
<u>*Priority:*</u> *Moderate*
Existing lightning protection is old and its effectiveness has not been established. It is recommended that a LPI (Lightning Protection Institute) certified inspector perform an inspection of the lightning system and provide findings and recommendations in accordance with LPI-175.

Treatment Recommendations -- Hazardous Materials

Hazardous Materials – Asbestos
<u>*Priority:*</u> *Low*
Recommend sampling of suspect asbestos containing materials, including caulking.

Hazardous Materials – Lead-Containing Paint and Lead Dusts
<u>*Priority:*</u> *Low*
Recommend stabilization or abatement of Lead Containing Paint. Lead dust wipe sampling not recommended.

Hazardous Materials – Lead In Soils
<u>*Priority:*</u> *Moderate*

Recommend further soils characterization to confirm applicable regulatory requirements.
Hazardous Materials – Mold/Biological
Priority: *Low*
No recommendations at this time.

Hazardous Materials – Petroleum Hydrocarbons
Priority: *Low*
No recommendations at this time.

Alternatives for Treatment

The following are several considerations of alternatives for the proposed treatments:

1. Relocation of the Tower to its original location could be an alternative but due to the recent outlay of material and rehabilitation, it is not currently recommended.
2. Opening the Tower to the public was considered and dismissed given the ladder access and potential risk that would be incurred to the NPS.

Assessment of Effects for Recommended Treatments

The following table includes an analysis of the major treatment recommendations which affect Section 106 Compliance:

Recommended Treatment	Potential Effects	Mitigating Measures	Beneficial Effects
1. Removal of modern structure and relocation of modern optic into Tower	Coordination with USCG on removal and potential code upgrades which may conflict with the historic Tower. This may include providing an alternate means of access (i.e. not by ladder) and a code compliant guard rail at the walk.	Any decision to remove modern structure and relocate optic in historic Tower will need to be evaluated for benefit by the NPS and USCG and if agreed upon, implemented sensitively to minimize damage to the resource.	- Removes modern structure from the historic landscape -Restores cultural resource to its original function as an operating light tower

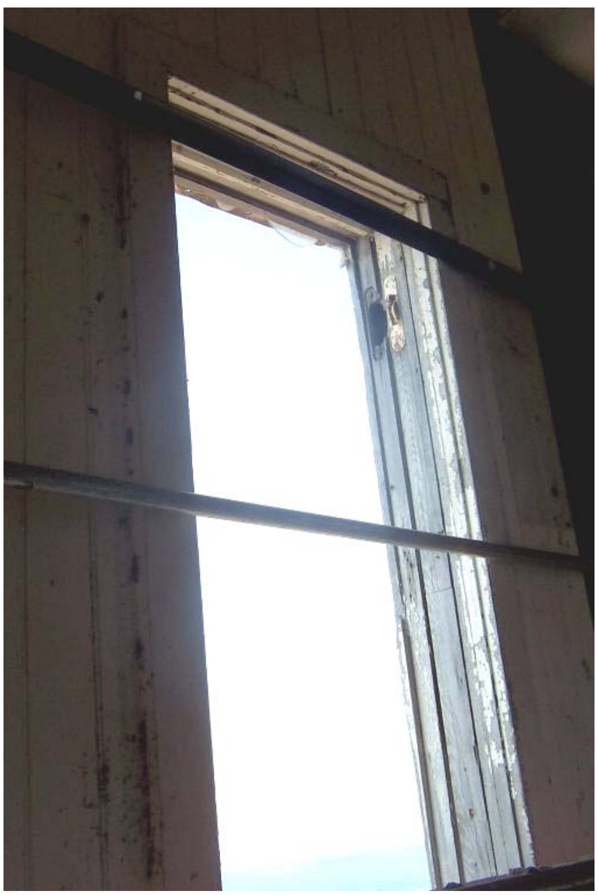
Chequamegon Point Tower Photographs, 2009

LI-CLS-01: View of Tower, 2009 (Source: AH IMGP3013)

LI-CLS-02: Service level, scaffolding and lantern (Source: AH IMGP3014)

LI-CLS-03: Tower's 2009 scaffolding system (Source: AH 100_9826)

LI-CLS-04: Service level window 1 and beadboard wall finish (Source: AH IMGP3020)



LI-CLS-05: Window 2, interior (Source: AH 100_9822)

LI-CLS-06: Service level hatch to lantern level (Source: AH 100_9823)

TRIPLEX

Chronology of Alterations and Use

Original Construction

The Long Island Triplex was constructed in 1938 by the WPA. The Triplex has two mirrored apartments on either side of the central apartment. Each unit has a separate entrance and the center unit has a neo-classical, recessed front porch.[35]

The Triplex is a wood frame building and finished on the exterior with asbestos shingle siding, painted white. Historic images from 1942 depict canopies and stoops at the entry doors. (Historic Images LI-10 and 11) A 1969 photo indicates that the land is still cleared around the Triplex, LaPointe Light Tower, and Fog Signal Building. (Historic Image LI-13)

The historic drawings indicate that there was to be a different siding material, however early historic photos indicate the asbestos shingles were likely original to the building. Original roofing was “blue/black” asphalt shingles with a 4” exposure. (Historic Drawings LI-04 to 12)

Significant Alterations / Current condition

The Triplex was reroofed in 1988 with asphalt shingles, mint green shade, by the NPS.

Although not functional, most of the original mechanical system components are still in place.

The existing electrical systems are just over 70 years old as they are original to the Triplex.

The Triplex shows past moisture damage at the interior walls, ceilings, and floors due to previous roofing issues. The ceilings, especially on each unit’s second floor, have areas of deterioration where the attic is exposed. Currently, the active moisture infiltration is at the basement walls and slab. Moisture appears to be trapped in the basement of the building (leading to high moisture content in the first floor framing as well as active mold growth) and exterior framing repair work is visible where moisture had entered the building. Bat infestation in the attic has also contributed to the poor conditions of the interior.

[35] List of Classified Structures, National Park Service, 2009.

Summary of Documented Work on the Building

Date	Work Described	Source of Information
1938	June 29: "Made excavation on point directed in Letter for Office west of fog signal building. An offset stake was driven in the ground 10' from the east corner of proposed first dwelling to be erected." Aug 31: "Contractor delivering concrete blocks & cement stacks. Subcontractor excavating sand from the building site." Oct 29: "Took pictures of new dwelling to show shingles laid on roof, etc."	Keeper, LI (LaPointe) Log,1872-1943
1939	June 6: "Made out final report on new dwelling, P.W.A. project No. 101." June 30: "Last day of the Light House Service today. Will join the U.S. Coast Guard tomorrow." July 17: "Scraping floor in Keeper's quarter – dwelling 'C' in the new dwelling." July 28: "…burying the two oil tank[s] east of fog signal building." Documented varnishing of floors one time in the Triplex, soon after it was constructed.	Keeper, LI (LaPointe) Log,1872-1943
1941	Aug 19: "Repaired windows in old dwelling." Both quarters still remain and are being kept up. Aug 29: "Dwelling leaks in all quarters around windows, doors and vent pipes." Triplex had early moisture infiltration problems. Sept 4: "At 1450 vertical antenna broke in center, upper half hanging, center section a twisted mass of steel…A great amount of water was driven into Keepers quarters and fog signal."	Keeper, LI (LaPointe) Log,1872-1943
1942, November 6	"Applying elastic putty around casing of windows & doors of dwelling." Temporary fix to water infiltration.	J.W. Bard, LI (LaPointe) Log,1872-1943
c.1945	Overhangs at doors replaced	Historic Photo c.1945, LI-13, APIS Archives
1988	Reroofed main roof with interlocking asphalt shingles (green)	HSPT Reports, 2009

General Physical Description

The building is a two-story, rectangular, wood frame residential structure with a full basement made from concrete block. It has a hipped roof with boxed eaves. It is composed of three units, each with private exterior doors.

Physical Description -- Architecture

Architecture – Roof
The roof is a simple hipped roof with three shed overhangs at the west, south, and east entry doors. The roofing is mint green asphalt shingle. Flashings are a white, prefinished drip edge. The sheathing is 1x8, not spaced, with a newer layer of plywood evident on top of the original sheathing. Roofing was replaced in 1988 according to the NPS records. The debris collected along the north drip line includes dark gray roof shingle pieces; possibly the roof's previous shingles. There are also ogee-style cornices and frieze boards. The eave consists of a boxed soffit, extending +/- 8", with built up 1x frieze board and fascia trim, all wood painted white. There are two sheet metal "range vents" which protrude through the roof +/-3'-0". The original drawings specified blue/black asphalt shingles with a 4" exposure and 15lb asphalt saturated felt.

Architecture – Shed Overhangs
There are three wood framed shed overhangs at the west, south, and east doors. The overhangs are sheathed with plywood and are supported by 2x4 struts. These are shown on the original construction drawings though a historic photo from c. 1945 shows the replacement underway. (Historic Images LI-13)

Architecture – Chimney
The chimney is red brick, stepped, with a soldier course at the top that transitions to a +/- 8" parged top. Two clay flues are evident. (LI-TX-06)

Architecture – Exterior Walls
The exterior walls consist of a concrete masonry unit (CMU) foundation with 2x4 framing and 1x8 sheathing. Brick infill is used between the first floor joists. Asbestos shingle siding is the exterior finish and the exposed siding measures 10 ½" x 24". The siding is painted and has a "wave" edge. Note that the original construction drawings show two types of siding, beveled and flush. However, it appears that only the beveled asbestos shingles were installed from historic photographs c. 1942.

A mortar sample was taken at the foundation between the CMU blocks. The mortar is tan colored, soft, and composed of lime and sand. The mixture is approximately two parts lime to seven parts sand by volume, and the sand is extremely fine.

Architecture – Windows for All Units
First and Second Floor Windows. This type of window is an original one- over one-lite, double-hung. It is either single, paired, or tripled in this building. The sash is inset with an ogee profile and the hardware is a single hand lift with thumb turn lock. The operating hardware is a head-mounted spring lift on one side and a metal track on the opposite side. The interior trim is a 2 ½" wide decorative style (consistent with the original drawings) with a 1" stained wood sill and painted skirt. The exterior trim is ¾" x 4 ½" with a 2" sill. The weather-stripping at the base is a bent metal flange that fits into a curl at the bottom rail. These windows have removable stops and roller shade hardware. Some windows have existing roller shades. Screening is crudely attached to the exterior trim of some windows. The typical dimension for this window is 2'4" x 3'10".

Basement Windows. These windows are the original three-lite metal frame awnings with thumb levers. The windows are currently covered on the exterior with plywood.

Architecture – Exterior Doors for All Units

The exterior doors are original with four lites over three horizontal wood panels. The muntins and panels have an ogee profile. Each door has three ball-tipped hinges, mortised knob set with integral deadbolt, and a plate on each face that is keyed at the exterior and has a thumb turn on the interior. The interior trim matches the interior window trim and the exterior trim is 1 1/8” x 3 ½”, all painted. Each door also has compression, copper weather-stripping, a metal threshold, and a concrete sill. The main entry doors are 3’ x 6’8” x unknown thickness, boarded-over. The utility doors are 2’8” x 6’8” x unknown thickness, boarded over. There is evidence of former screen doors.

Architecture – Exterior Trim

The exterior trim consists of window and door casings, headers, and sills. The door cornice is a header trim that is protected by drip edge sheet metal flashing. There are two built-up capital trims at the north doors to the east and west units, similar to the trim at the north porch.

Architecture – North Porch

The inset portion of the north wall consists of a concrete floor, tongue and groove wood ceiling, and four built-up columns. There are two boxed-out beams (pilasters) with capitals and trim above the opening that match the built-up trim at the east and west units’ doors. (LI-TX-22 to 25)

Architecture – Interior Doors for All Units

The interior doors for this building are original, are painted, and are one over one wood panel doors. The trim matches the interior window trim and the profile on each panel is ogee. Each door has a mortise lockset with a skeleton keyhole and plate on both faces and three ball-tipped hinges. The first floor doors are 2’to 2’6” x 6’6” x 1 3/8”. The second floor doors are 2’to 2’6” x 6’6” x 1 3/8”. (LI-TX-21)

Architecture – Wall Finishes

Unit A, East Unit

Basement. There is concrete block on the north, south, and west walls (roughly 7”x14”), and there is wood planking on the east walls (up to 16” wide). These wall finishes are original to the building.

Entry, Kitchen, Parlor, Second Floor Hall, Second Floor Bedrooms (Three), and All Closets. These rooms and their associated closets all have gypsum board wall finishes, painted in a variety of colors. The gypsum board is an original wall finish to the building.

Second Floor Bath. This room has gypsum board wall finishes as well as FRP tile wainscot on parts of the south and west walls and as the bathtub surround. The FRP wainscot is not original to the building but the gypsum board is original.

Unit B, Center Unit

Basement. There is concrete block on the north wall (same as in Unit A), wood planking on the south, west, and east walls (same as Unit A), and there is a red brick chimney made with oversized bricks (8”x2”) in the southeast corner. These wall finishes and the chimney are original to the building.

Entry, Parlor, Second Floor Hall, Second Floor Bedrooms (Three), and All Closets. These six rooms and their associated closets all have gypsum board wall finishes, painted in a variety of colors. The gypsum board is an original wall finish to the building.

Kitchen and Second Floor Bath. These two rooms have gypsum board wall finishes as well as FRP wainscot on parts of the rooms. The kitchen has wainscot on parts of the south and west walls. The second floor bath has wainscot as the bathtub surround. The FRP tile wainscot is not original to the building but the gypsum board is original.

Unit C, West Unit
Basement. There is concrete block on the south, east, and north walls (same as in Units A and B) and there is wood planking on the west wall (same as Units A and B). These wall finishes are original to the building.

Entry, Kitchen, Parlor, Second Floor Hall, Second Floor Bedrooms (Three), and All Closets. These seven rooms and their associated closets all have gypsum board wall finishes, painted in a variety of colors. The gypsum board is an original wall finish to the building.

Second Floor Bath. This room has gypsum board wall finishes as well as FRP wainscot as the bathtub surround. The FRP wainscot is not original to the building but the gypsum board is original.

Architecture – Ceiling Finishes
Unit A, East Unit
Basement. There is no finish at the basement as the framing is exposed.

Entry, Kitchen, Parlor, Second Floor Hall, Bath, Second Floor Bedrooms (Three), and All Closets. These eight rooms and their associated closets all have original gypsum board ceiling finishes.

Unit B, Center Unit
Basement. There is no finish at the basement as the framing is exposed.

Entry, Kitchen, Parlor, Second Floor Hall, Bath, Second Floor Bedrooms (Three), and All Closets. These eight rooms and their associated closets all have original gypsum board ceiling finishes.

Unit C, West Unit
Basement. There is no finish at the basement as the framing is exposed.

Entry, Kitchen, Parlor, Second Floor Hall, Bath, Second Floor Bedrooms (Three), and All Closets. These eight rooms and their associated closets all have original gypsum board ceiling finishes.

Architecture – Interior Trim
Unit A, East Unit
Basement. The basement does not have any interior trim.

Entry, Kitchen, Parlor, Second Floor Hall, Bath, Second Floor Bedrooms (Three), and All Closets. These eight rooms all have the original wood base trim (top 1” ogee profile) and base shoe, painted. All of the associated closets except the closet in the second floor southwest bedroom also have the same base trim and base shoe. The closet in the southwest bedroom only has a simple, painted, base shoe surrounding the box seat. There is also original cove molding in the entry, kitchen, parlor, and second floor north bedroom.

Unit B, Center Unit
Basement. The Basement does not have any interior trim.

Entry, Kitchen, Parlor, Second Floor Hall, Bath, Second Floor Bedrooms (Three), and All Closets. These eight rooms and their associated closets all have the original wood base trim and base shoe, painted (top 1" ogee profile).

Unit C, West Unit
Basement. The basement does not have any interior trim.

Entry, Kitchen, Parlor, Second Floor Hall, Bath, Second Floor Bedrooms (Three), and All Closets. These eight rooms all have the original wood base trim (top 1" ogee profile) and base shoe, painted. All of the associated closets, except the closet in the second floor southeast bedroom, also have the same base trim and base shoe. The closet in the southeast bedroom only has a simple, painted, base shoe surrounding the box seat. There is also original cove molding in the entry, kitchen, parlor, and second floor southeast bedroom.

Architecture – Floor
Unit A, East Unit
Basement. The basement floor is concrete slab-on-grade, original to the building.

Entry, Kitchen, Parlor, Bath, and Second Floor Bedrooms (Three). These seven rooms have historic patterned resilient flooring over the original 2 ¼" wood flooring. In most cases, the wood flooring is not visible.

Entry Closet, Kitchen Closet, Second Floor Hall and Closet, and Second Floor Bedroom Closets (Three). These seven rooms have the original 2 ¼" wood flooring.

Unit B, Center Unit
Basement. The basement floor is concrete slab-on-grade, original to the building.

Kitchen and Closet, and Bath. These three rooms have modern resilient flooring over the original 2 ¼" wood flooring. The wood flooring is not visible in the kitchen and closet.

Entry and Closet, Parlor and Closet, Second Floor Hall, and Bedrooms and Associated Closets. These eight rooms and their associated closets have the original 2 ¼" wood flooring.

Unit C, West Unit
Basement. The basement floor is concrete slab-on-grade, original to the building.

Kitchen, Bath, and Second Floor Southwest Bedroom. These three rooms have historic patterned resilient flooring over the original 2 ¼" wood flooring. In the kitchen, the wood flooring is not visible.

Entry and Closet, Parlor, Kitchen Closet, Second Floor Hall and Closet, and Second Floor Bedrooms and Associated Closets. These twelve rooms have the original 2 ¼" wood flooring.

Architecture – Stairs
Unit A, East Unit
First Floor to Basement Stairs. These stairs are wood with metal tread diamond plates. There are ten risers to a landing (kitchen door) and then three more risers to reach the kitchen vestibule. The stairs have a

handrail on the basement portion of the stairs but none on the stairs leading to the vestibule. There are ten risers (open) and three risers (wood) at 7 ½" high. The treads are 1 ½" thick, 2'8 ½" wide, and 11 ½" deep. The stringer is 1 ¾" thick by 1' wide. The newel for the basement portion is 3'7" tall and the distance from the nosing to the center of the handrail is 2'7". These stairs are original to the building. (LI-TX-10)

Second Floor to First Floor Stairs. These stairs are wood with painted risers and adhesive remains from some form of tread protection. There are ten risers to a landing (3'8" wide x 3'4" long) and then four more risers at 9" high. The treads are 3'4 ¾" wide and 10 ½" deep with a 1 ½" nosing overhang. The wood handrail has a 2 ¼" diameter and from the nosing to the center of the handrail is 2'6 ½". These stairs and handrail are original to the building.

Unit B, Center Unit

First Floor to Basement Stairs. These stairs are wood with metal diamond plates on the upper portion treads. There are ten risers to a landing (kitchen door) and then three more risers to reach the kitchen vestibule. The stairs have a handrail on the basement portion of the stairs on the western side but not on the eastern side or on the upper portion to the kitchen vestibule. There are ten risers (open) and three risers (wood with rubber matting on riser). The treads are 2'10 ½" wide, and 9 ½" deep. The stringer is 2x10. The newel for the basement portion is 4"x4" square and the distance from the nosing to the center of the handrail is 2'6". The railing is rectangular, 2" x 3 ¾". These stairs are original to the building. (LI-TX-26)

Second Floor to First Floor Stairs. These stairs are wood with painted risers and adhesive remains from some form of tread protection. There are thirteen risers at 8" high. The treads are 2'11 ½" wide and 10 ½" deep with a 1 ½" nosing overhang. There is a partial wood handrail on the western side of the stairs that becomes a wall for the entry room. The newel is 3' tall by 5" wide. From the nosing to the center of the handrail is 2'6". These stairs are original to the building. (LI-TX-30)

Unit C, West Unit

First Floor to Basement Stairs. These stairs are wood with adhesive remains from some form of tread protection on the basement portion and one tread rubber mat remaining on the kitchen vestibule portion. There are ten risers to a landing (kitchen door) and then three more risers to reach the kitchen vestibule. The stairs have no handrail on either the basement portion of the stairs or on the stairs leading to the vestibule. There are ten risers (open) and three risers (wood) at 7 ½" high. The treads are 1 ½" thick, 2'8 ½" wide, and 11 ½" deep. The stringer is 1 ¾" thick by 1'wide. These stairs are original to the building. (LI-TX-36)

Second Floor to First Floor Stairs. These stairs are wood with painted risers and stained treads. There are ten risers to a landing (3'8" wide x 3'4" long) and then four more risers at 9" high. The treads are 3'4 ¾" wide and 10 ½" deep with a 1 ½" nosing overhang. The wood handrail has a 2 ¼" diameter and from the nosing to the center of the handrail is 2'6 ½". These stairs and handrail are original to the building. (LI-TX-39)

Architecture – Casework

Unit A, East Unit

Entry Closet, Kitchen Closet, and Second Floor Hall Closet. These closets each have a 3 ¾" simple wood board hook rack along three walls and a 1" diameter rod (wood for entry and kitchen closets, metal for hall closet).

Kitchen. There are two sets of wall and base cabinets on either side of the sink along the north wall. The cabinets are each 2'8 ½" wide. (LI-TX-12 and 13)

Bath. The bath has two, two-door, built-in wood wall cabinets, one on top of the other, both painted white. The cabinets' widths are each 4', including trim, and they have bullet-tipped hinges. (LI-TX-18)

Bedroom Closets. The northeast and southeast bedroom closets each have a 3 ¾" simple wood board hook rack along three walls and a 1" diameter metal rod. They also each have a built-in wood shelving unit with three wood shelves. The southwest bedroom's closet has a built-in wood box seat (1'10" high, 2 ¼" thick wood top covered with vinyl), two sets of wooden shelves on the east and west walls, a 3 ¾" simple wood board hook rack along three walls, and a 1" diameter metal rod.

Unit B, Center Unit
Entry Closet, Kitchen Closet, and Parlor Closet. These closets each have a 3 ¾" simple wood board hook rack along three walls and a 1" diameter metal rod (not in kitchen closet).

Kitchen. There are wall and base cabinets (under the sink only) along the east wall. The cabinets are wood, painted white. (LI-TX-27)

Second Floor Hall. The hall has two, two-door, built-in wood wall cabinets, one on top of the other, two bullet-tipped hinges per door, and painted white. The cabinets' widths are each 4'2", including trim. These cabinets are similar to Unit A's bath cabinets.

Bath. The bath has two, two-door, built-in wood wall cabinets, one on top of the other, both painted white. The cabinets' widths are each 2'-2 ½", including trim and they have bullet-tipped hinges. These cabinets are similar to the second floor hall's cabinets, but much narrower.

Bedroom Closets. These closets each have a 3 ¾" simple wood board hook rack along three walls and a 1" diameter metal rod running length-wise.

Unit C, West Unit
Entry Closet, Kitchen Closet, and Second Floor Hall Closet. These closets each have a 3 ¾" simple wood board hook rack along three walls and a 1" diameter metal rod.

Kitchen. There are two sets of wall and base cabinets on either side of the sink along the north wall. The cabinets are each 2'8 ½" wide. These cabinets and their location are the same as Unit A's layout. (LI-TX-37)

Bath. The bath has two, two-door, built-in wood wall cabinets, one on top of the other, both painted white. The cabinets' widths are each 4', including trim, and they have bullet-tipped hinges. These cabinets are the same as Unit A's bath cabinets.

Bedroom Closets. These closets each have a 3 ¾" simple wood board hook rack along three walls and a 1" diameter metal rod. The southeast bedroom also has a built-in box seat, the same as Unit A's southwest bedroom (1'10" high, 2 ¼" thick wood top covered).

Architecture – Accessibility
Unit A, East Unit. This section of the building is currently not accessible from the open east entry door nor would it be accessible from the main north entry door if it were not boarded over. The east entry door opening is 2'8" clear with a grade to finish floor elevation change of more than 4" with a concrete sill. There are three risers at 8" high from the east door entry to the first floor level. The main north entry appears to be a 3' clear opening with at least a 4" concrete sill height to the threshold and at least 4" from the bottom of the sill to grade. Once inside the unit the doors do not meet the clearance for accessibility, nor is there a route to the other levels.

Unit B, Center Unit. This section of the building is currently not accessible from the south entry door or from the main north entry door. The south entry door opening is 2’8” clear with a grade to finished floor elevation change of more than 4” with a concrete sill. There are three risers at 8” high from the east door entry to the main floor level. The main north entry door opening appears to be a 3’clear opening with at least a 4” concrete porch height. Once inside the unit the doors do not meet the clearance for accessibility, nor is there a route to the other levels.

Unit C, West Unit. This section of the building is currently not accessible from the west entry door or from the main north entry door. The west entry door opening is 2’8” clear with a grade to finish floor elevation change of more than 4” with a concrete sill. There are three risers at 8” high from the west door entry to the main floor level. The main north entry appears to be a 3’clear opening with at least a 4” concrete sill height to the threshold and at least 4” from the bottom of the sill to grade. Once inside the unit the doors do not meet the clearance for accessibility, nor is there a route to the other levels.

Physical Description -- Structural

Structural – Foundation

The perimeter foundation walls were measured to be 12” thick concrete masonry units. The 1938 drawings do not indicate any reinforcing in the walls. The foundations for the walls could not be observed but are shown on the 1938 drawings to be 24” wide by 12” deep continuous concrete footings reinforced with three #5 bars. The interior columns bear on 28” square by 12” thick concrete footings reinforced with #5 bars at 6” each way based on information in the 1938 drawings. (Historic Drawings LI-02 to 05)

Structural – Floor Framing

The basement floor is a 4” thick concrete slab-on-grade reinforced with 6x6-10/10 wire mesh based on information in the 1938 drawings.

The first floor framing was measured to be 2x10 joists spaced at about 16”. The joists span approximately 11’4” and 12’8” and are sheathed with solid wood subflooring. The joists are supported on an 8” deep steel beam and the perimeter foundation walls. The 1938 drawings list the beams as “CB 82 @ 24#” and the columns as “3 1/2” L.W. Concrete Filled Column” or “3 1/2” Standard Pipe Column.” The flooring is wood over tongue and groove subflooring.

The second floor framing was measured to be 2x10 joists spaced at about 16” and is sheathed with solid wood subflooring.

Structural – Roof Framing

The roof framing was measured to be 2x6 rafters spaced at about 18”. The rafter spacing is specified to be 16” in the 1938 drawings. The rafters span approximately 12.5’. The rafters are supported on the exterior wood-framed walls. The rafters are sheathed with 1x solid wood underlayment.

Structural – Ceiling Framing

The ceiling framing of the original building was measured to be 2x6 joists spaced at about 16”. The joists span approximately 12.5’. The ceiling joists are supported on the perimeter walls and interior partition walls.

Structural – Wall Framing
The exterior walls were measured to be 2x4 studs spaced at about 16”. The interior walls are also framed with 2x4 studs.

Structural – Lateral System
Lateral stability for the building is provided by the exterior wood-framed walls.

Structural – Load Requirements
The required floor load capacity is 40 psf and the required roof snow load capacity is 50 psf. The required ceiling live load capacity is 10 psf (no storage is allowed).

Physical Description -- Mechanical

Mechanical – Plumbing Systems
The galvanized steel domestic water supply piping enters the basement below grade at the northwest side of the building. The water was originally supplied from a well near the shore of the lake. The well is no longer functional. There is a 1,000 gallon steel water storage tank and two 250 gallon water filter tanks located in the basement. (LI-TX-48) A 500 gallon steel hot water storage tank is also located near the water entry in the basement.

The building waste lines are cast iron and connect to a 4” cast iron sewer main that exits the building below grade at the southwest corner of the basement. This 4” line connects to a 6” vitrified clay sewer pipe that runs to the southwest and into a 900 gallon septic tank that serves the building. In addition, five floor drains in the basement connect to a 4” cast iron below-slab drain. This 4” drain connects to a 4” clay sewer pipe that drains to the north of the building and into the lake.

Remaining plumbing fixtures include enameled cast iron kitchen sinks in all three units and free-standing laundry tubs in the basement of the West and Center Units. Only the kitchen sink in the East Unit still has hot and cold faucets in place. Faucets are missing from the West and Center Units kitchen sinks. The two basement laundry tubs also do not have faucets. The remaining second floor fixtures include a tank-type toilet in the East Unit, bathtubs in all three units, and wall mounted lavatories in the East and West Units. Faucets remain in place for all three bathtubs and at the East and West Units’ bathroom lavatories. The second floor lavatory in the Center Unit is no longer mounted on the wall and is on the floor of the room. The lavatory faucets for this unit have been removed. The toilet locations in the Center and West Units have an open sewer connection in the floor.

Mechanical – HVAC
The heating system consists of an oil-fired Lennox “Aire-Flo” furnace in the basement with ductwork serving all three housing units above. The air was supplied through floor level wall grilles in the first and second floor living areas.

There are no ventilation systems in the building. The only source of basement ventilation is ground level windows which have been sealed off with plywood.

Mechanical – Fire Suppression
None in the building.

Mechanical – Other
A 2” galvanized steel fuel oil supply pipe enters the building below grade at the east end of the basement. A 1,000 gallon steel fuel oil tank is located to the southeast of the building.

Physical Description -- Electrical

Electrical – System Configuration
The Triplex Building was built in 1938 and would have been governed by the National Electrical Code of 1937. Existing systems are just over 70 years old. The existing wiring and equipment within the building along with receptacles and fixture bases remain. There is no source of power for the building.

Electrical – Conductor Insulation
Wiring in the Triplex is "Romex" construction with rubber insulated conductors in an overall sheath of braided cotton fiber. Romex is concealed in walls in upper levels of the building and run exposed in the unfinished basement. None of the wiring includes a separate ground conductor and receptacles within the building are of the two prong, nongrounded type. Conductors in the building are not connected to a source of power.

Electrical – Overcurrent Protection
Main overcurrent protection for the building is absent. Each of the three living units has a 60 ampere, 12 circuit single phase screw in fuse panel board, but none contain a main over current device. The building is served by a single two wire direct buried underground feeder that is directly connected to three unit panel boards via approximately 60 ampere "Romex" feeders (LI-TX-49). At one time there was a medium voltage utility power circuit that traveled across the lake between Madeline Island and Long Island. A medium voltage switch remains near the base of the LaPointe Light Tower. There is a pad that likely supported a step-down transformer for power for the building. The step-down transformer has been removed along with any overcurrent protection that might have existed for the Triplex.

Electrical – Lighting Systems
Lighting in the building is consistent with the era in which it was installed. All lighting is incandescent. All glass globes and reflectors have been removed, leaving fixture bases in place. Lamps have, for the most part, been removed. Lighting systems in the building are not connected to a source of power.

Electrical – Wiring Devices
Wiring Devices including receptacles and toggle switches are typical of the late 1030's era. In general, wiring devices are mounted in outlet boxes in walls. Receptacles are of the two prong type and do not include a ground connection. Wiring devices are no longer connected to a source of power and are no longer utilized.

Electrical – Telecommunications
None in the building.

Electrical – Fire Alarm System
None in the building.

Electrical – Lightning Protection
None on the building.

Physical Description -- Hazardous Materials

Landmark Environmental collected seven bulk samples from a total of seven different types of suspected asbestos containing materials (ACMs) at Long Island. Of the seven suspect ACMs that were sampled and analyzed, none resulted in concentrations of greater than one percent (positive for asbestos).
Hazardous Materials – Asbestos
Several varieties of flooring materials at the Triplex were sampled and were found to be non-ACM, including brown, green, red and multi-colored sheet flooring applications. Tar paper backing was also sampled and found to be non-ACM.

Asbestos-cement siding shingles are identified on the exterior of the Triplex structure based on visual similarities with confirmed asbestos-cement shingles. Minor amounts of asbestos-cement debris were observed on surface soils around the exterior of the structure. These pieces of ACM were nonfriable.

The following suspected ACMs were not sampled due to inaccessibility or park limitations or concerns regarding potential for damage to structures. Asbestos is assumed to be present at the following locations:

1. Wall and Ceiling Plaster and drywall with joint compound,
2. Wall and Ceiling Interiors (Fill insulation, tar paper vapor barriers and other suspect ACM applications may be found in wall and ceiling interiors),
3. Adhesives (Multiple varieties of miscellaneous adhesives were seen on mechanical system components, under flooring applications, and around windows),
4. Thermal System Insulation (TSI) (Was not observed and asbestos is commonly present in insulation on water pipes, metal ducting for heating systems, behind floor registers, steam piping, etc.),
5. Roofing Materials (Roofing felt, tar, and shingles were observed that may contain asbestos),
6. Sub-Flooring (Suspect ACMs in flooring applications were not observed and asbestos is commonly present in vapor barrier felts and tar-papers used in sub-flooring applications),
7. Caulk (Caulking was observed around window and door penetrations, which can also include gasket applications between the window assembly and the structure), and,
8. Asbestos-cement (Piping, wall-board, wall interior panels, roof flashing and roofing applications can be constructed of asbestos-cement. This type of application was not observed at the structure but may be present).

The assumed ACMs were observed to be in fair to poor condition.

Hazardous Materials – Lead Containing Paint
Detectable lead is assumed to be present at the following locations:

1. Interior Painted Surfaces, and,
2. Exterior Painted Surfaces.

Based on the estimated dates of construction of the various structures LCP is assumed to be present throughout the structure. The assumed LCP was observed to be in poor condition and the assumed LCP was observed to be in poor condition.

Loose/flaking assumed LCP is identified on the exterior walls of the structure. Paint chip debris is observed on localized areas of surface soils surrounding the structure.

Hazardous Materials – Lead Dust
Wipe sampling for lead dust was not conducted in the Triplex because lead dust was assumed to be present due to the poor condition of the confirmed and assumed LCP.

Hazardous Materials – Lead in Soils
The historical paint maintenance activities may have the potential to impact the surrounding soil. The surface soils adjacent to the structure were observed to have lead paint debris. Preliminary lead-in-soil sampling was performed to assess whether these soils contain lead concentrations above applicable residential soil standards.
One three-aliquot soil sample was collected from ground surface at the roof drip line, approximately 3' from the foundation walls.

1. Analysis of the composite drip line sample resulted in 1,373.1 mg lead/kg soil.

A second three-aliquot soil sample was collected from ground surface at approximately 8' from the foundation walls.

1. Analysis of this composite drip sample resulted in 6,955.4 mg lead/kg soil.

Hazardous Materials – Mold
Inspections of the structure were performed to identify the readily ascertainable visual extent of the mold growth. Moisture testing in building materials was not performed nor was sampling of building materials performed for microbial analysis.

Mold was visually identified in the Triplex. A pungent musty odor was identified in the Triplex. The structure had extensive visible mold growth and was actively growing at several locations. Mold was specifically noted in Unit C, West Unit, and the kitchens. Dead animals and feces were seen throughout the Triplex.

Character Defining Features

Mass/Form. WPA era two-story rectangular hipped roof structure with recessed porch on north side and built up wood entry pediments.

Layout of Space. Three distinct units with separate entries; the basement level allows communication to all three units. The end units (A and C) mirror one another while the Center Unit's layout is unique. Generally each unit has an open layout from the living to dining spaces with a separate kitchen. The bedrooms are separate without openings to connect one to another.

Exterior Materials. Asbestos shingles and wood trim painted white

Openings. Paired and single one- over one-lite wood double-hung windows; pediment trimmed doors on the north side; doors (mostly missing) were four-lite over three panel painted wood.

Interior Materials: Painted gypsum board, wood flooring with areas of linoleum sheet flooring, original cabinetry and kitchen sink fixtures, modest painted woodwork.

General Condition Assessment

In general, the Long Island Keepers Triplex is in fair condition on the exterior and in poor condition on the interior. Most of the wall, ceiling, and floor finishes are in disrepair and moisture issues are highly evident with instances of mold, rotting wood, and water stains throughout. The ceiling finishes, especially on the second floor in Units B and C, have collapsed in areas encouraging further ceiling finish failure and bat inhabitation. The wood flooring is in better condition as only a few instances of rot and water infiltrations were observed, the worst seen in Unit C's entry room. Also, the interior casework, windows, and interior and exterior doors exhibit peeling paint in a variety of intensities.

Structurally, the Triplex is in fair condition. Deteriorated flooring and joists need to be repaired and the basement needs to be dried out to reduce moisture content of the first floor framing. The roof framing needs to be strengthened to carry the required snow load.

Mechanically, the majority of the systems in the building are in poor condition with portions of the systems no longer in place.

Electrically, the existing systems are over 70 years old, are in poor condition, and are well beyond their useful life expectancy. In addition, the installation no longer meets current National Electrical Code requirements.

The following section is a discipline-by-discipline, component-by-component condition assessment of the building. Refer to Volume I, Chapter 2: Methodology for definitions of the condition ratings.

Condition Assessment -- Architecture

Architecture – Roof
<u>*Condition:*</u> *Fair to Poor*
The roof is overall in fair condition. There is a hole at the eave/soffit on the north side, though it has yet to translate to finish damage on the interior. There is damage on the interior from roof leaks but the damage appears to have occurred prior to this new roof. This roofing is nearing the end of its serviceable life. (LI-TX-07)

Architecture – Shed Overhangs
<u>Condition:</u> *Good*
All three shed overhangs appear to be in good condition, though paint is peeling in some areas. (LI-TX-09)

Architecture – Chimney
<u>Condition:</u> *Fair*
The chimney appears to be in fair condition. The step flashing at the chimney is suspected of leaking, though it could not be determined if it was an active leak issue. The flashing appears to have been reused.

Architecture – Exterior Walls
<u>Condition:</u> *Fair to Poor*
The exterior walls are overall in fair condition, although there is concern that the asbestos shingle siding is concealing significant damage beneath. The siding's paint is peeling in some areas and there are a few broken shingles. The CMU foundation wall has water infiltration (see structural assessment below). The interior framing below the western triple windows on the north elevation is visible and shows previous water infiltration and framing repair work. This damage, however, does not translate to the finish on the exterior.

Architecture – Windows for All Units
<u>Condition:</u> *Fair*
First and Second Floor Windows. This type of window has badly peeling paint on the interior and exterior. Some of the spring tapes are in working order and the weather-stripping is in good condition. The exterior wood is weathered and some deterioration is present at certain windows. Also, the glazing compound is in very poor condition. In general, these windows are in fair condition.

Basement Windows. These windows have some rust issues, the lever hardware is difficult to operate, and the glazing compound is failing. Overall, they are in fair condition.

Architecture – Exterior Doors for All Units
<u>Condition:</u> *Fair (Existing) and Poor (Missing)*
The exterior doors have all been boarded over with the exception of Unit 1, East Unit's utility door. Many of the exterior doors are missing and the exterior trim has rotted out at the base in many door locations. Also, some of the wood entablature trim is missing and some is rotten. In general, the paint is peeling and the overall condition of the existing doors and their trim is fair, while the missing doors and their trim are in poor condition.

Architecture – Exterior Trim
<u>Condition:</u> *Good to Fair to Poor*
The exterior trim is overall in fair condition. The cornice trim is generally in good condition with the exception of the hole at the north elevation's east end. The drip edge trim appears to be rusting and staining the trim below as it is in poor condition. (LI-TX-08)

Architecture – North Porch
<u>Condition:</u> *Good to Fair to Poor*
The bases' 1x built-up trim of the center two columns has been replaced, as evidenced by the different direction of joints, and the ogee bead trim is missing. The base of the far east column is rotted through,

exposing the rotted conditions at the wall framing. The porch's soffit and beam appear to be in fair condition with peeling paint. The concrete stoop is in good condition. The door trim around the center door is in good condition by nature of being further protected by the porch. (LI-TX-24 and 25)

Architecture – Interior Doors for All Units
<u>Condition:</u> *Good (Existing) and Poor (Missing)*
The existing interior doors are all operable. Some of these doors do have rusted hinges and paint peeling (badly in some instances), but overall, they are in good condition. There are many instances of missing doors, however.

Architecture – Wall Finishes
<u>Condition:</u> *Fair to Poor*
Unit A, East Unit. The basement's wood and concrete block wall finishes are in fair condition. There is water seepage around the north wall. Overall, the basement is very damp and has a high moisture content. The entry has a hole in the east wall and the front door is boarded-up. The kitchen is in fair condition with peeling paint and graffiti in the vestibule area. The parlor and second floor hall have visible mold. The second floor hall also has graffiti on the walls. The three bedrooms have cracks, and stains on the walls. The closets tend to have accelerated poor conditions of the rooms they are associated with. The second floor bath's gypsum board is in fair condition with cracks and stains at the corners. The FRP wainscot is also in fair condition.

Unit B, Center Unit. The basement's wood and concrete block wall finishes are in fair condition. There is water seepage around the northwest corner. Overall, the basement is very damp and has a high moisture content. The entry is in poor condition, especially on the northern upper wall, and the front door is boarded-up. The parlor has visible mold on and under the peeling paint. The second floor hall has bubbling and peeling paint along the gypsum board seams. The three bedrooms have gypsum board failure, cracks, peeling paint, and bat droppings on the walls. The closets tend to have accelerated poor conditions of the rooms they are associated with. The kitchen's wall finishes are in poor condition, especially on the vestibule's western wall. The FRP wainscot is in fair condition. The second floor bath's gypsum board is in poor condition as mold is visible.

Unit C, West Unit. The basement's wood and concrete block wall finishes are in fair condition. There appears to be some water infiltration along the south, east, and north walls. Overall, the basement is very damp and has a high moisture content. The entry has a large patch of missing gypsum board under the triple window. The framing and wood sheathing are visible and show signs of water damage. The front door is also boarded-up. (LI-TX-38) The kitchen is in poor condition with visible mold between layers of paint. The parlor also has visible mold along the gypsum board seam. The second floor hall has alligatored paint at the western corner. The three bedrooms have blistering paint. The closets tend to have accelerated poor conditions of the rooms they are associated with. The second floor bath's gypsum board is in poor condition with blistering paint. The FRP wainscot is in fair condition. (LI-TX-43)

Architecture – Ceiling Finishes
<u>Condition:</u> *Fair to Poor*
Unit A, East Unit. The entry ceiling has peeling paint while the kitchen is in poor condition with cracks and peeling paint. The parlor is also in poor condition as the gypsum board seam is separating and dirt or mold is visible along the seam. The second floor hall is in poor condition with seam separation, water stains and peeling paint. The second floor bath is in good condition with minor peeling paint over the bathtub. The north bedroom's ceiling is in deteriorating condition with over 40% of the ceiling missing and the attic visible. The other bedrooms are in fair condition with water stains and slight seam separation.

Unit B, Center Unit. The entry ceiling is in poor condition with the ceiling missing near the staircase. The kitchen is also in poor condition with peeling paint and the separation of the gypsum board seam, revealing dirt or mold growth. The parlor is in fair condition. The second floor hall is in deteriorating condition as the north half of the ceiling is missing or about to fall in. There are also water stains on the hall's ceiling. (LI-TX-31 and 32) The bath is in poor condition with holes and mold developing along the gypsum board seams, especially above the bathtub.(LI-TX-33 and 34) The south bedroom's ceiling is in deteriorating condition with over 25% of the ceiling missing, the attic visible, and visible mold covering over 70% of the ceiling. The other bedrooms are in poor condition with blistering paint around the gypsum board seams.

Unit C, West Unit. The entry ceiling is in poor condition with blistering paint on the ceiling finish. The parlor and the kitchen are in fair condition as they both exhibit peeling and blistering paint and water stains around gypsum board seams, signs of moisture issues. The second floor hall is in poor condition with cracks in the paint, seam separation, and puncture marks throughout, especially along the south and west gypsum board seams. The bath is in poor condition with holes and visible mold along the gypsum board seams. The north bedroom's ceiling is in deteriorating condition with visible mold and over 60% of the ceiling missing and the attic visible. The other bedrooms are in poor condition with blistering paint and visible mold. Also, the attic hatch has been removed in the south bedroom.

Architecture – Interior Trim
<u>*Condition:*</u> *Fair to Poor*
Unit A, East Unit. The entry, kitchen, parlor, second floor hall, bath, second floor bedrooms (three), and all closets, except the second floor north bedroom, have base and base shoes in fair condition. The north bedroom's base is in poor condition as it has splitting wood, peeling paint, and in general, a heavily worn base and base shoe. The cove molding in the entry, parlor, and second floor north bedroom are in fair condition as there are minor examples of thick and peeling paint, separation of molding from walls, and misalignment at joints. The kitchen's crown molding is in poor condition as it has more serious separation from the walls, stains and dirt in the joints.

Unit B, Center Unit. The entry, bath, second floor bedrooms, and all closets have interior trim that is in fair condition. The kitchen, parlor, and second floor hall have base and base shoes in poor condition as they have peeling paint, splitting wood, separation from walls, and base shoe separation from the base. This unit does not have any examples of cove molding.

Unit C, West Unit. The entry's and kitchen's base and base shoes are in poor condition as there are portions of both rooms' base missing or in deteriorating condition. The parlor, second floor hall, bath, and second floor bedrooms and their associated closets all have base and base shoes in fair condition. The cove molding in the entry, kitchen, parlor, and second floor southeast bedroom are in fair condition as there are minor examples of peeling paint, separation of molding from walls and misalignment at joints. The bath's cove molding is in poor condition as it is partially missing and there are stains and dirt in joints above the bathtub.

Architecture – Floor
<u>*Condition:*</u> *Good to Fair to Poor*
Unit A, East Unit. The basement floor is in fair condition; typical wear for basement use. The modern resilient flooring is typically between fair and poor in the entry, kitchen, parlor, bath, and second floor bedrooms (two). In general, it is heavily worn, stained, warped, and the seams are protruding upwards. The second floor bedrooms' have visible wood in fair condition, as there is some separation of wood floor boards and staining. The entry closet, kitchen closet, second floor hall and closet, and second floor bedroom closets (three) have original wood flooring. There are some instances of adhesive remains and stains, but overall the wood floors are in good condition.

Unit B, Center Unit. The basement floor is in fair condition; typical wear for basement use. The kitchen and its closet have resilient flooring in poor condition. The bath's resilient flooring is in poor condition with areas where the subfloor is visible. The wood flooring also appears to be in poor condition with water stains, adhesive remains, and obvious moisture issues. The entry and its closet, the parlor and its closet, the second floor hall, and the second floor south bedroom have wood flooring that is in poor condition with stains, carpet outlines, board separation, and fading. The other two bedrooms and the three bedrooms' closets have wood floors in good condition with some alligatored stain issues. Overall, the wood flooring in this unit is in fair condition.

Unit C, West Unit. The basement floor is in fair condition; typical wear for basement use. The kitchen's resilient flooring is in poor condition as is the resilient flooring in the bath and the second floor southwest bedroom. The wood visible in the bath is in poor condition as it is stained and possibly water damaged. The bedroom's visible wood is also in poor condition with glue stains and water stains in the visible area. The entry and the second floor bedrooms (except the southwest bedroom) have wood flooring in poor condition. In general, the wood boards are separated, the wood is faded, the stain is alligatored, and in the entry, along the south wall, the wood is rotting. All of the closets, the parlor, and the second floor hall have wood flooring in good condition with minor stains and fading. Overall, the wood flooring in this unit is in fair condition.

Architecture – Stairs
<u>Condition:</u> *Good to Fair*
Unit A, East Unit
First Floor to Basement Stairs. These stairs are in good condition. However, there is no handrail on the portion of the stairs leading to the kitchen vestibule.

Second Floor to First Floor Stairs. These stairs are in good condition. There are adhesive remains from previous tread protection and minor paint chipping on risers.

Unit B, Center Unit
First Floor to Basement Stairs. These stairs are in good condition. However, there is no handrail on the eastern side of the stairs from the basement and on the portion of the stairs leading to the kitchen vestibule.

Second Floor to First Floor Stairs. These stairs are in good condition. There are adhesive remains from previous tread protection and some paint chipping on risers. Also, there is only a partial handrail for these stairs.

Unit C, West Unit
First Floor to Basement Stairs. These stairs are in good condition. However, there is no handrail on the stairs and the paint is peeling.

Second Floor to First Floor Stairs. These stairs are in good condition. There is paint chipping on the risers and base trim.

Architecture – Casework
<u>Condition:</u> *Good to Fair to Poor*
Unit A, East Unit. The 3 ¾" simple wood board hook racks and the 1" diameter rods for the entry, kitchen, and second floor hall closets are in fair condition. In the kitchen, there are two sets of wall and base cabinets on either side of the sink along the north wall. The two sets of cabinets on either side of the sink are in poor condition as both sets of base cabinets are missing their top drawers, chipping paint on all cabinets, and the northwest base cabinet has missing wood on the drawer face frame. The bath's two, two-

door built-in wood wall cabinets are in fair condition as they both have peeling paint and the top cabinet has a hole in the middle shelf. The northeast bedroom closet is in fair condition as there is some wood splintering on the north wall. The southeast bedroom closet is in poor condition as the three wood shelves are missing and one of their wood supports has partially detached from the wall. Also, the wood rod support is cracked. The southwest bedroom closet's built-in wood box seat, two sets of wooden shelves, 3 ¾" simple wood board hook racks, and 1" diameter metal rod are all in fair condition. The closet's shelving in general has peeling paint.

Unit B, Center Unit. The entry, kitchen, and parlor closets' casework is in good condition, with some minor hook scars on the wood boards. The kitchen cabinets are in poor condition as the base cabinets under the sink are missing their drawers and their doors. Also, the knobs are missing from the remaining cabinet doors and the paint is peeling badly. The second floor hall's built-in wood wall cabinets are in poor condition as there are no doors remaining. The lower south cabinet has hinges and a piece of door remaining. The bath's built-in wood wall cabinets are in poor condition as only the two lower doors remain. The knobs have been removed, the hinges are rusted, and the paint is peeling badly. The bedroom closets have 3 ¾" simple wood board hook racks and 1" diameter metal rods that are in fair condition as there is some damage from bats and hook scars.

Unit C, West Unit. The 3 ¾" simple wood board hook racks and the 1" diameter rods for the entry, kitchen, and second floor hall closets are in fair condition as there is visible mold surrounding the wood boards. There are two sets of wall and base cabinets in the kitchen on either side of the sink along the north wall. The two sets of cabinets on either side of the sink are in poor condition as both sets of base cabinets have been removed. Both sets of wall cabinets have rotting wood around the base and missing wood shelving at the base. There is chipping paint, missing knobs, and rusty bullet hinges. The bath's two, two-door, built-in wood wall cabinets are in poor condition as only the two western set of doors are intact. The eastern doors were removed but their bullet hinges remain. The cabinets also have badly peeling paint and rusty hinges. The bedroom closets 3 ¾" simple wood board hook racks and 1" diameter metal rods are in fair condition.

Architecture – Accessibility
<u>*Condition:*</u> *Poor*
This building is not accessible as all three units do not have accessible entries.

Condition Assessment -- Structural

Structural – Foundation
<u>*Condition:*</u> *Good*
The perimeter foundation walls are in good condition although there is evidence of moisture coming through the walls. The foundations for the walls and columns could not be observed, thus their condition is unknown. No obvious signs of distress or damage were observed.

Structural – Floor Framing
<u>*Condition:*</u> *Fair*
The basement floor is in good condition although there is evidence of moisture coming through the slab.

The first floor framing is in fair condition. The average moisture content of the wood framing was over 17%. Four deteriorated floor joists were observed below the front window of the West Unit and four additional deteriorated floor joists and a deteriorated sill plate were observed below the front door of the East Unit (LI-TX-44 and 45). The floor sheathing was deteriorated above the deteriorated joists and at the

front door to the West Unit. Floor joists above the basement windows are not properly supported (LI-TX-46). The joists bear on a wood sill plate and are not supported on a lintel.

The second floor framing could not be observed, thus its condition is unknown. No obvious signs of distress or damage were observed.

Structural – Roof Framing
Condition: *Good*
The roof framing, where it could be observed, was in good condition. No obvious signs of distress or damage were observed with the exception of one area on the front eave that had been damaged when the flag pole in front of the building fell (LI-TX-47).

Structural – Ceiling Framing
Condition: *Good*
The ceiling framing is in good condition.

Structural – Wall Framing
Condition: *Unknown*
The interior and exterior wall framing could not be observed except at the front window of the west unit where it had been repaired, thus its condition is unknown. No obvious signs of distress or unrepaired damage were observed with the exception of the east column on the north porch. The base of the column is deteriorated.

Structural – Lateral System
Condition: *Good*
Lateral stability of the building is good.

Structural – Load Requirements
Condition: *Fair*
The ceiling, first and second floor framing have adequate capacity to support the required loads. The roof framing has a snow load capacity of approximately 30 psf, 20 psf less than the required snow load capacity.

Condition Assessment -- Mechanical

Mechanical – Plumbing Systems
Condition: *Poor*
The galvanized steel domestic water supply piping in the basement is in poor condition. Portions of the hot and cold water distribution piping have been removed. The well near the shore of the lake that originally supplied water to the building is no longer functional. The water storage tank, two water filter tanks, and hot water storage tank located in the basement are in poor condition.

The cast iron building waste lines and 4” cast iron sewer main that exits the building the basement are in fair to poor condition. The condition of the buried 6” vitrified clay sewer pipe that runs to the septic tank could not be determined. The 900 gallon septic tank that serves the building is in poor condition. The basement floor drains are missing cover grates leaving open sewer connections in the floor. The condition of the buried 4” basement drain piping could not be determined.

The remaining plumbing fixtures are in generally poor condition. This includes enameled cast iron kitchen sinks in all three units, free-standing laundry tubs in the basement of the West and Center Units, a second floor tank type toilet in the East Unit, bathtubs in all three units, and wall-mounted lavatories in the East and West Units. The second floor lavatory in the Center Unit is no longer mounted on the wall and is on the floor of the room. The remaining faucets at the East kitchen sink, all three bathtubs, and the East and West Units bathroom lavatories are in fair to poor condition.

Mechanical – HVAC
Condition: *Fair*
The oil-fired Lennox furnace in the basement is in poor condition with significant rust damage. The ductwork serving all three housing units above is in fair condition. The air distribution grilles in the first and second floor living areas are in fair to poor condition.

There are no ventilation systems in the building.

Mechanical – Fire Suppression
Condition: *N/A*

Mechanical – Other
Condition: *Fair to Poor*
The fuel oil supply piping in the basement has been partially removed. The remaining piping is in fair condition. The 1,000 gallon fuel oil tank located to the southeast of the building is in poor condition with significant rust damage.

Condition Assessment -- Electrical

Electrical – System Configuration
Condition: *Poor*
Electrical devices, lighting and wiring are from the original 1938 installation and are no longer connected to a source of power. Electrical systems in the Triplex are in poor condition, are well beyond expected life and no longer meet code. (LI-TX-49)

Electrical – Wiring Devices
Condition: *Poor*
Wiring Devices that remain are in poor condition.

Electrical – Conductor Insulation
Condition: *Poor*
Wiring, including conductors and insulation in the Triplex is in poor condition, is well beyond its expected life and no longer meets code.

Electrical – Overcurrent Protection
Condition: *Poor*
Overcurrent protection within the Triplex is either missing, or is in poor condition. There is no main overcurrent protection, and all fuses in branch panels have been removed.

Electrical – Lighting Systems
Condition: *Poor*
Lighting in the building is in poor condition with many parts missing. In addition, lighting within the building no longer meets code.

Electrical – Telecommunications, Fire Alarm System, and Lightning Protection
Condition: *N/A*

Condition Assessment -- Hazardous Materials

Refer to 'Physical Description -- Hazardous Materials' for detailed descriptions of locations and conditions of hazardous materials.

Ultimate Treatment and Use

The Triplex was constructed by the WPA in 1938 for residential use for the keepers. In 1939, the USCG took control of the lighthouses and the Triplex became residences for the USCG men and their families who manned both the LaPointe Light Tower and the Chequamegon Point Tower. In 1965, habitation on Long Island was no longer necessary for staffing the light towers and the Triplex was vacated.

The Triplex is currently vacant. The proposed use for the building is to remain vacant but provide a level of stabilization. One alternative explored was to provide staff and volunteer housing with minimal amenities (no systems). However, due to hazardous materials (mold) issues, lack of programmatic need currently, and funding constraints this use has been tabled.

Preservation (stabilization) is the recommended treatment for the building. Generally, with the exception of mold mitigation, the preservation is focused on the exterior elements only.

Requirements for Treatment

Compliance requirements for treatment currently include laws, regulations, and standards as outlined by the NPS and listed in Volume I, Administrative Data section of this report.

The recommended treatments are tailored to the Preferred Alternative as the outcome of the Value Analysis/CBA for the project. As individual buildings are rehabilitated, specific alternatives will present themselves during design and construction. The following section is a discipline-by-discipline, component-by-component description of the treatments proposed for the rehabilitation of the building. Refer to Volume I, Chapter 2: Methodology for the priority rating definitions.

Treatment Recommendations -- Architecture

Architecture – Roof
Priority: *Severe*
Remove existing asphalt shingle roof. Verify sound substrate and provide proper flashings at all eaves, rakes, valleys and intersections. Install new asphalt shingles to match original per the original drawings description of blue/black with a 4” exposure. Repair the hole at the eave and scrape, sand and repaint soffits, fascia and frieze.

Architecture – Shed Overhangs
Priority: *Low*
Scrape, sand and repaint.

Architecture – Chimney
Priority: *Low*
No recommendations at this time other than to verify proper step flashing coordinated with the new roof.

Architecture – Exterior Walls
Priority: *Unknown*
Consideration has been given to removing the asbestos shingles for the purposes of hazardous materials removal and in order to determine the extent of mold. However, this would be a considerable effort and the expense and loss of original materials has been deemed as not beneficial.

Architecture – Windows for All Units
Priority: *Severe*
Remove plywood at basement windows. Scrape, sand and repaint all windows. Epoxy stabilize deteriorated wood members; prepare areas of rust on metal windows. Reglaze all sash. Replacement glass where required shall be clear, non-reflective and have a visual light transmittance of not less than 72%.

Architecture – Exterior Doors for All Units
Priority: *Severe*
Remove board coverings at all doors. Provide and install new doors and hardware at all door openings to match the original. Epoxy stabilize deteriorating wood trim at the base. Repair the missing and rotted trim at the entablature, typical of two doors. Scrape, sand and paint all trim and paint all new doors.

Architecture – Exterior Trim
Priority: *Low*
Repair the hole at the cornice. Scrape, sand and paint all exterior trim. Coordinate work with doors and siding.

Architecture – North Porch
Priority: *Moderate*
Remove and salvage existing trim at the east column to expose damaged wall framing. Coordinate with structural and exterior wall work. Epoxy stabilize deteriorated wood trim. Scrape, sand and paint all components of the porch.

Architecture – Interior Doors for All Units
Priority: *Low*
No recommendations at this time due to limited proposed use of the building.

Architecture – Wall Finishes
Priority: *Severe (Common to All Units)*
Coordinate all finishes work (repair/replacement in kind) with the mold and moisture mitigation.

Basement. Investigate excavating the building perimeter and installing an underdrain system at the footing. Consider installing a waterproofing system at the exposed foundation wall prior to back filling. Coordinate all excavation activities with a park archeologist prior to disturbing any significant amount of ground.

Upper Levels. Remove damaged gypsum board and replace in kind. Patch areas where full gypsum board removal is not required of the hazmat work. Remove FRP and faux tile wainscot to access gypsum board below and store salvageable sections for future interpretation or use.

Architecture – Ceiling Finishes
Priority: *Severe (Common to All Units)*
Coordinate all finishes work (repair/replacement in kind) with the mold and moisture mitigation. Remove damaged gypsum board and replace in kind. Patch areas where full gypsum board removal is not required of the hazmat work.

Architecture – Interior Trim
<u>Priority:</u> *Low (Common to All Units)*
No recommendations at this time due to limited proposed use of the building.

Architecture – Floor
<u>Priority:</u> *Low (Common to All Units)*
No recommendations at this time due to limited proposed use of the building.

Architecture – Stairs
<u>Priority:</u> *Low (Common to All Units)*
No recommendations at this time due to limited proposed use of the building.

Architecture – Casework
<u>Priority:</u> *Low (Common to All Units)*
No recommendations at this time due to limited proposed use of the building.

Architecture – Accessibility
<u>Priority:</u> *Low*
Provide program access through interpretive exhibits and waysides at the Visitor Center.

Treatment Recommendations -- Structural

Structural – Foundation
<u>Priority:</u> *Moderate to Severe*
The moisture coming through the foundation walls should be reduced to dry out the basement.

Structural – Floor Framing
<u>Priority:</u> *Low*
The moisture coming through the basement floor should be reduced to dry out the basement. The deteriorated floor joists and sheathing should be repaired. The framing of the headers for the first floor joists above doors and windows should be strengthened to meet IEBC and NPS requirements.

Structural – Roof Framing
<u>Priority:</u> *Low*
The damaged eave should be repaired. The framing should be strengthened to meet IEBC and NPS requirements. The calculated capacity is 30 psf and the required capacity is 50 psf.

Structural – Ceiling Framing
<u>Priority:</u> *Low*
No recommendations at this time.

Structural – Wall Framing
Priority: *Low*
The base of the east column on the north porch should be repaired.

Structural – Lateral System
Priority: *Low*
No recommendations at this time.

Treatment Recommendations -- Mechanical

Mechanical – Plumbing Systems
Priority: *Moderate*
The existing plumbing fixtures and plumbing piping are no longer functional and there are open sewer pipes at several locations within the building. It is recommended that the plumbing piping be removed or capped along with removal of abandoned plumbing fixtures. The sewer pipe serving the building should be capped and sealed below grade.

Mechanical – HVAC
Priority: *Severe*
There are no functional heating or ventilation systems in the building. The addition of mechanical ventilation is highly recommended to prevent additional damage from high moisture levels inside the building.

Mechanical – Fire Suppression
Priority: *N/A*

Treatment Recommendations -- Electrical

Electrical – System Configuration
Priority: *Moderate*
Existing electrical systems within the building have been partially removed. There is no source of power for the building. It is recommended that existing electrical systems be left in place.

Electrical – Wiring Devices
Priority: *Moderate*
Existing wiring devices are not connected to a source of power and will not be used. It is recommended that existing wiring devices be left in place.

Electrical – Conductor Insulation
Priority: *Moderate*
It is recommended that existing conductors be left in place.

Electrical – Overcurrent Protection
Priority: *Moderate*
It is recommended that overcurrent protection for the new PV system wiring be in accordance with the

National Electrical Code, NPS and Federal Standards and Regulations. It is recommended that existing overcurrent protection be left in place.

Electrical – Lighting Systems
<u>Priority:</u> *Low*
It is recommended that existing lighting be left in place.

Electrical –Fire Alarm System
<u>Priority:</u> *Moderate*
No recommendations.

Electrical – Telecommunications and Lightning Protection
<u>Priority:</u> *N/A*

Treatment Recommendations -- Hazardous Materials

Hazardous Materials – Asbestos
<u>Priority:</u> *Moderate*
Recommend sampling of suspect asbestos containing materials, including caulking, asbestos cement, wall and ceiling plasters(i.e. plaster drywall texture and/or drywall joint compound), wall and ceiling interiors, adhesives, Thermal Systems Insulation, sub-flooring, and roofing materials.

Hazardous Materials – Lead-Containing Paint and Lead Dusts
<u>Priority:</u> *Moderate*
Recommend stabilization or abatement of Lead Containing Paint. Lead dust wipe sampling recommended.

Hazardous Materials – Lead In Soils
<u>Priority:</u> *Moderate*
Recommend further soils characterization to confirm applicable regulatory requirements.

Hazardous Materials – Mold/Biological
<u>Priority:</u> *Severe*
Recommend bat guano abatement and water intrusion/mold mitigation.

Hazardous Materials – Petroleum Hydrocarbons
<u>Priority:</u> *Low*
No recommendations at this time.

Alternatives for Treatment

The following are several considerations of alternatives for the proposed treatments:

1. Preservation is the current proposed treatment in order to minimize the loss of existing historic fabric.
2. One alternative considered was to rehabilitate the building for rustic staff housing (i.e. no improved systems). This was dismissed due to limited current programmatic need weighed against the costs associated.
3. It is understood that this island sees more local visitors than the others, which is, in part, the desire for the park to create a presence on the island. One alternative considered and dismissed, due to both budget constraints and determination of need, was to rehabilitate the building for use by school groups and the public. The change of use triggered significant code implications.
4. On the opposite spectrum, a more extreme alternative which has not yet been fully explored is the removal of the building, due to the hazardous materials conditions and their associated costs for mitigation. This is not currently a preferred approach due to the obvious conflict with Section 106 compliance; however it should remain as a possible alternative given limited capital improvement and maintenance budgets.

Assessment of Effects for Recommended Treatments

The following table includes an analysis of the major treatment recommendations which affect Section 106 Compliance:

Recommended Treatment	Potential Effects	Mitigating Measures	Beneficial Effects
1. Installation of an under drain system	Will affect the adjacent landscape/fabric.	Installation of the system will need to be evaluated for benefit and implemented sensitively to minimize damage to the landscape.	-System will redirect water away from the building, aiding in the preservation/ longevity of the historic resource
2. Mold mitigation	To properly eliminate mold many original elements of the historic fabric need to be removed.	Minimize removal of historic fabric by removing only portions that are currently damaged (vs. wholesale removal).	-Prevents further mold growth on additional historic fabric surfaces
3. Additional Hazardous Testing and Mitigation	Mitigation of hazardous material may require removal of historic materials and may affect the adjacent landscape/fabric.	Any mitigation will need to be evaluated for benefit and implemented sensitively to minimize damage to the resource.	- Improves safety for visitors and staff - Removes hazards from the cultural resource

Triplex Photographs, 2009

LI-TX-01: Aerial from LaPointe Tower, west view, 2009 (Source: AH IMGP2985)

LI-TX-02: West elevation, 2009 (Source: AH IMGP2956)

LI-TX-03 and 04: North elevation, 2009 (Source: AH IMGP2959 and IMGP2958)

LI-TX-05: East elevation, 2009 (Source: AH IMGP2966)

LI-TX-06: Chimney, east elevation (Source: AH IMGP2986)

LI-TX-07: Roof damage at southeastern portion (Source: AH IMGP2987)

LI-TX-08: East unit's main entry door (Source: AH IMGP2976)

LI-TX-09: East unit's kitchen entry door and overhang (Source: AH 100_9784)

LI-TX-10: East unit's basement stair (Source: AH CIMG4073)

LI-TX-11: East unit's basement, north elevation (Source: AH CIMG4074)

LI-TX-12: East unit's kitchen, north elevation (Source: AH CIMG3962)

LI-TX-13: East unit's kitchen cabinetry, looking northwest (Source: AH CIMG3972)

LI-TX-14: East unit's parlor, looking south into entry (Source: AH CIMG3977)

LI-TX-15: East unit's entry and stair, looking southeast (Source: AH CIMG3938)

LI-TX-16: East unit's second floor hall, looking north (Source: AH CIMG3987)

LI-TX-17: East unit's bath, looking east (Source: AH CIMG3998)


LI-TX-18: East unit's bath, looking northwest (Source: AH CIMG4003)


LI-TX-19: East unit's northeast bedroom, looking southeast (Source: AH CIMG4018)

LI-TX-20: East unit's northeast bedroom, attic view through fallen ceiling (Source: AH CIMG4022)

LI-TX-21: East unit's southwest bedroom door (typical door for all units) (Source: AH CIMG4058)

LI-TX-22: North elevation portico, center unit's main entry (Source: AH IMGP2960)

LI-TX-23: Portico columns (Source: AH IMGP2981)

LI-TX-24 and 25: West column capital and base of portico (Source: AH IMGP2983 and IMGP2980)

LI-TX-26: Center unit's basement stair and windows, looking north (Source: AH CIMG4087)

LI-TX-27 Center unit's kitchen, east elevation (Source: AH CIMG4094)

LI-TX-28: Center unit's parlor, south elevation (Source: AH CIMG4105)

LI-TX-29: Center unit's entry, south elevation (Source: AH CIMG4121)

LI-TX-30: Center unit's stair from entry to second floor (Source: AH CIMG4127)

LI-TX-31: Center unit's second floor hall, north elevation (Source: AH CIMG4136)

LI-TX-32: Center unit's second floor hall, detail of ceiling, looking north (Source: AH CIMG4140)

LI-TX-33: Center unit's bath, east elevation (Source: AH CIMG4144)

LI-TX-34: Center unit's north bedroom, looking north (Source: AH CIMG4187)

LI-TX-35: West unit's main entry door (Source: AH 100_9787)

LI-TX-36: West unit's basement stair, looking west (Source: AH DSC01081)

LI-TX-37: West unit kitchen, looking northwest (Source: AH DSC01118)

LI-TX-38: West unit entry, looking southwest (Source: AH DSC01101)

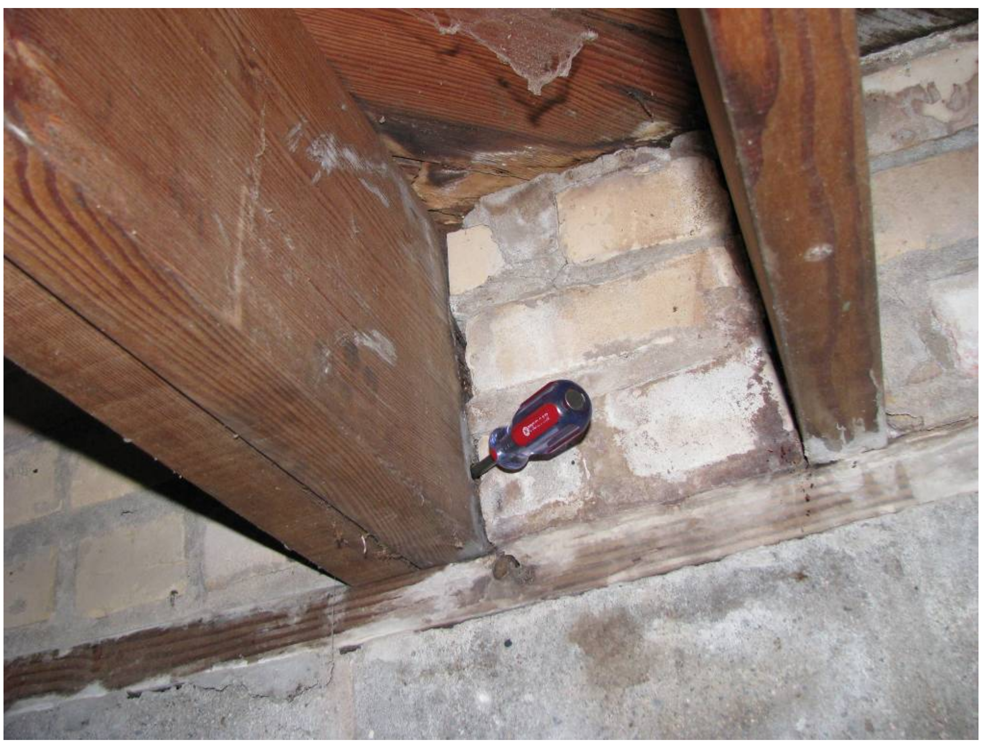
LI-TX-39: West unit stair to second floor (Source: AH DSC01136)

LI-TX-40: West unit southwest bedroom, south elevation (Source: AH DSC01156)

LI-TX-41: West unit's southeast bedroom, looking north (Source: AH DSC01165)

LI-TX-42: West unit southeast bedroom, ceiling detail, looking northwest (Source: AH DSC01173)

LI-TX-43: West unit bath, looking north (Source: AH DSC01183)



LI-TX-44: Deteriorated floor joist (Source: Martin/Martin)

LI-TX-45: Deteriorated sill plate (Source: Martin/Martin)

LI-TX-46: Joist header above window (Source: Martin/Martin)

LI-TX-47: Damage at roof eave (Source: Martin/Martin)

LI-TX-48: Original water filtration tanks in the basement (Source: RMH)

LI-TX-49: Service entrance, power for all three units connected through small (approx. #6AWG) conductors (Source: RMH)

OIL BUILDING

Chronology of Alterations and Use

Original Construction

The Long Island Oil Building was constructed in 1896 as a support building for the two new light towers constructed that same year.[36]

A historic photo of the Oil Building clearly shows the relationship of the building to LaPointe Light Tower as most of the vegetation is cut back. The radio tower is visible, so the photo was taken after the 1950s but before 1987. (Historic Image LI-12)

There are no available historic drawings for this building.

Significant Alterations / Current Condition

There have been no significant alterations to the Oil Building.

The Oil Building originally and currently has no mechanical system except for the circular gravity vent in the roof. It is now used as a general storage space.

There is no electrical system in the Oil Building.

The Oil Building is currently in stable condition and is solidly constructed of sheet metal on the exterior and brick on the interior with a sheet metal roof.

[36] List of Classified Structures, National Park Service, 2009

General Physical Description

The building is a one-story, rectangular utilitarian structure with riveted metal panels over brick walls, on a concrete foundation. There is a metal door with strap hinges located on the south elevation.

Physical Description -- Architecture

Architecture – Roof
The roof and cornice is sheet metal with sheet metal ridge caps and a metal vent in the center.

Architecture – Exterior Walls
The exterior walls are riveted sheet metal panels painted yellow.

Architecture – Exterior Door
The original entry door is plate steel with heavy strap hinges, mortise lock, and is painted yellow. The door is 2’3” x 6’6” x 3/8” frame with a 1/8” plate. (LI-BO-01 and 07)

Architecture – Wall Finish
The wall finish for this building is the original brick painted white. A sample of the mortar indicates that it is composed of roughly one part lime to two parts sand by volume, with very fine sand. The mortar is gray in color and soft.

Architecture – Ceiling Finish
The ceiling is sheet metal attached to the pyramidal roof structure. The roof framing has metal cross-bracing. (LI-OB-06)

Architecture – Floor
The floor is concrete, which is original to the building.

Architecture – Casework
There are metal shelving units that line all walls, painted white, which are not original to the building.

Architecture – Accessibility
The building is currently not accessible. The south elevation entry door opening is 2’3” clear with no grade to finished floor elevation change. The metal walls are on top of a concrete plinth which has become floor level due to vegetation growth and dirt build-up along the walls.

Physical Description -- Structural

Structural – Foundation
The perimeter foundation system consists of cast-in-place concrete.

Structural – Floor Framing
The floor is a concrete slab-on-grade.

Structural – Roof Framing
The steel roof framing was not accessible and could not be measured.

Structural – Wall Framing
The exterior walls are constructed of steel plate on the exterior face and brick masonry on the interior face.

Structural – Lateral System
Lateral stability for the building is provided by the exterior walls.

Structural – Load Requirements
The required floor load capacity is 125 psf and the required roof snow load capacity is 48 psf.

Physical Description -- Mechanical

Mechanical – Plumbing Systems
None in the building.

Mechanical – HVAC
The original circular gravity vent remains on the roof.

Mechanical – Fire Suppression
None in the building.

Physical Description -- Electrical

Electrical – System Configuration
None in the building.

Electrical – Wiring Devices
None in the building.

Electrical – Conductor Insulation
None in the building.

Electrical – Overcurrent Protection
None in the building.

Electrical – Lighting Systems
None in the building.

Electrical – Telecommunications
None in the building.

Electrical – Fire Alarm System
None in the building.

Electrical – Lightning Protection
None on the building.

Physical Description -- Hazardous Materials

Landmark Environmental collected seven bulk samples from a total of seven different types of suspected asbestos containing materials (ACMs). Of the seven suspect ACMs that were sampled and analyzed, none resulted in concentrations of greater than one percent (positive for asbestos).

Hazardous Materials – Asbestos
The following suspect ACMs were not sampled due to inaccessibility or park limitation regarding damage to structures. Asbestos is assumed to be present in:

1. Adhesives,
2. Caulk,
3. Transite, and,
4. Brick and Block Filler.

The assumed ACMs could be present between the brick interior and the outer metal-cladding and/or interior to the roof vent.

Hazardous Materials – Lead Containing Paint
Detectable lead is assumed to be present at the following locations:

1. Interior Painted Surfaces, and,
2. Exterior Painted Surfaces.

Based on the estimated dates of construction of the structure LCP is assumed to be present throughout the structure. The confirmed LCP was observed to be in poor condition and the assumed LCP was observed to be in poor condition.

Paint chip debris was not observed on the ground surface in the vicinity of the Oil Building.

Hazardous Materials – Lead Dust
Wipe sampling for lead dust was not conducted in the Oil Storage Building because it is a noninhabited.

Hazardous Materials – Lead in Soils
The historical paint maintenance activities may have the potential to impact the surrounding soil. The surface soils adjacent to the structure were observed to have lead paint debris. Preliminary lead-in-soil

sampling was not performed to assess whether these soils contain lead concentrations above applicable residential soil standards.

Soil Sampling was not conducted around the Oil Storage Building.

Hazardous Materials – Mold
Inspections of the structure were performed to identify the readily ascertainable visual extent of the mold growth. Moisture testing in building materials was not performed nor was sampling of building materials performed for microbial analysis. Mold was not visually identified in the Oil Storage Building.

Hazardous Materials – Petroleum Hydrocarbons
Localized areas of staining were observed on concrete floor in the Oil Storage Building. Stained areas are likely associated with fuel oil, diesel or other petroleum hydrocarbons. Tank and piping systems may also contain petroleum hydrocarbons.

Character Defining Features

Mass/Form. Simple utilitarian hipped roof structure.

Exterior Materials. Steel painted yellow with sheet metal roofing dark red.

Openings. One plate steel door – painted yellow.

Interior Materials. Exposed painted masonry walls, concrete slab, exposed roof panels.

General Condition Assessment

In general, the Long Island Oil Building is in fair condition on the exterior and good condition on the interior. The original interior brick walls, underside of the metal roof, and concrete floor are in good condition. The original metal door is in fair condition as it is rusted on the exterior and has badly peeling paint. Overall, the Oil Building is in fair condition.

Structurally, the Oil Building is in good condition.

Mechanically, the only attribute in the Oil Building is a circular gravity vent on the roof that is in fair condition.

Electrically, the Oil Building has no systems.

The following section is a discipline-by-discipline, component-by-component condition assessment of the building. Refer to Volume I, Chapter 2: Methodology for definitions of the condition ratings.

Condition Assessment -- Architecture

Architecture – Roof
<u>*Condition:*</u> *Good*
The sheet metal roof is in good condition with some paint peeling. The metal vent is also in good condition.

Architecture – Exterior Walls
<u>*Condition:*</u> *Fair*
The sheet metal is in fair condition as the yellow paint is peeling and a large amount of surface rust is visible.

Architecture – Exterior Door
<u>*Condition:*</u> *Fair to Poor*
The door is badly rusted on the surface, is missing one hinge pin, no longer has its original hardware, and has badly peeling paint.

Architecture – Wall Finish
<u>*Condition:*</u> *Good to Fair*
The painted brick is in good condition, but there is some spalling at the floor level, which indicates moisture may be trapped between the masonry and the sheet metal siding.

Architecture – Ceiling Finish
<u>Condition:</u> *Good to Fair*
The sheet metal roof is in good condition but the cross-bracing is rusting.

Architecture – Floor
<u>Condition:</u> *Good*
The concrete floor is in good condition as it appears currently, with some debris obscuring the corners.

Architecture – Casework
<u>Condition:</u> *Poor*
These metal shelving units are oxidizing and have badly peeling paint. In general, they are in poor condition.

Architecture – Accessibility
<u>Condition:</u> *Poor*
This building is not accessible.

Condition Assessment -- Structural

Structural – Foundation
<u>Condition:</u> *Good*
The visible portion of the foundation system appeared to be in good condition.

Structural – Floor Framing
<u>Condition:</u> *Good*
The concrete slab-on-grade is in good condition.

Structural – Roof Framing
<u>Condition:</u> *Unknown*
The steel roof could not be observed, thus its condition is unknown.

Structural – Wall Framing
<u>Condition:</u> *Good*
The walls are in good condition.

Structural – Lateral System
<u>Condition:</u> *Good*
Lateral stability of the building is good. No obvious signs of distress or damage were observed.

Structural – Load Requirements
<u>Condition:</u> *Good*
The floor has adequate capacity to support the required loads. The roof framing could not be observed, thus its capacity is unknown.

Condition Assessment -- Mechanical

Mechanical – Plumbing Systems and Fire Suppression
Condition: N/A

Mechanical – HVAC
Condition: Fair
The original circular gravity vent on the roof is in fair condition.

Condition Assessment -- Electrical

N/A

Condition Assessment -- Hazardous Materials

Refer to 'Physical Description -- Hazardous Materials' for detailed descriptions of locations and conditions of hazardous materials.

Ultimate Treatment and Use

The Oil Building was constructed in 1896 and has served as a utilitarian structure since that time. It is currently vacant and the proposed use is for it to remain vacant.

Preservation is the recommended treatment for the building.

Requirements for Treatment

Compliance requirements for treatment currently include laws, regulations, and standards as outlined by the NPS and listed in Volume I, Administrative Data section of this report.

The recommended treatments are tailored to the Preferred Alternative as the outcome of the Value Analysis/CBA for the project. As individual buildings are rehabilitated, specific alternatives will present themselves during design and construction. The following section is a discipline-by-discipline, component-by-component description of the treatments proposed for the preservation of the building. Refer to Volume I, Chapter 2: Methodology for the priority rating definitions.

Treatment Recommendations -- Architecture

Architecture – Roof
Priority: *Low*
Scrape and repaint the roof.

Architecture – Exterior Walls
Priority: *Low*
Scrape, patch and prepare areas of rust and repaint the walls.

Architecture – Exterior Door
Priority: *Moderate*
Scrape, patch and prepare areas of rust and repaint the door. Replace the missing hinge pin and knob/lock mechanism. Without replacing the hardware, this building remains open to possible damage and vandalism.

Architecture – Wall Finish
Priority: *Low*
Repaint the masonry walls to make more water-tight. Monitor the moisture issues and spalling at the base of the interior of the wall. Providing a path for any trapped moisture to escape between the masonry and sheet metal siding and/or introducing a flashing component between the brick and concrete slab to prevent moisture wicking up into the brick wall should both be explored for future mitigation.

Architecture – Ceiling Finish
Priority: *Low*
No recommendations at this time other than to monitor the rust on the cross bracing.

Architecture – Floor
<u>Priority:</u> *Low*
No recommendations at this time.

Architecture – Casework
<u>Priority:</u> *Low*
No recommendations at this time.

Architecture – Accessibility
<u>Priority:</u> *Low*
Provide program access through interpretive exhibits and waysides at the Visitor Center.

Treatment Recommendations -- Structural

Structural – Foundation
<u>Priority:</u> *Low*
No recommendations at this time.

Structural – Floor Framing
<u>Priority:</u> *Low*
No recommendations at this time.

Structural – Roof Framing
<u>Priority:</u> *Low*
No recommendations at this time.

Structural – Wall Framing
<u>Priority:</u> *Low*
No recommendations at this time.

Structural – Lateral System
<u>Priority:</u> *Low*
No recommendations at this time.

Treatment Recommendations -- Mechanical

Mechanical – Plumbing Systems and Fire Suppression
<u>Priority:</u> *N/A*

Mechanical – HVAC
<u>Priority:</u> *Low*
Clean and paint roof vent.

Treatment Recommendations -- Electrical

N/A

Treatment Recommendations -- Hazardous Materials

Hazardous Materials – Asbestos
Priority: *Low*
Recommend sampling of suspect asbestos containing materials, including adhesives and brick and block filler.

Hazardous Materials – Lead-Containing Paint and Lead Dust
Priority: *Low*
Recommend stabilization or abatement of Lead Containing Paint. Lead dust wipe sampling not recommended.

Hazardous Materials – Lead In Soils
Priority: *Low*
Recommend further soils characterization to confirm applicable regulatory requirements.

Hazardous Materials – Mold/Biological
Priority: *Low*
No recommendations at this time.

Hazardous Materials – Petroleum Hydrocarbons
Priority: *Low*
Recommend further investigation and sampling.

Alternatives for Treatment

One alternative treatment for consideration would be to remove the metal panel at the exterior to fully observe the moisture at the base of the brick. However, the expense and complexity of this approach may not be warranted on this smaller utilitarian structure which is why only monitoring has been called for at this time.

Assessment of Effects for Recommended Treatments

The following table includes an analysis of the major treatment recommendations which affect Section 106 Compliance:

Recommended Treatment	Potential Effects	Mitigating Measures	Beneficial Effects
1. Additional Hazardous testing and mitigation	Mitigation of hazardous material may require removal of historic materials.	Any mitigation will need to be evaluated for benefit and implemented sensitively to minimize damage to the resource.	- Improves safety for visitors and staff - Removes hazards from the cultural resource
2. Replace missing hardware to secure building	Adding new (modern) hardware elements may be visually disruptive and may require removal of historic hardware to allow proper door and hardware operation.	Attempt to match finish of existing hardware elements.	-Provides secure storage for NPS - Proper security will prevent possible future damage due to vandalism

Oil Building Photographs, 2009

LI-OB-01: South elevation, 2009 (Source: AH CIMG3930)


LI-OB-02: West elevation, 2009 (Source: AH CIMG3931)

LI-OB-03: North elevation, 2009 (Source: AH CIMG3933)

LI-OB-04: East elevation, 2009 (Source: AH CIMG3934)

LI-OB-05: View into interior, looking north (Source: AH CIMG3912)

LI-OB-06: Sheet metal ceiling (Source: AH IMGP3002)

LI-OB-07: Door and brick interior walls, looking south (Source: AH CIMG3923)

GLOSSARY OF TERMS

PRIMARY TREATMENT APPROACH – PRESERVATION

Preservation standards include measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. Preservation requires the retention of the greatest amount of historic fabric, including the landscape's historic form, features, and details as they have evolved over time. Limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work is permitted.

HOW TERMINOLOGY IS USED IN THE PRESERVATION APPROACH

Maintain – are those standard maintenance practices that are necessary to retain the features of a property as a contributing resource. Maintenance activities are usually not classified as repair, however minor repair such as replacement of posts or railings or segments of paving are included. Limited and sensitive upgrading of building systems (mechanical, electrical, plumbing) and other code related work is appropriate.

Plant – the removal and replanting of landscape plantings and vegetation as part of maintenance activities

Protect – short term and minimal measures used to stabilize and protect features, such as fencing around landscape features

Relocate – the removal and resetting of noncontributing features

Remove – the removal of nonhistoric features

Repair – features, components of features and materials that require additional work. These may include declining building features (e.g., roofing, foundation, mechanical systems) structures, small scale features (e.g., repair of a railing) or landscape plantings (e.g., repair mass planting by adding infill plantings). Features that are repaired will match the old in design, color, texture, and if possible, material. Distinctive features that are repaired will match the old in design, color, texture, and if possible, material. Replacement work will only occur when historic fabric is deteriorated beyond repair. Evaluation of restoration and low-impact options must be exhausted before replacement is considered feasible.

Retain –are those actions that are necessary to allow for a feature (contributing or noncontributing) to remain in place in its contributing current configuration and condition. Retention of historic fabric is the primary tenet for preservation treatment of historic properties. The extent of historic fabric represents historic integrity which is fundamental to the recognition and status of historical development.

Stabilize – immediate measures (more than standard maintenance practices) are needed to prevent deterioration, failure, or loss of features.

PRIMARY TREATMENT APPROACH – REHABILITATION

Rehabilitation in intended to return a property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of the property which are significant to its historic, architectural, and cultural values. Rehabilitation allows for repairs, alterations, restoration of missing features, and additions necessary to enable a compatible use for a property as long as

the portions or features which convey the historical, cultural, or architectural values are preserved. Limited and sensitive upgrading of mechanical, electrical and plumbing systems and other code-required work is permitted.

HOW TERMINOLOGY IS USED IN THE REHABILITATION APPROACH

Maintain – are those standard maintenance practices that are necessary to retain the features of a property as a contributing resource. Maintenance activities are usually not classified as repair, however minor repair such as replacement of posts or railings or segments of paving are included. Limited and sensitive upgrading of building systems (mechanical, electrical, plumbing) and other code related work is appropriate.

Plant – the removal and replanting of landscape plantings and vegetation as part of maintenance activities or the restoration of missing features.

Reestablish – are those measures necessary to depict a landscape feature as it occurred historically. Reestablishment may include the replacement of missing landscape features such as views, planting patterns, spatial relationships, or small scale features.

Relocate – remove and reset noncontributing features

Remove – removal of nonhistoric features

Repair – features, components of features and materials that require additional work. These may include declining building features (e.g., roofing, foundation, mechanical systems) structures, small scale features (e.g., repair of a railing) or landscape plantings (e.g., repair mass planting by adding infill plantings). Features that are repaired will match the old in design, color, texture, and if possible, material. Distinctive features that are repaired will match the old in design, color, texture, and if possible, material. Replacement work will only occur when historic fabric is deteriorated beyond repair. Evaluation of restoration and low-impact options must be exhausted before replacement is considered feasible.

Restore – are those measures necessary to depict a feature or area as it occurred historically. Restoration may include repair of a feature so that it appears as it did historically or it may include replacement of missing features or qualities. Restoration is undertaken when a “period of significance” is determined and that period of significance (original construction or a succeeding period representing a continuum of change for the property) becomes a project goal. Restoration is only recommended when restorative details can be substantiated by documentary and physical evidence. Without indisputable evidence restorative work risks conjectural decision making, leading to inaccurate and inappropriate historical appearance. Restoration must avoid the creation of a false sense of historical development.

Retain –are those actions that are necessary to allow for a feature (contributing or noncontributing) to remain in place in its contributing current configuration and condition. Retention of historic fabric is the primary tenet for preservation treatment of historic properties. The extent of historic fabric represents historic integrity which is fundamental to the recognition and status of historical development.

Stabilize – immediate, more extensive measures (more than standard maintenance practices) are needed to prevent deterioration, failure, or loss of features.

PRIMARY TREATMENT APPROACH – RESTORATION

Restoration standards allow for the accurate depiction of a property as it appeared at a particular time in its history by means of the removal of features from other periods in its history and reconstruction of missing

features from the period of significance. The limited and sensitive upgrading of systems (mechanical, electrical, plumbing) and other code related work is appropriate.

HOW TERMINOLOGY IS USED IN THE RESTORATION APPROACH

Maintain – are those standard maintenance practices that are necessary to retain the features of a property as a contributing resource. Maintenance activities are usually not classified as repair, however minor repair such as replacement of posts or railings or segments of paving are included. Limited and sensitive upgrading of building systems (mechanical, electrical, plumbing) and other code related work is appropriate.

Plant – the removal and replanting of landscape plantings and vegetation as part of maintenance activities or the restoration of missing features

Relocate – remove and reset noncontributing features

Remove – removal of nonhistoric features

Reestablish – are those measures necessary to depict a landscape feature as it occurred historically. Reestablishment may include the replacement of missing landscape features such as views, planting patterns, spatial relationships, or small scale features.

Repair – features, components of features and materials that require additional work. These may include declining building features (e.g., roofing, foundation, mechanical systems) structures, small scale features (e.g., repair of a railing) or landscape plantings (e.g., repair mass planting by adding infill plantings). Features that are repaired will match the old in design, color, texture, and if possible, material. Distinctive features that are repaired will match the old in design, color, texture, and if possible, material. Replacement work will only occur when historic fabric is deteriorated beyond repair. Evaluation of restoration and low-impact options must be exhausted before replacement is considered feasible.

Restore – are those measures necessary to depict a feature or area as it occurred historically. Restoration may include repair of a feature so that it appears as it did historically or it may include replacement of missing features or qualities. Restoration is undertaken when a "period of significance" is determined and that period of significance (original construction or a succeeding period representing a continuum of change for the property) becomes a project goal. Restoration is only recommended when restorative details can be substantiated by documentary and physical evidence. Without indisputable evidence restorative work risks conjectural decision making, leading to inaccurate and inappropriate historical appearance. Restoration must avoid the creation of a false sense of historical development.

Retain –are those actions that are necessary to allow for a feature (contributing or noncontributing) to remain in place in its contributing current configuration and condition. Retention of historic fabric is the primary tenet for preservation treatment of historic properties. The extent of historic fabric represents historic integrity which is fundamental to the recognition and status of historical development.

Stabilize – immediate, more extensive measures (more than standard maintenance practices) are needed to prevent deterioration, failure, or loss of features.

CONDITION ASSESSMENT DESCRIPTION LEVELS
Feature Condition Definitions
(Note: These terms are also applied to the overall structure/building.)

GOOD The feature is intact, structurally sound and performing its intended purpose. The feature needs no repair or rehabilitation, but only routine or preventive maintenance.

FAIR The feature is in fair condition if either of the following conditions is present:

- There are early signs of wear, failure or deterioration though the feature is generally structurally sound and performing its intended purpose – or –
- There is failure of a portion of the feature.

POOR The feature is in poor condition if any of the following conditions is present:

- The feature is no longer performing its intended purpose – or –
- Significant elements of the feature are missing – or –
- Deterioration or damage affects more than 25% of the feature – or –
- The feature shows signs of imminent failure or breakdown.

UNKNOWN Not enough information is available to make an evaluation.

RATINGS OF TREATMENT SEVERITY
An impact is a detectable result of an agent or series of agents having a negative effect on the significant characteristics or integrity of a structure and for which some form of mitigation or preventative action is possible. The assessment should include only those impacts likely to affect the structure within the next five years.

The Level of Impact Severity and their definitions are given below. For all levels, except UNKNOWN, two criteria are given. At least one of the criteria must be met for the declared Level of Impact Severity.

SEVERE
1. The structure/feature will be significantly damaged or irretrievably lost if action is not taken within two (2) years.
2. There is an immediate and severe threat to visitor or staff safety.

MODERATE
1. The structure/feature will be significantly damaged or irretrievably lost if action is not taken within five (5) years.
2. The situation caused by the impact is potentially threatening to visitor or staff safety.

LOW
1. The continuing effect of the impact is known and will not result in significant damage to the structure/feature.
2. The impact and its effects are not a direct threat to visitor or staff safety.

UNKNOWN Not enough information is available to make an evaluation.

DEFINITIONS OF TERMS

A

AAS: Atomic Absorption Spectroscopy

AC: Alternating current; the movement of current through an electrical circuit that periodically reverses direction. Alternating current is the form of electric power that is delivered to businesses and residences.

ACM: Asbestos Containing Material

Accessibility: a term used to describe facilities or amenities to assist people with disabilities and can extend to Braille signage, wheelchair ramps, elevators/lifts, walkway contours, reading accessibility, etc. According to its website, the Park Service is "committed to making all practicable efforts to make NPS facilities, programs, services, employment, and meaningful work opportunities accessible and usable by all people, including those with disabilities. This policy reflects the commitment to provide access to the widest cross section of the public and to ensure compliance with the Architectural Barriers Act of 1968, the Rehabilitation Act of 1973, the Equal Employment Opportunity Act of 1972, and the Americans with Disabilities Act of 1990. The Park Service will also comply with section 507 of the Americans with Disabilities Act (42 USC 12207), which relates specifically to the operation and management of federal wilderness areas. The accessibility of commercial services within national parks is also covered under all applicable federal, state and local laws" (source: http://www.nps.gov/aboutus/eeo.htm).

AES-ICP: Atomic Emission Spectroscopy – Inductively Coupled Plasma

AIHA: American Industrial Hygiene Association

Air Terminal: A rod that extends above a surface to attract lightning strikes.

AL: Action Level

B

Beam*:* a structural member, usually horizontal, with a main function to carry loads cross-ways to its longitudinal axis.

Branch Circuit: Insulated conductors used to carry electricity to an associated device or devices that originate from a single circuit breaker.

BTUH: British Thermal Unit per Hour; A traditional unit of energy.

BX Cable: Cable with flexible steel armored outer tube with individual copper conductors insulated with rubber and covered with a cotton braided sheath.

C

Cantilever: refers to the part of a member that extends freely over a beam or wall, which is not supported at its end.

Cast Iron: a large group of ferrous alloys that are easily cast. Cast iron tends to be brittle and is resistant to destruction and weakening by oxidation. The amount of carbon in cast irons is 2.1 to 4 wt%.

CFR: Code of Federal Regulation

Cistern: An underground receptacle for storage of liquids, usually water.

Clay Sewer: Sewer pipe made from vitrified clay that is highly resistant to corrosion.

Column: a main vertical member that carries axial loads from beams or girders to the foundation parallel to its longitudinal axis.

D

DC: Direct current; the unidirectional flow of current through an electrical circuit. Direct current is produced through such sources as batteries, thermocouples, or photovoltaic solar cells.

Dead Load: describes the loads from the weight of the permanent components of the structure.

Deflection: the displacement of a structural member or system under a load.

DRO: Diesel-Range Organics

E

ELPAT: Environmental Lead Proficiency Analytical Testing

EMT: Electro-metallic tubing; a metallic tube raceway that is used to carry and protect current carrying conductors or cables.

EPA: Environmental Protection Agency

F

Flue Vent: A duct or pipe conveying combustion by-products from a heater or furnace.

Fluorescent: A source of light that emits light radiation at longer wavelengths and lower energy.

Footing: a slab of concrete or an assortment of stones under a column, wall, or other structural member to transfer the loads of the member into the surrounding soil.

Foundation: supports a building or structure.

FRP: Fiberglass reinforced plastic

Full Sawn (FS): Lumber cut, in the rough, to its full nominal size.

G

Gable: located above the elevation of the eave line of a double-sloped roof.

Galvanized Steel: Steel coated with zinc carbonate to resist corrosion.

GPM: Gallon per minute; a standard unit of volumetric liquid flow rate.

Grade: the ground elevation of the soil.

Gravity Vent: Openings in a roof intended to vent hot air by the action of convection.

Gray Water: Wastewater generated from domestic washing activities and not containing human waste.

GRO: Gasoline Range Organics

H

Header: a member that carries joists, rafters or beams and is placed between other joists, rafters or beams.

Hip Roof: a roof sloping from all four sides of a building.

HUD: Housing and Urban Development

HVAC: Heating, Ventilation, and Air Conditioning.

I

IAQ: Indoor Air Quality

IEUBK: Integrated Exposure Uptake Biokinetic

Incandescent: A source of light that works by incandescence, or works by a heat-driven light emission through black-body radiation.
Inverter: A device that converts electrical direct current (DC) to electrical alternating current (AC).

J

Joist: a horizontal structural load-carrying member which supports floors and ceilings.

K

kVA: Kilovolt-ampere equal to 1,000 volt-amperes. kVA is a unit to express the apparent power consumed in an electrical circuit or electrical device.

kW: Kilowatt equal to 1,000 watts. A kilowatt is typically used to express the output power consumption of large devices or electrical systems.

L

LBP: Lead-Based Paint

LCP: Lead-Containing Paint

LCS: Lead-Contaminated Soils

Leach Field: A drain field used to remove contaminants and impurities from liquid that emerges from a septic tank.

LED: Light emitting diode; a semiconductor light source that can emit light in various colors and brightness.

Live Load: nonpermanent loads on a structure created by the use of the structure.

Load: an outside force that affects the structure or its members.

Louver: An opening with horizontal slats angled to allow passage of air while keeping out rain and snow.

M

Mg/kg: Milligrams per Kilogram

N

NEC: National Electric Code.

NESHAP: National Emission Standards for Hazardous Air Pollutants

Nonpotable Water: Water that has not been approved for safe human consumption.

NVLAP: National Voluntary Laboratory Accreditation Program

O

OSHA: Occupational Safety and Health Administration

Overcurrent Protection: A fuse, circuit breaker or relay that will open the electrical circuit when the downstream electrical current exceeds the stated current rating.

P

Passive Ventilation: Ventilation of a building without the use of a fan or other mechanical system.

Pitch: the slope of a member defined as the ratio of the total rise to the total run.

PLM: Polarized Light Microscopy

PV: Photovoltaic; An array of solar modules or cells that collect solar energy and convert the energy into direct current electricity.

PVC: Polyvinyl Chloride; A biologically and chemically resistant plastic widely used for household sewage pipe.

R

Rafter: a sloped structural load-carrying member which supports the roof.

RBM: Regulated/Hazardous Material

Reaction: the force or moment developed at the points of a support.

RLM: Industrial stem mounted reflector.

Romex: Wiring with rubber insulated conductors in an overall sheath of braided cotton fiber.

S

Seismic Load: loads produced during the seismic movements of an earthquake.

Septic Tank: A sewage tank containing anaerobic bacteria which decomposed waste discharged into the tank.

Shear: forces resulting in two touching parts of a material to slide in opposite directions parallel to their plane of contact.

Shelter: a structure that can be used for rustic camping in the event that staff are not able to leave the island due to weather. No utilities are provided.

Snow Load: loads produced from the accumulation of snow.

Span: the distance between supports.

Step-down Transformer: A device that converts a high voltage down to a lower voltage through a series of winding coils.

***Structural Steel*:** an iron alloy with a carbon content of 0.16% to 0.29%. Steel is malleable, and easily welded.

Strut: a structural brace that resists axial forces.

Stud: a vertical wall member used to construct partitions and walls.

T

Thermal Expansion Tank: A tank used in a closed water heating system to absorb excess water pressure caused by thermal expansion.

TSI: Thermal System Insulation

Turbine Vent: Vents utilizing rotating wind vanes to create air flow.

V

Vent Stack: A vertical pipe proving ventilation.

W

WAC: Wisconsin Administrative Code

WDNR: Wisconsin Department of Natural Resources

Wrought Iron: an iron alloy with very low carbon content, in comparison to steel. Wrought iron is tough, malleable, ductile, and easily welded.

X

XRF: X-ray fluorescence analyzer

Other

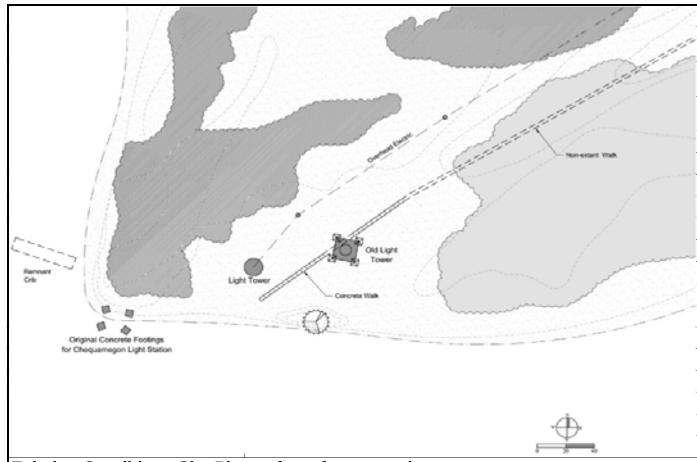
30 µg/m3: 30 micrograms per cubic meter

µg/SF: Micrograms of Lead Dust per Square Foot of Floor Space

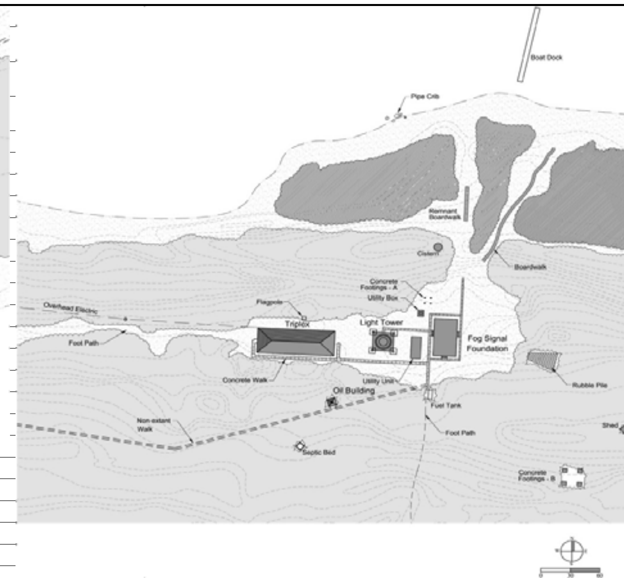
1x: Piece of dimensional lumber 1” (nominal) / ¾” (actual) thick

APPENDIX A: MATRIX OF TREATMENT ALTERNATIVE

REVISED 07.12.2011



Existing Conditions Site Plans - for reference only



General Description:
This treatment alternative proposes rehabilitating each island's cultural landscape to best portray the continuum of navigational history that characterizes the Apostle Islands as a system of light stations. Each island (and each light station) conveys specific characteristics related to particular periods of development in the navigation of the archipelago. This treatment will reveal this continuum by restoring missing historic features, and by repairing or altering others to convey the full historical significance of the system. Additions that are necessary to enable the compatible use of the light stations or islands are allowed as long as portions or features that convey the historical, cultural, or architectural values are preserved.

Period of Significance: 1858 - 1964

Please refer to the proposed treatments below.

	LaPointe Tower	Chequamegon Pt Lighthouse	Triplex	Oil Building	
Proposed Use of Building	Rehabilitate for guided visitor access.	Rehabilitate; no visitor access.	Preserve and maintain current use as vacant.	Preserve and maintain current use as vacant.	
Architecture	Increase ventilation at Tower; repair rust and delamination, seal joints; repair cracked glass at Lantern; repair windows and doors; paint interior and exterior complete.	Complete current rehabilitation project including: installing floor and access; installing windows; paint interior and exterior complete; Verify condition of roof and lantern.	Reroof; repair hole at soffit; repair broken wall shingles; repair windows and paint; replace missing exterior doors; repair entablature trim and north porch and paint all trim; remove all damaged gyp. board at walls and ceilings, patch in-kind; no interior paint/finish work; install moisture barrier at foundation.	Repaint roof and walls; repair door; mitigate moisture issues at masonry.	
Structural	Investigate structural significance of concrete foundation cracking, investigate structural significance of cracked bell fittings	No action at this time	Stop the moisture coming through the foundation walls, reduce the humidity in the basement to reduce the moisture content of the first floor joists, repair the first floor joists and sheathing, properly frame the first floor joists at the windows, repair the roof	No action at this time	
Mechanical	Increase ventilation for moisture control.	No action at this time.	Increase ventilation for moisture control. Cap and seal open sewer piping. Remove abandoned plumbing fixtures and unused mechanical components.	Clean and paint roof vent.	
Electrical	Provide PV power system to facilitate running of new ventilation equipment. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Remove overhead conductors (de-energized) from newer light structure and connect them with suitable distribution equipment to historic tower. Investigate possibility of moving existing USCG light (USCG Aids to Navigation) from USCG Culvert tower to Historic Tower and removing USCG Culvert Tower. Engage an LPI (Lightning Protection Institute) certified inspector to perform an inspection of the lightning protection system and provide findings and recommendations in accordance with LPI-175.	Provide PV Array and storage battery system to provide power for increased ventilation.		
HazMat	Soil characterization (lead); remove/stabilize lead paint	Soil characterization (lead); remove/stabilize lead paint	Bat guano abatement; water intrusion/mold mitigation; soil characterization (lead); asbestos sampling of materials to be preserved/stabilized; abatement of damaged asbestos siding; remove/stabilize lead paint	Remove/stabilize lead paint	
Accessibility	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	Program access through interpretive wayside exhibits.	

APPENDIX B: SUMMARY OF HAZARDOUS MATERIAL FINDINGS

LONG ISLAND LAPOINTE LIGHT TOWER

Building Number	LCS ID 101643
Building Name	Long Island LaPointe Light Tower
>1% Asbestos Confirmed	
Asbestos Assumed[37]	Brick/Block Filler and Adhesives
Detectable Lead in Paint Confirmed	
Detectable Lead in Paint Assumed	Interior and Exterior Painted Surfaces
Lead Dust on Floors >40 µg/SF Confirmed [38]	
Lead Dust on Floors >40 µg/SF Assumed [2]	Throughout
Lead Dust on Floors <40 µg/SF Confirmed [2]	
Visual Mold	
Lead in Soils >50 mg/kg[39]	Outside Tower Braces
Lead in Soils <50 mg/kg	
Lead in Soils Assumed	

< = Greater Than
< = Less Than
µg/SF = Micrograms of Lead Dust per Square Foot of Floor Space
mg/kg = Milligrams of Lead per Kilogram of Soil

[37] Materials listed are those identified or assumed to be present during the September 15, 2009 site assessment
[38] In accordance with EPA 40 CFR part 457 the clearance level for lead dust on floors in child occupied housing is 40 micrograms of lead dust per square foot of floor space.
[39] In accordance with NR720, WIS. Adm Code; 50 milligrams per kilogram, is the conservative acceptable residual containment level for lead in soil based on human health risk from direct contact (ingestion or inhalation) related to nonindustrial land use and considering more than one contaminant may be present in the soil. However, site specific Risk Assessment is recommended to identify the site specific clean up levels for lead contaminated soil at each of these sites.

CHEQUAMEGON POINT TOWER

Building Number	LCS ID 101656
Building Name	Chequamegon Point Tower
>1% Asbestos Confirmed	
Asbestos Assumed[40]	
Detectable Lead in Paint Confirmed	
Detectable Lead in Paint Assumed	Interior and Exterior Painted Surfaces
Lead Dust on Floors >40 µg/SF Confirmed [41]	
Lead Dust on Floors >40 µg/SF Assumed [2]	Throughout
Lead Dust on Floors <40 µg/SF Confirmed [2]	
Visual Mold	
Lead in Soils >50 mg/kg[42]	Roof Drip line
Lead in Soils <50 mg/kg	
Lead in Soils Assumed	

< = Greater Than
< = Less Than
µg/SF = Micrograms of Lead Dust per Square Foot of Floor Space
mg/kg = Milligrams of Lead per Kilogram of Soil

[40] Materials listed are those identified or assumed to be present during the September 15, 2009 site assessment
[41] In accordance with EPA 40 CFR part 457 the clearance level for lead dust on floors in child occupied housing is 40 micrograms of lead dust per square foot of floor space.
[42] In accordance with NR720, WIS. Adm Code; 50 milligrams per kilogram, is the conservative acceptable residual containment level for lead in soil based on human health risk from direct contact (ingestion or inhalation) related to nonindustrial land use and considering more than one contaminant may be present in the soil. However, site specific Risk Assessment is recommended to identify the site specific clean up levels for lead contaminated soil at each of these sites.

TRIPLEX

Building Number	LCS ID 101647
Building Name	Long Island Triplex
>1% Asbestos Confirmed	
Asbestos Assumed[43]	Transite, Plaster, Brick/Block Filler, Adhesives, Caulk, Wall Interiors, Insulation, Plaster, Drywall and Roofing
Detectable Lead in Paint Confirmed	
Detectable Lead in Paint Assumed	Interior and Exterior Painted Surfaces
Lead Dust on Floors >40 µg/SF Confirmed [44]	
Lead Dust on Floors >40 µg/SF Assumed [2]	Throughout
Lead Dust on Floors <40 µg/SF Confirmed [2]	
Visual Mold	Yes
Lead in Soils >50 mg/kg[45]	Roof Drip line
Lead in Soils <50 mg/kg	
Lead in Soils Assumed	

< = Greater Than
< = Less Than
µg/SF = Micrograms of Lead Dust per Square Foot of Floor Space
mg/kg = Milligrams of Lead per Kilogram of Soil

[43] Materials listed are those identified or assumed to be present during the September 15, 2009 site assessment
[44] In accordance with EPA 40 CFR part 457 the clearance level for lead dust on floors in child occupied housing is 40 micrograms of lead dust per square foot of floor space.
[45] In accordance with NR720, WIS. Adm Code; 50 milligrams per kilogram, is the conservative acceptable residual containment level for lead in soil based on human health risk from direct contact (ingestion or inhalation) related to nonindustrial land use and considering more than one contaminant may be present in the soil. However, site specific Risk Assessment is recommended to identify the site specific clean up levels for lead contaminated soil at each of these sites.

OIL BUILDING

Building Number	LCS ID 101648
Building Name	Long Island Oil Building
>1% Asbestos Confirmed	
Asbestos Assumed[46]	
Detectable Lead in Paint Confirmed	
Detectable Lead in Paint Assumed	Interior and Exterior Painted Surfaces
Lead Dust on Floors >40 µg/SF Confirmed [47]	
Lead Dust on Floors >40 µg/SF Assumed [2]	
Lead Dust on Floors <40 µg/SF Confirmed [2]	
Visual Mold	
Lead in Soils >50 mg/kg[48]	
Lead in Soils <50 mg/kg	
Lead in Soils Assumed	Yes

< = Greater Than
< = Less Than
µg/SF = Micrograms of Lead Dust per Square Foot of Floor Space
mg/kg = Milligrams of Lead per Kilogram of Soil

[46] Materials listed are those identified or assumed to be present during the September 15, 2009 site assessment
[47] In accordance with EPA 40 CFR part 457 the clearance level for lead dust on floors in child occupied housing is 40 micrograms of lead dust per square foot of floor space.
[48] In accordance with NR720, WIS. Adm Code; 50 milligrams per kilogram, is the conservative acceptable residual containment level for lead in soil based on human health risk from direct contact (ingestion or inhalation) related to nonindustrial land use and considering more than one contaminant may be present in the soil. However, site specific Risk Assessment is recommended to identify the site specific clean up levels for lead contaminated soil at each of these sites.

APPENDIX C: MATERIAL ANALYSIS REPORTS, LONG ISLAND

LONG ISLAND ACM SAMPLE CHART

Sample #	Sample Date	API ID	Sample Location	Material Description	Laboratory Result
B-LITRI-SF1-01	9/16/2009	25217	Triplex	Brown/tan marble pattern sheet flooring	ND
B-LITRI-SF2-01	9/16/2009	25217	Triplex	Multicolor splash pattern sheet flooring with pink mastic	ND
B-LITRI-SF3-01	9/16/2009	25217	Triplex	Green multicolor floor covering	ND
B-LITRI-SF4-01	9/16/2009	25217	Triplex	Red carpet patter sheet flooring with red mastic	ND
B-LITRI-SF5-01	9/16/2009	25217	Triplex	Green carpet patter sheet flooring with brown mastic	ND
B-LITRI-SF6-01	9/16/2009	25217	Triplex	Blue carpet pattern sheet flooring with red mastic	ND
B-LITRI-TP1-01	9/16/2009	25217	Triplex	Black tar paper with brown fibrous backing	ND

ND=None Detected
TR=Trace, <1% Visual Estimate

LONG ISLAND LEAD SAMPLE CHART

Sample ID	Sample Type	API ID	Sample Location	Sample Date	Reporting Limit (ug/sq ft)	Lead Concentration (ug/sq ft)
S-LILH-01	Soil Composite	25215	LaPointe Light Tower dripline	9/16/2009	16.5	BRL
S-LILH-02	Soil Composite	25215	LaPointe Light Tower outside braces	9/16/2009	19.2	3002.6
S-LITRI-01	Soil Composite	25217	Triplex dripline	9/16/2009	17.6	1373.1
S-LITRI-02	Soil Composite	25217	Triplex 5’ out from dripline	9/16/2009	17.9	6955.4
S-LICLH-01	Soil Composite	25221	Chequamegon Point Tower dripline	9/16/2009	14.1	1743.5

APPENDIX D: FABRIC ANALYSIS

Fabric Analysis
Long Island Light Complex
Apostle Island National Lakeshore
October 15, 2009

On Tuesday, October 6, 2009, David Arbogast, architectural conservator, of Davenport, Iowa, received a large box containing paint and mortar samples from Elizabeth Hallas, AIA, LEED AP. Senior Associate of Anderson Hallas Architects, PC of Golden, Colorado. She is in the process of preparing Historic Structures Reports for the historic lighthouse complexes of the Apostle Islands National Lakeshore, headquartered in Bayfield, Wisconsin. As part of the HSR's paint and mortar/plaster analysis is required in an attempt to ascertain historic finishes, mortars, and plasters for the subject structures. The samples were divided into sets contained within large manila mailing envelopes. The analysis follows the order in which the large envelopes have been arranged. The sixth set which is contained within this report was from the set of samples collected from the complex at the Long Island Light. There were 37 samples in the set, of which 33 were paint samples and four (nos. 13, 27, 33, and 36) were of plaster and mortar.

During the preceding twenty or more years Mr. Arbogast has performed paint analyses for various structures at the Apostles Islands. Those samples and his reports are in the archives at the headquarters in Bayfield and may be examined in relation to the findings from this analysis.

Analysis of the paint samples commenced on Friday, October 15, utilizing the same procedures used for the first set of samples. Numbering of the samples commenced with one and ended with 37. The following results were obtained from the analysis:

Triplex

Sample 1	**Munsell**
Light green	10GY 8/2
White	N 9.5/
White	N 9.5/

The first sample was collected from the wall of room A of the second floor of the triplex. It retained two layers of paint above a thick coating of plaster.

Triplex

Sample 2	**Munsell**
Light blue	7.5B 8/2
Off-white	2.5Y 8.5/2

The second sample came from the wall of room B of the second floor of the triplex. It revealed a thin layer of off-white paint beneath a light blue layer of paint.

Triplex

Sample 3	**Munsell**
Gray	N 5.75/

The third sample was removed from the door trim of room C of the second floor of the triplex. It consisted of a single, very thin layer of gray paint.

Triplex

Sample 4	**Munsell**
Light green	5GY 8/3
White	N 9.5/
White	N 9.5/
White	N 9.5/

The fourth sample was from the wall of room D of the second floor of the triplex. It retained four very thin paint layers – a layer of light green above three layers of white.

Triplex

Sample 5	**Munsell**
Pink	5YR 8/3
White	5Y 9/1
Glaze	--------
White	5Y 9/1

The fifth sample was found on the wall of room E on the second floor of the triplex. There was a very thin, very shiny glaze coat between the two white layers. This may have been either a coat intentionally applied to impart a high gloss to the paint or may been an atmospheric contaminant that was deposited on the surface, although this is quite unlikely.

Triplex

Sample 6	**Munsell**
White	N 9.5/
Off-white	2.5Y 8.5/2

The sixth sample was collected from the ceiling of room A of the second floor of the triplex. It revealed two paint layers on the paper surface of the gypsum board substrate.

Triplex

Sample 7	**Munsell**
Pink	5YR 8/3
White	N 9.5/
White	N 9.5/

The seventh sample was taken from the wall of room H of the first floor of the triplex. There were two paint layers above a whitewash layer which rested on the paper of the gypsum board.

Triplex

Sample 8	**Munsell**
White	N 9.5/
White	N 9.5/
White	N 9.5/

The eighth sample was from the ceiling of room H of the first floor of the triplex. It was quite similar to its counterpart, sample 7, but with a layer of white paint on its surface rather than pink.

Triplex

Sample 9	**Munsell**
Light green	10GY 7.5/2
Light green	10GY 7.5/2
White	N 9.5/

The ninth sample was removed from the wall of room I of the first floor of the triplex. It revealed two layers of light green paint above a stark white layer which rested on the paper of the gypsum board.

Triplex

Sample 10	**Munsell**
Dark gray	N 4.75/
Gray	N 5.25/
Gray	N 5.75/
White	5Y 9/1

The tenth sample was taken from the trim paint of room I of the first floor of the triplex. Above a base coat of white paint was a set of increasingly dark gray paint layers.

Triplex

Sample 11	**Munsell**
White	5Y 9/1
White	5Y 9/1
White	5Y 9/1
Off-white	2.5Y 8.5/2
White	5Y 9/1

Sample 11 was collected from the wall of room G of the first floor of the triplex. It retained a set of three layers of white paint and a layer of off-white paint above a relatively thick layer of lime (probably whitewash). Between this layer and the white layer above it was a thick, fuzzy black layer which appeared to be black mildew or mold.

Triplex

Sample 12	**Munsell**
Light blue	7.5B 7.5/2
Light green	10GY 7.5/2
White	5Y 9/1
White	5Y 9/1
Paper	--------

Sample 12 was taken from the wall of room F of the first floor of the triplex. Above a paper substrate was a relatively thick layer of lime (probably whitewash) above which was a set of three paint layers. The paper substrate probably was that used for a gypsum board substrate.

Sample 13 was the first of the mortar and plaster samples. It was analyzed on Thursday, October 15, utilizing the standard testing procedure developed by E. Blaine Cliver, Regional Historical Architect of the North Atlantic Region of the National Park Service. It came from room I of the first floor of the triplex. It was white in color with painted paper firmly adhered to its surface. The paper with its paint was removed from the plaster prior to analysis, although some wood pulp appeared as part of the fines in the analysis. There was no reaction with the hydrochloric acid, indicating the presence of gypsum rather than lime. The sand sieve analysis, such as it was, revealed unground bits of gypsum plaster and no sand at all. The plaster proved to be composed of pure gypsum and no sand. There is little doubt that, in conjunction with the paper, this was gypsum board.

Mortar/Plaster/Stucco Analysis Test Sheet

Sample No. 13
Building: Triplex, Long Island, Apostle Islands NL
Location: First floor Room I plaster
Sample Description: White with wallpaper and paint (removed prior to analysis), moderately soft, no reaction, extremely fast filtering time

Test No. 1 – Soluble Fraction

Data:

1. 192.0	Container A weight	8. No	Hair or fiber ______ type
2. 203.0	Container A and sample	9. 2.3	Fines and paper weight
3. 761.24	Barometric pressure	10. 2.1	Filter paper weight
4. 23	Temperature	11. 197.3	Sand and Container A weight
5. 0.00	Liters of water displaced	12. 10.2	cc. of sand
6. Off-white	Filtrate color	13. 34.1	Weight of graduated cylinder and sand
7. Brown	Fines color	14. 28.8	Weight of graduated cylinder

Computations:

15.	11.0	Starting weight of sample: No. 2 – No. 1
16.	0.2	Weight of fines: No. 9 – No. 10
17.	5.3	Weight of sand: No. 11 – No. 1
18.	1.9245	Sand density: No. 12 divided by (No. 13 – No. 14)
19.	5.5	Weight of soluble content: No. 15 – (No. 16 + No. 17)
20.	0.00	Mols. Of CO2: No. 5 x No. 3. x 0.016 divided by (No. 4 + 273.16 C.)
21.	0 00	Gram weight of CaCO3: 100 x No. 20
22.	5.5	Gram weight of Ca(OH)2: No. 19 – No. 21
23.	0.0743	Mols. of Ca(OH)2: No. 22 divided by 74
24.	5.5	Gram total weight of Ca(OH)2: 74 x (No. 20 + No. 23)
25.	0.00	Gram weight CO2: No. 20 x 44
26.	3.27	Gram weight total possible CO2: 44 x (No. 20 + No. 23)
27.	-------	%CO2 gain: No. 25 divided by No. 26

Conclusions:

28.	11.0	Gram weight of sample:	No. 15 – No. 25
29.	1.82	Fine parts/volume:	No. 16 divided by No. 28

30.___92.73___	Sand parts/volume:	(No. 17 divided by No. 28) x No. 18
31.________	Lime parts/volume:	(No. 24 divided by No. 28) x 1.1

Cement (if present)

32.________	Portland cement parts/volume:	(No. 16 divided by No. 28) x 0.78
33.________	Natural cement parts/volume:	(No. 16 divided by No. 28) x 0.86
34.________	Lime with cement parts/volume:	(No. 16 x o.2) divided by No. 28 x 1.1

Test No. 2 – Sand Sieve Analysis

Sieve	Sieve w/ sand weight	Sieve weight	Sand weight	Sand ratio
No. 10	106.8	106.8	0.0	0.00
No. 20	107.0	106.4	0.6	11.32
No. 30	100.7	99.3	1.4	26.42
No. 40	101.9	100.8	1.1	20.75
No. 50	94.3	93.2	1.1	20.75
Base	72.3	71.2	1.1	20.75

Triplex

Sample 14	**Munsell**
Light green	10GY 7.5/2
Light green	10GY 7.5/2

The fourteenth sample continued the series of paint samples. It was removed from the wall of room M of the first floor of the triplex. It retained two very thin layers of light green paint without any substrate.

Triplex

Sample 15	**Munsell**
White	N 9.5/
White	N 9.5/
Light green	10GY 7.5/2
Dark tan	2.5Y 6/4
Light green	10GY 7.5/2
White	N 9.5/

The fifteenth sample was from the wall of room J of the first floor of the triplex. Above a thick base of lime (probably whitewash) there were five paint layers.

Triplex

Sample 16	**Munsell**
Off-white	2.5Y 8.5/2
Gray	5Y 7/1

The sixteenth sample was found on the trim of room M of the first floor of the triplex. On its wood substrate were two very thin coats of paint.

Triplex	
Sample 17	**Munsell**
Pink	5YR 8/3
Pink	5YR 8/3

The seventeenth sample was collected from the wall of room N of the first floor of the triplex. It consisted of a pair of extremely thin layers of pink paint without any substrate attached to them.

Triplex	
Sample 18	**Munsell**
White	N 9.5/
White	5Y 9/1

The eighteenth sample came from the ceiling of room N of the first floor of the triplex. Above a thick layer of lime (probably whitewash) was a layer of stark white paint. The substrate was paper.

Triplex	
Sample 19	**Munsell**
Light blue	7.5B 7.5/2
Light green	10GY 7.5/2
White	5Y 9/1

The nineteenth sample was removed from the wall of room K of the first floor of the triplex. On its paper substrate were three thin paint layers.

Triplex	
Sample 20	**Munsell**
Pink	5YR 8/3

The twentieth sample was from the wall of room O of the first floor of the triplex. It consisted of a single layer of pink paint without any substrate.

Triplex	
Sample 21	**Munsell**
Light green	10GY 7.5/2
White	N 9.5/

Sample 21 was found on the wall of closet L of the first floor of the triplex. On the paper substrate were two layers of paint – white and light green.

Triplex	
Sample 22	**Munsell**
Light blue	7.5B 7.5/2
Off-white	2.5Y 8.5/2
Off-white	2.5Y 8.5/2

Sample 22 was collected from the wall of room F of the first floor of the triplex. It revealed three paint layers on its paper substrate.

Triplex

Sample 23	**Munsell**
Tan	2.5Y 8/4
White	5Y 9/1

Sample 23 came from room Q of the second floor of the triplex. On its paper substrate was a layer of white paint followed by a layer of tan paint.

Triplex

Sample 24	**Munsell**
Light gray	10Y 7.5/1
Off-white	2.5Y 8.5/2

Sample 24 was removed from room P of the second floor of the triplex. It revealed two paint coats on its paper substrate.

Triplex

Sample 25	**Munsell**
White	N 9.5/

Sample 25 was from the trim of room S of the second floor of the triplex. It consisted of a single layer of white paint without any substrate.

Triplex

Sample 26	**Munsell**
Light tan	2.5Y 8.5/4
White	N 9.5/

Sample 26 was found on the second floor closet of the triplex. On its wood substrate were two layers of paint – white and light tan.

Sample 27 continued the mortar and plaster samples. It, and the remaining samples, was analyzed on Saturday, October 17. The sample was taken from the plaster of room S of the second floor of the triplex. It gave every evidence of being a standard sample of gypsum board. On one side there was paper with paint on its surface and other side merely had paper. The paper layers and the paint was removed prior to the analysis. The sample had a nominal reaction with the hydrochloric acid which was not measurable. This is clearly indicative that the plaster was not composed of lime but of gypsum. The fines proportion was disproportionately high. The fines were brown in color which probably indicated dirt associated with the gypsum. The “sand”, such as it was, consisted entirely of unground bits of plaster with no silicate sand at all. The 94.56 parts of sand shown on the data sheet merely represents the unground bits of plaster which, in truth, was not sand at all.

Mortar/Plaster/Stucco Analysis Test Sheet

Sample No. 27
Building: Room S, Second Floor, Triplex, Long Island, Apostle Islands NL
Location: Plaster
Sample Description: White with painted paper on one side and paper on other side, (paper and paint removed), moderately soft, miniscule reaction, rapid filtering time

Test No. 1 – Soluble Fraction

Data:
1. 185.5 Container A weight
2. 238.8 Container A and sample
3. 761.49 Barometric pressure
4. 23 Temperature
5. 0.00 Liters of water displaced
6. Yellow-green Filtrate color
7. Brown Fines color
8. No Hair or fiber ______ type
9. 9.9 Fines and paper weight
10. 3.3 Filter paper weight
11. 213.3 Sand and Container A weight
12. 50.4 cc. of sand
13. 41.9 Weight of graduated cylinder and sand
14. 28.7 Weight of graduated cylinder

Computations:
15. 53.3 Starting weight of sample: No. 2 – No. 1
16. 6.6 Weight of fines: No. 9 – No. 10
17. 27.8 Weight of sand: No. 11 – No. 1
18. 1.813 Sand density: No. 12 divided by (No. 13 – No. 14)
19. 18.9 Weight of soluble content: No. 15 – (No. 16 + No. 17)
20. 0.00 Mols. Of CO2: No. 5 x No. 3. x 0.016 divided by (No. 4 + 273.16 C.)
21. 0.00 Gram weight of CaCO3: 100 x No. 20
22. 18.9 Gram weight of Ca(OH)2: No. 19 – No. 21
23. 0.2554 Mols. of Ca(OH)2: No. 22 divided by 74
24. 18.9 Gram total weight of Ca(OH)2: 74 x (No. 20 + No. 23)
25. 0.00 Gram weight CO2: No. 20 x 44
26. 11.24 Gram weight total possible CO2: 44 x (No. 20 + No. 23)
27. -------- %CO2 gain: No. 25 divided by No. 26

Conclusions:
28. 53.30 Gram weight of sample: No. 15 – No. 25
29. 12.38 Fine parts/volume: No. 16 divided by No. 28
30. 94.56 Sand parts/volume: (No. 17 divided by No. 28) x No. 18
31. ______ Lime parts/volume: (No. 24 divided by No. 28) x 1.1

Cement (if present)
32. ______ Portland cement parts/volume: (No. 16 divided by No. 28) x 0.78
33. ______ Natural cement parts/volume: (No. 16 divided by No. 28) x 0.86
34. ______ Lime with cement parts/volume: (No. 16 x o.2) divided by No. 28 x 1.1

Test No. 2 – Sand Sieve Analysis

Sieve	Sieve w/ sand weight	Sieve weight	Sand weight	Sand ratio
No. 10	107.5	106.8	0.7	2.53

No. 20	115.9	106.4	9.5	34.42
No. 30	105.8	99.3	6.5	23.55
No. 40	108.8	100.8	8.0	28.99
No. 50	95.4	93.2	2.2	7.97
Base	71.9	71.2	0.7	2.53

Triplex

Sample 28	**Munsell**
Light tan	2.5Y 8.5/4
White	5Y 9/1
Off-white	2.5Y 8.5/2
White	5Y 9/1
White	5Y 9/1

Sample 28 resumed the series of paint samples. It was collected from the first floor of apartment #3 of the triplex. On top of its paper substrate was a lime (probably whitewash) coat followed by four paint layers.

Triplex

Sample 29	**Munsell**
Light green	10GY 7.5/2
White	N 9.5/
White	5Y 9/1

Sample 29 came from the first floor of apartment #3 of the triplex. It consisted of three very thin paint layers without any substrate attached to them.

Triplex

Sample 30	**Munsell**
Light gray-green	5G 8/1

Sample 30 was removed from the second floor of apartment #3 K of the triplex. It was merely a single layer of paint without any substrate attached to it.

Triplex

Sample 31	**Munsell**
Light green	10GY 7.5/2
White	N 9.5/

Sample 31 was from the second floor of apartment #3 of the triplex. It consisted of a stiff cardboard substrate with two paint layers firmly adhered to it.

Triplex

Sample 32	**Munsell**
Gray	N 5.5/
Gray	5Y 7/1

Sample 32 was found on the basement trim of the triplex. It consisted of a lighter gray paint coat beneath a dark gray over coat.

Sample 33 was of the mortar of the triplex. It was tan in color and was quite soft. It had a quick and bubbly reaction which is typical of lime mortar, but the very small water displacement is not typical. If the gray fines are considered to be dirt associated with the original sand an approximate mixture of two parts of lime to seven parts of sand, by volume, was discovered. The sand sieve analysis revealed extremely fine sand of which over one-quarter passed all of the sieves and almost two-thirds was trapped in the finest sieve.

Mortar/Plaster/Stucco Analysis Test Sheet

Sample No. 33
Building: Triplex, Long Island, Apostle Islands NL
Location: Mortar
Sample Description: Tan, very soft, fast and bubbly reaction, very rapid filtering time

Test No. 1 – Soluble Fraction

Data:

1. 188.9 Container A weight
2. 215.1 Container A and sample
3. 761.49 Barometric pressure
4. 23 Temperature
5. 0.08 Liters of water displaced
6. Yellow-green Filtrate color
7. Gray Fines color
8. No Hair or fiber ______ type
9. 3.8 Fines and paper weight
10. 3.0 Filter paper weight
11. 210.4 Sand and Container A weight
12. 14.0 cc. of sand
13. 50.2 Weight of graduated cylinder and sand
14. 28.7 Weight of graduated cylinder

Computations:

15. 26.2 Starting weight of sample: No. 2 – No. 1
16. 0.8 Weight of fines: No. 9 – No. 10
17. 21.5 Weight of sand: No. 11 – No. 1
18. .65116 Sand density: No. 12 divided by (No. 13 – No. 14)
19. 3.9 Weight of soluble content: No. 15 – (No. 16 + No. 17)
20. 0.0032911 Mols. Of CO2: No. 5 x No. 3. x 0.016 divided by (No. 4 + 273.16 C.)
21. 0 33 Gram weight of CaCO3: 100 x No. 20
22. 3.57 Gram weight of Ca(OH)2: No. 19 – No. 21
23. .0483 Mols. of Ca(OH)2: No. 22 divided by 74
24. 3.81 Gram total weight of Ca(OH)2: 74 x (No. 20 + No. 23)
25. 0.14 Gram weight CO2: No. 20 x 44
26. 2.27 Gram weight total possible CO2: 44 x (No. 20 + No. 23)
27. 6.17 %CO2 gain: No. 25 divided by No. 26

Conclusions:

28. 26.06 Gram weight of sample: No. 15 – No. 25
29. 3.07 Fine parts/volume: No. 16 divided by No. 28
30. 53.72 Sand parts/volume: (No. 17 divided by No. 28) x No. 18

31. 16.08 Lime parts/volume: (No. 24 divided by No. 28) x 1.1

Cement (if present)

32.____________Portland cement parts/volume: (No. 16 divided by No. 28) x 0.78

33.____________Natural cement parts/volume: (No. 16 divided by No. 28) x 0.86

34.____________Lime with cement parts/volume: (No. 16 x o.2) divided by No. 28 x 1.1

Test No. 2 – Sand Sieve Analysis

Sieve	Sieve w/ sand weight	Sieve weight	Sand weight	Sand ratio
No. 10	106.9	106.8	0.1	0.46
No. 20	106.6	106.4	0.2	0.02
No. 30	99.5	99.3	0.2	0.92
No. 40	102.1	100.7	1.4	6.45
No. 50	107.4	93.2	14.2	65.44
Base	76.8	71.2	5.6	25.81

Triplex

Sample 34	**Munsell**
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
Gray	5Y 6/1
White	N 9.5/

Sample 34 continued the paint analysis and was collected from the exterior window trim of the triplex. Above an extremely thin coat of white paint, which probably served as a prime coat, there was a coat of gray paint followed by a lengthy succession of coats of stark white paint.

Oil House

Sample 35	**Munsell**
Yellow-orange	10YR 6/7
Yellow-orange	10YR 6/7
Yellow-orange	10YR 6/7
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
White	N 9.5/
Yellow-green	10Y 6/4
Charcoal	N 2.0/
Very dark maroon	7.5R 2/4

Sample 35 came from the exterior of the oil house. The quality of the sample was quite excellent with all layers being solid and easily discerned. The oldest very dark maroon only appeared as spots on the underside of the charcoal layer which did not adhere to any substrate.

Sample 36 was of the mortar of the oil house. It was gray in color and was moderately soft. It had a fast and bubbly reaction which is typical of lime mortar. It produced a strong sulfurous odor which may be related to its location in the oil house. It also produced an unusually high proportion of fines which consisted of black and red specks. The black specks floated on the water of filtration. If the fines are considered to have been associated with the original sand an approximate ratio of nine parts of lime to seventeen parts of sand, by volume, was discovered or, very roughly, one part of lime to two parts of sand. The sand sieve analysis revealed very fine sand, of which all passed the largest sieve and almost 30% passed all of the sieves. Over 43% was trapped in the finest sieve.

Mortar/Plaster/Stucco Analysis Test Sheet

Sample No. 36
Building: Oil House, Long Island, Apostle Islands NL
Location: Mortar
Sample Description: Gray, moderately soft, fast and bubbly reaction, sulphurous odor, rapid filtering time

Test No. 1 – Soluble Fraction

Data:
1. 185.1 Container A weight
2. 194.5 Container A and sample
3. 761.49 Barometric pressure
4. 23 Temperature
5. 0.40 Liters of water displaced
6. Yellow-green Filtrate color
7. Black & red Fines color
8. No Hair or fiber ______ type
9. 3.7 Fines and paper weight
10. 3.0 Filter paper weight
11. 191.0 Sand and Container A weight
12. 4.2 cc. of sand
13. 34.6 Weight of graduated cylinder and sand
14. 28.7 Weight of graduated cylinder

Computations:
15. 9.4 Starting weight of sample: No. 2 – No. 1
16. 0.7 Weight of fines: No. 9 – No. 10
17. 5.9 Weight of sand: No. 11 – No. 1
18. .7118644 Sand density: No. 12 divided by (No. 13 – No. 14)
19. 2.8 Weight of soluble content: No. 15 – (No. 16 + No. 17)
20. 0.0164557 Mols. Of CO2: No. 5 x No. 3. x 0.016 divided by (No. 4 + 273.16 C.)
21. 1.65 Gram weight of CaCO3: 100 x No. 20
22. 1.15 Gram weight of Ca(OH)2: No. 19 – No. 21
23. .0156 Mols. of Ca(OH)2: No. 22 divided by 74
24. 2.37 Gram total weight of Ca(OH)2: 74 x (No. 20 + No. 23)
25. 0.72 Gram weight CO2: No. 20 x 44
26. 1.47 Gram weight total possible CO2: 44 x (No. 20 + No. 23)
27. 48.98 %CO2 gain: No. 25 divided by No. 26

Conclusions:

28.	8.68	Gram weight of sample:	No. 15 – No. 25
29.	8.06	Fine parts/volume:	No. 16 divided by No. 28
30.	48.39	Sand parts/volume:	(No. 17 divided by No. 28) x No. 18
31.	30.03	Lime parts/volume:	(No. 24 divided by No. 28) x 1.1

Cement (if present)

32.		Portland cement parts/volume:	(No. 16 divided by No. 28) x 0.78
33.		Natural cement parts/volume:	(No. 16 divided by No. 28) x 0.86
34.		Lime with cement parts/volume:	(No. 16 x o.2) divided by No. 28 x 1.1

Test No. 2 – Sand Sieve Analysis

Sieve	Sieve w/ sand weight	Sieve weight	Sand weight	Sand ratio
No. 10	106.8	106.8	0.0	0.00
No. 20	106.6	106.4	0.2	3.92
No. 30	99.6	99.3	0.3	5.88
No. 40	101.6	100.7	0.9	17.65
No. 50	96.4	93.2	2.2	43.14
Base	72.7	71.2	1.5	29.41

Lighthouse

Sample 37	**Munsell**
White	N 9.5/
White	5Y 9/1
White	5Y 9/1
White	5Y 9/1
White	5Y 9/1
White	5Y 9/1
Orange-red	10R 5/8
Charcoal	N 2.0/

Sample 37 was removed from the interior of the lighthouse. The top layer was stark white, but the other white layers had yellowed as is typical with oil paint. The orange-red layer is a typical color for red lead prime paint used for metal. It is strikingly bright and intense. The charcoal colored layer may be a factory-applied prime finish for metal.

Chequamegon Point Light

Sample 38	**Munsell**
White	N 9.5/
White	5Y 9/1
Cream	2.5Y 8/4
Cream	2.5Y 8/4
Gray	N 5.75/
Gray	N 5.75/

Sample 38 was from the Chequamegon Point light. It consisted of a long piece of aged wood with weathered paint on its surface. The pair of upper white layers readily detached from the cream layer beneath them as did the cream layers from the gray layer beneath them. All told there were six layers of paint on the surface of the wood.

A number of conclusions can be drawn from the analysis, as follow:

1. There was a low degree of consistency between the samples, making it difficult to draw any firm conclusions.

2. A number of samples had so few layers that one of the following conclusions can be reached:

    a. The building was relatively recent in construction as appears to be the case with the triplex. That fact, coupled with a relatively short period of occupancy would naturally leave relatively few paint layers.

    b. The oldest layers had either weathered away over time, which is probable with exterior paint.

    c. They may have been stripped.

    d. The element itself had been replaced.

    e. Other coverings such as wallpaper may have preceded the paint and were removed prior to painting. Wallpaper was a popular covering, especially for damaged plaster.

3. Whitewash was apparent used on several surfaces of the triplex interior as their probable original finish.

4. As can be seen with many of the mortar sample discussions no relative ratios of sand to Portland cement or sand to Portland cement and lime has been stated. The acid reduction method which was used is better than other methods for determining lime to sand ratios. Hence, they were provided for those samples composed of sand and lime. For samples containing Portland cement, the best this form of testing can do is to indicate the presence of Portland cement and the sand itself.

    The primary goal in repointing is to achieve a compatible mortar. This can be done for lime and sand samples that were analyzed. It can also be done for Portland cement samples with a bit of trial and error. If the mortar is very hard then a higher ratio of Portland cement to sand will work. One must take into consideration any deterioration of the masonry as a result of the mortar. If this has been the case it may be advisable to use a softer mortar for repointing.

    The other primary mode of mortar analysis is spectrographic testing. Unfortunately, it also cannot accurately determine exact ratios of Portland cement to sand and/or to lime.

    The secondary goal is to match the appearance of the mortar, which depends to a very large extent on the sand. This is where acid reduction testing shines. It provides and exact calculation of the sand grain sizes as well as a sample of the sand for matching of color. If the sand is carefully matched then the appearance will be successful. This is especially critical in partial repointing and patching.

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