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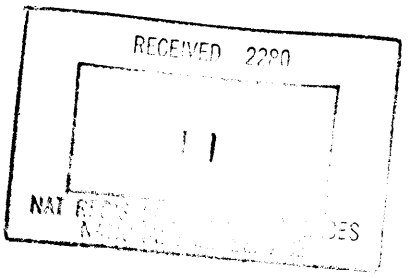

United States Department of Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in *How to Complete the National Register of Historic Places Registration Form* (National Register Bulletin 16A). Complete each item by marking "x" in the appropriate box or by entering the information requested. If an item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions. Place additional entries and narrative items on continuation sheets (NPS Form 10-900A). Use a typewriter, word processor, or computer, to complete all items.

1. Name of Property

historic name Bullhead Point Historical and Archaeological District

other names/site number Shipwrecks: *Empire State*, DR0224; *Ida Corning*, DR0195; *Oak Leaf*, DR0217

2. Location

street & number Off of North Duluth Avenue N/A **not for publication**
city or town Sturgeon Bay N/A **vicinity**
state Wisconsin **code** WI **county** Door **code** 029 **zip code** 54235

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended, I hereby certify that this X nomination _ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property X meets _ does not meet the National Register criteria. I recommend that this property be considered significant _ nationally _ statewide X locally. (_ See continuation sheet for additional comments.)

Alicia L. Goehring — February 5, 2003
Signature of certifying official/Title — Date

State or Federal agency and bureau

In my opinion, the property _ meets _ does not meet the National Register criteria.
(_ See continuation sheet for additional comments.)

Signature of commenting official/Title — Date

State or Federal agency and bureau

Bullhead Point Historical and Archaeological District	Door County	Wisconsin
Name of Property	County and State	

4. National Park Service Certification

I hereby certify that the property is:

✓ entered in the National Register.
___ See continuation sheet.
__ determined eligible for the National Register.
___ See continuation sheet.
__ determined not eligible for the National Register.
___ See continuation sheet.
__ removed from the National Register.
__ other, (explain:)

Edson N. Beall — 3/26/03

Signature of the Keeper — Date of Action

5. Classification

Ownership of Property (check as many boxes as as apply)

	private
X	public-local
	public-State
	public-Federal

Category of Property (Check only one box)

	building(s)
X	district
	structure
	site
	object

Number of Resources within Property (Do not include previously listed resources in the count)

contributing	noncontributing	
		buildings
3		sites
		structures
		objects
3		total

Name of related multiple property listing:
(Enter "N/A" if property not part of a multiple property listing.
Great Lakes Shipwrecks of Wisconsin

Number of contributing resources is previously listed in the National Register
0

6. Function or Use

Historic Functions (Enter categories from instructions)	**Current Functions** (Enter categories from instructions)
Transportation/water-related	Landscape/underwater

7. Description

Architectural Classification (Enter categories from instructions)	**Materials** (Enter categories from instructions)	
N/A	Foundation	N/A
	walls	N/A
	roof	N/A
	other	N/A

Narrative Description

(Describe the historic and current condition of the property on one or more continuation sheets.)

Site Description

Abandoned during the first quarter of twentieth century at Sturgeon Bay, Wisconsin's Bullhead Point, the vessels *Empire State, Ida Corning,* and *Oak Leaf* ended their varied careers as converted stone barges in the employ of the Sturgeon Bay Stone Company. The three shipwrecks lay parallel to one another in 0-12 feet of water (Figs. 1-2), with the centerboard trunks, frame timbers, and bow assemblies of two vessels rising above the water's surface and easily discernable from shore. Both the *Empire State* and *Ida Corning* are resting partially onshore. Any small portable artifacts have long been removed, though bricks, stone, iron fasteners, and upper structural components can still be found within the remaining hulls. Both the lower hull portions of *Ida Corning* and *Oak Leaf* are significantly intact. The vessels are all covered with a substantial layer of zebra mussels.

Clearly visible from shore, the Bullhead Point historic and archaeological district is an excellent locale for public interpretation of the area's historic stone industry and associated vessels. The site is equally interesting, informative, and accessible to divers, snorkelers, boaters, and pedestrians. In Spring 2003 the city of Sturgeon Bay will designate Bullhead Point a "shipwreck park," with the addition of benches, a Wisconsin Historical Society (WHS) sponsored historical marker, and improved landscaping.

History of Investigations

In fall 1999, a team of graduate students from East Carolina University's (ECU) Program in Maritime Studies, under the direction of Dr. Bradley Rodgers and in collaboration with the WHS, conducted an archaeological survey of the three shipwrecks at Bullhead Point. The project was a non-intrusive Phase II survey, and underwater archaeologists documented the site without excavation or artifact retrieval. Diagnostic artifacts and construction features that indicated the site's age or cultural delineation were examined, sketched, and left in place. The project generated separate maps for each shipwreck and as well as an overall site plan incorporating the point (Figs. 2-5). In 2002, underwater archaeologists from the WHS and volunteers from the Wisconsin Underwater Archaeological Association returned to the site and continued documentation with underwater photographs and video.

Site Description

The Bullhead Point historic and archaeological district consists of three features: the shipwrecks *Empire State, Ida Corning,* and *Oak Leaf.* Although the point itself is not included in the resource count, the point's eastern and southern shorelines constitute a portion of the district's boundaries. Located on the west side of Surgeon Bay, Bullhead Point proper is a large rock outcropping piled on an older rock crib pier structure, approximately 380 feet in length by 200 feet at its greatest width. The

wharf's construction is consistent with a crib pier style, filled in and enlarged over time with the addition of a great deal of crushed and large sized quarried stone (rip rap). Used by the Sturgeon Bay Stone Company at the turn of the twentieth century to load stone carrying vessels, the point's cul-de-sac shape indicates that wagons or mining cars were intended to off-load and turn around without interfering with newly arriving loads. The outcropping stands approximately five to eight feet above the waterline, and would easily have carried the horse drawn mining cars and rail lines reportedly installed on it to load limestone into waiting barges (Rowe 1979:11); a small gauge rail is visible protruding from the point's northeastern bank. The point now employs a gravel roadway and cul-de-sac turn around for visitors, which will be enhanced as described in the summary portion of this section.

Empire State

Perpendicular to the long axis of Bullhead Point are the remains of the propeller driven steamer *Empire State*. The hull is large for a mid nineteenth-century wooden ship at 212 feet in length, with a beam of 34.5 feet (Fig 3).

Partially sheathed in iron, the vessel's wooden hull is constructed with a complex system of integrated iron strapping for longitudinal reinforcement. The *Empire State's* starboard side is nearly on shore at water level and the hold is buried under a considerable pile of stone. The weight of this stone has distorted the ship from its original sleek shape and threatens to break off the port side. The bow is listing to port 10 to 15 degrees and the entire wreck has twisted under the stress of its stone load. Rising approximately one foot above the water's surface, the stempost is still sheathed with a massive iron shoe for protection from ice, as was the custom for many vessels on the lakes. The vessel is heavily constructed with frames considerably heavier than those of the other two Bullhead Point vessels. Notably, frame sets are tripled and quadrupled toward the after part of the ship to support the boilers and engines, which were removed during the vessel's conversion to a stone barge. Although the propeller and outboard shaft were also removed as part of the vessel's conversion, much of the inboard portion of the shaft remains in place.

The *Empire State's* port side and bow rise off the bottom nearly to the surface in some 10 to 12 feet of water, and the steamer's starboard side is embedded in the point's eastern shoreline. Consequently, it appears that the old steamer was sunk in order to extend the loading dock and present a new deep face for the wharf. Ships with a 12-foot draft could easily load off the *Empire State*'s port side.

Ida Corning

The remains of the *Ida Corning* represent a two-masted centerboard sailing vessel approximately 160 feet in length with a 30.5-foot beam (Fig 4). The *Ida Corning's* historically documented dimensions are 168 feet in length and 31.3 feet in beam, though the slight difference between historical and

archaeological measurements is easily reconciled by the fact that wooden ships are notorious for changing shape over time. This is particularly true when a good deal of the vessel's supporting upper structure has been removed. In other words, wooden wrecks will eventually take the shape of the bottom where they lay, and if the bottom undulates so will the wreck.

One dramatic piece of archaeological evidence confirming the identity of the *Ida Corning* is the presence of an iron hogging strap, an internal frame used in wooden ships to support the vessels against sagging at the bow and stern over time (Fig. 4, Photo. 5). This support strap originally fastened to the bilge ceiling and arched from stem to stern inside the hold both on the port and starboard side. The strap was reportedly removed from the vessel *George Presley* after that vessel sank in 1905, and later fitted in the *Ida Corning* when it was converted for stone hauling (Rowe 1979:15).

Archaeological evidence suggests that internal (and external) hogging arches were usually, though not exclusively, reserved for shallow draft steam vessels with high length to beam ratios such as those involved in Great Lakes bulk cargo trade. In light of hogging and sagging, an internal truss would be advantageous for any shallow draft hull seeing extended use carrying heavy cargo. Nevertheless, it remains a fairly unexpected sight on a typical sailing vessel, and is a notable archaeological illustration of stone barge conversion adaptation.

The *Ida Corning* possesses two mast steps and accompanying chain plates on the hull for a foremast and a mizzen. There is no indication of a main mast step or its associated chain plates. This is significant, as it indicates that the vessel was two masted with a Grand Haven style rig, typical of a purpose-built schooner-barge or barge conversion of the later part of the nineteenth century. Built specifically as a schooner-barge for the lumber trade, the *Ida Corning's* Grand Haven style rig resulted in a vessel that was a poor sailor and best suited to towing.

Although the centerboard is missing, it was originally 26 feet in length as is evidenced by the centerboard trunk, which is still intact. It is not braced from the sides of the vessel as it would be if the hold were 13 feet or deeper (Barkhausen 1990:24). The centerboard is offset to the vessel's port side and does not pass directly through the keel as does the *Oak Leaf's* centerboard. This is indeed unusual, as "through the keel" centerboards were the norm after 1856 and the *Ida Corning* was built in 1881 (Barkhausen 1990:14).

Internally, the *Ida Corning* is more heavily constructed than the former schooner *Oak Leaf*, located beside her, bearing testimony to it original construction as a schooner-barge. The vessel's framing is comprised of double frame sets placed on 20-inch centers. Futtocks are butt scarfed and the keelson and single rider keelson are diagonal lock scarfed and fastened with 1 inch iron drift pins.

The vessel's bilge ceiling is fastened with countersunk nails while the rest of the vessel is fastened with nails over roves or compression washers. The smooth hold floor created by the countersunk nails would facilitate unloading of bulk cargoes with square-nosed shovels. As is common with bulk carriers of this time period the ceiling planks are twice as thick as the outer hull planking at four inches to two. This indicates that the hold was bearing very heavy service and the cargo itself, stone in this case, created a substantial amount of more wear on the inner hull.

Oak Leaf

The remains of the *Oak Leaf* represent a centerboard vessel measuring approximately 162 feet in length and least 29 feet in beam (Fig 5). Like the purpose built schooner barge *Ida Corning,* the converted *Ida Corning's* mast steps and chain plates indicate a similar Grand Haven Style configuration. There is no other archaeological evidence for rigging of any sort, a further indication that the vessel last served as a stone barge.

Although the top of the centerboard is canted a few inches from exact center, it does go through the keel indicating it was built after the insurance underwriter regulation changes of 1856 (Barkhausen 1990:14). No supports hold the centerboard trunk to the port and starboard sides of the ship, consequently the vessel likely had less than a 13-foot depth of hold. The centerboard trunk is 24 feet long, relatively short for the overall length of the hull. This corroborates historical documentation indicating that the *Oak Leaf's* original length of 129.9 feet was substantially increased in 1891 (Great Lakes Marine Collection, MPL).

Typical of Great Lakes schooner construction in the late nineteenth century, the vessel's framing is comprised of double frame sets placed on 24-inch centers, with forward frame sets slightly larger than their aft partners. Individual frame pieces, or futtocks, are butt scarfed and fastened with iron pins. The keelson is supported down most of its length with a single rider sided at 9 inches and molded at 8.5 inches. There are no sister keelsons. An interesting method of longitudinal strengthening is, however, readily apparent.

Iron bracing runs along the keelson, counteracting the weight of the heavy cargo that often compromised the vessel's longitudinal strength. On the keelson's starboard side, a 1.3-foot wide by ¾ inch thick iron brace runs from just forward of the foremast to a few feet aft of the mizzenmast. The bracing is reinforced in two places with 5.10-foot lengths of overlapping pieces of identical width to the main brace. Each of these overlapping reinforcements is secured to the longer, primary reinforcing brace with 1.5-inch rivets. It appears that the primary brace possesses a slight, gradual arch, adding further to its strengthening capacity. It is unclear whether this longitudinal bracing was part of the

vessel's original construction, although one would speculate that it was added during the vessel's conversion to a stone barge.

The *Oak Leaf* has virtually no deadrise or roundness to its hull and a very sharp turn of the bilge. Again, the vessel likely had less than 13 feet for depth of hold. It would have been virtually rectangular in full cross section. The hull was constructed to sacrifice sailing qualities for cargo capacity and a shallow draft, qualities that are generic to Great Lakes ships of the later half of the nineteenth century.

Like the *Ida Corning*, the bilge ceiling to the turn of the bilge is fastened with countersunk nails. Again, this feature would make it easier to unload bulk cargo by hand as there would be no nail heads to interfere with the typical square nosed shovel used to unload the bottoms of these ships. The remainder of the outer hull planking and ceiling planking is fastened with nails over compression washers (or roves). The outer hull planking is 2 inches thick while the ceiling planking is 4 inches thick. The thicker ceiling planking suggests that the interior of the ship was expected to see rather rough treatment, another indicator that the vessel was intended to carry bulk cargo.

Vessel Construction and Histories

Empire State

The *Empire State* (U.S. Registry #7229) was launched on 5 April 1862, by the Buffalo firm of Mason and Bidwell. Built as a "propeller," a term that distinguished her from contemporary paddle wheeled steamers, the passenger freight steamer carried passengers above decks and freight below. The vessel was reportedly a popular passenger steamer, transporting many immigrants and prominent people westward (Fredrickson 1963:24). The vessel's dimensions were 212 feet in length, 32.7 feet in beam, and 12.2 feet in depth of hold. This figures in gross tons to 1116.53 with a net tonnage of 962.8 (Historical Data Form for *Empire State*, Wisconsin Historical Society).

Originally outfitted with a single cylinder steam engine, the *Empire State* plied the Lakes for several years before being selected as a candidate for testing a newly designed, two-cylinder power plant. In 1867 and 1868, Horatio Perry and John Lay used the *Empire State* to demonstrate the efficiency of a new steam engine design recently patented by the pair; an engine in which "... the saving of fuel was the only point sought to be obtained" (C. Patrick Labadie Collection). The detailed results of the trials provide an extraordinary glimpse into the steamer's conversion from a single cylinder steam engine to a compound (two-cylinder) unit.

The first trial, conducted in December of 1867, indicated that the *Empire State* then employed a single cylinder, low-pressure direct acting vertical steam engine. These were fairly inefficient engines as the steam ejected from the cylinder was not used to expand another lower pressure cylinder, as it was on a compound engine; it was simply ejected, similar to a locomotive type engine. The *Empire State's* power plant possessed a single 44-inch diameter piston that traveled a 39-inch stroke. During the trial the engine ran for 24 consecutive hours, at an average speed of 63 revolutions per minute with 50 pounds of steam pressure. The engine ultimately made 99,399 revolutions and consumed over 28 cords of wood (C. Patrick Labadie Collection). It appears likely that this was the vessel's original engine, since at the time of the trial the vessel was only five years old and any subsequent engine installation would likely have taken advantage of developing compound engine technology.

The second trial, in February of 1868, found the *Empire State* fitted with a Perry and Lay direct acting combined cylinder engine. A decided improvement over the single cylinder power plant, the compound engine employed two cylinders in order to use steam pressure more efficiently. Steam from the boiler was first introduced to a small diameter, high-pressure cylinder, and then to a larger diameter, low-pressure cylinder. Thus, the low-pressure piston utilized residual steam that would normally have been exhausted out of a single cylinder engine. The *Empire State's* new engine utilized a high-pressure piston that was 25 inches in diameter and a low-pressure piston of 54 inches in diameter. Each piston traveled a 39-inch stroke.

The parameters of the first trial were adhered to exactly in the second, and a comparison of results between the two trials revealed that the compound engine consumed 21 percent less fuel than its single cylinder predecessor. This represented a savings so substantial that four steamers were reportedly to be fitted out with the combined cylinder engine in time for the coming season. Here, the interplay between marine innovation and a ship owner's profit margin is well illustrated, for a more economical engine necessarily translated into larger profits. In this light, the *Empire State's* role in proving the efficiency of Perry and Lay's compound engine cannot be overstated.

The *Empire State's* early ownership changes and career reflects a historical significance not immediately apparent when considering the vessel solely as a stone barge. As with her sister ships at Bullhead Point, it is this prior history that adds exponentially to the district's interpretation. In 1864, the *Register of the Ships of the Lakes and River St. Lawrence* indicated the steamer was owned by the Western Transit Company (Thomas 1864:33). At this time, two years after her construction, the vessel was valued at $50,000, and made Buffalo its homeport (Thomas 1864:33). Thirty-three years later the *Empire State* was still owned by the Western Transit Company, which by then operated an impressive fleet of sixteen steamers (Blue Book of American Shipping 1897:27, 58).

In late April 1900, M.J. McCormick chartered the *Empire State* and her sister ship *Badger State* for the Buffalo-Green Bay Line (DCA 28 April 1900). The passenger steamers were to run the entire season "...with a guarantee of a certain amount of freight for each trip" (DCA 28 April 1900). Over the ensuing five months the *Empire State* is variously reported running for the Lackawana-Green Bay Line and Lackawana-Green Bay-Western Line. During this period the *Empire State* ran regularly between Buffalo, several ports in Green Bay, and also made stops in Menominee, Michigan.

On 27 June 1900, the *Empires State*'s most significant navigational accident occurred when the vessel ran aground in a thick fog near Sugar Creek, south of Little Sturgeon Bay. Carrying oats from Green Bay and 13 passengers for the Lackawanna, Green Bay & Western Line, the ship fetched up on the east shore of Green Bay while attempting to make Menominee on the west side of the bay. It took the tugs *George Nelson*, *Sydney T. Smith*, *Gladys Nau*, and *Torrent* three days to free the vessel, while local farmers constructed makeshift rafts and salvaged the 5,000 to 8,000 pounds of oats jettisoned to lighten the vessel (DCA 30 June 1900, DCA 7 July 1900). The *Empire State* suffered most of its damage while being pulled free of the shoal, including a broken rudder post, windlass, and two pall-posts. An embarrassed Captain Frank Powell, who left the ship in command of his first officer just before it ran aground, eventually nursed the steamer into Sturgeon Bay shipyard of Riebolt and Wolter for repairs (DCA 7 July 1900).

Trouble struck again only a month later, when the vessel's firemen, deckhands, and waiters "...struck on account of the food supplied being insufficient in amount and of inferior quality (DCA 25 August 1900). Incidentally, the strike occurred while the vessel was undergoing repairs to its "kettles" in the port of Escanaba, revealing that by 1900 the *Empire State* perhaps possessed two boilers.

Within a year of the strike, the Door County Advocate reported that the Barry Brothers Transportation Company purchased the *Empire State* and *Badger State* from Cleveland's Northern Transit Company for $75,000 (DCA 29 June 1901, DCA 13 July 1901). In the opinion of "well-posted local marine men", however, the sum was more likely $30,000 (DCA 13 July 1901). After extensive overhauling in Manitowoc, the steamers were put into service between Milwaukee and Chicago, though the Barry brothers briefly considered putting the steamers into service between Detroit and Cleveland (DCA 11 January 1902). That the Barry brothers contemplated the Detroit to Cleveland route at all reveals an especially ambitious inclination, for that coveted route had been monopolized by the Detroit and Cleveland Navigation Company for a third of a century (DCA 18 January 1902). Undaunted, Captain Thomas Barry piped "...you see, we are no school boys when it comes to fighting in the vessel business...we are not going there to sell out, but to stay" (DCA 18 January 1902).

Nonetheless, by the spring of 1902 both the *Empire State* and *Badger State* made their first appearance

in Sturgeon Bay, and it was reported that this was the beginning of tri-weekly visits, apparently ending the possibility of the steamers being transferred to the Detroit-Cleveland route (DCA 17 May 1902). The ships remained on Lake Michigan plying regular routes, though their routine was broken occasionally, such as when *Empire State* transported the Morris and Berger Carnival to Sturgeon Bay and collected passengers from various ports on the bay to visit the show (SHSW Historical Data Form). On another notable occasion, the *Empire State* found herself imprisoned in ice for an entire week with 25 passengers on board. Although two impatient travelers eventually walked ashore, the remainder stayed on board and idled their time "...by reading, playing cards, and telling stories" (DCA 20 February 1904). Both vessels were apparently well taken care of, for after 42 years of service for various lines, the steamers still carried an A2 insurance rating (Inland Lloyds Vessel Register 1904:33, DCA 16 August 1902).

In a spate of ownership changes, the *Empire State* was sold "by the United States Marshall" in the October of 1903 to F. H. Riebenack of Alpena, Michigan, who then sold the vessel to John McCoy of Milwaukee, who subsequently transferred the steamer to Mr. Margaret Barry, wife of Peter Barry (DCA 24 October 1903, DCA 21 November 1903, DCA 5 December 1903). The Barry Brothers had the vessel back by January 1904 and entered it into service between the western shore of Lake Michigan and Green Bay, this time competing with the Goodrich Line (DCA 16 January 1904). How the *Empire State* came to be sold by the U. S. Marshall is unclear. By 1905 the vessel was still under Barry ownership running between Milwaukee and Chicago.

Empire State's active career as a steamer came to an end at the Barry Dock in Chicago on Christmas Day in 1906, when fire so sufficiently damaged the ship that repair was not economically viable (Fredrickson 1963:25). Initial reports indicated that the steamer was a total loss and had burned to the water's edge (Evening Wisconsin 26 December 1906). Subsequent, reports, however, estimated the loss to be between $300 and $1,000, with most of the damage confined to the engine room (EW 27 December 1906, EW 4 January 1907). Rather than the fire damage alone, the steamer's advanced age, compounded by the recent fire, probably motivated the Barry Brothers Transportation Company to sell. Nevertheless, once "the finest craft on the lakes", the *Empire State* would soon undertake a less glamorous role, for by the spring of 1908 the vessel was being prepared at Sturgeon Bay for hauling stone (DCA 7 May 1908; DCA 14 May 1908).

Purchased by the Schnorbeck & Bennett Company of Muskegon to transfer stone from the Sturgeon Bay Stone Quarry to Holland, Michigan, part of the steamer's conversion reportedly involved the removal of the propeller and shaft (DCA 16 April 1908; DCA 23 April 1908). In regards to the *Empire State's* seemingly ignoble fate, the Door County Advocate wrote, "This is the beginning of the end of the career of a steamer that was once the pride of the Great Lakes" (DCA 7 May 1908). The

paper also prophetically announced that "The next step will be to sink her and use the hulk for a breakwater or cribbing for a dock..." (DCA 7 May 1908).

By 1910 the Sturgeon Bay Stone Company had purchased the former steamer for $2,500 along with the *Richard Mott* (DCA 9 June 1910; DCA 26 June 1931). Initially, the barge *Empire State* was towed often by the tug *Erma Wheeler*. However, for the remainder of her career she could be seen towed behind the steam barge *I. N. Foster*. Though the hull had a high length to beam ratio, an undesirable attribute for a stone barge, it was deemed worthy of carrying larger sized rock that was less likely to shift in heavy sea conditions. This service probably took a considerable toll on the former steamer, for by 1912 the barge had settled to the bottom near the wharf at Bullhead Point (DCA 18 December 1913). The vessel would be pumped, repaired, and placed into service one more time before being intentionally scuttled and filled with rock in 1916 to extend the end of the Sturgeon Bay Stone Company's wharf (WHS Historical Data Form for *Empire State*).

Fire struck the *Empire State* again in 1929, and although the Sturgeon Bay Fire Department responded to the scene, firefighters could do no more than prevent the spread of sparks (DCA 2 August 1929). Enough of the barge remained, however, that when the *Ida Corning* and *Oak Leaf* were intentionally burned in 1931, the remainder of the *Empire State* was burned to the waterline as well (DCA 26 October 1931).

Ida Corning

Hulls for barge conversions were cheap and easy to come by given the economic obsolescence of most sailing ships at the turn of the 20th century. These economic certainties already held sway when the *Ida Corning* (U. S. Registry 44283) was constructed as a purpose built schooner barge by Thomas Arnold in East Saginaw, Michigan in 1881. Two masts, a fore and a mizzen, gave this 168-foot by 31.3 foot by 10.9 foot vessel the configuration of a Grand Haven Rig. The *Ida Corning*'s dimensions figure to a gross tonnage of 444 and a net tonnage of 422.

Photographs reveal that the vessel carried an after cabin on the main deck and had a forecastle deck forward, which housed the winch and perhaps a steam boiler and donkey engine. The deck cabin and small forecastle deck insured that internal hull space was not wasted on crew quarters or machinery, for more cargo equated to more profit. The cavernous hull could be entirely filled with cargo.

Ida Corning's history clearly reflects turn of the century economics on the Great Lakes. Built to be towed in "consort" with other barges, the vessel was never intended to free sail the lakes. Her cargo hold supplemented the cargo capacity of her escort and provided added flexibility in that she could be

dropped at any port for unloading while the escort continued to a different destination. *Ida Corning* changed ownership several times during her early career but continued in the lumber trade until after the turn of the century (Great Lakes Marine Collection, MPL). By this time, however, the lumber industry was approaching hard times, as much of the lakes region was nearly depleted of timber. Seventy years of laissez-faire government and commercial management severely depleted the once seemingly limitless resource, forcing many lumber companies to divest while others moved west. Consequently, in 1908 the *Ida Corning* was sold to the Sturgeon Bay Stone Company and added to its flotilla of barges.

As a barge, the *Ida Corning* was often found in tow of the steamer *I.N. Foster* delivering stone to various locations on the lakes. The vessel faced the usual problems associated with hauling stone. Bad weather and small leaks were a constant worry for her small crew and winter dry dock and caulking were routine. Although grounding or a collision with another vessel was unusual, the *Ida Corning* ran aground at least once, in November of 1908. In a dense fog seven miles south of the entrance to the Sturgeon Bay Ship Canal, the barge and her escort tug *Duncan City,* struck a shoal in an area known as Clay Banks. Apparently, Captain Fred Johnson of the *Duncan City* failed to take into account the increased speed of the tow since the schooner barge was both empty and under full sail. As the vessels were being pulled from the banks by the tug *Smith* under a Captain Anderson, the *Ida Corning* struck a rock and broke off its shoe and rudder, necessitating a considerable repair.

It is unclear when the vessel was finally laid up, but her position parallel to *Oak Leaf* with the bow close to shore, suggests that she may have been used to extend the wharf sometime before the demise of the Sturgeon Bay Stone Company. In 1931 the well-used vessel was burned to the waterline.

Oak Leaf

The *Oak Leaf* (U.S. Registry 19106) was originally constructed in 1866 by Peck and Kirby in Cleveland, Ohio. The two masted centerboard schooner was built for Captain Henry Kelly, whose fleet routinely traded between Lakes Erie and Michigan. The vessel's original dimensions of 129.9 feet in length by 31.9 feet in beam by 11.2 feet depth of hold calculate to 319 gross tons and 303 net tons, small to average for the time period. The ship was doubtless intended to carry bulk cargo such as grain, corn, lumber, ore, coal, riprap, gravel and crushed stone; commodities in which sail could still compete with rail transportation and the ever more efficient steam ship.

The schooner's original crew of six to eight men was commanded by Capt. Hugh Morrison, a one armed man whose handicap demonstrated the dangers involved in sailing life at the time. Manual labor, essential to the operation of these vessels, was innately dangerous. Maiming from loading, unloading, and sailing accidents were not uncommon, and few lifetime sailors completely escaped the

working man's curse of the nineteenth century.

The schooner rig was ideal for Great Lakes navigation in the nineteenth century, as the few fore and aft sails could be operated by a small crew from the deck of the ship. It was seldom necessary for the crew to climb aloft on a schooner and then only for repairs and maintenance. Traditional square rigged ships needed much larger crews to climb aloft to set and reef the sails. The fore and aft rig was also more maneuverable in the variable winds of the Great Lakes, allowing a schooner to sail much closer and tack into the wind easier than a square rigged ship. This maneuverability, coupled with the schooner's shallow draft, was extremely important when sailing into and out of ports whose harbor mouths were sometimes less than 200 feet and whose bottoms' were often shallow.

The *Oak Leaf* apparently had a routine early life carrying the commodities for which she was designed. As most vessels did in the nineteenth century her ownership changed hands many times. Routine repairs and maintenance occupied many off-seasons and an entirely new deck was installed in 1874 (Board of Lake Underwriters 1874:34).

By 1886 the schooner needed a rebuild and only five years later the vessel was converted to a barge with the addition of 30 feet in length and the removal of her masts (Inland Lloyds 1895; Great Lakes Marine Collection, MPL). This conversion reflected the economic times, as smaller sailing hulls on the Great Lakes found it increasingly difficult to compete in bulk commodities, which were now transported in great quantities by immense steel hulled, steam powered, purpose-built bulk carriers whose cargo capacities eclipsed any wooden carrier. Economy dictated that older wooden sailing vessels be converted to barges. A barge's small crew represented a reduction in overhead and its cargo capacity enhanced that of its comparatively small wooden steamer escort, which were fast becoming obsolete due to the size and economic profitability of steel bulk carriers.

At the time of its conversion the vessel was owned by L. Feltus, of Escanaba, Michigan and likely used in the iron ore trade (Inland Lloyds 1895). By 1899, the barge *Oak Leaf* had been purchased by Capt. James A. Calbick for the Pilsen Lumber Company and continued to carry ore and grain, with the addition now of lumber. The *Oak Leaf's* dimensions had changed a great deal from her schooner days with a new length of 160 feet, a beam of 31.2, and a depth of hold at 11 feet. Consequently, the barge's gross tons increased to 395 and her net tons to 375 (Great Lakes Marine Collection, MPL).

During the winter of 1906, Door County's largest newspaper, the Door County Advocate (DCA), reported that negotiations were underway for the *Oak Leaf's* transfer to the Sturgeon Bay Stone Company (DCA 16 February 1906). To date, this and similar reports represent our best historical source concerning the use and activities of the *Oak Leaf* and her sister ships at Bullhead Point. The

purchase was necessitated by the company's successful bid to furnish 8,123 cords of stone for government harbor work in Michigan (DCA 16 February 1906). The sizable contract was expected to take two years to complete. Providing insight into the stone barge conversion process, the initial report of the *Oak Leaf's* sale indicated that the vessel was in excellent condition and would be ready for the trade "...as soon as she has been provided with shores and the covering boards put on her decks" (DCA 16 February 1906). Moreover, the fact that she was expected to carry 120 cords of stone, approximately 840 tons, gives one an idea of the vessel's cargo capacity.

From the opening of navigation in spring 1906, the movements and activities of the barge and her escort, the steam barge *I.N. Foster*, are reported regularly by the Door County Advocate. At times the *Oak Leaf* was paired with the barge *Ida Corning* on its transport route, but the tow seldom if ever consisted of more than two barges in line. Tugs and barges from other quarries often escorted the *Oak Leaf*, demonstrating that the various quarries cooperated when their loads of stone had to be delivered to the same destination (DCA 17 December 1908). During the early years of operation the Sturgeon Bay Stone Company periodically contracted tugs from local quarries to do its towing.

Incidents on the *Oak Leaf* illustrate the dangerous nature of hauling stone. The barge crews consisted of two or three men who could do little more than man the pumps should leaks or storms threaten their vessel. Searches for leaks in the holds of the barges were a continual activity with emergency caulking reported on several occasions (DCA 30 October 1913). In 1918, the *Oak Leaf* sank at its dock when a leak was left unattended overnight (DCA 27 September 1918). It seems likely that this accident could just have likely occurred with the barge under tow in open water.

Barges and their escorts appear to have spent an inordinate amount of time dodging storms and inclement weather, a reflection of their poor seafaring qualities. On one occasion the *Foster* and *Oak Leaf* survived a three week odyssey, dodging storms, seeking harbors and island lees, and crisscrossing the same bodies of water more than once, all in an attempt to get a simple cargo to Petoskey, Michigan; a day's sail away in good weather (DCA 21 November 1907). On another occasion the *Oak Leaf* rolled so badly on a return trip from Ludington, Michigan that she unshipped her mast and her deck-boiler went over the rail into the lake (DCA 2 September 1909). Indeed, most barges lost on the lakes were victims of shifting cargo that resulted in capsizing (Rowe 1979:20). Perhaps the only reason the *Oak Leaf* survived this particular gale is that her stone cargo had already been delivered. The fact that the barge was fitted with a deck boiler indicates that it perhaps used steam bilge pumps or a donkey engine for lifting cargo. Nonetheless, the vessel and crew's safety depended primarily on the skill and judgement of the escort captains; these captains must have been good, for fatalities seemed rare except for the period between 1903 and 1904 when three Sturgeon Bay barges were lost (Rowe 1979:3).

Occasionally, however, fatalities occurred even when the barge was not in distress. The body of 30-year-old Francis C. Brown, deckhand on the *Oak Leaf*, was recovered in Sturgeon Bay on 27 August 1908, after apparently falling overboard during the barge's outbound journey to the Michigan shore. (DCA 27 August 1908). With only two or three men on board, it was unlikely that anybody would witness a fall overboard. Moreover, should an accident be seen, it would take a great deal of time to signal the tug and more time still to turn a tow around and look for an overboard shipmate.

By 1928 the *Oak Leaf* and her sister barges owned by the Sturgeon Bay Stone Company were laid up at the wharf on Bullhead Point. The Stock Market crash in the fall of 1929 and subsequent depression insured that the vessels would never again carry a load of stone. Their value was placed at $7,000 before they were abandoned. In 1931 the scuttled barges *Oak Leaf*, *Ida Corning*, and *Empire State* were burned to the waterline after being judged recreational hazards (DCA 26 June 1931).

8. Statement of Significance

Applicable National Register Criteria
(Mark "x" in one or more boxes for the criteria qualifying the property for the National Register listing.)

X A Property is associated with events that have made a significant contribution to the broad patterns of our history.

_ B Property is associated with the lives of persons significant in our past.

_ C Property embodies the distinctive characteristics of a type, period, or method of construction

or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

X D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations
(Mark "x" in all the boxes that apply.)

Property is:

_ A owned by a religious institution or used for religious purposes.

_ B removed from its original location.

_ C a birthplace or grave.

_ D a cemetery.

_ E a reconstructed building, object, or structure.

_ F a commemorative property.

_ G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance
(Enter categories from instructions)

Archaeology/Historic-non-aboriginal
Maritime History
Industry

Period of Significance

1862-1931

Significant Dates

N/A

Significant Person
(Complete if Criterion B is marked)

N/A

Cultural Affiliation

Euro-American

Architect/Builder

Mason and Bidwell (*Empire State*)
Thomas Arnold (*Ida Corning*)
Peck and Kirby (*Oak Leaf*)

Narrative Statement of Significance
(Explain the significance of the property on one or more continuation sheets.)

Statement of Significance

Summary
Rising just above the water's surface at Sturgeon Bay, Wisconsin's Bullhead Point, are three tangible reminders of the city's once flourishing limestone industry (Figs. 1-5). Abandoned during the first quarter of twentieth century, the vessels *Empire State, Ida Corning* and *Oak Leaf* ended their varied careers as converted stone barges in the employ of the Sturgeon Bay Stone Company, then the city's second largest stone firm. Prior to conversion, the *Empire State* (constructed in 1862) plied the Great Lakes as a passenger steamer, while the *Ida Corning* (1881) and *Oak Leaf* (1866) operated as a schooner-barge and schooner respectively. Converting aging vessels into stone-barges was a common practice during the peak years of Sturgeon Bay's limestone industry, yet few historical references or sufficiently intact archaeological examples survive.

Evaluated within the context of this specific vessel type, as well as Sturgeon Bay's historically significant stone industry, the Bullhead Point historical and archaeological district is considered eligible for the National Register of Historic Places under Criteria A and D at the local level. The areas of significance under Criteria A are maritime history and industry. The three shipwrecks within the district are unique icons of the forgotten stone industry, inspiring historical consideration of the common laborer, sailor and significance of the city's stone business. Due to its exceptional setting, the Bullhead Point historic district represents an excellent opportunity to engage the public and foster appreciation for this important aspect of Sturgeon Bay's industrial and maritime history. The venue is unmatched for this purpose. Moreover, chronicles of the *Empire State, Ida Corning* and *Oak Leaf*, with their early sailing histories, changes in ownership, conversion, and final careers in the stone trade, offer a picture of stone-barge conversion and the waterborne conveying of stone at the turn of the twentieth century.

With respect to Criteria D, converted stone barges played a significant role in Sturgeon Bay's economic development, and the Bullhead Point shipwrecks are the region's best archaeological examples of this vessel type. Built between 1862 and 1881, enough of each vessel's original design and construction features remain to also inform archaeologists and historians about general trends in Great Lakes schooner, schooner-barge, and Civil War era passenger steamer construction. Although there is multiple property documentation for *Great Lakes Shipwrecks of Wisconsin* (Kreisa and Cooper 1992), this document does not yet include stone barges specifically.

The Sturgeon Bay Stone Industry

Under Criterion A, the Bullhead Point shipwrecks are significant for their association with Sturgeon Bay, Wisconsin's limestone industry, which helped fuel the city's early economy and development. No full measure of Sturgeon Bay's late nineteenth and early twentieth-century industrial and cultural character can be taken without due examination of the city's stone industry. The *Empire State, Ida Corning* and *Oak Leaf* are important reminders of forgotten quarrymen and sailors who mined and loaded seemingly endless quantities of Sturgeon Bay limestone into cavernous stone barge hulls, of local industrial and technological achievement, and an era when stone barges and their accompanying steam tug consorts were commonplace along the city's waterfront.

Today, Sturgeon Bay is a moderate size port city of 10,000 people located half way up the Door Peninsula. Referred to locally as "The Door", the peninsula is a conical outcrop that stretches some 65 miles northeastward into Lake Michigan from the eastern shore of Wisconsin (Fig. 1). The city of Sturgeon Bay is located on a bay of the same name. At its southeastern end, the bay connects to a rift across the peninsula known as the Sturgeon Bay Ship Canal, which for the most part is a natural cut in the peninsula's limestone. In 1878 this rift was extended by completion of the Sturgeon Bay Ship Canal to fully connect the waters of Green Bay to the west, with Lake Michigan on the eastern side of the Door Peninsula (Holand 1917:152). The canal allowed ships to pass through Door County, cutting 100 miles from their journey around the peninsula and enabling them to bypass the treacherous waters at the peninsula's northern tip known as Death's Door.

First settled by whites as a fur trading post in the 1820s, Sturgeon Bay's bountiful stone resources were initially examined by United States Indian Agent Samuel Stambaugh in 1831 (Holand 1917:304-305). From his outpost at Green Bay, Stambaugh authored a report entitled *The Quality and Condition of the Wisconsin Territory*, in which he revealed that Sturgeon Bay had a "commodious harbor...with the best stone available for building purposes" (Stambaugh 1831:410). While touring the region in 1843, Army Lt. Douglas Houghton confirmed Stambaugh's discovery and added that the area's underlying strata of Niagara limestone lay close to the surface, requiring little stripping of the overburden in order to quarry it (Rowe 1979:8).

Stone found in the Sturgeon Bay area possessed unique qualities well suited for its eventual industrial use. The rock making up the Door Peninsula is part of the Niagara Escarpment, an arc of limestone stretching from Illinois, along the east coast of Wisconsin, through northern Michigan and Canada, only to reverse itself and again enter the United States at Niagara Falls in western New York State. The formation consists chiefly of dolomite, a metamorphosed version of limestone that is much harder

than its parent rock but retains many of the limestone's qualities. The Niagara dolomite's hardness, lack of absorbency, crushing strength, and traverse strength made it ideal for the many enormous piers and breakwaters constructed throughout the Great Lakes from the mid-nineteenth through the early twentieth century (Buckley 1898:340-343; Currier 1960:71). Stone for these projects was usually in the form of rubble, or "one man stone" weighing 50-100 pounds each, or larger rip rap stone weighing 2 to 5 tons apiece (Holand 1917:168). A true testament to this stone's hardness is the cataract of Niagara Falls itself, whose great erosive powers, in a geological sense, would have cut through most softer rock in very little time.

Equally important, Sturgeon Bay's unique geography allowed for easy access to its considerable stone resources. Limestone made up the sheer bluffs on both sides of the harbor allowing for the commodity's easy transport via ship and barge, and the naturally protected harbor allowed vessels to load in poor weather. Indeed, according to a 1911 government report on the stone industry, "The proximity of some of the quarries in eastern Wisconsin to water transportation on Lake Michigan has greatly aided their rapid development" (Burchard 1912:68). Thus, Sturgeon Bay was twice blessed with a good commercial product and an ideal natural harbor.

Stone became Door County's first export when the federal government began a quarrying operation in Sturgeon Bay in 1834. Sturgeon Bay stone was used to build the breakwater at Michigan City, and it has been suggested that prior to 1917, nearly every harbor on Lake Michigan was built in part with Door County stone (Holand 1917:166). The first private stone business in Sturgeon Bay was started by Robert Laurie and his son John in 1880. In its first year of operation the firm shipped about 900 cords of stone valued at $2,700, and by 1883 was shipping about 4,300 cords annually (Stanley Green File, Door County Historical Society). The senior Laurie had some experience in the trade. In 1868, he had quarried his own stone and operated a lime kiln (presumably to make plaster) in order to build Sturgeon Bay's first stone house. Discovering that there was an emerging local market for lime, Laurie expanded the business, and in 1870 burned and sold about 1,000 kegs of lime (Stanley Green File, DCHS).

In 1885 two more quarries opened in Sturgeon Bay, reflecting the local demand for stone basements, and more increasingly, stone buildings. By 1900 there were four quarries operating in the area, including the Laurie Stone Company, Hagen Quarry, Leathem and Smith Quarry, and the Termensen and Jensen Company, also known as the Washington Stone Company (Day 1894:542; Buckley 1898:340). In total, eight quarry sites were opened and closed periodically in Sturgeon Bay from 1880 through 1900 (Stanley Green File, DCHS). Significantly, in 1900, the output of stone from all of the city's quarries combined reached a sizable aggregate of 24,900 cords, or 174,300 tons (DCA 8

December 1900). An approximate turn of the century ranking of the largest firms can be reconciled by the following shipping quantities in 1900: Leathem and Smith 8,500 cords; Termansen and Jensen, 6,000 cords; Graef and Nebel, 4,300 cords; and Green and Hagen, 3,600 cords (DCA 8 December 1900).

The several quarries spread throughout Sturgeon Bay at the turn of the century reflected Wisconsin's national standing as a top producer of limestone in the United States. There were 60 quarries in the state in 1880, and by 1890 the number increased to 119. A full two-thirds of statewide quarries were engaged in limestone production (Dirst 1994:6). In 1890, Wisconsin ranked eighth among the country's 41 limestone producing states, generating about one-twentieth of the industry's $19,095,179 in revenue (Day 1895:68). Four years later Wisconsin ranked seventh, moving the federal government to state that "The limestone industry in Wisconsin has become one of considerable importance" (Day 1895:83). In 1902, the state again ranked seventh among the 41 limestone producing states, generating $1,351,058 of the $30,231,003 total revenue (United States Geological Survey 1903:9). This represented a significant rise in the value of Wisconsin limestone, for three years earlier statewide revenue for the commodity totaled only $826,486 (USGS 1903:55). It was amidst this surge in stone production and related profits that the Sturgeon Bay Stone Company was formed.

In 1903, the Termensen and Jensen quarry merged with Louis Nebel and John Graf's stone business to form the Sturgeon Bay Stone Company. All of the men had experience in the Sturgeon Bay stone industry and their merger reflects how closely associated the city's quarries often were. Soren Termensen and Lars Jensen had both worked for the Brewster Quarry, which closed about 1893. Five years later, the pair opened the Termensen and Jensen quarry after leasing a portion of shoreline owned by the Washington Ice Company, near the head of Sturgeon Bay. A foreman for Sturgeon Bay's Hagen quarry for almost twenty years, Louis Nebel partnered with John Graf in 1900 and began quarrying stone just north of the former Hagen and English quarry site.

The four new partners of the Sturgeon Bay Stone Company assumed the corporation's principal positions: Louis P. Nebel, President; John Graef, Vice-President and Treasurer; Soren Termansen, Secretary; and Lars H. Jensen, General Manager. Together with the Green, Laurie, and Smith quarries, the Sturgeon Bay Stone Company represented the "Big Four" of Sturgeon Bay's stone industry during the first years of the 20th century (Stanley Green File, DCHS). When the firm opened for business in 1903 three quarry sites were under its direction, two on the west side of Sturgeon Bay and one on the east side near the mouth of the bay (DCA 17 January 1903). Before the opening of navigation in spring 1903 the company had already acquired orders for 2,000 cords of stone, all of which would be hauled by the company's tug *Sydney Smith* and three barges. In early July, the Sturgeon Bay Stone Company

secured a contract to furnish 2,200 cords of stone for harbor work at Ludington, Michigan. Nearly instantaneously, the four partners had created the second largest stone firm in the city.

An unfortunate spate of tow barge losses, and the realization that the aging steam tug *Sydney Smith* was becoming too expensive to maintain and operate, induced the Sturgeon Bay Stone Company to charter the tug *Duncan City* in 1904. This prompted the threat of a strike, providing an interesting glimpse into the safety, economics and politics associated with the stone carrying trade. The Sturgeon Bay Stone Company wanted the hired tug to run with only a single crew, a condition that the Licensed Tugmen's Protective Association (LTPA) would permit only on trips less than 35 miles (DCA 16 July 1904). Since the company hired the tug to run from Sturgeon Bay to Manitowoc and Menominee, its owners argued that because the trip could be made in less than eight hours and was less than 60 miles long, an exception should be made. Rather than establish a precedent, the LTPA president refused the company's request. Using a non-union crew was briefly considered as an alternative, though ultimately the firm chose to abide by union guidelines (DCA 16 July 1904).

Misfortune plagued the Sturgeon Bay Stone Company through the fall of 1904 when the 360-ton barge *Alert* and a small scow were lost en route to Petosky, Michigan. After taking nearly six feet of water in its hold, the *Alert* succumbed to heavy weather shortly after its two crew were taken aboard the consort steamer *Duncan City* (DCA 24 September 1904). Notably, the *Alert* was valued at $800 yet uninsured, revealing that the company chose saving money on the premium over a possible insurance settlement.

The firm continued the practice of chartering steamers for hauling its stone and towing barges through 1905, and eventually sold the aging tug *Sydney Smith* for $7,125 in the spring of that year (DCA 8 April 1905). However, having arrived at the conclusion that a company owned steam barge would increase profits, the Sturgeon Bay Stone Company shortly thereafter purchased the steamer *I. N. Foster* for a reported $10,000 (DCA 6 May 1905). The decision was a sound one, for over the next dozen years contracts remained steady for the company and serious mishaps upon the lakes were few.

In 1906 two contracts for nearly 9,000 cords of stone prompted the purchase of the barge *Oak Leaf.* Two years later the Sturgeon Bay Stone Company was awarded a 20,000 cord contract for the breakwater at Ludington, Michigan, a two year project that prompted the purchase of the *Ida Corning.* The apparently notable acquisition of the later vessel moved the Door County Advocate to declare: "The company will have one of the best fleets of the kind in this region" (DCA 12 March 1908). The former passenger steamer *Empire State* was added to the company's fleet in 1910. These are the vessels presently lying within the Bullhead Point historic district; histories of each are detailed in Section 7.

Crib stone continued to be a mainstay of the business through much of its operation; 7,725 cords of this type were shipped in 1907 along with 911 cords of building stone (47,498 tons aggregate) (DCA 24 December 1908). By 1910 the Sturgeon Bay Stone Company operated a fleet of seven vessels, all of which were busily engaged in fulfilling the large Ludington breakwater contract. The fleet delivered an impressive 7,400 tons of stone per week for the project, revealing much about the vast quantities of stone quarried by the company during this period. (DCA 30 June 1910). An appreciation for the size of the project can be gained by the fact that the contractors, Schnorbeck and Greiling, used the stone as fast as it was delivered and reportedly could have used more.

During the winter of 1912 the Sturgeon Bay Stone Company consolidated with the Sturgeon Bay Transportation Company and continued to operate under the former name (DCA 25 January 1912). That fall the Door County Advocate reported that the prospects for the stone industry were good, and the Sturgeon Bay Stone Company in particular was expected to do well with the recent award of a 3,000 ton contract for rip rap stone at Muskegon. By 1915, however, the fleet was placed in ordinary much earlier than usual, a circumstance that the Advocate attributed to "...the failure of the government to let the [harbor] contracts, [though] the money has been appropriated for plenty of harbor work to keep things moving" (DCA 19 August 1915).

Large government contracts on the lakes demand large quantities of crushed stone and odd sized riprap for building piers and breakwaters in such places as Racine, Milwaukee, Manitowoc, Muskegon, Michigan City, South Haven, Grand Haven, Frankfort, Traverse City, Kenosha, Ecanaba, Manistee, Menominee, Oconto and others (Buckley 1898:344). It appears that government contracts constituted much of the Sturgeon Bay Stone Company's business, for in 1919 the lack of a government contract forced company manager Soren Termansen to report that it was the first time in fifteen years that the quarry remained idle (DCA 16 May 1919). By 1920, only two quarries were operating citywide and only one survived the Great Depression (Stone Industry File, WHS).

Nonetheless, during its peak years of operation, the Sturgeon Bay Stone Company was consistently the second leading producer of limestone in Sturgeon Bay, and, depending on the timing of large contracts, was at times the city's largest stone producer. The *Empire State*, *Ida Corning* and *Oak Leaf* are consequently distinguished in their association with one of Sturgeon Bay's largest stone firms.

Foundation of the Stone Industry: The Common Laborer

The stone industry was inherently labor intensive, from a quarry's first ground breaking to the loading, transportation, and unloading of stone vessels. Unfortunately, despite the stone industry's clear

dependency on the common laborer, Sturgeon Bay's quarrymen and sailors are largely forgotten in the historical record. The shipwrecks at Bullhead Point are ideal for encouraging public consideration of this important aspect of "history from below."

Until the last quarter of the nineteenth century stone was quarried in shallow depressions know as open pits. Overburden above the horizontal rock shelf was removed using a simple pick and shovel, and later with a hydraulic or dragline scraper. The shelf was then undercut and a three man crew drilled the holes for blasting, one man sitting on a stool and holding a drill while the other two struck it with eight pound hammers (Stanley Green File, DCHS). The holes were approximately 12 to 18 inches deep and one and a half inches in diameter and held a black powder charge, ignited by a simple match lit fuse (Stanley Green File, DCHS). The detonations sheared off the rock face that was then cut into usable sized blocks with various hand tools (Bowles 1934:16-17; Buckley 1898:12). Early twentieth-century developments such as pneumatic or steam drills combined with dynamite to add greater efficiency and accuracy to stone removal. Technological advancement eventually emerged in the form of a stone crushing machine at the Smith quarry in 1904. The 150-horsepower crusher was capable of macadamizing 600 yards of stone a day, a clear improvement over the single yard a day that a manual laborer could produce. Nonetheless, quarrying and transporting dimension stone and rip rap, the types carried by the *Empire State, Ida Corning,* and *Oak Leaf*, remained decidedly unmechanized.

In May of 1900, the Door County Advocate reported that the five stone quarries in Sturgeon Bay "...will employ several hundred men during the coming season" (DCA 19 May 1900). By 1908 the Sturgeon Bay Stone Company alone employed over 100 workers (DCA 18 February1908). Many of these workers were housed in company owned "dormitories." In one instance, laborers brought in from Menominee were to be housed in a large tent with food supplied "...by the boarding house" (DCA 11 July 1903). Calls for workers went out as far as Chicago, as was the case in 1916 when the Green quarry needed 100 men in order to satisfy contracts for an incredible 30,000 tons of stone (Rowe 1979:20).

There was a contingent of immigrant labor as well. In 1904, 30 Macedonians were secured through a Chicago labor bureau to operate the new stone crusher at the Leathem and Smith quarry. The group was apparently industrious, for the Door County Advocate quickly revealed that "They are withal quiet and sober and always prepared to attend to the work for which they are employed" (DCA 16 July 1906). Unfortunately, wives and families were prohibited to accompany the men to America by the Turkish government. Consequently, it was predicted that the men would make their "pile" and eventually return home to live their lives in relative ease, "...providing that some enterprising pasha does not relieve them of their cash" (DCA 16 July 1906).

Quarrying was seasonal due to winter insurance restrictions on shipping from mid December to mid April. During the off-season months workers often took jobs in sawmills, shipyards, or as lumber jacks or ice cutters. Quarry operators used the off season to negotiate contracts for their product, set prices and calculate a pay scale for the next season (Rowe 1979:18). During the 1900 season, the Graef and Nebel quarry paid laborers between $1.50 and $1.62 per day (DCA 5 May 1900). Interestingly, in 1903 competition for labor with local canneries forced the Green Quarry to procure 11 hands from Menominee and pay the men $2.00 per day (DCA 18 July 1903). Although the outcome is unclear, a strike at the Sturgeon Bay Stone Company erupted in 1910 when laborers demanded a .25 cent raise to $2.00 a day (DCA 10 June 1910).

Once mined, workers transported the stone to barges, or scows in the vernacular, waiting in Sturgeon Bay. The stone was first broken up and loaded by hand into mining cars, a method borrowed from underground mining operations. The loaded cars, riding 24-inch gauge track, were then gravity propelled to the end of the loading wharf that extended far enough into the harbor to allow a barge to settle to its maximum draft. Along the way, stone intended for government harbors was weighed as the car passed over a portion of track designed for that purpose (DCA 4 July 1903). A winch and derrick upended the mining cars either directly into the waiting barge or onto a loading chute with access to the cargo hold. The barge was moved to present different loading hatches several times and perhaps even reversed before the loading process was complete. In order to keep them in trim barges were loaded carefully, for miscalculations at this point might result in a vessel swamping or turning turtle at the wharf, a dangerous if not embarrassing event.

Notably, in 1886 Louis Nebel, then a foreman at Sturgeon Bay's Hagen and English quarry and later part owner of the Sturgeon Bay Stone Company, devised a dump car that greatly expedited the loading process (Stanley Green File, DCHS). A pair of long timbers were extended from the dock, over the waiting stone barge, and finally secured to a crib outside of the vessel. Steel rails, spaced 30 inches apart, were then bolted to the timbers. A manned dump car with a 6x4x1 foot box rode the tracks, propelled by gravity and controlled by a foot brake. When the car was positioned directly over the barge, a hook in back of the car was released and the stone dumped into the hold. A similar but more advanced system of pocket docks, the purpose built gravity feed system developed for bulk carriers, were likely considered too expensive for stone mining operations and were never employed in Sturgeon Bay. In 1914, the Leatham and Smith quarry acquired an electric conveyor belt system that greatly sped the loading of stone barges (Rowe 1979:39-40).

Barge crews were also responsible for unloading the barge at its destination (Rowe 1979:20).

Unloading, done chiefly by hand, was backbreaking labor. A common method employed a bucket, suspended from a derrick, which was lowered into the vessel's hold. A horse or mule, harnessed to the opposite end of the line, raised the bucket when full. As an alternative, a boom could be slung from the barge's remaining masts and standing rig. The barge's crew, working inside the hold and always with an eye on keeping the vessel trim, placed the stone into the bucket by hand. The hulls were unloaded evenly and when the barge was almost unloaded the cargo was arranged in two parallel mounds on either side of the keelson or the centerline of the vessel for stability (Gray 1998:116; Rodgers 1996:25). Archaeological evidence from the Bullhead Point site and Claflin Point wreck in Little Sturgeon, Wisconsin suggests that the stone was generally rough hewn blocks 8 to 15 inches across weighing approximately 20 to 25 lbs (Rodgers 1996:14). Depending on the crew and barge size, unloading must have taken several days or as much as a couple of weeks (Bream 1998:155).

Hand unloading did not disappear with the advent of self-unloading technology. The two existed side by side for many years, just as many old and new technologies do from time to time, such as sail and steam. The donkey engine significantly reduced loading and unloading times. As its name implies, the donkey engine was a small steam engine that when rigged to a vessel's winch and standing rigging provided a hoist for unloading cargo, much like the donkey or horse powered bucket, but without the bother of an animal operated system. Pictorial evidence indicates that the *Ida Corning* possessed such an apparatus. The stone industry, however, needed an unloading system for its vessels. Barges often visited unimproved harbor sites or worked on stone jetties and wharves at some distance from a harbor's own unloading equipment.

A Sturgeon Bay Stone Company rival and important local quarry, Leathem and Smith helped lead the way toward modern self-unloading technology with the *Adriatic* , a crane and clam shell equipped stone barge converted in 1912. The *Adriatic* could unload itself in 10 to 12 hours (Bream 1998:157-158). Stone delivered in this manner was crushed stone and not the larger blocks found both at the Claflin and Bullhead Point archaeological sites. These blocks, referred to as "one man stone", would have been a good size for hand passing but would have been difficult to pick up with clam shell bucket. It is, therefore, likely that the type and size of stone needed for various work and the availability of shore facilities and labor dictated, for a time, what type of stone and barge would be dispatched to which site.

Stone Barges

With respect to Criterion D, the *Empire State, Ida Corning* and *Oak Leaf* are significant for their past and potential future contribution to the archaeological record. The Bullhead Point shipwrecks are representative of a vessel type of particular historical importance to the region specifically, and the

Great Lakes generally. With few written descriptions detailing how ships were converted to stone barges, the archaeological record is particularly useful, indeed necessary, for fully understanding how these vessels were retrofitted and used to transport stone.

All Door County stone was shipped via water, the great majority in the cavernous holds of converted stone barges. Indeed, as the age of steam advanced, many sailing vessels, particularly the ubiquitous Great Lakes schooner, found a second life as a tow barge. In 1860 there were 1,122 sailing vessels and 535 steam-powered vessels on the Great Lakes (Karamanski 2000:22). Eight years later the number of sailing vessels reached its peak at 1,855 (Merk 1916:375). Consequently, as steam vessels emerged as the more profitable vehicle for carrying many types of cargoes on the Inland Seas, "...most of the old veterans of the lake fleet underwent conversion to barges" (Karamanski 2000:40). Driven by the profit motive, ship owners discovered that by converting an aging sailing vessel to a barge, and then towing several barges in tandem (consort system), one could considerably increase the cargo capacity of a single voyage.

This system of consort towing, dropping barges off at various destinations and recovering them later, gave crews an opportunity to unload a vessel without holding up other shipments. Tows on the lakes contained as many as eight barges in line astern at 1000-foot intervals, though it is unlikely that the heavy stone barges were subject to tows of this size. Tows even half that size must have made navigation and ship handling difficult, particularly at night and in poor weather when tow lines were difficult for other vessels to see. Communications between the barges and escorting steamer were carried out via megaphone, hand, flag, or whistle signals (Rowe 1979:20). Since many of the converted barges employed a version of a schooner rig, the term "schooner-barge" ultimately became a permanent part of the Great Lakes maritime lexicon. So viable was this method of transporting bulk cargo, that purpose built schooner-barges eventually appeared on the Lakes, one of the largest being the 338 foot *Pretoria* launched in 1900 (Cooper and Jensen 1995:49).

The inspiration for schooner barges appears to come from a lumber merchant in Buffalo who used dismasted sailing ships as barges beginning in 1861 (Karamanski 2000:38). The innovation appeared on Lake Michigan in 1868 when two tugs and six barges transported a cargo of lumber form Peshtigo to Chicago (Karamanski 2000:38). In the latter 19th century, two Sturgeon Bay shipyards, Rieboldt and Wolters, and Leathem and Smith, were set up to build new barges and also handle conversions (Rowe 1979:13). Converting aging vessels into stone-barges was a common practice during the heyday Sturgeon Bay's limestone industry, yet few historical references or archaeological examples survive.

Part of the conversion process necessitated the removal of any super-structure from the vessel and the

main mast, bow sprit and jib boom if the converted vessel was a schooner. Steamers were converted as well. Archaeological evidence reveals that most of the internal machinery was taken out of converted steamers and through-hull fittings and pipes secured with wooden plugs. Archaeological evidence also indicates that internal bracing was added to strengthen the hull, and athwartships, tie bolts secured the sides of the vessel against the outward pressure of the bulk cargo in the hold (Gray 1998:106; Rodgers 1996:22-23). The "hogging straps" clearly visible on the *Ida Corning* and longitudinal iron bracing along the keelson of the *Oak Leaf* confirm that notion.

Some barges employed a minimal sailing rig that helped speed the tow, and sails were also useful to maneuver the barge out of harms way in case a towline parted. Two masts, a fore and mizzen was a typical configuration. Known as a Grand Haven Rig, or "Jack Ass" rig in contemporary sailing vernacular, the lack of a main mast allowed more room for deck loads and facilitated loading and unloading of bulk commodities (Martin 1995). Both the *Ida Corning* and *Oak Leaf* possess archaeological evidence of this rig type. Though the vessels could be sailed in an emergency or for sail assist during a tow, they would never maneuver well or sail at any speed on their own, for each had far too little sail and rig. The Grand Haven rig was a sail configuration employed expressly for towing. The fore and aft rigged sails may have also been used to mitigate roll, even while the vessel was under tow. A small shack at the stern or bow of the hulk housed a skeleton crew of no more than two or three men that steered and docked the barge, secured tow lines, pumped the bilges, and, in an emergency, dropped anchor to secure the vessel against grounding or collision.

Conclusion

The Bullhead Point historical and archaeological district is considered eligible for the National Register of Historic Places under Criteria A and D. The Sturgeon Bay Stone Company, which last owned the *Empire State, Ida Corning,* and *Oak Leaf*, operated during the peak stone production years in Sturgeon Bay. With respect to Criteria A, the Sturgeon Bay Stone Company was the city's second largest stone firm, and the three vessels at Bullhead Point are unique reminders of the city's historic stone industry and the waterborne transportation of stone. In a metaphorical sense, the Bullhead Point historic district can be used as a time machine to help reconstruct a small part of the late nineteenth-century community of Sturgeon Bay, conjuring a time when the bay echoed to staccato blasts of dynamite and black powder, the constant ring of stone drills, and the intermittent rumbling of hundreds of tons of cargo cascading into the gigantic hollow shells of waiting stone barges. Additionally, the district's location and accessibility make it a unique venue to create awareness and interest for an important, yet largely forgotten era. Finally, with respect to Criteria D, the district's past and future

archaeological yield contains valuable information on the conversion and use of stone barges, as well as data on three distinct Great Lakes vessel types.

9. Major Bibliographic References

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous Documentation on File (National Park Service):
- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic landmark
- recorded by Historic American Buildings Survey #
- recorded by Historic American Engineering Record #

Primary location of additional data:
X State Historic Preservation Office
- Other State Agency
- Federal Agency
- Local government
- University
- Other

Name of repository:

10. Geographical Data

Acreage of Property Less than one acre

UTM References (Place additional UTM references on a continuation sheet.)

	Zone	Easting	Northing
1	16N	725805.34	488670.77
2	16N	725852.48	488670.77
3	16N	725852.48	488700.20
4	16N	725865.15	4886700.20

X See Continuation Sheet

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet)

11. Form Prepared By

name/title	Russell T. Green, Catherine M. Green, Dr. Bradley Rodgers				
organization	Wisconsin Historical Society			**Date**	12/3/02
street & number	816 State Street			**Telephone**	608-221-5909
city or town	Madison	**state**	WI	**zip code**	53706

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Unites States Geological Survey. *The Stone Industry in 1903.* Washington D.C., Government Printing Office, 1904.

Wisconsin Historical Society. Maritime Preservation and Archaeology Program, files for *Empire State, Ida Corning, Oak Leaf.*

UTM coordinates continued:

5. Zone 16N, Easting: 725865.31; Northing: 488615.81
6. Zone 16N, Easting: 725805.19; Northing: 488615.81

Verbal Boundary Description

The boundaries of the Bullhead Point historical and archaeological district are shown on Figure 2 and USGS Quadrangle Map Sturgeon Bay West, Wis.

Boundary Justification

The boundaries were drawn to encompass known remains of the three shipwrecks within the district, and exclude areas not related to the immediate setting of the shipwrecks.

Bullhead Point Historical and Archaeological District	County	Wisconsin
Name of Property	County and State	

Additional Documentation

Submit the following items with the completed form:

Continuation Sheets

Maps A USGS map (7.5 or 15 minute series) indicating the property's location.
A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs Representative black and white photographs of the property.

Additional Items (Check with the SHPO or FPO for any additional items)

Property Owner

Complete this item at the request of SHPO or FPO.)

name/title	City of Sturgeon Bay				
organization				**date**	12/3/02
street&number	36 South Third Street			**telephone**	920-746-2900
city or town	Sturgeon Bay	**state**	WI	**zip code**	54235

Paperwork Reduction Act Statement: This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 470 et seq.).

Estimated Burden Statement: Public reporting burden for this form is estimated to average 18.1 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Chief, Administrative Services Division, National Park Service, P.O. Box 37127, Washington, DC 20013-7127; and the Office of Management and Budget, Paperwork Reductions Projects, (1024-0018), Washington, DC 20503.

Bullhead Point Historical and Archaeological District
Sturgeon Bay, Door County, Wisconsin

Photograph 1
View from southern shore of Bullhead Point. From left to right, remains of the *Empire State*, *Ida Corning* and *Oak Leaf*. Taken by Russell Green, December 2001.

Photograph 2
Historic photograph of propeller Steamer *Empire State*. Location and date unidentified. Milwaukee Public Library.

Photograph 3
Historic photograph of schooner-barge *Ida Corning*. Location and date unidentified. Milwaukee Public Library.

Photograph 4
Historic photograph of stone-barge *Oak Leaf* and steam tug *I.N. Foster*. Little Sturgeon, Wisconsin, date unidentified. Door County Maritime Museum.

Photograph 5
Iron "hogging strap" on *Ida Corning*. Taken by Russell Green, May 2002.

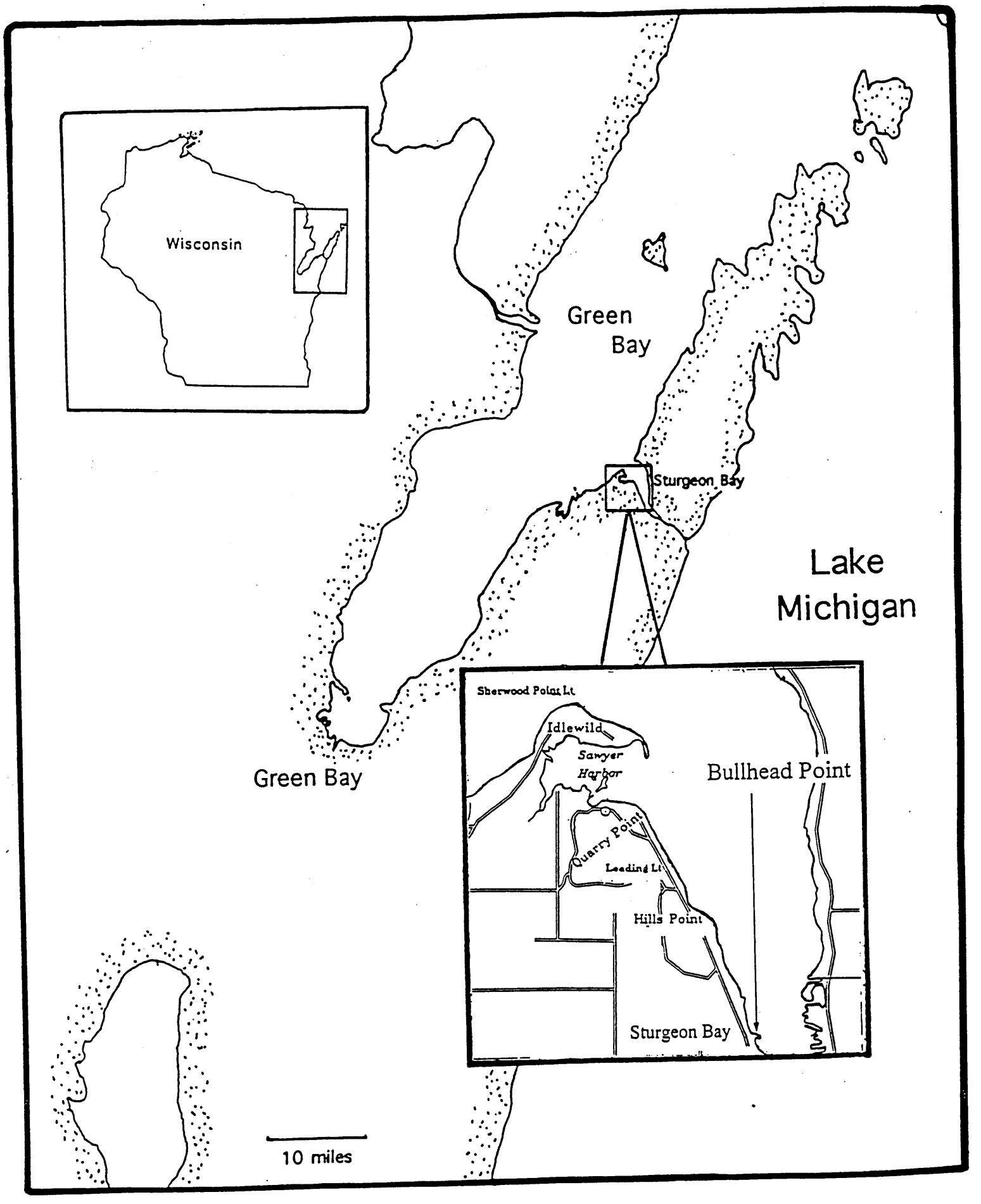
Wisconsin
Green Bay
Sturgeon Bay
Lake Michigan
Green Bay
Sherwood Point Lt
Idlewild
Sawyer Harbor
Bullhead Point
Quarry Point
Leading Lt
Hills Point
Sturgeon Bay
10 miles

Figure 1

Bullhead Point
1999 Survey

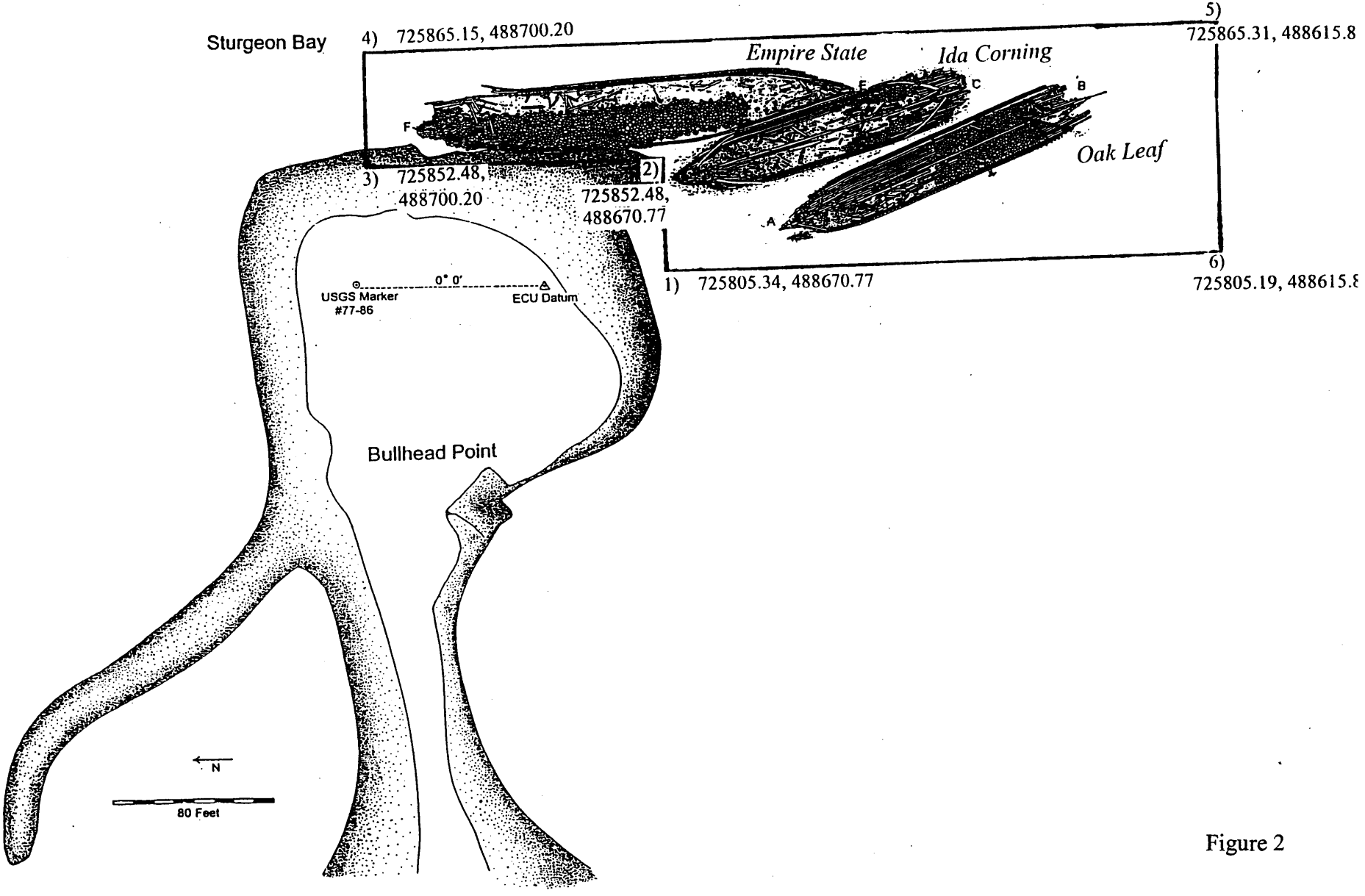

Figure 2

Bullhead Point
Empire State

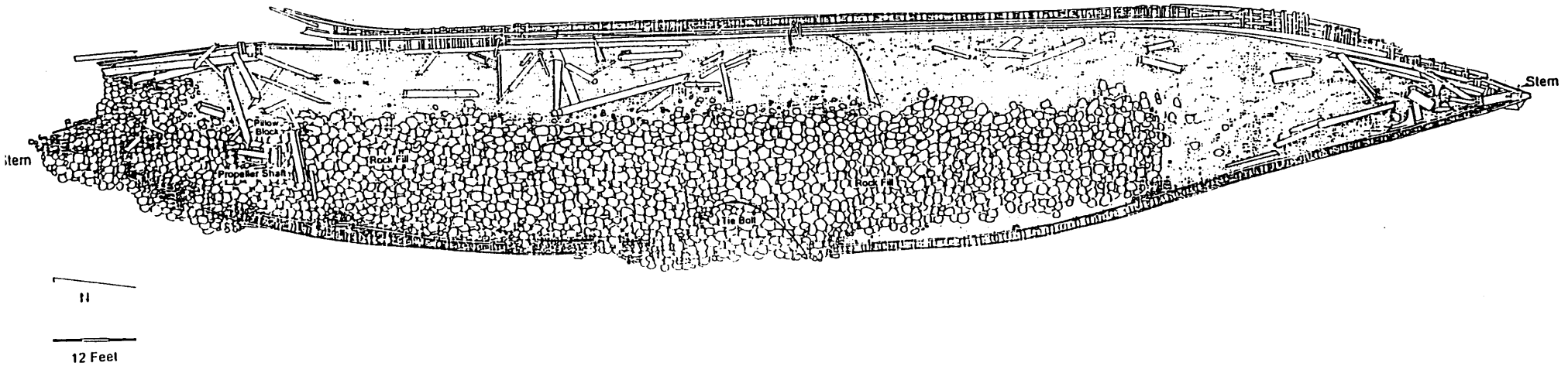

Figure 3

Bullhead Point

Ida Corning

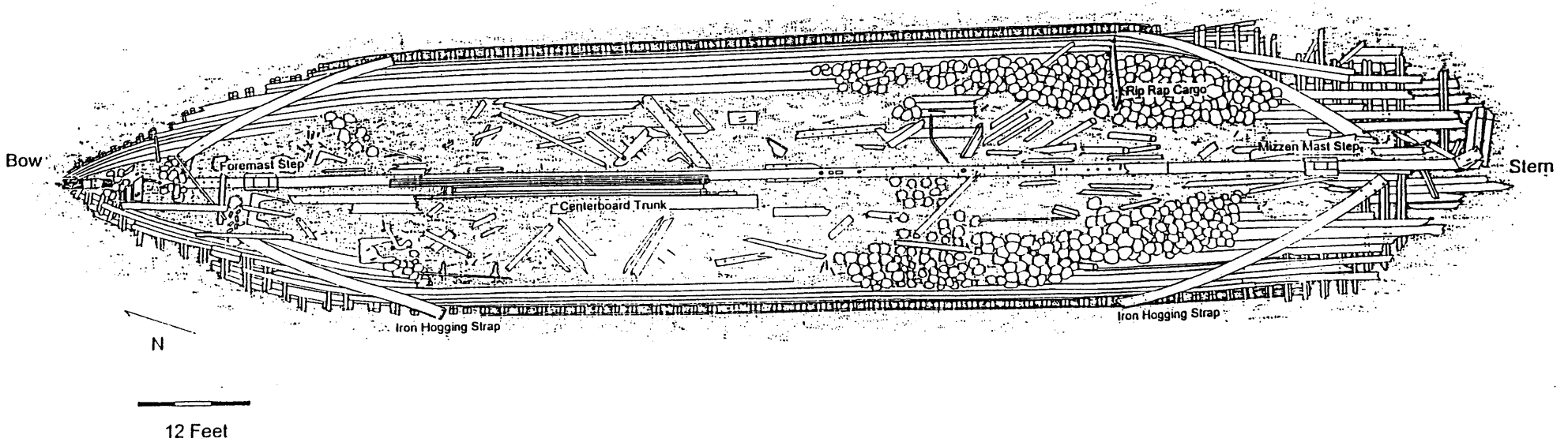

Figure 4

Bullhead Point
Oak Leaf

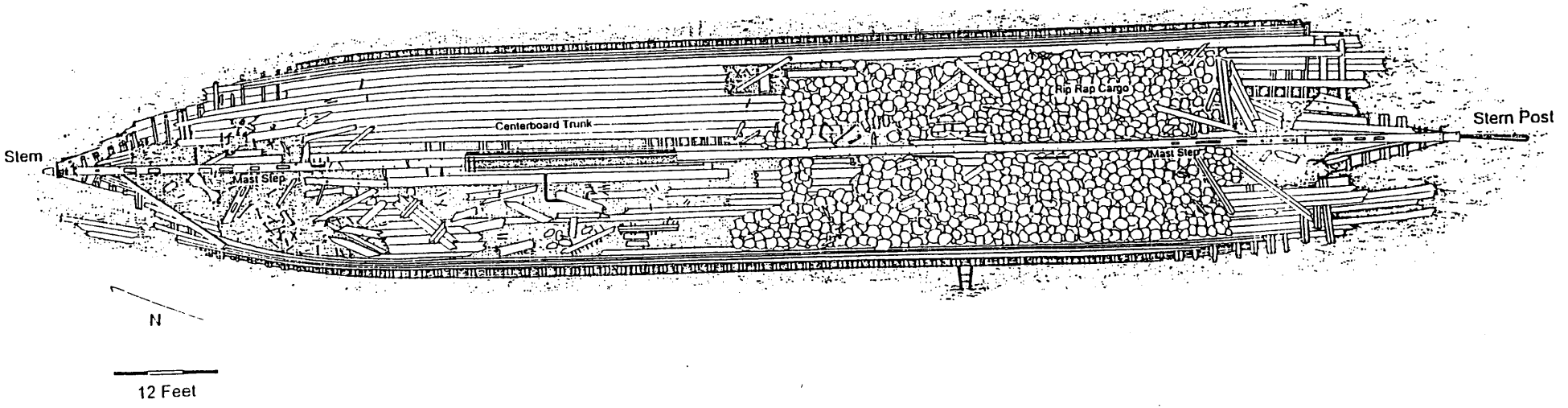

Figure 5