

STRAITSMOUTH ISLAND LIGHTHOUSE

A BOUNDARY RETRACEMENT SURVEY

**By Richard J. Leslie, P.L.S.
Vice President
BAY COLONY GROUP, INC.
4 School Street
Foxborough, MA**

Massachusetts. The island was purchased by the United States of America in November 1834 for the erection of a lighthouse to mark the entrance to Pigeon Cove. The lighthouse was built in 1835 with the tower later replaced by the present tower in 1896. Powered by solar panels, the lighthouse currently remains a fully operational lighthouse. The original boundary survey of the island, prepared on April 15, 1937, divided the island into two parcels. Parcel No.2, a 29.2 acre parcel, which was sold by the United States of America in April 1944, and Parcel No.1, a 1.8 acre parcel housing the lighthouse, which remained under the ownership of the United States of America. In response to a Request for Proposal issued by the U.S.

General Services Administration, Bay Colony Group was hired to perform a boundary retracement survey and an ALTA/ACSM Land Title Survey in support of transferring the ownership of Parcel No.1 to the Town of Rockport.

There are numerous problems that can arise whenever performing a boundary survey and although you can never know when they will present themselves you can be sure that they will. The first problem we encountered came early on, in the research phase. Although the deed descriptions for Parcels 1 & 2 were very detailed, we really needed to

obtain a copy of the original plan in order to have a visual reference of the location of the lighthouse and other structures in relation to the property lines. Per the deed, copies of the survey were filed at the Essex County Registry of Deeds as well as in the office of the Commander, Boston District, United States Coast Guard, Boston, MA. Searches of the on-line database of the Registry of Deeds as well as phone inquiries into the Boston Commander's office and the U.S. Coast Guard Real Property Division in Providence, RI in hopes of attaining a copy of the original plan were unsuccessful. Unable to obtain a

copy of the original plan we resorted to the next best thing which was to reproduce the property lines using the deed descriptions. Although we did not have a plan depicting the location of the lighthouse and structures on the parcels, we did have a graphical representation of the property lines with the location of the original monuments. As previously mentioned, the original plan was prepared in 1937 which meant the



Straitsmouth Island Lighthouse

reference bearings from the triangulation stations, as given in the deeds, would be based on the North American Datum of 1927 (NAD27). Since we intended to use Global Position System (GPS) equipment to perform the survey the bearings would have to be converted to North American Datum of 1983 (NAD83). By searching the National Geodetic Survey (NGS) database we were able to obtain copies of the data cards for the three triangulation stations called for in the deed. The data cards contained latitude and longitude data in both NAD27 and NAD83 datums. Using the U.S. Army Corps of

Engineer's Corpscon program the latitude and longitude data was used to develop coordinates in both datums for the triangulation stations. In order to obtain approximate bearings and coordinates for the property lines and corners on NAD83 datum, the original property lines and triangulation stations using the NAD27 datum were rotated onto the triangulation stations using the NAD83 datum. This provided us with the approximate positions for the property corners which would be used to help locate the actual corner monuments. Armed with this data and state of the art survey equipment we were ready to conduct the field survey.

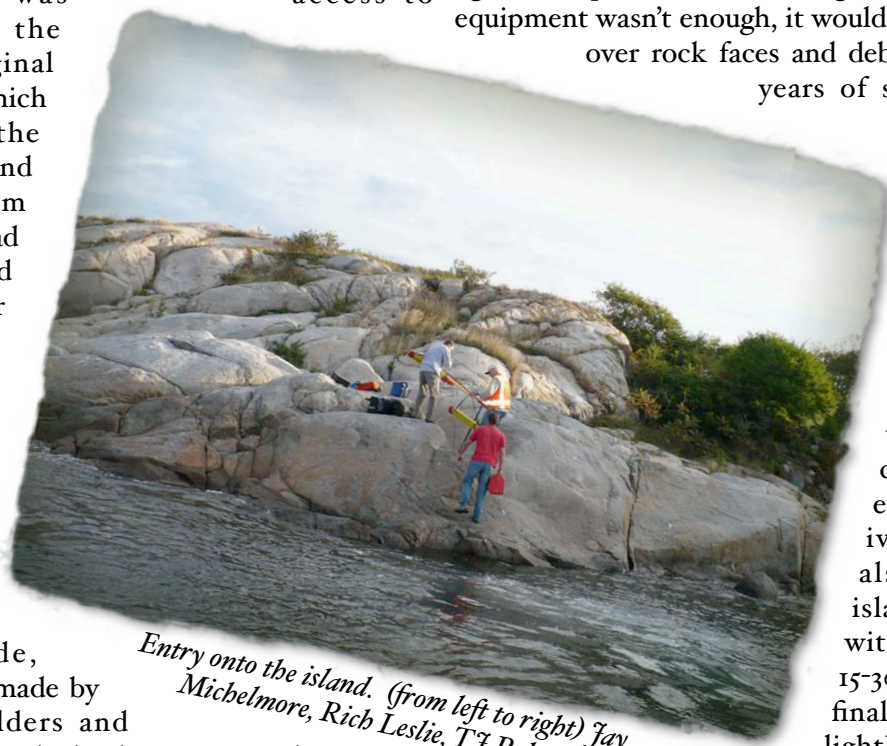
In performing the field survey there were several obstacles that needed to be overcome, not the least of which was access to and entry onto the island. The original boat slip/dock, which was located at the exact opposite end of the island from the lighthouse, had been destroyed and no longer existed. Since the island is surrounded by large boulders and rock faces access would be made by boat, preferably during high tide, with entry being made by scaling the boulders and rock face. Detailed planning and execution were necessary in monitoring tidal cycles and surges in order to facilitate entry onto and exit off the island. As expected the lighthouse was located



Straitsmouth Island as seen from Lighthouse

on the portion of the island most facing the open ocean thereby experiencing the strongest tidal surges. As a result of these surges, entry onto and exit off the island would have to be made at locations that provided the most protection from tidal surges, basically the opposite end of the island near the location of the former boat slip/dock.

Entry onto the island was no easy task, especially when you take into account that entry included not only survey personnel but all of the equipment, food and water that was needed for the day. Once entry had been accomplished the hard part came, the carrying of food/water, survey instruments/equipment, GPS units/equipment, laptop computer and sufficient battery power to operate and recharge the equipment as necessary from the entry point to the lighthouse parcel. As if the weight of the supplies and equipment wasn't enough, it would have to be carried over rock faces and debris resulting from years of storm surges and



Entry onto the island. (from left to right) Jay Michelmore, Rich Leslie, Tj Roberts

through vegetation ranging from knee to chest deep, there were no paths. At this point it should be noted that the vegetation consisted almost entirely of poison ivy and I should also mention the island was infested with RATS! After a 15-30 minute hike we finally arrived at the lighthouse parcel and could begin the survey.

Although a previous recon of the site, in preparation of the proposal, had failed to uncover

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any of the original monuments or occupation, we felt our chances were much better this time. True we still didn't have a copy of the original plan, but we did have coordinates based on our fancy survey calculations and we had just scaled the rocks, humped this state of the art equipment across the entire length of the island, through the poison ivy, with rats scurrying around our

feet at almost every step. No such luck! After 10 hours on the island looking, digging through debris and clearing groves of poison ivy we found nothing, nada, not a single piece of evidence. Disheartened it was time to head home and figure out where we went wrong.

As is often the case when you make a mistake or overlook something it usually happens early on in the project, that way it can haunt you throughout the entire length of the project, in our case it was with the research. We needed to dig deeper to find a copy of the original plan. Parcel No.2 had changed hands several times since first being deeded out by the U.S. Government and ownership was now with the Audubon Society. Although a call and subsequent record search of the Audubon's plan archives failed to produce the plan copy, I was given the name of a local gentleman who was working on the committee that wrote the grant for the Town of Rockport to purchase the lighthouse parcel. Since I had heard this gentleman's name mentioned in previous discussions, with the boat captain who was transporting us to and from the

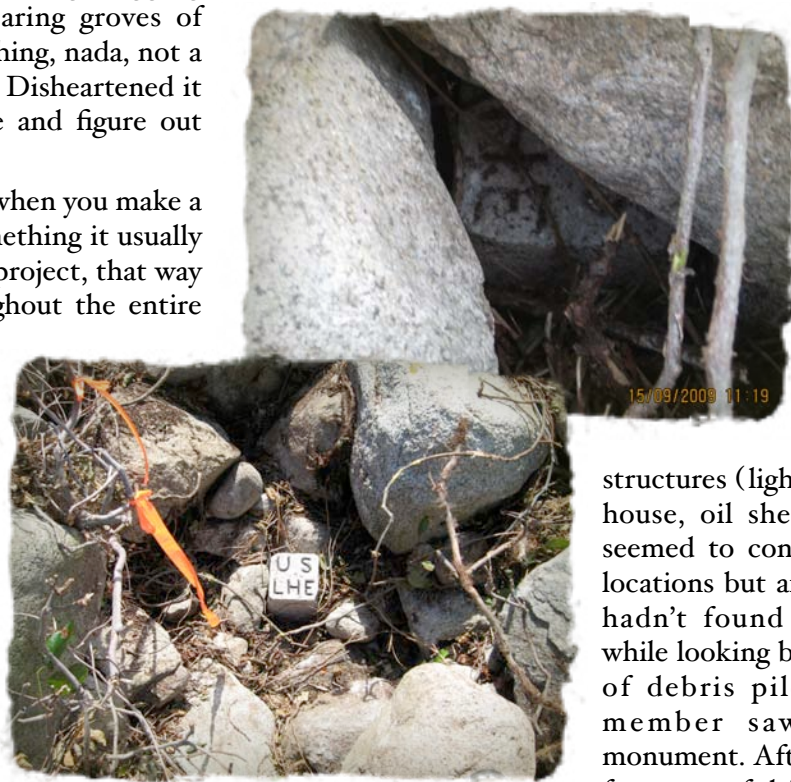
island, I decided I'd better give him a call. After all I had nowhere else to go and many years ago while taking a survey course the professor said that you should never underestimate the value of information that can be obtained by checking local archives or speaking to local historians. Boy was he right! While talking to the gentleman on the phone, as he sifted through his grant paperwork, he informed me he actually had a copy of the plan I had been looking for. Eureka we struck gold! We made arraignments to meet at the dock to pick up the plan and head back out to the island.

So we loaded the boat and went back to the island for the third time. After all, the third time is a charm right? Well it was! Although the plan did not

provide any additional information that would cause us to revise our previous calculations, it did provide us with a visual representation of the original property corners in relation to the existing

structures (lighthouse, innkeeper's house, oil shed ...etc). The plan seemed to confirm our calculated locations but after 4 hours we still hadn't found anything. Finally while looking between the crevices of debris piles a survey crew member saw the top of a monument. After clearing out four foot area of debris and large rocks we were able to completely uncover the original survey monument and to make things better it was the monument marking the point of beginning in the deed description. Upon

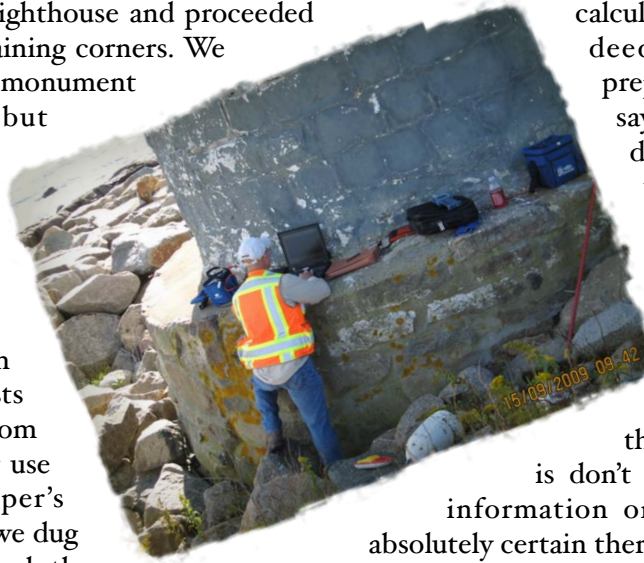
locating the monument and inputting the data into the laptop computer it was discovered that the initial tie distance from the spire of the lighthouse to the monument marking the point of beginning was off by over 3'. Now we had some solid evidence to work



Top: Original P.O.B. monument buried by large rocks and debris

Bottom: Original P.O.B. monument as recovered

with so we re-rotated the record property lines using the monument and the lighthouse and proceeded to look for the two remaining corners. We were able to recover the monument at the second corner but discovered that the monument marking the third corner was either destroyed or buried under several feet of sand and debris. Since there was an abundance of granite posts on the island, leftover from an elevated walkway that use to connect the innkeeper's house to the lighthouse, we dug a hole and used one to mark the



location of third and final corner as calculated using the record plan and deed. Time to head home and prepare the final plan. Needless to say the 2 hour drive home that day was much more pleasant than the previous trips.

In my opinion what separates the good surveys from the great surveys is the knowledge you gain over the course of the project. Without a doubt the lessoned to be learned here is don't stop digging, whether it's for information or monuments, until you are absolutely certain there is nowhere else to look.

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