

Minor and Technical Corrections to Coastal Barrier Resources System Unit L06

Overview

The John H. Chafee Coastal Barrier Resources System (CBRS) is depicted on a set of maps that is maintained by the U.S. Fish and Wildlife Service (Service). The CBRS was originally mapped in 1982, and the maps were adopted by Congress via the Coastal Barrier Resources Act (CBRA) (Pub. L. 97-348). The CBRS was expanded and all of the CBRS maps were updated in 1990 when CBRA was reauthorized through the Coastal Barrier Improvement Act (CBIA) (Pub. L. 101-591). Aside from three minor exceptions¹, the CBRS maps can only be modified through legislation enacted by Congress.²

Congress recognized the challenges associated with the outdated CBRS maps and, in the 2000 Coastal Barrier Resources Reauthorization Act (CBRRA) (Pub. L. 106-514), directed the Secretary to complete a Digital Mapping Pilot Project (pilot project) to prepare modernized digital maps for about ten percent of the CBRS. In the 2006 CBRRA (Pub. L. 109-226), Congress directed the Secretary to prepare digital maps for the remainder of the CBRS. The Service was contacted in the past by private property owners, local officials, members of Congress, and other interested parties who sought to remove certain areas from Topsail Unit L06 (located in Onslow County, North Carolina) and/or eliminate the unit from the CBRS entirely. The Service reviewed those claims and prepared comprehensively revised maps as part of the pilot project that underwent public review and were adopted by Congress in 2018 via the Strengthening Coastal Communities Act of 2018 (Pub. L. 115-358).

The Service was contacted in December 2020 by an interested party seeking to validate the location of a structure on Barton Bay Court in North Topsail Beach in relation to Unit L06 and determine whether the boundary in that area is accurately located based on historical CBRS maps. The Service's findings and recommendation related to this unit and a detailed summary of our review are below.



Figure 1 – Barton Bay Court (Unit L06 as depicted in the Service's CBRS Map per shown in pink)

Service Findings and Recommendation

The Service has reviewed the area in question and found that a minor and technical correction is appropriate to address an error on one of the current effective maps for Unit L06. This error affects two existing structures, one of which was on the ground prior to its inclusion within the CBRS. The Service recommends the removal of about 2.5 acres (that were inadvertently added to the CBRS in 2015) from Unit L06. This error was primarily the result of challenges in georeferencing the original CBRS maps combined with the quality of aerial imagery available to the Service in the early 2000s, when the boundary for Unit L06 was first digitized from the 1990 paper maps.

The Service recommends that Congress replace the current effective map for Unit L06, entitled "Onslow Beach Complex L05 (2 of 2) Topsail Unit L06 (1 of 2)" dated December 21, 2018, and numbered 37-023B, with a replacement map prepared by the Service and entitled "Onslow Beach Complex L05 (2 of 2) Topsail Unit L06 (1 of 2)" dated April 30, 2021, and numbered 37-023C. The revised map will not take effect until adopted by Congress through legislation.

Summary of Review of Unit L06

In 2020, the Service was asked to review a property located on Barton Bay Court in North Topsail Beach, North Carolina. This property is partially within Topsail Unit L06 of the CBRS (Figure 1) as depicted on the current official map dated December 21, 2018. The Service has carefully reviewed the historical maps and aerial imagery of the area and our records for the unit and found an error in this area. We discovered a discrepancy between the first official map adopted by Congress for Unit L06 dated September 30, 1982, and the aerial photographic atlas in our records entitled Coastal Barrier Resources Act of 1982: Photographic Inventory, Volume 7, North Carolina dated May 1983. The aerial photographic atlas was developed to show the location of the CBRS boundaries from the set of official maps as adopted by Congress in relation to aerial images that showed more up-to-date road networks and other features than the official CBRS maps. The Service historically used photo atlases in the practical administration of the CBRS, as they were more user-friendly than the official set of maps.

The May 1983 photo atlas shows a por-

tion of the Unit L06 boundary located roughly along the division between the Galleon Bay subdivision and what is now known as Barton Bay Yacht Club. This location depicted the 1982 break in development between the developed Galleon Bay area and the adjacent undeveloped area, and indicates that the property in question is within Unit L06. However, the actual location of the boundary as depicted on the September 30, 1982, map adopted by Congress coincides roughly with the eastern boundary of Barton Bay Yacht Club, excluding it from the CBRS (Figure 2). The boundary on the October 24, 1990 map is in roughly the same location as shown on the 1982 map.

When Congress directed the Service in 2000 to complete a pilot project to modernize the CBRS maps, Unit L06 was selected as one of the units. The Service digitized the boundaries of the units in the pilot project (including Unit L06) in the early 2000s by georeferencing³ the 1990 maps to a type of georeferenced aerial imagery known as U.S. Geological Survey Digital Orthophoto Quarter Quads (DOQQs) that dated to 1998. As noted in our 2008 report to Congress on the draft pilot project maps, “the disadvantages associated with DOQQs are that they have relatively low image resolution and they are not updated on a regular and frequent schedule.”⁴ Georeferencing in this location was also difficult due to a limited number of features on the official map (e.g., road intersections)

that could be used as control points to reference to static features visible on the DOQQs. Despite their limitations, the 1998 DOQQs were the best available base map imagery for the area in the early 2000s, and did not depict any structures in the Barton Bay Yacht Club area. The structure on Barton Bay Drive was constructed in 2002.

Our assessment indicates that the low image resolution of the DOQQs available at the time the existing boundaries were digitized for the pilot project (which did not depict any development in Barton Bay Yacht Club), combined with georeferencing challenges, contributed to an error in transferring the Unit L06 boundary from the 1990 CBRS map to the proposed pilot project draft map dated June 12, 2006. The Unit L06 boundary in this area was placed approximately 110 feet to the southwest of the actual location depicted on the 1990 map, giving the false impression that the area was already within the CBRS. This discrepancy is apparent today due to drastic improvements in the quality and quantity of digital aerial imagery that have been made since the early 2000s, which make georeferencing significantly easier and more accurate.

Prior to the final completion of the pilot project, the Service conducted a five-year review of most of the CBRS, including Unit L06, to make modifications to the boundaries as necessary to account for natural changes in the units

such as erosion or accretion.⁵ Because the Service had already digitized the existing boundaries of Unit L06 for use on the 2006 pilot project draft maps, the Service used those same boundaries in the five-year review process. Regrettably, we did not realize at the time that the existing CBRS boundary in the location of the Barton Bay Yacht Club had been incorrectly digitized several years prior. When the Service adopted the five-year review maps administratively on May 4, 2015, portions of the Barton Bay Yacht Club subdivision, including one existing structure, were inadvertently added to the CBRS. This erroneous boundary location was reaffirmed when Congress enacted Pub. L. 115-358, which adopted most of the Service’s final recommended pilot project maps.

There are now two structures located in the affected area, as a new home was constructed in 2019. Because this area was inadvertently added to the CBRS, the Service recommends a minor and technical correction to the current effective map for Unit L06 to relocate the northeastern boundary of the southernmost excluded area to its original location as depicted on the map adopted by Congress for this unit dated September 30, 1982. This correction would remove approximately 2.5 acres from the CBRS, comprising four lots within Barton Bay Yacht Club (including the one structure along Barton Bay Drive and one structure along New River Inlet Road) and a portion

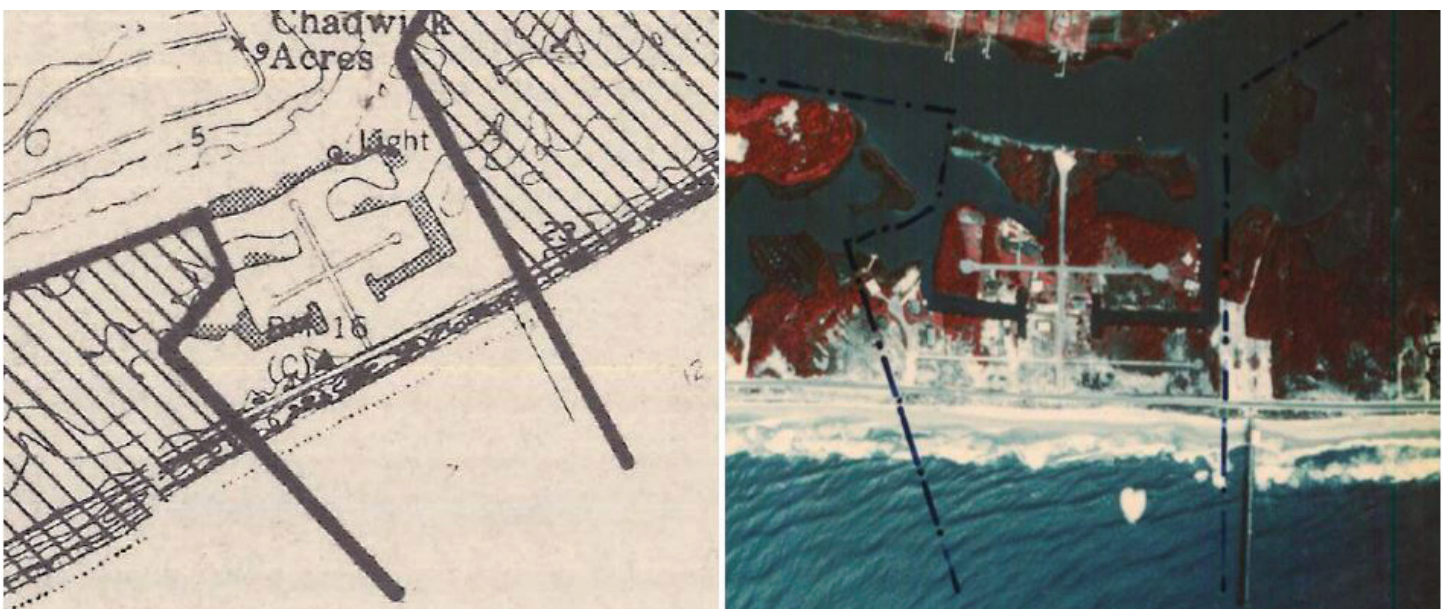


Figure 2 – Left: September 30, 1982 CBRS map adopted by Congress. Right: May 1983 photographic atlas intended to show the location of the CBRS boundary in relation to an aerial image.

of one lot to the south of New River Inlet Road. The Service has prepared a replacement map for Unit L06 that reflects this change dated April 30, 2021. The Service has determined that

no further changes are necessary to Unit L06 and no changes are necessary to Unit L05 (which is depicted on the same map panel).

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- 1 The administrative authority of the Service to make changes to the CBRS boundaries is limited to changes made as a result of natural forces, voluntary additions by property owners, and additions of excess federal property (16 U.S.C. 3503).
 - 2 The CBRA and CBIA both included provisions by which the Service could make minor and technical modifications to the boundaries to clarify the delineation of the units. However, these provisions were time limited and are no longer in effect.
 - 3 “Scanned maps and historical data usually do not contain spatial reference information. In these cases you will need to use accurate location data to align or georeference your raster data to a map coordinate system....Generally you will georeference your raster data using existing spatial data (target data), such as georeferenced rasters or a vector feature class that resides in the desired map coordinate system. The process involves identifying a series of ground control points—known x,y coordinates—that link locations on the raster dataset with locations in the spatially referenced data. Control points are locations that can be accurately identified on the raster dataset and in real-world coordinates. Many different types of features can be used as identifiable locations, such as road or stream intersections, the mouth of a stream, rock outcrops, the end of a jetty of land, the corner of an established field, street corners, or the intersection of two hedgerows.” <https://pro.arcgis.com/en/pro-app/latest/help/data/imagery/overview-of-georeferencing.htm>.
 - 4 U.S. Fish and Wildlife Service. Report to Congress: John H. Chafee Coastal Barrier Resources System Digital Mapping Pilot Project. Washington, D.C., 2018) 14-16.
 - 5 80 FR 25314

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