APPENDIX E

WITHOUT PROJECT ECONOMIC IMPACT ANALYSIS

APPENDIX E
WITHOUT PROJECT ALTERNATIVE ANALYSIS

E.1. **Without Project Conditions**. The geomorphic analysis of changes in Bogue Inlet determined that the inlet channel has been migrating to the east since the mid 1980's. The easterly migration of the channel has been accompanied by the easterly movement of the inlet shoreline that borders the west end of Emerald Isle. The resulting land loss associated with the eastward movement of the inlet shoreline has positioned the inlet shoreline precariously close to several buildings and roads in the Pointe Subdivision (Figure E.1). This has prompted homeowners and the Town of Emerald Isle to install temporary sandbag revetments to protect threatened buildings and the west end of Inlet Drive as well as a portion of Bogue Court (Figure E.2). The sandbags appear to be providing some temporary relief to the erosion problem; however, State rules will not permit the sandbag structures to remain beyond two years in the case of individual homes and 5 years for the structures protecting the end of Inlet Drive and Bogue Court. Furthermore, State rules only allow sandbags to be constructed once for each threatened property even if that property changes ownership. Several of the sandbag structures have already experience some degree of failure and have had to be repaired. The instability of the sandbag revetments combined with the State requirement that they be removed at the end of the permit period will result in the continued easterly migration of the inlet shoreline. While the argument could be made that the inlet will undergo a natural correction with the breaching of a new ebb channel west of its present location, there is nothing in the historic record that allows such a prediction to be made or to put a time on when such a correction is likely to occur. Therefore, the without project condition is based on the assumption that the inlet shoreline will continue to move to the east for a period of at least 10 years in response to the continued easterly migration of the ebb channel.

Figure E.1 September 2002 Aerial Photo Bogue Inlet

E.2. A September 2002 photograph of the inlet, shown on Figure E.1, supports the tendency of the inlet to continue to migrate to the east. As shown on this photo, the inlet shoreline located north of the sandbag revetment has moved approximately 100 feet to

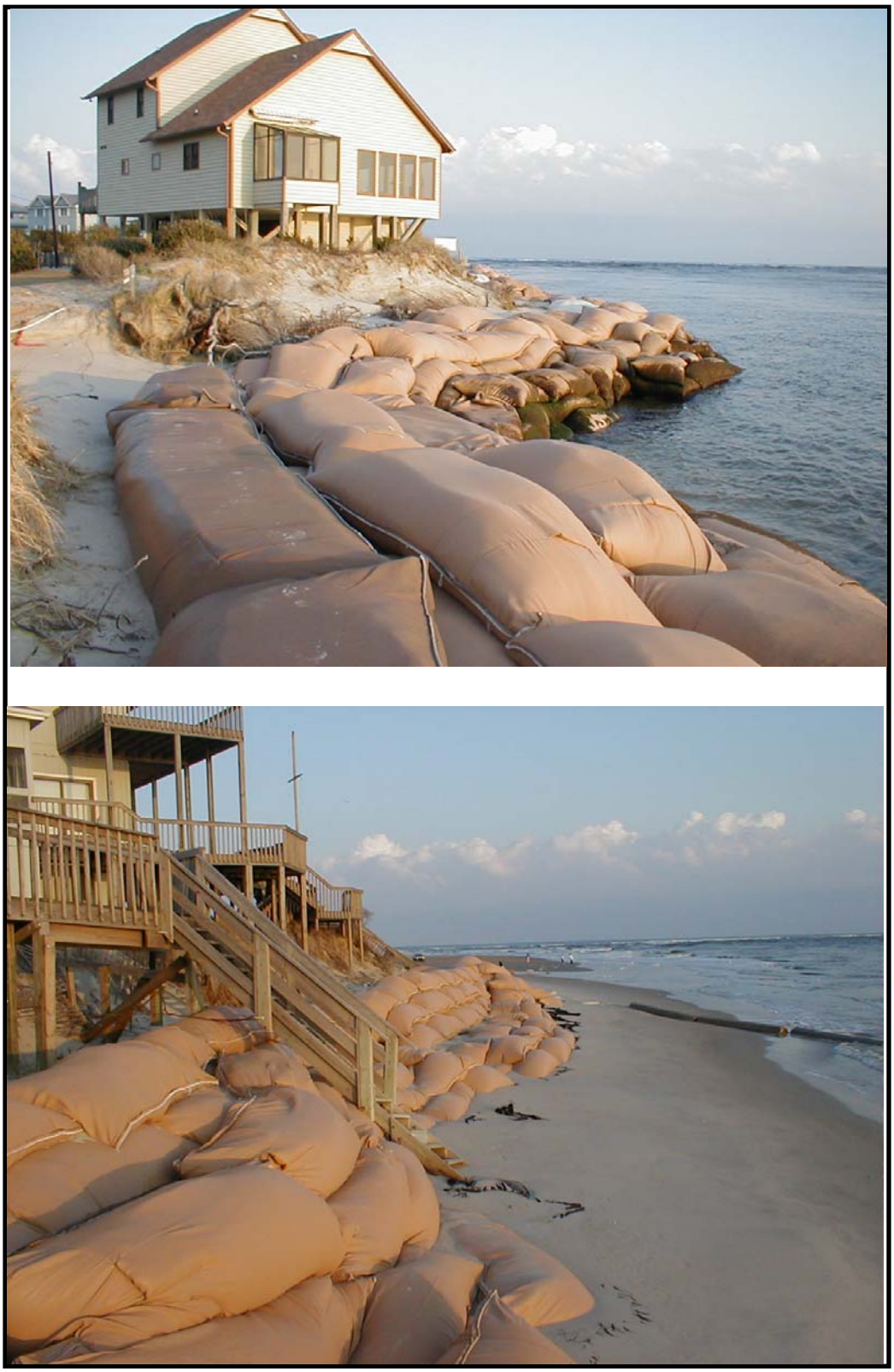

Figure E.2 March 2003
Photos of the Pointe

the east compared to the position it occupied in September 2001 (Figure E.3). The September 2002 photo clearly shows that the sandbag revetment is performing its job; however, once the sandbags are removed or fail, there will be a significant shift in the shoreline to the east that will occur over a relatively short period of time, i.e., a matter of weeks or months rather than years. Following this initial correction, the shoreline would then continue to migrate to the east at a fairly steady rate.

Figure E.3 September 2001 Aerial Photo Bogue Inlet

E.3. The rate of erosion of the inlet shoreline at the Pointe has varied in response to varying rates of channel movement. The cumulative movement of the Emerald Isle inlet shoreline between December 1973 and September 2001 is plotted on Figure E.4. As shown on this figure, the easterly migration of the inlet shoreline began in February 1984 and continues today. Two periods since 1984 to the present were evaluated to obtain a range of possible inlet shoreline migration rates. Between February 1984 and September 2001, the linear regression trend through the data resulted in a migration rate of 62.0 feet/year (Figure E.5). A second linear regression trend was constructed for this time period by excluding the September 1996 shoreline position that had been strongly influenced by Hurricane Fran. The slope of this trend line, excluding the September 1996, position was slightly less, equaling 60.4 feet/year (Figure E.5). The second period evaluated was from February 1992 to September 2001, a period when the easterly migration of the shoreline seemed to accelerate. Over this time period, the linear trend of the data resulted

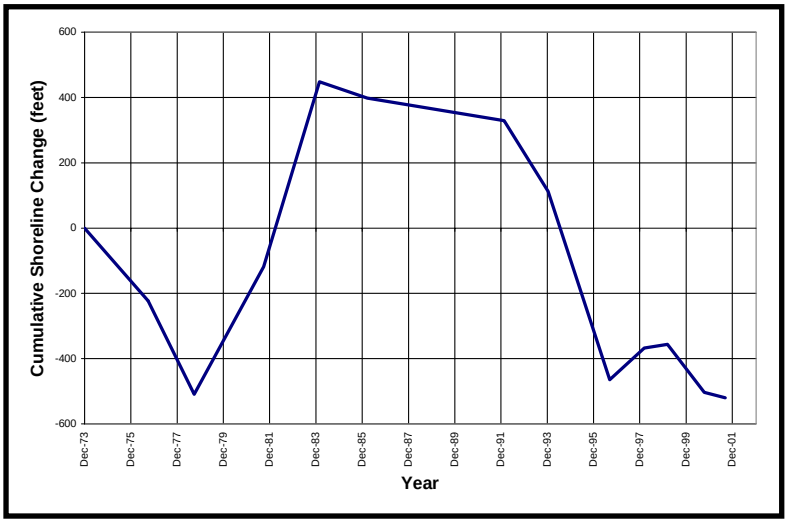

Figure E.4 Cumulative Changes in Emerald Isle Inlet Shoreline – Dec 73 to Sep 01