

W00635

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey: Habitat Mapping

Registry Number: W00635

LOCALITY

State(s): Florida

General Locality: Southwest Florida

Sub-locality: Charlotte Harbor and Offshore

2004

CHIEF OF PARTY
Mark Hansen

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

W00635

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State(s): **Florida**

General Locality: **Southwest Florida**

Sub-Locality: **Charlotte Harbor and Offshore**

Scale: **40000**

Dates of Survey: **01/01/2003 to 12/31/2004**

Instructions Dated: **01/01/2003**

Project Number: **ESD-PHB-22**

Field Unit: **US Geological Survey**

Chief of Party: **Mark Hansen**

Soundings by: **Marimatech E-Sea 103 (SBES)**

Imagery by: **N/A**

Verification by: **Pacific Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <https://www.ncei.noaa.gov/>. Products created during office processing were generated in NAD83 UTM 17N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

DESCRIPTIVE REPORT MEMO

March 31, 2023

MEMORANDUM FOR: Pacific Hydrographic Branch

FROM: Report prepared by PHB on behalf of field unit
Mark Hansen
Oceanographer, U.S. Geological Survey

SUBJECT: Submission of Survey W00635

The USGS, in cooperation with South Florida Water Management District (SFWMD), performed a bathymetric survey of the lower portion of Charlotte Harbor, Pine Island Sound, and offshore of Little Gaspiralla Island to Captiva Island using a single beam hydrographic system. This project supports several SFWMD efforts including the Caloosahatchee MFL, the Southwest Florida Feasibility Study, and the SWIM designation of Charlotte Harbor. In addition, a need for a Charlotte Harbor estuarine mixing model has been identified by the Southwest Florida Regional Restoration Coordination Team and the Southwest Florida Feasibility Study. In order to create an accurate model, current bathymetric data was obtained for the Charlotte Harbor system. Bathymetry data was also needed for the creation of a seagrass vision map (an NEP effort) and to populate the species response models being created as assessment tools for the restoration program. This project addresses the collection and interpretation of data necessary to develop the present day bathymetry of the lower portion of Charlotte Harbor, which includes Pine Island Sound, the region offshore of from Little Gaspiralla Island to south Captiva Island, Florida.

The single beam bathymetry data was submitted in an XYZ format file then horizontally and vertically shifted from WGS84 / NAVD88 to NAD83 / MLLW using VDatum. The shifted XYZ file was then used to generate a 4m resolution grid.

All soundings were reduced to Mean Lower Low Water using VDatum. The horizontal datum for this project is North American Datum of 1983 (NAD 83). The projection used for this project is Universal Transverse Mercator (UTM) Zone 17.

Horizontal Control:

Differential Geographic Positioning System (DGPS) coordinates were obtained using post-processing software packages developed by the National Oceanic and Atmospheric Administration (NOAA)/National Geodetic Survey (NGS) Online Positioning User Service (OPUS), National Aeronautics and Space Administration (NASA)/Jet Propulsion Laboratory (JPL) Online Positioning User Service (GIPSY), and Scripps Orbit and Permanent Array Center Online Positioning User Service (SCOUT). Boat trajectories were computed with PNAV v2.0 software by ASHTECH,

Inc. OPUS, GIPSY, and SCOUT results provide an error measurement for each daily solution. Applying these error measurements, the horizontal accuracy of the base station is estimated to be 0.04 (m) root mean squared (RMS). The kinematic (rover) trajectories were processed using PNAV v2.0, by ASHTECH, Inc. A horizontal error measurement, RMS is computed for each epoch. The horizontal trajectory errors for varied between 0 and 0.08(m).

Vertical Control:

GPS base or differential reference stations were operated within approximately 15 to 20 km of the survey area. Five new temporary ground-control points or benchmarks (surveyed to within 1 cm to 2 cm accuracy) were established throughout the study area for use as reference receiver sites using standard benchmarks procedures. The new benchmarks were surveyed using Ashtech Z-12, 12 channel dual-frequency GPS receivers. Full-phase carrier data were recorded on each occupied benchmark in Ashtech proprietary BIN format with daily occupations ranging from 6 to 12 hours. BIN files were then converted to RINEX-2 format for position processing. All static base station GPS sessions were submitted for processing to the online OPUS, GIPSY, and SCOUT system software. The computed base location results were entered into a spreadsheet to compute one final positional coordinate and error analysis for that base location. The final positional coordinate (latitude, longitude, and ellipsoid height) is the weighted average of all GPS sessions. For each GPS session, the weighted average was calculated from the total session time in seconds; therefore, longer GPS occupation times held more value than shorter occupation times. Results were computed relative to ITRF00 coordinate system. The established geodetic reference frame for the project was WGS84. Therefore, final reference coordinates used to process the rover data were transformed from ITRF00 to WGS84 using National Oceanic and Atmospheric Administration/ National Geodetic Survey(NOAA/NGS) HTDP software v2.1. The kinematic (rover) trajectories were processed using PNAV v2.0, by ASHTECH, Inc. A vertical error measurement, RMS is computed for each epoch. The vertical trajectory errors for varied between 0 and 0.08(m). The combined vertical error from base station coordinate solutions and rover trajectories range from 0 and 0.14 (m), with the average approximately 0.08 (m).

All survey systems and methods utilized during this survey were as described in DS1031-CharlotteH_WGS84_NAVD88-G03_SB_metadata.xyz.txt.

All data were reviewed for DTONs and none were identified in this survey.

US Geological Survey acquired the data outlined in this report. Data are available at <https://doi.org/10.3133/ds1031>. Additional documentation from the data provider may be attached to this report.

The survey is partially adequate to supersede previous data.