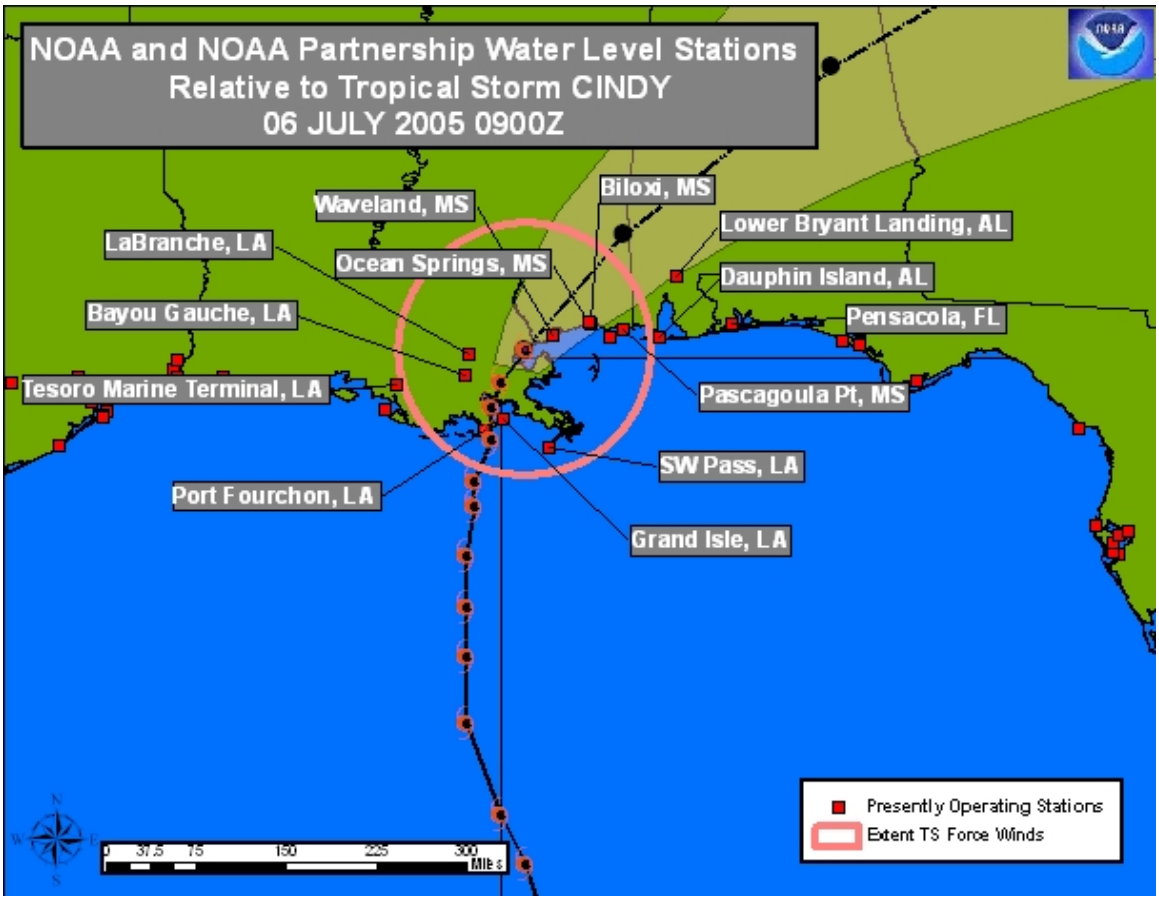
Hurricane Cindy Preliminary Water Levels



*For the purpose of timely release, data contained within this report have undergone a "limited" NOS Quality Assurance/Control; however, the data have not yet undergone final verification.
All data subject to NOS verification.

July 2005

noaa **National Oceanic and Atmospheric Administration**

U.S. DEPARTMENT OF COMMERCE
National Ocean Service
Center for Operational Oceanographic Products and Services

SUMMARY

Tropical Storm CINDY made landfall near Grand Isle, LA continued northward near New Orleans, LA passing just east of Bay St Louis, MS on **06 July 05 @ 0500 CDT.** CINDY sustained winds of approximately **60 - 70 mph** with a minimum barometric pressure of approximately **998 mb.** CO-OPS water level stations from Grand Isle, LA to Pensacola, FL were impacted.

Ocean Springs, MS recorded the highest observed STORM TIDE at 1.904 m (6.25 ft) above MLLW, Pascagoula Point, MS recorded 1.781 m (5.84 ft), Waveland recorded 1.218 m (3.99 ft), and Biloxi recorded 1.537 m (5.04 ft)
NOTE: The Biloxi station was innundated and did not record a maximum elevation.

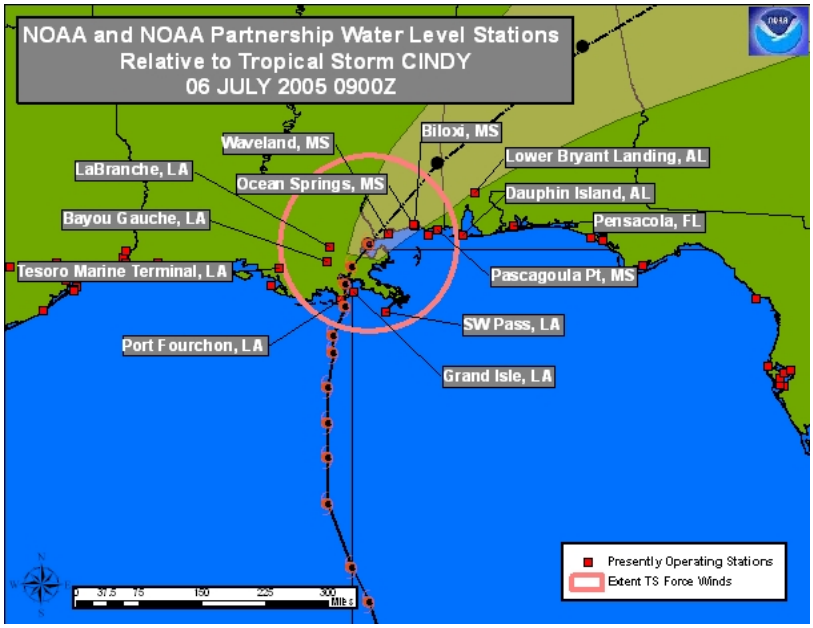


Figure 1. Tropical Storm CINDY made landfall near Grand Isle, LA continued northward near New Orleans, LA passing just east of Bay St Louis, MS on **06 July 05 @ 0500 CDT. Winds 60 – 70 mph, Pressure 998 mb.**

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Table 1. **Storm Tide Summary** for Tropical Storm CINDY. 06 July 05.

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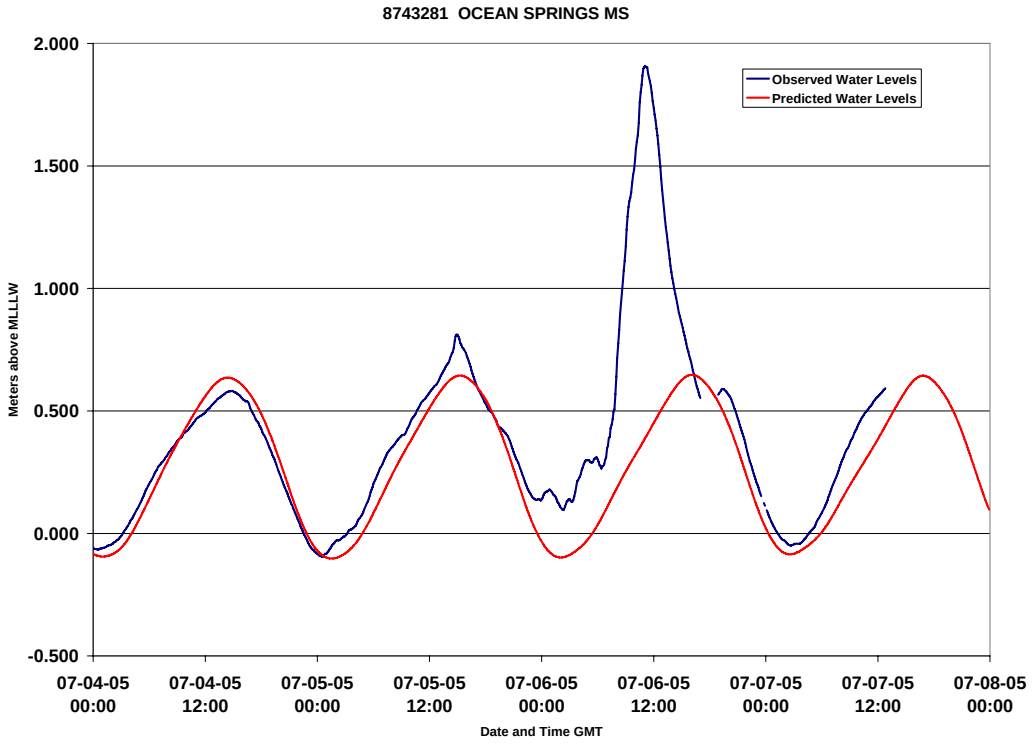
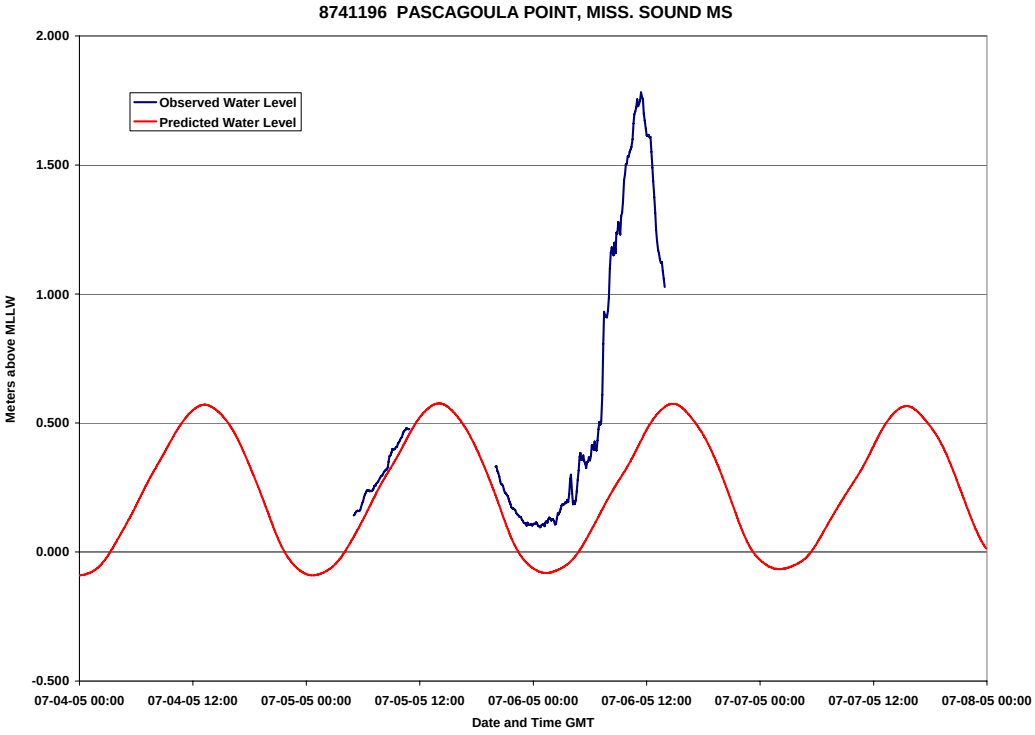
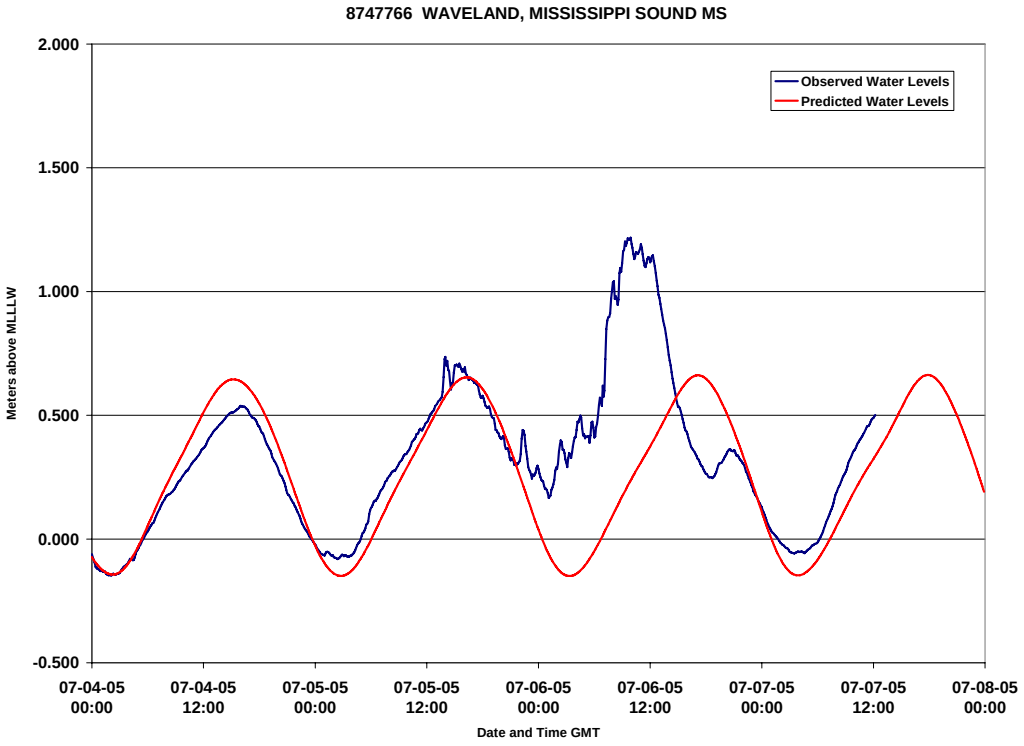
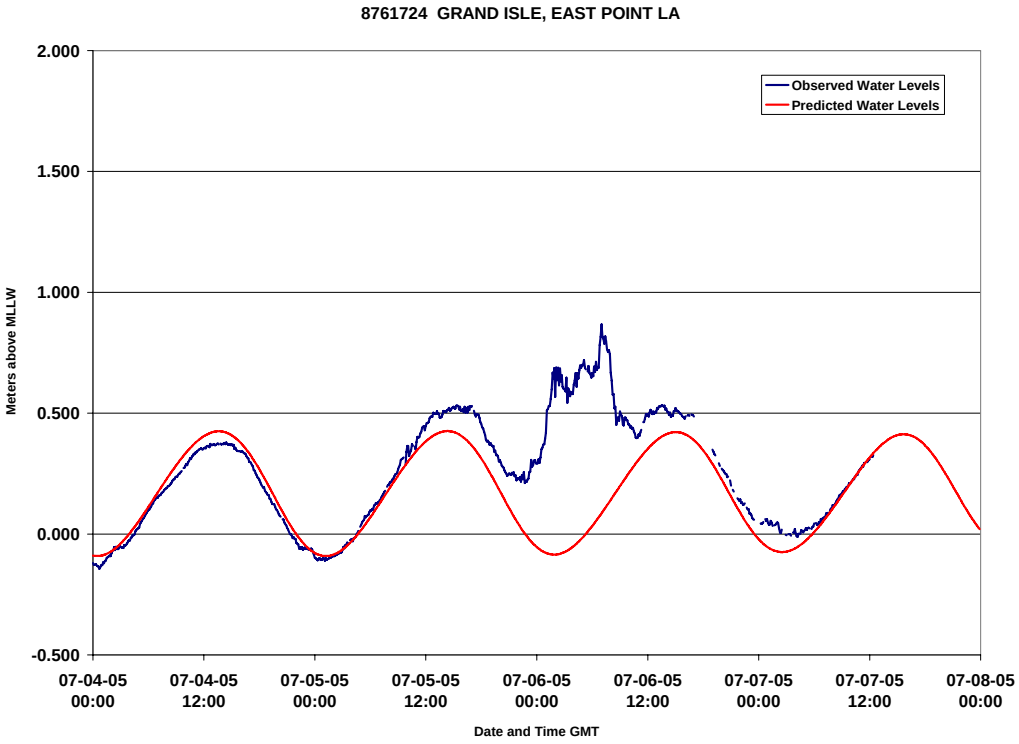
Station Name	Station ID	Latitude	Longitude	Date / Time GMT	Max Water Level above MLLW (m) Storm Tide	Predicted Water Levels (m)	Max Storm Surge (m)
Port Fourchon, LA	8762075	29 6.9 N	90 12.0 W	7/6/05 1318	0.611	0.461	0.150
Grand Isle, LA	8761724	29 15.8 N	89 57.4 W	7/6/05 0700	0.868	0.086	0.782
SW Pass, LA	8760922	28 55.9 N	89 24.4 W	7/6/05 1300	0.618	0.481	0.137
Pascagoula Point, MS	8741196	30 20.4 N	88 32.0 W	7/6/05 1124	1.781	0.432	1.349
Ocean Springs, MS	8743281	30 23.5 N	88 47.9 W	7/6/05 1118	1.904	0.403	***1.501**
Waveland, MS	8747766	30 16.9 N	89 22.0 W	7/6/05 0954	1.218	0.236	0.982
Biloxi, MS	8744117	30 24.7 N	88 54.2 W	7/6/05 1230	1.537	0.485	1.052
Lower Bryant Landing, AL	8737373	30 58.7 N	87 52.4 W	7/6/05 1736	1.193	0.615	0.578
Dauphin Is., AL	8735180	30 15.0 N	88 4.5 W	7/6/05 1700	0.836	0.458	0.378
Pensacola, FL	8729840	30 24.2 N	87 12.7 W	7/6/05 1712	0.795	0.526	0.269

NOTE *Ocean Springs Storm Surge Value based on predictions from nearby station and is subject to NOS verification.. Biloxi station was innundated and did not record a maximum elevation.
STORM TIDE water levels obtained from direct observation of actual water levels above MLLW Datum.
STORM SURGE water levels calculated from difference of STORM TIDE levels and Astronomical Predictions.




8741196 PASCAGOULA POINT, MISS. SOUND MS
Observed Water Level
Predicted Water Level
Meters above MLLW
2.000
1.500
1.000
0.500
0.000
-0.500
07-04-05 00:00
07-04-05 12:00
07-05-05 00:00
07-05-05 12:00
07-06-05 00:00
07-06-05 12:00
07-07-05 00:00
07-07-05 12:00
07-08-05 00:00
Date and Time GMT


8747766 WAVELAND, MISSISSIPPI SOUND MS
Observed Water Levels
Predicted Water Levels
Meters above MLLLW
2.000
1.500
1.000
0.500
0.000
-0.500
07-04-05 00:00
07-04-05 12:00
07-05-05 00:00
07-05-05 12:00
07-06-05 00:00
07-06-05 12:00
07-07-05 00:00
07-07-05 12:00
07-08-05 00:00
Date and Time GMT


8761724 GRAND ISLE, EAST POINT LA
Observed Water Levels
Predicted Water Levels
Meters above MLLW
2.000
1.500
1.000
0.500
0.000
-0.500
07-04-05 00:00
07-04-05 12:00
07-05-05 00:00
07-05-05 12:00
07-06-05 00:00
07-06-05 12:00
07-07-05 00:00
07-07-05 12:00
07-08-05 00:00
Date and Time GMT

Appendix 2

Excerpt From:

Tide and Current Glossary, NOAA National Ocean Service, Silver Spring, MD, 2000.

tide: The periodic rise and fall of a body of water resulting from gravitational interactions between Sun, Moon, and Earth. The vertical component of the particulate motion of a tidal wave. Although the accompanying horizontal movement of the water is part of the same phenomenon, it is preferable to designate this motion as tidal current. Same as astronomic tide.

tide (water level) gauge: An instrument for measuring the rise and fall of the tide (water level).

storm tide: As used by the National Weather Service, NOAA, the sum of the storm surge and astronomic tide. See storm surge and tide.

storm surge: The local change in the elevation of the ocean along a shore due to a storm. The storm surge is measured by subtracting the astronomic tidal elevation from the total elevation. It typically has a duration of a few hours. Since wind generated waves ride on top of the storm surge (and are not included in the definition), the total instantaneous elevation may greatly exceed the predicted storm surge plus astronomic tide. It is potentially catastrophic, especially on low lying coasts with gently sloping offshore topography. See storm tide.

National Water Level Observation Network (NWLON): The network of tide and water level stations operated by the National Ocean Service along the marine and Great Lakes coasts and islands of the United States.

datum (vertical): For marine applications, a base elevation used as a reference from which to reckon heights or depths. It is called a tidal datum when defined in terms of a certain phase of the tide. Tidal datums are local datums and should not be extended into areas which have differing hydrographic characteristics without substantiating measurements. In order that they may be recovered when needed, such datums are referenced to fixed points known as bench marks. See chart datum and bench marks.

chart datum: The datum to which soundings on a chart are referred. It is usually taken to correspond to a low-water elevation, and its depression below mean sea level is represented by the symbol Z_0. Since 1980, chart datum has been implemented to mean lower low water for all marine waters of the United States, its territories, Commonwealth of Puerto Rico, and Trust Territory of the Pacific Islands. See datum and National Tidal Datum Convention of 1980.

geodetic datum: See National Geodetic Vertical Datum of 1929 (NGVD 1929) and North American Vertical Datum of 1988 (NAVD 1988).

Mean Lower Low Water (MLLW): A tidal datum. The average of the lower low water height of each tidal day observed over the National Tidal Datum Epoch. See National Tidal Datum Epoch. For stations with shorter series, comparison of simultaneous observations with a control tide station is made in order to derive the equivalent datum of the National Tidal Datum Epoch.

National Tidal Datum Epoch: The specific l9-year period adopted by the National Ocean Service as the official time segment over which tide observations are taken and reduced to obtain mean values (e.g., mean lower low water, etc.) for tidal datums. It is necessary for standardization because of periodic and apparent secular trends in sea level. The present National Tidal Datum Epoch is 1960 through 1978. It is reviewed annually for possible revision and must be actively considered for revision every 25 years.

National Tidal Datum Convention of 1980: Effective November 28, 1980, the Convention: (1) establishes one uniform, continuous tidal datum system for all marine waters of the United States, its territories, Commonwealth of Puerto Rico, and Trust Territory of the Pacific Islands, for the first time in history; (2) provides a tidal datum system independent of computations based on type of tide; (3) lowers chart datum from mean low water to mean lower low water along the Atlantic coast of the United States; (4) updates the National Tidal Datum Epoch from 1941 through 1959, to 1960 through 1978; (5) changes the name Gulf Coast Low Water Datum to mean lower low water; (6) introduces the tidal datum of mean higher high water in areas of predominantly diurnal tides; and (7) lowers mean high water in areas of predominantly diurnal tides. See chart datum.

National Geodetic Vertical Datum of 1929 [NGVD 1929]: A fixed reference adopted as a standard geodetic datum for elevations determined by leveling. The datum was derived for surveys from a general adjustment of the first-order leveling nets of both the United States and Canada. In the adjustment, mean sea level was held fixed as observed at 21 tide stations in the United States and 5 in Canada. The year indicates the time of the general adjustment. A synonym for Sea-level Datum of 1929. The geodetic datum is fixed and does not take into account the changing stands of sea level. Because there are many variables affecting sea level, and because the geodetic datum represents a best fit over a broad area, the relationship between the geodetic datum and local mean sea level is not consistent from one location to another in either time or space. For this reason, the National Geodetic Vertical Datum should not be confused with mean sea level. See North American Vertical Datum of 1988 (NAVD 1988).

North American Vertical Datum of 1988 [NAVD 1988]: A fixed reference for elevations determined by geodetic leveling. The datum was derived from a general

adjustment of the first-order terrestrial leveling nets of the United States, Canada, and Mexico. In the adjustment, only the height of the primary tidal bench mark, referenced to the International Great Lakes Datum of 1985 (IGLD 1985) local mean sea level height value, at Father Point, Rimouski, Quebec, Canada was held fixed, thus providing minimum constraint. NAVD 1988 and IGLD 1985 are identical. However, NAVD 1988 bench mark values are given in Helmert orthometric height units while IGLD 1985 values are in dynamic heights. See International Great Lakes Datum of 1985, National Geodetic Vertical Datum of 1929, and geopotential difference.

bench mark (BM): A fixed physical object or mark used as reference for a horizontal or vertical datum. A tidal bench mark is one near a tide station to which the tide staff and tidal datums are referred. A primary bench mark is the principal mark of a group of tidal bench marks to which the tide staff and tidal datums are referred.

For further information on tides, tidal predictions, tidal datums and related publications, contact:

NOAA, National Ocean Service
CO-OPS, Products and Services N/OPS3
Attn: User Services
1305 East-West Highway
Silver Spring, MD 20190-3281

(301) 713-2877 Ext. 176
Fax: (301) 713-4437