Apalachicola NERR Meteorological Metadata

January - December 2005

Last Update: **October 16, 2023**

**I. Data Set & Research Descriptors**

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**2) Entry verification:**

The Data Logger program (NERR\_4\_2.csi) controls the sampling of the sensors. Meteorological conditions are measured every 5 seconds from each sensor and stored on the CR10X. Data are output to a file in three arrays: array 15 stores 15 minute averages, max and min data; array 60 stores hourly data; max and min data; and array 144 stores daily average, max and min data. Storage modules are used to interface between the CR10X and the PC208W software supplied by Campbell Scientific. New 4M storage modules are used to store the larger output needed for the new program. EQWin now replaces the WDMP as the NERR MET primary QA/QC program.

On 3/01/2005 at 12:04 the CR10X program was updated (NERR\_4\_2.csi). The midnight time stamp was changed within the program from 00:00 to 24:00.

Files are exported from PC208W in a comma-delimited format (.DAT file) and opened in Microsoft Excel for pre-processing with the EQWin format macro that was developed by the CDMO to reformat the header columns, insert station codes, insert a date column (mm/dd/yyyy), correct the time column format and reformat the data to the appropriate number of decimal places. The pre-processed file is then ready to be copied into the EQWin weather.eqi file where the data are QA/QC'd and archived in the database. EQWin queries, reports and graphs are used to discover data set outliers (values that fall outside the range that the instrument is designed to measure) and large changes in the data. EQWin is also used to generate statistics, view graphs, create customized queries and reports of the data, cross-query the water, weather and nutrient data and finally export the data to the CDMO. Any anomalous data are investigated and noted below in the Anomalous/ Suspect Data Section. Any data corrections that were performed are noted in the Deleted Data Section below.

**3) Research objectives:**

Data collected from the East Bay weather station complement those data taken from the East Bay water quality station. Data are also used for the analysis of other datalogger data collected at Cat Point and Dry Bar. Positioning the weather station in East Bay allows the Reserve to monitor changes in rainfall, photosynthetically active radiation, temperature, and other weather parameters influencing the water quality of East Bay. East Bay drains the Tate's Hell Swamp area, which was altered in the late 1960's and early 1970's by timber companies. An EPA grant allowed the Northwest Florida Water Management District to begin restoration of the site in 1995 to reduce non-point source runoff. East Bay is also an important nursery area for numerous fish and invertebrate species within Apalachicola Bay.

**4) Research methods:**

Data Collection Schedule:

i) 15 minute data are averages/totals of 5 second sampling over the period of 15 minutes.

ii) 60 minute data are averages/totals of 5 second sampling over the period of 1 hour.

iii) 24 hour data are averages/totals of 5 second sampling over the period of 24 hours.

iv) Parameters collected during each interval include:

Date, Julian date, Time, Average Temperature (°C), Maximum and Minimum Temperature, Time at maximum and minimum temperature, Relative Humidity, Maximum and Minimum Relative Humidity, Time at maximum and minimum relative humidity, Average Barometric Pressure, Minimum and Maximum

Barometric Pressure, Time at max and min barometric pressure, Wind speed, Wind Direction, Standard deviation of wind direction, Maximum and Minimum Wind Speed, Time at minimum and maximum wind speed, Total Precipitation (for that interval), Total Photosynthetically Active Radiation (for that interval), and Battery Voltage.

Sensor Calibration QA/QC

Sensors are calibrated either annually or biannually according to the maintenance schedule dictated by the Weather SOPs. The sensors and their wires are inspected monthly to make sure that they are clean, moving freely, and undamaged. The arm of the wind sensor is checked monthly to assure that it is aligned to true north.

Data Storage/Interface with PC208W

Storage modules are used to interface between the CR10X and the PC208W software supplied by Campbell Scientific. 4M storage modules are used to store the larger output needed for the new NERR\_4\_2.csi program. Storage modules are exchanged monthly. At the time of the exchange, a handheld Kestrel 4000 is used to measure weather conditions and compare them to the measurements of the sensors on the weather station. The storage module is downloaded with the PC208W software.

Preprocessing and Data QA/QC

The raw .DAT file is run through the CDMO “EQWin Format” macro in Excel. At this point the file is inspected to detect any kind of gross sensor malfunction. The file can then be imported into EQWin. Queries, Reports, and Graphs are created in EQWin to detect sensor malfunction or outliers. The following criteria are used in the EQWin program to flag potentially erroneous data:

Air Temp:

- Sample not greater than 50 degrees Celsius (C)

- Sample not less than –40 degrees Celsius (C)

- 15 min sample greater than max for the day

- 15 min sample less than the min for the day

Relative Humidity:

-Sample not greater than 100 percent humidity (%)

-Sample not less than 0 percent humidity (%)

-15 minute averages not greater than the max for the day

-15 minute averages not less than the min for the day

Barometric Pressure:

- Sample greater than 1060 millibars (mb)

- Sample not less than 900 millibars (mb)

-15 minute averages not greater than the max for the day

-15 minute averages not less than the min for the day

Wind Speed:

- Sample not greater than 30 meters per second (m/s)

- Sample not less than 0.5 meters per second (m/s) for 12 hours consecutively

Wind Direction:

- Sample not greater than 360 degrees

- Sample not less than 0 degrees

Precipitation

-15 minute total not greater than 5 millimeters

Solar Radiation

-15 minute total not greater than 5000 millimoles per meter squared (mmol/m^2)

-15 minute total not less than 0 millimoles per meter squared (mmol/m^2)

Time:

- 15-minute interval not recorded

For all data:

* Duplicate interval data

There were no other analyses, data collection intervals, or QA/QC procedures utilized other than EQWIN expressed in Version 5.1 of the CDMO manual.

**5) Site location and character:**

The Apalachicola National Estuarine Research Reserve is located in the northwestern part of Florida, generally called the panhandle. It is located adjacent to the City of Apalachicola, and encompasses most of the Apalachicola Bay system, including 52 miles of the lower Apalachicola River. Passes, both natural and manmade, connect Apalachicola Bay to the northeastern Gulf of Mexico. The sampling site is located in the upper reaches of East Bay. East Bay is separated from Apalachicola Bay by two bridges and a causeway and is located to the north of Apalachicola Bay proper. The bay is 8.2 km long, has an average depth of approximately 1.0 m MHW, and an average width of 1.8 km. The tides in East Bay are mixed and range from 0.3 m to 1.0 m (average 0.5 m).

The weather station is located at latitude 29 47.454' N and longitude 84 53.004' W. This site is less than 0.5 nautical miles west of the East Bay water quality station. The site is located near the tip of a peninsula, which separates Blount's Bay from West Bayou. The peninsula is dominated by marsh vegetation (mainly *Juncus roemerianus*). There is a cabbage palm hammock along the southeastern shoreline of the peninsula. The dominant upland habitat is primarily pineland forest to the northwest, which includes slash pine, saw palmetto, and sand pine. The weather station sensors are mounted at the top of a 3-meter tower. The tower is mounted on a 2m platform. The tipping bucket rain gauge is mounted on a 1m platform approximately 4m feet from the weather station platform. There is nothing nearby to shade the tower and the nearest wind block is the edge of the pine forest about one-half to three-quarters of a mile north to northwest of the station.

**6) Data collection period: January-December, 2005**

The Apalachicola weather monitoring station was erected on August 27, 1999 and began monitoring on September 3, 1999. The data submitted with this report encompasses data collected from 00:15 January 1, 2005 through 24:00 December 31, 2005. Actual module deployment during this time period began on 12/21/2004 at 15:17 and ended on 1/5/2006 at 10:50.

**7) Distribution**

According to the Ocean and Coastal Resource Management Data Dissemination Policy for the NERRS System-wide Monitoring Program, NOAA/ERD retains the right to analyze, synthesize and publish summaries of the NERRS System-wide Monitoring Program data. The PI retains the right to be fully credited for having collected and processed the data. Following academic courtesy standards, the PI and NERR site where the data were collected will be contacted and fully acknowledged in any subsequent publications in which any part of the data are used. Manuscripts resulting from the NOAA/OCRM supported research that are produced for publication in open literature, including refereed scientific journals, will acknowledge that the research was conducted under an award from the Estuarine Reserves Division, Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration. The data set enclosed within this package/transmission is only as good as the quality assurance/quality control procedures outlined by the enclosed metadata reporting statement. The user bears all responsibility for its subsequent use/misuse in any further analyses or comparisons. The Federal government does not assume liability to the Recipient or third persons, nor will the Federal government reimburse or indemnify the Recipient for its liability due to any losses resulting in any way from the use of this data. NERR weather data and metadata can be obtained from the Research Coordinator at the individual NERR site (please see Section 1 Principal investigators and contact persons), from the Data Manager at the Centralized Data Management Office (please see personnel directory under the general information link on the CDMO home page) and online at the CDMO home page Http://cdmo.baruch.sc.edu. Data are available in text format and Access data tables.

**8) Associated researchers and projects:**

Dulaiova, H. / Florida State University Department of Oceanography. NOAA Graduate Research Fellowship. Determination of the distribution and volume of groundwater entering Apalachicola Bay from St. George Island.

Edmiston, H.L., Wanat, J., Levi, L., Stewart, J., Lamb, M., Fahrny, S./ Apalachicola

National Estuarine Research Reserve. Distribution and density of fishes and benthic invertebrates in Apalachicola Bay.

Edmiston, H.L., Levi, L., Wanat, J., Stewart, J., Lamb, M., Fahrny, S./ Apalachicola National Estuarine Research Reserve. System-Wide Monitoring Program (SWMP) for water quality, weather, nutrients & chlorophyll A, and submerged aquatic vegetation monitoring in Apalachicola Bay.

Gihring, T./ Florida State University. The role of oligohaline marshes as a source or sink of nitrogen to the Apalachicola Bay.

Niu, X./ Florida State University Department of Statistics, Edmiston, H.L., Bailey, G.O./ Apalachicola

National Estuarine Research Reserve. Time series models for salinity and other environmental factors in the Apalachicola estuarine system (1998). Estuarine, Coastal, and Shelf Science 46:549-563.

Peterson, R./ Florida State University. Origin and fate of suspended particulates in the Apalachicola River: Impact on Apalachicola Bay

Putland, J./ Florida State University Department of Oceanography. NOAA Graduate Research Fellowship.

Planktonic food web variations related to salinity and nutrient patterns in Apalachicola Bay.

Stewart, J., Edmiston, H.L./ Apalachicola National Estuarine Research Reserve. Growth and spat recruitment related to environmental conditions at oyster bars in Apalachicola Bay.

Surratt, D./ Florida A&M University. Compare and contrast the historic and current trophic status of Apalachicola Bay using stable isotopes in sediments.

Wilber, P., et.al./NOAA Coastal Services Center & Edmiston, H.L., et al./Apalachicola National Estuarine Research Reserve. Benthic habitat mapping in Apalachicola Bay.

**II. Physical Structure Descriptors**

**9) Sensor Specifications:**

LiCor Quantum Pyranometer

Model # LI190SB

Stability: <±2% change over 1 yr

Operating Temperature: -40 to 65°C

Sensitivity: typically 5 µA per 1000µmoles s-1 m-2

Light spectrum wavelength: 400 to 700 nm

Date of last calibration: 3/23/04

In Use Dates are from 00:15 1/01/2005 to 24:00 12/31/2005

Wind Sentry: RM Young Model # 03001-5

Range: 0-50 m/s; 360° mechanical

Date of last calibration: 2/16/2004

In Use Dates are from 00:15 1/01/2005 through 09:00 9/14/2005

\*\*Note\*\* The arm of the wind sensor is checked monthly to ensure that it remains aligned to true north.

Wind Sentry: RM Young Model # 03001-5

Range: 0-50 m/s; 360° mechanical

Date of last calibration: 8/12/2005

In Use Dates are from 09:00 9/14/2005 through 24:00 12/31/2005

\*\*Note\*\* The arm of the wind sensor is checked monthly to ensure that it remains aligned to true north.

Temperature and Relative Humidity: Vaisala Model #: HMP45AC

Operating Temperature: -40 to 60°C

Temperature Measurement Range: -40 to 60°C

Temperature Accuracy: ± 0.2 °C @ 20°C

Relative Humidity Measurement Range: 0-100% non-condensing

RH Accuracy: +/-2% RH (0-90%) and +/-3% (90-100%)

Uncertainty of calibration: ± 0.6% RH

Date of Last calibration: 8/03/2004

In Use Dates are from 00:15 1/01/2005 to 09:00 9/14/2005

Temperature and Relative Humidity: Vaisala Model #: HMP45AC

Operating Temperature: -40 to 60°C

Temperature Measurement Range: -40 to 60°C

Temperature Accuracy: ± 0.2 °C @ 20°C

Relative Humidity Measurement Range: 0-100% non-condensing

RH Accuracy: +/-2% RH (0-90%) and +/-3% (90-100%)

Uncertainty of calibration: ± 0.6% RH

Date of Last calibration: 8/16/2005

In Use Dates are from 09:00 9/14/2005 to 24:00 12/31/2005

Barometric Sensor: Vaisala model CS-105

Operating Range:

Pressure: 600 to 1060 mb

Temperature: -40 to 60C

Humidity: non-condensing

Accuracy: ±0.5 to 6.0 mb (20 to 60°C)

Stability: ± 0.1 mb per year

Date of Last calibration: 2/18/2004

In Use Dates are from 00:15 1/01/2005 through 24:00 12/31/2005

Precipitation: Tipping Bucket Rain Gauge FIT Model #: TE 525

Range: 0.1 mm

Accuracy: 1.0% at <2"/hr

Date of Last calibration: 6/27/2005

In Use Dates are from 00:15 1/01/2005 through 09:15 8/19/2005

Precipitation: Tipping Bucket Rain Gauge FIT Model #: TE 525

Range: 0.1 mm

Accuracy: 1.0% at <2"/hr

Date of Last calibration: 3/30/2005

In Use Dates are from 09:15 8/19/2005 through 24:00 12/31/2005

Storage Module

Model #: SM4M

Storage capacity: 2 million low-resolution data values

Program storage: stores up to 8 programs with a total capacity of 128 KB

Processor: Hitachi H8S

Operating system: 64KB, flash memory based, and user downloadable

Operating range: Temperature: -35° to +65°C

Baud rates: 9600, 76800

Memory type: user selectable for either ring style (default) or fill and drop.

Power requirements: 5 +/-0.3 VDC @ 100mA

Campbell Scientific CR10X Wiring Panel has 128K of flash memory (EEPROM), in which it stores the operating system and it's program (that it uses to run the weather station). Additionally, there are 128K of SRAM, which it uses to run the program and store its measurements and for final data storage.

**10) Coded variable indicator and variable code definitions:**

Site Definitions: The weather data master table files for the Apalachicola NERR are coded APAEBMET, indicating the location of the weather station (East Bay) within the greater Apalachicola Bay system.

**11) Data Anomalies:**

**Arrays:**

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at [www.nerrsdata.org/get/landing.cfm](http://www.nerrsdata.org/get/landing.cfm) throughout the fall of 2022.

Photosynthetically Active Radiation (PAR) measurements throughout the year are periodically negative. The values are within the error range of the sensor and should be rounded to zero. The values are not changed in the dataset.

Relative Humidity (RH) values periodically are slightly greater than 100% throughout the year. The observed values, of +1 to 2%, are within the error range of the sensor and have been retained. The values can be attributed to a super-saturation event.

January

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 1/13/2005 13 20:00 15 7.6

apaebmet 1/13/2005 13 20:15 15 5.3

apaebmet 1/22/2005 22 12:00 15 6.6

February

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 2/14/2005 45 08:30 15 5.6

apaebmet 2/27/2005 58 13:45 15 5.3

apaebmet 2/27/2005 58 14:00 15 8.6

March

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 3/07/2005 67 23:00 15 21.6

apaebmet 3/07/2005 67 23:15 15 7.4

apaebmet 3/16/2005 76 04:00 15 14.0

apaebmet 3/16/2005 76 09:30 15 5.6

apaebmet 3/25/2005 85 10:15 15 14.2

apaebmet 3/25/2005 85 10:30 15 7.9

apaebmet 3/25/2005 85 10:45 15 10.9

apaebmet 3/25/2005 85 11:00 15 23.6

April

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 4/01/2005 92 15:15 15 11.7

apaebmet 4/01/2005 92 15:30 15 6.6

apaebmet 4/01/2005 92 15:45 15 11.4

apaebmet 4/01/2005 92 16:00 15 20.8

apaebmet 4/01/2005 92 16:15 15 7.4

apaebmet 4/01/2005 92 16:30 15 6.6

apaebmet 4/01/2005 92 16:45 15 6.4

apaebmet 4/07/2005 98 06:15 15 12.2

apaebmet 4/07/2005 98 06:45 15 12.7

apaebmet 4/07/2005 98 07:00 15 7.6

apaebmet 4/07/2005 98 07:15 15 8.9

apaebmet 4/07/2005 98 07:30 15 13.7

apaebmet 4/07/2005 98 07:45 15 6.6

apaebmet 4/23/2005 114 02:30 15 9.1

apaebmet 4/23/2005 114 02:45 15 8.6

apaebmet 4/23/2005 114 07:00 15 8.4

apaebmet 4/30/2005 121 15:45 15 16.8

apaebmet 4/30/2005 121 16:00 15 5.3

June

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 6/28/2005 179 01:00 15 5.1

July

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 7/01/2005 182 14:00 15 8.9

The following rain event was associated with Hurricane Dennis:

apaebmet 7/09/2005 190 16:45 15 7.1

apaebmet 7/09/2005 190 20:15 15 8.9

apaebmet 7/10/2005 191 07:45 15 6.6

apaebmet 7/10/2005 191 08:00 15 9.1

Hurricane Dennis removed the funnel top and screen from the rain gauge. It is unclear of exactly when it came off. Therefore the following precipitation data is suspect:

Station Code Date Julian Time Array TotPrcp

apaebmet 7/10/2005 191 10:00 15 0.0

apaebmet 7/10/2005 191 10:00 60 2.8

August

All remaining Temperature/ Relative Humidity data values (ATemp, MaxTemp, MinTemp, RH, MaxRH, MinRH) between 8/02/2005 at 21:30 through 8/19/2005 at 09:15 are –99999 readings. The rest of the Temperature/ Relative Humidity data during that time was deleted due to malfunctions of the sensor and/or battery problems. (See Section 12, Deleted data).

The following Barometric Pressure sensor readings were –99999 due to malfunctions of the sensor and/or battery problems. The time values (MaxBPT or MinBPT) associated with –99999 MaxBP or MinBP readings were deleted.

Date Julian Time Array Date Julian Time Array Data Type

8/03/2005 215 02:30 15 BP, MinBP

8/03/2005 215 03:00 60 BP, MinBP

8/03/2005 215 08:30 15 BP, MinBP

8/03/2005 215 08:45 15 through 8/03/2005 215 09:00 15 BP, Max/ Min BP

8/03/2005 215 09:00 60 BP, MinBP

8/03/2005 215 09:15 15 through 8/03/2005 215 15:15 15 BP, Max/ Min BP

8/03/2005 215 15:30 15 BP, MinBP

8/03/2005 215 15:45 15 through 8/03/2005 215 16:00 15 BP, Max/ Min BP

8/03/2005 215 16:00 60 BP, MinBP

8/03/2005 215 16:15 15 through 8/03/2005 215 22:00 60 BP, Max/ Min BP

8/03/2005 215 22:15 15 through 8/04/2005 216 02:00 60 BP, MinBP

8/04/2005 216 24:00 144 BP, MinBP

8/05/2005 217 01:30 15 BP, MinBP

8/05/2005 217 02:00 60 BP, MinBP

8/05/2005 217 02:30 15 through 8/05/2005 217 04:45 15 BP, MinBP

8/05/2005 217 05:00 15 BP, Max/ Min BP

8/05/2005 217 05:00 60 BP, MinBP

8/05/2005 217 05:15 15 through 8/05/2005 217 05:45 15 BP, Max/ Min BP

8/05/2005 217 06:00 15 through 8/05/2005 217 06:15 15 BP, MinBP

8/05/2005 217 06:30 15 through 8/05/2005 217 07:00 15 BP, Max/ Min BP

8/05/2005 217 07:00 60 BP, MinBP

8/05/2005 217 07:15 15 through 8/05/2005 217 10:30 15 BP, Max/ Min BP

8/05/2005 217 10:45 15 BP, MinBP

8/05/2005 217 11:00 15 BP, Max/ Min BP

8/05/2005 217 11:00 60 BP, MinBP

8/05/2005 217 11:15 15 through 8/05/2005 217 16:45 15 BP, Max/ Min BP

8/05/2005 217 17:00 15 through 8/05/2005 217 17:00 60 BP, MinBP

8/05/2005 217 24:00 144 BP, MinBP

8/06/2005 218 04:30 15 BP, MinBP

8/06/2005 218 04:45 15 through 8/06/2005 218 05:00 15 BP, Max/ Min BP

8/06/2005 218 05:00 60 BP, MinBP

8/06/2005 218 05:15 15 through 8/06/2005 218 07:30 15 BP, Max/ Min BP

8/06/2005 218 07:45 15 through 8/06/2005 218 08:00 60 BP, MinBP

8/06/2005 218 24:00 144 BP, MinBP

8/08/2005 220 03:00 15 through 8/08/2005 220 03:00 60 BP, MinBP

8/08/2005 220 24:00 144 BP, MinBP

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 8/21/2005 233 12:45 15 6.4

apaebmet 8/21/2005 233 13:00 15 6.6

The following TotPAR sensor readings were –99999 due to malfunctions of the sensor and/or battery problems:

Date Julian Time Array Date Julian Time Array Data Type

8/02/2005 214 21:45 15 through 8/02/2005 214 22:00 60 TotPAR

8/02/2005 214 24:00 144 TotPAR

8/03/2005 215 01:30 15 through 8/03/2005 215 01:45 15 TotPAR

8/03/2005 215 02:00 60 TotPAR

8/03/2005 215 02:30 15 through 8/03/2005 215 04:00 60 TotPAR

8/03/2005 215 05:30 15 through 8/05/2005 217 17:00 60 TotPAR

8/05/2005 217 24:00 144 TotPAR

8/06/2005 218 04:30 15 through 8/06/2005 218 08:00 60 TotPAR

8/06/2005 218 24:00 144 TotPAR

8/07/2005 219 07:00 15 through 8/07/2005 219 07:00 60 TotPAR

8/07/2005 219 24:00 144 TotPAR

8/08/2005 220 03:00 15 through 8/08/2005 220 03:15 15 TotPAR

8/08/2005 220 04:00 60 TotPAR

8/08/2005 220 24:00 144 TotPAR

8/11/2005 223 01:30 15 through 8/11/2005 223 02:00 60 TotPAR

8/11/2005 223 02:30 15 TotPAR

8/11/2005 223 03:00 60 TotPAR

8/11/2005 223 24:00 144 TotPAR

8/12/2005 224 24:00 144 TotPAR

8/13/2005 225 24:00 144 TotPAR

8/14/2005 226 10:45 15 TotPAR

8/14/2005 226 11:00 60 TotPAR

8/14/2005 226 14:00 15 through 8/14/2005 226 14:00 60 TotPAR

8/14/2005 226 15:00 15 through 8/14/2005 226 15:45 15 TotPAR

8/14/2005 226 16:00 60 TotPAR

8/14/2005 226 24:00 144 TotPAR

The following AvgVolt sensor readings were –99999 due to battery problems:

Date Julian Time Array Date Julian Time Array Data Type

8/03/2005 215 02:30 15 AvgVolt

8/03/2005 215 03:00 60 AvgVolt

8/03/2005 215 08:30 15 through 8/04/2005 216 02:00 60 AvgVolt

8/04/2005 216 02:30 15 AvgVolt

8/04/2005 216 03:00 60 AvgVolt

8/04/2005 216 24:00 144 AvgVolt

8/05/2005 217 01:15 15 through 8/05/2205 217 01:45 15 AvgVolt

8/05/2005 217 02:00 60 AvgVolt

8/05/2005 217 02:30 15 through 8/05/2005 217 17:00 60 AvgVolt

8/05/2005 217 24:00 144 AvgVolt

8/06/2005 218 04:30 15 through 8/06/2005 218 08:00 60 AvgVolt

8/06/2005 218 24:00 144 AvgVolt

8/08/2005 220 03:00 15 through 8/08/2005 220 03:00 60 AvgVolt

8/08/2005 220 24:00 144 AvgVolt

September

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 9/27/2005 270 16:15 15 6.1

October

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 10/07/2005 280 07:30 15 5.1

apaebmet 10/07/2005 280 08:45 15 14.7

November

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 11/20/2005 324 19:00 15 13.5

apaebmet 11/20/2005 324 19:15 15 8.9

December

The following Precipitation amounts are related to rainfall events over Apalachicola Bay. The high values coincide with values measured at the nearby NWS weather station in Apalachicola and are considered to be correct. They remain unchanged in the dataset.

Station Code Date Julian Time Array TotPrcp

apaebmet 12/08/2005 342 17:00 15 5.8

apaebmet 12/08/2005 342 17:15 15 9.7

**12) Deleted Data**

**Arrays:**

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at [www.nerrsdata.org/get/landing.cfm](http://www.nerrsdata.org/get/landing.cfm) throughout the fall of 2022.

March

The CR10X was turned off to install the new NERR\_4\_2.csi program onto the datalogger. The following samples were deleted:

Station Code Date Julian Time Array Data Type

apaebmet 3/01/2005 61 12:15 15 All data

apaebmet 3/01/2005 61 13:00 60 All data

apaebmet 3/01/2005 61 24:00 144 All data

July

The following data was deleted due to missing prior associated data:

Station Code Date Julian Time Array Data Type

apaebmet 7/27/2005 208 09:00 60 All data

apaebmet 7/27/2005 208 24:00 144 All data

July - August

Hurricane Dennis removed the funnel top and screen from the rain gauge. Therefore the precipitation data from 7/10/2005 at 10:15 through 8/19/2005 at 09:00 (array 60) and 10:00 (array 60) and 24:00 (array 144) was deleted. The Data Management Oversight Committee was notified immediately about missing precipitation data until the new rain gauge was purchased and installed. Also at 09:15 on 8/19/2005 the oversight committee was notified when the instrument was up and collecting data again.

August

On 8/19/2005 the Temperature/ Relative Humidity sensor was found disconnected from the shield. The data recorded for the deployment was out of sensor range or -99999. All MaxTempT, MinTempT, MaxRHT, and MinRHT data from 8/02/2005 at 02:30 through 8/19/2005 at 09:15 and 10:00 (array 60) and 24:00 (array 144) was deleted. All other Temperature/ Relative Humidity data (ATemp, MaxTemp, MinTemp, RH, MaxRH, and MinRH) from 8/02/2005 at 02:30 through 8/19/2005 at 09:15 and 10:00 (array 60) and 24:00 (array 144) were deleted, except –99999 values (See Section 11, Data Anomalies).

The following Barometric Pressure data was deleted due sensor malfunction and/or battery problems. Data Type code All BP data includes BP, MaxBP, MaxBPT, MinBP, MinBPT. If the MaxBP or the MinBP was deleted then the associated time value (MaxBPT or MinBPT) was also deleted.

Date Julian Time Array Date Julian Time Array Data Type

8/03/2205 215 02:30 15 MaxBP

8/03/2005 215 02:45 15 through 8/03/2005 215 03:00 15 BP, MaxBP

8/03/2005 215 03:00 60 MaxBP, MinBP

8/03/2005 215 03:15 15 BP, MaxBP

8/03/2005 215 04:00 60 BP, MaxBP

8/03/2005 215 06:30 15 through 8/03/2005 215 06:45 15 BP, MaxBP

8/03/2005 215 07:00 15 All BP data

8/03/2005 215 07:00 60 BP, MaxBP

8/03/2005 215 07:15 15 through 8/03/2005 215 08:15 15 All BP data

8/03/2005 215 08:30 15 MaxBP

8/03/2005 215 09:00 60 MaxBP

8/03/2005 215 22:15 15 through 8/04/2005 216 02:00 60 MaxBP

8/04/2005 216 02:15 15 BP, MaxBP

8/04/2005 216 02:30 15 through 8/04/2005 216 04:00 15 All BP data

8/04/2005 216 04:00 60 BP, MaxBP

8/04/2005 216 04:15 15 through 8/04/2005 216 07:15 15 All BP data

8/04/2005 216 07:30 15 BP, MaxBP

8/04/2005 216 07:45 15 through 8/04/2005 216 08:00 15 All BP data

8/04/2005 216 08:00 60 BP, MaxBP

8/04/2005 216 08:15 15 All BP data

8/04/2005 216 08:30 15 BP, MaxBP

8/04/2005 216 08:45 15 through 8/04/2005 216 09:00 15 All BP data

8/04/2005 216 09:00 60 through 8/04/2005 216 09:15 15 BP, MaxBP

8/04/2005 216 09:30 15 through 8/04/2005 216 09:45 15 All BP data

8/04/2005 216 10:00 15 through 8/04/2005 216 10:00 60 BP, MaxBP

8/04/2005 216 10:15 15 through 8/04/2005 216 11:00 60 All BP data

8/04/2005 216 11:15 15 through 8/04/2005 216 11:30 15 BP, MaxBP

8/04/2005 216 11:45 15 through 8/04/2005 216 12:00 15 All BP data

8/04/2005 216 12:00 60 BP, MaxBP

8/04/2005 216 12:15 15 through 8/04/2005 216 13:00 60 All BP data

8/04/2005 216 13:15 15 through 8/04/2005 216 14:00 60 BP, MaxBP

8/04/2005 216 14:15 15 through 8/04/2005 216 15:30 15 All BP data

8/04/2005 216 15:45 15 through 8/04/2005 216 16:30 15 BP, MaxBP

8/04/2005 216 16:45 15 through 8/04/2005 216 17:00 15 All BP data

8/04/2005 216 17:00 60 through 8/04/2005 216 18:15 15 BP, MaxBP

8/04/2005 216 18:30 15 All BP data

8/04/2005 216 18:45 15 through 8/04/2005 216 20:15 15 BP, MaxBP

8/04/2005 216 20:30 15 All BP data

8/04/2005 216 20:45 15 through 8/04/2005 216 22:00 60 BP, MaxBP

8/04/2005 216 22:15 15 All BP data

8/04/2005 216 22:30 15 through 8/04/2005 216 24:00 60 BP, MaxBP

8/04/2005 216 24:00 144 MaxBP

8/05/2005 217 00:15 15 through 8/05/2005 217 00:45 15 BP, MaxBP

8/05/2005 217 01:00 15 through 8/05/2005 217 01:00 60 BP, MaxBP

8/05/2005 217 01:15 15 All BP data

8/05/2005 217 01:30 15 MaxBP

8/05/2005 217 01:45 15 through 8/05/2005 217 02:00 15 All BP data

8/05/2005 217 02:00 60 MaxBP

8/05/2005 217 02:15 15 All BP data

8/05/2005 217 02:30 15 through 8/05/2005 217 04:45 15 MaxBP

8/05/2005 217 05:00 60 MaxBP

8/05/2005 217 06:00 15 through 8/05/2005 217 06:15 15 MaxBP

8/05/2005 217 07:00 60 MaxBP

8/05/2005 217 24:00 144 MaxBP

8/06/2005 218 04:30 15 MinBPT

8/07/2005 219 07:00 15 through 8/07/2005 219 07:00 60 MaxBP

8/07/2005 219 24:00 144 MaxBP

8/08/2005 220 03:00 15 through 8/08/2005 220 03:00 60 MaxBP

8/08/2005 220 03:15 15 BP, MaxBP

8/08/2005 220 04:00 60 MaxBP

8/08/2005 220 24:00 144 MaxBP

The following Barometric Pressure data was deleted due to outlier readings:

Station Code Date Julian Time Array Data Type

apaebmet 8/14/2005 226 10:45 15 MaxBP, MaxBPT

apaebmet 8/14/2005 226 11:00 60 MaxBP, MaxBPT

apaebmet 8/14/2005 226 24:00 144 MaxBP, MaxBPT

The following TotPAR data was deleted due to large negative numbers outside of the sensor range:

Date Julian Time Array Date Julian Time Array Data Type

8/11/2005 223 02:45 15 through 8/11/2005 223 03:00 15 TotPAR

8/11/2005 223 03:15 15 through 8/11/2005 223 24:00 60 TotPAR

8/12/2005 224 00:15 15 through 8/12/2005 224 24:00 60 TotPAR

8/13/2005 225 00:15 15 through 8/13/2005 225 24:00 60 TotPAR

8/14/2005 226 00:15 15 through 8/14/2005 226 10:30 15 TotPAR

8/14/2005 226 13:30 15 through 8/14/2005 226 13:45 15 TotPAR

8/14/2005 226 16:00 15 TotPAR

8/14/2005 226 16:15 15 through 8/14/2005 226 24:00 60 TotPAR

8/15/2005 227 00:15 15 through 8/15/2005 227 09:30 15 TotPAR

8/15/2005 227 10:00 60 TotPAR

8/15/2005 227 14:30 15 through 8/16/2005 228 04:15 15 TotPAR

8/16/2005 228 05:00 60 TotPAR

8/16/2005 228 05:30 15 TotPAR

8/16/2005 228 06:00 60 TotPAR

8/16/2005 228 09:00 15 TotPAR

8/16/2005 228 09:15 15 through 8/16/2005 228 12:00 60 TotPAR

8/16/2005 228 12:45 15 TotPAR

8/16/2005 228 13:00 60 TotPAR

8/16/2005 228 13:45 15 through 8/16/2005 228 14:00 15 TotPAR

8/16/2005 228 15:15 15 through 8/16/2005 228 24:00 144 TotPAR

8/17/2005 229 05:30 15 TotPAR

8/17/2005 229 05:45 15 TotPAR

8/17/2005 229 06:00 60 TotPAR

8/17/2005 229 20:15 15 TotPAR

8/17/2005 229 21:00 60 TotPAR

8/17/2005 229 24:00 144 TotPAR

The battery voltage recorded was between 0.2 and 25.6 volts, this is out of the sensor range of 9.6 –16.0 volts. The CR10X did not shut down during these low/high battery readings and sensor values were recorded. Therefore a problem occurred with the collection of the battery voltage and the following data was deleted:

Date Julian Time Array Date Julian Time Array Data Type

8/02/2005 214 22:00 15 AvgVolt

8/03/2005 215 01:45 15 AvgVolt

8/03/2005 215 03:00 15 AvgVolt

8/03/2005 215 03:15 15 through 8/03/2005 215 04:00 60 AvgVolt

8/03/2005 215 05:45 15 through 8/03/2005 215 06:45 15 AvgVolt

8/03/2005 215 07:00 60 AvgVolt

8/03/2005 215 07:30 15 through 8/03/2005 215 08:15 15 AvgVolt

8/04/2005 216 02:15 15 AvgVolt

8/04/2005 216 02:45 15 AvgVolt

8/04/2005 216 04:00 15 AvgVolt

8/04/2005 216 04:15 15 AvgVolt

8/04/2005 216 05:00 15 AvgVolt

8/04/2005 216 06:15 15 through 8/04/2005 216 08:00 15 AvgVolt

8/04/2005 216 08:15 15 through 8/04/2005 216 13:45 15 AvgVolt

8/04/2005 216 14:00 60 AvgVolt

8/04/2005 216 14:45 15 through 8/04/2005 216 15:00 15 AvgVolt 8/04/2005 216 15:15 15 through 8/04/2005 216 24:00 60 AvgVolt

8/05/2005 217 00:15 15 through 8/05/2005 217 00:30 15 AvgVolt

8/05/2005 217 01:00 15 through 8/05/2005 217 01:00 60 AvgVolt

8/05/2005 217 02:00 15 AvgVolt

8/05/2005 217 02:15 15 AvgVolt

8/11/2005 223 02:30 15 through 8/12/2005 224 01:45 15 AvgVolt

8/12/2005 224 02:00 60 through 8/12/2005 224 05:00 60 AvgVolt

8/12/2005 224 05:30 15 through 8/12/2005 224 12:00 60 AvgVolt

8/12/2005 224 12:30 15 AvgVolt

8/12/2005 224 13:00 15 through 8/12/2005 224 13:30 15 AvgVolt

8/12/2005 224 14:00 15 through 8/12/2005 224 15:00 60 AvgVolt

8/12/2005 224 15:30 15 through 8/12/2005 224 16:30 15 AvgVolt

8/12/2005 224 17:15 15 AvgVolt

8/12/2005 224 18:00 15 through 8/12/2005 224 19:00 60 AvgVolt

8/12/2005 224 19:30 15 through 8/12/2005 224 20:45 15 AvgVolt

8/12/2005 224 21:00 60 through 8/12/2005 224 24:00 60 AvgVolt

8/13/2005 225 00:15 15 through 8/13/2005 225 03:00 15 AvgVolt

8/13/2005 225 03:15 15 through 8/13/2005 225 04:15 15 AvgVolt

8/13/2005 225 04:45 15 through 8/13/2005 225 05:00 15 AvgVolt

8/13/2005 225 05:15 15 through 8/13/2005 225 09:00 15 AvgVolt

8/13/2005 225 09:15 15 through 8/13/2005 225 24:00 144 AvgVolt

8/14/2005 226 00:45 15 through 8/14/2005 226 01:00 15 AvgVolt

8/14/2005 226 01:15 15 through 8/14/2005 226 01:45 15 AvgVolt

8/14/2005 226 02:00 60 through 8/14/2005 226 02:15 15 AvgVolt

8/14/2005 226 02:45 15 through 8/14/2005 226 03:00 15 AvgVolt

8/14/2005 226 04:00 15 AvgVolt

8/14/2005 226 04:15 15 AvgVolt

8/14/2005 226 04:45 15 AvgVolt

8/14/2005 226 05:00 15 through 8/14/2005 226 05:15 15 AvgVolt

8/14/2005 226 06:00 15 through 8/14/2005 226 06:30 15 AvgVolt

8/14/2005 226 07:00 15 through 8/14/2005 226 10:45 15 AvgVolt

8/14/2005 226 11:00 60 AvgVolt

8/14/2005 226 13:45 15 through 8/14/2005 226 14:00 15 AvgVolt

8/14/2005 226 15:15 15 through 8/14/2005 226 23:30 15 AvgVolt

8/14/2005 226 24:00 15 through 8/14/2005 226 24:00 60 AvgVolt

8/15/2005 227 00:15 15 through 8/15/2005 227 04:15 15 AvgVolt

8/15/2005 227 04:45 15 through 8/15/2005 227 06:45 15 AvgVolt

8/15/2005 227 07:00 60 through 8/15/2005 227 07:15 15 AvgVolt

8/15/2005 227 07:45 15 through 8/15/2005 227 09:30 15 AvgVolt

8/15/2005 227 10:00 60 through 8/15/2005 227 11:15 15 AvgVolt

8/15/2005 227 11:45 15 through 8/15/2005 227 17:15 15 AvgVolt

8/15/2005 227 20:15 15 through 8/15/2005 227 21:30 15 AvgVolt

8/15/2005 227 22:00 15 through 8/16/2005 228 00:45 15 AvgVolt

8/16/2005 228 01:00 60 AvgVolt

8/16/2005 228 01:30 15 through 8/16/2005 228 04:00 60 AvgVolt

8/16/2005 228 09:00 15 AvgVolt

8/16/2005 228 09:15 15 through 8/16/2005 228 18:45 15 AvgVolt

8/16/2005 228 19:00 60 AvgVolt

8/16/2005 228 24:00 144 AvgVolt

8/17/2005 229 11:30 15 through 8/17/2005 229 12:30 15 AvgVolt

8/17/2005 229 13:00 60 AvgVolt

September

The CR10X was powered up on 9/19/2005 after fixing the programming problem. The following associated data was deleted from the database:

Station Code Date Julian Time Array Data Type

apaebmet 9/19/2005 262 11:00 60 All data

apaebmet 9/19/2005 262 24:00 144 All data

**13) Missing Data**

**Arrays:**

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at [www.nerrsdata.org/get/landing.cfm](http://www.nerrsdata.org/get/landing.cfm) throughout the fall of 2022.

Data are missing due to equipment or associated specific probes not being deployed, equipment failure, time of maintenance or calibration of equipment, or repair/replacement of a sampling station platform.  For more details on deleted data, see the Deleted Data Section (12.).  If additional information on missing data is needed, contact the Research Coordinator at the reserve submitting the data.

July

During a download of the data from the CR10X directly to a laptop the following array of data is missing:

Station Code Date Julian Time Array Data Type

apaebmet 7/27/2005 208 08:15 15 All data

August & September

After the installation of new batteries a programming problem with the CR10X occurred. The data was corrupt and was not saving to the storage module. All data between 8/24/2005 at 07:45 through 9/19/2005 at 10:00 (array 60) are missing.

**14) Other Remarks/ Notes**

**On 10/16/2023 this dataset was updated to include embedded QAQC flags for anomalous/suspect data.** System-wide monitoring data beginning in 2007 were processed to allow for QAQC flags and codes to be embedded in the data files rather than detailed in the metadata alone (as in the anomalous/suspect, deleted, and missing data sections above). Prior to 2007, rejected data were deleted from the dataset so they are unavailable to be used at all, but suspect data were only noted in the metadata document. Suspect data flags <1> were embedded retroactively in order to allow suspect data to be easily identified and filtered from the dataset if desired for analysis and reporting purposes. No other flags or codes were embedded in the dataset and users should still refer to the detailed explanations above for more information.

**Arrays:**

During 2022 all pre-2007 weather data were revisited by the CDMO. Historically those datasets included 15 minute, hourly (60), and daily data arrays (144). As directed by the NERRS Data Management Committee, the CDMO removed the hourly and daily data arrays leaving only the 15 minute data to make the entire NERRS SWMP weather dataset consistent in its reporting. All references to the 60 and 144 arrays were left in the metadata document as they may still provide valuable information, but users should be aware that they are largely no longer relevant. The updated datasets were uploaded to the database and made available through the various data applications at [www.nerrsdata.org/get/landing.cfm](http://www.nerrsdata.org/get/landing.cfm) throughout the fall of 2022.

**Precipitation:**

During the initial years of NERRS SWMP weather data collection the CR10X programming was inconsistent in how precipitation values were recorded. For most reserves, zeros were not recorded when rainfall had not occurred between 2001-2003, instead no rainfall was represented by a blank cell. The CDMO verified which datasets were impacted by this issue for the 2001-2006 datasets and inserted zeros when the metadata indicated that no precipitation occurred and data were not missing for other reasons. In some cases, zero values for precipitation data were evaluated and removed where the metadata confirmed that no rainfall should have been in the dataset. The pre-2007 data did not go through a thorough QAQC process again at that time (in addition to previous QAQC); however, if discrepancies were noticed between what was documented in the metadata and what was in the dataset, additional updates may have been made. The updated datasets were uploaded to the database and made available through the various data applications at [www.nerrsdata.org/get/landing.cfm](http://www.nerrsdata.org/get/landing.cfm) throughout early 2023.

In June 2009, in order to repopulate data tables, the Centralized Data Management Office removed all -99999 from SWMP weather data files and replaced them with -99.

Battery:

Starting on 8/02/2005 through 8/19/2005 the CR10X began experiencing battery issues. The voltage was anywhere from 0.2 to 25.6 volts, –99999, and normal voltage in between. The CR10X did not shut down and sensor data was recorded, some of which was out of sensor range, -99999 or reasonable data. It was determined that there was most likely a problem with the collection of the battery volt data. All battery data that was below 9.6 volts and above 16 volts was deleted and the rest of the data during this time period was double checked for accuracy.

Timestamp:

Data values from 00:15 1/01/2005 through 12:00 3/01/2005 were changed from 00:00 to 24:00 in the data file. These values were before the new program (NERR\_4\_2.csi) was installed.

Year:

Data values from 12:15 3/01/2005 through 09:15 6/27/2005 were changed from 2004 to 2005 in the data file. During the program update on 3/01/2005 the year was changed in the CR10X.

Precipitation:

The tipping bucket rain gauge was cleaned (4/13/2005), calibrated (6/27/2005) and replaced (8/19/2005) while the CR10X was recording. The following data values were changed to 00.0:

Station Code Date Julian Time Array Data Type

apaebmet 4/13/2005 104 11:45 15 TotPrcp

apaebmet 4/13/2005 104 12:00 60 TotPrcp

apaebmet 4/13/2005 104 24:00 144 TotPrcp

apaebmet 6/27/2005 179 08:45 15 TotPrcp

apaebmet 6/27/2005 179 09:00 15 TotPrcp

apaebmet 6/27/2005 179 09:00 60 TotPrcp

apaebmet 6/27/2005 179 09:15 15 TotPrcp

apaebmet 6/27/2005 179 10:00 60 TotPrcp

apaebmet 6/27/2005 179 24:00 144 TotPrcp

apaebmet 8/19/2005 231 09:15 15 TotPrcp

Hurricanes and Tropical Storms

Tropical Storm Arlene impacted the Apalachicola Bay area on June 11, 2005.

Tropical Storm Cindy impacted the Apalachicola Bay area on July 6 and 7, 2005.

Hurricane Dennis impacted the Apalachicola Bay area on July 10, 2005.

Rain Events (All measurements in mm)

Station Code Date TotPrcp

apaebmet 01/03/2005 0.3

apaebmet 01/06/2005 0.3

apaebmet 01/08/2005 0.3

apaebmet 01/10/2005 0.3

apaebmet 01/12/2005 0.3

apaebmet 01/13/2005 32.8

apaebmet 01/14/2005 1.8

apaebmet 01/22/2005 8.4

apaebmet 01/28/2005 1.3

apaebmet 01/29/2005 6.4

apaebmet 01/30/2005 0.3

apaebmet 02/01/2005 3.6

apaebmet 02/02/2005 5.6

apaebmet 02/03/2005 3.3

apaebmet 02/09/2005 0.3

apaebmet 02/14/2005 14.2

apaebmet 02/15/2005 0.3

apaebmet 02/16/2005 0.3

apaebmet 02/22/2005 0.3

apaebmet 02/23/2005 10.2

apaebmet 02/24/2005 1.0

apaebmet 02/25/2005 4.3

apaebmet 02/27/2005 76.2

apaebmet 03/03/2005 6.4

apaebmet 03/06/2005 0.3

apaebmet 03/07/2005 40.1

apaebmet 03/08/2005 1.5

apaebmet 03/15/2005 13.0

apaebmet 03/16/2005 84.8

apaebmet 03/17/2005 0.3

apaebmet 03/21/2005 0.3

apaebmet 03/22/2005 9.9

apaebmet 03/25/2005 58.2

apaebmet 03/26/2005 5.1

apaebmet 03/27/2005 10.2

apaebmet 03/31/2005 14.0

apaebmet 04/01/2005 81.3

apaebmet 04/07/2005 72.4

apaebmet 04/12/2005 1.3

apaebmet 04/23/2005 29.0

apaebmet 04/30/2005 58.7

apaebmet 05/01/2005 2.5

apaebmet 05/04/2005 7.6

apaebmet 05/05/2005 21.8

apaebmet 05/09/2005 0.3

apaebmet 05/21/2005 0.5

apaebmet 05/30/2005 11.4

apaebmet 06/20/2005 0.3

apaebmet 06/25/2005 0.3

apaebmet 06/28/2005 24.6

apaebmet 06/29/2005 0.8

apaebmet 06/30/2005 0.5

apaebmet 07/01/2005 19.8

apaebmet 07/02/2005 1.5

apaebmet 07/03/2005 0.3

apaebmet 07/04/2005 8.9

apaebmet 07/06/2005 1.5

apaebmet 07/09/2005 38.4

apaebmet 08/20/2005 1.8

apaebmet 08/21/2005 17.8

apaebmet 08/23/2005 0.5

apaebmet 09/21/2005 2.5

apaebmet 09/22/2005 3.0

apaebmet 09/26/2005 1.5

apaebmet 09/27/2005 29.2

apaebmet 09/28/2005 1.0

apaebmet 10/04/2005 6.1

apaebmet 10/06/2005 2.3

apaebmet 10/07/2005 40.6

apaebmet 10/23/2005 0.5

apaebmet 10/24/2005 0.3

apaebmet 10/28/2005 2.0

apaebmet 11/01/2005 5.3

apaebmet 11/06/2005 1.3

apaebmet 11/07/2005 0.3

apaebmet 11/10/2005 0.3

apaebmet 11/20/2005 69.3

apaebmet 11/21/2005 3.6

apaebmet 11/28/2005 13.5

apaebmet 12/05/2005 6.4

apaebmet 12/07/2005 4.1

apaebmet 12/08/2005 74.9

apaebmet 12/15/2005 6.9

apaebmet 12/17/2005 18.5

apaebmet 12/18/2005 7.9

apaebmet 12/24/2005 2.5

apaebmet 12/25/2005 1.3