Sevenson Environmental Services, Inc.

JACOBS

**US ARMY CORPS OF ENGINEERS**
**NEW ENGLAND DISTRICT**

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# 2005 AFTER ACTION REPORT NEW BEDFORD HARBOR REMEDIAL ACTION

New Bedford Harbor Superfund Site
New Bedford, MA

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| AAR | After Action Report |
| APEX | Apex Environmental, Inc. |
| Cd | cadmium |
| Cu | copper |
| Cr | chromium |
| cy | cubic yards |
| DDA | Debris Disposal Area |
| DMU | Dredge Management Unit |
| EPA | U.S. Environmental Protection Agency |
| EQNE | The Environmental Quality Company Northeast |
| First American | First American Engineered Solutions, LLC |
| FSP | Field Sampling Plan |
| FW | Foster Wheeler Environmental Corporation |
| GAC | granular activated carbon |
| gpm | gallons per minute |
| GPS | global positioning system |
| $H_2S$ | hydrogen sulfide |
| Jacobs | Jacobs Engineering Group |
| mg/kg | milligrams per kilogram |
| MHHW | Mean Higher High Water |
| NAD 83 | National North American Datum 1983, Massachusetts State Plane Coordinates, Mainland Zone Datum |
| NAE | U.S. Army Corps of Engineers – New England District |
| NGVD 29 | National Geodetic Vertical Datum 1929 |

## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| O&G | oil and grease |
| Pb | lead |
| PCB | polychlorinated biphenyl |
| PETS | Public Exposure Tracking System |
| PPE | personal protective equipment |
| ppm | parts per million |
| PVC | polyvinyl chloride |
| QAPP | Quality Assurance Project Plan |
| QC | Quality Control |
| Sevenson | Sevenson Environmental Services |
| TSCA | Toxic Substances Control Act |
| WWTP | Wastewater Treatment Plant |
| µg/L | micrograms per liter |

# 1.0 INTRODUCTION

The purpose of this *2005 After Action Report* (2005 AAR) is to summarize the key activities associated with remediation of the New Bedford Harbor Superfund Site during the 2005 field season. This 2005 AAR consists of six sections and eight attachments. At the request of the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers – New England District (NAE), this 2005 AAR is primarily a data summary report. The 2005 AAR does not present the level of detail that the Jacobs Engineering Group (Jacobs) *After Action Report 2004 New Bedford Harbor Remedial Action* (2004 AAR*)* (Jacobs 2005a) included. However, this 2005 AAR does present data collected by Jacobs during the 2005 remediation season, discusses anomalies in the data sets, and summarizes the lessons learned from the 2005 field season.

Since the administrative and background aspects of the project were presented in detail in the 2004 AAR (Jacobs 2005a), Section 1.0 of this document simply summarizes the planning conducted prior to the 2005 remediation season. The scope of work performed by the Jacobs and Sevenson Environmental Services (Sevenson) team during 2005 is presented in Section 2.0 and is organized by the following sections:

- Preparation and Mobilization (Section 2.1);
- Dredging (Section 2.2);
- Sediment Separation at Area C (Section 2.3);
- Sediment Dewatering at Area D (Section 2.4);
- Wastewater Treatment Plant (WWTP) at Area D (Section 2.5);
- North of Wood Street Remediation Activities (Section 2.6); and
- Air Monitoring Activities (Section 2.7).

Section 3.0 presents a discussion of the mass balance calculations derived from the 2005 production data. The aforementioned Sections 2.0 and 3.0 comprise the bulk of the 2005 AAR, and the information presented therein is supported by several referenced attachments that are included at the end of this document. Major conclusions are presented as Section 4.0. In addition to this report, ENSR also has submitted to the NAE

and EPA the following two reports summarizing their 2005 water quality and sediment sampling activities:

- the final August 2006 report titled *Progress Sampling for the Fall 2005 Remediation Dredging, New Bedford Harbor Superfund Site – New Bedford, Massachusetts* (ENSR 2006a) and
- the final August 2006 report titled *Water Quality Monitoring Summary Report, Fall 2005 Remediation Dredging, New Bedford Harbor Superfund Site – New Bedford, Massachusetts* (ENSR 2006b).

These two ENSR reports are briefly discussed in Section 2.8 and 2.9.

## 1.1 2005 PROJECT PLANNING

The Jacobs and Sevenson Team focused efforts in the winter of 2004/spring of 2005 on assessing the various remedial options for the 2005 season. These remedial options were detailed in the Jacobs *Draft Alternatives Analysis Summary 2005 Remedial Actions* [2005 Alternatives Analysis] (Jacobs 2005k). The two major remedial options analyzed in the 2005 Alternatives Analysis were as follows: (1) remediate the Pierce Mill Cove, which is adjacent to Area C and (2) continue dredging activities in the Upper Harbor in Dredge Management Units (DMUs) DMU-1, -2, -3, and -103. The 2005 Alternatives Analysis also included recommendations for the improvement of the following 2004 remediation processes: hydrogen sulfide controls; Area C fines separation; and improved control of air emissions due to the release of oils containing polychlorinated biphenyl (PCBs) during dredging.

During the February 16, 2005 meeting at the NAE headquarters in Concord, Massachusetts, the EPA and NAE agreed not to pursue remediation in the Pierce Mill Cove area in 2005. The consensus at the meeting was to continue remediation of the DMUs containing the greatest amount of PCB mass before addressing less contaminated areas to the south such as Pierce Mill Cove. Using this mass removal strategy in 2004, approximately 12,550 cubic yards (cy) of sediment were removed from DMU-2. At the request of the EPA and NAE, the Jacobs team assessed a number of factors to pick a

refined dredge footprint for the 2005 dredge season based on this mass removal remediation strategy.

During the May 4, 2005 strategy meeting between representatives of EPA, NAE, Jacobs, and Sevenson, an agreement was reached to continue the remediation approach used in 2004 in DMU-2, which is as follows:

- Sediment removal will not occur from a north-to-south (generally upgradient to downgradient) progression through the harbor. Rather, DMUs with greater amounts of PCB mass would be prioritized for remediation in 2005.
- 
- The 2005 dredge season remediation efforts would continue to be focused on the DMUs in the subtidal zone. Therefore, no restoration efforts were performed during the 2005 dredge season.

The remediation strategy was outlined in the Jacobs *Draft Addendum No. 1 to Execution Plan 2004, 2005 New Bedford Harbor Remedial Action* (Jacobs 2005h). The following two proposed dredge footprints for the 2005 season were outlined:

- **Option 1** – a combination of Dredge Area A, which would include the western, undredged portion of DMU-2 and portions of adjacent DMUs -3 and -4, and Dredge Area B, which would include the eastern, undredged portion of DMU-2 and portions of adjacent DMUs -1, -4 and -103.
- **Option 2** – a combination of Dredge Area C, which has a similar footprint to Dredge Area A, and Dredge Area D, which is comprised of the majority of DMU-4 and a portion of adjacent DMU-3 and -5.

Dredging in DMU-1, which is to the north of DMU-2, was eliminated from consideration for 2005 dredge season remedial activities due to hydraulic concerns associated with transporting the slurry to Area C and uncertainty regarding property access for the anticipated booster pump location.

Based on subsequent discussions with the EPA and NAE, Option 1 was selected and the 2005 remediation approach was presented in the Jacobs *Dredge Work Plan Addendum, New Bedford Harbor Remedial Action* (Jacobs 2005d). Dredge Areas A and B are presented in Figures A-1 and A-2, respectively (Attachment A).

The following project planning documents were updated in 2005 and used as guidance documents for the dredge season: *Construction Quality Control Plan for Remedial Action, New Bedford Harbor Superfund Site, Revision #1* (Jacobs 2005c); *Field Sampling Plan, New Bedford Harbor Superfund Site, Revision #2* (FSP) (Jacobs 2005f); *Quality Assurance Project Plan – Revision 1, New Bedford Harbor Superfund Site* (QAPP) (Jacobs 2005i)*; Regulatory Compliance Plan – Revision 2, New Bedford Harbor Superfund Site* (Jacobs 2005j); *Transportation and Temporary Storage Plan, New Bedford Harbor Superfund Site, Revision #1* (Jacobs 2005g); and *Environmental Protection Plan, New Bedford Harbor Superfund Site, Revision #1* (Jacobs 2005e). Relevant points of these documents are summarized in Attachment B. A summary of the submittals of modifications to the Initial Task Order also are presented in Attachment B for informational purposes.

# 2.0 SCOPE OF WORK PERFORMED

This Section summarizes the mobilization and dredging activities performed in 2005. To assist in conveying an overview of the work performed, a chronology of this past year's activities is presented in Attachment B, which is a summary table of 2005 activities.

## 2.1 PROJECT PREPARATION/MOBILIZATION

Section 2.1 describes the design and implementation of additional engineering controls that were implemented in 2005 to prevent releases of unsafe levels of hydrogen sulfide ($H_2S$) within the Desanding Plant at Area C (Section 2.1.1) and the optimization of the injection of ferric sulfate into the dredge slurry (Section 2.1.2).

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## 2.2 DREDGE CONTAMINATED SEDIMENTS FROM AREAS A AND B

Generally speaking, the same dredging methods used in 2004 were utilized for the 2005 dredging season. The pre-established target depth for 2005 dredging was the theoretical depth below mud line (or referred to as "z-star") to remove sediment to approximately the clean-up action levels. As in 2004, dredge cuts were rounded to the nearest foot in each particular area to maximize production as part of the PCB mass removal strategy.

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### 2.2.4 Post-Dredging Bathymetric Surveys

At the completion of dredging activities, Apex conducted final bathymetric surveys of Area A and Area B on December 8, 2005 and November 23, 2005, respectively (Attachment B and Figures A-8, A-9, A-10, A-11, A-12, and A-13 in Attachment A). The final bathymetric survey for Area A is presented as Figure A-8. Figure A-9 illustrates the change in sediment thickness from the Pre-Dredge Survey to the Final Post Dredge Survey in Area A. The planned versus the actual dredge elevations in Area A (based on the December 8 survey) is presented in Figure A-10. The final bathymetric survey for Area B is presented in Figure A-11. Figure A-12 illustrates the change in sediment thickness from the Pre-Dredge Area A survey to the Final Post Dredge Survey in Area B. The planned versus the actual dredge elevations in Area B (based on the

November 23 survey) is presented in Figure A-13. During the 2005 dredging season, based on the above-mentioned bathymetric surveys, approximately 8,663 and 15,467 cy of sediment were removed from Dredge Areas A and B, respectively (see table on Figure A-9).

## 2.3 COARSE AND FINE MATERIAL SEPARATION AT AREA C

The process of separating coarse materials (shells, gravel, golf balls, etc.) and sand from the dredge slurry at the Desanding Building at Area C did not change from the 2004 season to the 2005 dredging season. Since the desanding process is described in detail in the 2004 AAR (Jacobs 2005a), the desanding process will not be described in this report. The major procedural change at Area C was the downgrading of worker PPE from Level B to modified Level D.

The material generated at the Desanding Plant was divided into the following two waste streams: sand greater than 200 mesh and less than ½-inch (fine); and material greater than ½-inch (coarse) screenings. During the Dredge Area A and B dredging activities, composite samples of fine and coarse material were collected at about every 100 tons of sand material generated. The sampling was conducted in accordance with the August 2005 FSP (Jacobs 2005f). These composite samples were submitted to an offsite laboratory and analyzed for PCBs, oil and grease (O&G), and total metals in accordance with the procedures outlined in the FSP (Jacobs 2005f) and the Jacobs' QAPP (Jacobs 2005i). In addition, selected fine soil samples were submitted to GeoTesting Express in Boxborough, Massachusetts for geotechnical (grain size) analysis. Since the sampling protocol was not determined for the coarse screening material during the 2005 season, samples of the coarse screening material were not submitted for geotechnical and chemical analysis and this material (along with the 2004 coarse material) remains stored at the Debris Disposal Area (DDA) at Area C.

Analytical summary results for Area C are presented in various tables in Attachment D. The analytical results (PCBs and O&G) are presented in Table D-1, and the grain size data are presented in Table D-2. In addition, a split composite sample was submitted to

the Jacobs' QC lab and analyzed for PCBs, O&G, and total metals. The analytical results for the QC lab are presented in Table D-3.

**Dredge Area A Desanding Plant Analytical Data** - During the dredging of Dredge Area A, the PCB concentrations of the Desanding Plant samples ranged from 12 milligrams per kilogram (mg/kg) to 179.7 mg/kg with an average concentration of 71.2 mg/kg (Table D-1). The sand material represented by the 12 mg/kg PCB concentration, which was below the Toxic Substances Control Act (TSCA) threshold concentration of 50 mg/kg, was segregated from the sand that was above the TSCA threshold PCB concentration at the DDA. The O&G concentrations ranged from 510 parts per million (ppm) to 1,100 ppm. For each Desanding Plant sample submitted for analysis from Dredge Area A, the metals results also are presented in Table D-4, with the PCBs and O&G results for comparison purposes.

**Dredge Area B Desanding Plant Analytical Data** - During the dredging of Dredge Area B, the PCB concentrations of the Desanding Plant samples ranged from 46.9 mg/kg to 485.4 mg/kg with an average concentration of 244 mg/kg (Table D-1). The O&G concentrations ranged from 780 ppm to 4,300 ppm. For each Desanding Plant sample submitted for analysis from Dredge Area B, the metals results are also presented in Table D-4, with the PCBs and O&G results for comparison purposes.

**Disposition of Fine and Coarse Screenings** – During the 2005 season, Sevenson moved all of the material generated in the Desanding Plant to the DDA by dump truck. Transport and Disposal reports for Area C are included in Attachment E. Each truckload was weighed prior to and after loading. The load weights are reported in Table E-1. A total of 2,508 tons of fine screenings and 488 tons of coarse screenings were generated at the Area C Desanding Plant during the 2005 season (Table E-1). Fourteen hundred sixty tons of the TSCA fine sand generated in 2004 and in 2005 was transported to a hazardous waste disposal facility during the 2005 dredge season. The fine screening material was transported offsite through the following two separate contract vehicles:

- First American Engineered Solutions, LLC (First American) contracted through Jacobs for the October 2005 trucking event (Table E-2), and
- First American subcontracted directly to the NAE for the November 2005 trucking event (Table E-3).

During the October and November 2005 trucking events, First American transported and disposed of a total of 619 tons and 841 tons of TSCA material, through these two contract vehicles, respectively (Tables E-2 and E-3).

## 2.4 SEDIMENT DEWATERING AT AREA D

Analytical summary results for Area D are presented in various tables in Attachment D. During the 2005 season, all of the filter cake produced by the Area D dewatering process was disposed of offsite as TSCA waste. In accordance with the August 2005 FSP (Jacobs 2005f), composite samples of the filter cake were collected at a frequency of approximately one sample per 550 tons of filter cake produced and submitted for analysis for total PCBs, metals, O&G, and grain size analysis (Tables D-1, D-2 and D-5). Since the dewatering process is described in detail in the 2004 AAR (Jacobs 2005a), it is not described in this report.

**Dredge Area A Dewatering Plant Analytical Data** - During the dredging of Dredge Area A, the PCB concentrations of the Dewatering Plant filter cake samples ranged from 157.8 mg/kg to 1,002 mg/kg with an average concentration of 370 mg/kg (Table D-1). The O&G concentrations ranged from 1,200 ppm to 9,900 ppm. For each filter cake sample submitted for analysis from Dredge Area A, the metals results are presented in Table D-5, with the PCBs and O&G results for comparison purposes.

**Dredge Area B Dewatering Plant Analytical Data** - During the dredging of Dredge Area B, the PCB concentrations of the Dewatering Plant filter cake samples ranged from 520 mg/kg to 1,975 mg/kg with an average concentration of 1,249 mg/kg (Table D-1). The O&G concentrations ranged from 1,000 ppm to 13,000 ppm. For each filter cake sample submitted for analysis from Dredge Area B, the metals results are presented in Table D-5, with the PCBs and O&G results for comparison purposes. The laboratory

duplicate samples collected from the filter cake and submitted for laboratory analysis are presented in Table D-3.

Transport and Disposal reports for Area D are included in Attachment E. All of the filter cake generated during the 2005 dredging season exceeded the 50 mg/kg PCB criterion for TSCA waste and, therefore, was transported offsite as TSCA waste by either rail (Table E-4) or truck (Table E-5). The 2005 dredge season was the first year that TSCA waste was shipped offsite by rail directly from Area D. The ability to remove filter cake by railcar in 2005 was significant in the overall production achievement. Because of the high rate of processing and filter cake generation, filter cake had to be removed at a greater rate than in 2004. If Jacobs had to rely on trucks only to ship out the filter cake, the high production rate may have had to decrease or stop, or secondary filter cake storage would have had to be acquired. During the 2005 season, 10,415 tons of filter cake were shipped offsite by rail for disposal and 5,537 tons of filter cake were shipped offsite by truck for disposal (Tables E-4 and E-5).

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## 2.5 WASTEWATER TREATMENT AT AREA D DEWATERING FACILITY

During the 2005 dredging season, wastewater samples were collected at the influent, midpoint, and effluent sampling ports to evaluate the effectiveness of treatment and to determine whether treated water was acceptable for discharge into the harbor. All of the

WWTP sampling activities were conducted in accordance with the FSP (Jacobs 2005f). The influent and midpoint samples were grab samples collected from sampling ports. The effluent samples were collected utilizing a composite sampler provided by NAE. The wastewater samples were packaged and transported to the contract laboratories and analyzed for PCBs, copper (Cu), chromium (Cr), cadmium (Cd), and lead (Pb) in accordance with the procedures outlined in the FSP (Jacobs 2005f) and the QAPP (Jacobs 2005i). Also, additional sampling was conducted following the detection of PCBs effluent samples on October 13, 2005 and October 14, 2005. However, these detections were determined to be false positives attributed to laboratory contamination, which will be briefly discussed later in this section.

Water quality parameters were also recorded during each sampling event at the influent, mid-point, and effluent sampling ports. These water quality parameters included pH, conductivity, turbidity, temperature, salinity, dissolved oxygen, and oxidation/ reduction potential.

**Discussion of WWTP Analytical Results** – The discharge goals for wastewater treatment effluent are presented in Table 2-1. The influent, midpoint, and effluent detections are presented in Tables D-6, D-7, and D-8 (Attachment D) and are briefly discussed below.

**Influent Concentrations**. Various Aroclors of PCB were detected in the influent at concentrations ranging from 0.53 micrograms per liter (µg/L) to 390 µg/L. Cd was detected in only one influent sample at a concentration of 2.6 µg/L. Cr was detected at concentrations ranging from below detection limits to 75.0 µg/L. Pb was detected at concentrations ranging from 2.6 µg/L to 168 µg/L. Cu was detected at concentrations ranging from 6.6 µg/L to 212 µg/L (Table D-6).

**Midpoint Concentrations**. Various Aroclors of PCBs were detected in select water collected at the midpoint sampling port, which is located between the lead and lag sets of granular activated carbon (GAC) vessels, at concentrations ranging from below detection limits to 0.11 µg/L (Table D-6). Following the detection of PCBs in the effluent samples

in October 2005 (discussed below), water samples were collected from the effluent from each of the eight GAC vessels at the Area D WWTP to determine if there was breakthrough of PCBs through any of the GAC vessels. However, as presented on Table D-7, PCBs were not detected in any of the eight samples collected downstream of the eight GAC vessels, and it was determined that the detection of PCBs in the September 28, 2005 sample was probably due to laboratory contamination.

**Effluent Concentrations** – During treatment of wastewater generated during the dredging of Dredge Areas A and B, PCBs, Cu, Cr, and Pb were detected in select effluent samples (Table D-6). Because PCBs were detected at concentrations greater than the discharge limits for PCBs (0.065 µg/l, Table 2-1) on October 13, 2005 and October 14, 2005, the effluent was sampled on a daily basis from October 20 through October 28, 2005 to confirm or disprove the PCB detections. In addition, six split samples were submitted to Jacobs' QC laboratory to confirm or reject the detections of PCBs in the effluent.

PCBs were not detected above the laboratory detection limits in any of the six samples submitted to Jacobs' QC laboratory (Table D-8) or in any of the six samples submitted to Jacobs' contract laboratory (Table D-7). Therefore, it was concluded by Jacobs that the detections of PCBs in the effluent were due to laboratory cross contamination. The laboratory subsequently performed an internal audit which confirmed that the PCB concentrations were an artifact of improper cleaning, resulting in cross-contamination of laboratory glassware and low-level PCB concentrations in the analysis.

## 2.6 NORTH OF WOOD STREET REMEDIATION ACTIVITIES

In 2004 and 2005, ENSR collected soil samples from areas north of Wood Street and submitted the samples for laboratory analysis for PCBs and other chemicals of concern. PCBs were detected at concentrations above the cleanup criteria in some of the soil samples collected from locations above Mean Higher High Water (MHHW) datum. As part of the 2005 remediation activities, Jacobs therefore contracted the Environmental Quality Company Northeast (EQNE) to excavate these PCB-impacted soils (restoration

of this area was performed in 2006). The soil removal and disposal activities were conducted from November 28, 2005 through December 15, 2005 (Attachment B).

Approximately 450 cy of soils were removed during the excavation. The limits of the 2005 excavation were measured, verified, and recorded using the GPS unit, and are shown in Figure 2-1. Following the completion of excavation activities, and prior to backfilling, Jacobs collected confirmation soil samples and submitted them to the laboratory for PCB analysis. As presented in Table D-9 (Attachment D), the levels of PCBs detected in all of the confirmation samples were well below the action levels. All but approximately 20 tons of material (the last material excavated), was shipped offsite for disposal (Table E-6 in Attachment E). Since the 20 tons of material did not meet the minimum tonnage requirements for shipping material by either rail or truck, and to avoid premium transportation charges, the material was not shipped in 2005. This material is currently stored at the Area C DDA, and it will be shipped with the material from next season's processing.

## 2.7 AIR MONITORING

The 2005 air monitoring was conducted in accordance with the project air monitoring plan and the QAPP. The 2005 air sampling followed the same procedures that were utilized during the 2004 remediation season. The 2004 air sampling methods are described in detail in the Jacobs 2004 AAR (Jacobs 2005a) and, therefore, are only briefly described in this report. The following three types of air monitoring were conducted during the 2005 remediation season and described in the following subsections: Ambient Air Monitoring (Section 2.7.1); Personnel Monitoring (Section 2.7.2); and Facility Monitoring (Section 2.7.3).

### 2.7.1 Ambient Air Monitoring

During the 2005 season, Cashins Associates conducted all of the ambient air monitoring events utilizing the BGI brand PQ-100 portable samplers and the low flow analytical method EPA TO-10A, as outlined in the EPA document *Compendium Method TO-10A,*

*Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Flow Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD)* (EPA 1999). The selection of the low-flow sampling method was discussed in the 2004 AAR (Jacobs 2005a) and, therefore, will not be discussed in this report.

During the 2005 season, a series of eight ambient air sampling events were conducted at 10 sample stations, which were basically the same sampling locations used during the 2004 season. The sampling activities were divided into the remediation phase, which involved four weekly sampling events and two monthly events, and the non-activity phase, which involved pre- and post-remediation sampling events. The air samples were analyzed for each PCB homologue group by Severn Trent Laboratories, Inc. in Knoxville, Tennessee. The collected mass of each homologue group was quantified and normalized to the total volume of air collected to develop concentrations for each homologue group by the laboratory. The ten homologue group concentrations were then summed to obtain the ambient air concentration of total PCBs.

The ambient air monitoring information is included in Attachment F. The sampling events, along with the analytical results, are summarized in Table F-1. The 2005 air sampling locations are presented in Table F-2. In addition, for comparison purposes, each of the 2005 ambient air sampling events are plotted on a log scale plot in Table F-3. During the 2005 remediation season, meteorological data were also measured, and the results for each air sampling event are presented in Attachment F. The meteorological data are further summarized in Table F-4, which compares the following weather data for each sampling event: average wind speed; wind direction; minimum and maximum temperature; minimum and maximum humidity; barometric pressure; average radiation; and maximum radiation, as well as the minimum and maximum tide for each sampling event.

As presented in Table F-3, for each of the sampling stations, the highest concentrations were detected during the October 5 through October 6, 2005 air sampling event. This

sampling event was conducted while the dredge was operating in areas where the historically highest concentrations of PCBs were detected in the 2005 dredge footprint. During the dredging, heavy oils were encountered at the water surface, and the following meteorological and tide conditions existed on October 5-6, 2005, but were not present during the following two sampling events (October 27-28 and November 17-18, 2005):

- lower average wind speeds, which may reduce dispersion due to wind;
- southerly wind direction compared to north and northwest in late October and November;
- higher maximum and minimum temperatures;
- higher minimum and maximum humidity values;
- slightly higher average and maximum radiation values, and;
- a lower minimum tide for the October 27 to 28 event than for the November 17 to 18 event.

It is not readily apparent which of these six factors, or combination of these factors (wind speed, wind direction, humidity, solar radiation, or tides), is the determining factor resulting in elevated PCB concentrations.

The data presented in Table F-1 were uploaded into the Public Exposure Tracking System (PETS) that was developed by Foster Wheeler Environmental Corporation (FW) to track exposures and to provide a "trigger" of possible actions to take as a result of airborne PCB concentrations. A series of PETS curves were generated for the following nine sampling locations (Figure F-1) and are presented in Attachment F:

- 24 Aerovox;
- 25 Cliftex;
- 42 Nstar;
- 46 Coffin Avenue;
- 48 Area C crosswind;
- 49 Area C downwind;
- 50 Area D downwind;

- 55 Aerovox West, and;
- 56 Acushnet Park.

The PETS curves graphically represent the exposure budget (the risk-based allowable PCB intake by either a commercial worker or a resident) versus the monitored exposure (as determined by the ambient air PCB concentrations for the active remediation periods and the ambient air background concentrations as determined by 1999 and 2000 background data collected by FW). With the exception of the PETS curve for 24 Aerovox, the monitored exposures for the remaining eight locations were well below the exposure budget for each location. Of particular significance, are the PETs curves for the ambient air samples collected from Area C (48 Area C crosswind and 49 Area C downwind), Area D (Area D downwind), and the residential samples (55 Aerovox West and 56 Acushnet Park). Prior to the initiation of the 2004 dredging activities, it was thought that the processing activities at the Desanding Plant (Area C) and the Dewatering Plant (Area D) would be releasing significant concentrations of PCBs to the air. However, based on the low concentrations found, it appears that the impacts of these operations are minimal. In addition, it is encouraging that the ambient air PCB concentrations detected at residential monitoring locations 55 and 56 are well below the exposure budget for these locations. The concentrations observed in the field compare favorably with those predicted by the Jacobs 2005 air modeling activities that were summarized in the Jacobs' October 2005 report titled *Air Dispersion Modeling of Emission Sources 2004 and 2005 Dredging Operations, New Bedford Harbor Superfund Site* (Jacobs 2005b).

### 2.7.2 Personnel Air Monitoring

During 2005, a combination of direct-read instrumentation and integrated sample collection was used to monitor personnel exposures during sediment processing at the dredge and all other work areas. The same methods of personnel air monitoring that were used in 2004 were utilized for the 2005 operations. These methods are presented in Table 2-2, and since they are summarized in greater detail in the 2004 AAR (Jacobs 2005a), the methods will not be discussed further in this document. However, during

2005, neither the direct-read instrumentation nor integrated samples that were collected identified any issues that warranted attention.

### 2.7.3 Facility Monitoring

Facility monitoring was routinely conducted for total volatile organic compounds, primarily chlorinated solvents, carbon monoxide, and $H_2S$. These data are collected using direct-read instrumentation and integrated samples. The data for the direct-read instrumentation that was data-logged by the minute, on a daily basis were transmitted by Sevenson to Jacobs. These data are available upon request and are not presented in this report due to the large volume of readings. However, during 2005, neither the direct-read instrumentation nor the integrated samples that were collected as part of the facility monitoring identified any issues that warranted attention.

## 2.8 SEDIMENT PROGRESS SAMPLING

Sediment sampling was conducted in 2005 at Dredge Management Unit 2 (DMU-2) and DMU-4 (ENSR 2006a) and was reported to NAE as described in this section. The work was performed by ENSR and its subcontractor CR Environmental, Inc. under contract to the USACE. The sediment samples were collected for two major reasons: (1) to collect additional core data from the two dredge areas to refine the predicted z-star elevations that were previously developed using geostatistical modeling for use in setting the target dredging cut depths for the planned 2005 work, and (2) to help assess the efficiency of the dredge in removing the PCB contaminated sediments to the planned cut depths.

Ninety-five push-core sediment samples were collected prior to the start of dredging to refine the accuracy of the predicted z-star elevations. Forty-seven post-dredge cores were collected to assess the efficiency of the dredging operation. A complete report of the sediment sampling program can be found in ENSR's final report (ENSR 2006a). ENSR's Executive Summary to the Progress Sampling Report is provided in Appendix G.

## 2.9 WATER QUALITY MONITORING

Water quality monitoring was conducted in support of the 2005 dredging in the areas of DMU-2 and DMU-4 (ENSR 2006b) and was reported to NAE as described in this section. The work was performed by ENSR and its subcontractor CR Environmental, Inc. under contract to the USACE. The objectives of the monitoring were to ensure that the remediation was carried out in a manner that did not result in: (1) acute impacts to organisms within the water column outside of the dredge area; (2) significant transport of contaminated sediments or floating sheens outside of the dredge area; (3) blockage of the water way to anadromous fish passage.

A complete report of the water quality monitoring program can be found in ENSR's final report (ENSR 2006b). ENSR's Executive Summary to the Water Quality Monitoring Report is provided in Appendix H.

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# 3.0 MASS BALANCE CALCULATION

The 2005 remedial activities removed and dewatered solids from Dredge Areas A and B. The Jacobs solids and water balance calculations are presented in Attachment I and the Sevenson Operational Monitoring Data (Monitoring Data) are presented in Attachment J. The overall processing train for the 2005 season, which remained the same as for the 2004 season, consisted of the following primary processes that separated solids from water:

- dredge and pump sediment slurry from the dredge areas, via slurry pipeline to Area C;
- separate wet solid, coarse material from slurry using Area C coarse screen shaker;
- separate wet solid sand from the slurry using Area C hydrocyclones that report wet solid sand from slurry onto the Area C, 200-mesh screens;
- on the 200-mesh inclined screens, separate wet sand from residual silt and clays by washing the material with water as it passes over the screen with the sand dropping onto the floor of the desanding plant;
- separate wet solid sediment from slurry using Area D filter presses, and;
- separate residual solids from wastewater using the Area D Wastewater Treatment Plant, recycling solids back to filter press feed tanks, and discharging treated water to New Bedford Harbor.

The information presented as monitoring data was based on the following input reported daily by Sevenson (Attachment J): totalized flow meter readings, solids grab samples/dry solids analysis, and solids quantity estimates. Water balance information associated with calculations is based on flow meter data, flow estimates, and other flow meter data, while solids balance information is based on Area C weigh-scale data and filter cake production and shipping data.

## 3.1 SOLIDS BALANCE

The scale-weighed solids generated at Area C and Area D were weighed on-site before truck or rail shipment and totaled 18,948 wet tons. The solids reported on Jacobs' Solid and Water Balance (Table I-1) equals 488 wet tons of debris, 2,508 wet tons of sand, and

16,070 wet tons of filter cake, totaling 19,066 wet tons: a difference of 118 wet tons from the scale-weighed solids. Sevenson reported 16,090 wet tons of filter cake in their monitoring data (Attachment J). Both the Jacobs- and the Sevenson-reported weights are based on calculations from solid volumes and average densities. Thus, the one percent difference between calculated mass and actual (weighed) mass indicates that the density measurements accurately represent the materials.

When percent moisture values are factored into the wet weights of materials, a total of 11,916 dry tons of all solids from Dredge Areas A and B is obtained, which comes from 2,250 dry tons of coarse materials and sand at Area C, and 9,666 dry tons of filter cake at Area D. The percent moisture values for the debris and sand are assumed at 50 percent and 20 percent, respectively.

Table I-2 summarizes predicted production quantities and actual productions quantities. The predicted quantities were used for scoping purposes prior to the 2005 dredging season, and were based on last year's process results and assumed dredge slurry characteristics. The actual quantities are calculated using characteristics measured during the 2005 dredge season. An analysis of predicted filter cake weight, to the actual filter cake weight shows that a greater proportion of dredge solids were removed as filter cake versus as sand or debris.

## 3.2 WATER BALANCE

The Dredge Area A and B total slurry flow to the Desanding Building was 109,438 wet tons (refer to Table I-1). Because 2,996 wet tons of water, coarse screenings, and sand were removed from the slurry in Area C, 106,442 tons of dredge slurry entered Area D. Dilution water added to the slurry at Area C was estimated at 1,477 tons. Therefore, the combination of dredge sediment and dilution water entering Area D was approximately 107,919 wet tons. Sevenson measured the Area D influent as 24,692,399 gallons, or approximately 102,967 tons, using a specific gravity of one. The difference between the two weights (4,952 tons) is attributable to the specific gravity of the feed, polymer make-

up water, pipeline flush water, and filtrate monitoring water. These dilution factors are presented in Table I-1.

Sevenson measured the total volume of treated effluent water as 22,237,200 gallons (92,729 tons) discharged. The effluent volume is the water volume removed from the influent feed plus volume for Area D washing activities and polymer make-up. Water meter readings indicate that 1,220,736 gallons (5,090 tons) of water were added by the various means of dilution, making the total influent volume 25,913,135 gallons. Assuming the water contained in the filter cake was 6,404 tons (1,535,731 gallons), the difference between estimated influent volume and effluent volume is 2,140,204 gallons (8 percent of total influent). This volume is attributable to solids volume in the influent.

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# 4.0 LESSONS LEARNED/CONCLUSIONS

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## 4.4 AMBIENT AIR MONITORING

The 2005 ambient air sampling results compare well with the model-predicted ambient air PCB concentrations presented in the Jacobs' October 2005 report *Air Dispersion Modeling of Emission Sources 2004 and 2005 Dredging Operations, New Bedford Harbor Superfund Site* (Jacobs 2005b). The Jacobs 2005 dispersion model, which was calibrated using Jacobs' 2004 ambient air results, predicted that the PCB concentrations at commercial and residential receptors would be well below the allowable exposure budgets, even during dredging of highly impacted sediment. The air model was also calibrated to include the surrounding mudflats as a significant source, as well as the Aerovox property as a source. In addition, source inputs to the model also discounted the impact of the activities at Area C and Area D upon the PCB concentrations in ambient

air. Even though the 2005 results have not been run through the air dispersion model, it appears that these assumptions still hold true.

During the 2005 season, the meteorological station was fully operational, and the data are presented in this report. The following observations were made by correlating the 2005 ambient air concentration data with the tide and the meteorological data:

- The highest and second highest ambient air PCB concentrations were detected during the October 5-6, 2005 and September 14-15, 2005 sampling events, respectively (Tables F-1 and F-3). These two periods of elevated ambient air PCB concentrations, had the following factors in common:
  - both of these sampling events were correlated with periods of lower tides than the other sampling events (Table F-4);
  - during both of these periods, higher minimum and maximum temperatures were recorded; and
  - higher minimum and maximum humidity values were also recorded during these sampling events.
- During the October 5-6, 2005 sampling event, the lowest average wind speeds out of the eight sampling events were recorded, which may have affected the dispersion of the PCBs in ambient air due to wind.
- During the October 5-6, 2005 sampling event, the dredging occurred in the area where the highest historical PCB concentrations were encountered during previous investigations. It is evident that each of these factors contributes to the elevated concentrations of PCBs detected in air; however, it is not known which of these factors is the greatest contributor.

Because it appears that the tidal influences have a great effect on the area of PCB-impacted mudflats that are exposed during these air monitoring events, it is proposed that a data logger be attached to one of the dredge area sheet piles to record the change in tide elevations during each of the sampling events. This will allow greater correlation of the tide elevation data with the dredging activities and the meteorological data.

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## 5.0 REFERENCES


ENSR. 2006a (August). Final. *Progress Sampling for the Fall 2005 Remediation Dredging, New Bedford Harbor Superfund Site – New Bedford, Massachusetts*. 0-9000-350-1240.

———. 2006b (August). Final. *Water Quality Monitoring Summary Report, Fall 2005 Remediation Dredging, New Bedford Harbor Superfund Site – New Bedford, Massachusetts.* 09000-350-1340.

Jacobs Engineering Group, Inc. (Jacobs). 2005a (November). *After Action Report 2004, New Bedford Harbor Remedial Action*. ACE-J23-35BG0105-M17-0005.

———. 2005b (October). *Air Dispersion Modeling of Emission Sources 2004 and 2005 Dredging Operations, New Bedford Harbor Superfund Site.* ACE-J23-35BG0105-M17-0003.

———. 2005c (September). *Construction Quality Control Plan for Remedial Action, New Bedford Harbor Superfund Site, Revision #1*. ACE-J23-35BG0102-M3-0007. ACE-J23-35BG0105-M3-0006.

———. 2005d (August). *Dredge Work Plan Addendum, New Bedford Harbor Remedial Action*. ACE-J23-35BG0106-M1-0001.

———. 2005e (August). *Environmental Protection Plan, New Bedford Harbor Superfund Site, Revision #1*. ACE-J23-35BG0101-M1-0001. ACE-J23-35BG0105-M3-0004.

———. 2005f (August). *Field Sampling Plan, New Bedford Harbor Superfund Site, Revision #2*. ACE-J23-35BG0101-M3-0012. ACE-J23-35BG0105-M3-0003.

———. 2005g (August). *Transportation and Temporary Storage Plan, New Bedford Harbor Superfund Site, Revision #1*. ACE-J23-35BG0102-M3-005. ACE-J23-35BG0105-M3-0002.

———. 2005h (May). *Draft Addendum No. 1 to Execution Plan 2004, 2005 New Bedford Remedial Action*. ACE-J23-35BG0105-M1-0001.

———. 2005i (May). *Quality Assurance Project Plan – Revision 1, New Bedford Harbor Superfund Site*. ACE-J23-35BG0103-M3-0007.

———. 2005j (May). *Regulatory Compliance Plan – Revision 2, New Bedford Harbor Superfund Site*. ACE-J23-35BG0105-M3-0003.

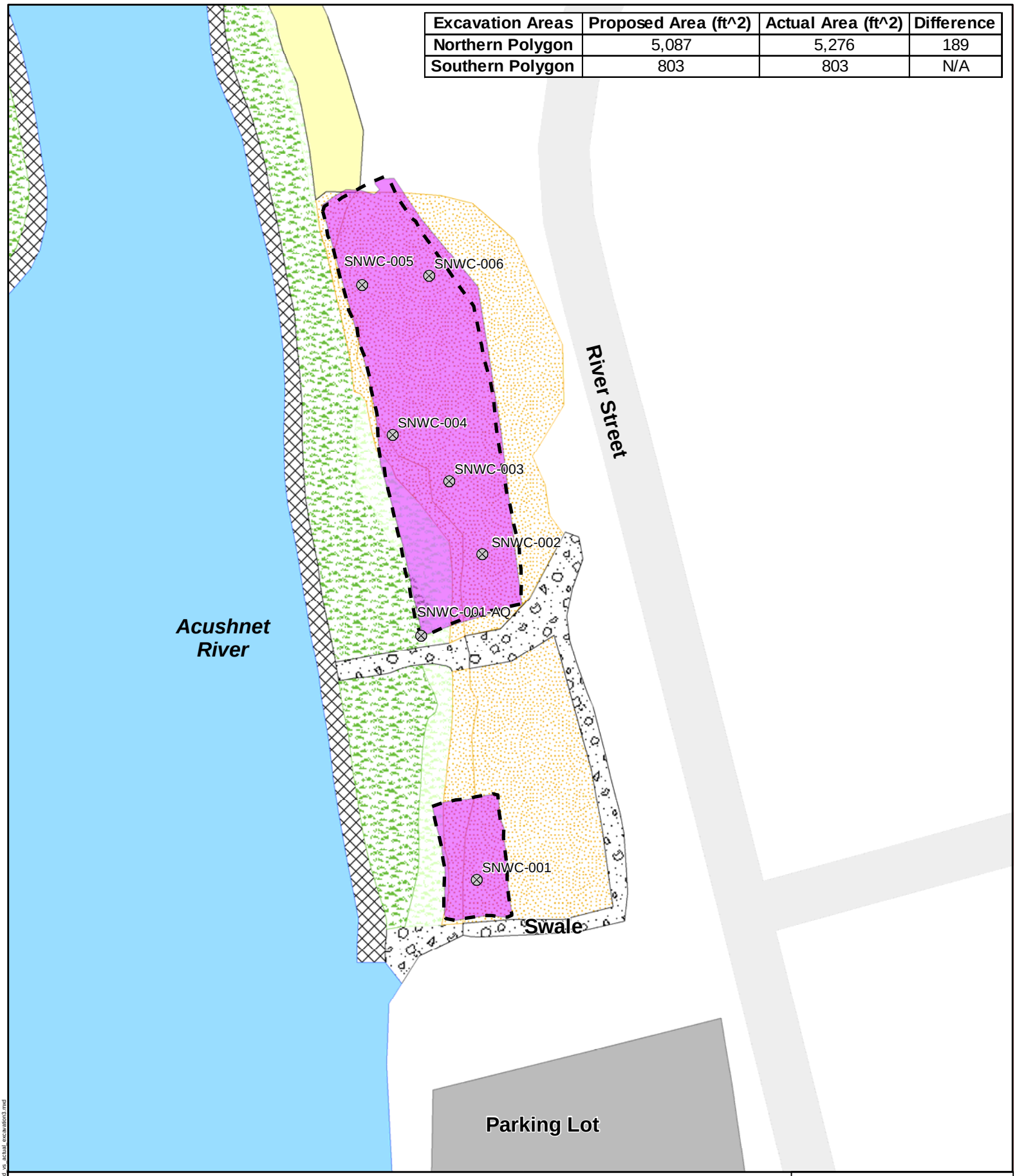
———. 2005k (January). *Draft Alternatives Analysis Summary 2005 Remedial Actions*. ACE-J23-35BG0103-M17-0001.

Sevenson Environmental Services (Sevenson). 2006a (March). *Dredging and Desanding Operations and maintenance manual and Standard Operating procedures, New Bedford Harbor Superfund Site*.

U.S. Environmental Protection Agency (EPA). 1999 (January). *Compendium Method TO-10A, Determination of Pesticides and Polychlorinated Biphenyls in Ambient Air Using Low Volume Polyurethane Foam (PUF) Sampling Followed by Gas Chromatographic/Multi-Detector Detection (GC/MD).*

# FIGURE

| Excavation Areas | Proposed Area (ft^2) | Actual Area (ft^2) | Difference |
|---|---|---|---|
| Northern Polygon | 5,087 | 5,276 | 189 |
| Southern Polygon | 803 | 803 | N/A |




Legend

- Post-Excavation Area
- Planned Area of Excavation
- Roads
- Parking Lot
- High Marsh Planting
- Low Marsh Planting
- Phragmites Removal Area
- Rip-Rap
- River
- Toe Stone
- Upland Seed Mix
- Sample Locations

N

0 20 40 Feet

1:480

JACOBS

North of Wood Street
Planned Excavation Limits
and Actual Excavation Limits

New Bedford Harbor Superfund Site
December 2005

NAME: croberts DATE: 12/27/2005

Figure 2-1

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# TABLES

**Table 2-1**
**Wastewater Treatment Plant Discharge Goals**
**New Bedford Harbor Superfund Site - 2005 Season**

| Analysis | Surface Water Discharge Treatment Goal (µg/L) |
|---|---|
| PCB Aroclor [1] | 0.065 |
| Metals | |
| Cd | 9.3 |
| Cr | 50 |
| Cu | 5.6 |
| Pb | 8.5 |

Notes:
[1] Per PCB Aroclor

Cd = Cadmium
Cr = Chromium
Cu = Copper
Pb = Lead
PCB = Polychlorinated biphenyls
µg/L = micrograms per liter

**Table 2-2**
**Air Monitoring Protocol**
**New Bedford Harbor Superfund Site - 2005 Season**

| Instrument | Location | Mode of Operation | Action Level | Action |
|---|---|---|---|---|
| MultiRAE $H_2S$ | Ground level entrance and operating pump tank | Continuous | 40 ppm | ***Evacuate at 50 ppm*** after 10 minutes sustained |
| MiniRAE (PID)[1] ($H_2S$) | Operating pump | Continuous | 100 ppm | Detection up to 4000 ppm |
| AreaRAE (VOC) | Shaker Platform | Continuous | 50 ppm | Use PCE[2]/TCE[3] colorimetric tubes. Collect integrated samples if detected above 50 ppm or no detection made. |
| Integrated Sampling (VOC) | Pump Tank | 1 day/week | 50 ppm | Evaluate results |

Notes:
$H_2S$ = hydrogen sulfide
PCE = perchloroethylene
PID = photoionization detector
ppm = parts per million
TCE = trichloroethylene
VOC = volatile organic compound

**Table 2-3**
**Hydrogen Sulfide Exposure Limits**
**New Bedford Harbor Superfund Site - 2005 Season**

| $H_2S$ Exposure Limits | OSHA[1] | ACGIH[2] | NIOSH |
|---|---|---|---|
| Ceiling | 20 ppm (10 minutes) | -- | 10 ppm (10 minutes) |
| Peak | 50 ppm | -- | -- |
| STEL[3] | -- | 15 ppm | -- |
| 8-hour TWA[4] | 10 ppm | 5 ppm | -- |
| IDLH[5] | 100 ppm[6] | -- | 100 ppm |

Notes:
[1] Occupational Safety and Health Administration
[2] American Conference of Governmental Industrial Hygienists
[3] Short Term Exposure Limit
[4] Time Weighted Average
[5] IDLH = Immediately Dangerous to Life or Health
[6] ppm = parts per million

# ATTACHMENT A

# Dredge Planning and Progress Figures

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# ATTACHMENT B

# Summary of 2005 Activities

**Attachment B**
**Summary of 2005 Activities**
**New Bedford Harbor Superfund Project**

| Date | Activity | Summary |
|---|---|---|
| **Revise/Submit Planning Documents** | | |
| Draft April 2004<br>Final July 2004<br>Addendum No. 1 May 2005 | Execution Plan 2004, 2004 New Bedford Harbor Remedial Action, New Bedford Harbor Superfund Site, New Bedford, MA. Draft Addendum No. 1 to Execution Plan 2004, 2005 New Bedford Harbor Remedial Action. | Submittal of Addendum to the Execution Plan outlining the remediation of the New Bedford Superfund Site to be accomplished for Fiscal Year (FY) 2005 and 2006. |
| Draft April 2004<br>Final September 2004 | Site Specific Safety & Health Plan | This document was not revised in 2005. |
| Draft May 2004,<br>Final September 2004 | Emergency Response Contingency Plan | This document was not revised in 2005. |
| Draft May 2004,<br>Final September 2004,<br>Revised September 2005 | Construction Quality Control Plan | The Final was revised in September 2005. |
| Draft May 2004,<br>Final August 2004,<br>Revised August 2005,<br>Revised December 2005 | Field Sampling Plan | This document was revised twice in 2005. The first (Aug.) was for 2005 dredging activities and the second (Dec.) was to incorporate debris sampling/analysis protocol. |
| Draft June 2004,<br>Final September 2004,<br>Revised May 2005 | Quality Assurance Program Plan | Revisions made, including reorganizing documents to be a Program Plan. |
| Draft July 2004,<br>Final November 2004,<br>Revised August 2005 | Regulatory Compliance Plan | The Final was revised in August 2005. |
| Draft May 2004,<br>Final September 2004,<br>Revised August 2005 | Transportation & Temporary Storage Plan | The Final was revised in August 2005. |
| Draft May 2004,<br>Final August 2004,<br>Revised August 2005 | Environmental Protection Plan | The Final was revised in August 2005. |

**Attachment B**
**Summary of 2005 Activities**
**New Bedford Harbor Superfund Project**

| Date | Activity | Summary |
|---|---|---|
| **Submittal of Initial Task Order/Subsequent Modifications** | | |
| Negotiated Proposal Submitted on 4/8/05 | Modification 7 | **Tasks under Mod. 7 include the following:** Execution Plan for 2005 Remediation; update Project Work Plans; management and support; Ambient Air Modeling; evaluations of impacts to wetlands; and general site operations and maintenance. |
| Negotiated Proposal Submitted on 7/21/05 | Modification 8 | **Tasks under Mod. 8 include the following:** Task 1 - general mobilization, winterization, and demobilization; Task 2 - twenty (20) days of dredging and associated activities; Task 3 - twenty (20) days of dredging and associated activities; Task 4 - ten (10) days of dreging and associated activities; and Task 9 - remediate impacted material "North of Wood Street". Tasks 5, 6, 7, and 8 were not exercised by the NAE during the 2005 season. |
| Negotiated Proposal Submitted on 11/7/05 | Modification 11 | **Tasks under Mod. 11 include the following:** Task 1 - additional T & D of Filter Cake from Area D; and Task 2 - disposal of PCB-contaminated sand from Sawyer Street. This work was documented in Field Change Notice (FCN) #026. |
| **Mobilization Activities** | | |
| August/September 2005 | Mobilization of Equipment and Personnel Associated with 2005 Dredging Activities. | Since the majority of the equipment associated with dredging and processing of sand (Area C), filter cake production and waste water treatment (Area D), was assembled and inspected prior to the 2004 season, the 2005 activities concentrated on remobilization activites. These included the installation of sheet piles in Dredge Areas A and B, mobilizing the dredges and associated dredge pipelines, staging the combined booster pump/ferric injection system at Manomet Steet, and the installation of two fume hoods at the Area C desanding Plant. The remainder of the mobilization activities incurred general maintanance and repair activitites necessary to initiate dredging. |
| August 2005 | Buried Pipeline Repair - Area C | Water main repair at Area C. Prep. meeting (8/16/05), Initial Inspection (8/16/05) |
| August 2005 | Booster Pump and Ferric System setup | Combination of booster pump and ferric injection system at Manomet Street. Prep. meeting (8/22/05), Initial Inspection (9/6/05) |

**Attachment B**
**Summary of 2005 Activities**
**New Bedford Harbor Superfund Project**

| Date | Activity | Summary |
|---|---|---|
| **Mobilization Activities (continued)** | | |
| August 2005 | Service Test Pipelines | Dredge and slurry pipelines. Prep. meeting (8/29/05), Initial Inspection (9/9 and 9/12/05) |
| August 2005 | Install Desanding System Fume Hood | Installation of modified fume hood at Desanding Plant at Area C. Prep. meeting. (8/30/05), Initial Inspection (9/12/05) |
| September 2006 | Transportation & Disposal | Prep. meeting (9/9/05), Initial Inspection (9/26 and 10/7/05) |
| **Dredging and Associated Activities** | | |
| 9/12/2005 | Intiated and suspended debris removal activities in Dredge Area A | Initiated debris removal activities in DMU-2. However, at the request of the NAE, the debris removal activities were suspended due to elevated turbidity. **Debris Removal Operations** (prep. inspect. [8/30/05] and initial inspect. [9/12/05]) |
| 9/13/2005 | Initiated dredging activities in Dredge Area A (primarily Dredge Management Unit-2 [DMU-2] | This included the start-up activities for the following support operations: **Sediment Processing Operations** (prep. inspect. [8/30/05] and initial inspect. [9/7 and 9/14/05]); **Dredging Operations** (prep. inspect. [8/30/05] and initial inspect. [9/15/05]); and **Sampling** (prep. inspect. [9/9/05] and initial inspect. [9/14/05]). |
| 9/13/2005 | Downgrade of Worker Protection at Area C | Following testing of the air within the Desanding Building at Area C, the required personnel protection equipment (PPE) was downgraded from Level B (supplied air) to Level D with the personal escape air supply furnished to each worker within the building. |
| 9/26/2005 | Initiate shipment by rail of filter cake material from Waste Water Treatment Plant (WWTP) at Area D | The waste management process (including rail) was initiated with the 9/9/05 preparatory meeting and the subsequent 9/26/05 and 10/7/05 initial inspections. |
| 10/4 and 10/5/05 | Conduct Hydrocyclone Treatability Test in Dredge Area A (DMU-4) | Conducted pilot hydrocyclone treatability test in the desanding plant at Area C. The pilot test was conducted on sediment dredged during normal dredging operations. However, for the purpose of the test, the area within Dredge Area B (primarily comprised of DMU-4) with the highest PCB concentrations within Dredge Area B (primarily comprised of DMU-4) was dredged. Sediments collected during the test were submitted for analysis at the Sevenson analytical laboratory and sediments were also shipped to the USACE laboratory in Vicksburg, MS. Prep. meeting (9/23/05), initial inpection (10/05/05). |

**Attachment B**
**Summary of 2005 Activities**
**New Bedford Harbor Superfund Project**

| Date | Activity | Summary |
|---|---|---|
| **Dredging and Associated Activities (continued)** | | |
| 10/6/2006 | Continued Dredging Activities in Dredge Area A (DMU-2) | Continued dredging activities in Dredge Area A following completion of hydrocyclone treatability test. |
| 10/10/2006 | Initiated continuous dredging activities in Dredge Area B, which is composed of primarily DMU-2 | Started continuous Dredge Area A dredging activities. |
| 10/14/2005 through 11/08/05 | Started debris removal activities in Dredge Area B with a modified "rake". | The modified rake had a thumb-type attachment that allowed the operator to effectively remove debris from the sediment without suspending excessive material into the water column. However, due to turbidity issues during low tide, the debris removal activities were curtailed during these times of the day. |
| 11/16/05 through 11/18/05 | Offsite shipment of TSCA sand generated during 2004 dredging activities. The sand was stored at the Debris Disposal Area (DDA) at Area C. | The shipment of the sand was conducted by First American for the USACE under a separate contract between First American and the USACE. However, the trucks were loaded by Sevenson Environmental Services (SES). |
| **Air Monitoring Activities** | | |
| 8/10-11/2005 | Pre-Dredge Background Sampling | Pre-dredge sampling activities conducted at eight (8) sampling locations. During this sampling round and the subsequent seven (7) sampling rounds conducted in 2005, one (1) duplicate and one (1) field blank were also collected and submitted for analysis. In addition, the samples during each of the eight rounds were collected with polyurethane foam (PUF) samples with quarter filters. Prep. Inspect. (9/14/05), Initial Inspection 9/15/05. |
| 9/14-15/2005 | 1st Round of Weekly Air Sampling | Air samples were collected from ten (10) sampling locations. |
| 9/22-23/2005 | 2nd Round of Weekly Air Sampling | Air samples were collected from ten (10) sampling locations. |
| 9/28-29/2005 | 3rd Round of Weekly Air Sampling | Air samples were collected from ten (10) sampling locations. |
| 10/5-6/2005 | 4th Round of Weekly Air Sampling | Air samples were collected from ten (10) sampling locations. |
| 10/27-28/2005 | 1st Round of Monthly Air Sampling | Air samples were collected from ten (10) sampling locations. |
| 11/17-18/2005 | 2nd Round of Air Sampling | Air samples were collected from ten (10) sampling locations. |
| 12/28-29/2005 | Post Dredge/North of Wood Street Round of Air Sampling | Post dredging/sediment processing samples to determine background values during inactive season. Pre-dredge sampling activities conducted at eight (8) sampling locations. |

**Attachment B**
**Summary of 2005 Activities**
**New Bedford Harbor Superfund Project**

| Date | Activity | Summary |
|---|---|---|
| **Bathymetric Survey** | | |
| 9/2/2005 | Pre-Dredge Survey in Dredge Areas A and B | Survey conducted by Apex. Prep. Meeting (8/24/05), Initial Inspection (9/02/05). |
| 9/18/2005 | Bathymetric Survey in Dredge Area A | Survey conducted by Apex. |
| 9/24/2005 | Bathymetric Survey in Dredge Areas A and B | Survey conducted by Apex. |
| 10/1/2005 | Bathymetric Survey in Dredges Area A and B | Survey conducted by Apex. |
| 10/8/2005 | Bathymetric Survey in Dredges Area A and B | Survey conducted by Apex. |
| 10/15/2005 | Bathymetric Survey in Dredge Area B | Survey conducted by Apex. |
| 10/22/2005 | Bathymetric Survey in Dredge Area B | Survey conducted by Apex. |
| 10/29/2005 | Bathymetric Survey in Dredge Area B | Survey conducted by Apex. |
| 11/5/2005 | Bathymetric Survey of the Entire Dredge Area B | Survey conducted by Apex. |
| 11/12/2005 | Bathymetric Survey of the Western Portion of Dredge Area B | Survey conducted by Apex. |
| 11/23/2005 | Bathymetric Survey in Dredge Area B | Survey conducted by Apex. |
| 12/8/2005 | Bathymetric Survey in Dredge Area A and the Areas of DMU-2 dredged during 2004 | Survey conducted by Apex. |
| **North of Wood Street Remediation Activities** | | |
| 11/28-12/15 | Conducted excavation activities at North of Wood Street | Excavation of soils containing PCBs at concentrations greater than 50 parts per million. Environmental Quality Company Northeast (EQNE), under contract to Jacobs, conducted the excavation activities as well as the transportation and disposal of PCB-impacted soils. Prep. meeting (11/18/05). |
| **Winterization Activities** | | |
| 11/28/05 - 12/9/05 | Winterization | Winterization activities were conducted for the following operations: Dredge Areas A and B; combined ferric sulfide treatment system/booster pump station at Manomet Street; docks at Area D; DDA storage; CDF ponds; desanding building (Area C); pipeline from dredge area to Area C: and dewatering plant (Area D). |

# ATTACHMENT C

# Revised Process Flow Diagrams and As-Builts

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# ATTACHMENT D

# Sample Summary Tables

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# ATTACHMENT E

# Transport and Disposal Reports

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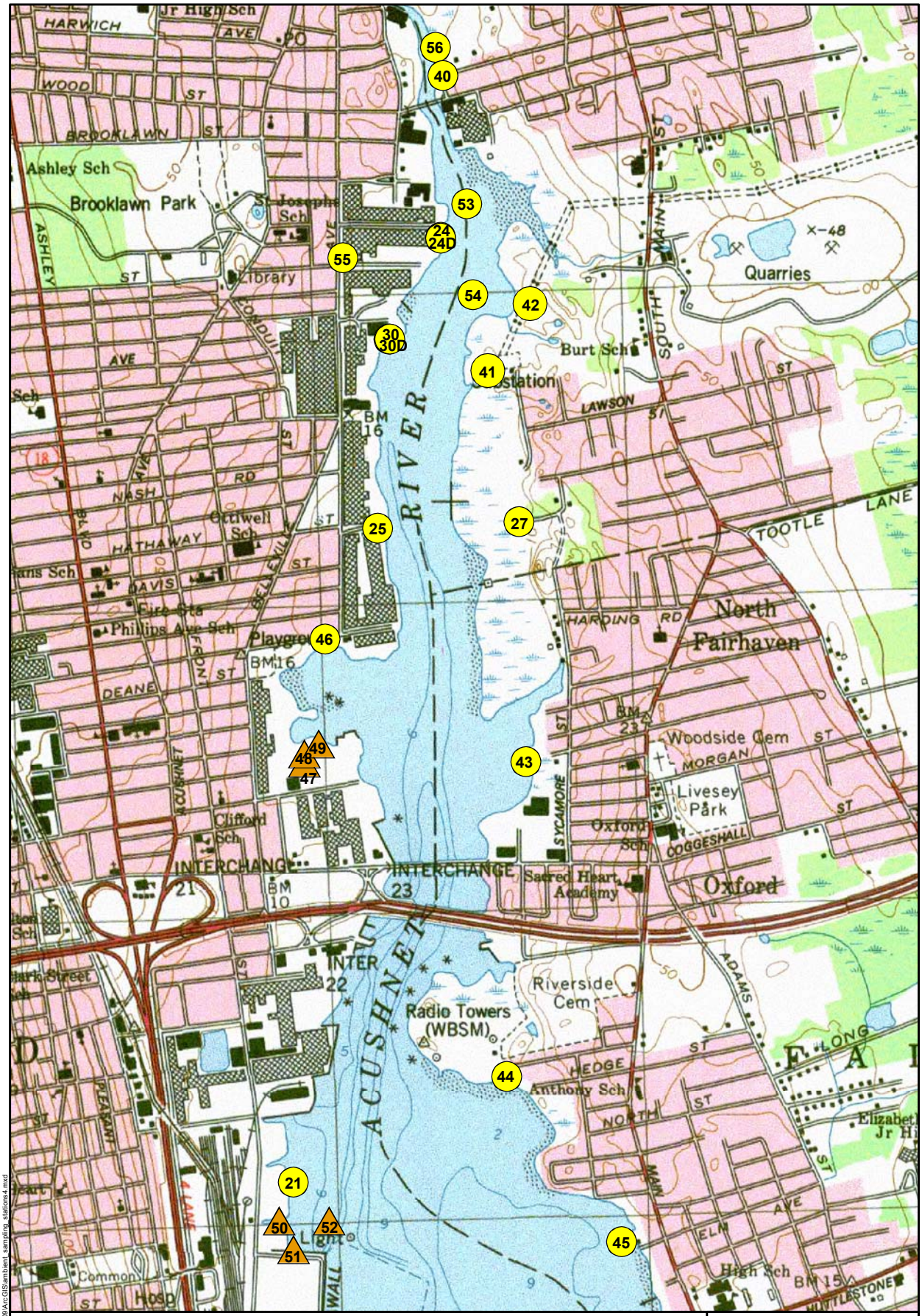
# ATTACHMENT F

# Ambient Air Monitoring Information


56
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30D
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ASHLEY
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Burt Sch
SOUTH
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LAWSON
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Ottiwell Sch
HATHAWAY
DAVIS
Fire Sta
Phillips Ave Sch
Playgrd
BM 16
DEANE
TOOTLE
LANE
HARDING
North Fairhaven
BM 23
Woodside Cem
MORGAN
Livesey Park
Oxford Sch
COGGESHALL
SYCAMORE
INTERCHANGE
21
BM 10
INTERCHANGE
23
Sacred Heart Academy
Oxford
ACUSHNET
INTER
22
Riverside Cem
Radio Towers (WBSM)
ADAMS
HEDGE
Anthony Sch
NORTH
ST
LONG
Elizabeth Jr Hi
MAIN
ELM
AVE
High Sch
BM 15
Common
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WALL
PLEASANT
Legend
Ambient Air Sampling Locations
Mobile Station
Stationary Station
Aerial Photography MASSGIS 2003
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1:18,000
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Ambient Air Sampling Station Locations
New Bedford Harbor Superfund Site
NAME: croberts
DATE: 2/9/2006
Figure F-1
Y:\NBH\Projects\35BG0101\07\20060208\ArcGIS\ambient_sampling_stations4.mxd

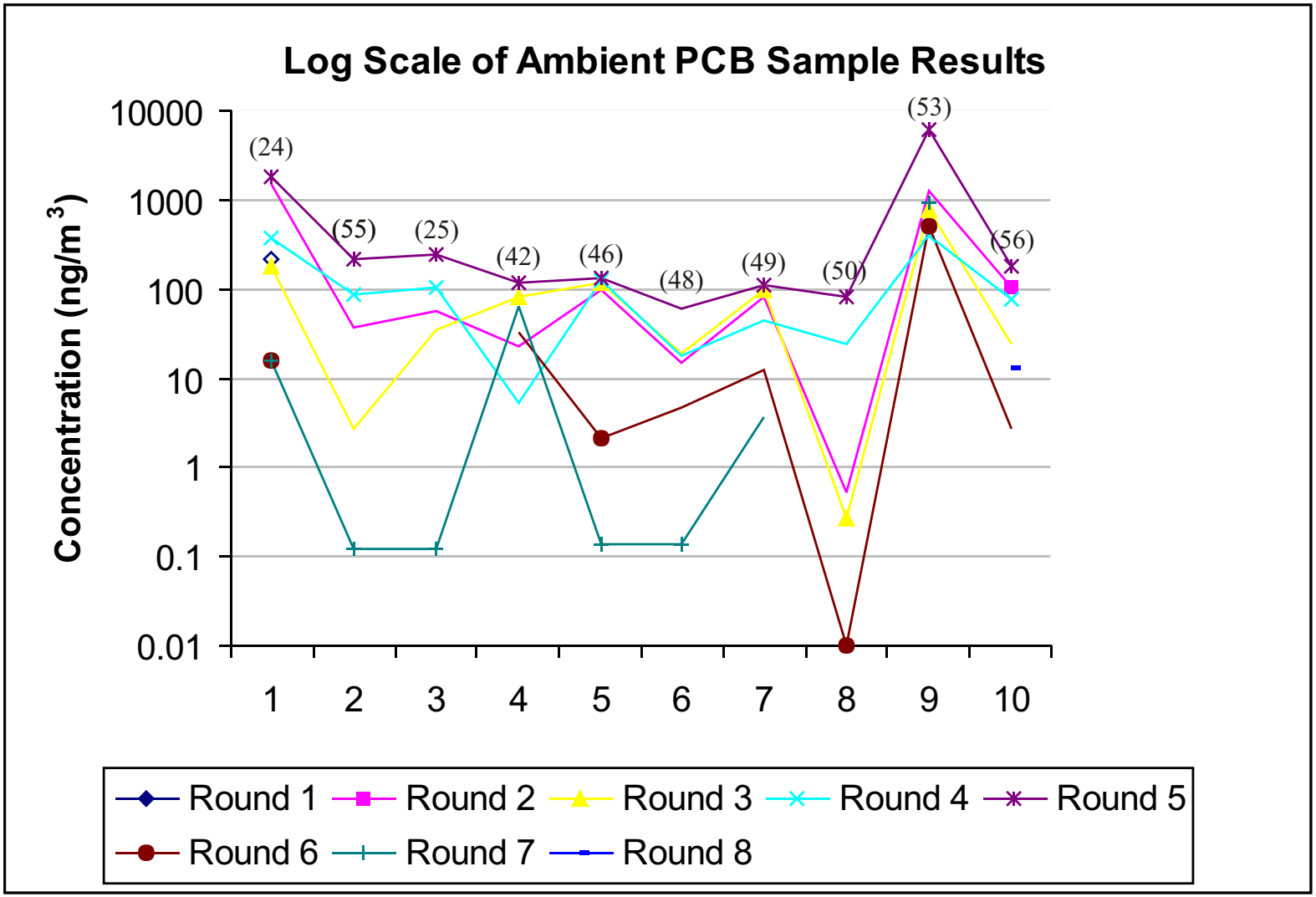
**Table F-1**
**Ambient Monitoring Program**
**Total Detectable PCB in Air**
**New Bedford Harbor Superfund Site - 2005 Season**

| Sampling [1] Period | Aerovox [2] (Station 24) | Aerovox West Upwind (Station 55) | Cliftex (Station 25) | Nstar (Station 42) | Coffin Ave (Station 46) | Area C Downwind (Station 47) | Area C Crosswind (Station 48) | Area C Downwind (Station 49) | Area D Downwind (Station 50) | Area D Downwind (Station 51) | Area D Downwind (Station 52) | Dredge (Station 53) | Achusnet Park (Station 56) | Blank (Duplicate) | ng/m$^3$ Sample | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.10 to 8.11 | 216 | 42.1 | 103 | 25.9 | 37.2 | NS [3] | NS | 29.3 | NS | NS | 21.3 | NS | 49.9 | 44.1 | 0.32 | Duplicate sample |
| Round 1 | | | | | | | | | | | | | | | | Aerovox West |
| 9.14 to 9.15 | 1,490 | 37.6 | 58.2 | 22.5 | 99.8 | NS | 14.9 | 83.6 | 0.52 | NS | NS | 1,280 | 102 | NS | 0.26 | No Duplicate Sample |
| Round 2 | | | | | | | | | | | | | | | | |
| 9.22 to 9.23 | 178 | 2.64 | 35.2 | 83.3 | 115 | NS | 19.1 | 97 | 0.26 | NS | NS | 780 | 23.9 | 18.8 | 0.54 | Duplicate sample |
| Round 3 | | | | | | | | | | | | | | | | Station 48, Area C |
| 9.28 to 9.29 | 383 | 87 | 104 | 5.28 | 124 | NS | 17.3 | 44.2 | 24.2 | NS | NS | 391 | 77.9 | QA[6] | 1.16 | Duplicate sample |
| Round 4 | | | | | | | | | | | | | | | | to Corps Lab |
| 10.5 to 10.6 | 1,822 | 222 | 251 | 119 | 130 | NS | 60.1 | 114 | 81.7 | NS | NS | 6,315 | 180 | 1,708 | 0.96 | Duplicate sample |
| Round 5 | | | | | | | | | | | | | | | | Aerovox Station 24 |
| 10.27 to 10.28 | 15.4 | 3.97 | NS [4] | 32.3 | 2.06 | NS | 4.61 | 12.3 | 0.01 | NS | NS | 505 | 2.73 | QA[6] | 0.42 | Duplicate sample sent |
| Round 6 | | | | | | | | | | | | | | | | to Corps lab |
| 11.17 to 11.18 | 15.9 | 0.12 | 0.12 | 63.6 | 0.14 | NS | 0.139 | 3.71 | NS[5] | NS | NS | 913 | 3.76 | 14.9 | 1.73 | Duplicate sample |
| Round 7 | | | | | | | | | | | | | | | | Aerovox Station 24 |
| 12.28 to 12.29 | 83.2 | 10.8 | 10.9 | 21.4 | 65.1 | 7.42 | NS | NS | NS | 2.18 | NS | NS | 13.5 | QA[6] | 0.33 | Duplicate sample sent |
| Round 8 | | | | | | | | | | | | | | | | to Corps lab |

Notes:
(1) Sampled and analyzed using EPA TO-10A Methodology.
(2) All results reported for 24 hour time-weighted average in nanograms per cubic meter of air (ng/m$^3$).
(3) NS = not sampled.
(4) Sample tube for 25 Cliftex was broken during transport.
(5) Sample tube for 50 Area D was broken during analysis preparation.
(6) Duplicate sent to USACE laboratory.

**Table F-2**
**Ambient PCB Sample Station Locations**
**New Bedford Harbor Superfund Site - 2005 Season**

| Station Number | Station Type | Location | City/Town | Northing | Easting |
|---|---|---|---|---|---|
| 21 | M | New Bedford Welding | New Bedford | 2696913.00000 | 814013.00000 |
| 24 | M | Aerovox NE corner | New Bedford | 2706941.00000 | 815574.00000 |
| 24D | M | Aerovox duplicate | New Bedford | 2706932.00000 | 815574.00000 |
| 25 | M | Cliftex, Manomet Street | New Bedford | 2703854.00000 | 814907.00000 |
| 27 | M | Francis St (Porter) | Fairhaven | 2703925.00000 | 816405.00000 |
| 30 | M | Fiber Leather | New Bedford | 2705861.00000 | 815029.00000 |
| 30D | M | Fiber Leather duplicate | New Bedford | 2705864.00000 | 815034.00000 |
| 40 | M | Wood St (Titleist) | Acushnet | 2705820.00000 | 814933.00000 |
| 41 | M | NSTAR substation | Acushnet | 2705524.00000 | 816074.00000 |
| 42 | M | NSTAR North | Fairhaven | 2706236.00000 | 816524.00000 |
| 43 | M | Bus Terminal Lot | Fairhaven | 2701377.00000 | 816482.00000 |
| 44 | M | Taber St (Pumping Station) | Fairhaven | 2698035.00000 | 816277.00000 |
| 45 | M | Cozy Cove Marina | Fairhaven | 2684279.00000 | 817739.00000 |
| 46 | M | Coffin Ave | New Bedford | 2703796.00000 | 814947.00000 |
| 47 | S | Area C Downwind | New Bedford | 2701361.00000 | 814129.00000 |
| 48 | S | Area C Crosswind | New Bedford | 2701462.00000 | 814128.00000 |
| 49 | S | Area C Upwind | New Bedford | 2701564.00000 | 814279.00000 |
| 50 | S | Area D Downwind | New Bedford | 2696198.00000 | 814012.00000 |
| 51 | S | Area D Crosswind | New Bedford | 2696500.00000 | 812858.00000 |
| 52 | S | Area D Upwind | New Bedford | 2695390.00000 | 814397.00000 |
| 53 | S | DMU2 Dredge | Varies | 2706636.00000 | 815839.00000 |
| 54 | M | DMU2 DW on barge | Varies | 2706333.00000 | 815917.00000 |
| 55 | M | Aerovox West (R7 receptor) | New Bedford | 2706728.00000 | 814540.00000 |
| 56 | M | Acushnet Park | New Bedford | 2708962.00000 | 815519.00000 |

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Log Scale of Ambient PCB Sample Results

New Bedford Superfund Site

CROBERTS 02/09/06

Table F-3

**Table F-4**
**Meteorological Data/Tide Data Summary**
**New Bedford Harbor Superfund Site - 2005 Season**

| Date | Avg. Wind (mph) | Direction | Min Temp ($^oF$) | Max Temp ($^oF$) | Min Humidity % | Max Humidity % | Barometer (inch) | Avg. Radiation (watts /$m^3$) | Max Radiation (watts /$m^3$) | Tide Min (ft msl) | Tide Max (ft msl) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aug 10, 11 | 6.9 | SSW | 71 | 92 | 39 | 94 | 29.9 | 330 | 809 | 0.3 | 3.9 |
| Sep 14, 15 | 7.8 | SSW | 69 | 80 | 60 | 96 | 30 | 186 | 775 | 0 | 4.6 |
| Sep 22, 23 | 8.3 | SW | 61 | 81 | 39 | 90 | 30 | 267 | 757 | 0.3 | 4.6 |
| Sep 28, 29 | 12.2 | SSE | 52 | 73 | 42 | 85 | 30.1 | 264 | 750 | 0.8 | 3.7 |
| Oct 05, 06 | 4.2 | SSE | 58 | 73 | 75 | 100 | 30.2 | 158 | 704 | -0.1 | 4.5 |
| Oct 27, 28 | 7.3 | NNW | 40 | 50 | 48 | 81 | 30.2 | 114 | 583 | 0.8 | 3.5 |
| Nov 17, 18 | 8.8 | NW | 34 | 48 | 26 | 90 | 30.1 | 145 | 530 | -0.2 | 4.8 |
| Dec 28, 29 | 6.1 | S | 28 | 50 | 63 | 98 | 29.7 | 61 | 353 | -0.2 | 4.5 |

Notes:
$^oF$ = Fahrenheit
% = percent
ft msl = feet mean sea level
mph = miles per hour
watts/$m^3$ = watts per meter cubed

# Air Sampling Status Reports (PETS Curves)

# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 24 Aerovox
Exposure Budget Slope (EBS) = 344 (ng/m$^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 24 Aerovox, the quarterly average ambient air PCB concentrations for the June 1999 through May 2000 baseline sampling were used as background concentrations. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. Low triggers were identified, which will be evaluated for potential necessary response.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 24 Aerovox |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 344 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 75 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#] | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 67 | 67.00 | 67.00 | NC | NC | NC | NC | NC | NC |
| 2 | 11/30/2002 | 18 | 18 | 9477 | 67 | 67.00 | 67.00 | 6192 | 6192 | 1206.0 | 1,206.0 | 19.5% | 19.5% |
| 3 | 12/1/2002 | 1 | 19 | 9476 | 32 | 49.50 | 66.08 | 344 | 6536 | 49.5 | 1,255.5 | 14.4% | 19.2% |
| 4 | 2/28/2003 | 89 | 108 | 9387 | 32 | 32.00 | 38.00 | 30616 | 37152 | 2848.0 | 4,103.5 | 9.3% | 11.0% |
| 5 | 5/31/2003 | 92 | 200 | 9295 | 76 | 54.00 | 45.36 | 31648 | 68800 | 4968.0 | 9,071.5 | 15.7% | 13.2% |
| 6 | 8/31/2003 | 92 | 292 | 9203 | 130 | 103.00 | 63.52 | 31648 | 100448 | 9476.0 | 18,547.5 | 29.9% | 18.5% |
| 7 | 11/30/2003 | 91 | 383 | 9112 | 67 | 98.50 | 71.83 | 31304 | 131752 | 8963.5 | 27,511.0 | 28.6% | 20.9% |
| 8 | 2/28/2004 | 90 | 473 | 9022 | 32 | 49.50 | 67.58 | 30960 | 162712 | 4455.0 | 31,966.0 | 14.4% | 19.6% |
| 9 | 5/31/2004 | 93 | 566 | 8929 | 76 | 54.00 | 65.35 | 31992 | 194704 | 5022.0 | 36,988.0 | 15.7% | 19.0% |
| 10 | 8/31/2004 | 92 | 658 | 8837 | 130 | 103.00 | 70.61 | 31648 | 226352 | 9476.0 | 46,464.0 | 29.9% | 20.5% |
| 11 | 9/8/2004 | 8 | 666 | 8829 | 67 | 98.50 | 70.95 | 2752 | 229104 | 788.0 | 47,252.0 | 28.6% | 20.6% |
| 12 | 9/9/2004 | 1 | 667 | 8828 | 1024 | 545.50 | 71.66 | 344 | 229448 | 545.5 | 47,797.5 | 158.6% | 20.8% |
| 13 | 9/14/2004 | 5 | 672 | 8823 | 1449 | 1236.50 | 80.33 | 1720 | 231168 | 6182.5 | 53,980.0 | 359.4% | 23.4% |
| 14 | 9/23/2004 | 9 | 681 | 8814 | 588 | 1018.50 | 92.73 | 3096 | 234264 | 9166.5 | 63,146.5 | 296.1% | 27.0% |
| 15 | 9/27/2004 | 4 | 685 | 8810 | 9557 | 5072.50 | 121.81 | 1376 | 235640 | 20290.0 | 83,436.5 | 1474.6% | 35.4% |
| 16 | 10/19/2004 | 22 | 707 | 8788 | 559 | 5058.00 | 275.41 | 7568 | 243208 | 111276.0 | 194,712.5 | 1470.3% | 80.1% |
| 17 | 11/5/2004 | 17 | 724 | 8771 | 578 | 568.50 | 282.29 | 5848 | 249056 | 9664.5 | 204,377.0 | 165.3% | 82.1% |
| 18 | 12/3/2004 | 28 | 752 | 8743 | 30 | 304.00 | 283.10 | 9632 | 258688 | 8512.0 | 212,889.0 | 88.4% | 82.3% |
| 19 | 2/28/2005 | 87 | 839 | 8656 | 32 | 31.00 | 256.96 | 29928 | 288616 | 2697.0 | 215,586.0 | 9.0% | 74.7% |
| 20 | 5/31/2005 | 92 | 931 | 8564 | 76 | 54.00 | 236.90 | 31648 | 320264 | 4968.0 | 220,554.0 | 15.7% | 68.9% |
| 21 | 8/10/2005 | 71 | 1002 | 8493 | 130 | 103.00 | 227.41 | 24424 | 344688 | 7313.0 | 227,867.0 | 29.9% | 66.1% |
| 22 | 8/11/2005 | 1 | 1003 | 8492 | 216 | 173.00 | 227.36 | 344 | 345032 | 173.0 | 228,040.0 | 50.3% | 66.1% |
| 23 | 9/15/2005 | 35 | 1038 | 8457 | 1490 | 853.00 | 248.45 | 12040 | 357072 | 29855.0 | 257,895.0 | 248.0% | 72.2% |
| 24 | 9/23/2005 | 8 | 1046 | 8449 | 178 | 834.00 | 252.93 | 2752 | 359824 | 6672.0 | 264,567.0 | 242.4% | 73.5% |
| 25 | 9/29/2005 | 6 | 1052 | 8443 | 383 | 280.50 | 253.09 | 2064 | 361888 | 1683.0 | 266,250.0 | 81.5% | 73.6% |
| 26 | 10/6/2005 | 7 | 1059 | 8436 | 1822 | 1102.50 | 258.70 | 2408 | 364296 | 7717.5 | 273,967.5 | 320.5% | 75.2% |
| 27 | 10/28/2005 | 22 | 1081 | 8414 | 15.4 | 918.70 | 272.14 | 7568 | 371864 | 20211.4 | 294,178.9 | 267.1% | 79.1% |
| 28 | 11/18/2005 | 21 | 1102 | 8393 | 15.9 | 15.65 | 267.25 | 7224 | 379088 | 328.7 | 294,507.6 | 4.5% | 77.7% |
| 29 | 12/29/2005 | 41 | 1143 | 8352 | 83.2 | 49.55 | 259.44 | 14104 | 393192 | 2031.6 | 296,539.1 | 14.4% | 75.4% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

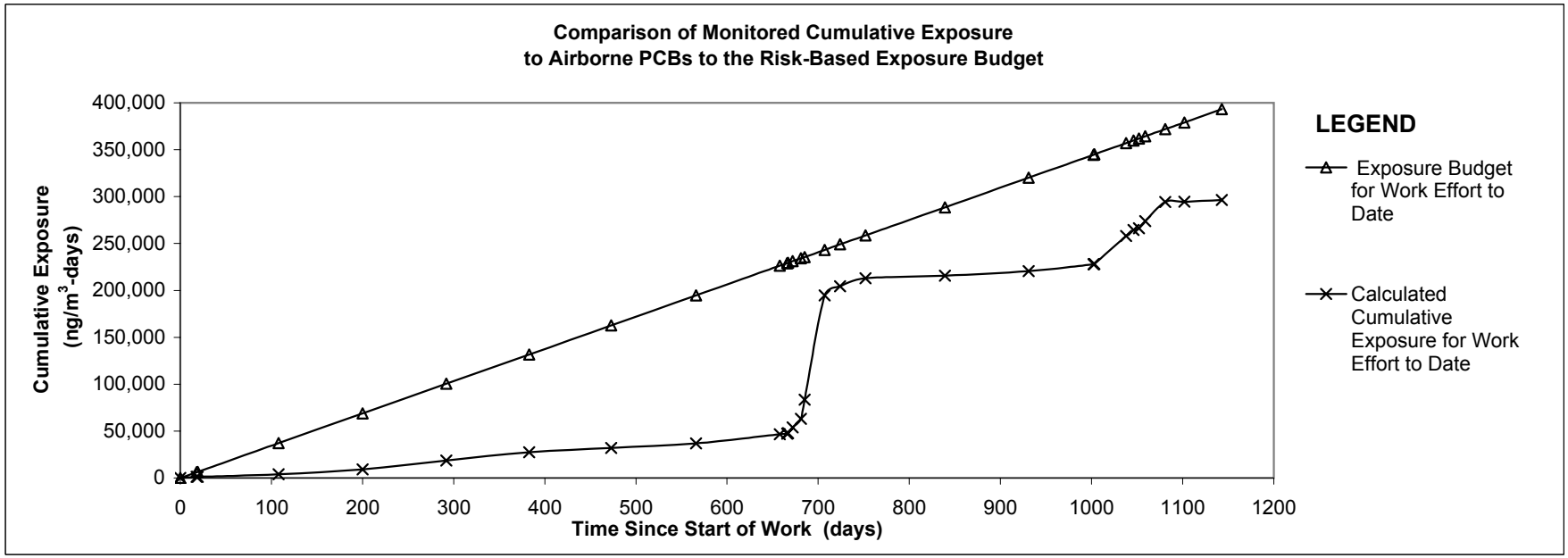
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 24 Aerovox |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 83.2 |
| **Exposure Budget Expended During This Period:** | 14.4% |
| **Cumulative Exposure Budget Expended to Date:** | 75.4% |
| **Response Level:** | LOW |
| **Response:** | Evaluate the Cause and Significance of the Triggering Conditions |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 25 Cliftex
Exposure Budget Slope (EBS) = 344 (ng/m$^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 25 Cliftex, the quarterly average ambient air PCB concentrations were used as a background concentration, which represent the quarterly baseline averages for the period of June 1999 through May 2000. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. No triggers were identified, therefore, no action is required.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 25 Cliftex |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 344 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 23 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#} | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 22 | 22.00 | 22.00 | NC | NC | NC | NC | NC | NC |
| 2 | 11/30/2002 | 18 | 18 | 9477 | 22 | 22.00 | 22.00 | 6192 | 6192 | 396.0 | 396.0 | 6.4% | 6.4% |
| 3 | 12/1/2002 | 1 | 19 | 9476 | 3.2 | 12.60 | 21.51 | 344 | 6536 | 12.6 | 408.6 | 3.7% | 6.3% |
| 4 | 2/28/2003 | 89 | 108 | 9387 | 3.2 | 3.20 | 6.42 | 30616 | 37152 | 284.8 | 693.4 | 0.9% | 1.9% |
| 5 | 5/31/2003 | 92 | 200 | 9295 | 35 | 19.10 | 12.25 | 31648 | 68800 | 1757.2 | 2,450.6 | 5.6% | 3.6% |
| 6 | 8/31/2003 | 92 | 292 | 9203 | 46 | 40.50 | 21.15 | 31648 | 100448 | 3726.0 | 6,176.6 | 11.8% | 6.1% |
| 7 | 11/30/2003 | 91 | 383 | 9112 | 22 | 34.00 | 24.21 | 31304 | 131752 | 3094.0 | 9,270.6 | 9.9% | 7.0% |
| 8 | 2/28/2004 | 90 | 473 | 9022 | 3.2 | 12.60 | 22.00 | 30960 | 162712 | 1134.0 | 10,404.6 | 3.7% | 6.4% |
| 9 | 5/31/2004 | 93 | 566 | 8929 | 35 | 19.10 | 21.52 | 31992 | 194704 | 1776.3 | 12,180.9 | 5.6% | 6.3% |
| 10 | 8/31/2004 | 92 | 658 | 8837 | 46 | 40.50 | 24.17 | 31648 | 226352 | 3726.0 | 15,906.9 | 11.8% | 7.0% |
| 11 | 9/8/2004 | 8 | 666 | 8829 | 22 | 34.00 | 24.29 | 2752 | 229104 | 272.0 | 16,178.9 | 9.9% | 7.1% |
| 12 | 9/9/2004 | 1 | 667 | 8828 | 167 | 94.50 | 24.40 | 344 | 229448 | 94.5 | 16,273.4 | 27.5% | 7.1% |
| 13 | 9/14/2004 | 5 | 672 | 8823 | 229 | 198.00 | 25.69 | 1720 | 231168 | 990.0 | 17,263.4 | 57.6% | 7.5% |
| 14 | 9/23/2004 | 9 | 681 | 8814 | 97 | 163.00 | 27.50 | 3096 | 234264 | 1467.0 | 18,730.4 | 47.4% | 8.0% |
| 15 | 9/28/2004 | 5 | 686 | 8809 | 423 | 260.00 | 29.20 | 1720 | 235984 | 1300.0 | 20,030.4 | 75.6% | 8.5% |
| 16 | 10/19/2004 | 21 | 707 | 8788 | 259 | 341.00 | 38.46 | 7224 | 243208 | 7161.0 | 27,191.4 | 99.1% | 11.2% |
| 17 | 11/15/2004 | 27 | 734 | 8761 | 61 | 160.00 | 42.93 | 9288 | 252496 | 4320.0 | 31,511.4 | 46.5% | 12.5% |
| 18 | 12/3/2004 | 18 | 752 | 8743 | 27 | 44.00 | 42.96 | 6192 | 258688 | 792.0 | 32,303.4 | 12.8% | 12.5% |
| 19 | 2/28/2005 | 87 | 839 | 8656 | 3.2 | 15.10 | 40.07 | 29928 | 288616 | 1313.7 | 33,617.1 | 4.4% | 11.6% |
| 20 | 5/31/2005 | 92 | 931 | 8564 | 35 | 19.10 | 38.00 | 31648 | 320264 | 1757.2 | 35,374.3 | 5.6% | 11.0% |
| 21 | 8/10/2005 | 71 | 1002 | 8493 | 46 | 40.50 | 38.17 | 24424 | 344688 | 2875.5 | 38,249.8 | 11.8% | 11.1% |
| 22 | 8/11/2005 | 1 | 1003 | 8492 | 103 | 74.50 | 38.21 | 344 | 345032 | 74.5 | 38,324.3 | 21.7% | 11.1% |
| 23 | 9/15/2005 | 35 | 1038 | 8457 | 58.2 | 80.60 | 39.64 | 12040 | 357072 | 2821.0 | 41,145.3 | 23.4% | 11.5% |
| 24 | 9/23/2005 | 8 | 1046 | 8449 | 35.2 | 46.70 | 39.69 | 2752 | 359824 | 373.6 | 41,518.9 | 13.6% | 11.5% |
| 25 | 9/29/2005 | 6 | 1052 | 8443 | 104 | 69.60 | 39.86 | 2064 | 361888 | 417.6 | 41,936.5 | 20.2% | 11.6% |
| 26 | 10/6/2005 | 7 | 1059 | 8436 | 251 | 177.50 | 40.77 | 2408 | 364296 | 1242.5 | 43,179.0 | 51.6% | 11.9% |
| 27 | 11/18/2005 | 43 | 1102 | 8393 | 0.12 | 125.56 | 44.08 | 14792 | 379088 | 5399.1 | 48,578.1 | 36.5% | 12.8% |
| 28 | 12/29/2005 | 41 | 1143 | 8352 | 10.9 | 5.51 | 42.70 | 14104 | 393192 | 225.9 | 48,804.0 | 1.6% | 12.4% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

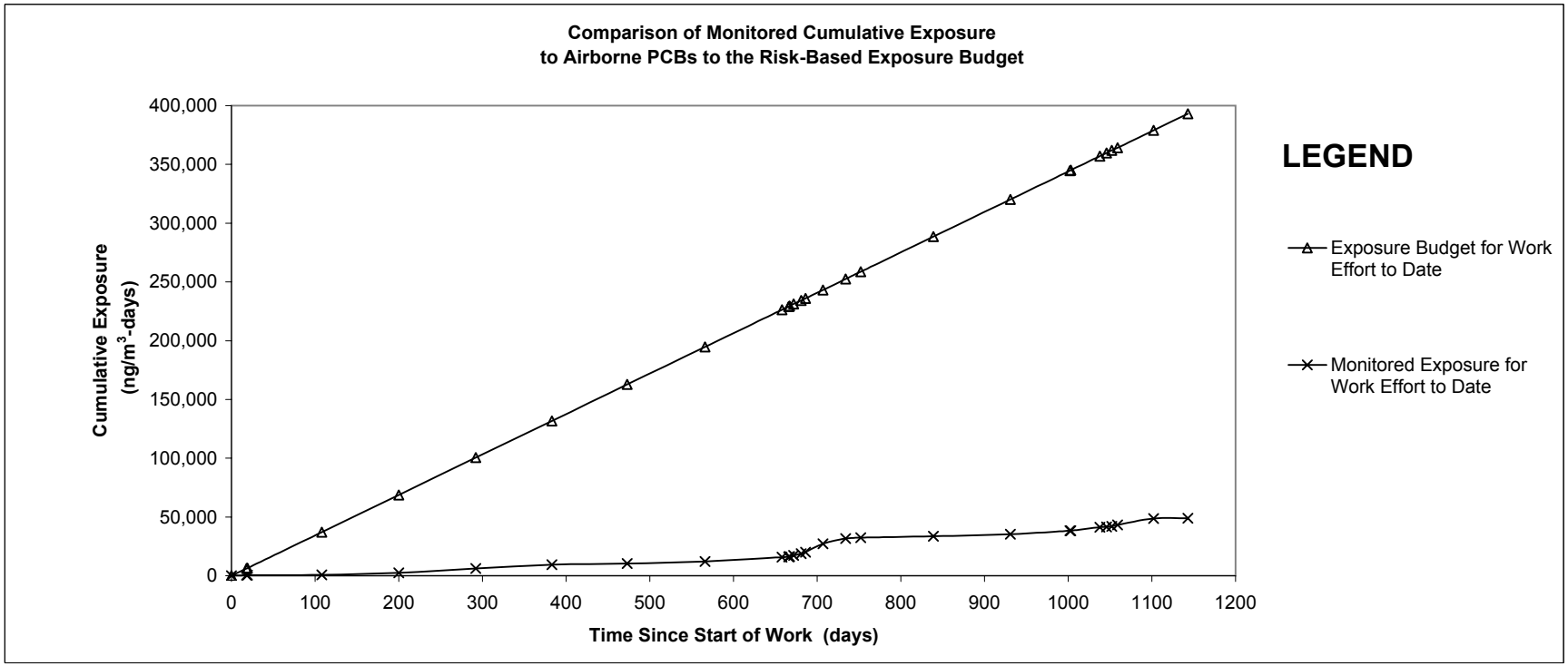
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 25 Cliftex |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 10.9 |
| **Exposure Budget Expended During This Period:** | 1.6% |
| **Cumulative Exposure Budget Expended to Date:** | 12.4% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 42 NSTAR N

Exposure Budget Slope (EBS) = 344 (ng/m$^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 42 NSTAR N, the quarterly average ambient air PCB concentrations were used as a background concentration, which represent the quarterly baseline averages from Station 23 - Achusnet Substation, for the period of June 1999 through May 2000. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. No triggers were identified, therefore, no action is required.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 42 NSTAR N |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 344 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 23 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#} | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 24 | 24.00 | 24.00 | NC | NC | NC | NC | NC | NC |
| 2 | 11/30/2002 | 18 | 18 | 9477 | 24 | 24.00 | 24.00 | 6192 | 6192 | 432.0 | 432.0 | 7.0% | 7.0% |
| 3 | 12/1/2002 | 1 | 19 | 9476 | 9.9 | 16.95 | 23.63 | 344 | 6536 | 17.0 | 449.0 | 4.9% | 6.9% |
| 4 | 2/28/2003 | 89 | 108 | 9387 | 9.9 | 9.90 | 12.32 | 30616 | 37152 | 881.1 | 1,330.1 | 2.9% | 3.6% |
| 5 | 5/31/2003 | 92 | 200 | 9295 | 29 | 19.45 | 15.60 | 31648 | 68800 | 1789.4 | 3,119.5 | 5.7% | 4.5% |
| 6 | 8/31/2003 | 92 | 292 | 9203 | 31 | 30.00 | 20.14 | 31648 | 100448 | 2760.0 | 5,879.5 | 8.7% | 5.9% |
| 7 | 11/30/2003 | 91 | 383 | 9112 | 24 | 27.50 | 21.88 | 31304 | 131752 | 2502.5 | 8,382.0 | 8.0% | 6.4% |
| 8 | 2/28/2004 | 90 | 473 | 9022 | 9.9 | 16.95 | 20.95 | 30960 | 162712 | 1525.5 | 9,907.5 | 4.9% | 6.1% |
| 9 | 5/31/2004 | 93 | 566 | 8929 | 29 | 19.45 | 20.70 | 31992 | 194704 | 1808.9 | 11,716.3 | 5.7% | 6.0% |
| 10 | 8/31/2004 | 92 | 658 | 8837 | 31 | 30.00 | 22.00 | 31648 | 226352 | 2760.0 | 14,476.3 | 8.7% | 6.4% |
| 11 | 11/4/2004 | 65 | 723 | 8772 | 24 | 27.50 | 22.49 | 22360 | 248712 | 1787.5 | 16,263.8 | 8.0% | 6.5% |
| 12 | 11/5/2004 | 1 | 724 | 8771 | 73 | 48.50 | 22.53 | 344 | 249056 | 48.5 | 16,312.3 | 14.1% | 6.5% |
| 13 | 12/3/2004 | 28 | 752 | 8743 | 40 | 56.50 | 23.80 | 9632 | 258688 | 1582.0 | 17,894.3 | 16.4% | 6.9% |
| 14 | 2/28/2005 | 87 | 839 | 8656 | 9.9 | 24.95 | 23.92 | 29928 | 288616 | 2170.7 | 20,065.0 | 7.3% | 7.0% |
| 15 | 5/31/2005 | 92 | 931 | 8564 | 29 | 19.45 | 23.47 | 31648 | 320264 | 1789.4 | 21,854.4 | 5.7% | 6.8% |
| 16 | 8/10/2005 | 71 | 1002 | 8493 | 31 | 30.00 | 23.94 | 24424 | 344688 | 2130.0 | 23,984.4 | 8.7% | 7.0% |
| 17 | 8/11/2005 | 1 | 1003 | 8492 | 25.9 | 28.45 | 23.94 | 344 | 345032 | 28.5 | 24,012.8 | 8.3% | 7.0% |
| 18 | 9/15/2005 | 35 | 1038 | 8457 | 22.5 | 24.20 | 23.95 | 12040 | 357072 | 847.0 | 24,859.8 | 7.0% | 7.0% |
| 19 | 9/23/2005 | 8 | 1046 | 8449 | 83.3 | 52.90 | 24.17 | 2752 | 359824 | 423.2 | 25,283.0 | 15.4% | 7.0% |
| 20 | 9/29/2005 | 6 | 1052 | 8443 | 5.28 | 44.29 | 24.29 | 2064 | 361888 | 265.7 | 25,548.7 | 12.9% | 7.1% |
| 21 | 10/6/2005 | 7 | 1059 | 8436 | 119 | 62.14 | 24.54 | 2408 | 364296 | 435.0 | 25,983.7 | 18.1% | 7.1% |
| 22 | 10/28/2005 | 22 | 1081 | 8414 | 32.3 | 75.65 | 25.58 | 7568 | 371864 | 1664.3 | 27,648.0 | 22.0% | 7.4% |
| 23 | 11/18/2005 | 21 | 1102 | 8393 | 63.6 | 47.95 | 26.00 | 7224 | 379088 | 1007.0 | 28,655.0 | 13.9% | 7.6% |
| 24 | 12/29/2005 | 41 | 1143 | 8352 | 21.4 | 42.50 | 26.59 | 14104 | 393192 | 1742.5 | 30,397.5 | 12.4% | 7.7% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

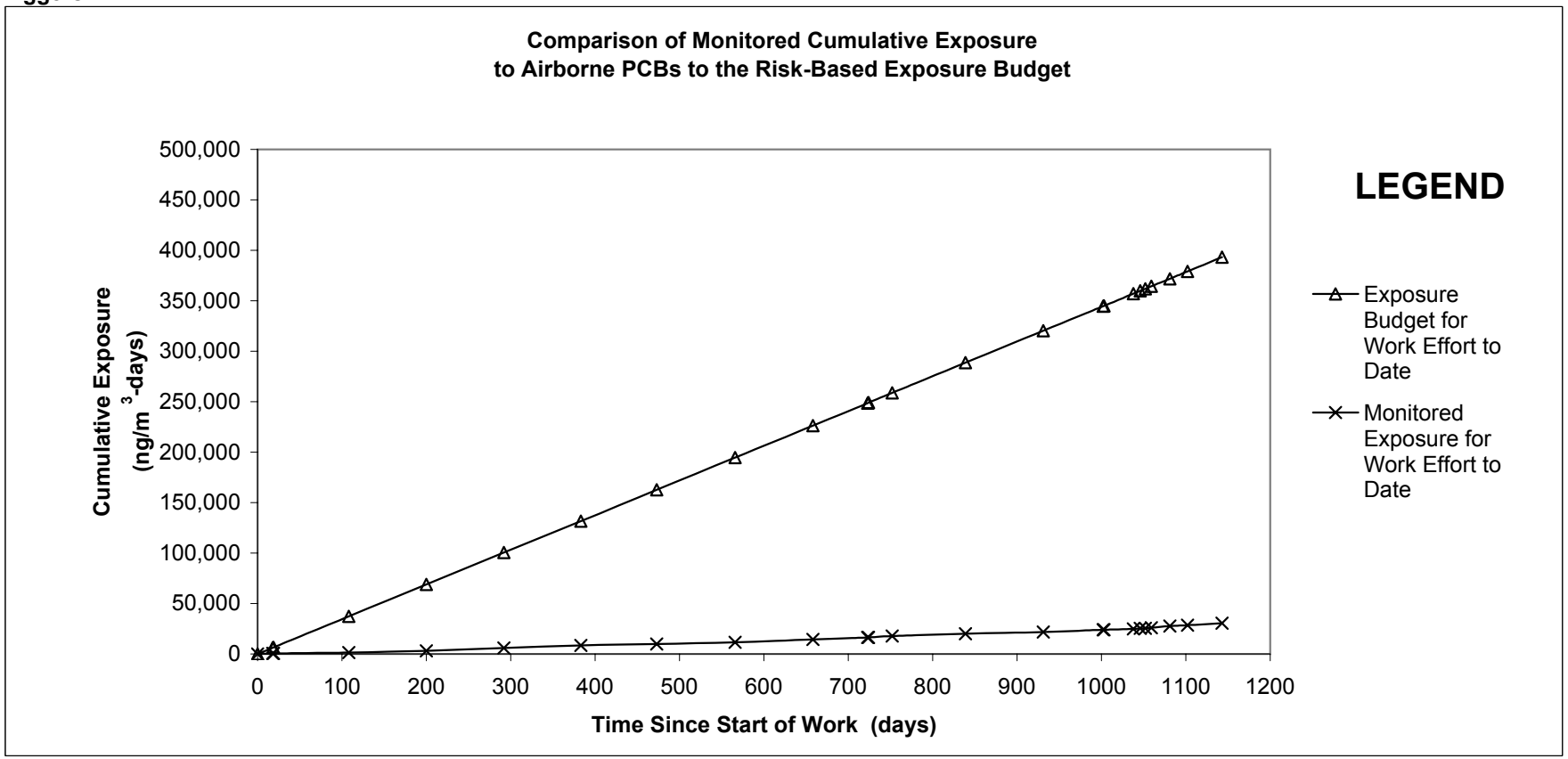
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 42 NSTAR N |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 21.4 |
| **Exposure Budget Expended During This Period:** | 12.4% |
| **Cumulative Exposure Budget Expended to Date:** | 7.7% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 46 Coffin Ave
Exposure Budget Slope (EBS) = 344 (ng/$m^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 46 Coffin Ave., the quarterly ambient air PCB concentrations were used for background concentrations. These values represent the quarterly baseline averages from Stations 21 and 25 - Cliftex, for the period of June 1999 through May 2000. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. No triggers were identified, therefore, no action is required.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 46 Coffin Ave |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 344 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 26.1 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#] | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 22 | 22.00 | 22.00 | NC | NC | NC | NC | NC | NC |
| 2 | 11/30/2002 | 18 | 18 | 9477 | 22 | 22.00 | 22.00 | 6192 | 6192 | 396.0 | 396.0 | 6.4% | 6.4% |
| 3 | 12/1/2002 | 1 | 19 | 9476 | 3.2 | 12.60 | 21.51 | 344 | 6536 | 12.6 | 408.6 | 3.7% | 6.3% |
| 4 | 2/28/2003 | 89 | 108 | 9387 | 3.2 | 3.20 | 6.42 | 30616 | 37152 | 284.8 | 693.4 | 0.9% | 1.9% |
| 5 | 5/31/2003 | 92 | 200 | 9295 | 35 | 19.10 | 12.25 | 31648 | 68800 | 1757.2 | 2,450.6 | 5.6% | 3.6% |
| 6 | 8/31/2003 | 92 | 292 | 9203 | 46 | 40.50 | 21.15 | 31648 | 100448 | 3726.0 | 6,176.6 | 11.8% | 6.1% |
| 7 | 11/30/2003 | 91 | 383 | 9112 | 22 | 34.00 | 24.21 | 31304 | 131752 | 3094.0 | 9,270.6 | 9.9% | 7.0% |
| 8 | 2/28/2004 | 90 | 473 | 9022 | 3.2 | 12.60 | 22.00 | 30960 | 162712 | 1134.0 | 10,404.6 | 3.7% | 6.4% |
| 9 | 5/31/2004 | 93 | 566 | 8929 | 35 | 19.10 | 21.52 | 31992 | 194704 | 1776.3 | 12,180.9 | 5.6% | 6.3% |
| 10 | 8/31/2004 | 92 | 658 | 8837 | 46 | 40.50 | 24.17 | 31648 | 226352 | 3726.0 | 15,906.9 | 11.8% | 7.0% |
| 11 | 9/8/2004 | 8 | 666 | 8829 | 22 | 34.00 | 24.29 | 2752 | 229104 | 272.0 | 16,178.9 | 9.9% | 7.1% |
| 12 | 9/9/2004 | 1 | 667 | 8828 | 145 | 83.50 | 24.38 | 344 | 229448 | 83.5 | 16,262.4 | 24.3% | 7.1% |
| 13 | 9/14/2004 | 5 | 672 | 8823 | 48 | 96.50 | 24.92 | 1720 | 231168 | 482.5 | 16,744.9 | 28.1% | 7.2% |
| 14 | 9/23/2004 | 9 | 681 | 8814 | 5 | 26.50 | 24.94 | 3096 | 234264 | 238.5 | 16,983.4 | 7.7% | 7.2% |
| 15 | 9/28/2004 | 5 | 686 | 8809 | 342 | 173.50 | 26.02 | 1720 | 235984 | 867.5 | 17,850.9 | 50.4% | 7.6% |
| 16 | 10/19/2004 | 21 | 707 | 8788 | 36 | 189.00 | 30.86 | 7224 | 243208 | 3969.0 | 21,819.9 | 54.9% | 9.0% |
| 17 | 11/5/2004 | 17 | 724 | 8771 | 80 | 58.00 | 31.50 | 5848 | 249056 | 986.0 | 22,805.9 | 16.9% | 9.2% |
| 18 | 12/3/2004 | 28 | 752 | 8743 | 15 | 47.50 | 32.10 | 9632 | 258688 | 1330.0 | 24,135.9 | 13.8% | 9.3% |
| 19 | 2/28/2005 | 87 | 839 | 8656 | 3.2 | 9.10 | 29.71 | 29928 | 288616 | 791.7 | 24,927.6 | 2.6% | 8.6% |
| 20 | 5/31/2005 | 92 | 931 | 8564 | 35 | 19.10 | 28.66 | 31648 | 320264 | 1757.2 | 26,684.8 | 5.6% | 8.3% |
| 21 | 8/10/2005 | 71 | 1002 | 8493 | 46 | 40.50 | 29.50 | 24424 | 344688 | 2875.5 | 29,560.3 | 11.8% | 8.6% |
| 22 | 8/11/2005 | 1 | 1003 | 8492 | 37.2 | 41.60 | 29.51 | 344 | 345032 | 41.6 | 29,601.9 | 12.1% | 8.6% |
| 23 | 9/15/2005 | 35 | 1038 | 8457 | 99.8 | 68.50 | 30.83 | 12040 | 357072 | 2397.5 | 31,999.4 | 19.9% | 9.0% |
| 24 | 9/23/2005 | 8 | 1046 | 8449 | 115 | 107.40 | 31.41 | 2752 | 359824 | 859.2 | 32,858.6 | 31.2% | 9.1% |
| 25 | 9/29/2005 | 6 | 1052 | 8443 | 124 | 119.50 | 31.92 | 2064 | 361888 | 717.0 | 33,575.6 | 34.7% | 9.3% |
| 26 | 10/6/2005 | 7 | 1059 | 8436 | 130 | 127.00 | 32.54 | 2408 | 364296 | 889.0 | 34,464.6 | 36.9% | 9.5% |
| 27 | 10/28/2005 | 22 | 1081 | 8414 | 2.06 | 66.03 | 33.23 | 7568 | 371864 | 1452.7 | 35,917.3 | 19.2% | 9.7% |
| 28 | 11/18/2005 | 21 | 1102 | 8393 | 0.14 | 1.10 | 32.61 | 7224 | 379088 | 23.1 | 35,940.4 | 0.3% | 9.5% |
| 29 | 12/29/2005 | 41 | 1143 | 8352 | 65.1 | 32.62 | 32.61 | 14104 | 393192 | 1337.4 | 37,277.8 | 9.5% | 9.5% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

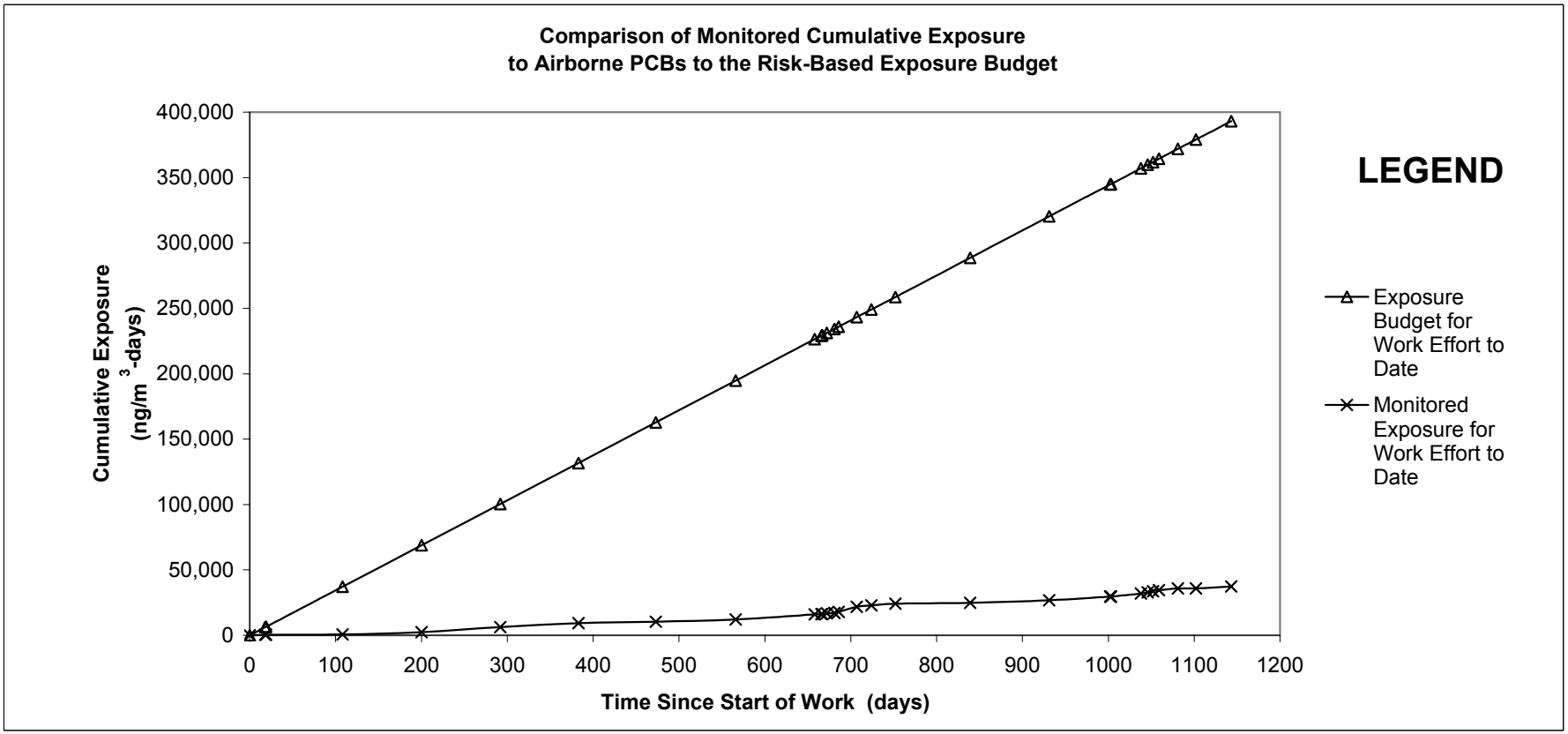
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 46 Coffin Ave |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 65.1 |
| **Exposure Budget Expended During This Period:** | 9.5% |
| **Cumulative Exposure Budget Expended to Date:** | 9.5% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 48 Area C Crosswind
Exposure Budget Slope (EBS) = 344 (ng/$m^3$-day)

**Collection Date:** 11/18/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 48 Area C Crosswind, the quarterly average ambient air PCB concentrations were used for background. These values represent the quarterly baseline averages from Station 26 - Sawyer for the period of June 1999 through May 2000. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 9/14/05 to close the inactive field season. No triggers were identified, therefore, no action is required.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 48 Area C Crosswind |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 344 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 56 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#] | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 43 | 43.00 | 43.00 | NC | NC | NC | NC | NC | NC |
| 2 | 11/30/2002 | 18 | 18 | 9477 | 43 | 43.00 | 43.00 | 6192 | 6192 | 774.0 | 774.0 | 12.5% | 12.5% |
| 3 | 12/1/2002 | 1 | 19 | 9476 | 89 | 66.00 | 44.21 | 344 | 6536 | 66.0 | 840.0 | 19.2% | 12.9% |
| 4 | 2/28/2003 | 89 | 108 | 9387 | 89 | 89.00 | 81.12 | 30616 | 37152 | 7921.0 | 8,761.0 | 25.9% | 23.6% |
| 5 | 5/31/2003 | 92 | 200 | 9295 | 61 | 75.00 | 78.31 | 31648 | 68800 | 6900.0 | 15,661.0 | 21.8% | 22.8% |
| 6 | 8/31/2003 | 92 | 292 | 9203 | 33 | 47.00 | 68.44 | 31648 | 100448 | 4324.0 | 19,985.0 | 13.7% | 19.9% |
| 7 | 11/30/2003 | 91 | 383 | 9112 | 43 | 38.00 | 61.21 | 31304 | 131752 | 3458.0 | 23,443.0 | 11.0% | 17.8% |
| 8 | 2/28/2004 | 90 | 473 | 9022 | 89 | 66.00 | 62.12 | 30960 | 162712 | 5940.0 | 29,383.0 | 19.2% | 18.1% |
| 9 | 5/31/2004 | 93 | 566 | 8929 | 61 | 75.00 | 64.24 | 31992 | 194704 | 6975.0 | 36,358.0 | 21.8% | 18.7% |
| 10 | 8/31/2004 | 92 | 658 | 8837 | 33 | 47.00 | 61.83 | 31648 | 226352 | 4324.0 | 40,682.0 | 13.7% | 18.0% |
| 11 | 9/8/2004 | 8 | 666 | 8829 | 43 | 38.00 | 61.54 | 2752 | 229104 | 304.0 | 40,986.0 | 11.0% | 17.9% |
| 12 | 9/9/2004 | 1 | 667 | 8828 | 37 | 40.00 | 61.51 | 344 | 229448 | 40.0 | 41,026.0 | 11.6% | 17.9% |
| 13 | 9/14/2004 | 5 | 672 | 8823 | 64 | 50.50 | 61.43 | 1720 | 231168 | 252.5 | 41,278.5 | 14.7% | 17.9% |
| 14 | 9/23/2004 | 9 | 681 | 8814 | 10 | 37.00 | 61.10 | 3096 | 234264 | 333.0 | 41,611.5 | 10.8% | 17.8% |
| 15 | 9/28/2004 | 5 | 686 | 8809 | 165 | 87.50 | 61.30 | 1720 | 235984 | 437.5 | 42,049.0 | 25.4% | 17.8% |
| 16 | 10/19/2004 | 21 | 707 | 8788 | 48 | 106.50 | 62.64 | 7224 | 243208 | 2236.5 | 44,285.5 | 31.0% | 18.2% |
| 17 | 11/30/2004 | 42 | 749 | 8746 | 43 | 45.50 | 61.68 | 14448 | 257656 | 1911.0 | 46,196.5 | 13.2% | 17.9% |
| 18 | 2/28/2005 | 90 | 839 | 8656 | 89 | 66.00 | 62.14 | 30960 | 288616 | 5940.0 | 52,136.5 | 19.2% | 18.1% |
| 19 | 5/31/2005 | 92 | 931 | 8564 | 61 | 75.00 | 63.41 | 31648 | 320264 | 6900.0 | 59,036.5 | 21.8% | 18.4% |
| 20 | 8/31/2005 | 92 | 1023 | 8472 | 33 | 47.00 | 61.94 | 31648 | 351912 | 4324.0 | 63,360.5 | 13.7% | 18.0% |
| 21 | 9/14/2005 | 14 | 1037 | 8458 | 43 | 38.00 | 61.61 | 4816 | 356728 | 532.0 | 63,892.5 | 11.0% | 17.9% |
| 22 | 9/15/2005 | 1 | 1038 | 8457 | 14.9 | 28.95 | 61.58 | 344 | 357072 | 29.0 | 63,921.5 | 8.4% | 17.9% |
| 23 | 9/23/2005 | 8 | 1046 | 8449 | 19.1 | 17.00 | 61.24 | 2752 | 359824 | 136.0 | 64,057.5 | 4.9% | 17.8% |
| 24 | 9/29/2005 | 6 | 1052 | 8443 | 17.3 | 18.20 | 60.99 | 2064 | 361888 | 109.2 | 64,166.7 | 5.3% | 17.7% |
| 25 | 10/6/2005 | 7 | 1059 | 8436 | 60.1 | 38.70 | 60.85 | 2408 | 364296 | 270.9 | 64,437.6 | 11.3% | 17.7% |
| 26 | 10/28/2005 | 22 | 1081 | 8414 | 4.61 | 32.36 | 60.27 | 7568 | 371864 | 711.8 | 65,149.4 | 9.4% | 17.5% |
| 27 | 11/18/2005 | 21 | 1102 | 8393 | 0.139 | 2.37 | 59.16 | 7224 | 379088 | 49.9 | 65,199.2 | 0.7% | 17.2% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

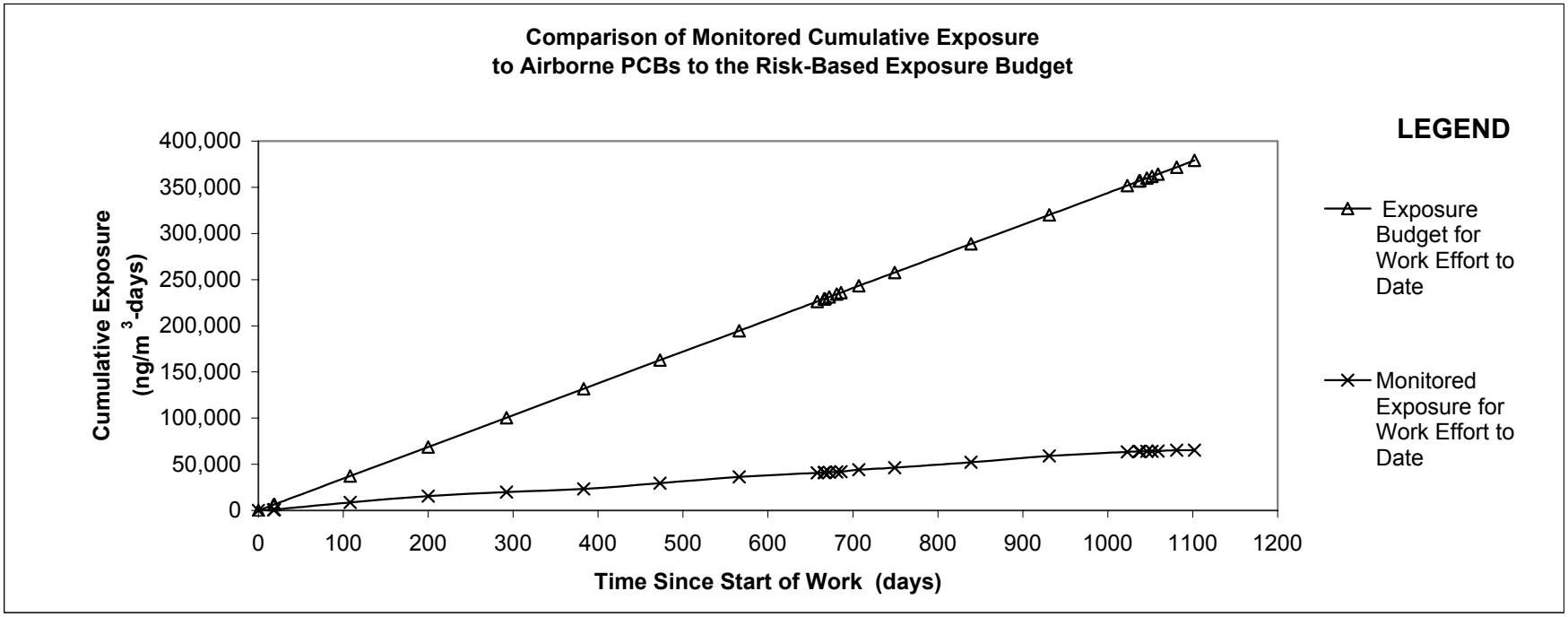
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 48 Area C Crosswind |
| **Collection Date:** | 11/18/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 0.139 |
| **Exposure Budget Expended During This Period:** | 0.7% |
| **Cumulative Exposure Budget Expended to Date:** | 17.2% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 49 Area C Downwind
Exposure Budget Slope (EBS) = 344 (ng/m$^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 49 Area C Upwind, the quarterly average ambient air PCB concentrations were used for background. For the December 2005 sampling event, the results from Station 47 were used to represent Area D downgradient air PCB concentrations. These represent the average quarterly baseline averages from Station 26 - Sawyer, for the period of June 1999 through May 2000. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. No triggers were identified, therefore, no action is required.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 49 Area C Downwind |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 344 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 56 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#] | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 43 | 43.00 | 43.00 | NC | NC | NC | NC | NC | NC |
| 2 | 11/30/2002 | 18 | 18 | 9477 | 43 | 43.00 | 43.00 | 6192 | 6192 | 774.0 | 774.0 | 12.5% | 12.5% |
| 3 | 12/1/2002 | 1 | 19 | 9476 | 89 | 66.00 | 44.21 | 344 | 6536 | 66.0 | 840.0 | 19.2% | 12.9% |
| 4 | 2/28/2003 | 89 | 108 | 9387 | 89 | 89.00 | 81.12 | 30616 | 37152 | 7921.0 | 8,761.0 | 25.9% | 23.6% |
| 5 | 5/31/2003 | 92 | 200 | 9295 | 61 | 75.00 | 78.31 | 31648 | 68800 | 6900.0 | 15,661.0 | 21.8% | 22.8% |
| 6 | 8/31/2003 | 92 | 292 | 9203 | 33 | 47.00 | 68.44 | 31648 | 100448 | 4324.0 | 19,985.0 | 13.7% | 19.9% |
| 7 | 11/30/2003 | 91 | 383 | 9112 | 43 | 38.00 | 61.21 | 31304 | 131752 | 3458.0 | 23,443.0 | 11.0% | 17.8% |
| 8 | 2/28/2004 | 90 | 473 | 9022 | 89 | 66.00 | 62.12 | 30960 | 162712 | 5940.0 | 29,383.0 | 19.2% | 18.1% |
| 9 | 5/31/2004 | 93 | 566 | 8929 | 61 | 75.00 | 64.24 | 31992 | 194704 | 6975.0 | 36,358.0 | 21.8% | 18.7% |
| 10 | 8/31/2004 | 92 | 658 | 8837 | 33 | 47.00 | 61.83 | 31648 | 226352 | 4324.0 | 40,682.0 | 13.7% | 18.0% |
| 11 | 9/8/2004 | 8 | 666 | 8829 | 43 | 38.00 | 61.54 | 2752 | 229104 | 304.0 | 40,986.0 | 11.0% | 17.9% |
| 12 | 9/9/2004 | 1 | 667 | 8828 | 56 | 49.50 | 61.52 | 344 | 229448 | 49.5 | 41,035.5 | 14.4% | 17.9% |
| 13 | 9/14/2004 | 5 | 672 | 8823 | 86 | 71.00 | 61.59 | 1720 | 231168 | 355.0 | 41,390.5 | 20.6% | 17.9% |
| 14 | 9/23/2004 | 9 | 681 | 8814 | 17 | 51.50 | 61.46 | 3096 | 234264 | 463.5 | 41,854.0 | 15.0% | 17.9% |
| 15 | 9/28/2004 | 5 | 686 | 8809 | 207 | 112.00 | 61.83 | 1720 | 235984 | 560.0 | 42,414.0 | 32.6% | 18.0% |
| 16 | 10/19/2004 | 21 | 707 | 8788 | 66 | 136.50 | 64.05 | 7224 | 243208 | 2866.5 | 45,280.5 | 39.7% | 18.6% |
| 17 | 11/5/2004 | 17 | 724 | 8771 | 28 | 47.00 | 63.65 | 5848 | 249056 | 799.0 | 46,079.5 | 13.7% | 18.5% |
| 18 | 12/3/2004 | 28 | 752 | 8743 | 26 | 27.00 | 62.28 | 9632 | 258688 | 756.0 | 46,835.5 | 7.8% | 18.1% |
| 19 | 2/28/2005 | 87 | 839 | 8656 | 89 | 57.50 | 61.79 | 29928 | 288616 | 5002.5 | 51,838.0 | 16.7% | 18.0% |
| 20 | 5/31/2005 | 92 | 931 | 8564 | 61 | 75.00 | 63.09 | 31648 | 320264 | 6900.0 | 58,738.0 | 21.8% | 18.3% |
| 21 | 8/10/2005 | 71 | 1002 | 8493 | 33 | 47.00 | 61.95 | 24424 | 344688 | 3337.0 | 62,075.0 | 13.7% | 18.0% |
| 22 | 8/11/2005 | 1 | 1003 | 8492 | 29.3 | 31.15 | 61.92 | 344 | 345032 | 31.2 | 62,106.2 | 9.1% | 18.0% |
| 23 | 9/15/2005 | 35 | 1038 | 8457 | 83.6 | 56.45 | 61.74 | 12040 | 357072 | 1975.8 | 64,081.9 | 16.4% | 17.9% |
| 24 | 9/23/2005 | 8 | 1046 | 8449 | 97 | 90.30 | 61.95 | 2752 | 359824 | 722.4 | 64,804.3 | 26.3% | 18.0% |
| 25 | 9/29/2005 | 6 | 1052 | 8443 | 44.2 | 70.60 | 62.00 | 2064 | 361888 | 423.6 | 65,227.9 | 20.5% | 18.0% |
| 26 | 10/6/2005 | 7 | 1059 | 8436 | 114 | 79.10 | 62.12 | 2408 | 364296 | 553.7 | 65,781.6 | 23.0% | 18.1% |
| 27 | 10/28/2005 | 22 | 1081 | 8414 | 12.3 | 63.15 | 62.14 | 7568 | 371864 | 1389.3 | 67,170.9 | 18.4% | 18.1% |
| 28 | 11/18/2005 | 21 | 1102 | 8393 | 3.71 | 8.01 | 61.11 | 7224 | 379088 | 168.1 | 67,339.0 | 2.3% | 17.8% |
| 29 | 12/29/2005 | 41 | 1143 | 8352 | 7.42 | 5.57 | 59.11 | 14104 | 393192 | 228.2 | 67,567.2 | 1.6% | 17.2% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

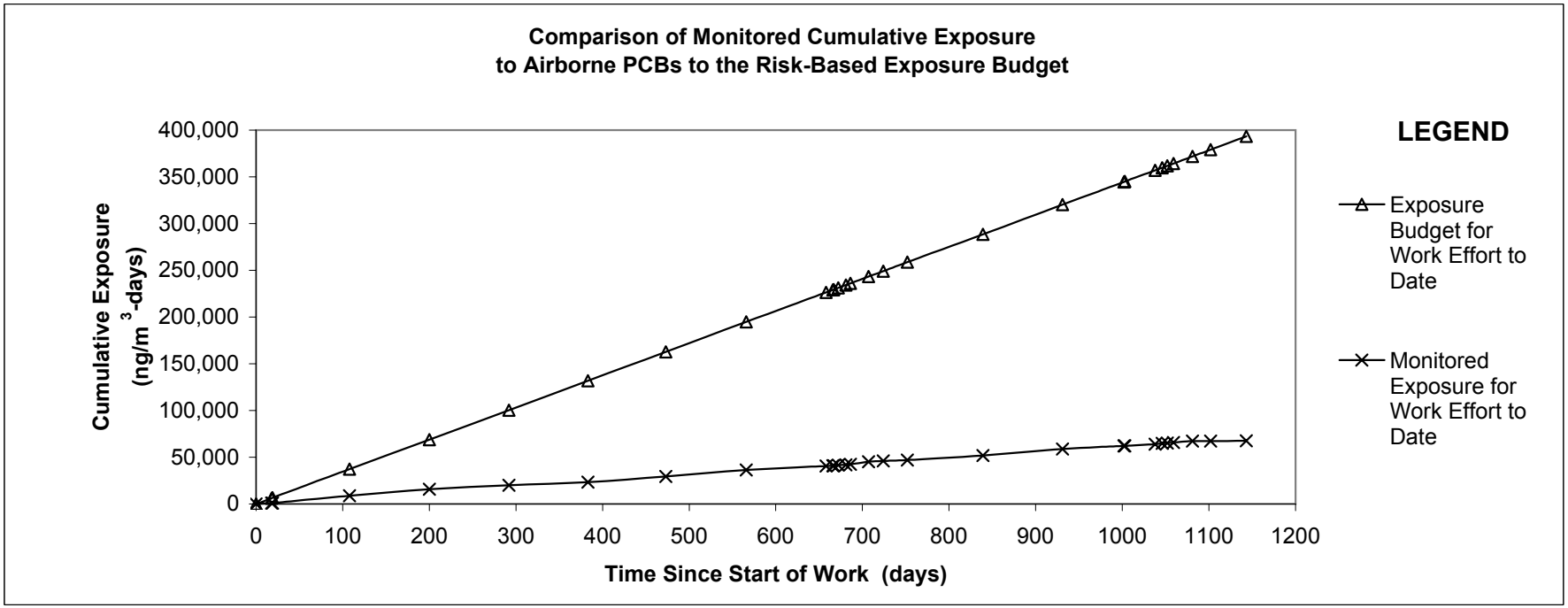
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 49 Area C Downwind |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 7.42 |
| **Exposure Budget Expended During This Period:** | 1.6% |
| **Cumulative Exposure Budget Expended to Date:** | 17.2% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 50 Area D Downwind
Exposure Budget Slope (EBS) = 344 (ng/m$^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The October 28, 2005 sample was broken during analysis. The 2005 dredging activities were completed on November 18, 200

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. However, for the August 2005 background sampling event, the results from Station 52 were used to represent Area D downgradient air PCB concentrations. For the December 2005 post-dredging sampling event, the results from Station 51 were used to represent Area D downgradient air PCB concentrations. For Station 50 Area D, the average quarterly air PCB concentrations were used as background concentrations, which represent the average quarterly from Station 21 - New Bedford Welding, for the period of June 1999 through May 2000. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. No triggers were identified, therefore, potential necessary response is not necessary.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 50 Area D Downwind |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 344 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 16.7 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#] | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 5.9 | 5.90 | 5.90 | NC | NC | NC | NC | NC | NC |
| 2 | 11/30/2002 | 18 | 18 | 9477 | 5.9 | 5.90 | 5.90 | 6192 | 6192 | 106.2 | 106.2 | 1.7% | 1.7% |
| 3 | 12/1/2002 | 1 | 19 | 9476 | 3.4 | 4.65 | 5.83 | 344 | 6536 | 4.7 | 110.9 | 1.4% | 1.7% |
| 4 | 2/28/2003 | 89 | 108 | 9387 | 3.4 | 3.40 | 3.83 | 30616 | 37152 | 302.6 | 413.5 | 1.0% | 1.1% |
| 5 | 5/31/2003 | 92 | 200 | 9295 | 6.8 | 5.10 | 4.41 | 31648 | 68800 | 469.2 | 882.7 | 1.5% | 1.3% |
| 6 | 8/31/2003 | 92 | 292 | 9203 | 12 | 9.40 | 5.98 | 31648 | 100448 | 864.8 | 1,747.5 | 2.7% | 1.7% |
| 7 | 11/30/2003 | 91 | 383 | 9112 | 5.9 | 8.95 | 6.69 | 31304 | 131752 | 814.5 | 2,561.9 | 2.6% | 1.9% |
| 8 | 2/28/2004 | 90 | 473 | 9022 | 3.4 | 4.65 | 6.30 | 30960 | 162712 | 418.5 | 2,980.4 | 1.4% | 1.8% |
| 9 | 5/31/2004 | 93 | 566 | 8929 | 6.8 | 5.10 | 6.10 | 31992 | 194704 | 474.3 | 3,454.7 | 1.5% | 1.8% |
| 10 | 8/31/2004 | 92 | 658 | 8837 | 12 | 9.40 | 6.56 | 31648 | 226352 | 864.8 | 4,319.5 | 2.7% | 1.9% |
| 11 | 9/8/2004 | 8 | 666 | 8829 | 5.9 | 8.95 | 6.59 | 2752 | 229104 | 71.6 | 4,391.1 | 2.6% | 1.9% |
| 12 | 9/9/2004 | 1 | 667 | 8828 | 20 | 12.95 | 6.60 | 344 | 229448 | 13.0 | 4,404.1 | 3.8% | 1.9% |
| 13 | 9/14/2004 | 5 | 672 | 8823 | 38 | 29.00 | 6.77 | 1720 | 231168 | 145.0 | 4,549.1 | 8.4% | 2.0% |
| 14 | 9/23/2004 | 9 | 681 | 8814 | 6 | 22.00 | 6.97 | 3096 | 234264 | 198.0 | 4,747.1 | 6.4% | 2.0% |
| 15 | 9/28/2004 | 5 | 686 | 8809 | 80 | 43.00 | 7.23 | 1720 | 235984 | 215.0 | 4,962.1 | 12.5% | 2.1% |
| 16 | 10/19/2004 | 21 | 707 | 8788 | 17 | 48.50 | 8.46 | 7224 | 243208 | 1018.5 | 5,980.6 | 14.1% | 2.5% |
| 17 | 12/3/2004 | 45 | 752 | 8743 | 22 | 19.50 | 9.12 | 15480 | 258688 | 877.5 | 6,858.1 | 5.7% | 2.7% |
| 18 | 2/28/2005 | 87 | 839 | 8656 | 3.4 | 12.70 | 9.49 | 29928 | 288616 | 1104.9 | 7,963.0 | 3.7% | 2.8% |
| 19 | 5/31/2005 | 92 | 931 | 8564 | 6.8 | 5.10 | 9.06 | 31648 | 320264 | 469.2 | 8,432.2 | 1.5% | 2.6% |
| 20 | 8/10/2005 | 71 | 1002 | 8493 | 12 | 9.40 | 9.08 | 24424 | 344688 | 667.4 | 9,099.6 | 2.7% | 2.6% |
| 21 | 8/11/2005 | 1 | 1003 | 8492 | 21.3 | 16.65 | 9.09 | 344 | 345032 | 16.7 | 9,116.2 | 4.8% | 2.6% |
| 22 | 9/15/2005 | 35 | 1038 | 8457 | 0.52 | 10.91 | 9.15 | 12040 | 357072 | 381.9 | 9,498.1 | 3.2% | 2.7% |
| 23 | 9/23/2005 | 8 | 1046 | 8449 | 0.26 | 0.39 | 9.08 | 2752 | 359824 | 3.1 | 9,501.2 | 0.1% | 2.6% |
| 24 | 9/29/2005 | 6 | 1052 | 8443 | 24.2 | 12.23 | 9.10 | 2064 | 361888 | 73.4 | 9,574.6 | 3.6% | 2.6% |
| 25 | 10/6/2005 | 7 | 1059 | 8436 | 81.7 | 52.95 | 9.39 | 2408 | 364296 | 370.7 | 9,945.2 | 15.4% | 2.7% |
| 26 | 10/28/2005 | 22 | 1081 | 8414 | 0.01 | 40.86 | 10.03 | 7568 | 371864 | 898.8 | 10,844.0 | 11.9% | 2.9% |
| 27 | 12/29/2005 | 62 | 1143 | 8352 | 2.18 | 1.10 | 9.55 | 21328 | 393192 | 67.9 | 10,911.9 | 0.3% | 2.8% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

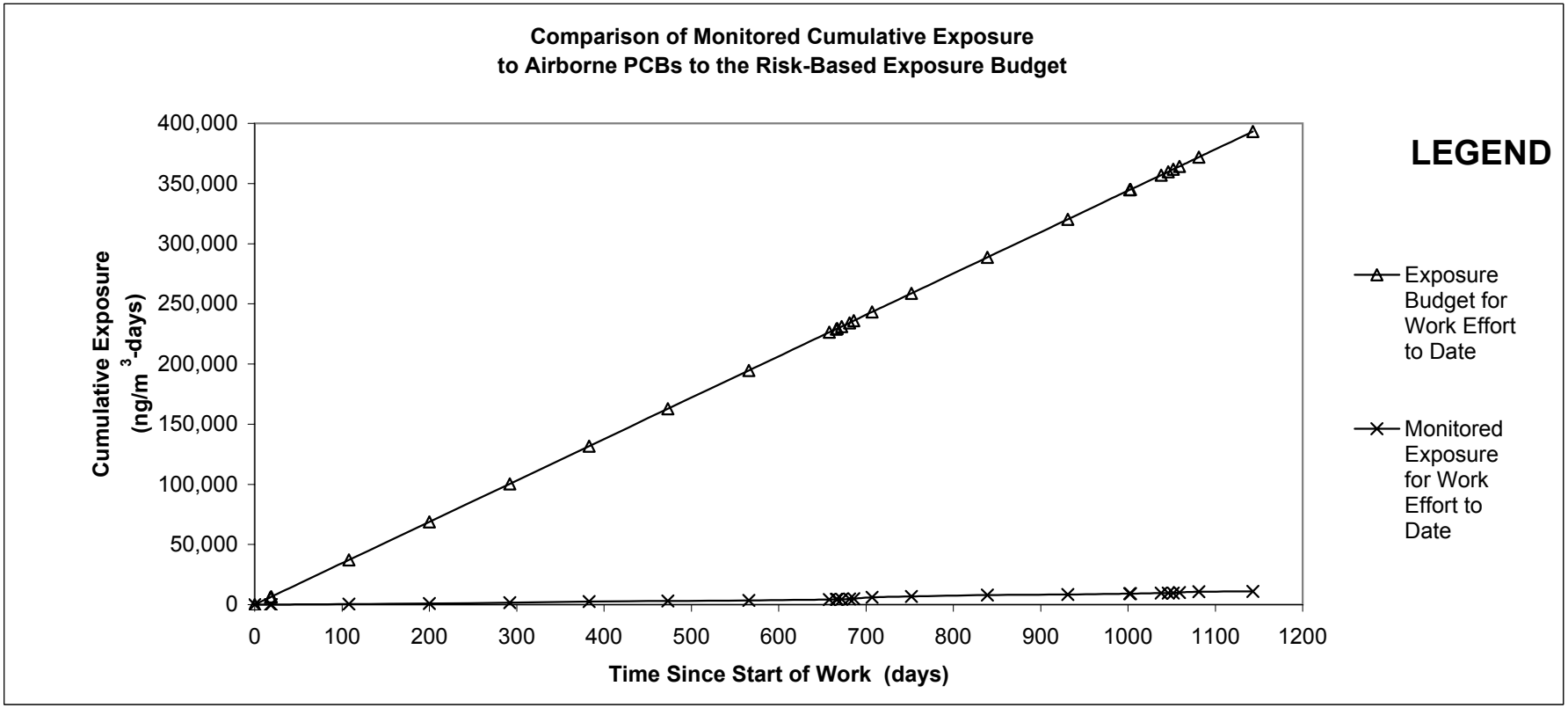
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 50 Area D Downwind |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 2.18 |
| **Exposure Budget Expended During This Period:** | 0.3% |
| **Cumulative Exposure Budget Expended to Date:** | 2.8% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 55 Aerovox West
Exposure Budget Slope (EBS) = 202 (ng/m$^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

This is a new sample location that was first sampled on December 3, 2004. Due to elevated concentrations on the East side of the facility, this location was selected to demonstrate what a local resident receptor (child receptor) might be seeing during remedial work. The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 55 Aerovox West, the maximum baseline result of 5.2 ng/m3 was used, which represents the maximum baseline result from Station 40 - Wood Street (Titleist), during the pre-construction sampling round on 11/18/02. Since there were no background concentrations measured at this location, the maximum concentration was used. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. No triggers were identified, therefore, no action is required.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 55 Aerovox West |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 202 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 5.2 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#} | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 5 | 5.00 | 5.00 | NC | NC | NC | NC | NC | NC |
| 2 | 11/4/2004 | 723 | 723 | 8772 | 5 | 5.00 | 5.00 | 146046 | 146046 | 3615.0 | 3,615.0 | 2.5% | 2.5% |
| 3 | 11/5/2004 | 1 | 724 | 8771 | 28 | 16.50 | 5.02 | 202 | 146248 | 16.5 | 3,631.5 | 8.2% | 2.5% |
| 4 | 12/3/2004 | 28 | 752 | 8743 | 9 | 18.50 | 5.52 | 5656 | 151904 | 518.0 | 4,149.5 | 9.2% | 2.7% |
| 5 | 8/10/2005 | 250 | 1002 | 8493 | 5 | 7.00 | 5.89 | 50500 | 202404 | 1750.0 | 5,899.5 | 3.5% | 2.9% |
| 6 | 8/11/2005 | 1 | 1003 | 8492 | 42.1 | 23.55 | 5.91 | 202 | 202606 | 23.6 | 5,923.1 | 11.7% | 2.9% |
| 7 | 9/15/2005 | 35 | 1038 | 8457 | 37.6 | 39.85 | 7.05 | 7070 | 209676 | 1394.8 | 7,317.8 | 19.7% | 3.5% |
| 8 | 9/23/2005 | 8 | 1046 | 8449 | 2.64 | 20.12 | 7.15 | 1616 | 211292 | 161.0 | 7,478.8 | 10.0% | 3.5% |
| 9 | 9/29/2005 | 6 | 1052 | 8443 | 87 | 44.82 | 7.36 | 1212 | 212504 | 268.9 | 7,747.7 | 22.2% | 3.6% |
| 10 | 10/6/2005 | 7 | 1059 | 8436 | 222 | 154.50 | 8.34 | 1414 | 213918 | 1081.5 | 8,829.2 | 76.5% | 4.1% |
| 11 | 10/28/2005 | 22 | 1081 | 8414 | 3.97 | 112.99 | 10.47 | 4444 | 218362 | 2485.7 | 11,314.9 | 55.9% | 5.2% |
| 12 | 11/18/2005 | 21 | 1102 | 8393 | 0.12 | 2.05 | 10.31 | 4242 | 222604 | 42.9 | 11,357.8 | 1.0% | 5.1% |
| 13 | 12/29/2005 | 41 | 1143 | 8352 | 10.8 | 5.46 | 10.13 | 8282 | 230886 | 223.9 | 11,581.7 | 2.7% | 5.0% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

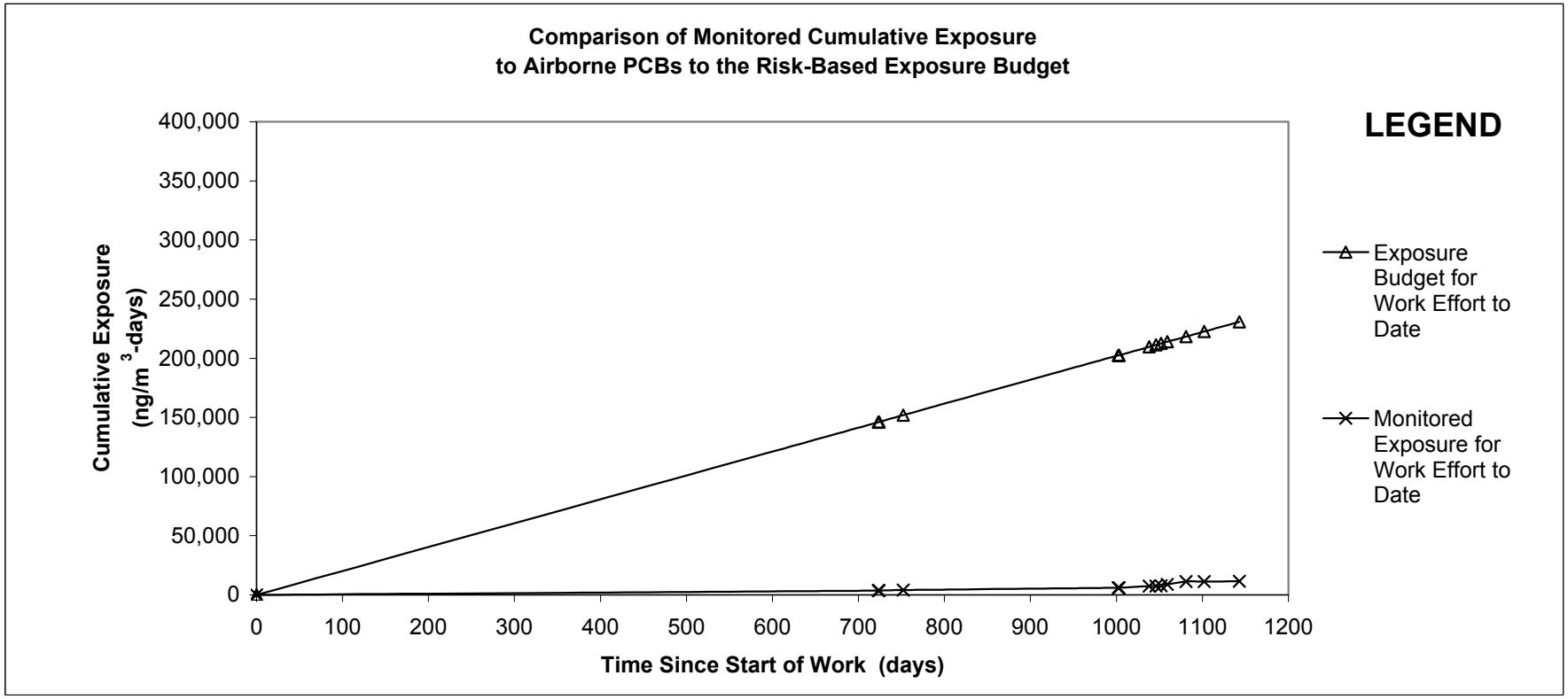
NC = Not Calculated

Shading represents actual data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 55 Aerovox West |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 10.8 |
| **Exposure Budget Expended During This Period:** | 2.7% |
| **Cumulative Exposure Budget Expended to Date:** | 5.0% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**



# Air Sampling Status

New Bedford Harbor Superfund Site

**Station #:** 56 Achushnet Park
Exposure Budget Slope (EBS) = 202 (ng/m$^3$-day)

**Collection Date:** 12/29/2005

**Construction Activity:** The 2005 dredging activities were completed on November 18, 2005.

This report summarizes sample results for the above referenced location and date. The samples were collected on polyurethane foam (PUF)/XAD sample media with a glass fiber pre-filter using a BGI, PQ-1 Low-Vol sampler. The samples were analyzed using high-resolution mass spectrometry (HRGCMS) for total PCB homologue groups. Results are evaluated relative to the Exposure Budget Tracking Process described in the Development of PCB Air Action Levels for the Protection of the Public, New Bedford Superfund Site, August 2001. Cumulative data for this reporting period are included on pages 3 and 4.

**Summary of This Sampling Period:**

This is a new sample location that was first sampled on December 3, 2004. Due to elevated concentrations on the East side of the facility, this location was selected to demonstrate what a local resident receptor (child receptor) might be seeing during remedial work. The results from the Baseline Ambient Air Sampling program were used to assign background concentrations for each air sampling location. For Station 56 Acushnet Park, the maximum baseline result of 5.2 ng/m3 was used, which represents the maximum result from Station 40 - Wood Street (Titleist), during the NWS pre-construction sampling round on 11/18/05. Since there were no background concentrations measured at this location, the maximum concentration was used. These background concentrations were used for the inactive field times from 11/12/02 through 9/8/04 and for the period from 12/4/04 through 8/10/05 to close the inactive field season. No triggers were identified, therefore, no action is required.

| | | |
|---|---|---|
| | | |
| | | |
| **Monitoring Station** | | 56 Achushnet Park |
| **Exposure Budget Slope** | [ng/m$^3$-day] | 202 |
| **Work Start Date** | [mm/dd/yyyy] | 11/12/2002 |
| **Projected Work End Date** | [mm/dd/yyyy] | 11/10/2028 |
| | | |
| **Occupational Limit Used as Ceiling** | [ng/m$^3$] | 500,000 |
| | | |
| **TEL for Worker in Public** | [ng/m$^3$] | 50,000 |
| **NTEL for Worker in Public** | [ng/m$^3$] | 1,789 |
| **Minimum of TEL/NTEL** | [ng/m$^3$] | 1,789 |
| | | |
| **Baseline Average Concentration** | [ng/m$^3$] | 5.2 |

# Sample Results, Calculated Budget and Exposure Values

| (A) Event | (B) Sampling Date | (C) Days Since Previous Sampling Event | (D) Work Effort Elapsed Time | (E) Estimated Work Effort Remaning | (F) PCB Concentration Result | (G) Average of Most Recent Two Concentration Results | (H) Weighted Average of Concentration Results | (I) Exposure Budget for the Period | (J) Cumulative Exposure Budget for Work Effort to Date | (K) Measured Exposure During the Period | (L) Calculated Cumulative Exposure for Work Effort to Date | (M) Exposure Budget Expended During the Period | (N) Cumulative Exposure Expended for Work Effort to Date |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [#] | [month/day/year] | [days] | Runnig Sum of Column (C) to Date [days] | [days] | [ng/m$^3$] | [ng/m$^3$] | Column (L)/Column (D) [ng/m$^3$] | EBS[1] * Column (C) [ng/m$^3$-days] | Sum of Column (I) [ng/m$^3$-days] | Column (G)* Column (C) [ng/m$^3$-days] | Sum of Column (K) [ng/m$^3$-days] | Column (K) /Column (I) [%] | Column (L) /Column (J) [%] |
| 1 | 11/12/2002 | 0 | 0 | 9495 | 5.2 | 5.20 | 5.20 | NC | NC | NC | NC | NC | NC |
| 2 | 11/4/2004 | 723 | 723 | 8772 | 5.2 | 5.20 | 5.20 | 146046 | 146046 | 3759.6 | 3,759.6 | 2.6% | 2.6% |
| 3 | 11/5/2004 | 1 | 724 | 8771 | 39 | 22.10 | 5.22 | 202 | 146248 | 22.1 | 3,781.7 | 10.9% | 2.6% |
| 4 | 12/3/2004 | 28 | 752 | 8743 | 2 | 20.50 | 5.79 | 5656 | 151904 | 574.0 | 4,355.7 | 10.1% | 2.9% |
| 5 | 8/10/2005 | 250 | 1002 | 8493 | 5.2 | 3.60 | 5.25 | 50500 | 202404 | 900.0 | 5,255.7 | 1.8% | 2.6% |
| 6 | 8/11/2005 | 1 | 1003 | 8492 | 49.9 | 27.55 | 5.27 | 202 | 202606 | 27.6 | 5,283.3 | 13.6% | 2.6% |
| 7 | 9/15/2005 | 35 | 1038 | 8457 | 102 | 75.95 | 7.65 | 7070 | 209676 | 2658.3 | 7,941.5 | 37.6% | 3.8% |
| 8 | 9/23/2005 | 8 | 1046 | 8449 | 23.9 | 62.95 | 8.07 | 1616 | 211292 | 503.6 | 8,445.1 | 31.2% | 4.0% |
| 9 | 9/29/2005 | 6 | 1052 | 8443 | 77.9 | 50.90 | 8.32 | 1212 | 212504 | 305.4 | 8,750.5 | 25.2% | 4.1% |
| 10 | 10/6/2005 | 7 | 1059 | 8436 | 180 | 128.95 | 9.12 | 1414 | 213918 | 902.7 | 9,653.2 | 63.8% | 4.5% |
| 11 | 10/28/2005 | 22 | 1081 | 8414 | 2.73 | 91.37 | 10.79 | 4444 | 218362 | 2010.0 | 11,663.2 | 45.2% | 5.3% |
| 12 | 11/18/2005 | 21 | 1102 | 8393 | 3.76 | 3.25 | 10.65 | 4242 | 222604 | 68.1 | 11,731.3 | 1.6% | 5.3% |
| 13 | 12/29/2005 | 41 | 1143 | 8352 | 13.5 | 8.63 | 10.57 | 8282 | 230886 | 353.8 | 12,085.2 | 4.3% | 5.2% |

**Notes:**

[1]EBS: Exposure Budget Slope= ng/m$^3$-day

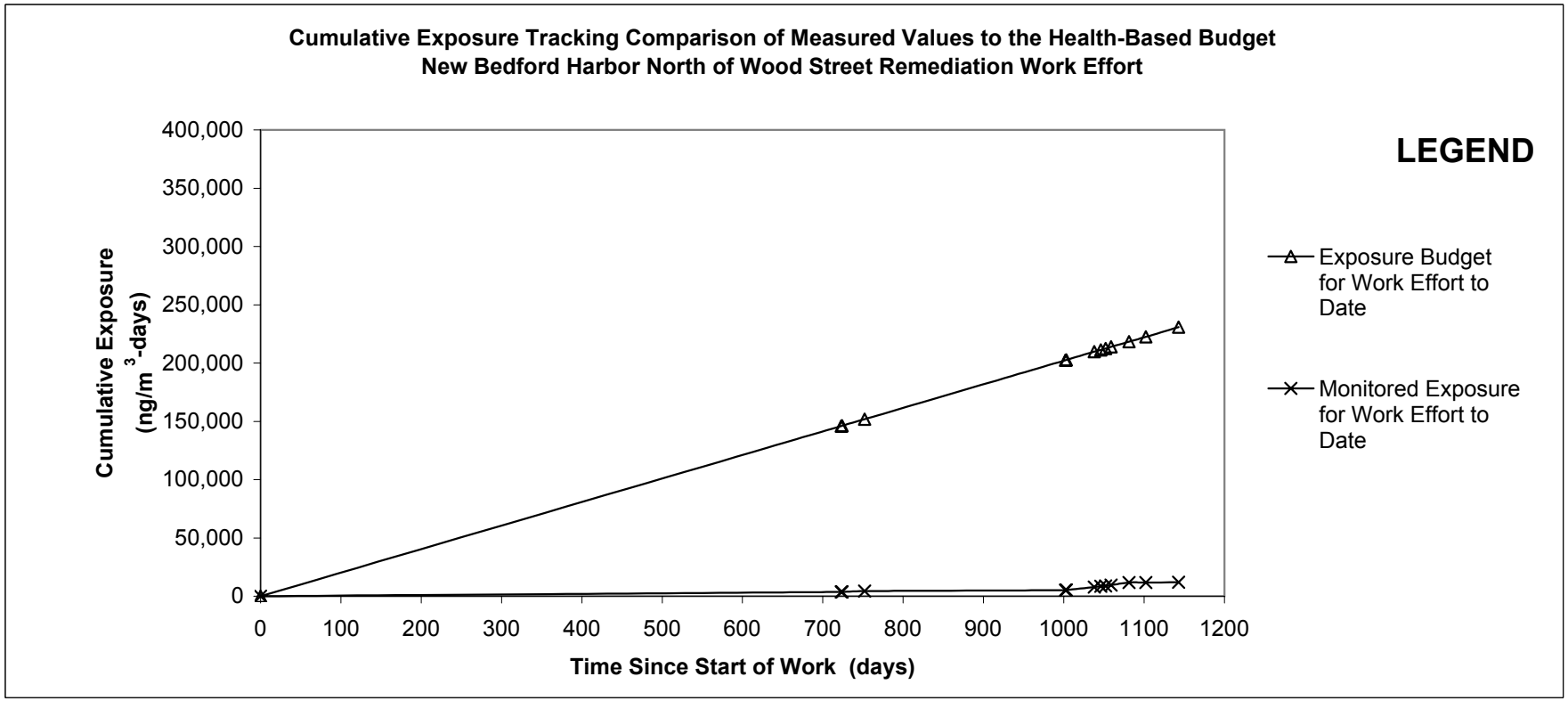
NC = Not Calculated

Shading represents actual sampling data. All other numbers represent projected PCB concentrations for that period.

# Air Sampling Status Report

| | |
|---|---|
| **Sample Station :** | 56 Achushnet Park |
| **Collection Date:** | 12/29/2005 |
| **Measured PCB Concentration (ng/m$^3$):** | 13.5 |
| **Exposure Budget Expended During This Period:** | 4.3% |
| **Cumulative Exposure Budget Expended to Date:** | 5.2% |
| **Response Level:** | No Triggers Identified |
| **Response:** | No Response Necessary |

**Triggers:**

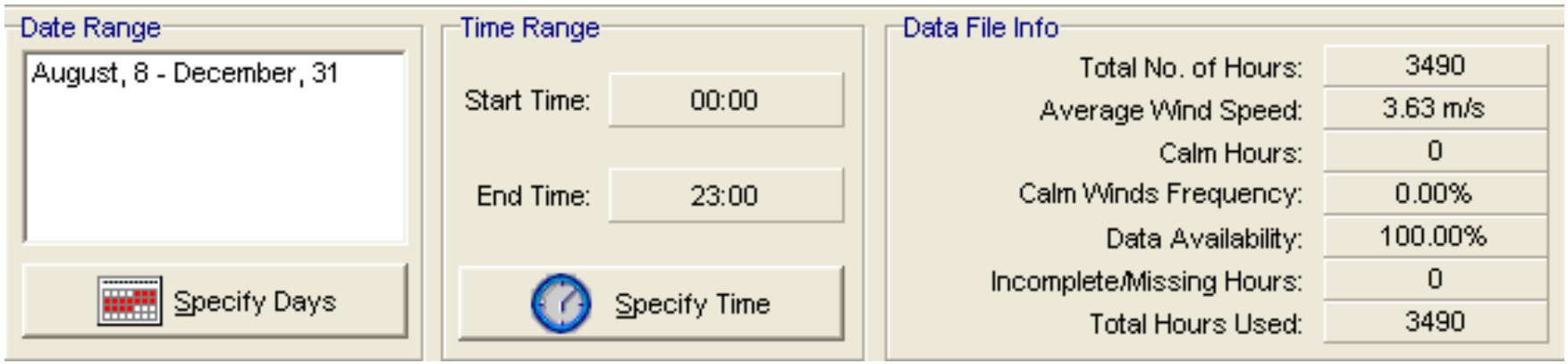


# 2005 New Bedford Harbor On-Site

# Climatic Data Survey

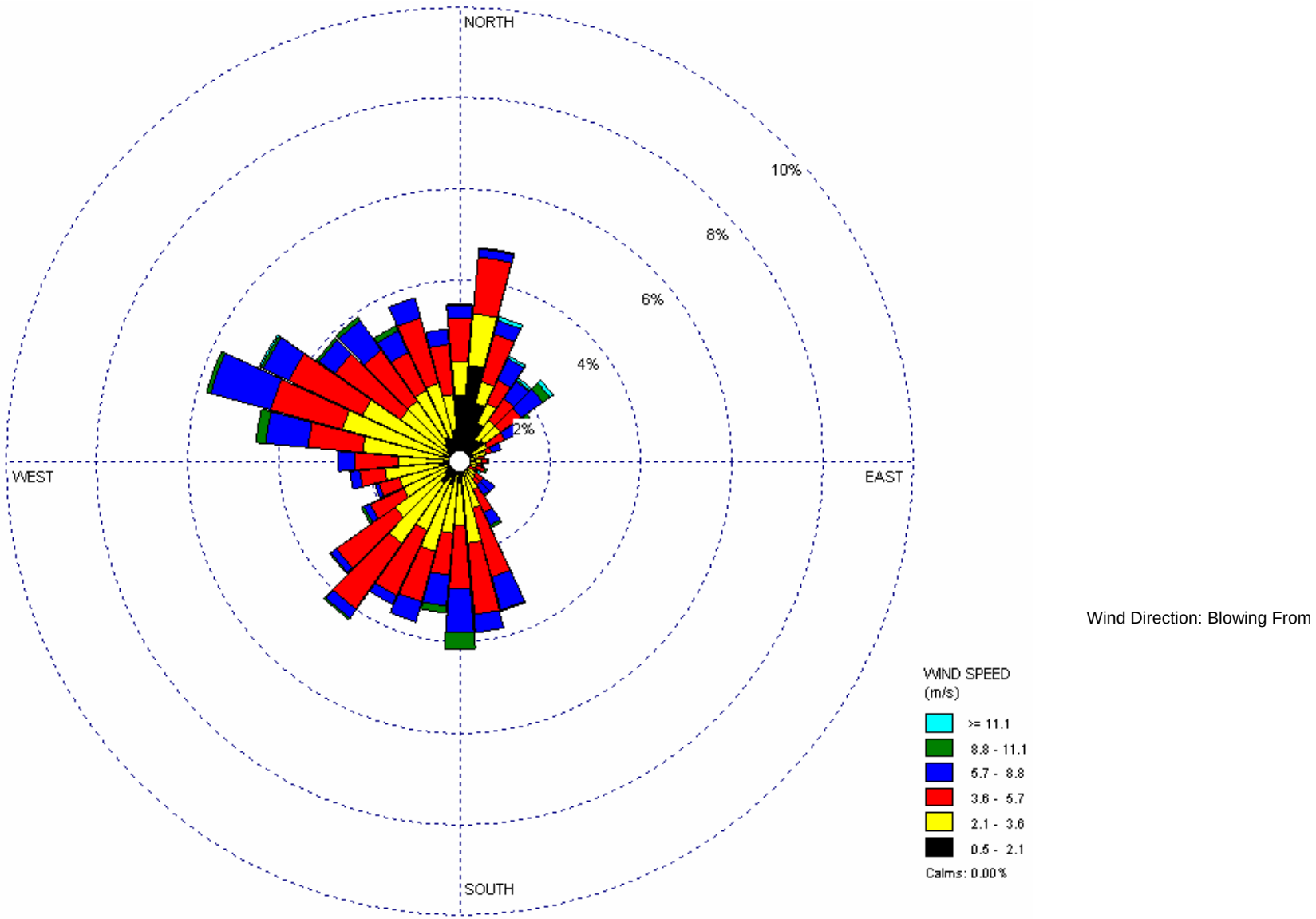
# (August 8 – December 31, 2005, Hourly Data)

# 2005 New Bedford Harbor On-Site Climatic Data Summary
# (August 8 – December 31, 2005 Hourly Data)



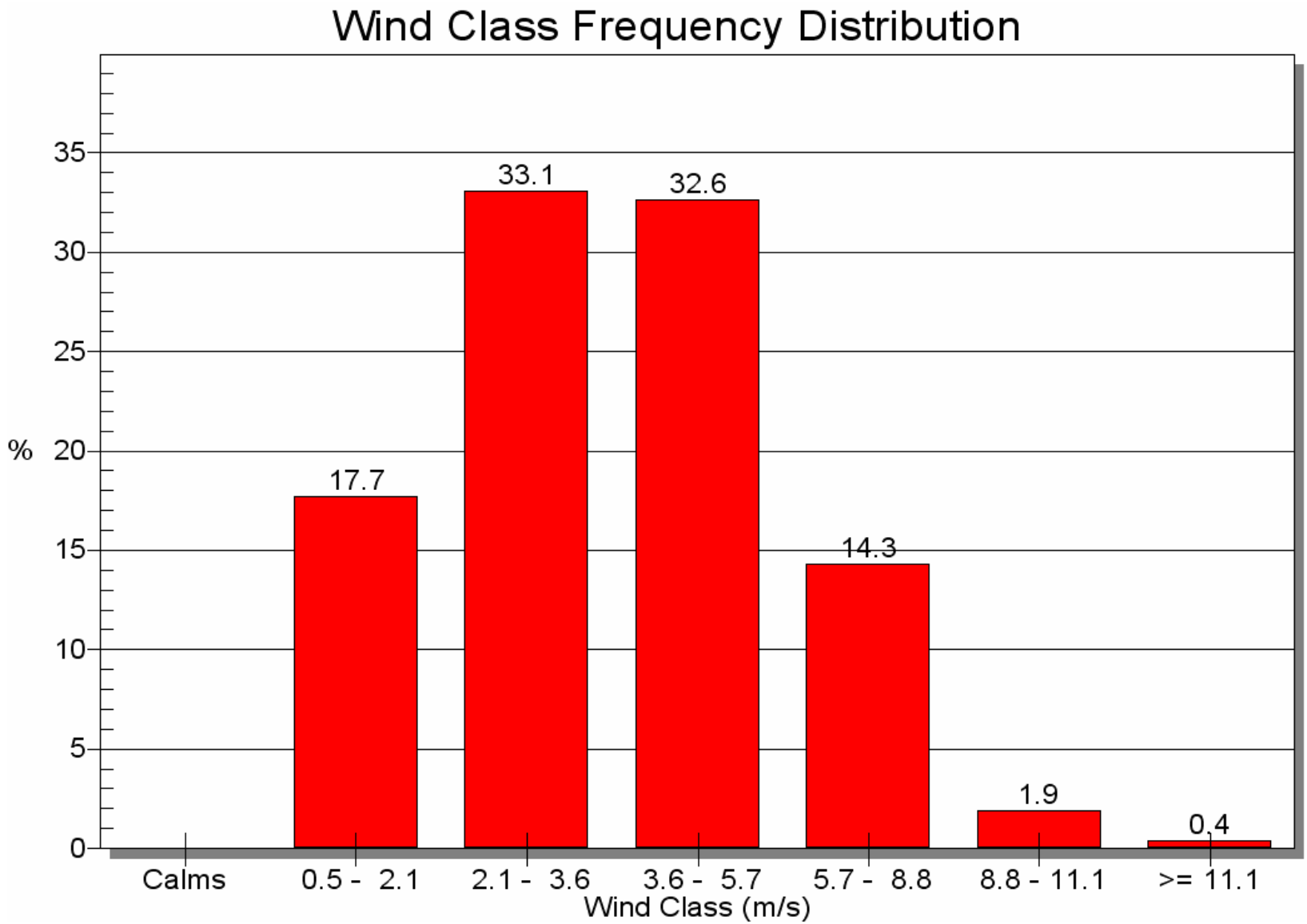

1 m/s (meter per second) = 2.237 mile per hour

# (August 8 – December 31, 2005 Hourly Data)



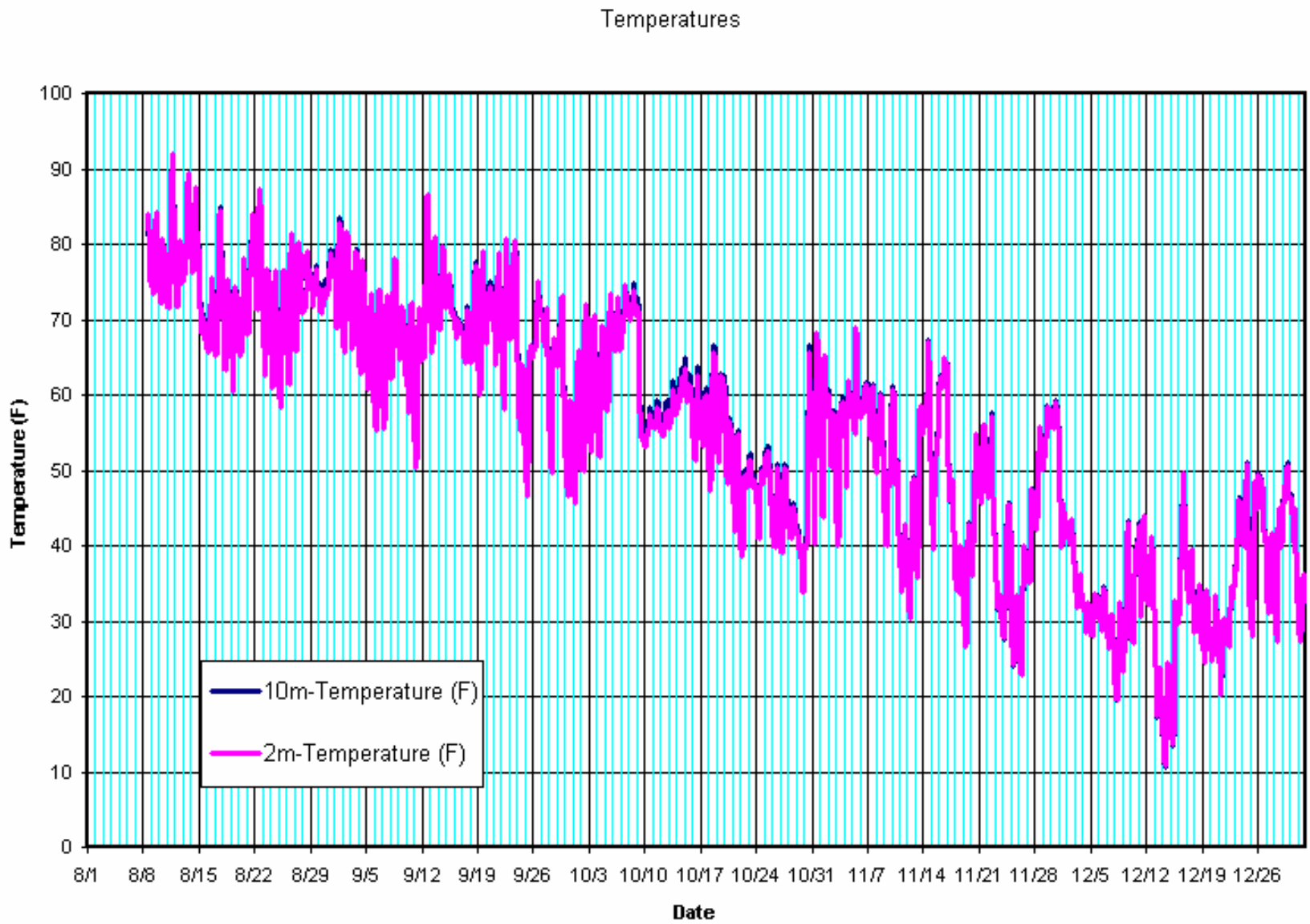

1 m/s (meter per second) = 2.237 miles per hour

(August 8 – December 31, 2005 Hourly Data)

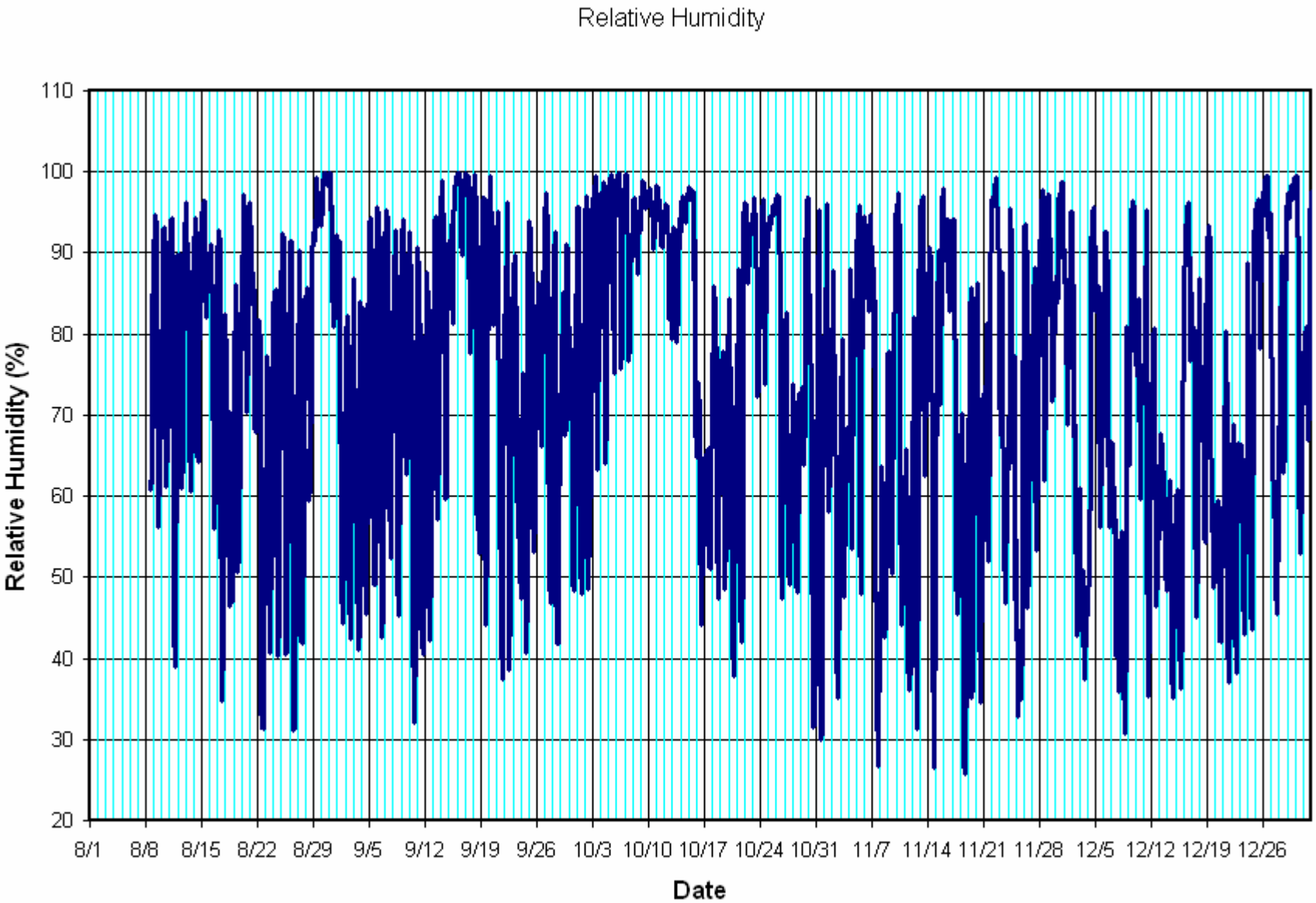



1 m/s (meter per second) = 2.237 miles per hour

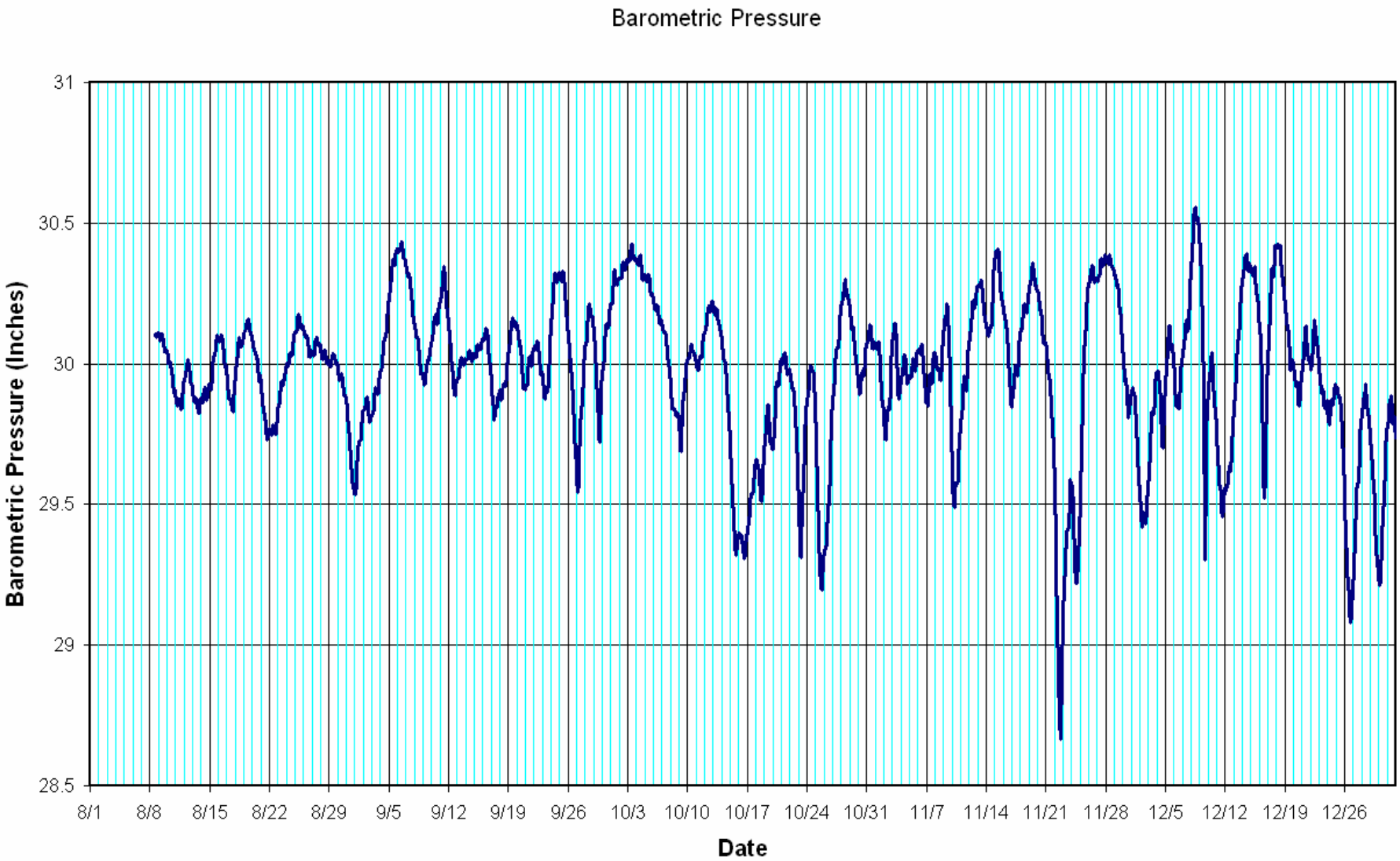
(August 8 – December 31, 2005 Hourly Data)



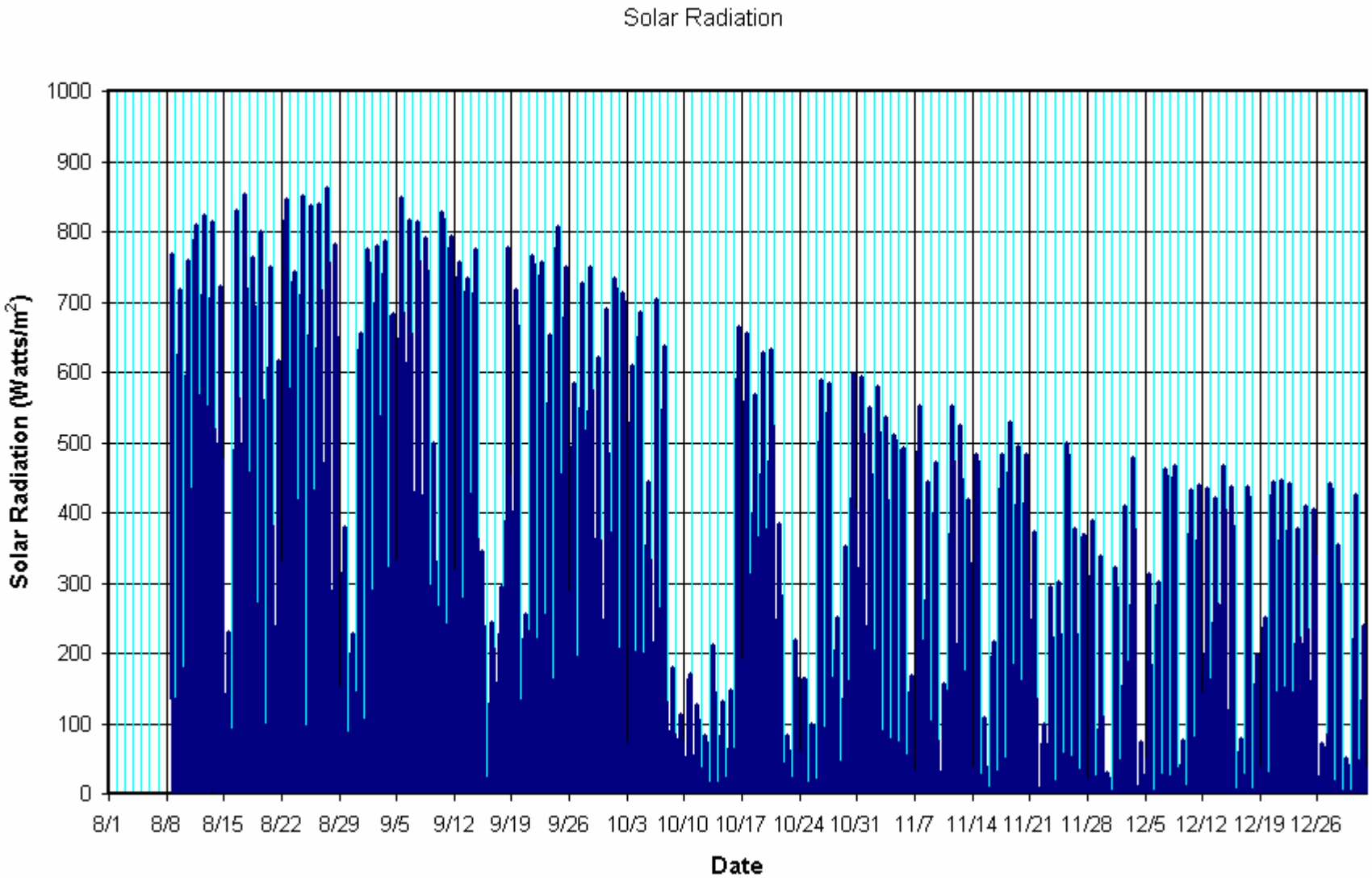
(August 8 – December 31, 2005 Hourly Data)



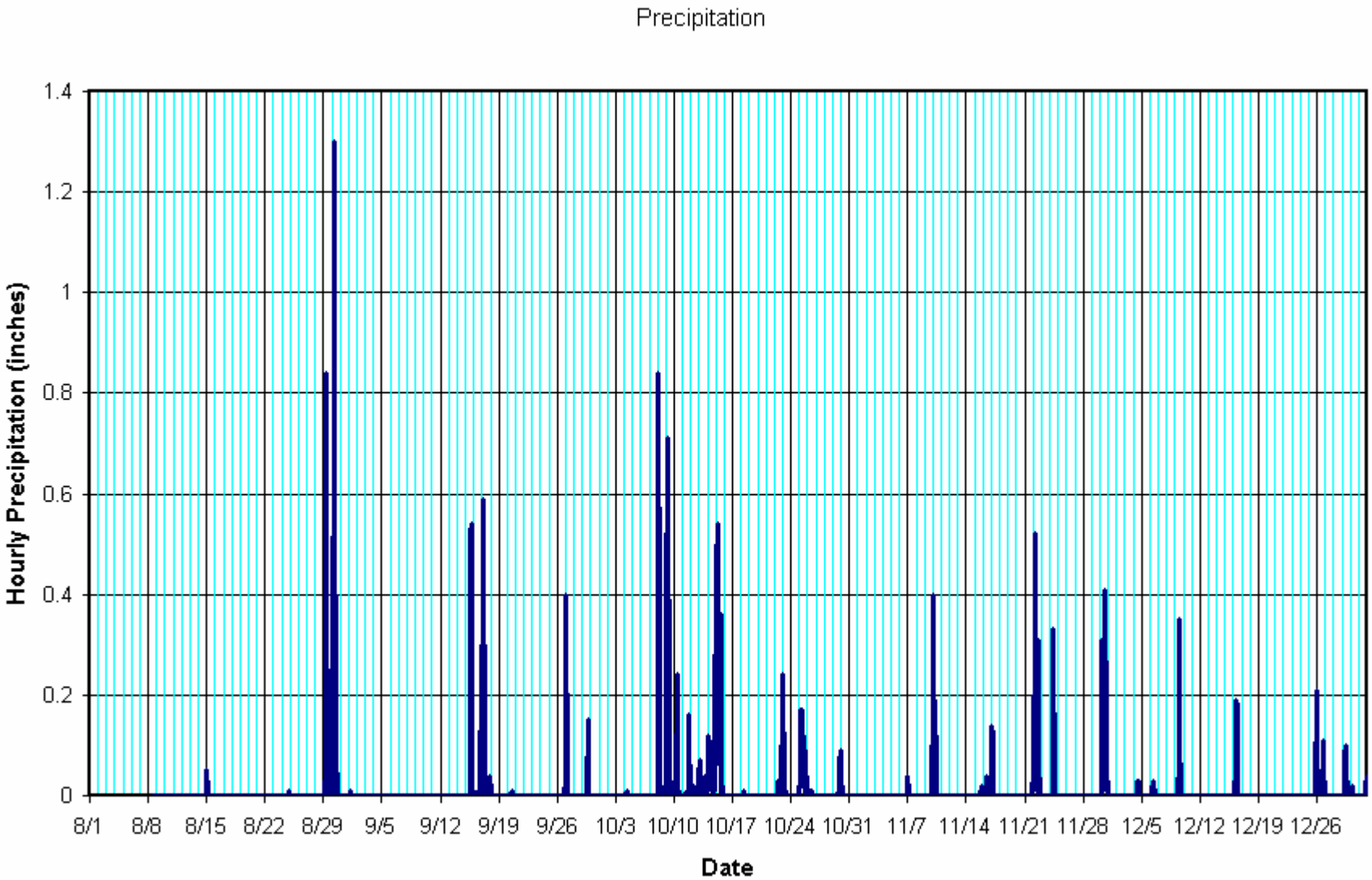
(August 8 – December 31, 2005 Hourly Data)



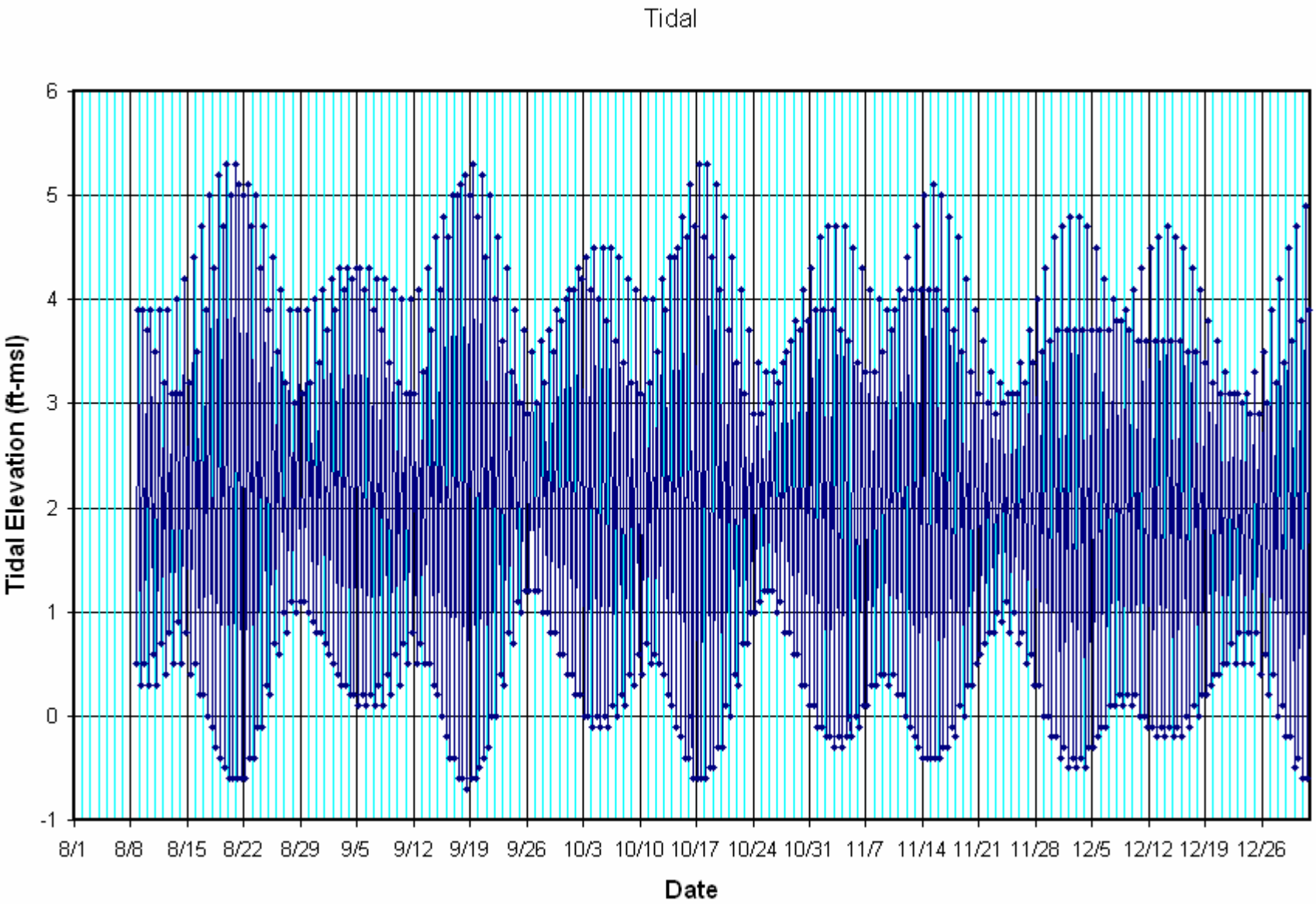
(August 8 – December 31, 2005 Hourly Data)



(August 8 – December 31, 2005 Hourly Data)



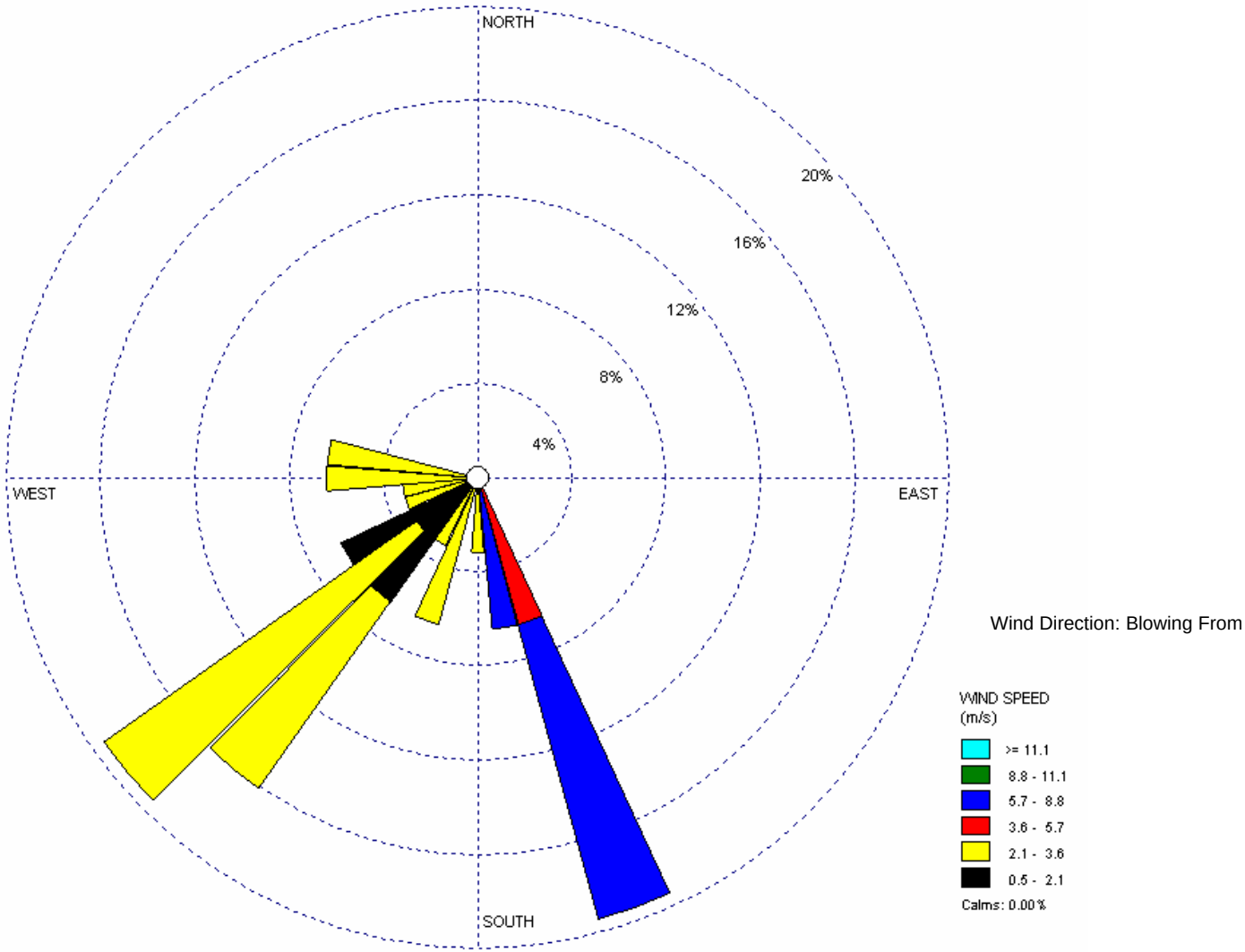
(August 8 – December 31, 2005 – from Belleville, Acushnet River)



# Baseline (August 10, 8 AM – August 11, 3 PM, Hourly Data)

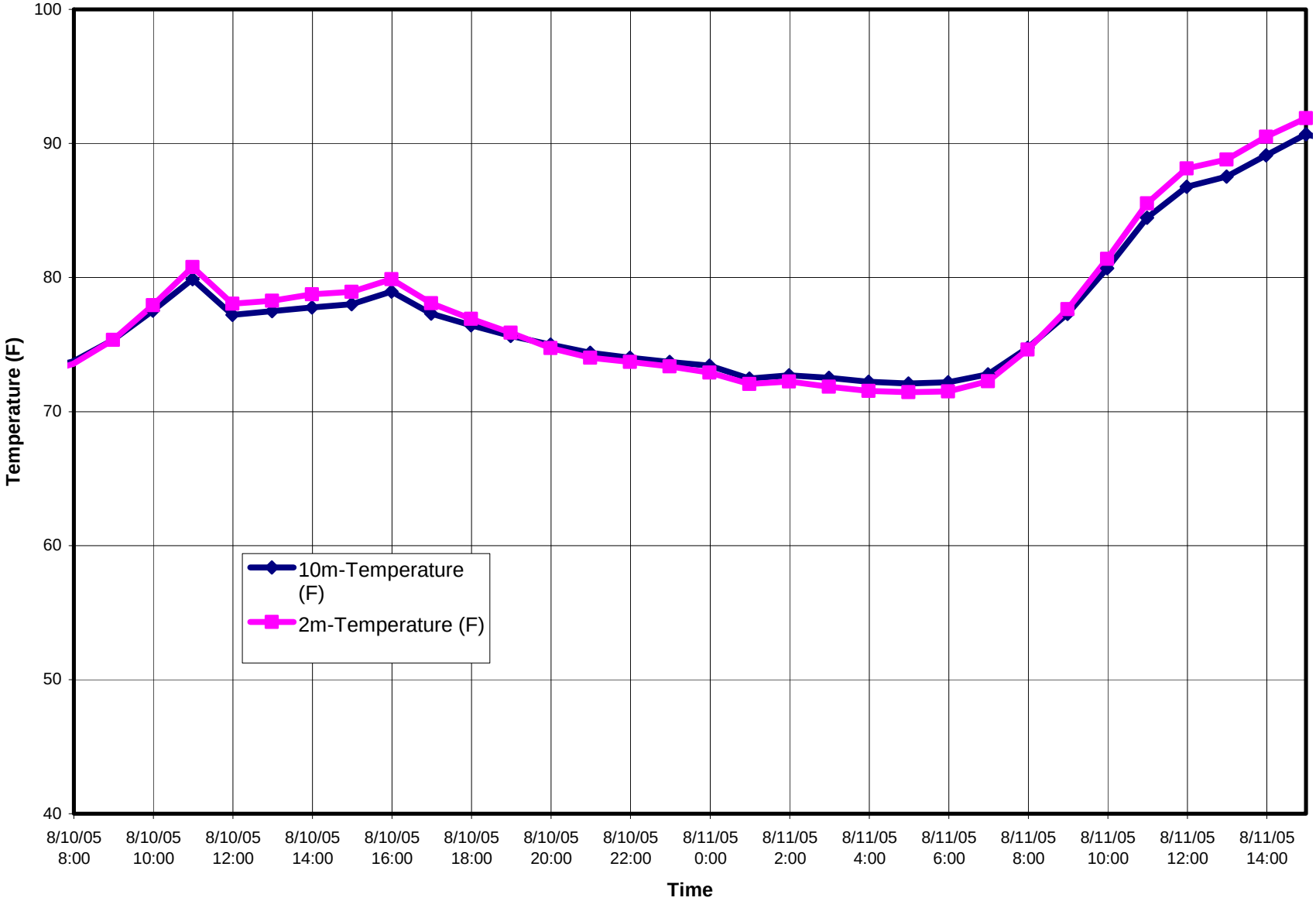
| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 8/10/05 8:00 AM | 6.144 | 248.4 | 73.740 | 73.559 | 0.181 | 90.732 | 30.007 | 85.236 | 0 | |
| 8/10/05 9:00 AM | 4.715 | 207.4 | 75.353 | 75.343 | 0.009 | 82.942 | 30.008 | 172.020 | 0 | |
| 8/10/05 10:00 AM | 5.280 | 225.1 | 77.538 | 77.938 | -0.399 | 73.231 | 29.993 | 345.880 | 0 | |
| 8/10/05 11:00 AM | 6.618 | 231.3 | 79.875 | 80.782 | -0.907 | 61.248 | 29.984 | 532.830 | 0 | |
| 8/10/05 12:00 PM | 12.730 | 157.4 | 77.221 | 78.056 | -0.834 | 76.845 | 29.984 | 568.500 | 0 | 3.9 |
| 8/10/05 1:00 PM | 12.370 | 169.2 | 77.489 | 78.265 | -0.777 | 70.136 | 29.980 | 623.890 | 0 | |
| 8/10/05 2:00 PM | 12.350 | 163.6 | 77.774 | 78.750 | -0.976 | 67.926 | 29.968 | 759.310 | 0 | |
| 8/10/05 3:00 PM | 13.480 | 165.5 | 78.018 | 78.932 | -0.915 | 71.284 | 29.951 | 746.900 | 0 | |
| 8/10/05 4:00 PM | 12.450 | 164.1 | 78.945 | 79.876 | -0.932 | 64.253 | 29.933 | 671.650 | 0 | |
| 8/10/05 5:00 PM | 12.210 | 161.4 | 77.310 | 78.079 | -0.769 | 68.570 | 29.923 | 544.500 | 0 | 0.6 |
| 8/10/05 6:00 PM | 11.180 | 162.0 | 76.437 | 76.916 | -0.479 | 74.168 | 29.906 | 323.170 | 0 | |
| 8/10/05 7:00 PM | 10.070 | 158.9 | 75.653 | 75.884 | -0.232 | 79.566 | 29.901 | 168.960 | 0 | |
| 8/10/05 8:00 PM | 6.658 | 176.1 | 74.999 | 74.742 | 0.256 | 85.386 | 29.896 | 27.472 | 0 | |
| 8/10/05 9:00 PM | 5.663 | 201.2 | 74.384 | 74.025 | 0.359 | 87.126 | 29.903 | -1.035 | 0 | |
| 8/10/05 10:00 PM | 6.153 | 204.4 | 74.023 | 73.700 | 0.323 | 88.438 | 29.909 | -0.067 | 0 | |
| 8/10/05 11:00 PM | 5.441 | 220.1 | 73.702 | 73.369 | 0.331 | 89.360 | 29.901 | -0.398 | 0 | |
| 8/11/05 12:00 AM | 5.314 | 217.5 | 73.421 | 72.909 | 0.512 | 90.361 | 29.887 | -2.672 | 0 | 3.5 |
| 8/11/05 1:00 AM | 5.057 | 221.5 | 72.470 | 72.062 | 0.408 | 92.411 | 29.879 | -0.972 | 0 | |
| 8/11/05 2:00 AM | 4.422 | 233.8 | 72.700 | 72.236 | 0.466 | 92.219 | 29.875 | -1.486 | 0 | |
| 8/11/05 3:00 AM | 3.287 | 227.1 | 72.515 | 71.866 | 0.648 | 93.546 | 29.861 | -2.704 | 0 | |
| 8/11/05 4:00 AM | 3.270 | 220.9 | 72.227 | 71.549 | 0.676 | 93.716 | 29.855 | -2.364 | 0 | |
| 8/11/05 5:00 AM | 3.214 | 221.0 | 72.103 | 71.457 | 0.647 | 94.254 | 29.848 | -1.805 | 0 | |
| 8/11/05 6:00 AM | 3.559 | 235.9 | 72.185 | 71.505 | 0.680 | 94.371 | 29.851 | -0.139 | 0 | 0.3 |
| 8/11/05 7:00 AM | 3.740 | 236.6 | 72.778 | 72.257 | 0.522 | 91.294 | 29.858 | 59.357 | 0 | |
| 8/11/05 8:00 AM | 4.970 | 226.4 | 74.756 | 74.635 | 0.121 | 82.817 | 29.867 | 198.890 | 0 | |
| 8/11/05 9:00 AM | 5.406 | 255.1 | 77.291 | 77.644 | -0.353 | 73.468 | 29.874 | 379.490 | 0 | |
| 8/11/05 10:00 AM | 5.638 | 266.4 | 80.689 | 81.398 | -0.709 | 63.725 | 29.875 | 547.560 | 0 | |
| 8/11/05 11:00 AM | 4.502 | 227.5 | 84.463 | 85.529 | -1.067 | 53.534 | 29.873 | 675.910 | 0 | |
| 8/11/05 12:00 PM | 5.105 | 217.5 | 86.775 | 88.143 | -1.368 | 50.542 | 29.863 | 767.770 | 0 | |
| 8/11/05 1:00 PM | 7.220 | 281.3 | 87.529 | 88.807 | -1.278 | 47.801 | 29.856 | 809.460 | 0 | 3.9 |
| 8/11/05 2:00 PM | 6.815 | 278.0 | 89.108 | 90.497 | -1.389 | 43.915 | 29.849 | 803.730 | 0 | |
| 8/11/05 3:00 PM | 5.218 | 273.1 | 90.694 | 91.891 | -1.197 | 38.945 | 29.836 | 747.450 | 0 | |
| | | | | | | | | | | |
| **Maximum** | **13.480** | | **90.694** | **91.891** | **0.680** | **94.371** | **30.008** | **809.460** | **0.000** | **3.900** |
| **Mimimum** | **3.214** | | **72.103** | **71.457** | **-1.389** | **38.945** | **29.836** | **-2.704** | **0.000** | **0.300** |
| **Average** | **6.883** | | **77.318** | **77.581** | **-0.264** | **75.879** | **29.905** | **329.572** | **0.000** | **2.440** |

# Baseline (August 10, 8 AM – August 11, 3 PM, Hourly Data)

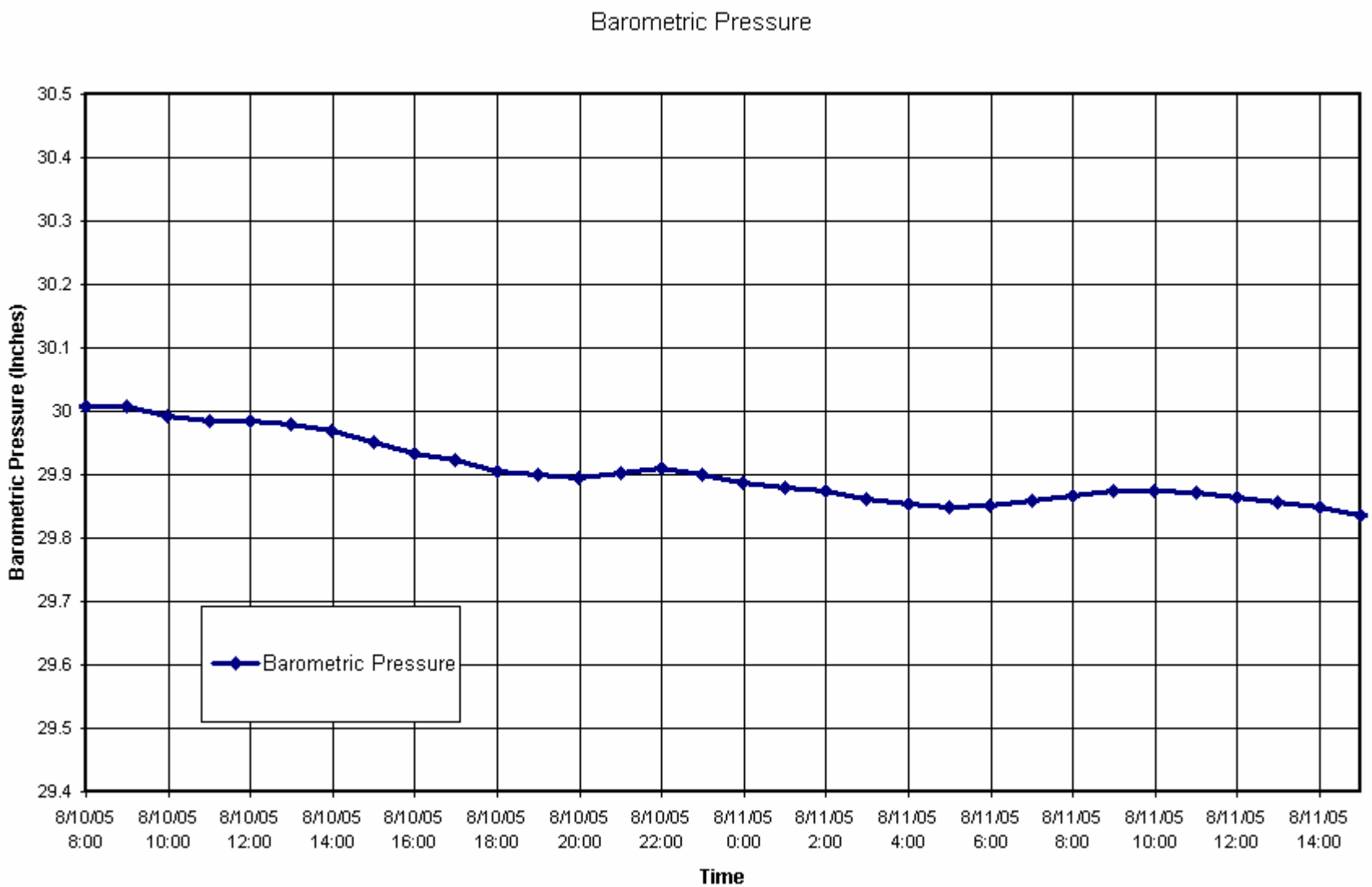



1 m/s (meter per second) = 2.237 miles per hour

# Baseline (August 10, 8 AM – August 11, 3 PM, Hourly Data)

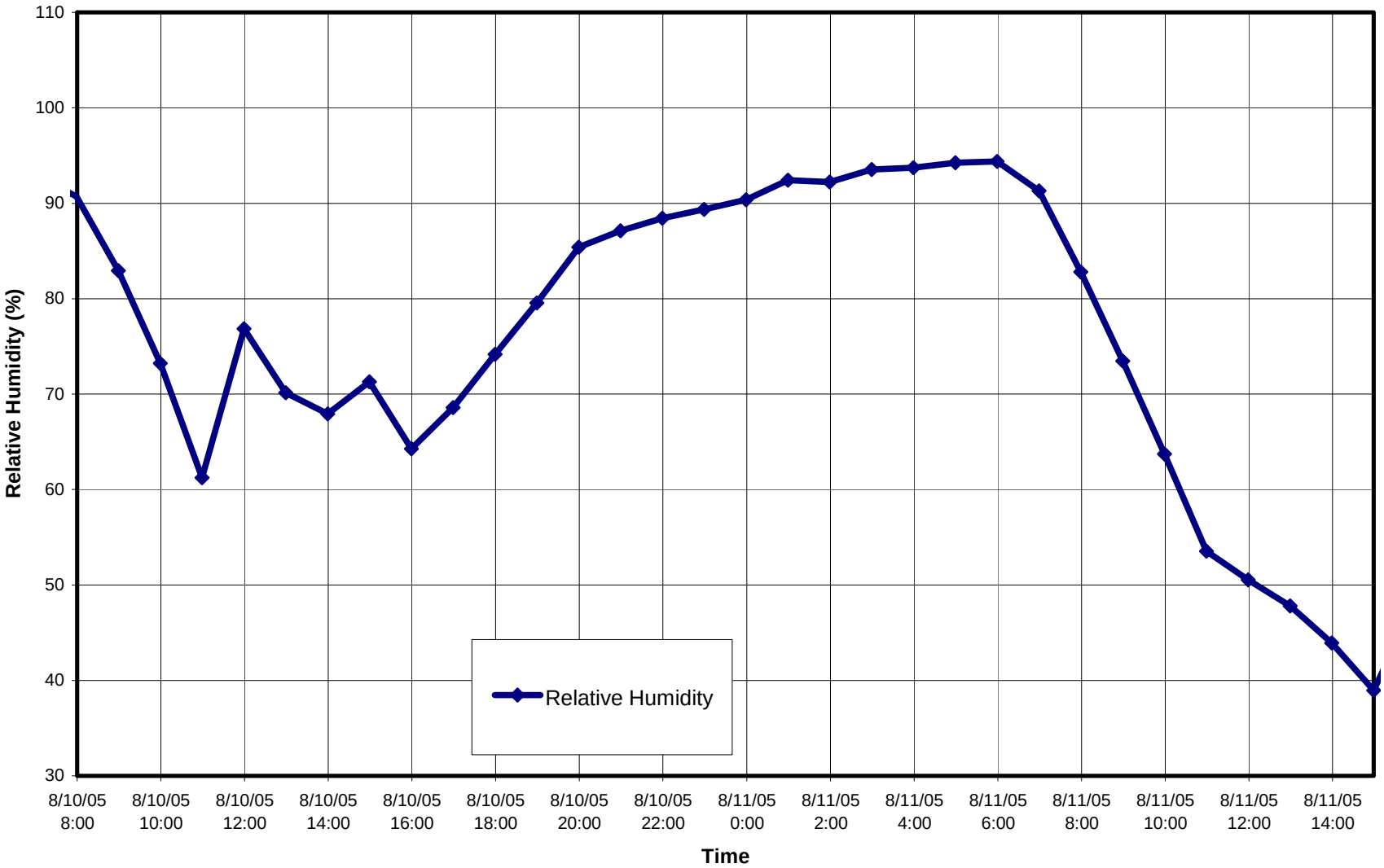


# Baseline (August 10, 8 AM – August 11, 3 PM, Hourly Data)

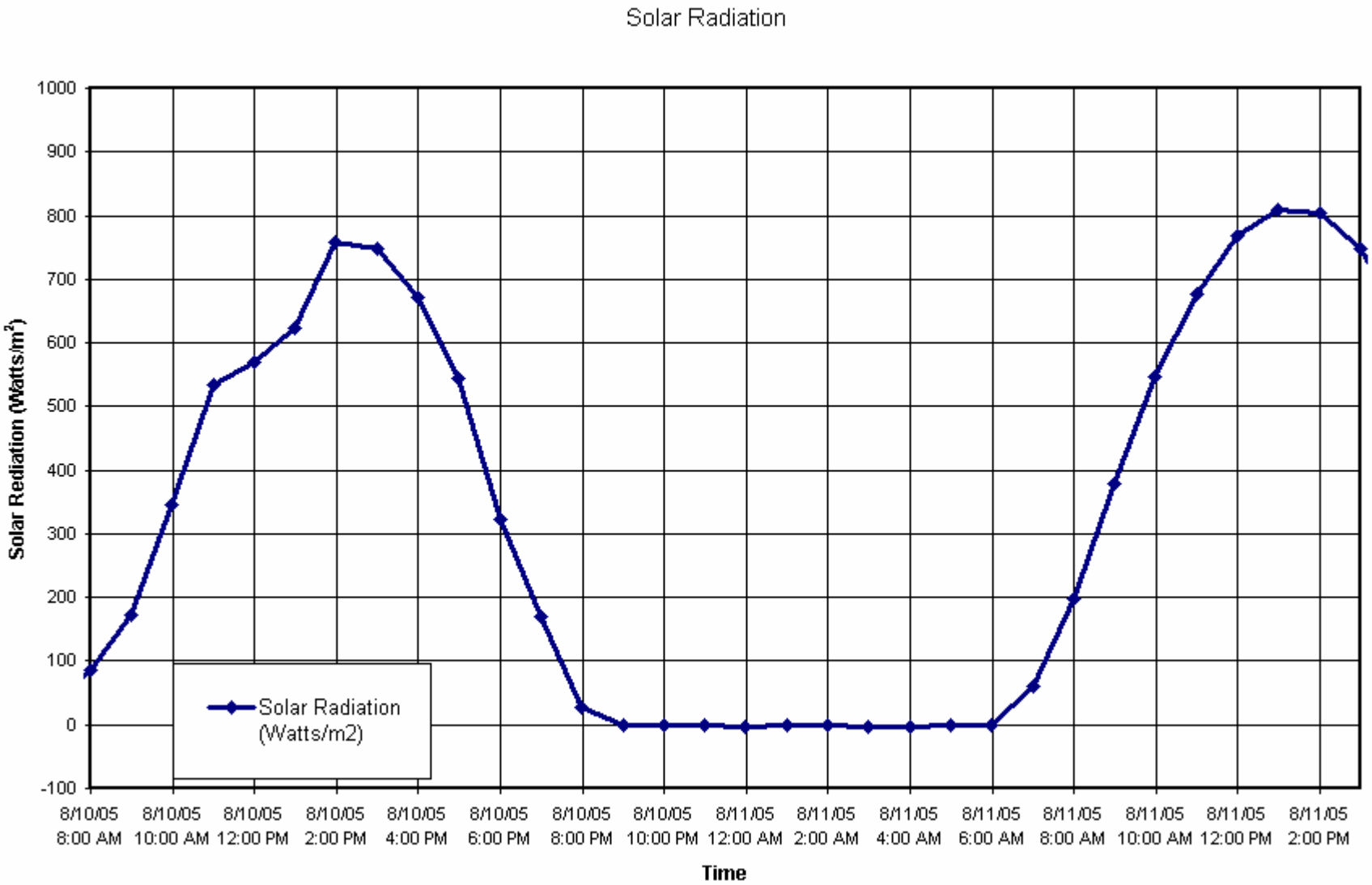


# Baseline (August 10, 8 AM – August 11, 3 PM, Hourly Data)

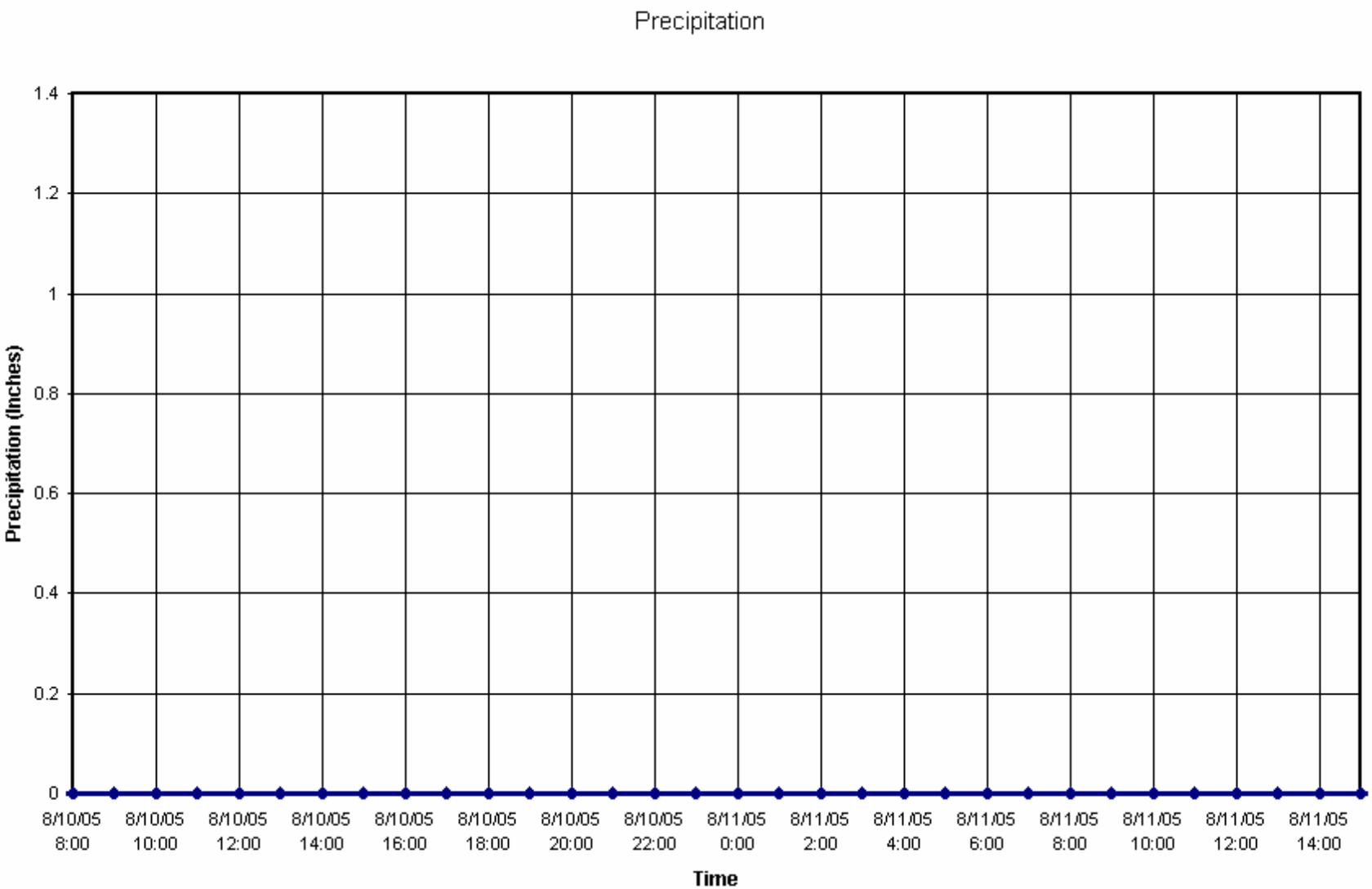
Relative Humidity



# Baseline (August 10, 8 AM – August 11, 3 PM, Hourly Data)

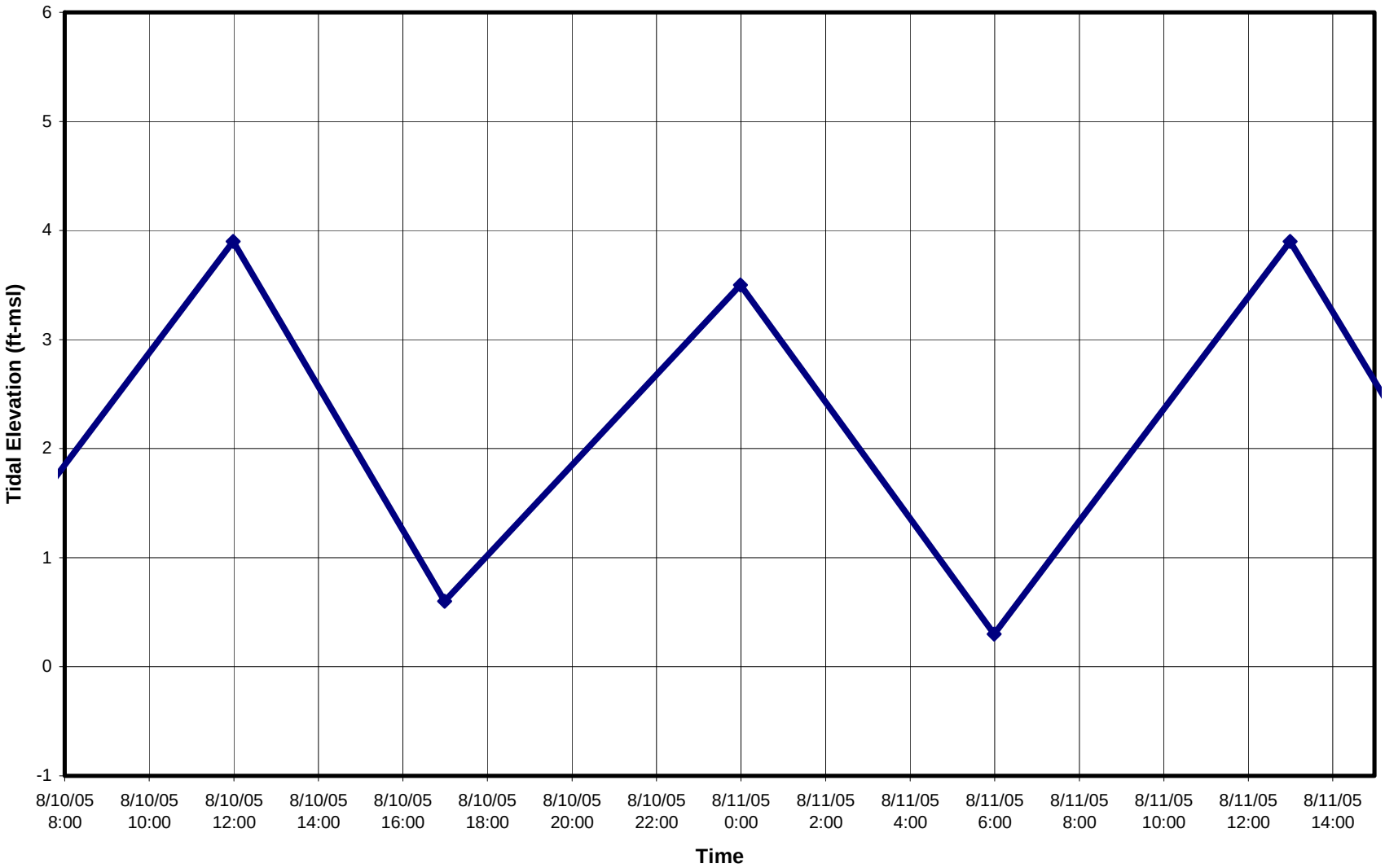


# Baseline (August 10, 8 AM – August 11, 3 PM, Hourly Data)



# Baseline (August 10, 8 AM – August 11, 3 PM)

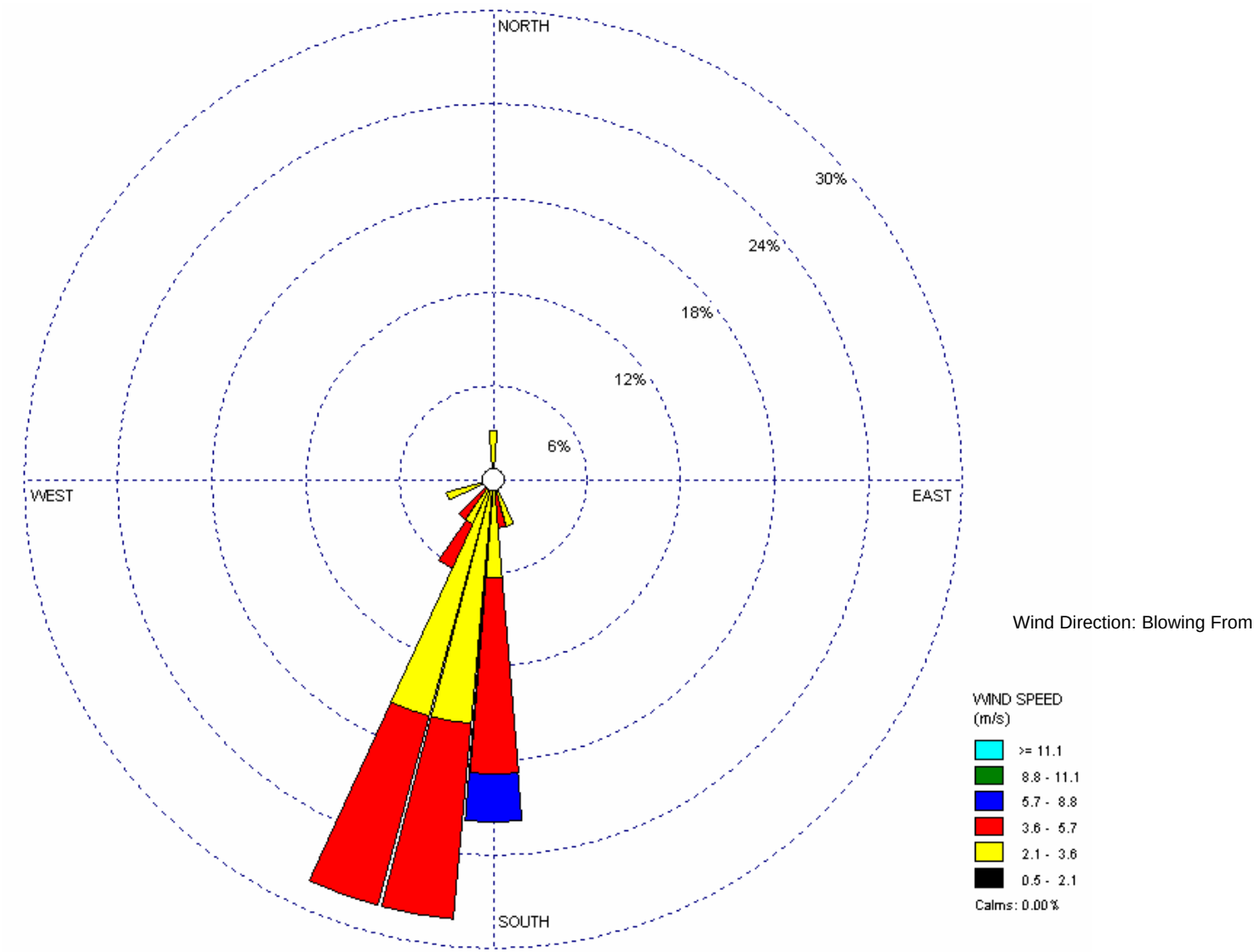
Tidal



# (Sept. 14, 8 AM – Sept. 15, 3 PM, Hourly Data)

| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/14/05 8:00 AM | 8.610 | 186.2 | 69.161 | 68.768 | 0.392 | 89.862 | 30.036 | 61.960 | 0 | |
| 9/14/05 9:00 AM | 8.890 | 182.7 | 69.178 | 68.960 | 0.219 | 89.341 | 30.043 | 121.180 | 0 | |
| 9/14/05 10:00 AM | 7.300 | 199.3 | 70.396 | 70.372 | 0.024 | 85.840 | 30.044 | 254.210 | 0 | |
| 9/14/05 11:00 AM | 6.842 | 185.6 | 75.158 | 75.793 | -0.634 | 69.529 | 30.046 | 670.750 | 0 | 0.3 |
| 9/14/05 12:00 PM | 9.120 | 221.0 | 78.258 | 79.057 | -0.799 | 60.583 | 30.043 | 751.710 | 0 | |
| 9/14/05 1:00 PM | 10.560 | 203.3 | 78.502 | 79.264 | -0.763 | 60.854 | 30.035 | 775.280 | 0 | |
| 9/14/05 2:00 PM | 10.100 | 200.4 | 79.147 | 79.834 | -0.687 | 59.634 | 30.026 | 757.600 | 0 | |
| 9/14/05 3:00 PM | 10.500 | 194.7 | 79.134 | 79.851 | -0.717 | 60.085 | 30.017 | 692.910 | 0 | |
| 9/14/05 4:00 PM | 11.660 | 200.8 | 78.448 | 78.828 | -0.380 | 67.003 | 30.011 | 470.990 | 0 | |
| 9/14/05 5:00 PM | 10.140 | 191.6 | 77.344 | 77.349 | -0.004 | 75.189 | 30.006 | 257.790 | 0 | |
| 9/14/05 6:00 PM | 7.800 | 206.8 | 76.945 | 76.876 | 0.069 | 78.255 | 30.008 | 152.700 | 0 | 4.6 |
| 9/14/05 7:00 PM | 8.350 | 196.6 | 75.392 | 75.021 | 0.373 | 85.161 | 30.009 | 19.902 | 0 | |
| 9/14/05 8:00 PM | 8.040 | 186.4 | 73.639 | 73.161 | 0.478 | 89.565 | 30.018 | -1.659 | 0 | |
| 9/14/05 9:00 PM | 6.951 | 189.0 | 73.556 | 73.060 | 0.496 | 90.061 | 30.030 | -0.960 | 0 | |
| 9/14/05 10:00 PM | 5.708 | 192.5 | 73.764 | 73.169 | 0.595 | 89.988 | 30.035 | -2.075 | 0 | |
| 9/14/05 11:00 PM | 6.396 | 190.0 | 73.334 | 72.750 | 0.585 | 91.193 | 30.034 | -2.277 | 0 | |
| 9/15/05 12:00 AM | 5.991 | 195.8 | 72.770 | 72.123 | 0.648 | 87.553 | 30.033 | -2.376 | 0 | 0.2 |
| 9/15/05 1:00 AM | 4.449 | 195.5 | 72.330 | 71.589 | 0.741 | 83.147 | 30.032 | -2.572 | 0 | |
| 9/15/05 2:00 AM | 4.599 | 203.6 | 72.234 | 71.646 | 0.589 | 88.371 | 30.034 | -0.321 | 0 | |
| 9/15/05 3:00 AM | 4.703 | 212.1 | 72.651 | 72.088 | 0.563 | 88.261 | 30.037 | -0.443 | 0 | |
| 9/15/05 4:00 AM | 7.070 | 183.5 | 72.684 | 72.004 | 0.679 | 90.752 | 30.023 | -2.060 | 0 | |
| 9/15/05 5:00 AM | 6.252 | 188.4 | 72.500 | 71.852 | 0.644 | 92.583 | 30.024 | -1.520 | 0 | |
| 9/15/05 6:00 AM | 4.961 | 189.6 | 72.353 | 71.652 | 0.699 | 93.185 | 30.035 | -2.457 | 0 | 4.1 |
| 9/15/05 7:00 AM | 5.028 | 178.7 | 72.611 | 71.962 | 0.652 | 93.008 | 30.048 | 6.403 | 0 | |
| 9/15/05 8:00 AM | 6.370 | 163.4 | 72.534 | 72.099 | 0.435 | 93.444 | 30.059 | 51.434 | 0 | |
| 9/15/05 9:00 AM | 7.650 | 171.0 | 73.215 | 72.854 | 0.363 | 91.473 | 30.067 | 117.240 | 0 | |
| 9/15/05 10:00 AM | 9.860 | 182.1 | 74.238 | 74.083 | 0.155 | 88.210 | 30.070 | 189.200 | 0 | |
| 9/15/05 11:00 AM | 11.090 | 177.0 | 76.052 | 76.062 | -0.011 | 81.239 | 30.065 | 345.190 | 0 | |
| 9/15/05 12:00 PM | 12.380 | 183.1 | 75.787 | 75.517 | 0.271 | 82.815 | 30.064 | 135.130 | 0 | 0 |
| 9/15/05 1:00 PM | 9.690 | 173.6 | 75.406 | 74.989 | 0.417 | 85.511 | 30.057 | 72.850 | 0.06 | |
| 9/15/05 2:00 PM | 7.220 | 248.6 | 73.894 | 73.312 | 0.582 | 94.155 | 30.050 | 32.452 | 0.08 | |
| 9/15/05 3:00 PM | 5.730 | 0.3 | 71.988 | 71.494 | 0.495 | 96.374 | 30.053 | 22.225 | 0.3 | |
| | | | | | | | | | | |
| **Maximum** | **12.380** | | **79.147** | **79.851** | **0.741** | **96.374** | **30.070** | **775.280** | **0.300** | **4.600** |
| **Mimimum** | **4.449** | | **69.161** | **68.768** | **-0.799** | **59.634** | **30.006** | **-2.572** | **0.000** | **0.000** |
| **Average** | **7.813** | | **74.206** | **73.982** | **0.224** | **83.507** | **30.037** | **185.637** | | **1.840** |

(Sept. 14, 8 AM – Sept. 15, 3 PM, Hourly Data)

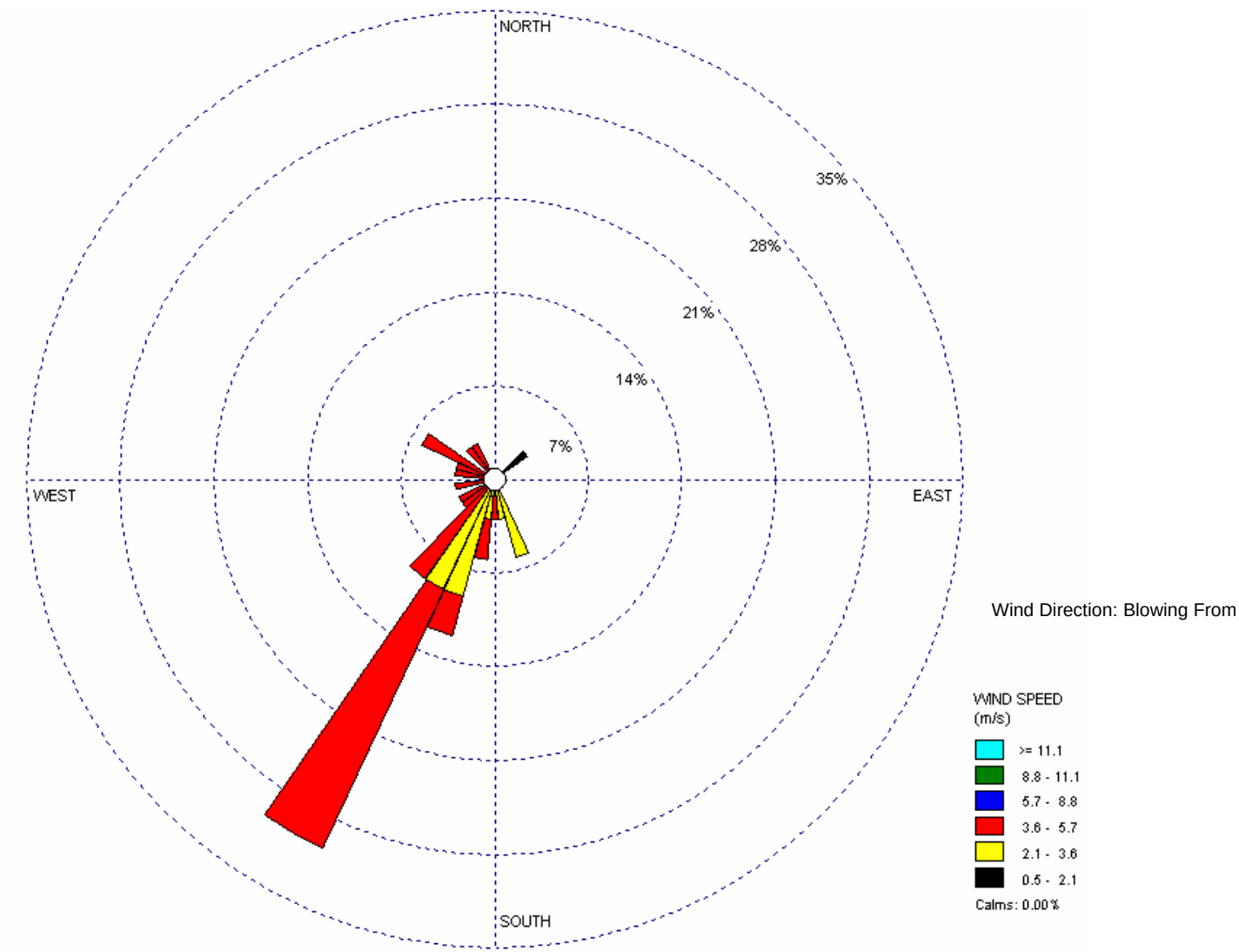



1 m/s (meter per second) = 2.237 miles per hour

(Sept. 22, 8 AM – Sept. 23, 4 PM, Hourly Data)

| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/22/05 8:00 AM | 2.899 | 52.3 | 60.572 | 59.689 | 0.883 | 84.369 | 30.066 | 128.080 | 0 | |
| 9/22/05 9:00 AM | 5.258 | 170.0 | 68.358 | 67.768 | 0.590 | 72.153 | 30.076 | 312.790 | 0 | |
| 9/22/05 10:00 AM | 5.633 | 159.5 | 72.380 | 72.025 | 0.355 | 63.413 | 30.082 | 488.320 | 0 | |
| 9/22/05 11:00 AM | 5.918 | 162.7 | 76.048 | 75.913 | 0.136 | 56.054 | 30.078 | 624.420 | 0 | |
| 9/22/05 12:00 PM | 8.460 | 181.1 | 79.739 | 79.864 | -0.124 | 42.616 | 30.068 | 717.640 | 0 | 4.6 |
| 9/22/05 1:00 PM | 9.770 | 192.2 | 80.617 | 80.637 | -0.020 | 38.506 | 30.057 | 757.250 | 0 | |
| 9/22/05 2:00 PM | 10.030 | 202.7 | 79.964 | 80.103 | -0.140 | 42.007 | 30.034 | 731.960 | 0 | |
| 9/22/05 3:00 PM | 9.830 | 208.6 | 79.656 | 79.707 | -0.052 | 43.559 | 30.019 | 650.440 | 0 | |
| 9/22/05 4:00 PM | 10.520 | 201.8 | 77.888 | 77.854 | 0.034 | 53.117 | 30.008 | 518.920 | 0 | |
| 9/22/05 5:00 PM | 10.640 | 209.6 | 76.697 | 76.419 | 0.277 | 58.481 | 29.989 | 349.970 | 0 | |
| 9/22/05 6:00 PM | 9.610 | 206.5 | 74.890 | 74.283 | 0.606 | 61.981 | 29.976 | 162.940 | 0 | 0.4 |
| 9/22/05 7:00 PM | 9.720 | 213.2 | 72.676 | 71.717 | 0.959 | 67.902 | 29.963 | 15.583 | 0 | |
| 9/22/05 8:00 PM | 8.970 | 210.3 | 70.962 | 69.943 | 1.020 | 82.074 | 29.963 | -3.373 | 0 | |
| 9/22/05 9:00 PM | 7.160 | 207.8 | 70.252 | 69.118 | 1.134 | 80.407 | 29.971 | -3.701 | 0 | |
| 9/22/05 10:00 PM | 7.130 | 207.4 | 69.355 | 68.219 | 1.137 | 83.883 | 29.975 | -3.386 | 0 | |
| 9/22/05 11:00 PM | 7.100 | 200.1 | 69.365 | 68.230 | 1.135 | 82.822 | 29.969 | -2.986 | 0 | |
| 9/23/05 12:00 AM | 6.746 | 197.2 | 68.799 | 67.701 | 1.097 | 86.067 | 29.960 | -2.862 | 0 | 3.6 |
| 9/23/05 1:00 AM | 6.879 | 190.4 | 68.439 | 67.328 | 1.112 | 88.828 | 29.939 | -2.809 | 0 | |
| 9/23/05 2:00 AM | 5.867 | 196.4 | 68.333 | 67.220 | 1.113 | 88.633 | 29.932 | -2.804 | 0 | |
| 9/23/05 3:00 AM | 6.979 | 211.5 | 68.644 | 67.526 | 1.119 | 87.707 | 29.918 | -2.768 | 0 | |
| 9/23/05 4:00 AM | 8.130 | 214.3 | 69.158 | 68.095 | 1.063 | 85.926 | 29.903 | -2.685 | 0 | |
| 9/23/05 5:00 AM | 10.080 | 220.0 | 69.484 | 68.475 | 1.008 | 88.547 | 29.883 | -2.426 | 0 | 0.3 |
| 9/23/05 6:00 AM | 11.600 | 219.3 | 69.857 | 68.878 | 0.977 | 89.621 | 29.874 | -2.264 | 0 | |
| 9/23/05 7:00 AM | 9.610 | 220.5 | 70.217 | 69.237 | 0.979 | 89.689 | 29.877 | 4.734 | 0 | |
| 9/23/05 8:00 AM | 8.960 | 232.4 | 71.262 | 70.467 | 0.794 | 85.980 | 29.891 | 104.830 | 0 | |
| 9/23/05 9:00 AM | 8.650 | 244.8 | 72.742 | 72.289 | 0.453 | 80.938 | 29.894 | 253.320 | 0 | |
| 9/23/05 10:00 AM | 9.170 | 263.3 | 74.495 | 74.243 | 0.252 | 75.467 | 29.899 | 338.120 | 0 | |
| 9/23/05 11:00 AM | 7.710 | 277.4 | 76.433 | 76.446 | -0.013 | 67.473 | 29.905 | 424.910 | 0 | |
| 9/23/05 12:00 PM | 7.620 | 287.8 | 77.487 | 77.783 | -0.296 | 63.508 | 29.916 | 555.580 | 0 | |
| 9/23/05 1:00 PM | 8.510 | 300.5 | 77.981 | 77.752 | 0.229 | 62.311 | 29.910 | 293.710 | 0 | 4.3 |
| 9/23/05 2:00 PM | 9.810 | 300.5 | 79.387 | 79.703 | -0.317 | 56.452 | 29.901 | 653.190 | 0 | |
| 9/23/05 3:00 PM | 9.460 | 328.4 | 80.248 | 80.504 | -0.256 | 54.797 | 29.911 | 489.640 | 0 | |
| 9/23/05 4:00 PM | 9.280 | 323.4 | 80.571 | 80.364 | 0.206 | 55.700 | 29.915 | 266.300 | 0 | |
| | | | | | | | | | | |
| **Maximum** | **11.600** | | **80.617** | **80.637** | **1.137** | **89.689** | **30.082** | **757.250** | **0.000** | **4.600** |
| **Mimimum** | **2.899** | | **60.572** | **59.689** | **-0.317** | **38.506** | **29.874** | **-3.701** | **0.000** | **0.300** |
| **Average** | **8.294** | | **73.423** | **72.894** | **0.529** | **70.333** | **29.961** | **266.987** | **0.000** | **2.640** |

(Sept. 22, 8 AM – Sept. 23, 4 PM, Hourly Data)

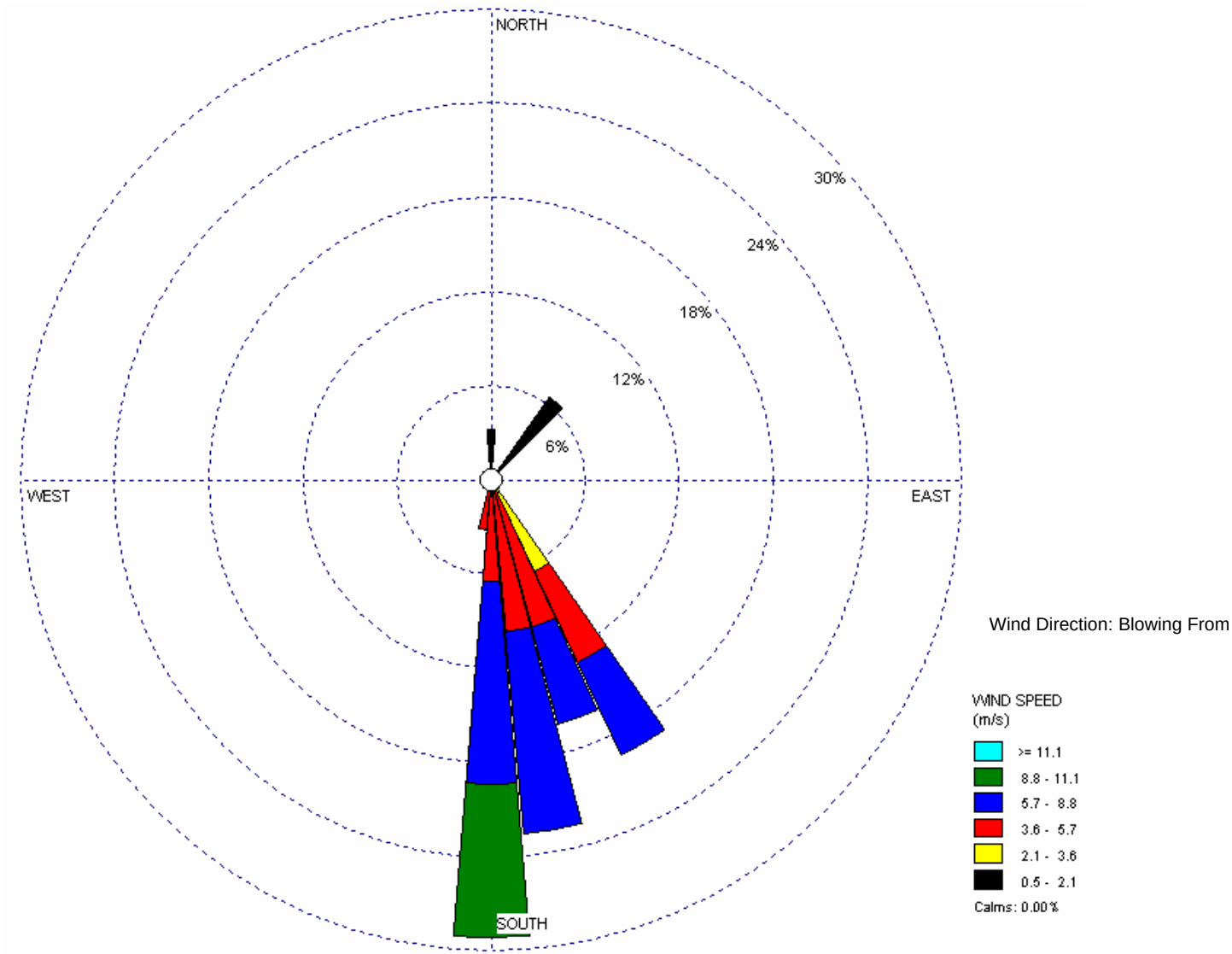



1 m/s (meter per second) = 2.237 miles per hour

# (Sept. 28, 8 AM – Sept. 29, 2 PM, Hourly Data)

| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 9/28/05 8:00 AM | 3.208 | 3.2 | 52.388 | 51.773 | 0.616 | 77.157 | 30.161 | 116.720 | 0 | |
| 9/28/05 9:00 AM | 2.748 | 37.2 | 55.829 | 55.887 | -0.058 | 68.833 | 30.182 | 300.700 | 0 | |
| 9/28/05 10:00 AM | 2.805 | 37.9 | 61.783 | 61.889 | -0.106 | 51.071 | 30.199 | 474.590 | 0 | |
| 9/28/05 11:00 AM | 4.294 | 153.9 | 65.007 | 65.332 | -0.325 | 41.851 | 30.209 | 615.330 | 0 | 1 |
| 9/28/05 12:00 PM | 7.180 | 154.9 | 65.752 | 66.326 | -0.573 | 42.854 | 30.212 | 714.070 | 0 | |
| 9/28/05 1:00 PM | 9.070 | 155.6 | 66.619 | 67.047 | -0.429 | 43.916 | 30.205 | 749.610 | 0 | |
| 9/28/05 2:00 PM | 10.670 | 154.2 | 67.087 | 67.386 | -0.300 | 42.724 | 30.189 | 724.760 | 0 | |
| 9/28/05 3:00 PM | 11.060 | 158.8 | 67.458 | 67.632 | -0.174 | 41.774 | 30.176 | 646.410 | 0 | |
| 9/28/05 4:00 PM | 11.140 | 167.8 | 66.904 | 66.956 | -0.051 | 52.902 | 30.166 | 506.460 | 0 | |
| 9/28/05 5:00 PM | 10.080 | 171.5 | 66.631 | 66.508 | 0.123 | 54.706 | 30.164 | 333.980 | 0 | 3.7 |
| 9/28/05 6:00 PM | 9.540 | 181.2 | 65.919 | 65.456 | 0.464 | 58.324 | 30.170 | 141.700 | 0 | |
| 9/28/05 7:00 PM | 10.010 | 178.1 | 65.298 | 64.419 | 0.880 | 59.679 | 30.168 | 9.652 | 0 | |
| 9/28/05 8:00 PM | 10.290 | 176.2 | 65.056 | 64.125 | 0.932 | 62.845 | 30.169 | -3.283 | 0 | |
| 9/28/05 9:00 PM | 11.300 | 171.5 | 64.909 | 64.059 | 0.851 | 68.669 | 30.168 | -3.008 | 0 | |
| 9/28/05 10:00 PM | 13.050 | 170.1 | 65.061 | 64.217 | 0.844 | 65.029 | 30.165 | -2.880 | 0 | |
| 9/28/05 11:00 PM | 14.850 | 165.7 | 65.237 | 64.399 | 0.838 | 62.875 | 30.147 | -2.827 | 0 | |
| 9/29/05 12:00 AM | 17.090 | 157.7 | 65.022 | 64.319 | 0.701 | 72.025 | 30.118 | -2.804 | 0 | 0.8 |
| 9/29/05 1:00 AM | 16.560 | 161.3 | 65.297 | 64.563 | 0.735 | 73.295 | 30.102 | -2.804 | 0 | |
| 9/29/05 2:00 AM | 14.750 | 153.7 | 64.989 | 64.331 | 0.656 | 75.066 | 30.096 | -2.804 | 0 | |
| 9/29/05 3:00 AM | 14.410 | 152.0 | 64.459 | 63.853 | 0.606 | 75.600 | 30.064 | -2.691 | 0 | |
| 9/29/05 4:00 AM | 12.280 | 154.5 | 64.750 | 64.131 | 0.619 | 78.393 | 30.047 | -1.437 | 0 | |
| 9/29/05 5:00 AM | 11.460 | 158.5 | 65.683 | 65.039 | 0.643 | 81.550 | 30.022 | -0.933 | 0 | |
| 9/29/05 6:00 AM | 11.250 | 153.9 | 65.972 | 65.379 | 0.592 | 85.018 | 29.982 | -0.499 | 0 | 3.5 |
| 9/29/05 7:00 AM | 12.350 | 166.4 | 67.711 | 66.974 | 0.736 | 83.055 | 29.953 | 2.564 | 0 | |
| 9/29/05 8:00 AM | 14.740 | 168.9 | 68.642 | 68.007 | 0.635 | 80.513 | 29.931 | 63.133 | 0 | |
| 9/29/05 9:00 AM | 16.360 | 176.6 | 69.923 | 69.630 | 0.292 | 75.925 | 29.919 | 293.910 | 0 | |
| 9/29/05 10:00 AM | 15.230 | 184.0 | 71.923 | 71.846 | 0.077 | 68.120 | 29.905 | 432.040 | 0 | |
| 9/29/05 11:00 AM | 17.340 | 181.7 | 71.981 | 71.936 | 0.045 | 69.272 | 29.890 | 442.240 | 0 | |
| 9/29/05 12:00 PM | 19.330 | 180.9 | 71.929 | 72.129 | -0.200 | 73.136 | 29.853 | 620.650 | 0 | 0.8 |
| 9/29/05 1:00 PM | 19.680 | 180.9 | 72.294 | 72.359 | -0.064 | 70.873 | 29.803 | 505.480 | 0 | |
| 9/29/05 2:00 PM | 23.160 | 183.5 | 73.101 | 73.122 | -0.021 | 67.467 | 29.766 | 523.630 | 0 | |
| | | | | | | | | | | |
| **Maximum** | **23.160** | | **73.101** | **73.122** | **0.932** | **85.018** | **30.212** | **749.610** | **0.000** | **3.700** |
| **Mimimum** | **2.748** | | **52.388** | **51.773** | **-0.573** | **41.774** | **29.766** | **-3.283** | **0.000** | **0.800** |
| **Average** | **12.170** | | **66.149** | **65.840** | **0.309** | **65.307** | **30.074** | **264.247** | **0.000** | **1.960** |

(Sept. 28, 8 AM – Sept. 29, 2 PM, Hourly Data)

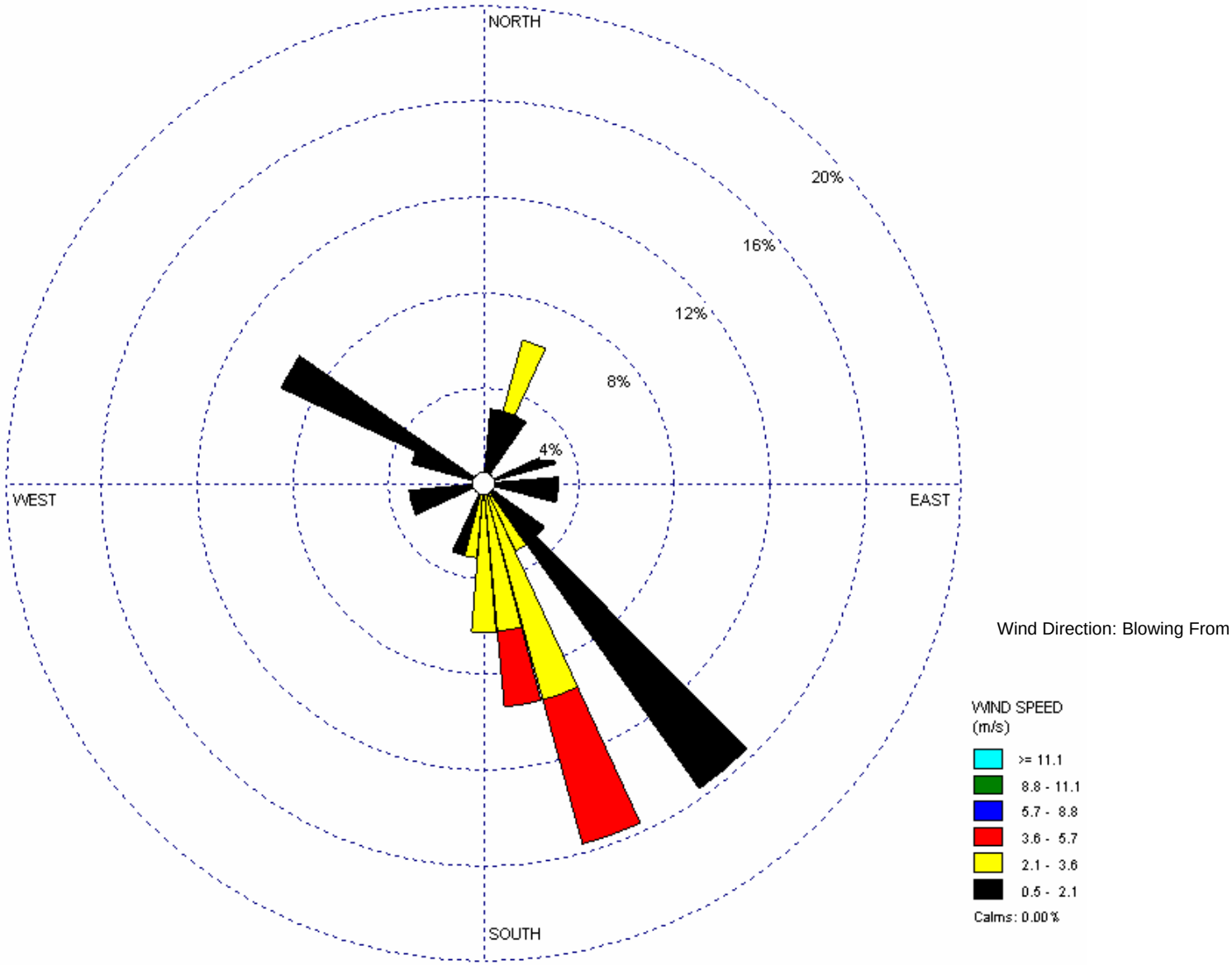



1 m/s (meter per second) = 2.237 miles per hour

# (October 5, 8AM – Oct. 6, 3 PM, 2005, Hourly Data)

| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/5/05 8:00 AM | 3.832 | 29.8 | 58.661 | 58.243 | 0.418 | 99.583 | 30.314 | 28.455 | 0 | |
| 10/5/05 9:00 AM | 4.019 | 9.5 | 59.799 | 59.417 | 0.381 | 99.423 | 30.319 | 74.190 | 0 | |
| 10/5/05 10:00 AM | 3.489 | 22.5 | 61.281 | 61.136 | 0.145 | 90.470 | 30.319 | 216.670 | 0 | 4.5 |
| 10/5/05 11:00 AM | 5.090 | 24.7 | 63.894 | 64.185 | -0.291 | 82.223 | 30.314 | 355.150 | 0 | |
| 10/5/05 12:00 PM | 2.116 | 66.0 | 66.696 | 66.772 | -0.077 | 81.348 | 30.311 | 264.390 | 0 | |
| 10/5/05 1:00 PM | 2.805 | 102.8 | 68.568 | 70.195 | -1.627 | 80.498 | 30.295 | 256.840 | 0 | |
| 10/5/05 2:00 PM | 5.932 | 174.6 | 70.211 | 70.364 | -0.154 | 83.082 | 30.274 | 219.210 | 0 | |
| 10/5/05 3:00 PM | 4.593 | 178.0 | 71.094 | 71.501 | -0.408 | 79.669 | 30.259 | 442.610 | 0 | 0 |
| 10/5/05 4:00 PM | 4.674 | 169.0 | 72.926 | 73.339 | -0.412 | 75.142 | 30.250 | 442.970 | 0 | |
| 10/5/05 5:00 PM | 6.851 | 175.9 | 71.064 | 71.078 | -0.015 | 82.026 | 30.246 | 222.940 | 0 | |
| 10/5/05 6:00 PM | 5.374 | 177.8 | 69.009 | 68.647 | 0.363 | 91.902 | 30.244 | 47.195 | 0 | |
| 10/5/05 7:00 PM | 4.957 | 146.7 | 68.144 | 67.747 | 0.398 | 94.104 | 30.245 | 1.730 | 0 | |
| 10/5/05 8:00 PM | 4.750 | 164.0 | 67.929 | 67.401 | 0.529 | 94.660 | 30.248 | -0.003 | 0 | |
| 10/5/05 9:00 PM | 2.649 | 137.5 | 68.106 | 67.558 | 0.548 | 94.896 | 30.249 | -0.013 | 0 | |
| 10/5/05 10:00 PM | 4.160 | 155.7 | 67.609 | 67.027 | 0.583 | 96.822 | 30.242 | 0.000 | 0 | 3.8 |
| 10/5/05 11:00 PM | 2.560 | 142.3 | 67.078 | 66.459 | 0.620 | 98.295 | 30.235 | 0.000 | 0 | |
| 10/6/05 12:00 AM | 3.644 | 136.7 | 66.725 | 66.131 | 0.593 | 98.873 | 30.229 | 0.000 | 0 | |
| 10/6/05 1:00 AM | 2.621 | 138.8 | 66.584 | 65.981 | 0.602 | 99.354 | 30.220 | 0.000 | 0 | |
| 10/6/05 2:00 AM | 1.900 | 85.3 | 66.652 | 66.038 | 0.613 | 99.649 | 30.209 | 0.000 | 0 | |
| 10/6/05 3:00 AM | 2.042 | 131.5 | 66.728 | 66.105 | 0.622 | 99.686 | 30.199 | 0.000 | 0 | -0.1 |
| 10/6/05 4:00 AM | 2.159 | 137.8 | 66.826 | 66.187 | 0.636 | 99.705 | 30.196 | 0.000 | 0 | |
| 10/6/05 5:00 AM | 1.432 | 204.5 | 67.124 | 66.457 | 0.665 | 99.736 | 30.190 | 0.000 | 0 | |
| 10/6/05 6:00 AM | 3.614 | 299.6 | 66.641 | 66.026 | 0.613 | 99.749 | 30.190 | 0.000 | 0 | |
| 10/6/05 7:00 AM | 3.062 | 301.7 | 66.555 | 65.914 | 0.641 | 99.761 | 30.198 | 0.957 | 0 | |
| 10/6/05 8:00 AM | 2.213 | 286.7 | 66.794 | 66.181 | 0.612 | 99.793 | 30.201 | 27.410 | 0 | |
| 10/6/05 9:00 AM | 3.229 | 263.8 | 67.343 | 66.743 | 0.600 | 99.422 | 30.206 | 61.347 | 0 | |
| 10/6/05 10:00 AM | 3.274 | 295.8 | 68.474 | 68.176 | 0.298 | 91.540 | 30.206 | 126.230 | 0 | 4.5 |
| 10/6/05 11:00 AM | 3.356 | 245.1 | 70.335 | 70.214 | 0.122 | 83.558 | 30.208 | 181.120 | 0 | |
| 10/6/05 12:00 PM | 4.051 | 155.7 | 71.450 | 71.236 | 0.214 | 79.592 | 30.204 | 250.240 | 0 | |
| 10/6/05 1:00 PM | 10.000 | 157.7 | 71.710 | 71.661 | 0.049 | 79.117 | 30.194 | 704.200 | 0 | |
| 10/6/05 2:00 PM | 10.580 | 169.2 | 72.978 | 73.041 | -0.062 | 75.815 | 30.179 | 667.370 | 0 | |
| 10/6/05 3:00 PM | 10.460 | 159.5 | 72.492 | 72.539 | -0.047 | 77.763 | 30.164 | 481.780 | 0 | |
| | | | | | | | | | | |
| **Maximum** | **10.580** | | **72.978** | **73.339** | **0.665** | **99.793** | **30.319** | **704.200** | **0.000** | **4.500** |
| **Mimimum** | **1.432** | | **58.661** | **58.243** | **-1.627** | **75.142** | **30.164** | **-0.013** | **0.000** | **-0.100** |
| **Average** | **4.234** | | **67.734** | **67.491** | **0.243** | **90.852** | **30.236** | **158.531** | **0.000** | **2.540** |

(October 5, 8AM – Oct. 6, 3 PM, 2005, Hourly Data)

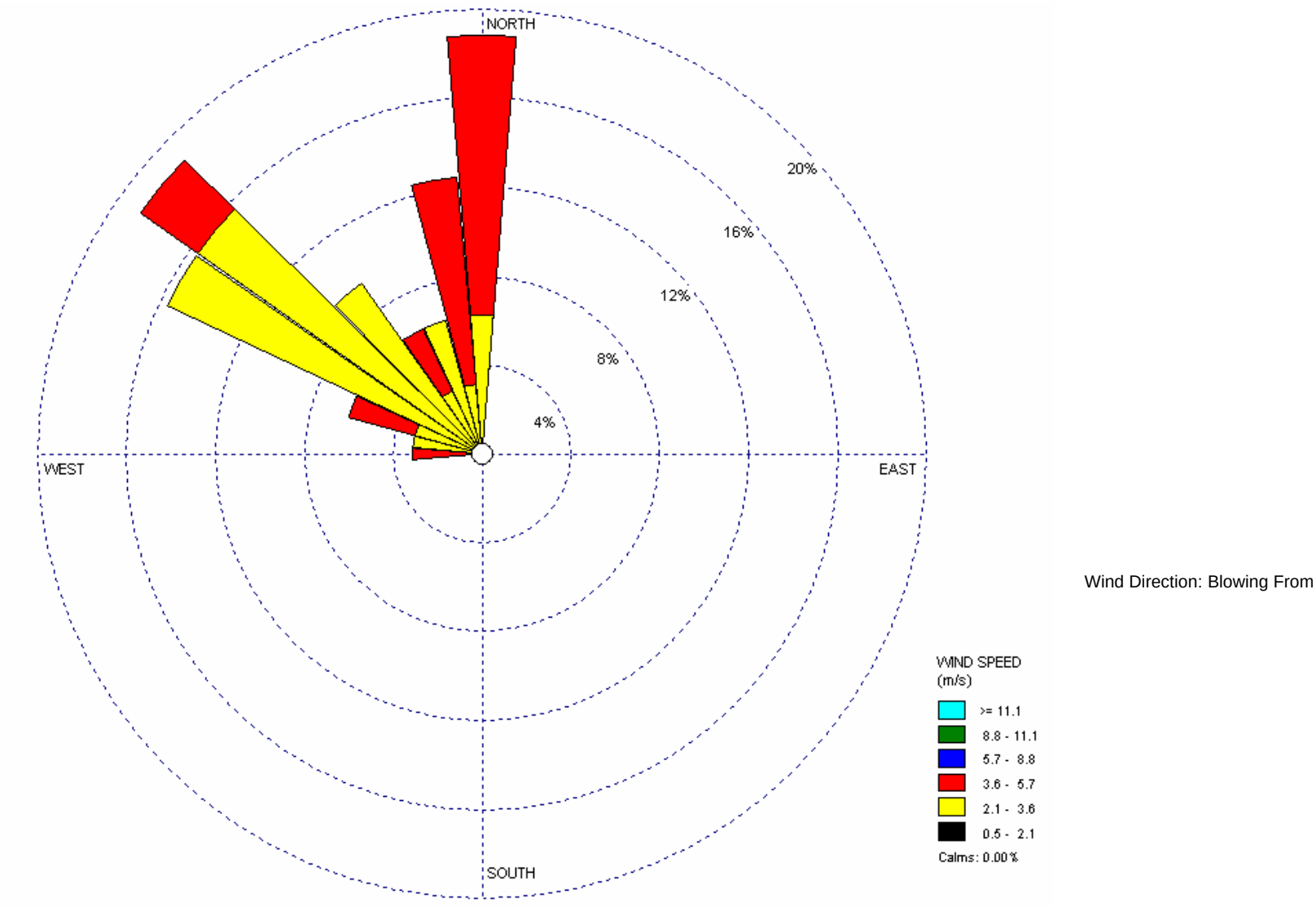



1 m/s (meter per second) = 2.237 miles per hour

# (October 27, 7 AM – October 28, 2 PM, 2005, Hourly Data)

| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 10/27/05 7:00 AM | 7.03 | 296.3 | 40.658 | 39.705 | 0.953 | 80.742 | 29.984 | -2.5218 | 0 | |
| 10/27/05 8:00 AM | 6.597 | 303.4 | 40.892 | 39.959 | 0.932 | 78.503 | 30.005 | 38.799 | 0 | |
| 10/27/05 9:00 AM | 6.778 | 297.4 | 42.376 | 41.749 | 0.628 | 70.501 | 30.033 | 145.64 | 0 | |
| 10/27/05 10:00 AM | 8.49 | 312 | 44.523 | 44.027 | 0.496 | 64.834 | 30.045 | 283.74 | 0 | 1.1 |
| 10/27/05 11:00 AM | 10.38 | 331.8 | 46.492 | 46.197 | 0.295 | 55.394 | 30.045 | 498.93 | 0 | |
| 10/27/05 12:00 PM | 7.24 | 337.3 | 48.213 | 48.205 | 0.008 | 53.02 | 30.058 | 582.85 | 0 | |
| 10/27/05 1:00 PM | 5.674 | 315.7 | 49.586 | 49.375 | 0.211 | 50.322 | 30.062 | 381.68 | 0 | |
| 10/27/05 2:00 PM | 6.679 | 284.5 | 50.362 | 49.985 | 0.377 | 51.34 | 30.06 | 190.27 | 0 | |
| 10/27/05 3:00 PM | 7.88 | 270.7 | 50.815 | 50.253 | 0.562 | 49.131 | 30.057 | 186.57 | 0 | |
| 10/27/05 4:00 PM | 8.58 | 289.2 | 50.673 | 50.098 | 0.574 | 49.256 | 30.068 | 264.82 | 0 | |
| 10/27/05 5:00 PM | 6.441 | 294.4 | 49.705 | 48.967 | 0.739 | 52.262 | 30.079 | 69.654 | 0 | 3.4 |
| 10/27/05 6:00 PM | 5.557 | 304.8 | 48.841 | 47.939 | 0.902 | 53.191 | 30.095 | 9.606 | 0 | |
| 10/27/05 7:00 PM | 5.272 | 308.3 | 47.756 | 46.829 | 0.926 | 55.205 | 30.117 | -1.4396 | 0 | |
| 10/27/05 8:00 PM | 6.719 | 308.7 | 46.57 | 45.701 | 0.868 | 57.632 | 30.139 | -1.4032 | 0 | |
| 10/27/05 9:00 PM | 6.647 | 312.3 | 45.731 | 44.885 | 0.846 | 58.073 | 30.161 | -1.3484 | 0 | |
| 10/27/05 10:00 PM | 5.773 | 310.6 | 45.003 | 44.16 | 0.843 | 61.279 | 30.181 | -1.3922 | 0 | |
| 10/27/05 11:00 PM | 4.448 | 304.6 | 44.367 | 43.534 | 0.834 | 65.27 | 30.196 | -1.381 | 0 | 0.8 |
| 10/28/05 12:00 AM | 5.302 | 299.2 | 43.864 | 43.037 | 0.827 | 68.411 | 30.205 | -1.2779 | 0 | |
| 10/28/05 1:00 AM | 6.56 | 306.6 | 43.411 | 42.628 | 0.781 | 70.453 | 30.215 | -0.87602 | 0 | |
| 10/28/05 2:00 AM | 5.556 | 322.9 | 42.922 | 42.149 | 0.773 | 73.353 | 30.214 | -0.68355 | 0 | |
| 10/28/05 3:00 AM | 5.359 | 331.1 | 42.824 | 42.044 | 0.780 | 73.812 | 30.222 | -0.31828 | 0 | |
| 10/28/05 4:00 AM | 5.884 | 348.5 | 42.765 | 41.96 | 0.805 | 69.714 | 30.226 | -0.70792 | 0 | |
| 10/28/05 5:00 AM | 5.034 | 355.5 | 42.584 | 41.781 | 0.803 | 65.185 | 30.235 | -0.23344 | 0 | 3.5 |
| 10/28/05 6:00 AM | 5.656 | 338.7 | 42.306 | 41.518 | 0.788 | 65.22 | 30.241 | -0.04056 | 0 | |
| 10/28/05 7:00 AM | 6.733 | 354.4 | 41.972 | 41.203 | 0.768 | 64.954 | 30.247 | -0.37542 | 0 | |
| 10/28/05 8:00 AM | 7.55 | 347 | 41.67 | 40.93 | 0.739 | 68.279 | 30.259 | 8.585 | 0 | |
| 10/28/05 9:00 AM | 9.2 | 358.4 | 41.886 | 41.209 | 0.677 | 63.705 | 30.266 | 31.526 | 0 | |
| 10/28/05 10:00 AM | 11.27 | 359.6 | 42.136 | 41.523 | 0.612 | 59.478 | 30.271 | 93.425 | 0 | |
| 10/28/05 11:00 AM | 10.37 | 352.4 | 43.078 | 42.577 | 0.501 | 57.753 | 30.3 | 157.52 | 0 | 0.8 |
| 10/28/05 12:00 PM | 11.2 | 354.3 | 44.127 | 43.77 | 0.356 | 54.237 | 30.281 | 250.01 | 0 | |
| 10/28/05 1:00 PM | 11.24 | 347 | 45.245 | 44.952 | 0.293 | 49.232 | 30.278 | 228.7 | 0 | |
| 10/28/05 2:00 PM | 11.05 | 1.539 | 45.513 | 45.194 | 0.319 | 48.099 | 30.261 | 229.24 | 0 | |
| **Maximum** | **11.27** | **359.6** | **50.815** | **50.253** | **0.953** | **80.742** | **30.300** | **582.850** | **0** | **3.5** |
| **Minimum** | **4.448** | **1.539** | **40.658** | **39.705** | **0.008** | **48.099** | **29.984** | **-2.522** | **0** | **0.8** |
| **Average** | **7.317** | **311.2** | **44.965** | **44.314** | **0.651** | **61.183** | **30.160** | **113.674** | | **1.9** |

# (October 27, 7 AM – Oct. 28, 2 PM, 2005, Hourly Data)



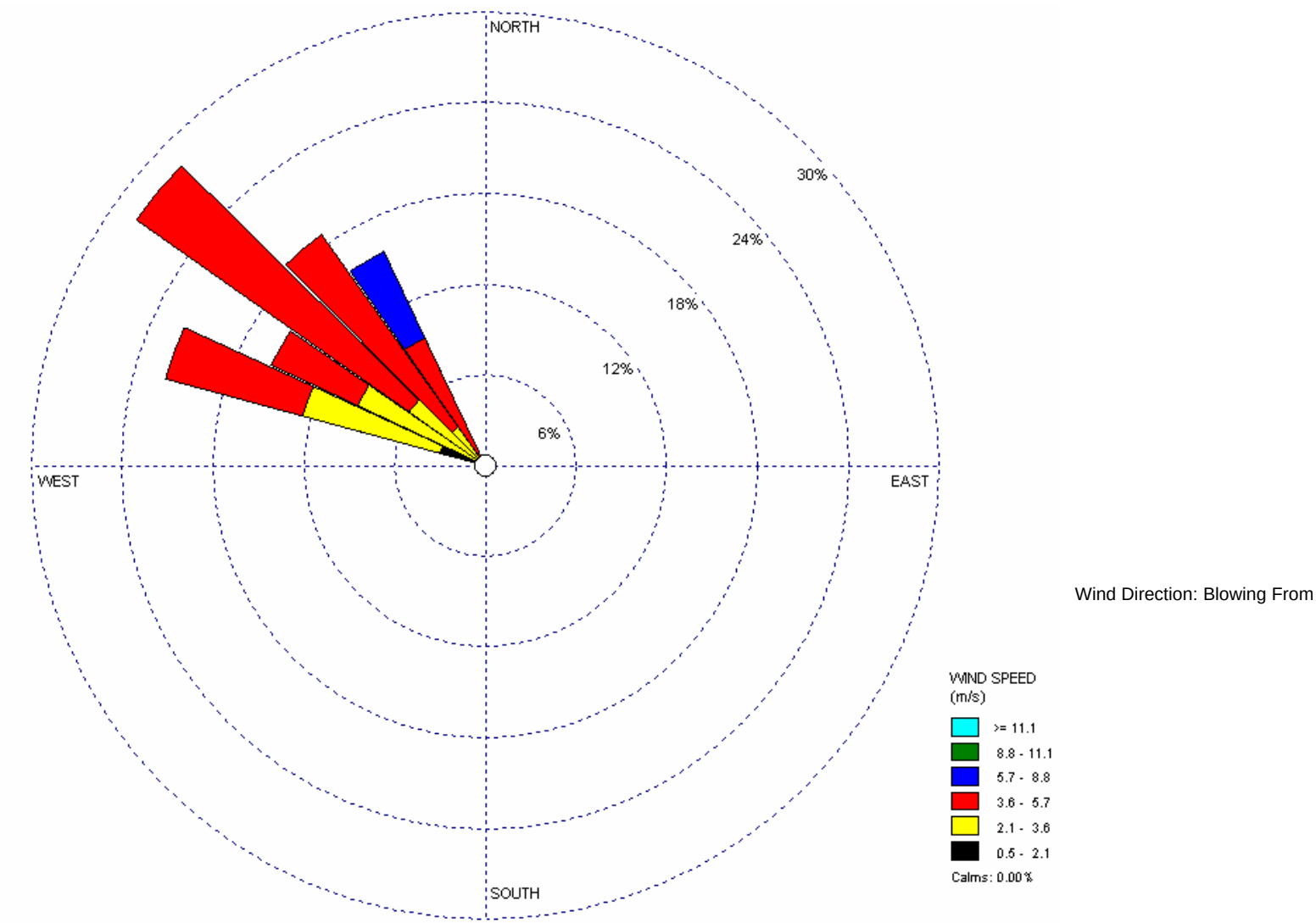

Wind Direction: Blowing From

1 m/s (meter per second) = 2.237 miles per hour

# (November 17, 7 AM – November 18, 2 PM, 2005, Hourly Data)

| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 11/17/05 7:00 AM | 6.48 | 307.8 | 46.251 | 46.228 | 0.024 | 89.645 | 29.937 | 0.10428 | 0 | |
| 11/17/05 8:00 AM | 7.44 | 315.8 | 46.156 | 46.133 | 0.022 | 85.198 | 29.953 | 3.1373 | 0 | 4.8 |
| 11/17/05 9:00 AM | 9.03 | 315.2 | 45.916 | 45.94 | -0.024 | 82.711 | 29.978 | 23.018 | 0 | |
| 11/17/05 10:00 AM | 11.45 | 317.8 | 45.677 | 45.782 | -0.106 | 76.18 | 29.989 | 120.61 | 0 | |
| 11/17/05 11:00 AM | 10.95 | 316 | 45.833 | 46.014 | -0.181 | 63.081 | 29.995 | 216.32 | 0 | |
| 11/17/05 12:00 PM | 11.22 | 326.2 | 45.731 | 46.147 | -0.416 | 57.845 | 29.995 | 387.22 | 0 | |
| 11/17/05 1:00 PM | 11.91 | 321.1 | 46.923 | 47.408 | -0.485 | 49.222 | 29.983 | 483.14 | 0 | |
| 11/17/05 2:00 PM | 9.31 | 308.9 | 47.437 | 47.927 | -0.490 | 47.389 | 29.966 | 443.33 | 0 | -0.1 |
| 11/17/05 3:00 PM | 9.79 | 295.4 | 48.25 | 48.642 | -0.392 | 46.014 | 29.956 | 375.58 | 0 | |
| 11/17/05 4:00 PM | 10.6 | 290.4 | 47.809 | 47.978 | -0.169 | 46.552 | 29.959 | 211.13 | 0 | |
| 11/17/05 5:00 PM | 9.4 | 299.1 | 47.158 | 47.165 | -0.006 | 45.458 | 29.975 | 99.248 | 0 | |
| 11/17/05 6:00 PM | 9.69 | 311.9 | 45.363 | 45.228 | 0.135 | 46.648 | 30.002 | 1.4003 | 0 | |
| 11/17/05 7:00 PM | 9.52 | 304.4 | 42.999 | 42.879 | 0.120 | 48.357 | 30.026 | -3.9451 | 0 | |
| 11/17/05 8:00 PM | 9.81 | 320.7 | 41.054 | 40.941 | 0.114 | 51.579 | 30.061 | -3.3154 | 0 | |
| 11/17/05 9:00 PM | 8.52 | 325.1 | 39.492 | 39.337 | 0.155 | 51.576 | 30.073 | -3.6786 | 0 | 3.7 |
| 11/17/05 10:00 PM | 7.56 | 310.1 | 38.162 | 38.053 | 0.109 | 51.044 | 30.084 | -3.9433 | 0 | |
| 11/17/05 11:00 PM | 5.082 | 293.7 | 37.042 | 36.868 | 0.174 | 55.462 | 30.095 | -4.4677 | 0 | |
| 11/18/05 12:00 AM | 7.68 | 292.6 | 36.12 | 36.03 | 0.090 | 58.145 | 30.108 | -3.8683 | 0 | |
| 11/18/05 1:00 AM | 7.25 | 297.2 | 35.445 | 35.363 | 0.082 | 61.326 | 30.117 | -3.7258 | 0 | |
| 11/18/05 2:00 AM | 7.55 | 294.4 | 35.136 | 35.046 | 0.089 | 62.506 | 30.117 | -3.541 | 0 | -0.2 |
| 11/18/05 3:00 AM | 6.331 | 295.9 | 34.892 | 34.756 | 0.136 | 65.604 | 30.127 | -3.622 | 0 | |
| 11/18/05 4:00 AM | 3.159 | 292.6 | 34.599 | 34.336 | 0.264 | 69.872 | 30.126 | -3.6662 | 0 | |
| 11/18/05 5:00 AM | 4.103 | 285.1 | 34.534 | 34.212 | 0.322 | 70.203 | 30.124 | -3.5103 | 0 | |
| 11/18/05 6:00 AM | 6.903 | 294.4 | 34.936 | 34.763 | 0.173 | 67.31 | 30.135 | -3.386 | 0 | |
| 11/18/05 7:00 AM | 6.631 | 292.3 | 34.458 | 34.301 | 0.157 | 68.365 | 30.15 | -3.8651 | 0 | |
| 11/18/05 8:00 AM | 6.815 | 296.3 | 34.092 | 33.945 | 0.147 | 68.817 | 30.173 | 4.8139 | 0 | |
| 11/18/05 9:00 AM | 8.99 | 305 | 34.362 | 34.441 | -0.079 | 59.253 | 30.196 | 116.31 | 0 | 4.6 |
| 11/18/05 10:00 AM | 14.09 | 320.6 | 35.066 | 35.281 | -0.216 | 42.356 | 30.202 | 280.38 | 0 | |
| 11/18/05 11:00 AM | 13.84 | 329.9 | 36.007 | 36.344 | -0.337 | 33.677 | 30.213 | 413.84 | 0 | |
| 11/18/05 12:00 PM | 11.27 | 313.3 | 37.035 | 37.475 | -0.440 | 28.862 | 30.214 | 499.89 | 0 | |
| 11/18/05 1:00 PM | 11.24 | 310.9 | 37.969 | 38.474 | -0.505 | 27.13 | 30.199 | 529.59 | 0 | |
| 11/18/05 2:00 PM | 8.14 | 310 | 38.899 | 39.49 | -0.591 | 25.941 | 30.192 | 494.91 | 0 | |
| **Maximum** | **14.09** | **329.9** | **48.250** | **48.642** | **0.322** | **89.645** | **30.214** | **529.590** | **0** | **4.8** |
| **Minimum** | **3.159** | **285.1** | **34.092** | **33.945** | **-0.591** | **25.941** | **29.937** | **-4.468** | **0** | **-0.2** |
| **Average** | **8.805** | **306.6** | **40.338** | **40.404** | **-0.066** | **56.354** | **30.076** | **145.482** | | **2.6** |

(November 17, 7 AM – November 18, 2 PM, 2005, Hourly Data)



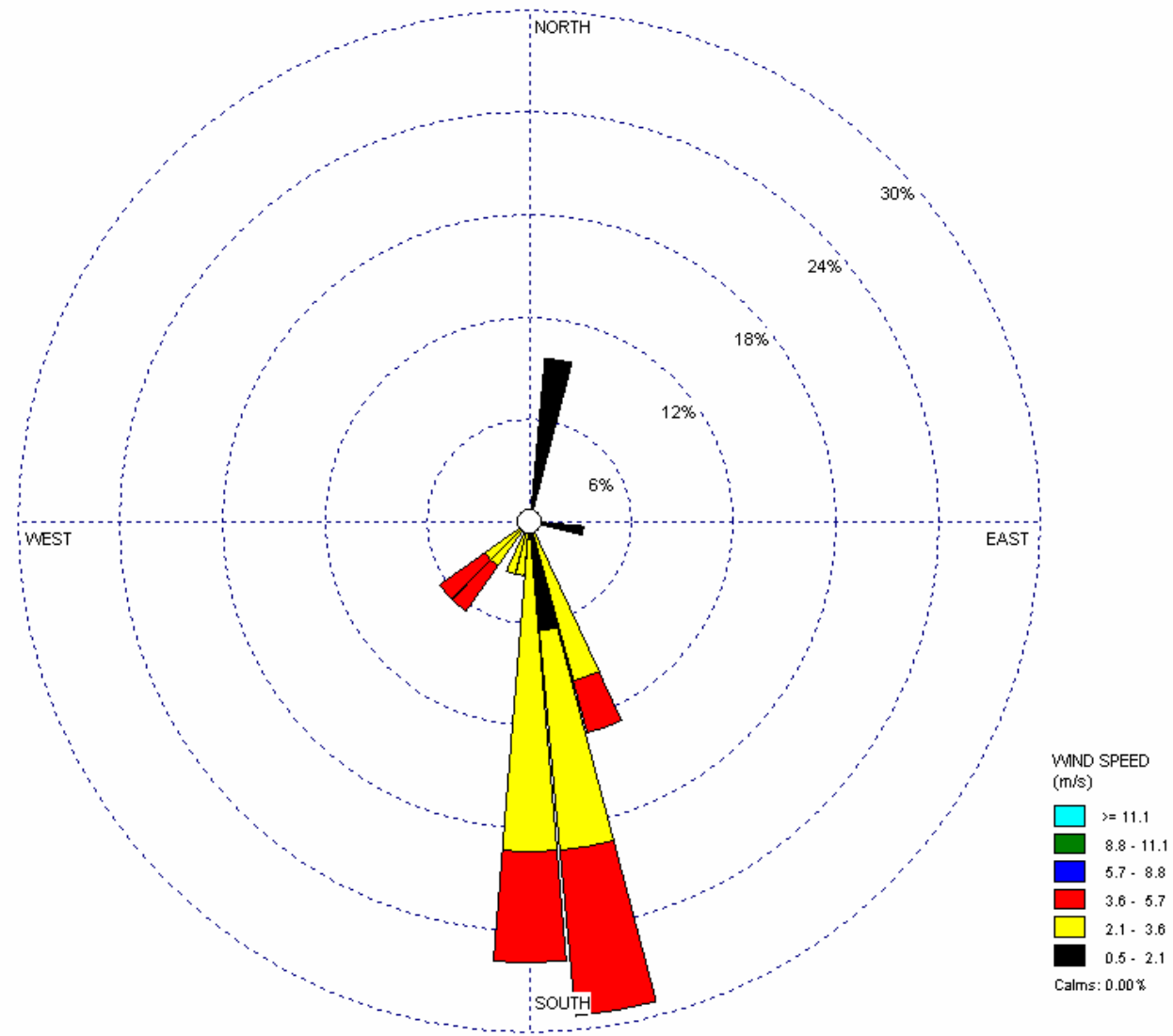

Wind Direction: Blowing From

1 m/s (meter per second) = 2.237 miles per hour

# (December 28, 7 AM – December 29, 1 PM, 2005, Hourly Data)

| Day-Time | Wind Speed (mph) | Wind Direction (degree) | 10m-Temperature (F) | 2m-Temperature (F) | Delta-T (F) | Relative Humidity (%) | Barometric Pressure (inch) | Solar Radiation (Watts/m$^2$) | Precipitation (inch) | Tidal Elevation (ft-msl) |
|---|---|---|---|---|---|---|---|---|---|---|
| 12/28/05 7:00 AM | 2.066 | 6.526 | 29.391 | 28.578 | 0.813 | 87.693 | 29.883 | -2.7823 | 0 | |
| 12/28/05 8:00 AM | 2.2 | 12.25 | 29.031 | 28.271 | 0.760 | 89.425 | 29.889 | -2.6527 | 0 | |
| 12/28/05 9:00 AM | 3.08 | 7.17 | 27.805 | 27.25 | 0.554 | 89.718 | 29.895 | 38.131 | 0 | |
| 12/28/05 10:00 AM | 1.593 | 100.8 | 29.361 | 29.583 | -0.222 | 76.997 | 29.904 | 166.25 | 0 | |
| 12/28/05 11:00 AM | 4.564 | 163.7 | 33.89 | 34.184 | -0.294 | 70.088 | 29.928 | 281.22 | 0 | 0.1 |
| 12/28/05 12:00 PM | 5.725 | 156.3 | 36.928 | 36.986 | -0.059 | 67.34 | 29.907 | 353.06 | 0 | |
| 12/28/05 1:00 PM | 6.15 | 172.9 | 40.281 | 40.552 | -0.271 | 68.289 | 29.878 | 337.23 | 0 | |
| 12/28/05 2:00 PM | 9.74 | 223.9 | 43.851 | 44.078 | -0.228 | 62.886 | 29.857 | 255.88 | 0 | |
| 12/28/05 3:00 PM | 7.87 | 225.4 | 44.482 | 44.581 | -0.098 | 65.543 | 29.839 | 150.54 | 0 | |
| 12/28/05 4:00 PM | 7.46 | 228.2 | 44.879 | 44.957 | -0.077 | 69.354 | 29.842 | 138.72 | 0 | |
| 12/28/05 5:00 PM | 6.734 | 218.7 | 44.661 | 44.586 | 0.076 | 71.064 | 29.843 | 49.522 | 0 | |
| 12/28/05 6:00 PM | 4.03 | 200.7 | 43.817 | 43.532 | 0.285 | 75.572 | 29.837 | 1.318 | 0 | 3.4 |
| 12/28/05 7:00 PM | 3.842 | 165.1 | 42.209 | 41.583 | 0.626 | 82.844 | 29.823 | -2.4487 | 0 | |
| 12/28/05 8:00 PM | 4.204 | 171.7 | 40.28 | 39.807 | 0.473 | 90.278 | 29.807 | -1.4649 | 0 | |
| 12/28/05 9:00 PM | 6.973 | 176.7 | 40.455 | 40.185 | 0.270 | 91.97 | 29.793 | -1.1771 | 0 | |
| 12/28/05 10:00 PM | 6.901 | 181.8 | 41.152 | 40.872 | 0.281 | 92.753 | 29.778 | -1.1116 | 0 | |
| 12/28/05 11:00 PM | 6.724 | 175.4 | 41.034 | 40.763 | 0.271 | 95.249 | 29.768 | -2.1072 | 0 | -0.2 |
| 12/29/05 12:00 AM | 5.115 | 181.1 | 40.956 | 40.541 | 0.415 | 96.469 | 29.748 | -2.4042 | 0 | |
| 12/29/05 1:00 AM | 5.466 | 167 | 42.496 | 41.98 | 0.516 | 97.182 | 29.725 | -0.55358 | 0 | |
| 12/29/05 2:00 AM | 11.04 | 166.8 | 43.767 | 43.555 | 0.213 | 97.373 | 29.702 | -0.39349 | 0 | |
| 12/29/05 3:00 AM | 9.03 | 172.2 | 43.742 | 43.59 | 0.151 | 97.421 | 29.692 | -0.87368 | 0 | |
| 12/29/05 4:00 AM | 9.87 | 160.7 | 44.97 | 44.662 | 0.308 | 97.434 | 29.674 | -1.9868 | 0 | |
| 12/29/05 5:00 AM | 6.992 | 170.8 | 45.624 | 45.334 | 0.290 | 96.427 | 29.645 | -2.394 | 0 | |
| 12/29/05 6:00 AM | 7.5 | 176.6 | 46.298 | 45.992 | 0.305 | 94.25 | 29.611 | -1.716 | 0.02 | 4.5 |
| 12/29/05 7:00 AM | 10.26 | 166 | 46.258 | 45.913 | 0.345 | 94.54 | 29.603 | 0.03392 | 0.09 | |
| 12/29/05 8:00 AM | 9.77 | 177.9 | 46.975 | 46.78 | 0.195 | 95.892 | 29.594 | 0.0499 | 0.05 | |
| 12/29/05 9:00 AM | 4.844 | 159.7 | 46.827 | 46.421 | 0.406 | 97.104 | 29.588 | 9.7296 | 0.02 | |
| 12/29/05 10:00 AM | 5.604 | 178.2 | 48.056 | 47.886 | 0.170 | 98.014 | 29.581 | 20.716 | 0.04 | |
| 12/29/05 11:00 AM | 5.159 | 182 | 47.987 | 47.881 | 0.106 | 98.028 | 29.563 | 24.347 | 0.1 | |
| 12/29/05 12:00 PM | 3.808 | 172.9 | 49.069 | 48.72 | 0.349 | 98.346 | 29.519 | 50.417 | 0 | -0.2 |
| 12/29/05 1:00 PM | 5.246 | 181.6 | 49.978 | 49.765 | 0.213 | 97.828 | 29.465 | 44.128 | 0 | |
| **Maximum** | **11.04** | **228.2** | **49.978** | **49.765** | **0.813** | **98.346** | **29.928** | **353.060** | **0.1** | **4.5** |
| **Minimum** | **1.593** | **6.526** | **27.805** | **27.250** | **-0.294** | **62.886** | **29.465** | **-2.782** | **0** | **-0.2** |
| **Average** | **6.115** | **161.3** | **41.823** | **41.593** | **0.230** | **87.206** | **29.748** | **61.201** | | **1.5** |

# (December 28, 7 AM – December 29, 1 PM, 2005, Hourly Data)




Wind Direction: Blowing From

1 m/s (meter per second) = 2.237 miles per hour

# ATTACHMENT G

# ENSR Progress Sampling Report

# Executive Summary

# EXECUTIVE SUMMARY

Remediation dredging was performed within Dredge Management Units (DMU) 2, 3, 4, and 5 of the New Bedford Harbor Superfund Site from September through mid-November 2005. Dredging was conducted with auger-equipped hydraulic dredges over a combined area of approximately 383,000 square feet of the Acushnet River. Approximately 24,000 cubic yards of polychlorinated biphenyl (PCB) contaminated sediments were removed from the dredged area with the depth of cut ranging from 1 to 5 feet. The 2005 dredging removed sediments to the approximate depth of the z* elevation (where PCB concentrations are predicted to be less than the 10 mg/kg remediation criteria), but the focus was on maximizing the volume of contaminated sediments removed rather than fully remediating the area (i.e., no cleanup passes were performed). Dredged material was pumped to shore-side facilities for desanding and dewatering with approximately 16,000 tons of filter cake transported for offsite disposal.

The fall 2005 dredging was performed in areas adjoining the area dredged in 2004, including the eastern portion that remained of DMU-2 (Area-A), and the entire area of DMU-4 and limited portions of DMU-3 and DMU-5 located immediately to the south (Area-B). Based on historical sampling, total PCB concentrations were reported at thousands of mg/kg for some sediments within this area with the depth of contamination ranging from 1 foot to nearly 5 feet. Ninety-five push-core sediment samples were collected prior to the start of the dredging to refine the accuracy of the predicted z* elevation over the dredge area. A limited number of these samples were submitted for analysis to determine total PCB concentrations above and below the visual transition between black surficial silt and lighter underlying sediments as a means of comparing the accuracy of the observed interface in predicting actual z* elevations. Forty-seven post-dredge cores were collected to assess the efficiency of the dredge in removing the intended depth of PCB contaminated sediment.

Pre-dredge cores were fairly consistent over both dredge areas with a distinct layer of black fluidized silt (OL layer) with a thickness up to 53 inches, transitioning to a lighter underlying layer of olive colored silt-clay. For some samples collected along the edge of the marsh on the eastern side of the harbor, an underlying layer of peat was observed beneath the black OL layer. PCB concentrations above the interface ranged up to 18,200 mg/kg (total Aroclors) and were generally non-detect or low beneath the interface. The PCB data supported the model used previously for the Upper Harbor that the visually identifiable physical characteristics of the sediment provided a good indicator of PCB concentrations and that the core measured interface elevation provided an estimate of the z* elevation. The agreement between the field measured elevation for the visual transition and the target dredge elevation in the dredge plan was determined to be within 1-foot at 67 of the 95 pre-dredge core locations with no apparent bias above or below the target dredge elevation. The limited offsets between the planned dredging elevation and the observed transition elevation were reviewed by Jacobs Engineering, and adjustments were made to the target cut depth elevation to increase overall dredging efficiency.

Visual assessment of the pre-dredge cores also allowed for comparison of the core measured thickness of the black surficial OL layer with the planned sediment removal thickness. The agreement between these two parameters was not as good as the z*/planned cut elevation comparison, particularly for Area-A with a bias toward over predicting the sediment thickness. The offset between the thickness predictions and measurements could have been due to the technical constraints of bathymetric measurements in shallow waters with fluidized surficial sediments or the constraints of collecting representative cores of the fluidized surficial sediments (historical core samples were collected by vibratory techniques). Although this potential offset could affect the predicted volume of sediment removed from a given area, it in no way affected the actual dredging, as dredging control was based on the elevation of the dredge cut rather than the thickness of the material to be removed.

Physical characterization of the post-dredge cores indicated the complete removal of the black surficial OL layer in all the samples that were collected from Area-A and approximately one-half of those collected from Area-B, with the other half retaining the distinct black surficial silt layer with an average thickness of 12 inches. For the post-dredge cores where the OL layer had been removed, it was replaced by a dark olive post-dredge surficial layer, ranging in thickness from 3 to 22 inches, and overlying the more consolidated olive colored silt.

Six sets of pre- and post-dredge core samples were selected for PCB analysis from locations in Area-B where dredging had proceeded below the sediment transition interface. The PCB concentrations in the post-dredge surficial layer were generally much lower than in surficial layer of the area prior to dredging. However, the post-dredge surficial concentrations (ranging from 4.8 to 208 mg/kg with a mean of 102 mg/kg) were well above the pre-dredge concentrations from same elevation (ranging from non-detect to 33 mg/kg with a mean of 6.1 mg/kg). The presence of a residual post-dredge surficial layer retaining some of the physical and chemical characteristics of the previously overlying pre-dredge material is not unexpected, especially given that no cleanup passes were performed in the 2005 dredging. This residual surficial layer is considered to be the result of one or more of a number of processes, including undisturbed residuals (material not fully removed), generated residuals (sloughing within and adjacent to the dredge cut, resuspension and deposition related to the dredging and support activities), and normal background resuspension and deposition in the harbor unrelated to the dredging.

# ATTACHMENT H

# ENSR Water Quality Report

# Executive Summary

# EXECUTIVE SUMMARY

Remediation dredging was performed within Dredge Management Units (DMU) 2, 3, 4, and 5 of the New Bedford Harbor Superfund Site from September through November 2005. The eastern portion of DMU-2, left open during the 2004 dredge program to allow anadromous fish passage through the Acushnet River estuary, was dredged during the early stages of the 2005 program with removal of approximately 8,660 cubic yards of contaminated sediments. Approximately 15,470 cubic yards were removed from DMU-4 and limited portions of DMU-3 and DMU-5, making for a total of approximately 24,130 cubic yards of contaminated sediments removed during the 2005 dredging. Similar to the 2004 work, the dredging was performed using auger-equipped hydraulic dredges, with the dredged material pumped to shore-side facilities for desanding, dewatering, and preparation for offsite disposal. Because of elevated PCB concentrations in the dredged sediments (>1,000 mg/kg), special material handling was required for the work as well as the performance of a water quality monitoring program.

The water quality monitoring program was developed by the USEPA and the USACE to help ensure that the dredging and support activities were carried out in a manner that did not result in: 1) acute impacts to organisms within the water column outside of the dredge area; 2) significant transport of contaminated sediments or floating sheens outside of the work zone to clean or previously remediated areas; or 3) blockage of the water way to anadromous fish passage. The monitoring included measurement of water column turbidity in real-time using meters on monitoring vessels and using deployed recording meters in and around the dredging work area and visual observation for fish passage.

Similar to previous in-water work within the New Bedford Harbor Superfund Site, an upper level turbidity criterion of 50 NTUs (Nephelometric Turbidity Unit) above background was set for the project at two down current compliance transects. A warning level was set at 300 feet down current of dredging operations (triggering sampling and evaluation of work operations if exceeded) and a project criterion was set at 600 feet down current (triggering additional sampling and operation shutdown if exceeded). Toxicity testing of water samples was the primary analytical tool for evaluating impacts to the water column. The 2005 monitoring program also featured deployment of sediment traps to support characterization of potential sediment transport and oil sheen monitoring to evaluate the potential for contaminants to be transported outside the work zone via surface sheens.

The 2005 dredging removed nearly double the amount of contaminated sediment as compared to 2004. As the work was performed without the use of partial depth silt curtains, as used in 2004, there were no apparent restrictions to fish passage. A number of large schools of baitfish (believed to be herring), along with predatory fish (believed to be bluefish

and/or striped bass) were seen in the area throughout much of the dredging period. Given the higher production rate and lack of curtains, turbidity levels were higher on average in 2005 within and immediately down current of the work zone as compared to 2004, and the sediment trap data indicated accelerated deposition within the work area. There were five exceedences of the turbidity warning level during the 2005 season (50 NTU above background at 300 feet down current of operations) and one exceedence of the project turbidity criterion (50 NTU above background at 600 feet down current of operations). The exceedences corresponded to work in shallow water depths, particularly where equipment was moved through the water column. In all cases, turbidity levels dropped quickly with cessation of the activity. Toxicity testing revealed that there were only limited sub-lethal effects associated with the elevated turbidity levels, and that the 50 NTU criterion was ecologically protective.

Oil sheens on the water surface were noted on most monitoring days, not unexpected given that the 2005 work continued in an area with extremely high PCB concentrations. In some instances, the oil surfaced and formed the sheen beyond the extent of the boom boundary around the work zone. The mass of PCBs estimated within the individual sheens was small (a maximum of approximately 18 g), representing a very small fraction of the PCBs actually being dredged (estimated at 9.5 tons PCBs removed over the 2005 dredge season, Jacobs 2006). All sheens that were noted outside of the boundaries of the boomed area were observed to move with the prevailing currents (ebb or flood tide) and disperse with distance, remaining near the axis of the channel.

# ATTACHMENT I

# Jacobs Solids and Water Balance

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# ATTACHMENT J

# Sevenson Operational Monitoring Data

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