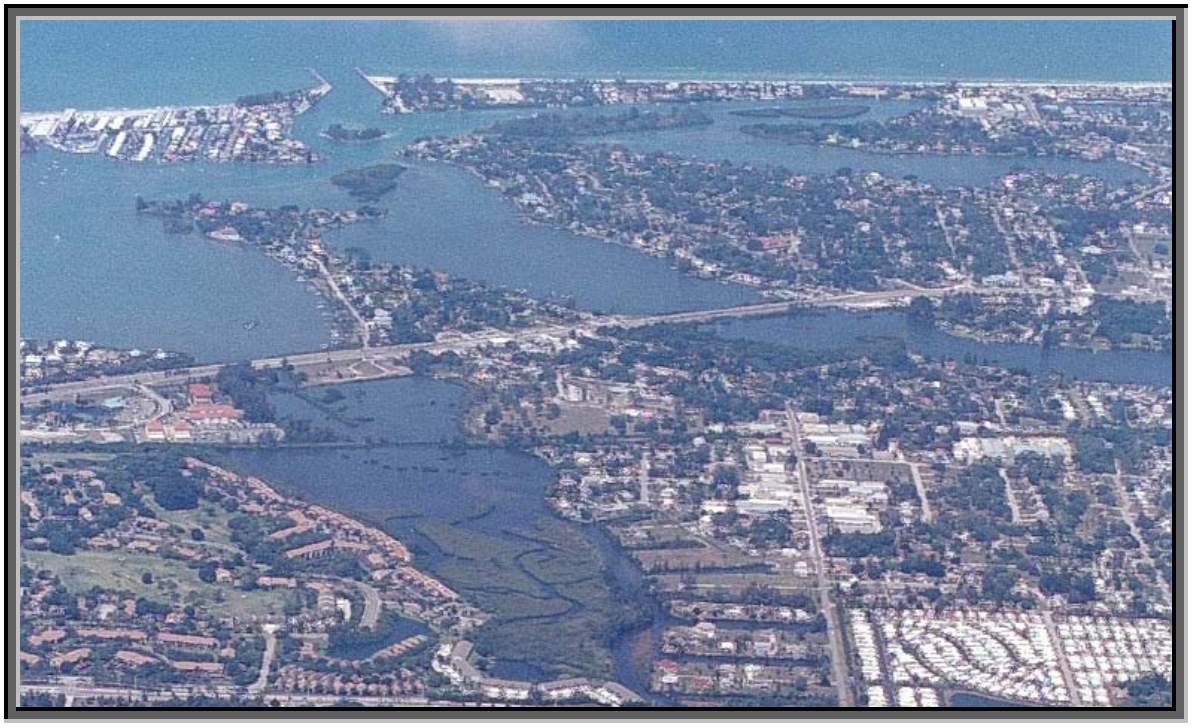
Dona and Robert's Bay Estuary Analysis 2003

Submitted to:
Sarasota County
Comprehensive Watershed Management Team



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Introduction

The Sarasota County Center for Watershed Management has drafted the Comprehensive Watershed Management Plan. The plan focuses on four strategic areas that need attention in order to properly manage Sarasota County's water resources. The four areas have been identified as Water Quality, Flood Protection, Water Supply, and Natural Systems. The monitoring effort addressed in this report is intended to support the comprehensive watershed management plan's natural systems goal: "To enhance, protect and conserve the hydrologic and ecologic functions of natural systems including estuaries freshwater and groundwater systems." Specifically this monitoring program provides data necessary to guide and gage the success of the County's efforts to restore more natural hydrologic regimes to our natural water systems.

The Dona and Robert's Bay (DARB) watershed is one of the five major watersheds in Sarasota County with a contributing area of 62,376 acres (Figure 1). The predominant land use type in the upper watershed is pasture and agriculture; the lower portions of the DARB watershed consist primarily of medium density residential. Much of this watershed historically drained east via sloughs toward the Myakka River and a much smaller area drained toward Dona Bay. The Cow Pen Slough Canal was completed in the late 1960s (Lincer, J.L. 1975). This canal increased the size of the DARB watershed from approximately 5 square miles to 75 square miles. The canal has two control structures. The current management of the structures is to open the gates June 1st each year to allow freshwater to drain off the land. The gates are closed November 1st to hold water back during the dry months. This schedule has been maintained regardless of rainfall or estuarine habitat needs.

Cow Pen Slough Canal southern control structure at tidal/freshwater interface.

In addition to the Cow Pen Slough Canal, many alterations have resulted in a substantial increase in freshwater input to the DARB system. The Blackburn Canal was dug to connect Curry Creek to the Myakka River, increasing freshwater inputs to Robert's Bay. Hatchet Creek in Venice has been straightened and deepened (Deleuw, Cather & Brill, 1959). Many swales and ditches have been constructed that feed freshwater into upper Lyon's Bay. Additionally, a recent tidal flow dye study conducted by Sarasota County staff supports the results of a previous study from the 1970s indicating that the Alligator Creek and Woodmere Creek watersheds also drain toward Venice inlet rather than Lemon Bay as commonly thought. Current trends in data show that estuarine habitat in southwest Florida has been negatively impacted by alterations to the quantity, quality, and timing of freshwater inflows. The DARB system is typical of this scenario.

In 1975, Mote Marine Laboratory submitted a report on "The Ecological Status of Dona and Robert's Bays" to the Sarasota Board of County Commissioners. Aside from that report, there is a lack of historical water quality, hydrological, and biological data for the DARB area. New data are being collected in DARB to provide a better understanding of the water budget and guide management of our water resources for both consumption and natural habitat needs.

This report will focus on seagrass and oyster habitat as biological indicators of estuarine health for the DARB system. Research has shown that seagrass beds are important habitat for a wide variety of marine fauna. Seagrass beds serve as feeding, forging areas and nursery habitat for fish species as well as a variety of other aquatic organisms. Seagrass beds also function to slow shoreline erosion and trap sediments. Additionally, seagrasses provide some water quality benefits in the form of nutrient removal. Seagrass beds are susceptible to water quality and other environmental change and can therefore serve as an important gage as to how human alterations to watersheds effect the natural habitats in our estuaries. Recent work conducted by the South Florida Water Management District (SFWMD) in the southern Indian River Lagoon indicates that seagrass health can be directly correlated to water quality (Crean et. al., 2003). Oysters were chosen as another biological indicator due to their immobility and ease of monitoring. Oyster beds also provide important shelter habitat and foraging areas as well as help prevent erosion by stabilizing shorelines. An individual oyster can filter between 4 and 40 liters of water per day (Volety et. al, 2003) providing a valuable water quality function. Recent work conducted by Volety shows that oyster bed health is affected by water quality, particularly salinity levels. The two biological indicators discussed in this report provide a well documented vital habitat for both commercial and sport fish species. A study conducted in 1991 showed that tourists spent $2 billion dollars fishing Florida waters during that year (Stedman & Hanson, 1998). Little background data exist for these two habitats in the DARB system and the results from this report will be used as baseline data for analysis of future trends.

In integrated systems it is difficult to look solely at biological indicators and infer any conclusions or make integrated water management decisions. The biology of estuarine systems is driven by the hydrology and water quality inputs into the system. Therefore, this report will also discuss available water quality, rainfall, and discharge data.

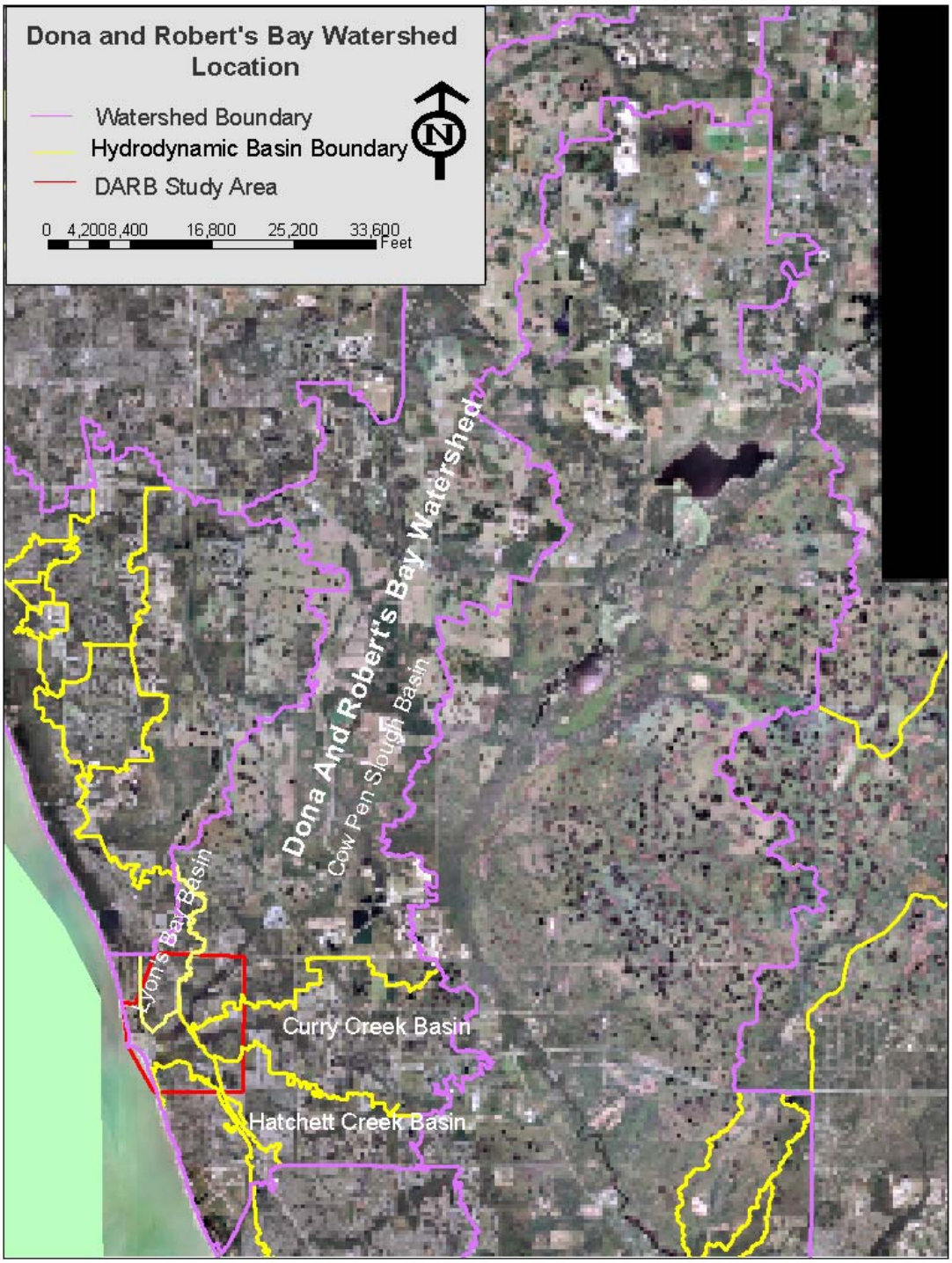


Figure 1. Dona and Robert's Bay Watershed Location Map.

DARB Seagrass Beds

Methods

The Southwest Florida Water Management District (SWFWMD) conducts aerial seagrass bed mapping throughout the District's coastal counties every other year. Monitoring began in 1986 by aerial photography taken in late fall during over-flights at the end of the seagrass growing season. An aerial interpolation is conducted, seagrass polygons are scrutinized for change, and any change is incorporated into the polygons. A spatial analysis is then conducted, and seagrass polygons are categorized as patchy or continuous seagrass beds. In this report, beds are discussed without regard as to whether they are patchy or continuous. When the GIS work is finalized it is available to download from the Water Management District's website. Downloaded data from 1988, 1994, 1996, 1999 and 2001 SWFWMD coverages were used for this report. A shape file was created with the seagrass polygons that occur in the DARB study area. In addition to the SWFWMD data, 1948 aerials have been analyzed to infer historical coverage of seagrass for the area. The 1948 aerials were scanned and ortho-rectified by Sarasota County's Geomatics department. The 1948 bed delineation analysis was done conservatively due to the poorer quality of the aerial photographs and the time of year when the photos were taken.

Sarasota County staff conducted a field truthing event in late May 2003 to verify that seagrass occurred in or near the areas delineated by the SWFWMD 2001 winter mapping effort. Even though the field truthing occurred several months after the mapping effort SWFWMD mapped seagrass bed locations appear to be relatively stable thus emerging seagrass could be expected in the same general vicinity. Four seagrass transect locations (LYB1, LYB2, DB1, and RB1) were selected in stable bed locations where seagrasses were found in the field during the field truthing event (Figure 5). Transects start at the shallow end of the bed and terminate at the deep edge of the bed. A GPS position was taken as well as a compass bearing from a fixed location marked either by a piling or flagging tape on mangrove islands. The four transects were analyzed for coverage using the Braun Blanquet method which is used by the Florida Department of Environmental Protection to monitor seagrass beds in Charlotte Harbor, Lemon Bay, and Sarasota Bay. The Braun Blanquet method classifies coverages into categories based on percentages (i.e., category 1 is <5% cover). Data are collected from the beginning, middle and edge of bed. For beds longer than 150 meters, data are collected at 50 meter intervals. In addition to percent cover; species, shoot density, sediment type, and epiphyte density are also noted. In future monitoring events, physical water quality parameters will be taken at each station as well as photosynthetically available radiance or PAR. Sarasota County may increase the number of transects as necessary for future monitoring events.

Results

An analysis of the SWFWMD mapping efforts coupled with the 1948 aerial delineation indicated an overall decline in coverage from 1948-2001 in DARB by approximately 32% (Figure 2). This figure is consistent with the SWFWMD estimate of an approximate

30 % loss during the same time period district wide (Tomasko et. al, 2002). The trend for aerially mapped seagrass acreage in DARB since 1988 also followed the trends found district-wide. In the DARB study area, approximately 123 acres of seagrass beds were delineated on the 1948 aerials (Figure 3). Approximately 84 acres of seagrass beds were delineated during the 2001 mapping effort in this same area (Figure 4).

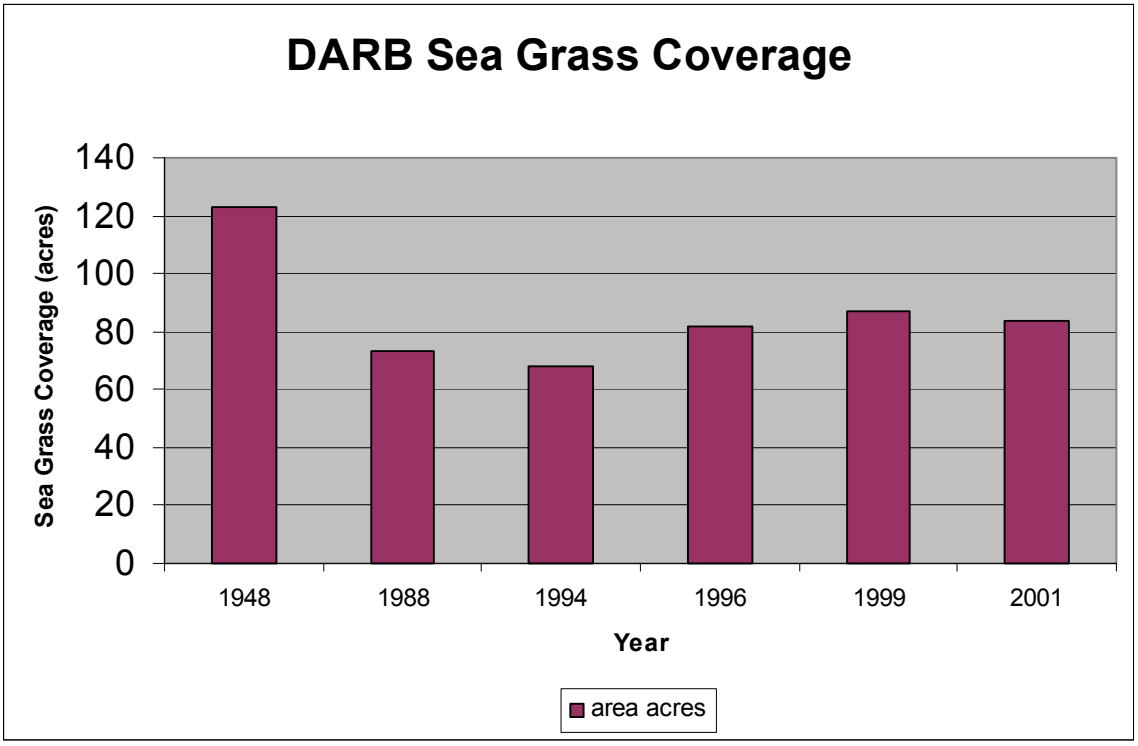


Figure 2. SWFWMD aerially delineated seagrass beds 1988-2001 & Sarasota County aerially delineated beds 1948 for the DARB study area.

During the field truthing event conducted at the end of May 2001, sparse seagrass coverage was observed in or very near (within 10 meters) to most areas that the SWFWMD had delineated as seagrass beds. The exception was that some areas delineated as seagrass beds were actually oyster beds. Another site visit was conducted in early July to determine the extent of oyster beds that were delineated as seagrass beds. Oyster beds were mapped using a Trimble Geoexplorer 3. These delineated oyster beds were then plotted on a GIS layer with 2001 aerials. The acreage that overlapped the 2001 SWFWMD delineated seagrass beds were removed from SWFWMD acreages. Results from this effort indicated that approximately 8.86 acres of oyster beds overlapped the SWFWMD 2001 aerial mapped 83.9 acres of seagrasses for a total overestimation of approximately 10%. Figure 5 illustrates the overlap of oyster beds on SWFWMD seagrass beds. GIS aerial analysis is a newer methodology thus a 10% overestimation could also apply to the 1948 aerial delineation as well as other annual SWFWMD delineations. During the July visit however, no seagrasses were observed in the transect areas where seagrasses were observed during the May event, indicating that the sparse seagrass coverage observed in May had died.

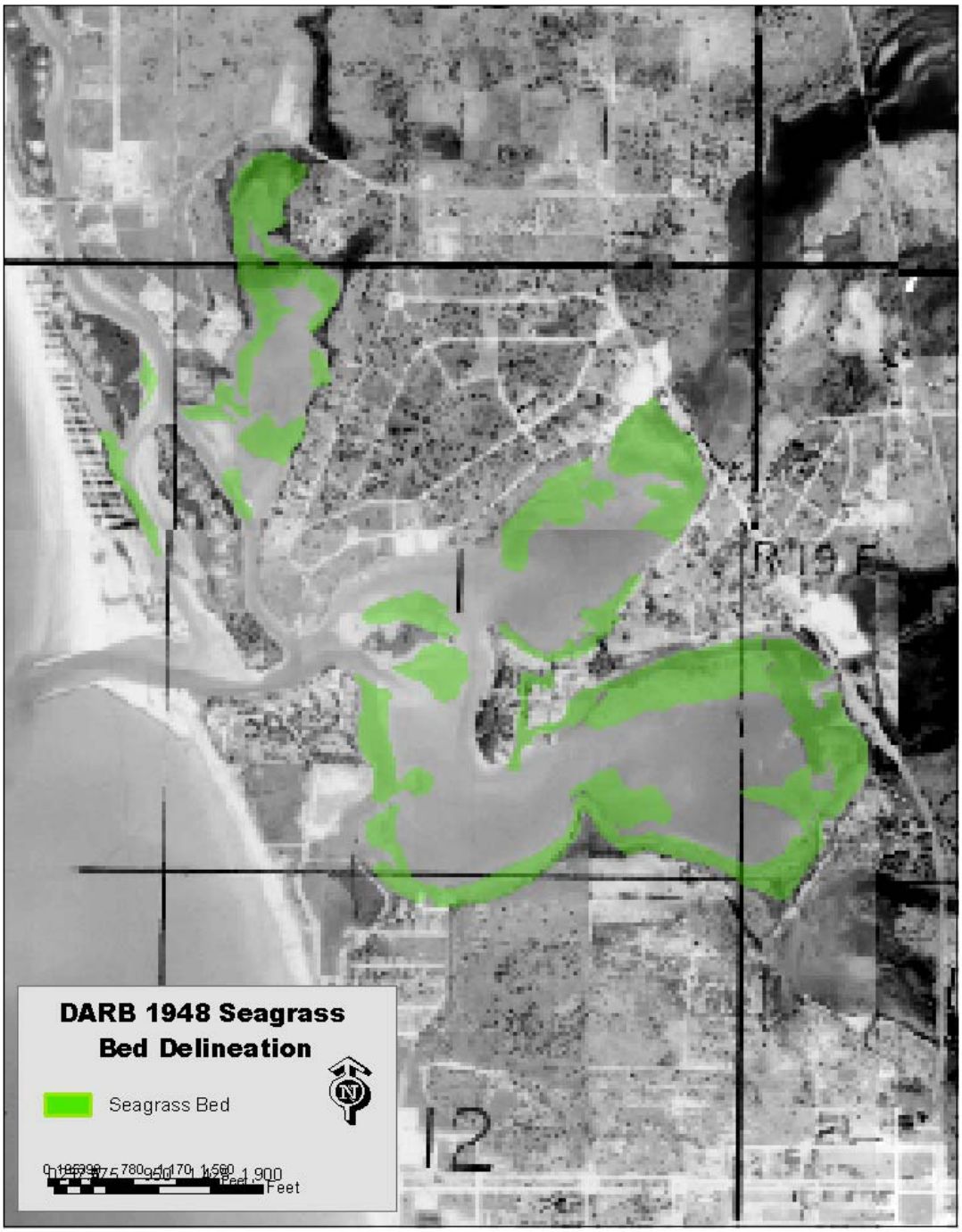


Figure 3. 1948 Sarasota County Seagrass Bed Delineation

Figure 4. 2001 SWFWMD Seagrass Bed Delineation

Figure 5. 2001 Oyster and Seagrass Overlay

Quantitative monitoring of seagrass transects was completed October 3, 2003. The results indicated sparse coverage. No mature seagrass with blade lengths longer than 7 cm were observed. Visual observations throughout the project area verified sparse coverage with observed seagrasses shoots being new and emergent. Two emergent species, *Halodule wrightii* and *Thalassia testudinum,* were noted in the mouth of Lyon's Bay. Transect data using the Braun Blanquet method indicated that transect LYB1 contained few seagrasses. The bed length was only 8 meters. The beginning station and end station both fell into the "+" category indicating that seagrasses were present but few. Average blade length was 4.3 cm. The only species noted was *Halodule wrightii.* Data was not collected for the LYB2 transect because no seagrasses were found. Transect DB1 was approximately 39 meters long. Three stations were monitored, one at each edge and one in the middle. Each station fell into the Braun Blanquet category of "1" which is less than five percent cover. Average blade length for this transect was 5.27 cm. The only species noted was *Halodule wrightii.* Transect RB1 was approximately 44 meters long. The shoreward station fell into category "1" with less than five percent coverage and the water ward station fell into the + category with few shoots noted. Average shoot length for this transect was 3.1 cm. Again, the only species noted was *Halodule wrightii.* Seagrass transects will be monitored quarterly during FY04 in an effort to observe and document intra-annual variability in growth and coverage.

DARB Oyster Beds

Methods

In order to gage the health of oyster beds, an initial project to locate and map oyster beds in the DARB project area was undertaken. Oyster beds were delineated in the field using a Trimble Geoexplorer 3. The GPS data was loaded onto ortho-rectified color aerials. This method allowed correlation with pixel signatures on the aerial photos enabling further delineations. Most oyster beds in the DARB project area were then delineated using the color aerial photography from 2001. At least thirty-five percent of the oyster beds in the area were field verified. 1948 aerials were used to estimate the historic extent of oyster beds. Due to the quality of the 1948 photos only the areas east of U.S. Hwy 41 were analyzed for historic extent. A comparison of historic versus 2001 oyster extent was then possible. Some areas where oysters appeared in 1948 but were absent in 2001 were field checked by probing the sediment with a steel rod to feel for hard oyster shell under the substrate. In areas where oysters had appeared in 1948 but were absent on the 2001 delineation, a hard shell substrate was found under approximately 5 cm of silt. During the summer, further delineations west of U.S. Hwy. 41 and in the Lyon's Bay portion of the study area were conducted allowing for completion of the oyster bed habitat GIS layer. The layer consists of polygons delineated over the aerial signatures of oyster bed habitat or substrate. The layer does not imply that all oyster bed habitat areas contain live and/or healthy oysters. The layer also does not take into account live oysters that were observed growing along the shoreline, sea walls, and pilings.

Oyster bed health was analyzed by counting live and dead oysters that fell within a randomly placed quarter-meter PVC quadrat. Oyster spat (juvenile oysters) recruitment was recorded. Oysters in our area are capable of setting spat throughout the year but winter spat is minimal. The peak season of spat production and recruitment begins in the spring and extends through the fall. The five longest live oysters were recorded. Oysters were considered dead if both shells of the bivalve were still conjoined yet they contained no tissue.

Six stations were selected for oyster sampling. One station in each of the three bay segments (Dona-DB1, Lyons-LYB1 and Robert's Bays RB1), and two stations from Shakett Creek SC1 and SC2 east of U.S. Hwy. 41, and one from Curry Creek CC1 east of U.S. Hwy. 41 were selected. Subsequent data gathering will be collected at these permanent stations. Oyster bed locations and sampling stations for the study area are presented in Figure 6. Additionally figure 6 illustrates the river kilometer system (RKS) that was established on a GIS layer as a distance reference tool. The RKS starts at 0 kilometers at Venice inlet and extends up all of the tributaries to a predetermined point. Sampling stations may be added in the future as needed. At each of the six stations, oysters were collected and placed in five gallon buckets for counting on the boat. All oysters that fell within the quadrat were collected. The data was then analyzed at Florida Gulf Coat University using a univariate analysis of variance (Levenes's Test of Equality of Variances). The statistical analysis was run on the percent of live oysters as well as the number of actual live oysters. In addition, physical water quality parameters and water depth were collected at each of the stations. This data is presented in Appendix A.

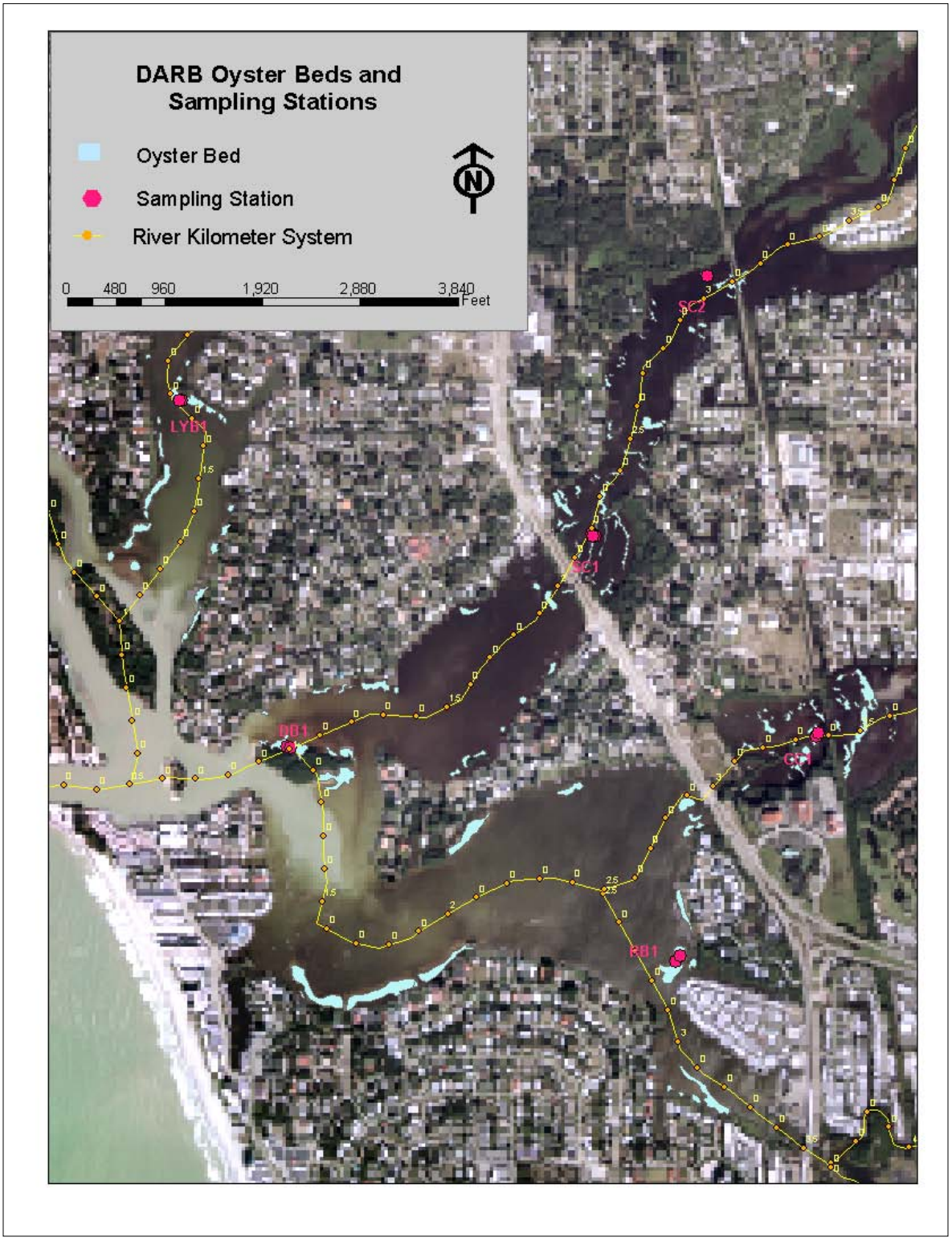


Figure 6. Oyster Bed Locations and Sampling Stations

Results

Overall, approximately 23 acres of oyster bed habitat were aerially delineated using the 2001 aerials for the entire DARB project area. A loss of approximately 2.27 acres of oyster habitat was observed when comparing 1948 and 2001 oyster bed coverage east of U.S. 41 (Figure 7). There was approximately 10.34 acres of oyster bed habitat in 1948. In 2001 approximately 8.07 acres of oyster bed habitat was delineated east of U.S. 41. Figures 8 and 9 aerially illustrate the differences between 1948 and 2001 oyster coverage in Shakett and Curry Creeks. The majority, 2.11 acres, of the observed oyster habitat loss is explained by the filling of a large portion of Robert's Bay which is evident when comparing the aerial photos in Figure 9. Field truthing in January and February of 2003 demonstrated that oysters visually had the greatest densities of live oysters and robust beds between river kilometers 2.1 and 3.3 on Shakett Creek and river kilometers 3.1 and 3.7 on Curry Creek

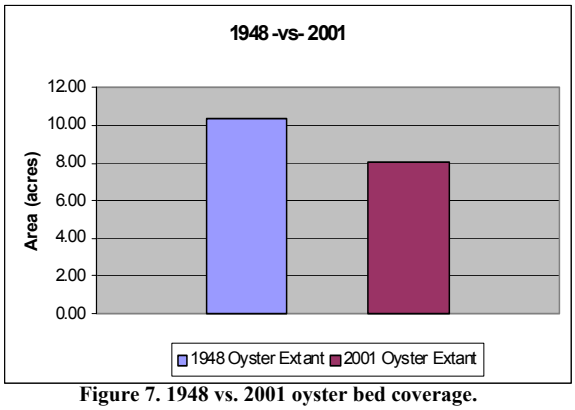


Figure 7. 1948 vs. 2001 oyster bed coverage.

Statistical analysis of the quantitative data collected in October 2003 indicates that the sampling station in Lyon's Bay (LB1) had the largest number of live oysters and highest percentage of live oysters. No significant statistical difference in percentage of live oysters was evident between stations SC1, SC2, CC1, and DB1. Few live oysters were found upstream of U.S. Hwy. 41 in Shakett or Curry Creeks. Oysters found in Dona Bay were also mostly dead with a small percentage of live oysters. Many were covered with silt and mud. The Robert's Bay station, located in close proximity to the intracoastal canal and the historic mouth of Hatchet Creek, had a higher percentage of live oysters. The Levene's test of variance and post hoc test indicated that there was no significant difference in percent of live oysters when comparing the Robert's Bay station with the healthiest station in Lyon's bay. However, when examining the amount of live oysters only, the qualitative statistics indicated that the Robert's Bay site was more similar to the sites with no live oysters than the Lyon's Bay site. The statistical analyses are located in Appendix A.

Exposed oyster beds on Shakett Creek

Figure 8. Shakett Creek 2001/1948 Oyster Bed Comparison

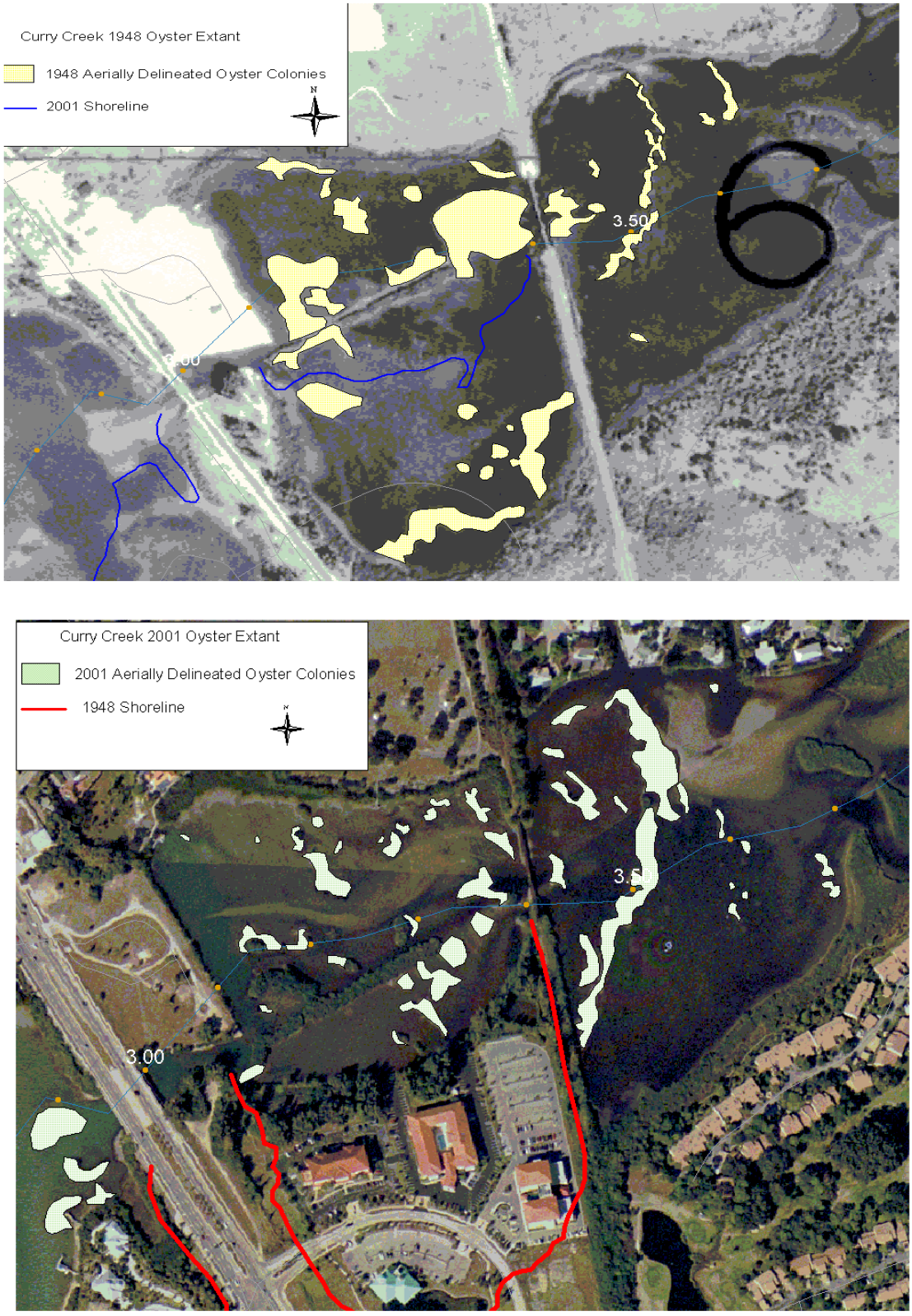
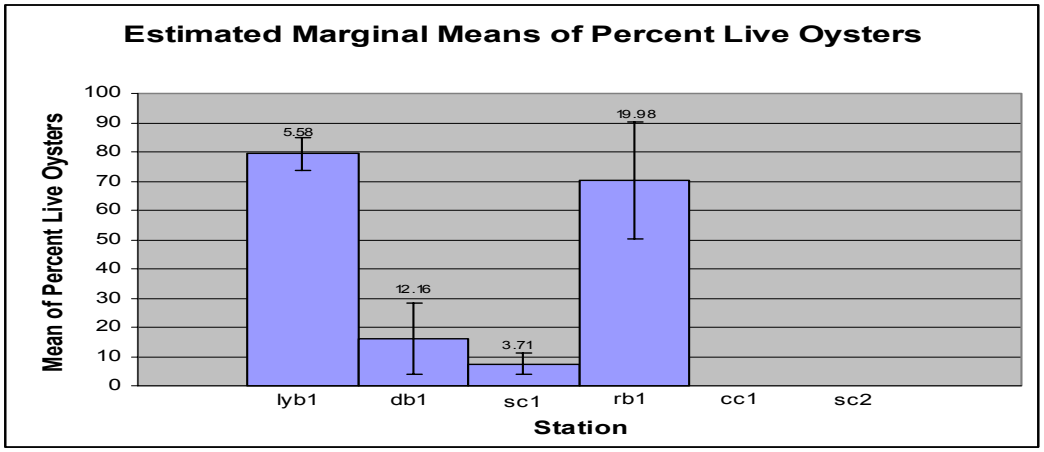


Figure 9. Curry Creek 2001/1948 Oyster Bed Comparison

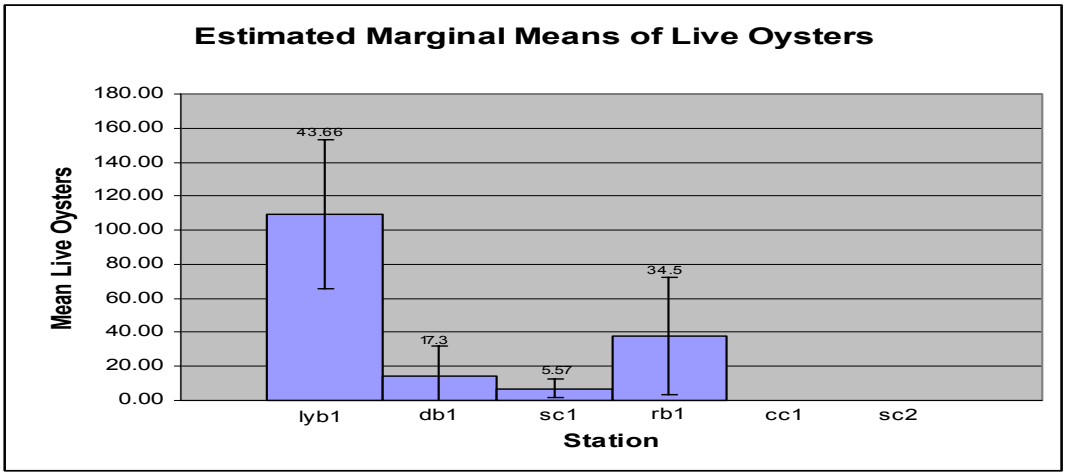
Figure 10 illustrates graphically the estimated marginal means of percent live and live oysters. When observing the height of the largest live oysters it was determined that the live oysters encountered throughout the study area were no more than three years old. This suggests that the current conditions are inadequate for the oysters in these systems to attain the longer life spans associated with commercially harvestable oysters which are generally greater than 7 cm. Spat recruitment observed on oysters at all stations was minimal. Lyon's Bay and Robert's Bay were the only stations where spat was observed. Twelve spat were noted in Robert's Bay and seven in Lyon's bay. Overall counts for oysters were less then oyster amounts recorded in the healthiest sites in the Caloosahatchee River and Fakahatchee Strand. These areas located south of Sarasota County have approximately four times higher oyster counts per quarter meter (Volety et. al., 2003). DARB total live and dead counts were approximately double that of counts conducted in July to the north in Little Sarasota Bay at the mouth of North Creek (Leverone J. R., 2003). The highest numbers of dead oysters in the DARB study area were found upstream of U.S. Hwy. 41 as follows: SC2= 81, SC1= 80, and CC1=75. Lower numbers of dead oysters were found at the three other sites: DB=50.33, LYB1= 27.43, and RB1=10.00. The observed high oyster mortality is most likely due to prolonged exposure to fresh water during the 2003 wet season and is discussed further in the discussion section.

The percent of live oysters in the DARB area appear to be susceptible to high annual and seasonal variability. A qualitative survey conducted by the County found no live oysters in Curry Creek, Shakett Creek, or Dona Bay in September, 1982 yet in February 1983, live oysters were found throughout the Dona and Robert's Bays area (Sauers and Perry, 1983). A more recent study of an oyster relocation project in Shakett Creek showed the number of live oysters increased overall during a three year monitoring project, yet the second year of monitoring in October showed a large decrease in live oysters at all stations. (Ed Barber and Associates, 2003)

Example of shoreline oyster colony in Shakett Creek



Station	Mean % Live	St.Dev.
lyb1	79.28	5.58
db1	16.12	12.16
sc1	7.38	3.71
rb1	70.17	19.98
cc1	0.00	0.00
sc2	0.00	0.00



Station	Mean Live	St.Dev.
Lyb1	109.33	43.66
Db1	14.33	17.39
Sc1	7.00	5.57
rb1	37.67	34.59
Cc1	0.00	0.00
Sc2	0.00	0.00

Figure 10. Estimated Marginal Means of Percent Live and Live Oysters.

Water Quality Monitoring Results:

MS-4 Monitoring

As part of the County's MS-4 permit under the NPDES program, Sarasota County has contracted Mote Marine Laboratory to collect monthly random grab samples throughout the coastal waters of Sarasota County. No grab sampling stations were previously located in the DARB area so five additional stations were added (DR1-DR5) in 2003. DR5 will not be discussed in this report because it falls outside the project area in the Intracoastal Waterway closer to the mouth of Alligator Creek. Figure 11 shows the sampling locations.

The following parameters are monitored from grab samples: temperature, specific conductance, dissolved oxygen, turbidity, total suspended solids, chlorophyll a, total nitrate + nitrite, dissolved nitrate+nitrite, dissolved inorganic nitrogen, dissolved orthophosphate, pH, salinity, dissolved oxygen % sat. color, biological oxygen demand-5 day, total kjeldahl nitrogen, dissolved ammonium nitrogen, total nitrogen, total phosphorus. The raw data available from this monitoring are presented as part of Appendix B. The full data set from March 2003 to present has not yet been made available to the County. Presently the full data set is available only from March through October 2003. Figures 12, 13 and 14 display the results for salinity, turbidity, TSS, color, chlorophyll a, and pH. Average daily rainfall totals from the DARB watershed area are also presented. A substantial increase in color during the summer months as well as chlorophyll a values is illustrated on Figures 13 and 14 and can be associated with freshwater inputs during the wet season. There is also a significant drop in salinity apparent in Figure 12 that occurred during the summer months. According to the data, salinity values in Dona Bay were the lowest followed by Curry Creek, and Shakett Creek. Lyon's Bay presented the least drop in salinity and pH. Lyon's Bay has the smallest contributing watershed and remained the most stable throughout the sampling period.

Data Logger Deployments

Sarasota County staff deployed a YSI 6600 extended deployment data sonde at the mouth of Curry Creek immediately upstream of U.S. Hwy 41 for approximately six weeks from July 10, 2003 through August 19, 2003. This meter was pre- and post-calibrated according to standard protocol by the YSI company representative. The data logger results for salinity, DO, specific conductance, turbidity, chlorophyll a, and pH are displayed in Figures 15 through 17. Average salinities from July 10, 2003 through August 19, 2003 dropped to approximately 13 ppt from a spring average of 31 ppt. From August 9, 2003 through August 19, 2003, salinities at this location remained below 1 ppt. The water quality meter was checked with a discreet measurement that supported the observed low salinity values. The meter was also deployed alongside another meter that further supported the physical water quality results. A tropical system moved through the area in the beginning of August depositing approximately 6.6 inches of rain over the watershed, coinciding with the observed drops in salinity readings. The pH value also exhibited a noticeable drop, presumably as highly tannin-laced water moved downstream following the tropical event.

Deployments of YSI 6920 data loggers during the spring of 2003 give an indication of dry season physical water quality particularly salinity. There were three spring deployments (Figure 18). Two deployments took place on Shakett Creek, one in April and one in June, and one deployment took place in March on Curry Creek. Average salinity at Curry Creek and U.S. 41 was 31 ppt during the last week of March 2003. Average salinities from July 10, 2003 through August 19, 2003 dropped to approximately 13 ppt. Data logger salinity readings at Shakett Creek and U.S. Hwy. 41 averaged 33 ppt during the first week of April 2003. After opening the control structure gates on Cow Pen Slough average salinity at the same location dropped to 26 ppt. after a 2.5 inch rain event. In August, the MS-4 monitoring recorded salinity in this same vicinity at 4 ppt.

In December 2002, a one-time physical water quality sampling event was conducted. Four teams in four boats evaluated physical water quality parameters throughout the study area and further up into the watershed. Efforts were made to capture both high and low tide data in sampling locations. The results of the December 2002 monitoring event can be viewed in Appendix B. The sampling locations for this event are also presented in Figure 11.

YSI 6600 Extended Deployment Data Sonde Probes

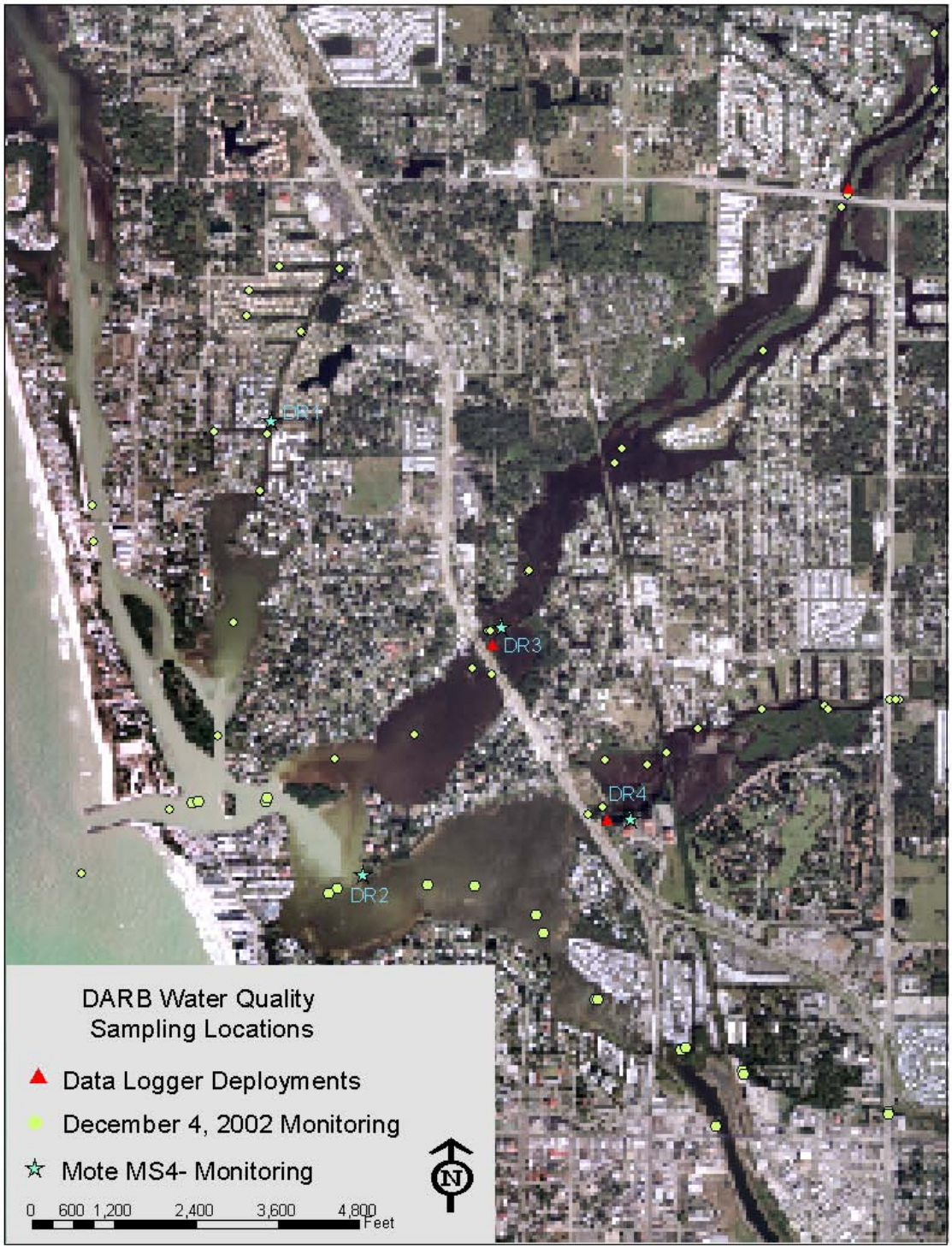
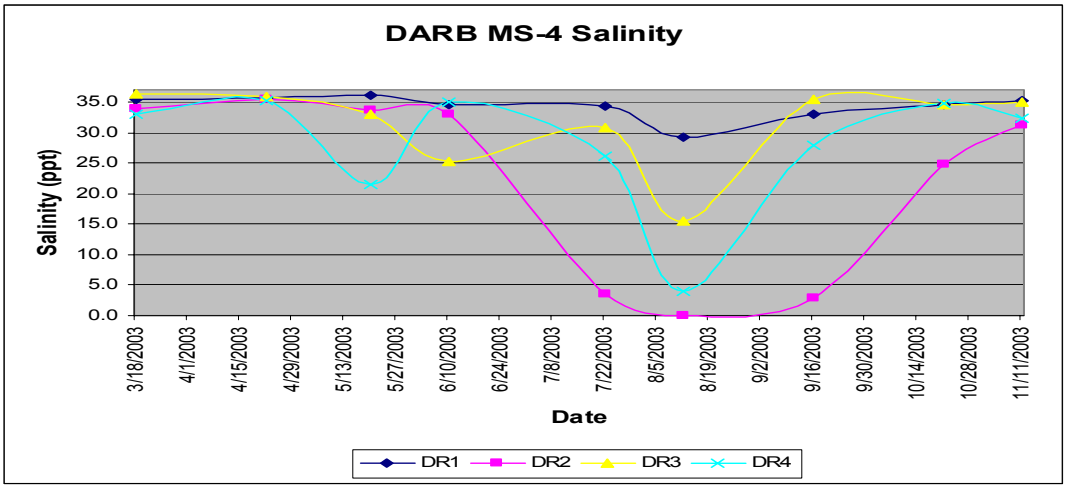
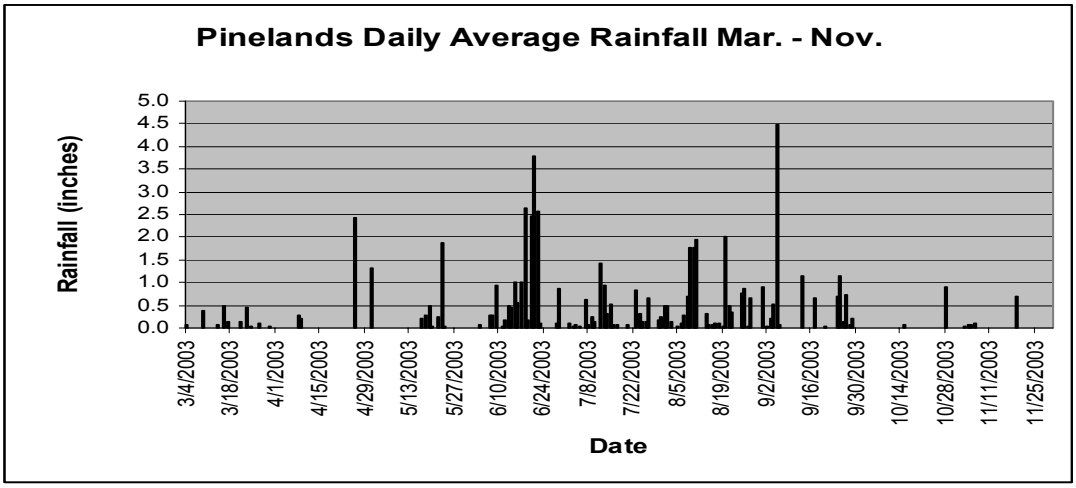


Figure 11. Approximate Water Quality Sampling Locations





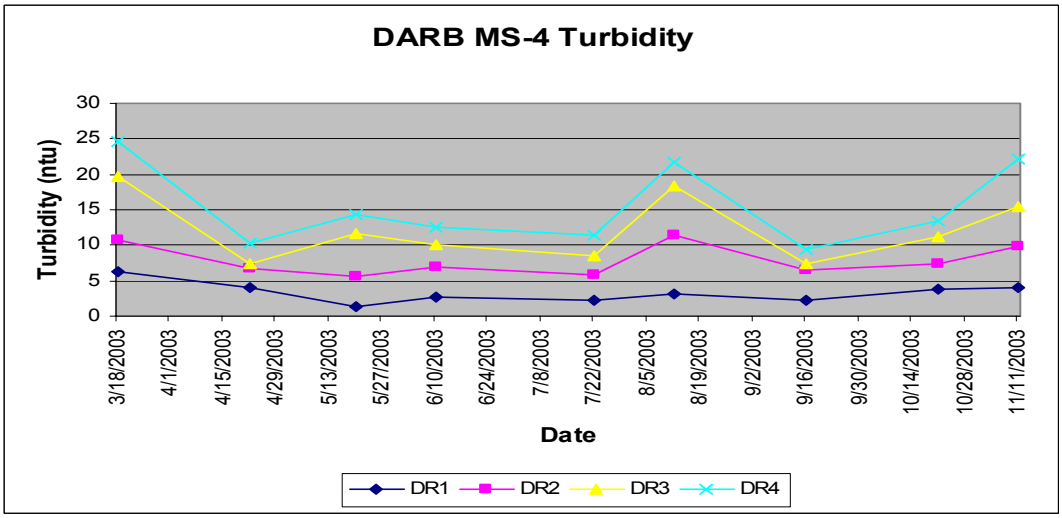
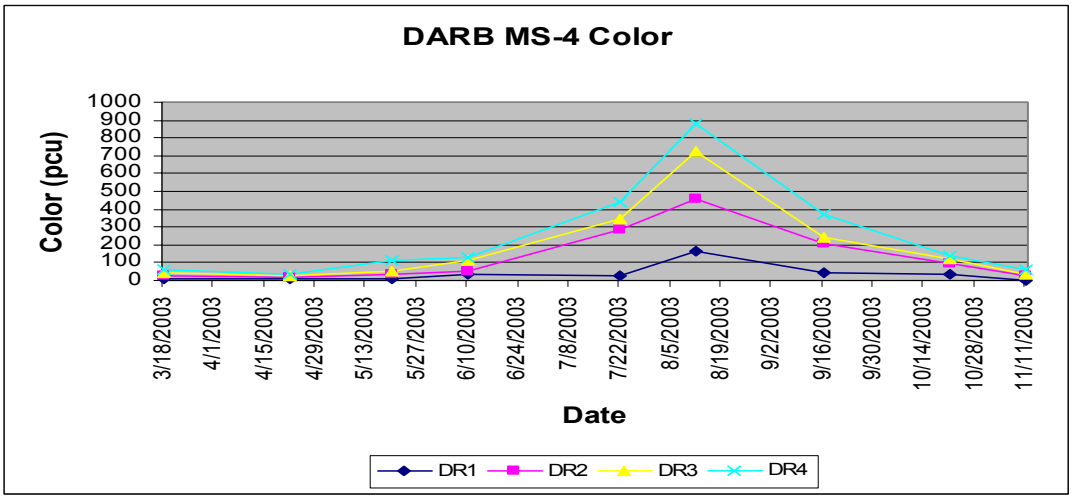
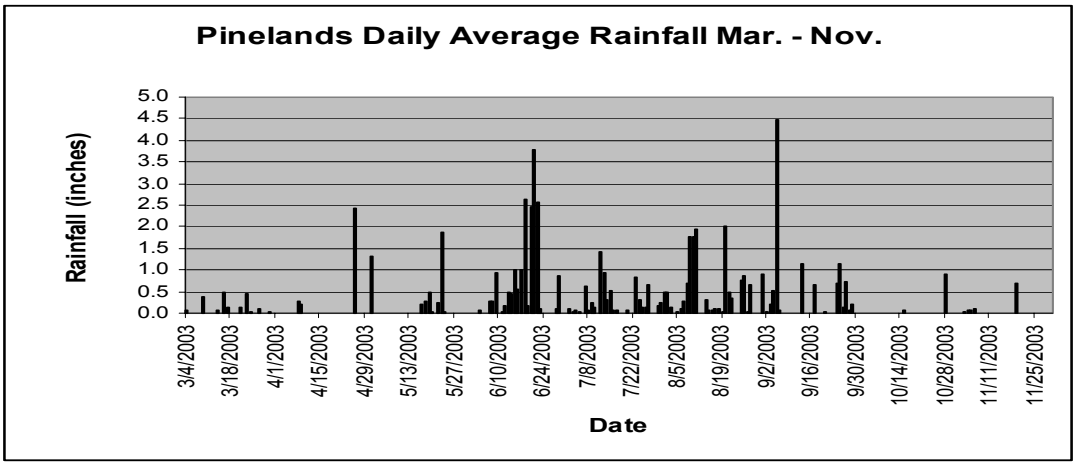


Figure 12. DARB MS-4 Monitoring Results and Avg. Daily Rainfall





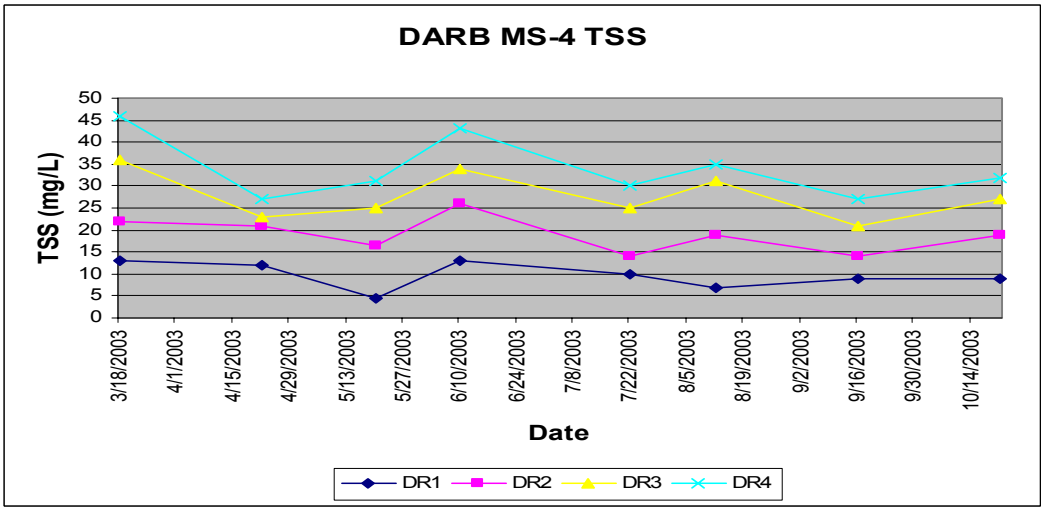
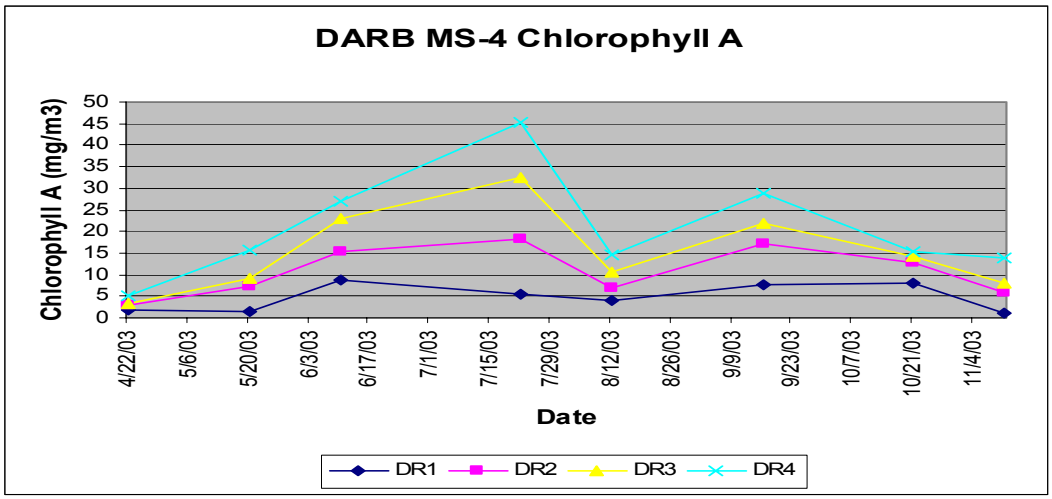
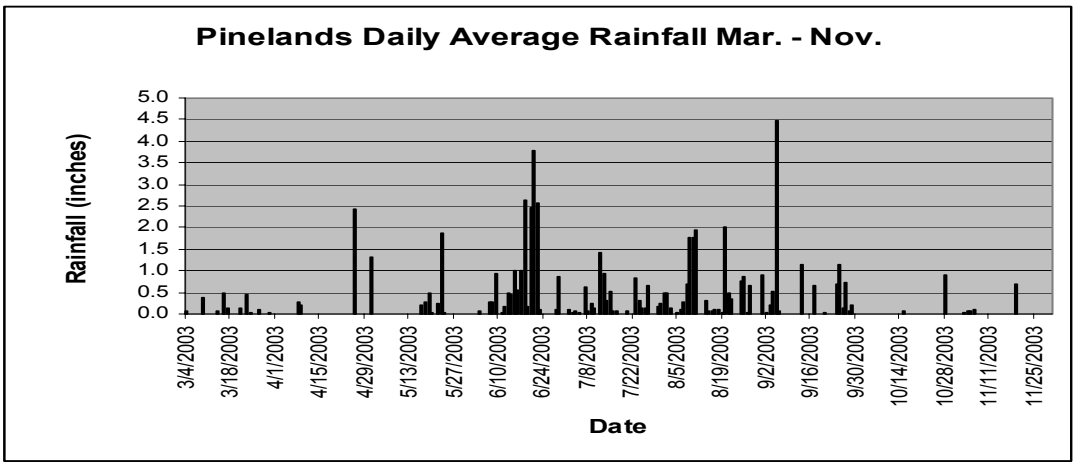


Figure 13. DARB MS-4 Monitoring Results and Avg. Daily Rainfall





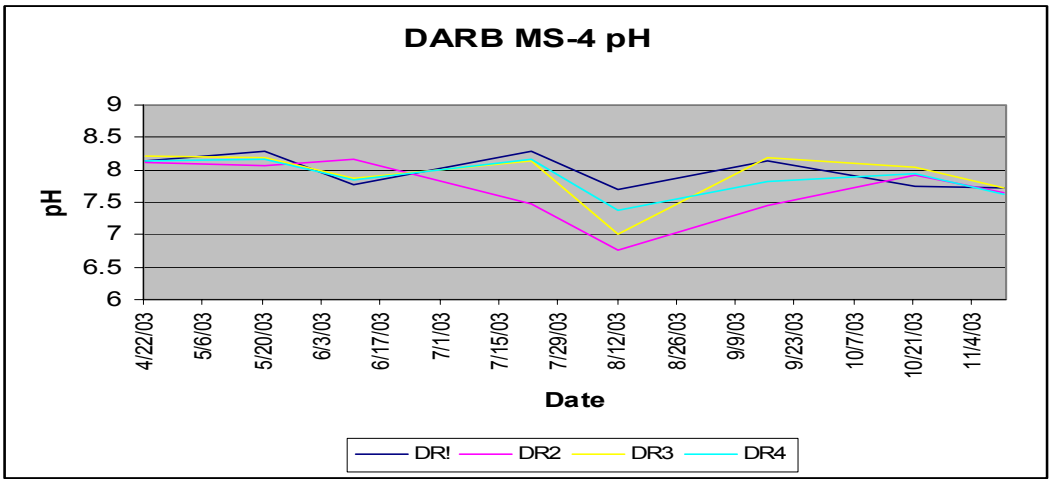
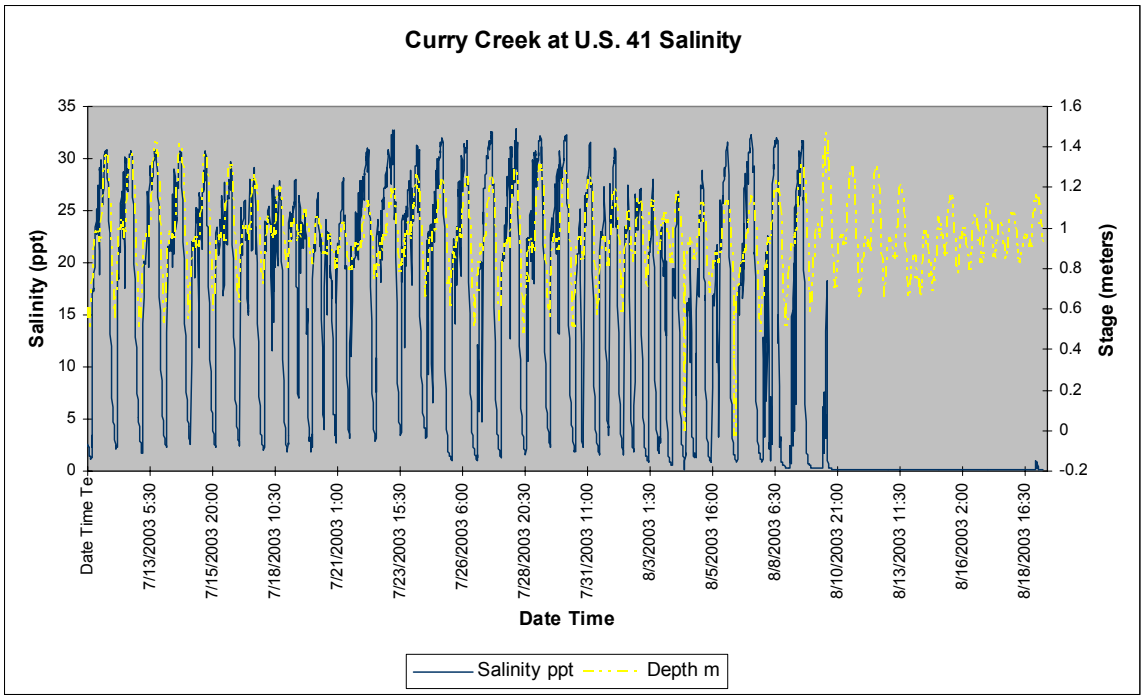


Figure 14. DARB MS-4 Monitoring Results and Avg. Daily Rainfall



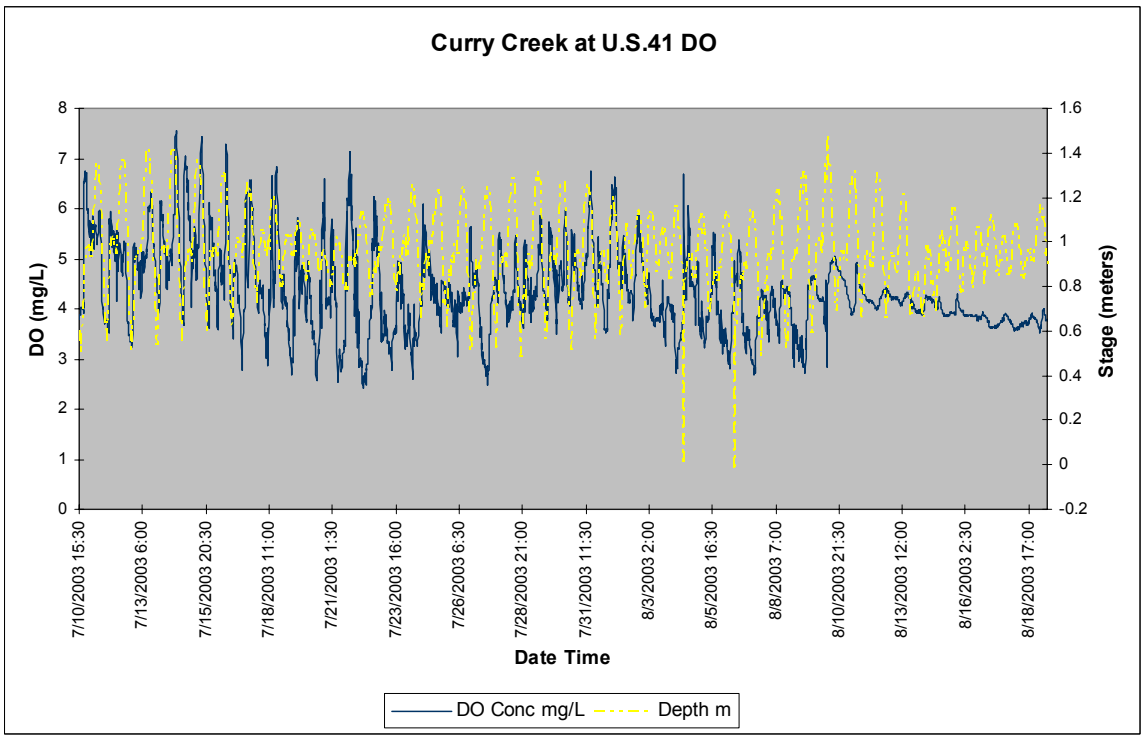


Figure 15. Datalogger Deployment at the Mouth of Curry Creek: Salinity and DO

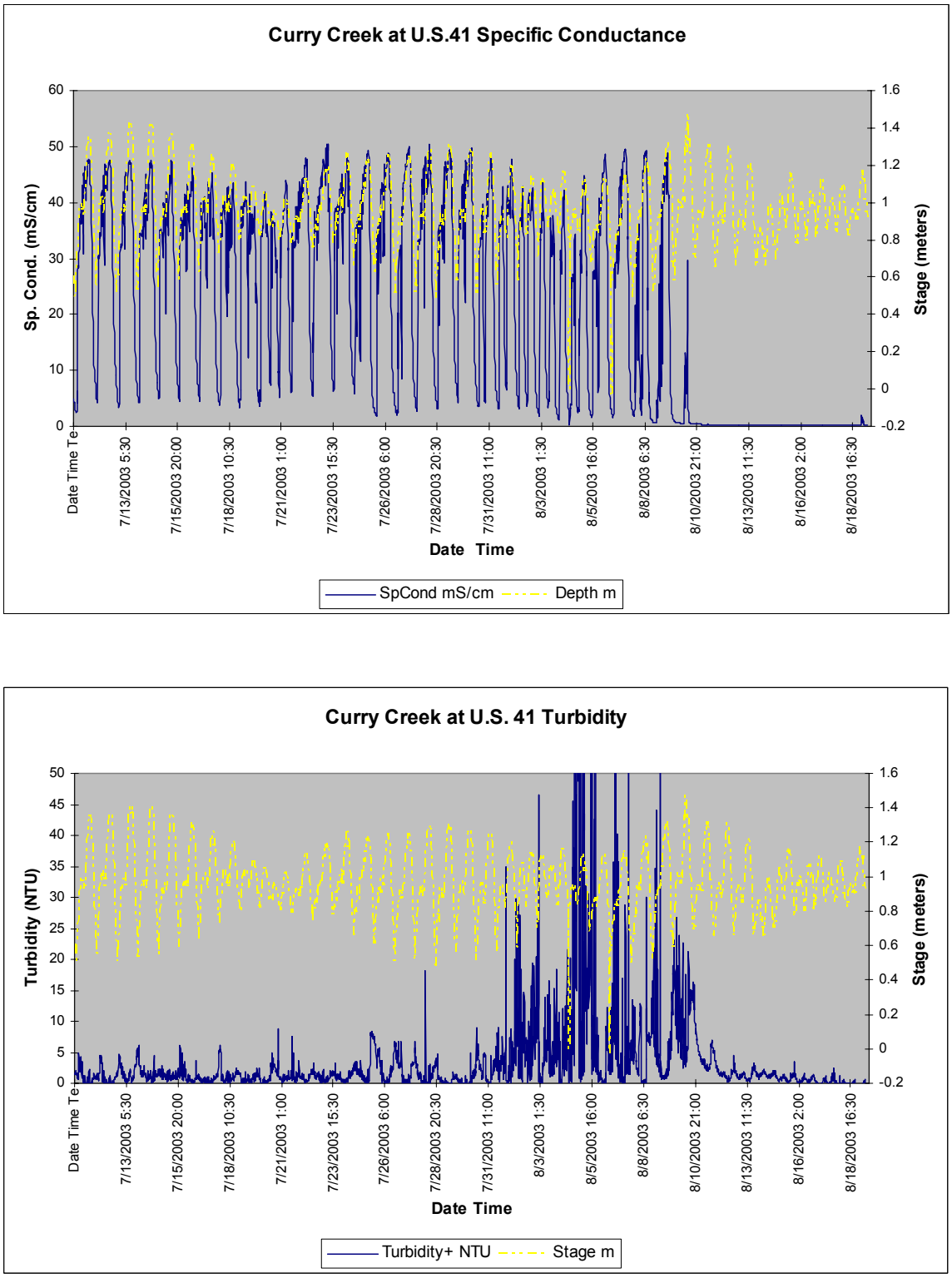
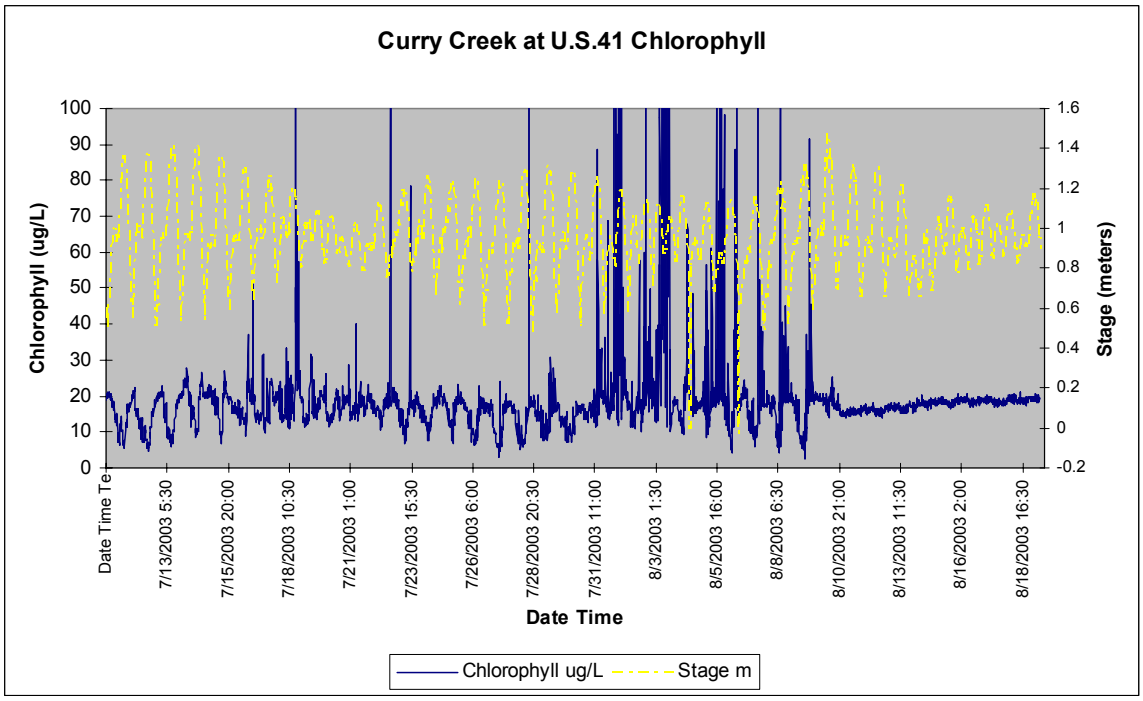


Figure 16. Datalogger Deployment at the Mouth of Curry Creek: Specific Conductance and Turbidity



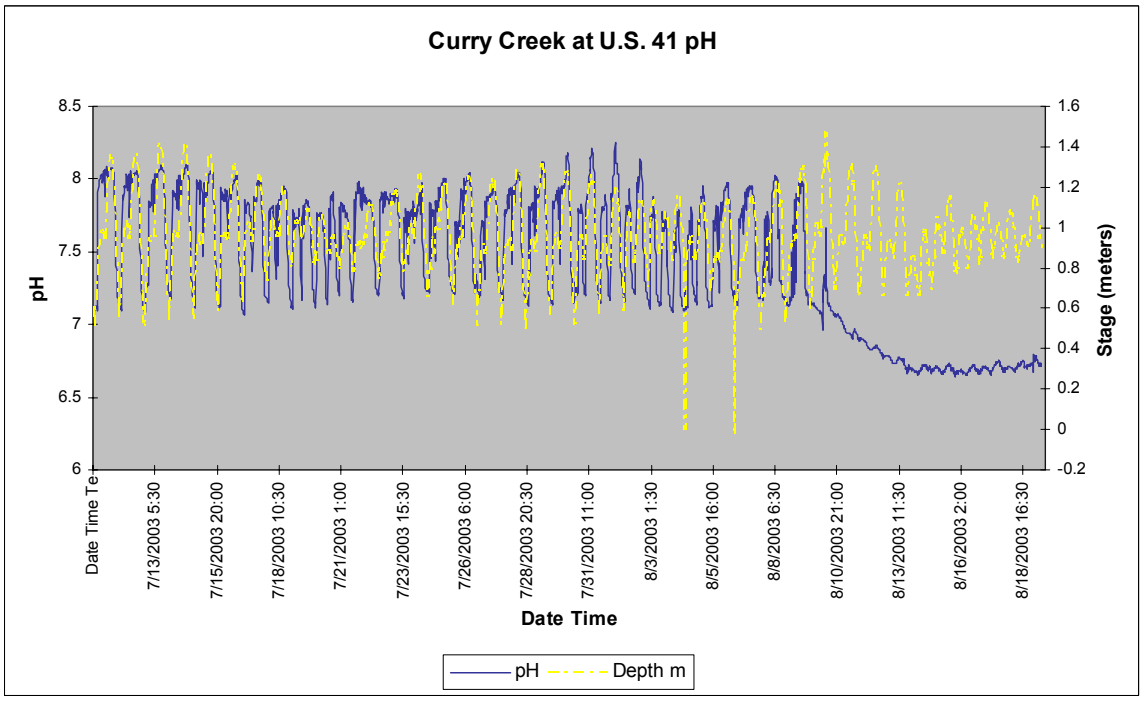


Figure 17. Datalogger Deployment at the Mouth of Curry Creek: Chlorophyll a and pH

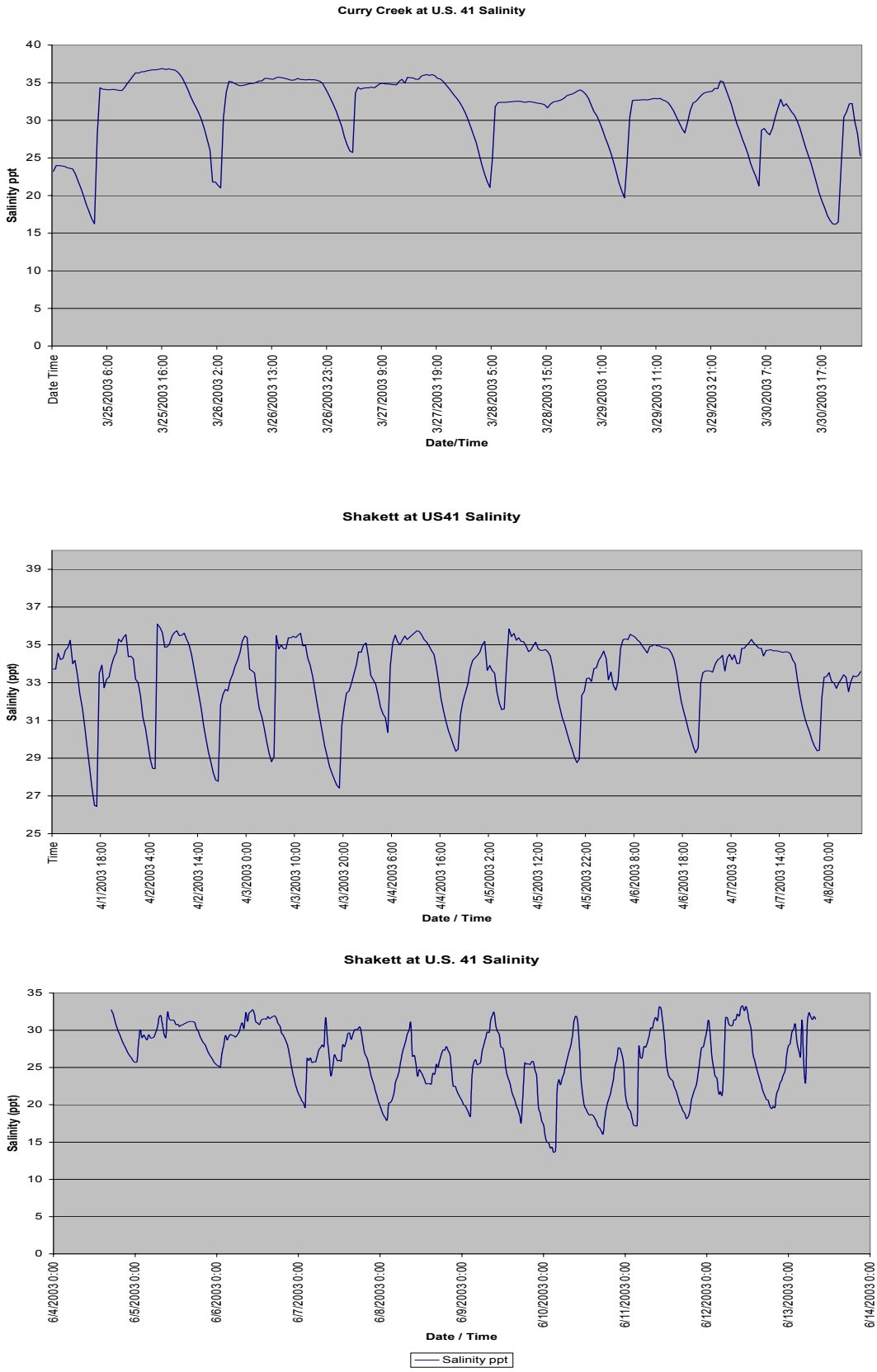


Figure 18. Spring Data Logger Salinity

Cow Pen Slough and Blackburn Canal Water Quantity and Quality

The largest freshwater input to the DARB project area is the Cow Pen Slough Canal followed by Curry Creek / Blackburn Canal. These two man made conveyance systems have increased the amount and timing of freshwater inputs to the DARB system. To illustrate the change in hydrology, Figure 19 displays the 1847 water courses and current watercourses overlaid on a county aerial. Figure 20 presents stage data and discharge from both the control structures on Cow Pen Slough Canal. The total volume of fresh water discharged across the upper cow pen slough weir between June and November 2003 was calculated at approximately 35,000 acre-feet. The data from the upstream weir was used for the calculation due to less equipment down time and more reliable data. Sarasota County has been testing Cow Pen Slough for primary and secondary drinking water standards from February 2003 through present to determine the possibility of using Cow Pen Slough as a public water source. (Sarasota County Water Resources 2003) The results indicate that the only parameters consistently above the acceptable range of values for primary and/or secondary drinking water standards were color, iron and on one occasion odor. Therefore, the large input of fresh water from Cow Pen Slough does not appear to have harmful or toxic pollutants that may affect the downstream estuarine biota.

Studies conducted on the Myakka River have estimated that discharges to Blackburn Canal are between five to ten percent of the flow on the Myakka River (USGS, 1992). For the purpose of estimating flow the USGS gage no. 02298830 located on the Myakka River near Sarasota was used for volume estimations. Figure 21 graphically illustrates the increase in discharge for Blackburn canal due to the influence of the Myakka River. The discharge values were calculated at five, seven, and ten percent of the discharge calculated at the Myakka River gage in order to see the relationship between higher and lower flow regimes. The total estimated volume of fresh water discharged into Blackburn Canal from the Myakka River from June through November 2003 ranged from 17,000 to 34,000 acre feet. The only water quality data available for Blackburn Canal was collected by FDEP as part of the strategic monitoring of water bodies that were identified as impaired on the 1998 Impaired Waters (303d) list. Data was collected on four occasions between June and October 2003 at Blackburn Canal and Capris Isles Blvd. Dissolved Oxygen was the only parameter that was consistently low during all four events. All other parameters fell within range for class III waters. The data collected during the four events did not indicate that pollutants were at levels that would adversely affect estuarine bioto.

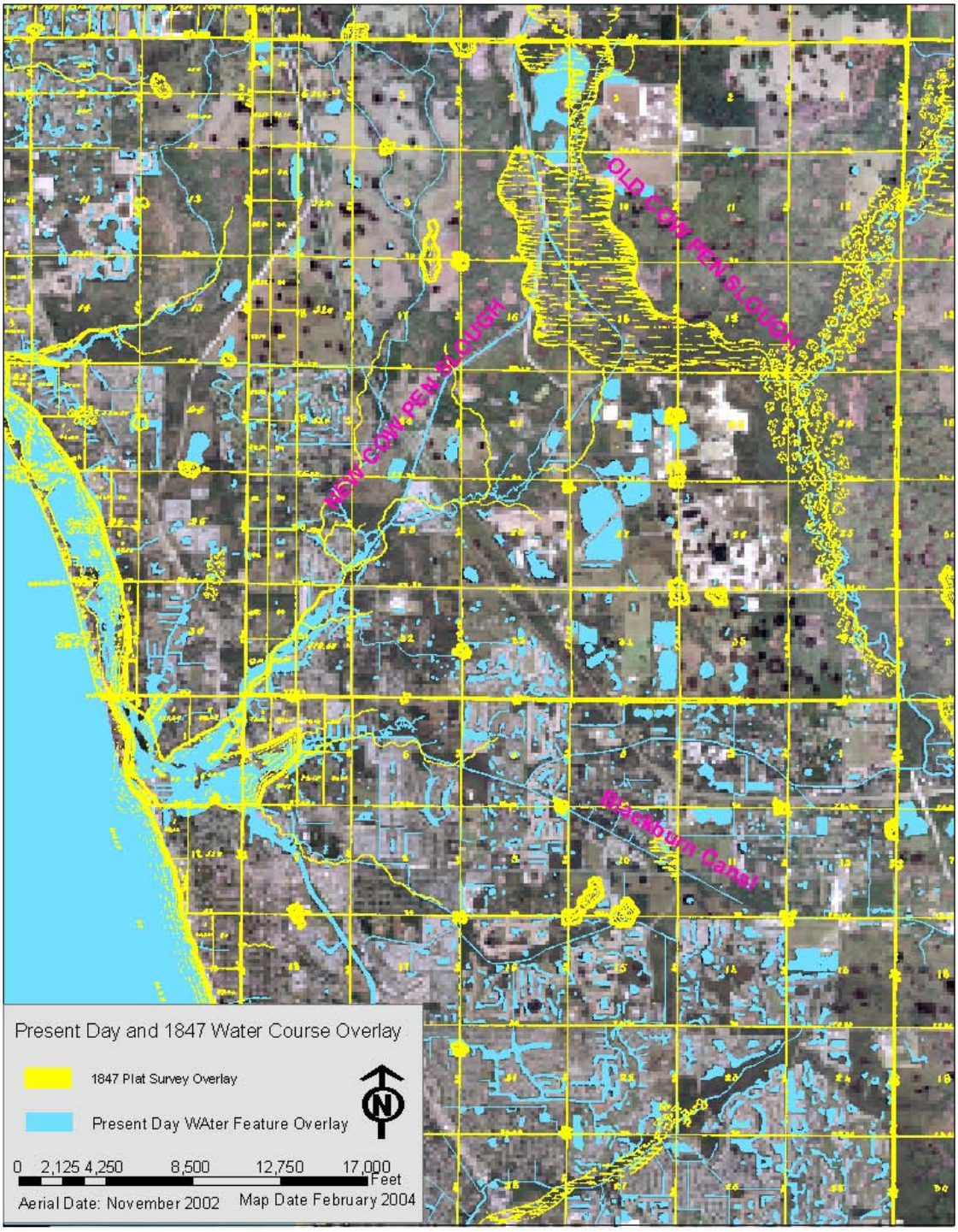
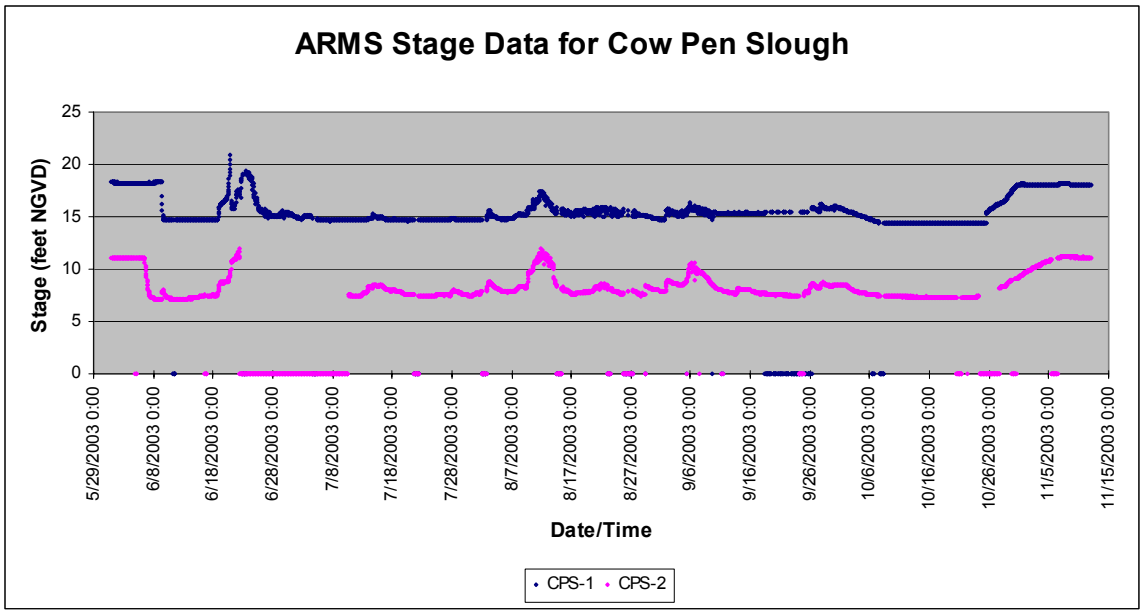


Figure 19. 1847 survey and present day water feature overlay.



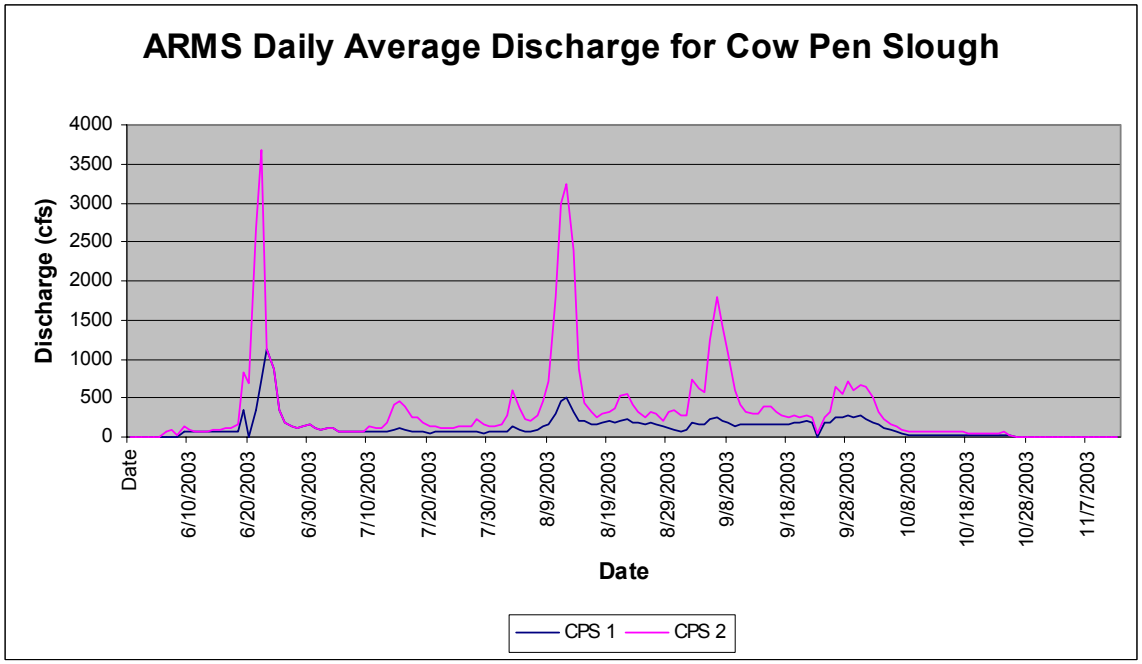
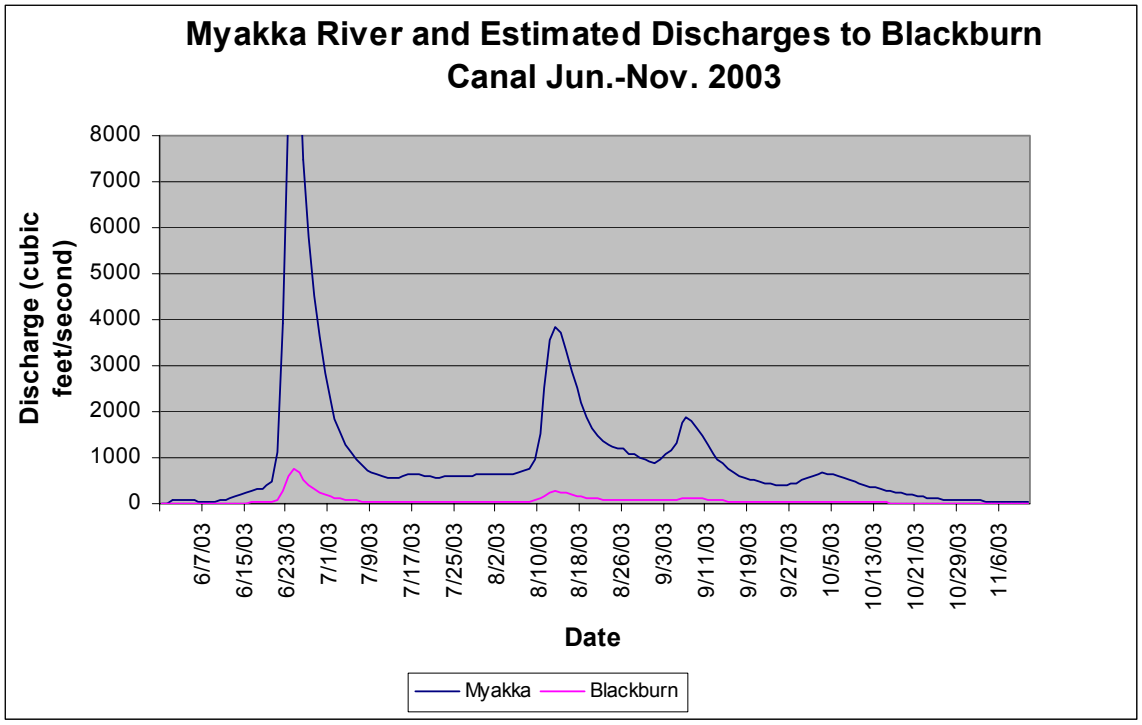


Figure 20. Stage and discharge for CPS-1 (upstream control structure) and CPS-2 (downstream control structure) on Cow Pen Slough Canal



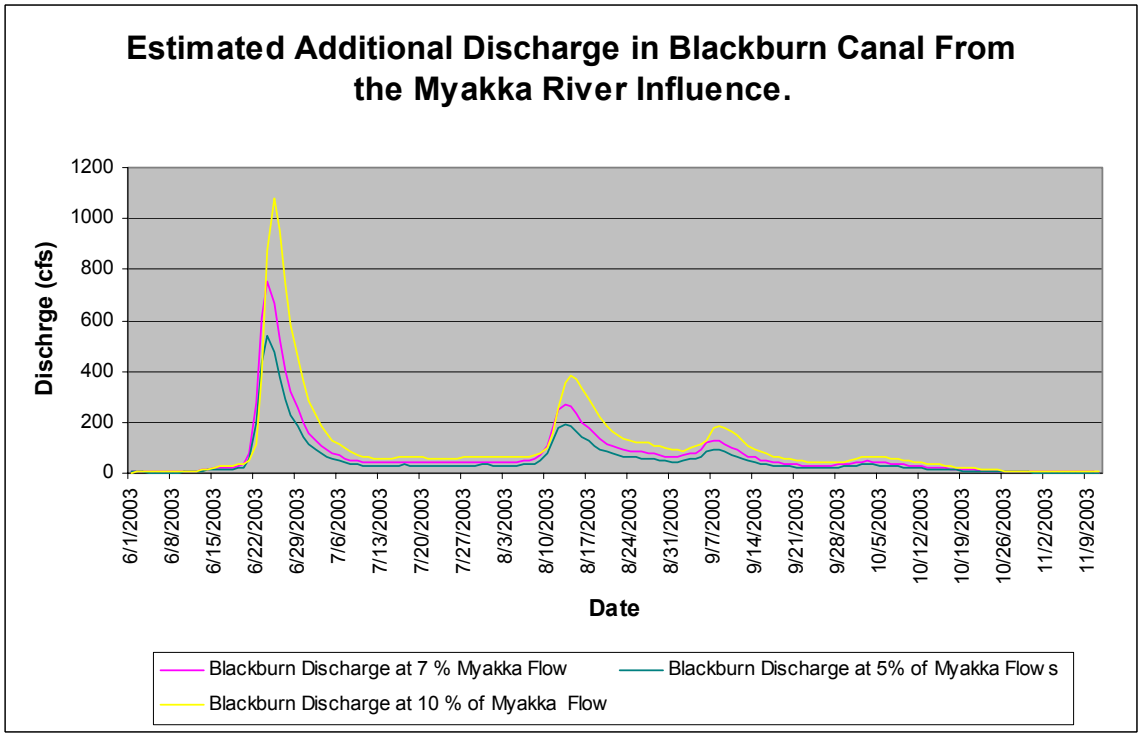


Figure 21. Calculated Discharge from the Myakka River and estimated discharge from the Myakka River to Blackburn Canal June through November 2003

Discussion

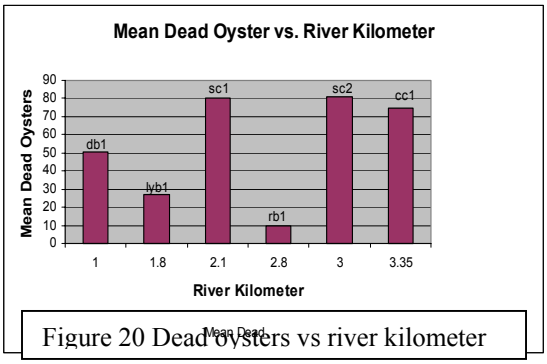
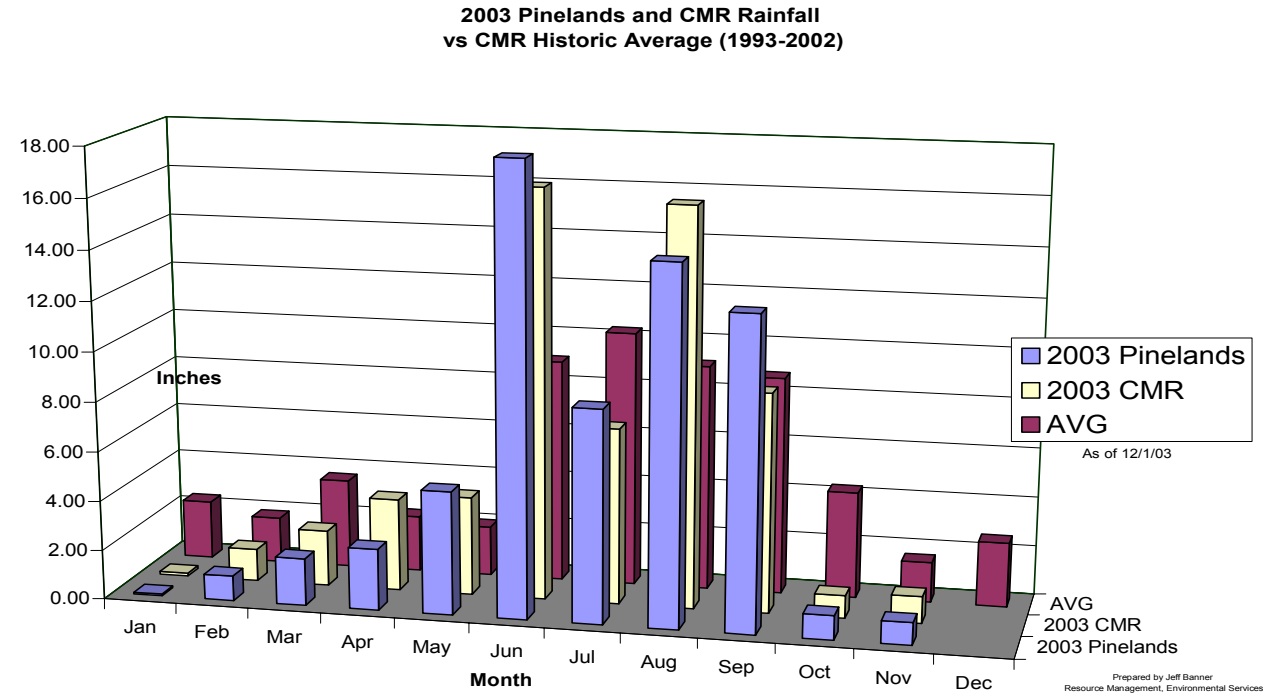


Figure 20 Dead oysters vs river kilometer

Both seagrass and oysters are aquatic biological indicator organisms with definite habitat requirements. As aquatic organisms, water quality is a primary factor in their overall health, density, and distribution. Different species of seagrass have slightly different salinity tolerances. *Halodule wrightii,* the only species of seagrass found in the DARB monitoring transects during this event, has a large range of salinity tolerance. Although seagrasses can tolerate salinity fluctuations, they prefer habitats that have salinity ranges from 24 ppt to 35 ppt. However, the ability of seagrass to conduct photosynthesis has been shown to decrease as salinity decreases. (USFWS Multi Species Recovery Plan For South Florida, 1999) Another requirement of seagrass is water clarity. Water clarity can also affect their ability to conduct photosynthesis: The Sarasota Bay National Estuary Program sponsored a study that attributed available light as the primary abiotic factor that affects seagrass health in Sarasota Bay (Dixon, Kirkpatrick, 1995). Salinity and the parameters of color, total suspended solids, and turbidity that affect water clarity showed a wide variation during the 2003 wet season. Work presented by the SFWMD indicate that seagrass depth and distribution in the Indian River Lagoon is directly correlated to available light which is reduced by increases in color and turbidity associated with large freshwater discharges to the estuary. The results from transect monitoring, visual observations of a decline in seagrass coverage during the "growing season", and water quality analysis imply that the above average rainfall during the 2003 wet season yielded an overabundance of fresh water which contributed to an environment that was unfavorable for seagrass health in the DARB system. Preliminary results from Charlotte Harbor seagrass transect monitoring also point to a shoreward retreat in the deep edge of some seagrass beds (Ott, personal conversation, 2003). A long-term monitoring program is planned for the DARB study area. Monitoring will occur quarterly instead of once a year and this schedule will provide a better understanding of the dynamic variability of seagrass health in the DARB system.

Oysters also have specific habitat requirements especially with regard to salinity. Oysters grow best at salinities from 12-20 ppt. and can tolerate salinities from 5ppt to 25 ppt (Olsen et al, 2003) Excessive valve closures and poor recruitment occur as salinities drop below 14 ppt. Adult oysters are tolerant of fresh water however, salinities of 5 ppt or lower will result in >95% mortality of juvenile oysters. High juvenile mortality can occur when exposed to low salinities for just one week. Experimental results indicate that adults can tolerate salinities as low as 5 ppt for up to eight weeks but can tolerate salinities no lower than 3 ppt for prolonged periods (Tolley et. al., 2003). DARB water quality data indicate that in locations where the highest oyster mortalities occurred, salinity dropped below 5 ppt. The MS-4 monitoring results suggest that salinity in Dona Bay remained below 5 ppt for the duration of the wet season. The meter deployment at Curry Creek suggested that salinity remained below 1 ppt for at least a ten day period in August 2003. As oyster sampling moved upstream, the percentage of dead oysters increased (Figure 20). Further evidence indicating that an overabundance of fresh water has impacted oyster habitat can be gleaned from a GIS analysis of the contributing watershed acreage into each of the bay segments where oyster sampling occurs. Lyon's Bay had the healthiest oyster beds with the most oysters as well as the highest percentage of live oysters. Lyon's Bay has the smallest contributing watershed of approximately 1,120 acres. MS-4 monitoring results indicate that Lyon's Bay also maintained the highest salinity throughout the wet season. Shakett Creek, with the largest contributing watershed, 47,564 acres, and Curry Creek / Blackburn Canal with a 6,398 acre watershed coupled with sustained wet season flows from the Myakka River watershed, claimed very few to no live oysters. Peak flows into Shakett Creek from the Cow Pen Slough Canal were as high as 2000 cubic feet per second during two of the tropical events associated with the 2003 wet season. All stations had little to no spat recruitment noted during the sampling. Preliminary results from this year's monitoring of oysters in the Caloosahatchee River to the south also indicate that impacts on oyster viability and spat recruitment occurred during the 2003 wet season. (Volety, personal conversation, 2003)

The 2003 wet season exhibited an above average amount of rainfall (Figure 22) The DARB system is an enclosed bay system with an artificially-large contributing watershed altered by increased drainage. Seasonal and event-driven salinity and water quality fluctuations appear to be extreme. This provides an environment that is not presently conducive to the long term viability and health of the two bio-indicator genera discussed in this report Whether the above average wet season or natural variability had the largest effect on bio-indicator health during this summer or whether the altered hydrology and geomorphology is not conducive to a favorable environment, is a question that needs to be addressed. The large increase in the contributing watershed from historic conditions coupled with hydrologic alterations must play a role in overall ecosystem health and change. To gage that role versus seasonal and annual variability, a consistent hydrologic and biologic monitoring program is necessary.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2003 Pinelands	0.08	1.01	1.91	2.47	4.97	17.96	8.55	14.30	12.48	0.98	0.91	
2003 CMR	0.11	1.30	2.26	3.72	3.98	16.44	7.09	15.96	8.81	0.92	1.08	
AVG	2.37	1.85	3.60	2.26	2.00	8.99	10.29	9.09	8.76	4.29	1.62	2.60

Figure 23. Area Rainfall for 2003.

Recommendations

- Identify and initiate hydrologic restoration projects where possible in the DARB watershed. Restoration projects should focus primarily on attenuating freshwater discharges to the DARB system.

- Draft a specific monitoring plan and schedule for the DARB watershed that integrates biological, hydrological and water quality monitoring. Based on collected data, set up theoretical recovery targets of bio- indicators.

- Fix the ARMS system to the point that data is accurate with no gaps. This is essential to a proper evaluation of the hydrology of DARB. Also, correct historic ARMS data through the evaluation of field notes.

- Conduct a comparative analysis on salinity fluctuations between DARB and other estuary systems with fewer alterations.

- Conduct an annual oyster spat recruitment study for the DARB system. This would involve monthly set up, collection, and counting of recruited spat on strung oyster shell from March through October. Oysters have difficulty setting spat when water is too fresh.

- Conduct a shoreline mapping project for the DARB system that follows the extent of the river kilometer system.

- Draft a voluntary "fisherman's catch survey" in order to do some statistical fish population studies. This data can be evaluated and incorporated into the annual report.

- Create a public awareness program to both discourage the building of seawalls and encourage the public to abandon seawalls and let their shorelines re-colonize with native mangroves.

- Construct a dynamic tide/flow model for the DARB system. Accurate bathymetry is essential for this function.

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Appendix A

Statistical Analysis of Oysters
Oyster Field Sampling Sheets
Seagrass field Sampling Sheets

Appendix B

MS-4 Water Quality Monitoring Results For March – June 2003
December 4, 2002 Physical Water Quality Results

Appendix A

Statistical Analysis of Oysters
Oyster Field Sampling Sheets
Seagrass field Sampling Sheets

Univariate Analysis of Variance

Between-Subjects Factors

		N
STATION	1.00	3
	2.00	3
	3.00	3
	4.00	3
	5.00	3
	6.00	3

Descriptive Statistics

Dependent Variable: PERCENT

STATION	Mean	Std. Deviation	N
1.00	79.2833	5.5824	3
2.00	16.1167	12.1682	3
3.00	7.3833	4.5435	3
4.00	70.1700	19.9812	3
5.00	.0000	.0000	3
6.00	.0000	.0000	3
Total	28.8256	34.9904	18

Levene's Test of Equality of Error Variances[a]

Dependent Variable: PERCENT

F	df1	df2	Sig.
4.335	5	12	.017

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept+STATION

Tests of Between-Subjects Effects

Dependent Variable: PERCENT

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	19615.381[a]	5	3923.076	39.288	.000
Intercept	14956.428	1	14956.428	149.784	.000
STATION	19615.381	5	3923.076	39.288	.000
Error	1198.242	12	99.854		
Total	35770.051	18			
Corrected Total	20813.624	17			

a. R Squared = .942 (Adjusted R Squared = .918)

Estimated Marginal Means

STATION

Estimates

Dependent Variable: PERCENT

STATION	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1.00	79.283	5.769	66.713	91.853
2.00	16.117	5.769	3.547	28.687
3.00	7.383	5.769	-5.187	19.953
4.00	70.170	5.769	57.600	82.740
5.00	-1.071E-15	5.769	-12.570	12.570
6.00	-1.054E-14	5.769	-12.570	12.570

Pairwise Comparisons

Dependent Variable: PERCENT

(I) STATION	(J) STATION	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1.00	2.00	63.167*	8.159	.000	45.390	80.944
	3.00	71.900*	8.159	.000	54.123	89.677
	4.00	9.113	8.159	.286	-8.664	26.890
	5.00	79.283*	8.159	.000	61.506	97.060
	6.00	79.283*	8.159	.000	61.506	97.060
2.00	1.00	-63.167*	8.159	.000	-80.944	-45.390
	3.00	8.733	8.159	.305	-9.044	26.510
	4.00	-54.053*	8.159	.000	-71.830	-36.276
	5.00	16.117	8.159	.072	-1.660	33.894
	6.00	16.117	8.159	.072	-1.660	33.894
3.00	1.00	-71.900*	8.159	.000	-89.677	-54.123
	2.00	-8.733	8.159	.305	-26.510	9.044
	4.00	-62.787*	8.159	.000	-80.564	-45.010
	5.00	7.383	8.159	.383	-10.394	25.160
	6.00	7.383	8.159	.383	-10.394	25.160
4.00	1.00	-9.113	8.159	.286	-26.890	8.664
	2.00	54.053*	8.159	.000	36.276	71.830
	3.00	62.787*	8.159	.000	45.010	80.564
	5.00	70.170*	8.159	.000	52.393	87.947
	6.00	70.170*	8.159	.000	52.393	87.947
5.00	1.00	-79.283*	8.159	.000	-97.060	-61.506
	2.00	-16.117	8.159	.072	-33.894	1.660
	3.00	-7.383	8.159	.383	-25.160	10.394
	4.00	-70.170*	8.159	.000	-87.947	-52.393
	6.00	9.474E-15	8.159	1.000	-17.777	17.777
6.00	1.00	-79.283*	8.159	.000	-97.060	-61.506
	2.00	-16.117	8.159	.072	-33.894	1.660
	3.00	-7.383	8.159	.383	-25.160	10.394
	4.00	-70.170*	8.159	.000	-87.947	-52.393
	5.00	-9.474E-15	8.159	1.000	-17.777	17.777

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Dependent Variable: PERCENT

	Sum of Squares	df	Mean Square	F	Sig.
Contrast	19615.381	5	3923.076	39.288	.000
Error	1198.242	12	99.854		

The F tests the effect of STATION. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

Post Hoc Tests

STATION

Multiple Comparisons

Dependent Variable: PERCENT

	(I) STATION	(J) STATION	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	1.00	2.00	63.1667*	8.1590	.000	35.7609	90.5724
		3.00	71.9000*	8.1590	.000	44.4942	99.3058
		4.00	9.1133	8.1590	.865	-18.2924	36.5191
		5.00	79.2833*	8.1590	.000	51.8776	106.6891
		6.00	79.2833*	8.1590	.000	51.8776	106.6891
	2.00	1.00	-63.1667*	8.1590	.000	-90.5724	-35.7609
		3.00	8.7333	8.1590	.884	-18.6724	36.1391
		4.00	-54.0533*	8.1590	.000	-81.4591	-26.6476
		5.00	16.1167	8.1590	.408	-11.2891	43.5224
		6.00	16.1167	8.1590	.408	-11.2891	43.5224
	3.00	1.00	-71.9000*	8.1590	.000	-99.3058	-44.4942
		2.00	-8.7333	8.1590	.884	-36.1391	18.6724
		4.00	-62.7867*	8.1590	.000	-90.1924	-35.3809
		5.00	7.3833	8.1590	.938	-20.0224	34.7891
		6.00	7.3833	8.1590	.938	-20.0224	34.7891
	4.00	1.00	-9.1133	8.1590	.865	-36.5191	18.2924
		2.00	54.0533*	8.1590	.000	26.6476	81.4591
		3.00	62.7867*	8.1590	.000	35.3809	90.1924
		5.00	70.1700*	8.1590	.000	42.7642	97.5758
		6.00	70.1700*	8.1590	.000	42.7642	97.5758
	5.00	1.00	-79.2833*	8.1590	.000	-106.6891	-51.8776
		2.00	-16.1167	8.1590	.408	-43.5224	11.2891
		3.00	-7.3833	8.1590	.938	-34.7891	20.0224
		4.00	-70.1700*	8.1590	.000	-97.5758	-42.7642
		6.00	.0000	8.1590	1.000	-27.4058	27.4058
	6.00	1.00	-79.2833*	8.1590	.000	-106.6891	-51.8776
		2.00	-16.1167	8.1590	.408	-43.5224	11.2891
		3.00	-7.3833	8.1590	.938	-34.7891	20.0224
		4.00	-70.1700*	8.1590	.000	-97.5758	-42.7642
		5.00	.0000	8.1590	1.000	-27.4058	27.4058

Based on observed means.

Multiple Comparisons

Dependent Variable: PERCENT

	(I) STATION	(J) STATION	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Dunnett T3	1.00	2.00	63.1667*	8.1590	.024	14.7923	111.5410
		3.00	71.9000*	8.1590	.001	50.4301	93.3699
		4.00	9.1133	8.1590	.991	.[a]	.
		5.00	79.2833*	8.1590	.007	.[a]	.
		6.00	79.2833*	8.1590	.007	.[a]	.
	2.00	1.00	-63.1667*	8.1590	.024	-111.5410	-14.7923
		3.00	8.7333	8.1590	.932	-38.1999	55.6666
		4.00	-54.0533	8.1590	.159	-138.5873	30.4806
		5.00	16.1167	8.1590	.538	.[a]	.
		6.00	16.1167	8.1590	.538	.[a]	.
	3.00	1.00	-71.9000*	8.1590	.001	-93.3699	-50.4301
		2.00	-8.7333	8.1590	.932	-55.6666	38.1999
		4.00	-62.7867	8.1590	.144	.[a]	.
		5.00	7.3833	8.1590	.410	.[a]	.
		6.00	7.3833	8.1590	.410	.[a]	.
	4.00	1.00	-9.1133	8.1590	.991	.[a]	.
		2.00	54.0533	8.1590	.159	-30.4806	138.5873
		3.00	62.7867	8.1590	.144	.[a]	.
		5.00	70.1700	8.1590	.112	.[a]	.
		6.00	70.1700	8.1590	.112	.[a]	.
	5.00	1.00	-79.2833*	8.1590	.007	.[a]	.
		2.00	-16.1167	8.1590	.538	.[a]	.
		3.00	-7.3833	8.1590	.410	.[a]	.
		4.00	-70.1700	8.1590	.112	.[a]	.
		6.00	.0000	8.1590	.	.[a]	.
	6.00	1.00	-79.2833*	8.1590	.007	.[a]	.
		2.00	-16.1167	8.1590	.538	.[a]	.
		3.00	-7.3833	8.1590	.410	.[a]	.
		4.00	-70.1700	8.1590	.112	.[a]	.
		5.00	.0000	8.1590	.	.[a]	.

Based on observed means.

*. The mean difference is significant at the .05 level.

a. Range values cannot be computed.

Homogeneous Subsets

PERCENT

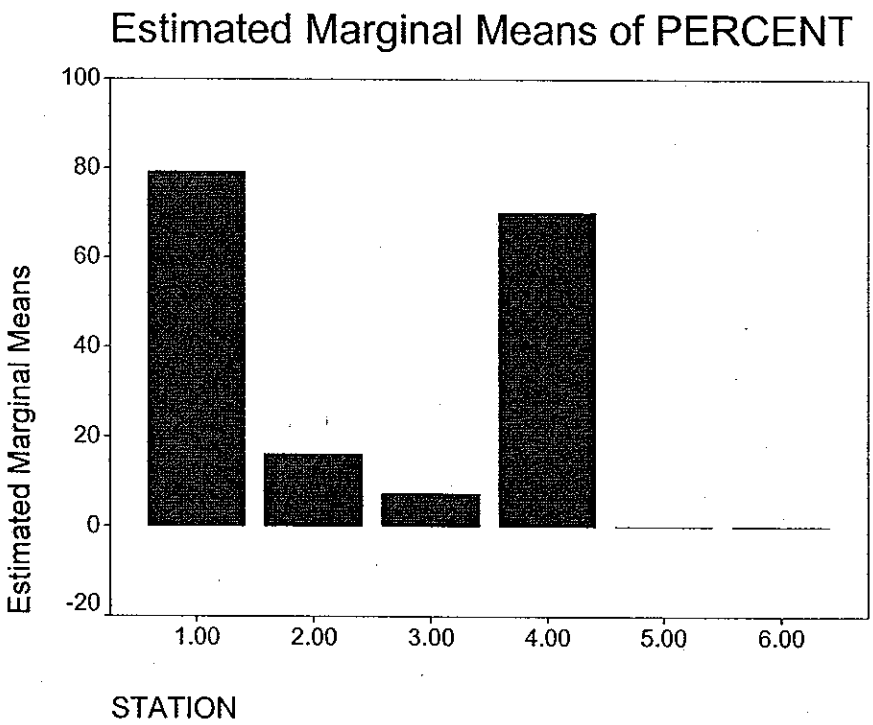
	STATION	N	Subset 1	Subset 2
Tukey HSD[a,b]	5.00	3	.0000	
	6.00	3	.0000	
	3.00	3	7.3833	
	2.00	3	16.1167	
	4.00	3		70.1700
	1.00	3		79.2833
	Sig.		.408	.865

Means for groups in homogeneous subsets are displayed.
Based on Type III Sum of Squares
The error term is Mean Square(Error) = 99.854.

a. Uses Harmonic Mean Sample Size = 3.000.

b. Alpha = .05.

Profile Plots



Univariate Analysis of Variance

Between-Subjects Factors

		N
STATION	1.00	3
	2.00	3
	3.00	3
	4.00	3
	5.00	3
	6.00	3

Descriptive Statistics

Dependent Variable: LIVE

STATION	Mean	Std. Deviation	N
1.00	109.3333	43.6616	3
2.00	14.3333	17.3877	3
3.00	7.0000	5.5678	3
4.00	37.6667	34.5881	3
5.00	.0000	.0000	3
6.00	.0000	.0000	3
Total	28.0556	44.4476	18

Levene's Test of Equality of Error Variances[a]

Dependent Variable: LIVE

F	df1	df2	Sig.
4.400	5	12	.017

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept+STATION

Tests of Between-Subjects Effects

Dependent Variable: LIVE

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	26712.944[a]	5	5342.589	9.329	.001
Intercept	14168.056	1	14168.056	24.740	.000
STATION	26712.944	5	5342.589	9.329	.001
Error	6872.000	12	572.667		
Total	47753.000	18			
Corrected Total	33584.944	17			

a. R Squared = .795 (Adjusted R Squared = .710)

Estimated Marginal Means

STATION

Estimates

Dependent Variable: LIVE

STATION	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1.00	109.333	13.816	79.230	139.436
2.00	14.333	13.816	-15.770	44.436
3.00	7.000	13.816	-23.103	37.103
4.00	37.667	13.816	7.564	67.770
5.00	6.971E-16	13.816	-30.103	30.103
6.00	-1.825E-14	13.816	-30.103	30.103

Pairwise Comparisons

Dependent Variable: LIVE

(I) STATION	(J) STATION	Mean Difference (I-J)	Std. Error	Sig.[a]	95% Confidence Interval for Difference[a]	
					Lower Bound	Upper Bound
1.00	2.00	95.000*	19.539	.000	52.428	137.572
	3.00	102.333*	19.539	.000	59.761	144.905
	4.00	71.667*	19.539	.003	29.095	114.239
	5.00	109.333*	19.539	.000	66.761	151.905
	6.00	109.333*	19.539	.000	66.761	151.905
2.00	1.00	-95.000*	19.539	.000	-137.572	-52.428
	3.00	7.333	19.539	.714	-35.239	49.905
	4.00	-23.333	19.539	.255	-65.905	19.239
	5.00	14.333	19.539	.477	-28.239	56.905
	6.00	14.333	19.539	.477	-28.239	56.905
3.00	1.00	-102.333*	19.539	.000	-144.905	-59.761
	2.00	-7.333	19.539	.714	-49.905	35.239
	4.00	-30.667	19.539	.143	-73.239	11.905
	5.00	7.000	19.539	.726	-35.572	49.572
	6.00	7.000	19.539	.726	-35.572	49.572
4.00	1.00	-71.667*	19.539	.003	-114.239	-29.095
	2.00	23.333	19.539	.255	-19.239	65.905
	3.00	30.667	19.539	.143	-11.905	73.239
	5.00	37.667	19.539	.078	-4.905	80.239
	6.00	37.667	19.539	.078	-4.905	80.239
5.00	1.00	-109.333*	19.539	.000	-151.905	-66.761
	2.00	-14.333	19.539	.477	-56.905	28.239
	3.00	-7.000	19.539	.726	-49.572	35.572
	4.00	-37.667	19.539	.078	-80.239	4.905
	6.00	1.895E-14	19.539	1.000	-42.572	42.572
6.00	1.00	-109.333*	19.539	.000	-151.905	-66.761
	2.00	-14.333	19.539	.477	-56.905	28.239
	3.00	-7.000	19.539	.726	-49.572	35.572
	4.00	-37.667	19.539	.078	-80.239	4.905
	5.00	-1.895E-14	19.539	1.000	-42.572	42.572

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

a. Adjustment for multiple comparisons: Least Significant Difference (equivalent to no adjustments).

Univariate Tests

Dependent Variable: LIVE

	Sum of Squares	df	Mean Square	F	Sig.
Contrast	26712.944	5	5342.589	9.329	.001
Error	6872.000	12	572.667		

The F tests the effect of STATION. This test is based on the linearly independent pairwise comparisons among the estimated marginal means.

Post Hoc Tests

STATION

Multiple Comparisons

Dependent Variable: LIVE

	(I) STATION	(J) STATION	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Tukey HSD	1.00	2.00	95.0000*	19.5391	.004	29.3687	160.6313
		3.00	102.3333*	19.5391	.002	36.7020	167.9646
		4.00	71.6667*	19.5391	.030	6.0354	137.2980
		5.00	109.3333*	19.5391	.001	43.7020	174.9646
		6.00	109.3333*	19.5391	.001	43.7020	174.9646
	2.00	1.00	-95.0000*	19.5391	.004	-160.6313	-29.3687
		3.00	7.3333	19.5391	.999	-58.2980	72.9646
		4.00	-23.3333	19.5391	.832	-88.9646	42.2980
		5.00	14.3333	19.5391	.974	-51.2980	79.9646
		6.00	14.3333	19.5391	.974	-51.2980	79.9646
	3.00	1.00	-102.3333*	19.5391	.002	-167.9646	-36.7020
		2.00	-7.3333	19.5391	.999	-72.9646	58.2980
		4.00	-30.6667	19.5391	.631	-96.2980	34.9646
		5.00	7.0000	19.5391	.999	-58.6313	72.6313
		6.00	7.0000	19.5391	.999	-58.6313	72.6313
	4.00	1.00	-71.6667*	19.5391	.030	-137.2980	-6.0354
		2.00	23.3333	19.5391	.832	-42.2980	88.9646
		3.00	30.6667	19.5391	.631	-34.9646	96.2980
		5.00	37.6667	19.5391	.432	-27.9646	103.2980
		6.00	37.6667	19.5391	.432	-27.9646	103.2980
	5.00	1.00	-109.3333*	19.5391	.001	-174.9646	-43.7020
		2.00	-14.3333	19.5391	.974	-79.9646	51.2980
		3.00	-7.0000	19.5391	.999	-72.6313	58.6313
		4.00	-37.6667	19.5391	.432	-103.2980	27.9646
		6.00	.0000	19.5391	1.000	-65.6313	65.6313
	6.00	1.00	-109.3333*	19.5391	.001	-174.9646	-43.7020
		2.00	-14.3333	19.5391	.974	-79.9646	51.2980
		3.00	-7.0000	19.5391	.999	-72.6313	58.6313
		4.00	-37.6667	19.5391	.432	-103.2980	27.9646
		5.00	.0000	19.5391	1.000	-65.6313	65.6313

Based on observed means.

Multiple Comparisons

Dependent Variable: LIVE

	(I) STATION	(J) STATION	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Dunnett T3	1.00	2.00	95.0000	19.5391	.218	-74.8157	264.8157
		3.00	102.3333	19.5391	.233	.[a]	.
		4.00	71.6667	19.5391	.492	-94.4846	237.8179
		5.00	109.3333	19.5391	.205	.[a]	.
		6.00	109.3333	19.5391	.205	.[a]	.
	2.00	1.00	-95.0000	19.5391	.218	-264.8157	74.8157
		3.00	7.3333	19.5391	.995	.[a]	.
		4.00	-23.3333	19.5391	.961	-163.2164	116.5498
		5.00	14.3333	19.5391	.833	.[a]	.
		6.00	14.3333	19.5391	.833	.[a]	.
	3.00	1.00	-102.3333	19.5391	.233	.[a]	.
		2.00	-7.3333	19.5391	.995	.[a]	.
		4.00	-30.6667	19.5391	.801	.[a]	.
		5.00	7.0000	19.5391	.573	.[a]	.
		6.00	7.0000	19.5391	.573	.[a]	.
	4.00	1.00	-71.6667	19.5391	.492	-237.8179	94.4846
		2.00	23.3333	19.5391	.961	-116.5498	163.2164
		3.00	30.6667	19.5391	.801	.[a]	.
		5.00	37.6667	19.5391	.668	.[a]	.
		6.00	37.6667	19.5391	.668	.[a]	.
	5.00	1.00	-109.3333	19.5391	.205	.[a]	.
		2.00	-14.3333	19.5391	.833	.[a]	.
		3.00	-7.0000	19.5391	.573	.[a]	.
		4.00	-37.6667	19.5391	.668	.[a]	.
		6.00	.0000	19.5391	.	.[a]	.
	6.00	1.00	-109.3333	19.5391	.205	.[a]	.
		2.00	-14.3333	19.5391	.833	.[a]	.
		3.00	-7.0000	19.5391	.573	.[a]	.
		4.00	-37.6667	19.5391	.668	.[a]	.
		5.00	.0000	19.5391	.	.[a]	.

Based on observed means.

*. The mean difference is significant at the .05 level.

a. Range values cannot be computed.

Homogeneous Subsets

LIVE

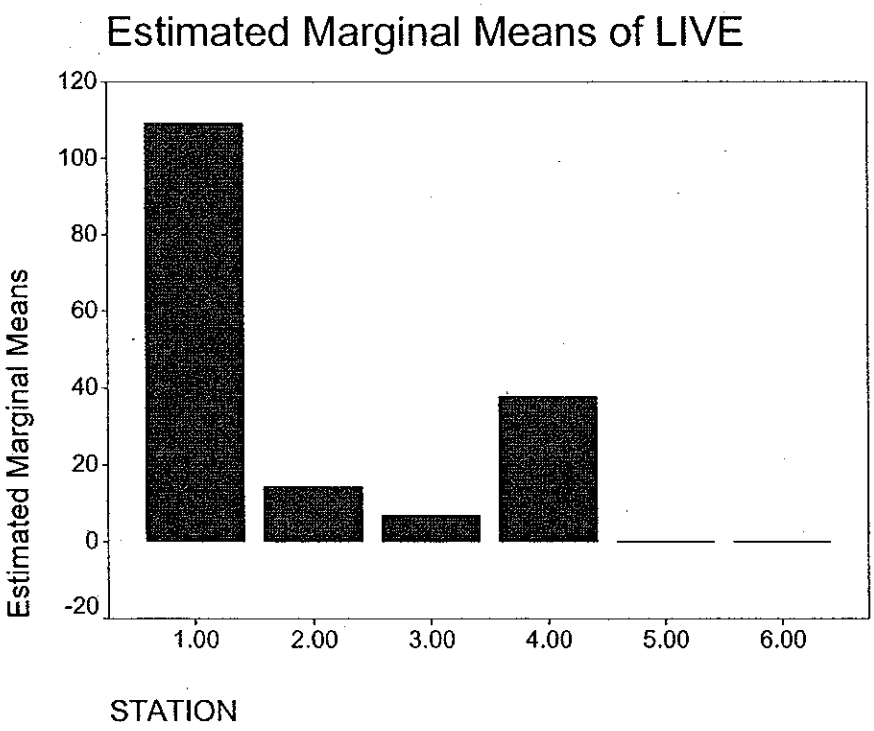
	STATION	N	Subset 1	Subset 2
Tukey HSD[a,b]	5.00	3	.0000	
	6.00	3	.0000	
	3.00	3	7.0000	
	2.00	3	14.3333	
	4.00	3	37.6667	
	1.00	3		109.3333
	Sig.		.432	1.000

Means for groups in homogeneous subsets are displayed.
Based on Type III Sum of Squares
The error term is Mean Square(Error) = 572.667.

a. Uses Harmonic Mean Sample Size = 3.000.

b. Alpha = .05.

Profile Plots



Oyster Sampling

Date: 10/8/2003 Samplers Michael Jones and Joe Jacobson

Location: DARB study area

Est. Tide High falling Weather Clear to slightly overcast

Date Time	Bed No. I.D.	Quadrat (1,2)	Live No.	Dead No.	Spat No.	Longest 5 Live (cm)	GPS pt. (y,n)	DO (mg/L)	pH	Sp. Cond (uS/cm)	Temp. ©	Salinity (ppt)	Depth (cm)	River Kilo#
10/8/03 1130	lyb1	1	68	25	0	6,6,6,6,7	y	6.12	7.95	47780	27.78	31.01	55	1.8
10/8/03 1145	lyb1	2	155	37	1		y						54	
10/15/03 1040	lyb1	3	105	20	6	6,6,7,7,8	y	5.02	7.89	51300	28.35	33.64	0	
10/8/03 1305	db1	1	1	16	0	4	y	6.48	7.76	33750	29.41	21.08	64	1
10/8/03 1330	db1	2	8	54	0	3,3,3,4,2	y						51	
10/15/03 1140	db1	3	34	81	0	3,3,3,4,5,		8.72	7.73					
10/8/03 1345	sc1	1	6	73	0	6,5,3,3,2	y	6.88	7.68	24510	30.32	15.1	31	2.1
10/8/03 1405	sc1	2	13	97	0	6,5,5,4,3	y						55	
10/15/2003 1220	SC1	3	2	71		3,2	y	7.91	7.73	23.83	28.62	14.35	20	
10/8/03 1440	rb1	1	24	12	0	9,9,7,6,5	y	6.3	7.89	43260	29.42	28.17	47	2.8
10/8/03 1450	rb1	2	77	7	0	7,6,6,5,4	n						40	
10/15/03 1400	rb1	3	12	11	12	2,2,3,3,2	y	6.73	7.77	39150	28.92	24.87	18	
10/8/03 1515	cc1	1	0	24	0		y	5.65	7.19	12520	29.66	7.17	51	3.35
10/8/03 1520	cc1	2	0	69	0		n						42	
10/15/03 1415	cc1	3	0	131	0		Y	6.47	7.33	6600	29.87	3.67	10	
10/15/03 1300	SC2	1	0	69	0		N	8	7.68	21610	28.68	12.95	3	3
10/15/03 1315	SC2	2	0	119	0		Y							
10/15/03 1330	SC2	3	0	54	0		N							

Comments:

SC1: counting only oysters above the submerged level(green others pale white)

RB1:- Lots of siltation on oysters.

All WQ parameters at 8" below surface

One GPS pt for CC! and RB1

3rd quadrats and the station SC2 were added a week later and were done during low tide. Some beds wee exposed.

Date: 10-9-03

Oyster Sampling

Samplers: [illegible], MJ

Location: LB1

Est. Tide: [illegible]

Weather: [illegible]

	Bed No. I.D.	Quadrat (1,2)	Live No.	Dead No.	Spat No.	Longest 5 Live (cm)	GPS pt. (y,n)	DO (mg/L)	pH	Sp. Cond (uS/cm)	Temp. ©	Depth (cm)	
[illegible]	LB1	1	68	[illegible]	0	[illegible]	y	6.12	[illegible]	[illegible]	[illegible]	55	[illegible]
[illegible]	LB1	2	[illegible]	[illegible]	1		y					54	
		[illegible]	[illegible]	[illegible]									
.05	DB1	1	1	16	0	9	y	6.48	7.76	33750	29.41	64	21.0
[illegible]	DB1	2	8	54	0	3.3, 3, 4.2	y					51	
.95	[illegible]	1	6	73	0	[illegible]	y	[illegible]	7.29	[illegible]	[illegible]	31	[illegible]
105	[illegible]	2	13	97	0	6, 5, [illegible], 4.2	y					55	
140	RB1	1	24	12	0	9, [illegible], 7, 6, 5	y	6.20	[illegible]	[illegible]	29.42	47	29.17
150	RB1	2	77	7	0	7, [illegible], 4	y					40	
515	[illegible]	1	0	24	0	—	[illegible]	[illegible]	7.19	[illegible]	29.66	51	7.17
[illegible]	[illegible]	2	0	69	0	—	[illegible]					42	

Comments:

[illegible]

RB1 [illegible]

All [illegible] surface

[illegible]

[illegible]

Oyster Sampling

Date: 10/8/2003 Samplers Michael Jones and Joe Jacobson

Location: DARB study area

Est. Tide High falling Weather Clear to slightly overcast, Turning clear with Northerly breezes < 10 Kn

Date Time	Bed No. I.D.	Quadrat (1,2)	Live No.	Dead No.	Spat No.	Longest 5 Live (cm)	GPS pt. (y,n)	DO (mg/L)	pH	Sp. Cond (uS/cm)	Temp. ©	Salinity (ppt)	Depth (cm)	River Kilo#
10/8/03 1130	lyb1	1	68	25	0	6,6,6,6,7	y	6.12	7.95	47780	27.78	31.01	55	1.8
10/8/03 1145	lyb1	2	155	37	1		y						54	
10/15 1040	lyb1	3	105	20	6	6,6,7,7,8	R101509A	5.02	7.89	51,300	22.35	33.64	0	
10/8/03 1305	db1	1	1	16	0	4	y	6.48	7.76	33750	29.41	21.08	64	1
10/8/03 1330	db1	2	8	54	0	3,3,3,4,2	y						51	
10/15 1140	db1	3	34	91	0	3,3,3,4,5	y	8.72	7.94	32,410	28.47	20.12	8	
10/8/03 1345	sc1	1	64	73	0	6,5,3,3,2	y	6.88	7.68	24510	30.32	15.1	31	2.1
10/8/03 1405	sc1	2	138	97	0	6,5,5,4,3	y						55	
10/15 1220	sc1	3	2	71			y	7.91	7.73	23930	28.62	14.35	20	
10/8/03 1440	rb1	1	24	12	0	9,9,7,6,5	y	6.3	7.89	43260	29.42	28.17	47	2.8
10/8/03 1450	rb1	2	77	7	0	7,6,6,5,4	n						40	
10/15 1400	rb1	3	12	11	12	2,2,2,2,2	y	6.73	7.77	34150	28.92	24.87	18	
10/8/03 1515	cc1	1	0	24	0		y	5.65	7.19	12520	29.66	7.17	51	3.35
10/8/03 1520	cc1	2	0	69	0		n						42	
10/15 1415	cc1	3	0	131	0	0	y	6.47	7.33	6600	29.87	3.67	10	
10/15	SC2	1		109	0	0	same point	8.02	7.68	21,610	28.68	12.95	3	
10/15	SC2	2	0	119	0	0								
10/15	SC2	3	0	54	0	0								

Comments: SC1: counting only oysters above the submerged level(green others pale white)
RB1:- Lots of siltation on oysters.
All WQ parameters at 8" below surface
One GPS pt for CC1 and RB1
3rd quadrat was done during low tide + top of beds were out of H2O

Charlotte Harbor Aquatic Preserve - Seagrass Data Sheet (Modified from SWFWMD - SWIM) Page___of___

Date: 10/3/03	Site (Transect) #: RB1	Crew: JS, MS	Weather:
Offset from flagging_____m	Sonde:		FLUCS:
Species: (H) Halodule, (R) Ruppia, (T) Thalassia, (S) Syringodium, (HE) Halophilia, (AA) Attached Algae, (DA) Drift Algae			Tide Start: / Tide End:
Abundance: r = solitary, + = few, 1 = <5% cover, 2 = 5-25% cover, 3 = 26-50% cover, 4 = 51-75% cover, 5 = 76-100%			Compass Heading:
Epiphyte Density: 1 = clean, 2 = light, 3 = moderate, 4 = heavy	Site Location Comments:		Photo #:
Sediments: 1 = shelly sand, 2 = sand, 3 = muddy sand, 4 = muck			

General Comments:

Station (m)	Time	Depth (cm)	Species #	Abundance #	Blade Lengths (5)	Labrynt Shoot#	Epiphyte Density	Epiphyte Descript.	Sediment #	Shoot Density (3)	Salinity	DO	Temp.	PAR (X)	Secchi (m)	Station Comments
44		93	H	1	2,3,2,H,2	-	3		3					X		Crush + Epiphyte
88		110	H	+	3,4,5,2,3	-	2		3		-	-	-	X		Secchi to bottom
																WATER

May be mid bed, edge of bed, or a Blaun Blanquet m^2 placement for abundance estimate.
Seagrass description at mid bed, edge of bed, and 50 meter intervals (where coverage is present).
Water column data and PAR sample taken at mid bed and edge of bed.

PAR Calculations:

Water Depth: 88

	AIR	WATER
surface		- 210
40 cm		- 320
60 cm		- 270
80 cm		- 230

	AIR	WATER
surface		470
40 cm		160
60 cm		90
80 cm		

outer edge

next continued

Charlotte Harbor Aquatic Preserve - Seagrass Data Sheet (Modified from SWFWMD - SWIM) Page ___ of ___

Date: [illegible]	Site (Transect) #: DB1	Crew: [illegible]	Weather: [illegible]
Offset from flagging 25 m	Sonde:		FLUCS:
Species: (H) Halodule, (R) Ruppia, (T) Thalassia, (S) Syringodium, (HE) Halophilia, (AA) Attached Algae, (DA) Drift Algae		Tide Start:	Tide End:
Abundance: r = solitary, + = few, 1 = <5% cover, 2 = 5-25% cover, 3 = 26-50% cover, 4 = 51-75% cover, 5 = 76-100%		Compass Heading: [illegible]	
Epiphyte Density: 1 = clean, 2 = light, 3 = moderate, 4 = heavy	Site Location Comments:		Photo #:
Sediments: 1 = shelly sand, 2 = sand, 3 = muddy sand, 4 = muck			

General Comments:

Station (m)	Time	Depth (cm)	Species #	Abundance #	Blade Lengths (5)	Labrynt Shoot#	Epiphyte Density	Epiphyte Descript.	Sediment #	Shoot Density (3)	Salinity	DO	Temp.	PAR (X)	Secchi (m)	Station Comments
26	1000	27	H	1	7,4,4,5,7	-	2	-	3	2	-	-	-			Mud Bottom
45		30	H	1	5,5,6,4,5		2		3	0						"
65		42	H	1	7,6,7,5,4		3		3	3						Mud Bottom
																WATER

May be mid bed, edge of bed, or a Blaun Blanquet m² placement for abundance estimate.
Seagrass description at mid bed, edge of bed, and 50 meter intervals (where coverage is present).
Water column data and PAR sample taken at mid bed and edge of bed.

PAR Calculations:

Water Depth: 30

	AIR	WATER
surface		- 1 44
40 cm		
~~20~~ ~~60 cm~~		- 700 mth.
80 cm		

Mid-bed

	AIR	Water
surface		- 1920
40 cm		- 2 28
60 cm		
80 cm		

Mid. Edge

Charlotte Harbor Aquatic Preserve - Seagrass Data Sheet (Modified from SWFWMD - SWIM) Page___of___

Date: 10/03/03	Site (Transect) #: LYB1	Crew: JAJ MSJ	Weather: Clear / High clouds
Offset from flagging 26 m	Sonde:		FLUCS:
Species: (H) Halodule, (R) Ruppia, (T) Thalassia, (S) Syringodium, (HE) Halophilia, (AA) Attached Algae, (DA) Drift Algae		Tide Start:	Tide End:
Abundance: r = solitary, + = few, 1 = <5% cover, 2 = 5-25% cover, 3 = 26-50% cover, 4 = 51-75% cover, 5 = 76-100%		Compass Heading: 195°	
Epiphyte Density: 1 = clean, 2 = light, 3 = moderate, 4 = heavy	Site Location Comments:		Photo #:
Sediments: 1 = shelly sand, 2 = sand, 3 = muddy sand, 4 = muck			

General Comments:

Station (m)	Time	Depth (cm)	Species #	Abundance #	Blade Lengths (5)	Labrynt Shoot#	Epiphyte Density	Epiphyte Descript.	Sediment #	Shoot Density (3)	Salinity	DO	Temp.	PAR (X)	Secchi (m)	Station Comments
26	1150	80	H	+	4,5,3,5,5	?	1	-	3		No use meter					New shoots
39	1200	77	H	+	5,6,3,3,4		1		3							
																WATER

May be mid bed, edge of bed, or a Blaun Blanquet m² placement for abundance estimate.
Seagrass description at mid bed, edge of bed, and 50 meter intervals (where coverage is present).
Water column data and PAR sample taken at mid bed and edge of bed.

PAR Calculations:

Water Depth:

	AIR	WATER
surface		-909
40 cm		-590
60 cm		
77 80 cm		-253 bott. DM

	AIR	
surface		
40 cm		
60 cm		
80 cm		

Appendix B

MS-4 Water Quality Monitoring Results For March – June 2003
December 4, 2002 Physical Water Quality Results

MOTE MARINE LABORATORY

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Kumar Mahadevan, Ph.D.
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Mote Aquaculture Park • 12300 Fruitville Road • Sarasota, FL 34240

July 29, 2003

Ms. Laura Ammeson
Sarasota County
Air and Water Quality Protection
2817 Cattlemen Road
Sarasota, FL. 34232

Dear Ms. Ammeson,

Enclosed are the data tables from the April 2003 sampling of Sarasota Bay and the Myakka River that Mote Marine Laboratory is performing for Sarasota County. Magnetic data are enclosed as an Excel 9.0 file (SBMN0403.XLS) which will generate the attached tables. Data are organized as five tables with descriptions which follow.

Mid-Day *in situ* profiles	6 pages
Station locations and water clarity	2 pages
Water quality analyses	2 pages
Weather conditions during samplings	1 page
Hydrolab Minisonde continuous deployments	4 pages each
Custody sheets for water quality samples	5 pages

The continuous Hydrolab data was gathered from stations 10-5 and 8-1 of the North Bay segment during this sampling. Diurnal fluctuation of dissolved oxygen concentration was low at station 8-1 and ranged between 5.9 - 6.9 mg/L with a percent saturation of dissolved oxygen of 88 - 105%. At station 10-5, the fluctuations of dissolved oxygen concentration was between 4.2 - 8.2 mg/L. Percent saturations of dissolved oxygen of this station ranged between 58 - 124%.

In Aprilr, Mote Marine Laboratory also participated in Regional Ambient Monitoring Program and collected a water sample for analysis. The data and custody sheet for this effort are also enclosed in this report. Magnetic data are enclosed as an Excel 9.0 file (ramp0403.XLS).

Please don't hesitate to call if I may answer any further questions regarding these data.

Sincerely,

ANissanka

Ari Nissanka D.Sc.
Senior Chemist
Enclosures AN:mig

Sarasota Bay / Myakka River Status and Trends Monitoring
Mid-Day *In Situ* Profiles

Station	Date (mmddyy)	Time (EST)	Sample Depth (m)	Salinity (PSU)	Specific Conductance (mmhos/cm)	Temperature (Deg C)	pH (SU)	Dissolved Oxygen (mg/l)	D.O. Percent Saturation (%)
DR-1	042203	1300	0.2	35.4	53.45	26.44	7.93	5.88	90.4
DR-1	042203	1301	0.7	35.6	53.77	25.85	7.98	6.20	94.5
DR-1	042203	1303	1.2	36.0	54.26	25.20	8.04	6.80	102.8
DR-2	042203	1221	0.2	35.0	52.99	26.25	7.93	5.99	91.7
DR-2	042203	1222	0.7	35.5	53.57	25.96	7.96	6.00	91.5
DR-2	042203	1224	1.2	35.9	54.11	25.67	7.99	6.19	94.2
DR-3	042203	1328	0.2	35.7	53.94	24.41	8.03	6.56	97.4
DR-3	042203	1329	1.0	35.9	54.22	24.30	8.05	6.53	97.0
DR-3	042203	1331	2.3	35.9	54.17	24.29	8.05	6.56	97.4
DR-4	042203	1140	0.2	35.0	52.97	25.32	7.94	6.24	93.8
DR-4	042203	1142	1.0	35.2	53.20	25.17	7.95	6.14	92.2
DR-4	042203	1143	3.1	35.2	53.25	25.14	7.96	6.21	93.3
DR-5	042203	1049	0.2	33.8	51.28	25.97	7.77	5.42	81.1
DR-5	042203	1055	1.0	33.9	51.49	25.83	7.78	5.21	78.6
DR-5	042203	1056	3.1	34.0	51.62	25.83	7.78	5.20	78.5

arine Laboratory
hompson Parkway
ota, FL 34236
) 388-4441
DH#E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Station Locations and Water Clarity

Station	Date	Time	Ideal Station Location		Actual Station Location		Depth	Secchi	Water	Attenuation
			Latitude	Longitude	Latitude	Longitude	Overall	Depth	Quality	Coefficient
	(mmddyy)	(EST)	(degrees)	(degrees)	(degrees)	(degrees)	(m)	(m)	Sample	(m^{-1})
ML-1	042303	1229	27.03944	-82.28528	27.04007	-82.28515	1.3	>B	030358	1.68
ML-2	042303	1209	27.02833	-82.27444	27.02885	-82.27333	1.0	0.8	030362	1.64
ML-3	042303	1154	27.03056	-82.27250	27.03015	-82.27233	1.3	>B	030364	1.51
ML-4	042303	1139	27.02500	-82.27139	27.02493	-82.27227	0.8	>B	030363	1.59
ML-5	042303	1119	27.01167	-82.26944	27.01185	-82.26937	1.8	1.5	030356	1.62
MU-1	042303	1424	27.09083	-82.32750	27.08918	-82.32730	2.0	>B	030357	1.80
MU-2	042303	1404	27.08000	-82.31944	27.07972	-82.31877	1.8	>B	030359	1.62
MU-3	042303	1348	27.07139	-82.31667	27.07228	-82.31573	1.7	1.8	030365	1.78
MU-4	042303	1323	27.05583	-82.30472	27.05672	-82.30392	1.2	1.0	030355	1.77
MU-5	042303	1307	27.05167	-82.29806	27.05332	-82.29845	1.1	>B	030361	1.70
DR-1	042203	1300	27.12140	-82.46350	27.12145	-82.46340	1.4	1.0	030381	0.33
DR-2	042203	1221	27.11710	-82.45270	27.11713	-82.45258	1.4	>B	030378	0.06
DR-3	042203	1328	27.11560	-82.46540	27.11538	-82.46577	2.5	>B	030380	0.19
DR-4	042203	1140	27.10120	-82.44120	27.10112	-82.44110	3.3	2.0	030382	0.47
DR-5	042203	1049	27.06540	-82.43240	27.06527	-82.43253	3.3	1.8	030379	0.57

Mote Marine Laboratory
1600 Thompson Parkway
Sarasota, FL 34236
(941) 388-4441
FDH#E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Water Quality Analyses

Station	Sample Depth	Time (EST)	Sample Number	Date (mmddyy)	NH_4-N Diss (mg/l)	NO_{23}-N Diss (mg/l)	Inorg N Diss (mg/l)	NO_{23}-N (mg/l)	TKN (mg/l)	Total N (mg/l)	PO_4-P Diss (mg/l)	Total P (mg/l)	BOD_5 (mg/l)	TSS (mg/l)	VSS (mg/l)	Turbidity (NTU)	Color Apparent (PCU)	Color pH (su)	Chl a Corr (mg/m3)	Salinity Field (PSU)
16-1	MID	1444	030371	4/22/03	0.023	U0.005	0.026	U0.005	0.20	0.20	0.017	0.15	0.9	14	NA	4.4	9	8.23	2.73	34.8
16-1 REP	MID	1454	030370	4/22/03	0.016	U0.005	0.019	U0.005	0.28	0.28	0.017	0.13	0.9	8	NA	2.8	8	8.21	2.11	NA
16-2	1.0M	1428	030368	4/22/03	0.017	U0.005	0.020	U0.005	0.24	0.24	0.015	0.13	0.7	5	NA	2.1	9	8.24	1.54	35.1
16-3	1.0M	1412	030369	4/22/03	0.019	U0.005	0.022	U0.005	0.18	0.18	0.013	0.12	U0.5	8	NA	1.6	7	8.18	0.83	35.4
16-4	1.0M	1358	030367	4/22/03	0.020	U0.005	0.023	U0.005	0.22	0.22	0.013	0.12	0.6	4	NA	1.1	7	8.24	0.73	35.7
16-5	1.0M	1335	030375	4/22/03	0.034	0.005	0.039	U0.005	U0.05	U0.05	0.011	0.12	U0.5	4	NA	0.75	3	8.21	0.37	35.7
LB-1	MID	1245	030376	4/22/03	0.020	U0.005	0.023	U0.005	0.24	0.24	0.045	0.21	1.2	12	NA	4.1	20	7.96	5.69	33.1
LB-2	1.0M	1227	030366	4/22/03	0.025	U0.005	0.028	U0.005	0.42	0.42	0.061	0.23	1.2	9	NA	4.1	27	7.91	3.68	32.7
LB-3	MID	1211	030374	4/22/03	0.027	U0.005	0.030	U0.005	0.38	0.38	0.067	0.28	1.5	12	NA	5.3	27	7.98	3.81	32.9
LB-4	1.0M	1152	030373	4/22/03	0.031	0.005	0.036	U0.005	0.33	0.33	0.047	0.21	1.1	12	NA	2.8	15	8.17	2.80	34.1
LB-5	MID	1130	030372	4/22/03	0.026	U0.005	0.028	U0.005	0.31	0.31	0.031	0.16	1.2	12	NA	3.1	18	8.33	2.39	34.6
ML-1	MID	1229	030358	4/23/03	U0.005	U0.005	0.005	U0.005	0.69	0.69	0.114	0.20	1.4	5	NA	2.9	90	7.56	4.89	9.21
ML-2	MID	1209	030362	4/23/03	0.006	U0.005	0.009	U0.005	0.69	0.69	0.107	0.19	1.6	10	NA	3.6	80	7.64	6.87	9.79
ML-3	MID	1154	030364	4/23/03	U0.005	U0.005	0.005	U0.005	0.64	0.64	0.101	0.18	1.8	5	NA	2.8	80	7.68	7.38	11.7
ML-4	MID	1139	030363	4/23/03	U0.005	U0.005	0.005	U0.005	0.68	0.68	0.102	0.18	1.6	7	NA	3.4	75	7.68	5.80	11.0
ML-5	MID	1108	030356	4/23/03	U0.005	U0.005	0.005	U0.005	0.67	0.67	0.099	0.19	2.1	8	NA	3.8	80	7.77	5.53	12.8
ML-5 REP	MID	1119	030360	4/23/03	U0.005	U0.005	0.005	U0.005	0.70	0.70	0.099	0.19	2.0	6	NA	3.5	80	7.81	6.41	NA
MU-1	1.0M	1424	030357	4/23/03	U0.005	U0.005	0.005	U0.005	0.84	0.84	0.220	0.23	0.8	U2	NA	1.5	90	7.31	4.00	0.31
MU-2	MID	1404	030359	4/23/03	0.006	U0.005	0.009	U0.005	0.76	0.76	0.205	0.23	1.1	2	NA	1.8	95	7.36	3.78	0.98
MU-3	MID	1347	030365	4/23/03	0.009	U0.005	0.012	U0.005	0.69	0.69	0.193	0.23	1.0	4	NA	2.3	100	7.36	4.11	1.60
MU-4	MID	1323	030355	4/23/03	U0.005	U0.005	0.005	U0.005	0.74	0.74	0.142	0.21	1.6	6	NA	3.2	90	7.45	7.33	5.57
MU-5	MID	1307	030361	4/23/03	0.005	U0.005	0.008	U0.005	0.67	0.67	0.132	0.19	1.4	6	NA	3.0	90	7.57	6.03	6.39
DR-1	MID	1301	030381	4/22/03	0.018	U0.005	0.020	U0.005	0.23	0.23	0.016	0.13	0.8	12	2.7	4.0	10	8.14	1.88	35.6
DR-2	MID	1223	030378	4/22/03	0.026	U0.005	0.028	U0.005	0.18	0.18	0.021	0.14	0.5	9	1.9	2.7	10	8.12	1.21	35.5
DR-3	1.0M	1330	030380	4/22/03	0.026	U0.005	0.028	U0.005	0.11	0.11	0.010	0.11	U0.5	2	0.7	0.60	7	8.22	0.27	35.9
DR-4	1.0M	1140	030382	4/22/03	0.026	U0.005	0.028	U0.005	0.19	0.19	0.019	0.14	0.5	4	1.5	2.9	10	8.13	1.60	35.2
DR-5	1.0M	1049	030379	4/22/03	0.032	0.008	0.040	0.005	0.30	0.31	0.058	0.18	0.7	10	2.5	4.2	15	8.00	3.17	33.9
DR-5 REP	1.0M	1109	030377	4/22/03	0.034	0.009	0.043	0.006	0.29	0.30	0.030	0.17	0.7	9	2.5	3.5	15	8.02	3.18	NA
EQP BLK		0800	030385	4/24/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.36	U0.05	NA
EQP BLK		0800	030383	4/24/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	U0.5	U0.2	U2	5.48	U0.05	NA
EQP BLK		0825	030384	4/24/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.48	U0.05	NA

E MARINE LABORATORY, 1600 Ken Thompson Parkway, Sarasota, FL 34236

STODY SHEET

Kit # 031-5012 Project No. 112-521

Sampling Date 4/22/03 Log Book Pg #s _____ Batch # 2C03029

Samplers R. Myers A. Baird

STATION DESIGNATION	TIME (EST)	SAMPLE DEPTH	H - 03 P, Br 125 ml DARK ICE	D-03 P, 1/2 gal ICE	A - 03 P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD	E - 03 Filtered P, 125 ml ICE	F - 03 Filtered P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD
DR-5	1049	1.0m/Mid	0379 ✓	0379 ✓	0379 ✓	✓	0379 ✓	0379 ✓	✓
DR-5 REP	1109	1.0m/Mid	0377 ✓	0377 ✓	0377 ✓	✓	0377 ✓	0377 ✓	✓
DR-4	1140	1.0m/Mid	0382 ✓	0382 ✓	0382 ✓	✓	0382 ✓	0382 ✓	✓
		1.0m/Mid	0382D ✓						
DR-2 (MF)	1223	1.0m/Mid	0378 ✓	0378 ✓	0378 ✓	✓	0378 ✓	0378 ✓	✓
DR-1	1301	1.0m/Mid	0381 ✓	0381 ✓	0381 ✓	✓	0381 ✓	0381 ✓	✓
DR-3	1330	1.0m/Mid	0380 ✓	0380 ✓	0380 ✓	✓	0380 ✓	0380 ✓	✓
		1.0m/Mid	0380D ✓						
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							

FRACTION ANALYSES
H - Chl-a (Fluorometric)
D - TSS, BOD_5 Turb, Color
A - $NO_{23}N$, TKN, TOTP
F - $DNO_{23}N$, DNH_4N
E - DPO_4P

+VSS

CONTAINER COUNT, THIS PAGE ONLY 32

RELINQUISHED BY: (SAMPLER/S SIGNATURE)	RECEIVED BY:(TRANSPORTER'S SIGNATURE)	DATE/TIME:	COUNT VERIFIED:
Andrea H Boe	4/22/03 1630	1600 DST 4/22/03	HB
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	COUNT VERIFIED:

Ice Present: ✓

Containers verified 100% ✓

D-03 NOTE 0381 Half Full

MOTE MARINE LABORATORY

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Mote Aquaculture Park • 12300 Fruitville Road • Sarasota, FL 34240

August 13, 2003

Ms. Laura Ammeson
Sarasota County
Air and Water Quality Protection
2817 Cattlemen Road
Sarasota, FL. 34232

Dear Ms. Ammeson,

Enclosed are the data tables from the May 2003 sampling of Sarasota Bay and the Myakka River that Mote Marine Laboratory is performing for Sarasota County. Magnetic data are enclosed as an Excel 9.0 file (SBMN0503.XLS) which will generate the attached tables. Data are organized as five tables with descriptions which follow.

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Hydrolab Minisonde continuous deployments	4 pages each
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The continuous Hydrolab data was gathered from stations 14-1 and 13-3 of the Roberts Bay segment during this sampling. Diurnal fluctuation of dissolved oxygen concentration was low at station 14-1 and ranged between 4.0 -5.8 mg/L with a percent saturation of dissolved oxygen of 62 - 92 %. At station 13-3, the fluctuations of dissolved oxygen concentration was between 3.3 -7.2 mg/L. Percent saturations of dissolved oxygen of this station ranged between 53 - 119 %.

Since we are in the process of revising the ideal station locations for all the segments for each month, the 'Ideal Station Location' Latitude and Longitude are not included in this report, and will report them once they are revised. Only the actual station locations are reported.

Please don't hesitate to call if I may answer any further questions regarding these data.

Sincerely,

ANissanka

Ari Nissanka D.Sc.
Senior Chemist
Enclosures AN:mig

Mote Marine Laboratory
1600 Thompson Parkway
Sarasota, FL 34236
(941) 388-4441
FDH#E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Mid-Day *In Situ* Profiles

Station	Date (mmddyy)	Time (EST)	Sample Depth (m)	Salinity (PSU)	Specific Conductance (mmhos/cm)	Temperature (Deg C)	pH (SU)	Dissolved Oxygen (mg/l)	D.O. Percent Saturation (%)
DR-1	052003	1254	0.2	36.2	54.48	30.14	8.03	6.21	102.3
DR-1	052003	1255	0.6	36.2	54.51	30.04	8.05	6.15	101.1
DR-1	052003	1256	0.9	36.2	54.53	29.99	8.06	6.44	105.8
DR-2	052003	1213	0.2	32.8	50.01	30.30	7.84	5.60	89.9
DR-2	052003	1214	0.8	33.7	51.13	30.14	7.91	5.78	93.7
DR-2	052003	1215	1.4	33.7	51.19	30.15	7.92	5.80	94.1
DR-3	052003	1327	0.2	33.1	50.38	30.94	7.96	6.67	109.6
DR-3	052003	1328	0.5	33.1	50.35	30.96	7.97	6.70	109.8
DR-3	052003	1329	0.7	33.5	50.86	30.96	8.00	6.99	114.9
DR-4	052003	1130	0.2	33.2	50.50	29.97	7.94	5.85	94.4
DR-4	052003	1131	0.9	35.0	52.97	29.70	8.02	6.01	98.0
DR-4	052003	1133	1.6	35.2	53.18	29.70	8.05	6.19	100.5
DR-5	052003	1029	0.2	32.5	49.53	30.11	7.89	5.20	83.7
DR-5	052003	1030	1.0	32.6	49.74	29.99	7.91	5.09	81.9
DR-5	052003	1033	2.4	33.8	51.30	29.79	7.98	5.07	81.8

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DH#E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Station Locations and Water Clarity

Station	Date	Time	Ideal Station Location		Actual Station Location		Depth	Secchi	Water	Attenuation
			Latitude	Longitude	Latitude	Longitude	Overall	Depth	Quality	Coefficient
	(mmddyy)	(EST)	(degrees)	(degrees)	(degrees)	(degrees)	(m)	(m)	Sample	(m^{-1})
ML-1	052103	1310			27.04180	-82.28880	0.9	>B	030666	2.14
ML-2	052103	1327			27.03288	-82.27835	1.3	1.0	030668	2.10
ML-3	052103	1342			27.02970	-82.27095	2.6	1.0	030664	1.90
ML-4	052103	1354			27.02290	-82.27400	2.3	1.0	030661	2.07
ML-5	052103	1418			27.00775	-82.26623	1.7	0.8	030667	1.90
MU-1	052103	1120			27.09680	-82.33165	2.9	1.0	030660	2.48
MU-2	052103	1142			27.08875	-82.32747	1.2	0.8	030662	2.53
MU-3	052103	1208			27.07547	-82.31683	1.6	1.0	030670	2.41
MU-4	052103	1235			27.05902	-82.30548	1.9	1.0	030669	2.39
MU-5	052103	1248			27.05450	-82.30085	2.4	1.0	030665	2.32
DR-1	052003	1254			27.11911	-82.46413	1.1	>B	030673	0.34
DR-2	052003	1213			27.12510	-82.44970	1.6	1.3	030674	1.20
DR-3	052003	1327			27.10729	-82.45915	0.9	>B	030676	0.87
DR-4	052003	1130			27.10979	-82.45195	1.8	>B	030675	0.53
DR-5	052003	1029			27.09382	-82.43732	2.6	2.0	030672	0.66

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Sarasota Bay / Myakka River Status and Trends Monitoring
Water Quality Analyses

Station	Sample Depth	Time (EST)	Sample Number	Date (mmddyy)	NH_4-N Diss (mg/l)	NO_{23}-N Diss (mg/l)	Inorg N Diss (mg/l)	NO_{23}-N (mg/l)	TKN (mg/l)	Total N (mg/l)	PO_4-P Diss (mg/l)	Total P (mg/l)	BOD_5 (mg/l)	TSS (mg/l)	VSS (mg/l)	Turbidity (NTU)	Color Apparent (PCU)	Color pH (su)	Chl a Corr (mg/m3)	Salinity Field (PSU)
16-1	MID	1431	030652	5/20/03	0.014	U0.005	0.017	U0.005	0.16	0.16	0.015	0.14	0.9	11	NA	0.95	9	8.29	2.34	36.0
16-1 REP	MID	1441	030655	5/20/03	0.030	U0.005	0.033	U0.005	0.19	0.19	0.016	0.14	1.2	11	NA	1.4	6	8.28	1.37	36.1
16-2	MID	1410	030657	5/20/03	0.015	U0.005	0.017	U0.005	0.12	0.12	0.014	0.13	1.0	9	NA	1.9	9	8.34	5.08	33.8
16-3	MID	1349	030659	5/20/03	0.021	U0.005	0.024	U0.005	0.17	0.17	0.014	0.13	0.9	7	NA	3.6	8	8.34	4.54	33.9
16-4	1.0M	1335	030656	5/20/03	0.023	U0.005	0.026	U0.005	0.17	0.17	0.013	0.13	1.1	6	NA	2.3	11	8.20	5.23	33.5
16-5	MID	1317	030649	5/20/03	0.020	U0.005	0.023	U0.005	0.16	0.16	0.014	0.12	0.9	6	NA	4.5	9	8.30	4.56	33.5
LB-1	MID	1226	030654	5/20/03	0.019	U0.005	0.022	U0.005	0.51	0.51	0.090	0.34	1.7	15	NA	2.3	38	8.14	6.58	31.8
LB-2	MID	1204	030658	5/20/03	0.024	U0.005	0.027	U0.005	0.50	0.50	0.072	0.29	2.4	8	NA	3.7	29	8.16	7.04	32.3
LB-3	MID	1135	030650	5/20/03	0.022	U0.005	0.024	U0.005	0.46	0.46	0.055	0.25	1.8	7	NA	3.2	25	8.16	5.99	33.1
LB-4	MID	1103	030653	5/20/03	0.027	U0.005	0.030	U0.005	0.30	0.30	0.028	0.16	1.2	4	NA	1.9	12	8.31	2.11	35.5
LB-5	1.0M	1047	030651	5/20/03	0.015	U0.005	0.017	U0.005	0.24	0.24	0.016	0.14	1.4	9	NA	2.0	10	8.27	3.07	36.1
ML-1	MID	1310	030666	5/21/03	0.012	U0.005	0.015	U0.005	0.82	0.82	0.310	0.36	1.5	4	NA	2.8	110	7.35	9.88	2.76
ML-2	MID	1325	030668	5/21/03	0.011	U0.005	0.014	U0.005	0.83	0.83	0.252	0.31	1.6	6	NA	3.2	90	7.44	11.91	4.57
ML-3	1.0M	1340	030664	5/21/03	0.008	U0.005	0.011	U0.005	0.82	0.82	0.238	0.31	1.5	5	NA	2.9	90	7.49	9.64	5.54
ML-4	1.0M	1352	030661	5/21/03	0.008	U0.005	0.011	U0.005	0.83	0.83	0.234	0.31	1.7	6	NA	3.6	110	7.48	10.46	6.06
ML-5	MID	1415	030667	5/21/03	0.008	U0.005	0.011	U0.005	0.79	0.79	0.193	0.28	1.7	8	NA	4.3	85	7.65	7.30	8.03
ML-5 REP	MID	1420	030663	5/21/03	0.008	U0.005	0.011	U0.005	0.83	0.83	0.196	0.33	1.8	8	NA	4.2	90	7.70	7.93	NA
MU-1	1.0M	1132	030660	5/21/03	0.023	0.081	0.104	0.078	1.20	1.28	0.473	0.54	2.9	4	NA	2.3	160	7.18	28.60	0.21
MU-2	MID	1140	030662	5/21/03	0.018	0.079	0.097	0.077	1.36	1.44	0.472	0.58	4.6	6	NA	3.6	150	7.02	43.04	0.21
MU-3	MID	1206	030670	5/21/03	0.014	0.050	0.064	0.050	1.10	1.15	0.492	0.58	1.5	3	NA	2.3	140	7.10	14.14	0.23
MU-4	1.0M	1233	030669	5/21/03	0.015	0.021	0.036	0.021	0.95	0.97	0.453	0.51	1.4	2	NA	2.6	140	7.15	8.72	0.46
MU-5	1.0M	1248	030665	5/21/03	0.009	0.006	0.015	0.006	0.97	0.98	0.425	0.47	1.6	3	NA	2.7	150	7.12	13.60	0.80
DR-1	MID	1256	030673	5/20/03	0.020	U0.005	0.023	U0.005	0.15	0.15	0.014	0.12	0.9	4.3	0.9	1.4	6	8.28	1.54	36.2
DR-2	MID	1212	030674	5/20/03	0.025	U0.005	0.028	U0.005	0.37	0.37	0.059	0.20	1.3	12.0	3.2	4.2	25	8.07	5.78	33.7
DR-3	MID	1324	030676	5/20/03	0.023	U0.005	0.026	U0.005	0.34	0.34	0.039	0.19	1.3	8.7	2.8	6.0	23	8.19	1.90	33.1
DR-4	1.0M	1128	030675	5/20/03	0.018	U0.005	0.020	U0.005	0.28	0.28	0.041	0.16	1.3	9.3	1.9	2.6	18	8.16	4.03	35.0
DR-5	1.0M	1035	030672	5/20/03	0.027	0.011	0.038	0.008	0.30	0.31	0.050	0.17	1.2	8.4	2.8	3.5	22	8.09	3.47	32.6
DR-5 REP	1.0M	1048	030671	5/20/03	0.029	0.010	0.039	0.009	0.29	0.30	0.048	0.18	1.2	9.1	2.9	3.5	18	8.10	3.56	NA
EQP BLK		1530	030677	5/20/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	U0.5	U0.2	U2	5.60	U0.05	NA
EQP BLK		0755	030679	5/22/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.56	U0.05	NA
EQP BLK		0835	030678	5/22/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.40	U0.05	NA

MARINE LABORATORY, 1600 Ken Thompson Parkway, Sarasota, FL 34236

STODY SHEET

Kit # 05-19-031-0019 Project No. 112-521

Sampling Date 5/29/03 Log Book Pg #s _____ Batch # 2003039

Samplers C.S. LM

STATION DESIGNATION	TIME (EST)	SAMPLE DEPTH	H - 03 P, Br 125 ml DARK, ICE	D -03 P, 1/2 gal ICE	A - 03 P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD	E - 03 Filtered P, 125 ml ICE	F - 03 Filtered P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD
DR-5	10:35	1.0m/Mid	0672	0672	0672	✓	0672	0672	✓
DR-5	10:48	1.0m/Mid	0671	0671	0671	✓	0671	0671	✓
DR-4	11:28	1.0m/Mid	0675D	0675	0675	✓	0675	0675	✓
DR-2	12:12	1.0m/Mid	0674	0674	0674	✓	0674	0674	✓
DR-1	12:56	1.0m/Mid	0673	0673	0673	✓	0673	0673	✓
DR-3	13:24	1.0m/Mid	0676	0676	0676	✓	0676	0676	✓
Eq Blank	1530	1.0m/Mid	0677	0677	0677	✓	0677	0677	✓
		1.0m/Mid		RM 5/30/03					
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
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		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							

FRACTION ANALYSES: H - Chl-a (Fluorometric); A - $NO_{23}N$, TKN, TOTP; E - DPO_4P; D - TSS, BOD_5 Turb, Color; F - $DNO_{23}N$, DNH_4N

CONTAINER COUNT, THIS PAGE ONLY 35 N + DPS

AW 5/31/03

RELINQUISHED BY: (SAMPLER'S SIGNATURE)	RECEIVED BY:(TRANSPORTER'S SIGNATURE)	DATE/TIME:	COUNT VERIFIED:
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	COUNT VERIFIED:
	AWisseman	15:40 05/30/03	✓

Ice Present: ✓ Containers verified 100% ✓

MOTE MARINE LABORATORY

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Myra H. Monfort
Chairman of the Boa

Kumar Mahadevan, F
Executive Director

FIELD STATIONS: **Florida Keys** • 24244 Overseas Highway • Summerland Key, FL 33042 • PHONE: (305) 745-2729 • FAX (305) 745-2730
Charlotte Harbor • P.O. Box 2197 • Pineland, FL 33945 • PHONE: (239) 283-1622 • FAX (239) 283-2466
Mote Aquaculture Park • 12300 Fruitville Road • Sarasota, FL 34240

August 27, 2003

Ms. Laura Ammeson
Sarasota County
Air and Water Quality Protection
2817 Cattlemen Road
Sarasota, FL. 34232

AIR & WATER QUALITY RECEIVED SEP 2 2003 PROTECTION

Dear Ms. Ammeson,

Enclosed are the data tables from the ~~May~~ June 2003 sampling of Sarasota Bay and the Myakka River that Mote Marine Laboratory is performing for Sarasota County. Magnetic data are enclosed as an Excel 9.0 file (SBMN0603.XLS) which will generate the attached tables. Data are organized as five tables with descriptions which follow.

Mid-Day *in situ* profiles	6 pages
Station locations and water clarity	2 pages
Water quality analyses	2 pages
Weather conditions during samplings	1 page
Hydrolab Minisonde continuous deployments	4 pages each
Custody sheets for water quality samples	5 pages

The continuous Hydrolab data was gathered from stations 14-2 of the Roberts Bay segment and 16-3 of The Lemon Bay segment during this sampling. Diurnal fluctuation of dissolved oxygen concentration was high at station 16-3 and ranged between 2.3 - 8.8 mg/L with a percent saturation of dissolved oxygen of 38 - 146 %. At station 14-2, the fluctuation of dissolved oxygen concentration was between 4.7 - 8.0 mg/L. Percent saturation of dissolved oxygen of this station ranged between 76 - 132 %.

Since we are still in the process of revising and incorporating the ideal station locations into the monthly reports, the 'Ideal Station Location' Latitude and Longitude are not included in this report, and will report them once they are revised. Only the actual station locations are reported.

Please don't hesitate to call if I may answer any further questions regarding these data.

Sincerely,

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Sarasota Bay / Myakka River Status and Trends Monitoring
Mid-Day *In Situ* Profiles

Station	Date (mmddyy)	Time (EST)	Sample Depth (m)	Salinity (PSU)	Specific Conductance (mmhos/cm)	Temperature (Deg C)	pH (SU)	Dissolved Oxygen (mg/l)	D.O. Percent Saturation (%)
DR-1	061003	1257	0.2	31.0	47.49	33.40	7.60	4.99	84.2
DR-1	061003	1258	1.0	34.6	52.46	31.84	7.94	5.05	84.8
DR-1	061003	1259	1.9	34.9	52.75	31.61	7.96	4.85	81.3
DR-2	061003	1330	0.2	31.9	48.68	31.94	8.03	6.10	101.0
DR-2	061003	1332	1.0	33.0	50.28	31.39	8.10	6.63	109.5
DR-2	061003	1333	3.2	33.7	51.18	31.09	8.13	6.66	109.8
DR-3	061003	1219	0.2	21.2	33.83	31.81	7.69	5.50	85.3
DR-3	061003	1220	0.9	25.2	39.53	31.36	7.76	5.18	81.6
DR-3	061003	1222	1.5	28.8	44.54	31.22	7.81	4.92	79.0
DR-4	061003	1148	0.2	21.1	33.62	32.21	7.69	4.49	70.2
DR-4	061003	1151	0.4	21.6	34.35	32.18	7.69	4.34	67.8
DR-4	061003	1153	0.5	24.3	38.19	32.21	7.77	4.95	79.0
DR-5	061003	1052	0.2	31.7	48.51	30.92	7.96	5.21	83.5
DR-5	061003	1053	1.0	31.7	48.44	30.94	7.98	5.19	83.2
DR-5	061003	1054	3.5	31.7	48.43	30.98	7.99	5.17	84.1

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Station Locations and Water Clarity

Station	Date	Time	Ideal Station Location		Actual Station Location		Depth	Secchi	Water	Attenuation
			Latitude	Longitude	Latitude	Longitude	Overall	Depth	Quality	Coefficient
	(mmddyy)	(EST)	(degrees)	(degrees)	(degrees)	(degrees)	(m)	(m)	Sample	(m^{-1})
ML-1	061103	1206			27.03717	-82.28222	1.9	0.8	030801	1.87
ML-2	061103	1151			27.03203	-82.27797	1.5	0.8	030804	1.89
ML-3	061103	1136			27.02952	-82.27298	3.9	0.8	030800	1.96
ML-4	061103	1114			27.01857	-82.27273	3.3	0.8	030802	2.47
ML-5	061103	1043			27.00343	-82.25903	0.7	>B	030803	2.37
MU-1	061103	1419			27.10023	-82.33307	2.3	1.3	030794	2.10
MU-2	061103	1352			27.08663	-82.32677	3.0	1.0	030795	2.02
MU-3	061103	1316			27.06542	-82.31420	2.3	0.8	030797	2.00
MU-4	061103	1258			27.06323	-82.30990	1.2	0.8	030799	2.24
MU-5	061103	1233			27.04903	-82.29360	2.0	1.0	030805	1.82
DR-1	061003	1257			27.12775	-82.46157	2.1	1.4	030790	0.83
DR-2	061003	1330			27.10982	-82.45718	3.4	1.5	030793	0.44
DR-3	061003	1219			27.11970	-82.45048	1.7	1.5	030788	1.20
DR-4	061003	1148			27.11428	-82.44558	0.7	>B	030792	0.81
DR-5	061003	1052			27.07602	-82.43042	3.7	1.3	030791	0.76

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Sarasota Bay / Myakka River Status and Trends Monitoring
Water Quality Analyses

Station	Sample Depth	Time (EST)	Sample Number	Date (mmddyy)	NH_4-N Diss (mg/l)	NO_{23}-N Diss (mg/l)	Inorg N Diss (mg/l)	NO_{23}-N (mg/l)	TKN (mg/l)	Total N (mg/l)	PO_4-P Diss (mg/l)	Total P (mg/l)	BOD_5 (mg/l)	TSS (mg/l)	VSS (mg/l)	Turbidity (NTU)	Color Apparent (PCU)	Color pH (su)	Chl a Corr (mg/m3)	Salinity Field (PSU)
16-1	1.0M	1354	030785	6/11/03	0.009	U0.005	0.012	U0.005	0.34	0.34	0.014	0.18	1.2	9	NA	1.9	12	8.34	3.52	35.1
16-2	MID	1337	030778	6/11/03	0.016	U0.005	0.019	U0.005	0.29	0.29	0.017	0.17	1.2	6	NA	2.1	10	8.29	3.95	34.8
16-3	MID	1309	030782	6/11/03	0.010	U0.005	0.013	U0.005	0.26	0.26	0.010	0.16	1.1	7	NA	4.1	8	8.29	4.31	36.5
16-4	1.0M	1251	030777	6/11/03	0.011	U0.005	0.014	U0.005	0.23	0.23	0.009	0.18	1.0	9	NA	2.1	8	8.37	4.64	36.6
16-5	1.0M	1237	030786	6/11/03	0.012	U0.005	0.015	U0.005	0.25	0.25	0.008	0.18	1.0	7	NA	2.8	8	8.37	3.72	36.7
LB-1	MID	1147	030783	6/11/03	0.018	U0.005	0.020	U0.005	0.37	0.37	0.072	0.25	1.5	9	NA	3.7	30	7.98	9.14	30.8
LB-2	MID	1130	030784	6/11/03	0.010	U0.005	0.013	U0.005	0.34	0.34	0.072	0.26	1.5	9	NA	3.5	30	8.07	9.61	31.4
LB-3	MID	1113	030780	6/11/03	0.013	U0.005	0.016	U0.005	0.56	0.56	0.051	0.27	2.5	13	NA	3.9	25	8.23	12.27	33.0
LB-4	MID	1057	030781	6/11/03	0.021	U0.005	0.024	U0.005	0.29	0.29	0.042	0.19	1.3	3	NA	1.1	10	8.19	1.97	35.0
LB-5	1.0M	1030	030779	6/11/03	0.021	U0.005	0.024	U0.005	0.31	0.31	0.014	0.19	1.0	5	NA	2.2	8	8.25	2.34	36.9
LB-5 REP	1.0M	1037	030787	6/11/03	0.015	U0.005	0.017	U0.005	0.24	0.24	0.013	0.18	1.0	6	NA	1.9	8	8.26	2.64	NA
ML-1	MID	1203	030801	6/11/03	0.012	U0.005	0.015	U0.005	0.86	0.86	0.217	0.31	1.4	9	NA	3.6	100	7.60	15.46	6.79
ML-2	MID	1148	030804	6/11/03	0.009	U0.005	0.012	U0.005	0.90	0.90	0.195	0.34	1.6	9	NA	5.7	100	7.67	18.78	8.03
ML-3	1.0M	1132	030800	6/11/03	0.013	U0.005	0.016	U0.005	0.94	0.94	0.186	0.30	2.0	10	NA	6.1	100	7.75	23.87	8.80
ML-4	1.0M	1111	030802	6/11/03	0.018	U0.005	0.020	U0.005	1.06	1.06	0.152	0.31	4.4	16	NA	8.8	100	8.07	37.33	10.8
ML-5	MID	1040	030803	6/11/03	0.013	U0.005	0.016	U0.005	1.15	1.15	0.135	0.34	3.7	18	NA	11	110	8.21	39.21	13.5
MU-1	1.0M	1418	030794	6/11/03	0.018	0.056	0.074	0.059	0.92	0.98	0.350	0.39	1.0	U2	NA	1.6	110	7.26	8.34	0.24
MU-1 REP	1.0M	1420	030798	6/11/03	0.023	0.055	0.078	0.056	0.98	1.04	0.355	0.39	1.1	2	NA	1.9	100	7.30	8.95	NA
MU-2	MID	1350	030795	6/11/03	0.014	0.024	0.038	0.027	0.96	0.99	0.368	0.40	1.3	3	NA	1.8	110	7.27	15.29	0.27
MU-3	MID	1314	030797	6/11/03	0.016	U0.005	0.019	U0.005	0.91	0.91	0.348	0.40	1.2	5	NA	2.3	110	7.38	9.49	1.22
MU-4	MID	1307	030799	6/11/03	0.022	U0.005	0.024	U0.005	0.89	0.89	0.330	0.39	1.3	4	NA	3.3	110	7.42	11.28	1.76
MU-5	MID	1237	030805	6/11/03	0.011	0.008	0.019	0.011	0.81	0.82	0.265	0.35	1.4	6	NA	3.9	110	7.55	14.46	4.54
DR-1	1.0M	1257	030790	6/10/03	0.013	U0.005	0.016	U0.005	0.47	0.47	0.069	0.25	1.7	13	4.3	2.7	32	7.77	8.60	34.6
DR-2	1.0M	1330	030793	6/10/03	0.019	U0.005	0.022	U0.005	0.41	0.41	0.035	0.17	1.4	13	4.0	4.2	21	8.18	6.78	33.0
DR-2 REP	1.0M	1340	030789	6/10/03	0.014	U0.005	0.017	U0.005	0.34	0.34	0.039	0.19	1.4	14	4.1	3.5	21	8.16	7.33	NA
DR-3	MID	1219	030788	6/10/03	0.029	0.006	0.035	0.007	0.66	0.67	0.122	0.24	1.5	8	2.7	3.1	60	7.87	7.55	25.2
DR-4	MID	1148	030792	6/10/03	0.056	0.013	0.069	0.016	0.58	0.60	0.126	0.24	1.5	6	2.5	2.7	55	7.84	6.36	21.6
DR-5	1.0M	1052	030791	6/10/03	0.016	U0.005	0.019	0.006	0.25	0.26	0.040	0.20	1.3	11	3.4	4.4	23	8.09	7.47	31.7
EQP BLK		1555	030808	6/10/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	U0.5	U0.2	U2	5.57	U0.05	NA
EQP BLK		1555	030806	6/11/03	0.012	U0.005	0.015	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.33	U0.05	NA
EQP BLK		0815	030807	6/12/03	U0.005	U0.005	0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.37	U0.05	NA

E MARINE LABORATORY, 1600 Ken Thompson Parkway, Sarasota, FL 34236

USTODY SHEET

Kit # 031-0024 Project No. 112-521

Sampling Date 6/10/2003 Log Book Pg #s _____ Batch # 2003051

Samplers R. Myers A. Baird

STATION DESIGNATION	TIME (EST)	SAMPLE DEPTH	H - 03 P, Br 125 ml DARK ICE	D - 03 P, 1/2 gal ICE	A - 03 P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD	E - 03 Filtered P, 125 ml ICE	F - 03 Filtered P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD
DR-5	1152	1.0m/Mid	0791	0791	0791	✓	0791	0791	✓
DR-4	1248	1.0m/Mid	0792	0792	0792	✓	0792	0792	✓
DR-3	1319	1.0m/Mid	0788D 0788	0788	0788	✓	0788	0788	✓
DR-1	1357	1.0m/Mid	0790	0790	0790	✓	0790	0790	✓
DR-2	1430	1.0m/Mid	0793	0793	0793	✓	0793	0793	✓
DR-2 REP	1440	1.0m/Mid	0789D 0789	0789	0789	✓	0789	0789	✓
Blank	1555	1.0m/Mid	0808	0808	0808	✓	0808	0808	✓
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							

FRACTION ANALYSES: H - Chl-a (Fluorometric); A - $NO_{23}N$, TKN, TOTP; E - DPO_4P; D - TSS, BOD_5 Turb, Color, VSS; F - $DNO_{23}N$, DNH_4N

CONTAINER COUNT, THIS PAGE ONLY 32 37+ blank TJ

RELINQUISHED BY: (SAMPLER'S SIGNATURE)	RECEIVED BY: (TRANSPORTER'S SIGNATURE)	DATE/TIME:	COUNT VERIFIED:
Andrea H Baird			
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	COUNT VERIFIED:
	Tracy Tout	6/10/03 1555	TJ

Ice Present: ✓

Containers verified 100% ✓

MOTE MARINE LABORATORY

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Myra H. Monfort
Chairman of the Board

Kumar Mahadevan, Ph.D.
Executive Director

FIELD STATIONS: ***Florida Keys*** • 24244 Overseas Highway • Summerland Key, FL 33042 • PHONE: (305) 745-2729 • FAX: (305) 745-2730
Charlotte Harbor • P.O. Box 2197 • Pineland, FL 33945 • PHONE: (239) 283-1622 • FAX: (239) 283-2466
Mote Aquaculture Park • 12300 Fruitville Road • Sarasota, FL 34240

December 15, 2003

Ms. Laura Ammeson
Sarasota County
Air and Water Quality Protection
2817 Cattlemen Road
Sarasota, FL. 34232

SARASOTA COUNTY
DEC 18 2003
WATER RESOURCES

Dear Ms. Ammeson,

Enclosed are the revised data tables from the July 2003 sampling of Sarasota Bay and the Myakka River that Mote Marine Laboratory is performing for Sarasota County. Data are organized as six tables with descriptions which follow.

Mid-Day *in situ* profiles	8 pages
Station locations and water clarity	2 pages
Water quality analyses	2 pages
Weather conditions during samplings	1 page
Hydrolab Minisonde continuous deployments	4 pages Revised 12/12/2003
Custody sheets for water quality samples	6 pages

The continuous Hydrolab data was gathered from stations MU-4 of the Myakka River segment during this sampling. Diurnal fluctuation of dissolved oxygen concentration was negligible and ranged only between 3.2 - 3.7 mg/L with a percent saturation of dissolved oxygen of 43 - 49 %.

I apologize for the oversight of having incorrect headers for the temperature and pH columns of the continuous deployment data table. The table had been corrected and three copies of the full report is enclosed with the revised version of the magnetic data file (SBMN0703.xls). Please discard the previous report of December 5, 2003 and replace it with this.

The *in-Situ* profile of percent saturation of dissolved oxygen at stations 16-2 and 16-4 bottom were recorded as 200#, implying that the saturations were >200%. Both these stations were located on grass beds and this super saturation may be due to the high photosynthetic activity.

Please don't hesitate to call if I may answer any further questions regarding these data.

Sincerely,

Ari Nissanka D.Sc.
Senior Chemist
Enclosures AN:mig

te Marine Laboratory
600 Thompson Parkway
Sarasota, FL 34236
(941) 388-4441
FDH#E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Mid-Day *In Situ* Profiles

Station	Date (mmddyy)	Time (EST)	Sample Depth (m)	Salinity (PSU)	Specific Conductance (mmhos/cm)	Temperature (Deg C)	pH (SU)	Dissolved Oxygen (mg/l)	D.O. Percent Saturation (%)
DR-1-07	072203	1326	0.2	33.72	51.22	33.74	8.08	6.62	114.1
DR-1-07	072203	1328	0.8	34.39	51.99	33.36	8.18	8.02	137.9
DR-1-07	072203	1331	1.3	34.90	52.82	32.88	8.23	8.56	146.4
DR-2-07	072203	1254	0.2	2.99	5.44	32.26	7.27	4.58	64.3
DR-2-07	072203	1256	0.4	3.56	7.64	32.39	7.26	4.25	59.89
DR-2-07	072203	1257	0.5	3.73	6.73	32.48	7.27	4.41	63.6
DR-3-07	072203	1356	0.2	28.64	44.27	33.47	7.97	5.88	98.0
DR-3-07	072203	1358	0.7	30.81	47.25	32.78	8.03	6.61	110.2
DR-3-07	072203	1400	1.1	31.32	47.96	32.63	8.06	6.75	112.7
DR-4-07	072203	1229	0.2	24.99	39.19	33.42	7.91	5.59	91.1
DR-4-07	072203	1229	0.4	26.22	44.00	33.21	7.93	5.25	84.0
DR-4-07	072203	1230	0.6	28.95	44.69	32.99	7.95	5.24	87.5
DR-5-07	072203	1050	0.2	25.45	39.83	32.58	7.72	4.71	75.8
DR-5-07	072203	1051	1.0	25.46	39.83	32.56	7.72	4.09	65.9
DR-5-07	072203	1052	2.8	26.11	40.76	32.36	7.73	3.69	59.5
LB-1-07	072203	1226	0.2	23.21	37.04	33.20	7.80	7.05	113.5
LB-1-07	072203	1227	1.0	23.23	37.06	33.07	7.76	6.71	107.8
LB-1-07	072203	1227	3.0	26.84	42.17	31.51	7.68	1.21	19.4
LB-2-07	072203	1244	0.2	23.33	37.21	33.16	7.90	6.71	107.9
LB-2-07	072203	1244	1.0	23.29	37.16	33.02	7.89	6.85	109.9
LB-2-07	072203	1245	1.7	26.80	42.12	31.76	7.86	1.26	20.3
LB-3-07	072203	1259	0.2	23.03	36.78	33.31	8.03	6.67	107.4
LB-3-07	072203	1259	0.6	23.07	36.84	33.24	8.04	6.91	111.2
LB-3-07	072203	1300	1.0	23.11	36.92	33.17	8.04	7.00	112.5
LB-4-07	072203	1118	0.2	23.79	37.86	32.50	8.39	7.83	124.9
LB-4-07	072203	1119	0.5	23.80	37.88	32.43	8.38	7.93	126.4
LB-4-07	072203	1119	0.7	23.97	38.10	32.30	8.35	7.37	117.5
LB-5-07	072203	1052	0.2	24.71	39.18	32.06	8.48	6.92	110.2
LB-5-07	072203	1053	0.6	25.44	40.18	32.03	8.48	6.97	111.5
LB-5-07	072203	1054	0.9	26.35	41.49	31.96	8.45	6.39	102.6

Marine Laboratory
Thompson Parkway
Sarasota, FL 34236
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FDH/E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Station Locations and Water Clarity

Station	Date	Time	Ideal Station Location		Actual Station Location		Depth	Secchi	Water	Attenuation
			Latitude	Longitude	Latitude	Longitude	Overall	Depth	Quality	Coefficient
	(mmddyy)	(EST)	(degrees)	(degrees)	(degrees)	(degrees)	(m)	(m)	Sample	(m^{-1})
7-1-07	072303	1117	27.38025	-82.61425	27.38098	-82.61548	2.0	1.5	030949	0.91
7-2-07	072303	1105	27.36670	-82.59143	27.36715	-82.59160	4.0	2.5	030951	0.73
8-1-07	072303	1131	27.38777	-82.59458	27.38822	-82.59422	3.9	2.7	030955	0.37
8-2-07	072303	1143	27.37907	-82.57290	27.37972	-82.57288	2.2	2.0	030956	0.73
10-1-07	072303	1046	27.34424	-82.58265	27.34440	-82.58297	2.0	>B	030952	0.56
10-2-07	072303	1222	27.34924	-82.56986	27.34938	-82.56970	2.3	1.5	030960	0.56
10-3-07	072303	1029	27.33400	-82.58137	27.33283	-82.58082	5.9	2.5	030959	0.49
10-4-07	072303	1352	27.32052	-82.56628	27.32050	-82.56602	1.2	>B	030954	0.62
10-5-07	072303	1337	27.30575	-82.54863	27.30492	-82.54933	1.1	>B	030948	1.31
11-1-07	072303	1158	27.36571	-82.56273	27.36582	-82.56262	3.1	1.2	030953	0.81
11-2-07	072303	1209	27.35321	-82.55562	27.35345	-82.55528	2.8	1.4	030962	0.91
11-3-07	072303	1235	27.33725	-82.55643	27.33703	-82.55635	3.2	1.4	030950	0.53
11-4-07	072303	1312	27.32226	-82.54559	27.32253	-82.54537	1.7	1.2	030957	0.76
11-5-07	072303	1324	27.31022	-82.54121	27.31027	-82.54095	2.1	0.7	030958	1.24
12-1-07	072203	1321	27.30093	-82.56415	27.30070	-82.56403	3.9	2.5	030963	0.78
12-2-07	072203	1310	27.28825	-82.56410	27.28837	-82.56402	4.2	2.3	030968	0.83
13-1-07	072203	1249	27.29164	-82.54427	27.29163	-82.54443	1.2	0.7	030973	1.64
13-2-07	072203	1235	27.27946	-82.54573	27.28092	-82.54537	0.8	>B	030975	2.17
13-3-07	072203	1220	27.27038	-82.54272	27.27037	-82.54263	1.8	0.5	030974	1.86
13-4-07	072203	1203	27.25470	-82.53196	27.25493	-82.53228	4.5	1.1	030964	1.85
13-5-07	072203	1139	27.25261	-82.52955	27.25357	-82.53028	1.1	>B	030971	1.58
14-1-07	072203	1128	27.24116	-82.51845	27.24147	-82.51817	1.5	0.5	030967	1.66
14-2-07	072203	1110	27.22550	-82.51247	27.22418	-82.51170	1.4	0.7	030965	1.62
14-3-07	072203	1057	27.22112	-82.50561	27.22103	-82.50587	1.6	0.6	030966	1.54
14-4-07	072203	1039	27.20046	-82.50259	27.20027	-82.50245	1.5	0.9	030972	1.47
14-5-07	072203	1027	27.18120	-82.49282	27.18117	-82.49338	2.4	0.9	030970	1.86
16-1-07	072203	1453	27.17459	-82.49121	27.17492	-82.49132	1.5	0.8	030977	1.83
16-2-07	072203	1436	27.16011	-82.48224	27.15982	-82.48224	1.0	>B	030984	1.73
16-3-07	072203	1419	27.14879	-82.47383	27.14863	-82.47407	1.8	1.2	030981	1.41
16-4-07	072203	1405	27.14008	-82.47017	27.14072	-82.47037	1.3	>B	030976	1.04
16-5-07	072203	1347	27.12788	-82.46935	27.12663	-82.46930	2.9	1.3	030985	1.06
DR-1-07	072203	1326	27.12000	-82.46340	27.12011	-82.46335	1.5	1.3	031002	-9
DR-2-07	072203	1254	27.12320	-82.45020	27.12326	-82.45008	0.7	>B	031001	-9
DR-3-07	072203	1356	27.10790	-82.45840	27.10787	-82.45811	1.3	>B	030998	-9
DR-4-07	072203	1229	27.11030	-82.45630	27.11053	-82.45629	0.8	>B	031003	-9
DR-5-07	072203	1050	27.07480	-82.43010	27.07519	-82.43010	3.0	1.0	031000	-9
LB-1-07	072203	1226	27.03506	-82.42608	27.03550	-82.42617	3.2	1.0	030978	1.79
LB-2-07	072203	1244	27.01602	-82.41381	27.01702	-82.41422	1.9	1.0	030986	1.58
LB-3-07	072203	1259	27.00063	-82.40300	27.00107	-82.40322	1.2	1.1	030982	1.49
LB-4-07	072203	1118	26.97569	-82.38730	26.97569	-82.38730	0.9	>B	030979	1.43
LB-5-07	072203	1052	26.95236	-82.37059	26.95267	-82.37068	1.1	0.9	030983	1.53

-9 = No data due to instrument malfunction

Mote Marine Laboratory
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Sarasota Bay / Myakka River Status and Trends Monitoring
Water Quality Analyses

Station	Sample Depth	Time (EST)	Sample Number	Date (mmddyy)	NH_4-N Diss (mg/l)	NO_{23}-N Diss (mg/l)	Inorg N Diss (mg/l)	NO_{23}-N (mg/l)	NH_4-N (mg/l)	TKN (mg/l)	Total N (mg/l)	PO_4-P Diss (mg/l)	Total P (mg/l)	BOD_5 (mg/l)	TSS (mg/l)	VSS (mg/l)	Turbidity (NTU)	Color Apparent (PCU)	Color pH (su)	Chl a Corr (mg/m3)	Salinity Field (PSU)
13-1-07	MID	1249	030973	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.74	0.74	0.070	0.29	4.5	11	NA	5.6	60	8.27	31.78	26.36
13-2-07	MID	1235	030975	7/22/03	U0.005	0.008	0.011	0.006	NA	1.04	1.05	0.088	0.34	4.9	17	NA	9.2	85	8.32	43.12	22.53
13-3-07	MID	1220	030974	7/22/03	0.006	U0.005	0.009	U0.005	NA	0.96	0.96	0.078	0.33	5.7	17	NA	8.1	65	8.26	48.42	24.29
13-4-07	1.0M	1203	030964	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.96	0.96	0.073	0.32	5.9	15	NA	7.0	95	8.38	41.05	23.54
13-5-07	MID	1139	030971	7/22/03	0.007	U0.005	0.010	U0.005	NA	0.81	0.81	0.083	0.29	3.8	10	NA	4.7	65	8.34	26.11	22.83
14-1-07	MID	1128	030967	7/22/03	U0.005	U0.005	0.005	U0.005	NA	1.00	1.00	0.076	0.31	5.1	13	NA	5.0	70	8.39	39.53	22.85
14-2-07	MID	1110	030965	7/22/03	0.008	U0.005	0.011	U0.005	NA	1.06	1.06	0.058	0.29	5.4	17	NA	5.5	60	8.40	28.20	22.49
14-3-07	MID	1057	030966	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.94	0.94	0.059	0.27	5.0	10	NA	4.5	65	8.43	22.39	21.91
14-4-07	MID	1039	030972	7/22/03	0.005	U0.005	0.008	U0.005	NA	1.03	1.03	0.036	0.26	5.1	10	NA	5.1	65	8.39	18.27	23.76
14-5-07	1.0M	1013	030970	7/22/03	0.009	0.005	0.014	U0.005	NA	0.91	0.91	0.042	0.27	3.6	17	NA	5.0	60	8.23	24.21	25.87
14-5-07 REP	1.0M	1024	030969	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.85	0.85	0.041	0.25	3.7	12	NA	5.0	60	8.23	22.97	NA
16-1-07	MID	1453	030977	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.91	0.91	0.042	0.26	5.5	14	NA	7.9	60	8.43	23.59	25.15
16-2-07	MID	1436	030984	7/22/03	0.014	U0.005	0.017	U0.005	NA	0.84	0.84	0.052	0.24	3.9	11	NA	4.5	85	8.51	18.00	23.89
16-3-07	MID	1418	030981	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.72	0.72	0.037	0.21	3.6	12	NA	3.9	55	8.40	16.51	26.77
16-4-07	MID	1405	030976	7/22/03	0.009	U0.005	0.012	U0.005	NA	0.64	0.64	0.034	0.21	3.9	7	NA	3.3	55	8.49	13.33	28.05
16-5-07	1.0M	1347	030985	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.62	0.62	0.032	0.47	3.3	8	NA	3.0	48	8.37	16.03	28.94
DR-1-07	MID	1321	031002	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.33	0.33	0.027	0.15	1.8	10	3.1	2.3	22	8.29	5.54	34.39
DR-2-07	MID	1259	031001	7/22/03	0.121	0.063	0.184	0.066	NA	0.90	0.97	0.191	0.21	1.7	4	1.9	3.5	260	7.47	12.79	3.56
DR-3-07	MID	1352	030998	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.42	0.42	0.063	0.19	2.5	11	3.3	2.7	65	8.15	14.14	30.81
DR-4-07	MID	1221	031003	7/22/03	U0.005	0.006	0.009	0.006	NA	0.48	0.49	0.108	0.21	2.2	5	2.3	2.9	95	8.16	12.65	26.22
DR-5-07	1.0M	1110	031000	7/22/03	0.028	0.011	0.039	0.008	NA	0.55	0.56	0.098	0.26	1.8	11	3.9	3.4	85	7.97	13.94	25.46
DR-5-07 REP	1.0M	1110	030999	7/22/03	0.019	0.009	0.028	0.008	NA	0.50	0.51	0.096	0.23	2.0	13	4.1	3.6	90	8.01	15.49	NA
LB-1-07	1.0M	1226	030978	7/22/03	U0.005	U0.005	0.005	U0.005	NA	0.85	0.85	0.091	0.31	4.7	11	NA	4.6	65	8.15	25.57	23.23
LB-2-07	MID	1243	030986	7/22/03	0.010	U0.005	0.013	U0.005	NA	0.81	0.81	0.081	0.29	4.6	9	NA	4.0	60	8.14	19.01	0.36
LB-3-07	MID	1258	030982	7/22/03	0.011	U0.005	0.014	U0.005	NA	0.86	0.86	0.071	0.28	4.7	12	NA	4.4	60	8.25	16.78	23.07
LB-4-07	MID	1118	030979	7/22/03	0.006	U0.005	0.009	U0.005	NA	0.99	0.99	0.039	0.26	5.2	9	NA	5.2	55	8.54	25.71	23.80
LB-5-07	MID	1036	030983	7/22/03	0.024	U0.005	0.027	U0.005	NA	1.03	1.03	0.012	0.23	5.3	11	NA	5.8	55	8.59	26.39	25.44
LB-5-07 REP	MID	1052	030980	7/22/03	0.009	U0.005	0.012	U0.005	NA	0.99	0.99	0.014	0.25	5.1	12	NA	5.7	55	8.61	26.26	NA
EQP BLK		1540	031005	7/22/03	U0.005	U0.005	0.005	U0.005	NA	U0.05	U0.05	U0.005	U0.05	U0.5	U2	U0.5	U0.2	U2	5.71	U0.05	NA
EQP BLK		1521	031006	7/23/03	U0.005	U0.005	0.005	U0.005	NA	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.69	U0.05	NA
EQP BLK		0845	031004	7/25/03	U0.005	U0.005	0.005	U0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.58	U0.05	NA

INE LABORATORY, 1600 Ken Thompson Parkway, Sarasota, FL 34236

ODY SHEET Kit # 031-0030 Project No. 112-521

ng Date 7/22/03 Log Book Pg #s 1 2 3 Batch # 2003073

blers R. Myers M. Luciano

STATION DESIGNATION	TIME (EST)	SAMPLE DEPTH	H - 03 P, Br 125 ml DARK, ICE	D -03 P, 1/2 gal ICE	A - 03 P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD	E - 03 Filtered P, 125 ml ICE	F - 03 Filtered P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD
DR-5 FD	11:10	1.0m/Mid	1000	1000	1000	✓	1000	1000	✓
DR-5	11:10	1.0m/Mid	0999	0999	0999	✓	0999	0999	✓
DR-4	12:21	1.0m/Mid	1003	1003	1003	✓	1003	1003	✓
DR-2	12:59	1.0m/Mid	1001	1001	1001	✓	1001	1001	✓
DR-1	13:21	1.0m/Mid	1002	1002	1002	✓	1002	1002	✓
DR-3	13:52	1.0m/Mid	0998	0998	0998	✓	0998	0998	✓
equipment Blank	15:40	1.0m/Mid	1005	1005	1005	✓	1005	1005	✓
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							

FRACTION ANALYSES: H - (23) Chl-a (Fluorometric); D - TSS, BOD_5 Turb, Color, VSS; A - $NO_{23}N$, TKN, TOTP; F - $DNO_{23}N$, DNH_4N; E - DPO_4P

Temp Blank 9°C

CONTAINER COUNT, THIS PAGE ONLY 35

RELINQUISHED BY: (SAMPLER'S SIGNATURE)	RECEIVED BY:(TRANSPORTER'S SIGNATURE)	DATE/TIME:	COUNT VERIFIED:
	Pat Merotto	7-22-03 1541 EST	✓
RELINQUISHED BY: Richard Myers	RECEIVED BY:	DATE/TIME:	COUNT VERIFIED:

Ice Present: ✓

Containers verified 100% pm

MOTE MARINE LABORATORY

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Kumar Mahadevan, Ph.D.
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Mote Aquaculture Park • 12300 Fruitville Road • Sarasota, FL 34240

January 09, 2004

SARASOTA COUNTY
JAN 19 2004
WATER RESOURCES

Ms. Laura Ammeson
Sarasota County
Air and Water Quality Protection
2817 Cattlemen Road
Sarasota, FL. 34232

Dear Ms. Ammeson,

Enclosed are the data tables from the September 2003 sampling of Sarasota Bay and the Myakka River that Mote Marine Laboratory is performing for Sarasota County. Magnetic data are enclosed as an Excel 9.0 file (SBMN0903.XLS) which will generate the attached tables. Data are organized as six tables with descriptions which follow.

Mid-Day *in situ* profiles	8 pages
Station locations and water clarity	2 pages
Water quality analyses	2 pages
Weather conditions during samplings	1 page
Hydrolab Minisonde continuous deployments	4 pages each
Custody sheets for water quality samples	6 pages

The continuous Hydrolab data was gathered from stations 13-4 and 14-1 of Roberts Bay segment during this sampling. Diurnal fluctuation of dissolved oxygen concentration ranged between 2.8 - 6.2 mg/L at station 13-4, and between hypoxic 1.9 - 6.9 mg/L at station 14-1. Percent saturation of dissolved oxygen ranged from 41 - 93 % and 29 - 103% respectively.

Concentration of BOD5 (0.8 mg/L) reported for equipment blank sample number 031169, and concentration of VSS (0.5mg/L) reported for equipment blank sample number 031171 are higher than the respective MDLs for the methods (0.5 mg/L). These elevations are with in one limit of detection and considered as random contamination during handling of the samples.

Please don't hesitate to call if I may answer any further questions regarding these data.

Sincerely,

Ari Nissanka

Ari Nissanka D.Sc.
Senior Chemist
Enclosures AN:mig

Mote Marine Laboratory
1600 Thompson Parkway
Sarasota, FL 34236
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FDH#E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Mid-Day *In Situ* Profiles

Station	Date (mmddyy)	Time (EST)	Sample Depth (m)	Salinity (PSU)	Specific Conductance (mmhos/cm)	Temperature (Deg C)	pH (SU)	Dissolved Oxygen (mg/l)	D.O. Percent Saturation (%)
DR-1-09	091603	1311	0.2	32.05	48.95	31.02	7.40	5.84	95.3
DR-1-09	091603	1313	0.8	33.07	50.33	30.58	7.42	5.90	96.0
DR-1-09	091603	1313	1.3	33.99	51.59	30.45	7.48	6.00	98.2
DR-2-09	091603	1229	0.2	1.14	2.14	29.78	6.86	6.04	80.2
DR-2-09	091603	1230	0.7	2.94	5.35	29.13	6.66	4.49	59.7
DR-2-09	091603	1231	1.1	8.25	14.26	29.28	6.60	2.26	31.0
DR-3-09	091603	1338	0.2	30.84	47.30	29.71	7.47	6.29	99.7
DR-3-09	091603	1339	1.0	35.48	53.58	29.24	7.51	5.64	91.2
DR-3-09	091603	1342	3.2	35.75	54.00	29.19	7.51	5.55	89.7
DR-4-09	091603	1153	0.2	12.05	20.22	29.54	7.07	5.91	83.6
DR-4-09	091603	1155	0.8	28.00	43.39	29.39	7.28	3.74	57.9
DR-4-09	091603	1156	1.3	30.40	46.71	29.37	7.33	3.56	56.3
DR-5-09	091603	1047	0.2	15.51	25.49	30.06	7.00	5.12	74.6
LB-1-09	091603	1207	0.2	17.39	28.30	29.84	7.48	3.94	57.8
LB-1-09	091603	1207	0.5	17.77	28.86	29.60	7.45	3.62	53.0
LB-1-09	091603	1208	0.7	17.86	29.00	29.56	7.44	3.56	52.1
LB-2-09	091603	1146	0.2	17.80	28.91	29.89	7.49	4.25	62.7
LB-2-09	091603	1147	1.0	18.22	29.52	29.58	7.44	3.54	52.0
LB-2-09	091603	1148	2.7	23.59	37.30	30.00	7.63	0.70	10.6
LB-3-09	091603	1130	0.2	17.01	27.78	29.64	7.79	6.56	95.8
LB-3-09	091603	1131	0.6	17.50	28.46	29.66	7.76	5.94	87.0
LB-3-09	091603	1131	1.0	17.54	28.52	29.53	7.68	5.25	76.7
LB-4-09	091603	1112	0.2	16.95	27.65	29.94	7.91	5.23	76.7
LB-4-09	091603	1113	1.0	21.41	34.18	30.20	7.72	0.80	12.1
LB-4-09	091603	1114	1.9	23.87	37.70	30.36	7.87	1.86	28.6
LB-5-09	091603	1047	0.3	16.03	26.29	29.18	8.24	6.60	95.0

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Sarasota Bay / Myakka River Status and Trends Monitoring
Station Locations and Water Clarity

Station	Date	Time	Ideal Station Location		Actual Station Location		Depth	Secchi	Water	Attenuation
			Latitude	Longitude	Latitude	Longitude	Overall	Depth	Quality	Coefficient
	(mmddyy)	(EST)	(degrees)	(degrees)	(degrees)	(degrees)	(m)	(m)	Sample	(m^{-1})
7-1-09	091703	1120	27.36491	-82.60823	27.36492	-82.60883	1.8	0.7	031116	1.19
7-2-09	091703	1106	27.36065	-82.59453	27.36042	-82.59458	3.9	0.9	031123	0.85
8-1-09	091703	1136	27.38414	-82.58860	27.38397	-82.58868	3.5	1.5	031115	0.72
8-2-09	091703	1152	27.37632	-82.57216	27.37615	-82.57190	1.5	1.1	031118	0.81
10-1-09	091703	1029	27.34550	-82.59462	27.34265	-82.59357	3.8	1.7	031122	0.69
10-2-09	091703	1050	27.34412	-82.57124	27.34212	-82.57605	1.5	>B	031125	0.57
10-3-09	091703	1006	27.33926	-82.58047	27.33933	-82.58002	1.9	1.5	031120	0.66
10-4-09	091703	1330	27.31507	-82.56589	27.31540	-82.56652	5.8	2.2	031124	0.44
10-5-09	091703	1347	27.30965	-82.55321	27.30955	-82.55320	1.1	1.0	031121	0.73
11-1-09	091703	1208	27.36698	-82.56980	27.36747	-82.56942	3.3	1.2	031119	0.93
11-2-09	091703	1225	27.34891	-82.55895	27.34890	-82.55860	3.6	1.6	031126	0.53
11-3-09	091703	1255	27.33112	-82.55516	27.33180	-82.55537	3.9	2.3	031127	0.49
11-4-09	091703	1311	27.32486	-82.54659	27.32545	-82.54557	2.5	1.4	031114	0.69
11-5-09	091703	1405	27.30436	-82.54324	27.30402	-82.54313	1.8	0.7	031117	1.46
12-1-09	091603	1454	27.30340	-82.56403	27.30317	-82.56405	7.6	3.8	031131	0.32
12-2-09	091603	1440	27.29864	-82.56033	27.29803	-82.56038	5.0	2.0	031137	0.62
13-1-09	091603	1415	27.29030	-82.54766	27.29022	-82.54763	2.1	0.8	031129	1.49
13-2-09	091603	1401	27.28120	-82.54241	27.28107	-82.54223	1.3	0.7	031134	1.55
13-3-09	091603	1338	27.26706	-82.53928	27.26693	-82.53907	0.9	0.7	031136	1.89
13-4-09	091603	1307	27.25750	-82.53300	27.25755	-82.53292	0.9	0.6	031135	2.02
13-5-09	091603	1244	27.25081	-82.52574	27.25057	-82.52568	1.2	0.8	031132	1.76
14-1-09	091603	1222	27.23837	-82.51715	27.23783	-82.51645	2.1	0.8	031128	1.78
14-2-09	091603	1205	27.23177	-82.51597	27.23163	-82.51598	1.5	0.6	031130	1.89
14-3-09	091603	1142	27.21801	-82.51121	27.21833	-82.51120	0.8	>B	031133	1.77
14-4-09	091603	1117	27.20052	-82.49762	27.20033	-82.49738	1.5	0.6	031140	1.86
14-5-09	091603	1050	27.18391	-82.49674	27.18460	-82.49585	0.9	>B	031139	1.96
16-1-09	091603	1355	27.16960	-82.49064	27.16965	-82.49070	0.9	0.5	031147	2.40
16-2-09	091603	1333	27.16197	-82.48452	27.16202	-82.48462	3.3	0.5	031148	2.29
16-3-09	091603	1318	27.14932	-82.47496	27.14933	-82.47533	1.7	0.7	031141	1.78
16-4-09	091603	1304	27.14075	-82.47156	27.14035	-82.47225	2.4	0.7	031149	1.74
16-5-09	091603	1248	27.13033	-82.47017	27.13047	-82.47047	1.5	0.9	031151	1.53
DR-1-09	091603	1311	27.12090	-82.46410	27.12128	-82.46347	1.5	>B	031167	0.85
DR-2-09	091603	1229	27.12610	-82.44600	27.12587	-82.44643	1.3	0.8	031168	3.32
DR-3-09	091603	1338	27.11400	-82.46500	27.11407	-82.46525	3.4	>B	031165	0.64
DR-4-09	091603	1153	27.10920	-82.45380	27.10903	-82.45408	1.5	0.8	031172	2.50
DR-5-09	091603	1047	27.06090	-82.44400	27.06090	-82.44413	0.5	>B	031164	2.12
LB-1-09	091603	1207	27.04942	-82.43688	27.04925	-82.43682	0.9	>B	031145	2.02
LB-2-09	091603	1146	27.02309	-82.41807	27.02293	-82.41798	2.9	1.0	031143	1.87
LB-3-09	091603	1130	26.99601	-82.40010	26.99610	-82.39995	1.2	0.8	031146	2.19
LB-4-09	091603	1112	26.97605	-82.38374	26.97637	-82.38367	2.1	0.8	031150	1.77
LB-5-09	091603	1047	26.96319	-82.37824	26.96388	-82.37690	0.6	>B	031142	1.72

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Sarasota Bay / Myakka River Status and Trends Monitoring
Water Quality Analyses

Station	Sample Depth	Time (EST)	Sample Number	Date (mmddyy)	NH_4-N Diss (mg/l)	NO_{23}-N Diss (mg/l)	Inorg N Diss (mg/l)	NO_{23}-N (mg/l)	NH_4-N (mg/l)	TKN (mg/l)	Total N (mg/l)	PO_4-P Diss (mg/l)	Total P (mg/l)	BOD_5 (mg/l)	TSS (mg/l)	VSS (mg/l)	Turbidity (NTU)	Color Apparent (PCU)	Color pH (su)	Chl a Corr (mg/m3)	Salinity Field (PSU)
12-1-09	1.0M	1453	031131	9/16/03	0.011	U0.005	0.014	U0.005	NA	0.19	0.19	0.016	0.10	1.1	11	NA	0.70	7	8.25	2.74	34.68
12-2-09	1.0M	1438	031137	9/16/03	0.022	0.005	0.027	U0.005	NA	0.11	0.11	0.021	0.11	0.7	9	NA	0.75	7	8.22	1.96	34.26
13-1-09	1.0M	1414	031129	9/16/03	0.013	U0.005	0.016	U0.005	NA	0.57	0.57	0.054	0.21	2.7	23	NA	5.8	50	8.16	15.72	27.60
13-2-09	MID	1400	031134	9/16/03	0.012	U0.005	0.015	U0.005	NA	0.59	0.59	0.061	0.22	3.3	10	NA	5.5	70	8.21	17.34	22.78
13-3-09	MID	1337	031136	9/16/03	0.011	U0.005	0.014	U0.005	NA	0.69	0.69	0.071	0.22	2.7	15	NA	5.9	80	8.12	23.73	20.80
13-4-09	MID	1307	031135	9/16/03	0.015	U0.005	0.017	U0.005	NA	1.11	1.11	0.071	0.26	2.8	16	NA	8.7	40	8.11	16.40	20.77
13-5-09	MID	1243	031132	9/16/03	0.015	U0.005	0.017	U0.005	NA	0.67	0.67	0.069	0.21	3.0	14	NA	5.9	80	8.16	16.72	20.14
14-1-09	MID	1221	031128	9/16/03	0.009	U0.005	0.012	U0.005	NA	0.71	0.71	0.071	0.22	2.9	11	NA	6.2	75	8.18	17.82	19.15
14-2-09	MID	1204	031130	9/16/03	0.013	U0.005	0.016	U0.005	NA	0.76	0.76	0.070	0.22	3.1	15	NA	6.9	85	8.20	18.46	18.81
14-3-09	MID	1141	031133	9/16/03	0.013	U0.005	0.016	U0.005	NA	0.79	0.79	0.074	0.22	3.3	20	NA	6.5	85	8.19	16.99	16.98
14-4-09	MID	1117	031140	9/16/03	0.007	U0.005	0.010	U0.005	NA	0.73	0.73	0.066	0.22	3.0	12	NA	5.9	90	8.20	17.37	19.21
14-5-09	MID	1050	031139	9/16/03	0.018	U0.005	0.020	U0.005	NA	0.79	0.79	0.067	0.25	2.8	13	NA	7.6	85	8.14	19.42	19.09
14-5-09 REP	MID	1055	031138	9/16/03	0.011	U0.005	0.014	U0.005	NA	0.77	0.77	0.065	0.21	2.8	13	NA	7.6	85	8.18	15.59	NA
16-1-09	MID	1355	031147	9/16/03	0.017	U0.005	0.020	U0.005	NA	0.73	0.73	0.067	0.22	2.6	12	NA	5.7	100	8.14	18.94	20.19
16-2-09	1.0M	1333	031148	9/16/03	0.012	U0.005	0.015	U0.005	NA	0.75	0.75	0.068	0.22	2.8	9	NA	4.0	90	8.12	16.85	19.30
16-3-09	MID	1318	031141	9/16/03	0.017	U0.005	0.020	U0.005	NA	0.56	0.56	0.056	0.19	2.1	9	NA	3.1	85	8.16	12.51	22.61
16-4-09	1.0M	1304	031149	9/16/03	0.008	U0.005	0.011	U0.005	NA	0.60	0.60	0.055	0.20	2.1	8	NA	3.4	70	8.10	11.91	23.12
16-5-09	MID	1248	031151	9/16/03	0.009	U0.005	0.012	U0.005	NA	0.53	0.53	0.052	0.19	1.5	9	NA	2.7	55	8.10	12.65	24.75
DR-1-09	MID	1310	031167	9/16/03	0.012	U0.005	0.015	U0.005	NA	0.36	0.36	0.040	0.13	1.7	9	3.5	2.2	41	8.13	7.59	33.07
DR-2-09	MID	1228	031168	9/16/03	0.096	0.088	0.184	0.087	NA	0.89	0.98	0.130	0.21	1.1	5	2.7	4.2	170	7.45	9.42	2.94
DR-3-09	1.0M	1338	031165	9/16/03	0.016	0.011	0.027	0.011	NA	0.28	0.29	0.027	0.12	0.9	7	1.8	1.1	27	8.20	4.29	35.48
DR-3-09 REP	1.0M	1348	031166	9/16/03	0.012	0.012	0.024	0.012	NA	0.28	0.29	0.028	0.11	1.0	7	2.3	1.1	27	8.19	4.73	NA
DR-4-09	MID	1152	031172	9/16/03	0.046	0.078	0.124	0.078	NA	0.59	0.67	0.130	0.21	1.0	6	2.8	1.8	130	7.81	6.92	28.00
DR-5-09	MID	1047	031164	9/16/03	0.172	0.042	0.214	0.039	NA	0.92	0.96	0.188	0.35	2.2	9	3.6	4.1	110	7.82	13.39	15.51
LB-1-09	MID	1207	031145	9/16/03	0.148	0.059	0.207	0.057	NA	0.59	0.65	0.146	0.26	1.0	7	NA	1.9	85	7.81	4.80	17.77
LB-2-09	1.0M	1146	031143	9/16/03	0.166	0.060	0.226	0.057	NA	0.67	0.73	0.147	0.28	1.2	6	NA	1.8	85	7.79	14.04	18.22
LB-3-09	MID	1130	031146	9/16/03	0.014	0.019	0.033	0.017	NA	0.71	0.73	0.107	0.27	2.3	8	NA	2.5	90	8.01	34.63	17.50
LB-4-09	1.0M	1112	031150	9/16/03	0.013	U0.005	0.016	U0.005	NA	0.66	0.66	0.095	0.25	2.6	9	NA	2.5	80	8.07	19.62	21.41
LB-5-09	MID	1043	031142	9/16/03	0.013	U0.005	0.016	U0.005	NA	0.56	0.56	0.077	0.22	2.1	9	NA	3.0	90	8.27	8.66	16.03
LB-5-09 REP	MID	1052	031144	9/16/03	0.012	U0.005	0.015	U0.005	NA	0.62	0.62	0.080	0.21	1.5	9	NA	2.1	90	8.24	14.27	NA
EQP BLK		1615	031171	9/16/03	U0.005	U0.005	0.005	U0.005	NA	U0.05	U0.05	0.005	U0.05	U0.5	U2	0.5	U0.2	U2	5.72	U0.05	NA
EQP BLK		0815	031169	9/18/03	U0.005	U0.005	0.005	U0.005	NA	U0.05	U0.05	U0.005	U0.05	0.8	U2	NA	U0.2	U2	5.37	U0.05	NA
EQP BLK		1652	031170	9/18/03	U0.005	U0.005	0.005	U0.005	U0.005	U0.05	U0.05	U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.20	U0.05	NA

E MARINE LABORATORY, 1600 Ken Thompson Parkway, Sarasota, FL 34236

CUSTODY SHEET

Kit # 031-0038

Sampling Date 9/16/03 Log Book Pg #s _____ Project No. 112-521(Sbmon)

Samplers R. Myers A. Jayo Batch # 20023094

Mode of Sampling: Niskin

STATION DESIGNATION	TIME (EST)	SAMPLE DEPTH	H - 03 P, Br 125 ml DARK, ICE	D - 03 P, 1/2 gal ICE	A - 03 P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD	E - 03 Filtered P, 125 ml ICE	F - 03 Filtered P, 250 ml H_2SO_4 pH <2 ICE	pH ✓ FIELD
DR5	1047	1.0m/Mid	1164 ✓	1164 ✓	1164 ✓	✓	1164 ✓	1164 ✓	✓
DR4	1152	1.0m/Mid	1172 D	1172 ✓	1172 ✓	✓	1172 ✓	1172 ✓	✓
DR2	1228	1.0m/Mid	1168 ✓	1168 ✓	1168 ✓	✓	1168 ✓	1168 ✓	✓
DR1	1310	1.0m/Mid	1167 ✓	1167 ✓	1167 ✓	✓	1167 ✓	1167 ✓	✓
DR3	1338	1.0m/Mid	1165 ✓	1165 ✓	1165 ✓	✓	1165 ✓	1165 ✓	✓
DR3	~~1348~~ 1338	1.0m/Mid	1166 ✓	1166 ✓	1166 ✓	✓	1166 ✓	1166 ✓	✓
Eq Blank	1615	1.0m/Mid	1171	1171	1171	✓	1171	1171	✓
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							

FRACTION ANALYSES

A - NH_4N*, $NO_{23}N$, TKN, TOTP D - BOD_5**, Color, TSS, VSS***, Turb E - DPO_4P
F** - DNH_4N, $DNO_{23}N$ H - Chl-a (Fluorometric)
* - for SWF Stations only, ** - not For SWF Stations, *** - For DR Stations only

CONTAINER COUNT, THIS PAGE ONLY 35

RELINQUISHED BY: (SAMPLER'S SIGNATURE)	RECEIVED BY:(TRANSPORTER'S SIGNATURE)	DATE/TIME:	COUNT VERIFIED:
RELINQUISHED BY:	RECEIVED BY: Pat Hunroth	DATE/TIME: 1645 9-16-03	COUNT VERIFIED:

Ice Present: ✓ Temperature Blank: 7.4 °C Containers verified 100% pm ✓

SB521.wpd Revised:August 20, 2003

MOTE MARINE LABORATORY

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Charlotte Harbor • P.O. Box 2197 • Pineland, FL 33945 • Phone: (239) 283-1622 • Fax: (239) 283-2466
Mote Aquaculture Park • 12300 Fruitville Road • Sarasota, FL 34240

February 11, 2004

Ms. Laura Ammeson
Sarasota County
Air and Water Quality Protection
2817 Cattlemen Road
Sarasota, FL. 34232

SARASOTA COUNTY

FEB 13 2004

WATER RESOURCES

Dear Ms. Ammeson,

Enclosed are the data tables from the October 2003 sampling of Sarasota Bay and the Myakka River that Mote Marine Laboratory is performing for Sarasota County. Magnetic data are enclosed as an Excel 9.0 file (SBMN1003.XLS) which will generate the attached tables. Data are organized as six tables with descriptions which follow.

Mid-Day *in situ* profiles	8 pages
Station locations and water clarity	2 pages
Water quality analyses	2 pages
Weather conditions during samplings	1 page
Hydrolab Minisonde continuous deployments	4 pages each
Custody sheets for water quality samples	6 pages

The continuous Hydrolab data was gathered from stations MU-4 and ML-1 of Myakka River segment during this sampling. Diurnal fluctuation of dissolved oxygen concentration was very slight and ranged between 5.2 - 6.1 mg/L at station MU-4, and between 5.5 - 6.2 mg/L at station ML-1. Percent saturation of dissolved oxygen ranged from 62 - 75 % and 67 - 78% respectively.

Concentration of dissolved ammonia reported for equipment blank sample numbers 031303, 031304 and 030105 average 0.010 mg/L, or two times the detection limit for the analyte (MDL=0.005 mg/L). Based on the concentrations of ammonia for the respective unfiltered blank samples, the filtration process itself (rather than the sample collection) contributed between 0.000 to 0.010 mg/L, for an average of 0.004 mg/L. The average contribution of filtration was less than the MDL and was not statistically different from zero. This appears to be statistically random contamination with average impacts that are still within the method detection limits and so should not affect data quality of the remaining samples. We are, however, reviewing sampling procedures and will perform additional tests on the disposable filters used for field filtration. As these blanks are field equipment blanks rather than method blanks, no data qualifier codes are applied to sample data.

Please don't hesitate to call if I may answer any further questions regarding these data.

Sincerely,

Ari Nissanka

Ari Nissanka D.Sc.
Senior Chemist. Enclosures AN:mig

Mote Marine Laboratory
1600 Thompson Parkway
Sarasota, FL 34236
(941) 388-4441
FDH#E84091, FDEP#870216G

Sarasota Bay / Myakka River Status and Trends Monitoring
Mid-Day *In Situ* Profiles

Station	Date (mmddyy)	Time (EST)	Sample Depth (m)	Salinity (PSU)	Specific Conductance (mmhos/cm)	Temperature (Deg C)	pH (SU)	Dissolved Oxygen (mg/l)	D.O. Percent Saturation (%)
DR-1-10	102103	1401	0.2	32.97	50.55	29.37	7.62	5.25	83.9
DR-1-10	102103	1402	0.6	34.48	52.62	29.17	7.75	4.76	76.4
DR-1-10	102103	1402	1.0	34.99	53.29	28.51	7.84	4.77	76.1
DR-2-10	102103	1321	0.2	22.34	35.62	27.71	7.93	7.22	105.4
DR-2-10	102103	1322	0.6	24.86	39.19	27.24	7.93	6.94	101.7
DR-2-10	102103	1323	0.9	30.04	46.42	26.69	7.96	6.36	95.9
DR-3-10	102103	1447	0.2	34.58	52.64	26.82	8.04	6.77	104.5
DR-3-10	102103	1448	1.0	34.64	52.71	26.79	8.04	6.84	105.5
DR-3-10	102103	1449	2.7	35.25	53.53	26.58	8.05	6.69	103.2
DR-4-10	102103	1247	0.2	34.58	52.61	26.45	7.93	5.77	88.5
DR-4-10	102103	1249	0.6	34.73	52.82	26.44	7.95	5.89	90.4
DR-4-10	102103	1250	1.0	35.20	53.45	26.48	7.98	6.12	94.2
DR-5-10	102103	1524	0.2	33.09	50.62	27.10	7.86	6.45	99.1
DR-5-10	102103	1525	0.8	33.12	50.66	27.06	7.87	6.44	99.0
DR-5-10	102103	1525	1.3	33.06	50.59	27.07	7.86	6.44	98.9
LB-1-10	102103	1430	0.2	29.67	45.69	27.34	7.51	6.40	96.6
LB-1-10	102103	1431	1.0	29.71	45.76	27.23	7.51	6.47	97.5
LB-1-10	102103	1431	1.8	29.87	45.97	27.14	7.50	6.25	94.1
LB-2-10	102103	1413	0.2	28.85	44.56	26.94	7.45	5.77	86.2
LB-2-10	102103	1414	1.0	28.83	44.54	26.99	7.46	5.87	87.7
LB-2-10	102103	1414	1.7	29.19	45.05	26.34	7.36	4.45	65.9
LB-3-10	102103	1400	0.2	28.05	43.46	26.94	7.40	5.57	83.4
LB-3-10	102103	1401	0.6	28.08	43.49	26.93	7.39	5.56	82.5
LB-3-10	102103	1401	0.9	28.08	43.48	26.92	7.39	5.51	81.9
LB-4-10	102103	1346	0.2	26.78	41.68	26.70	7.58	6.31	92.6
LB-4-10	102103	1347	0.6	26.78	41.69	26.74	7.57	6.27	92.1
LB-4-10	102103	1347	0.9	26.78	41.69	26.70	7.57	6.19	90.9
LB-5-10	102103	1330	0.2	27.56	42.77	26.47	7.67	6.01	88.5
LB-5-10	102103	1331	1.0	27.74	43.03	26.41	7.69	6.06	89.6
LB-5-10	102103	1332	1.9	30.25	46.45	26.21	7.77	6.20	92.1

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Sarasota Bay / Myakka River Status and Trends Monitoring
Station Locations and Water Clarity

Station	Date	Time	Ideal Station Location		Actual Station Location		Depth	Secchi	Water	Attenuation
			Latitude	Longitude	Latitude	Longitude	Overall	Depth	Quality	Coefficient
	(mmddyy)	(EST)	(degrees)	(degrees)	(degrees)	(degrees)	(m)	(m)	Sample	(m^{-1})
7-1-10	102203	1114	27.37974	-82.60183	27.37943	-82.60168	3.0	0.7	031240	1.34
7-2-10	102203	1058	27.37328	-82.59063	27.37327	-82.59072	4.1	1.5	031253	0.80
8-1-10	102203	1130	27.38478	-82.58350	27.38480	-82.58332	3.2	1.0	031239	0.90
8-2-10	102203	1149	27.37123	-82.57739	27.37140	-82.57738	3.7	0.8	031248	1.24
10-1-10	102203	1041	27.35317	-82.58200	27.35312	-82.58178	3.8	2.6	031243	0.55
10-2-10	102203	1249	27.33932	-82.56744	27.33930	-82.56738	2.2	1.7	031249	3.32
10-3-10	102203	1008	27.33075	-82.58471	27.33133	-82.58470	3.3	>B	031242	0.57
10-4-10	102203	1440	27.31177	-82.56508	27.31163	-82.56495	5.0	2.5	031247	0.42
10-5-10	102203	1425	27.31382	-82.55319	27.31355	-82.55328	4.6	1.1	031252	1.02
11-1-10	102203	1209	27.36367	-82.56204	27.36380	-82.56175	3.3	0.7	031251	1.30
11-2-10	102203	1228	27.35294	-82.56188	27.35268	-82.56178	3.6	1.5	031246	0.68
11-3-10	102203	1342	27.33770	-82.55514	27.33785	-82.55475	2.1	0.6	031244	1.21
11-4-10	102203	1357	27.32001	-82.54623	27.31982	-82.54627	1.9	0.9	031245	0.99
11-5-10	102203	1411	27.31165	-82.54243	27.31160	-82.54282	1.7	1.2	031250	1.06
12-1-10	102103	1404	27.30445	-82.56181	27.30395	-82.56100	3.2	1.7	031294	0.78
12-2-10	102103	1421	27.29089	-82.56273	27.29045	-82.56237	4.0	4.0	031291	0.36
13-1-10	102103	0946	27.29178	-82.55099	27.29118	-82.54985	2.0	>B	031286	0.57
13-2-10	102103	1013	27.28559	-82.54434	27.28568	-82.54483	2.1	1.8	031284	1.05
13-3-10	102103	1045	27.26634	-82.54074	27.26713	-82.54025	2.1	1.6	031283	0.63
13-4-10	102103	1113	27.25707	-82.53238	27.25747	-82.53298	1.5	>B	031292	1.13
13-5-10	102103	1134	27.24775	-82.52234	27.24747	-82.52347	2.3	1.7	031295	1.08
14-1-10	102103	1152	27.23511	-82.52013	27.23495	-82.51743	2.0	1.5	031289	1.08
14-2-10	102103	1208	27.22613	-82.51325	27.22628	-82.51212	1.9	1.6	031288	1.22
14-3-10	102103	1225	27.21758	-82.50273	27.21817	-82.50407	1.5	>B	031290	1.11
14-4-10	102103	1243	27.19858	-82.50238	27.19848	-82.50152	1.8	1.4	031293	1.17
14-5-10	102103	1302	27.18990	-82.49436	27.18975	-82.49512	1.7	>B	031285	0.75
16-1-10	102103	1208	27.17174	-82.49235	27.17160	-82.49252	1.3	>B	031261	1.15
16-2-10	102103	1150	27.16133	-82.48455	27.16150	-82.48450	1.5	>B	031257	1.08
16-3-10	102103	1134	27.15314	-82.48020	27.15288	-82.48035	2.1	>B	031263	0.85
16-4-10	102103	1117	27.14446	-82.47512	27.14357	-82.47495	1.2	>B	031255	0.91
16-5-10	102103	1103	27.13421	-82.47046	27.13413	-82.47035	2.5	1.5	031259	0.75
DR-1-10	102103	1401	27.13290	-82.46180	27.13290	-82.46165	1.2	>B	031277	1.08
DR-2-10	102103	1321	27.12630	-82.44870	27.12627	-82.44868	1.1	>B	031282	1.65
DR-3-10	102103	1447	27.11280	-82.46270	27.11284	-82.46283	2.9	1.5	031280	1.24
DR-4-10	102103	1247	27.10890	-82.44790	27.10890	-82.44804	1.2	>B	031279	0.60
DR-5-10	102103	1524	27.06770	-82.43100	27.06777	-82.43084	1.5	1.5	031278	1.52
LB-1-10	102103	1430	27.04493	-82.43241	27.04518	-82.43253	2.0	1.4	031258	1.60
LB-2-10	102103	1413	27.01554	-82.41316	27.01572	-82.41327	1.9	0.8	031262	1.54
LB-3-10	102103	1400	27.00150	-82.40530	27.00180	-82.40492	1.1	>B	031264	1.29
LB-4-10	102103	1346	26.98130	-82.38921	26.98122	-82.38935	1.1	>B	031260	1.34
LB-5-10	102103	1330	26.95133	-82.36577	26.95103	-82.36592	2.1	1.4	031256	0.84

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Sarasota Bay / Myakka River Status and Trends Monitoring
Water Quality Analyses

Station	Sample Depth	Time (EST)	Sample Number	Date (mmddyy)	NH_4-N Diss (mg/l)	NO_{23}-N Diss (mg/l)	Inorg N Diss (mg/l)	NO_{23}-N (mg/l)	NH_4-N (mg/l)	TKN (mg/l)	Total N (mg/l)	PO_4-P Diss (mg/l)	Total P (mg/l)	BOD_5 (mg/l)	TSS (mg/l)	VSS (mg/l)	Turbidity (NTU)	Color Apparent (PCU)	Color pH (su)	Chl a Corr (mg/m3)	Salinity Field (PSU)
12-1-10	1.0M	1503	031294	10/21/03	0.022	U0.005	0.024	U0.005	NA	0.28	0.28	0.016	0.17	0.6	9	NA	3.7	12	8.19	2.09	33.87
12-2-10	1.0M	1521	031291	10/21/03	0.025	U0.005	0.028	U0.005	NA	0.24	0.24	0.022	0.13	U0.5	10	NA	1.1	8	8.19	0.49	33.93
13-1-10	1.0M	1045	031286	10/21/03	0.015	U0.005	0.017	U0.005	NA	0.29	0.29	0.032	0.16	0.5	5	NA	2.4	13	8.13	3.58	32.65
13-1-10 REP	1.0M	1053	031287	10/21/03	0.094	U0.005	0.097	U0.005	NA	0.37	0.37	0.027	0.16	0.5	14	NA	2.5	12	8.14	1.97	NA
13-2-10	1.0M	1113	031284	10/21/03	0.013	U0.005	0.016	U0.005	NA	0.35	0.35	0.028	0.17	0.6	7	NA	3.0	16	8.15	1.71	31.96
13-3-10	1.0M	1144	031283	10/21/03	0.010	U0.005	0.013	U0.005	NA	0.40	0.40	0.037	0.18	0.7	11	NA	3.9	22	8.09	3.20	30.46
13-4-10	MID	1213	031292	10/21/03	0.022	U0.005	0.024	U0.005	NA	0.43	0.43	0.045	0.19	0.9	10	NA	4.2	26	8.08	3.48	29.13
13-5-10	1.0M	1234	031295	10/21/03	0.021	U0.005	0.024	U0.005	NA	0.47	0.47	0.042	0.20	0.9	6	NA	3.2	23	8.14	2.32	28.49
14-1-10	MID	1251	031289	10/21/03	0.018	U0.005	0.020	U0.005	NA	0.42	0.42	0.045	0.18	0.8	9	NA	3.7	24	8.14	2.82	28.22
14-2-10	MID	1307	031288	10/21/03	0.021	U0.005	0.024	U0.005	NA	0.44	0.44	0.043	0.18	0.7	13	NA	2.7	22	8.19	1.45	27.58
14-3-10	MID	1325	031290	10/21/03	0.013	U0.005	0.016	U0.005	NA	0.60	0.60	0.044	0.19	1.3	15	NA	3.1	22	8.22	3.10	27.08
14-4-10	MID	1342	031293	10/21/03	0.020	U0.005	0.023	U0.005	NA	0.51	0.51	0.044	0.19	1.7	13	NA	3.3	28	8.25	2.84	26.94
14-5-10	MID	1402	031285	10/21/03	0.013	U0.005	0.016	U0.005	NA	0.46	0.46	0.048	0.20	1.4	14	NA	2.9	28	8.24	4.81	27.32
16-1-10	MID	1207	031261	10/21/03	0.020	U0.005	0.023	U0.005	NA	0.49	0.49	0.040	0.23	1.5	12	NA	3.6	24	8.07	3.25	28.48
16-1-10 REP	MID	1211	031254	10/21/03	0.030	0.005	0.035	U0.005	NA	0.49	0.49	0.041	0.23	1.1	10	NA	2.8	24	8.06	4.59	NA
16-2-10	MID	1149	031257	10/21/03	0.025	0.005	0.030	U0.005	NA	0.45	0.45	0.037	0.22	0.8	8	NA	2.5	22	8.05	2.17	28.65
16-3-10	1.0M	1133	031263	10/21/03	0.030	U0.005	0.033	U0.005	NA	0.39	0.39	0.030	0.18	0.7	10	NA	1.6	17	8.09	1.11	30.62
16-4-10	MID	1117	031255	10/21/03	0.029	0.007	0.036	U0.005	NA	0.30	0.30	0.029	0.17	0.5	8	NA	2.0	17	8.02	0.89	30.86
16-5-10	1.0M	1100	031259	10/21/03	0.023	0.006	0.029	U0.005	NA	0.33	0.33	0.031	0.18	0.6	9	NA	2.6	22	8.09	1.63	31.25
DR-1-10	MID	1400	031277	10/21/03	0.025	0.007	0.032	0.005	NA	0.45	0.46	0.045	0.25	2.3	14	4.8	4.1	33	7.83	8.72	34.48
DR-1-10 REP	MID	1413	031281	10/21/03	0.016	0.024	0.040	0.022	NA	0.48	0.50	0.046	0.27	2.1	9	4.2	3.7	31	7.80	7.94	NA
DR-2-10	MID	1320	031282	10/21/03	0.018	U0.005	0.020	U0.005	NA	0.60	0.60	0.049	0.19	1.5	10	3.5	3.8	65	8.05	4.81	24.86
DR-3-10	1.0M	1445	031280	10/21/03	0.022	U0.005	0.024	U0.005	NA	0.35	0.35	0.028	0.20	0.9	8	3.0	3.7	21	8.14	1.61	34.64
DR-4-10	MID	1248	031279	10/21/03	0.021	0.006	0.027	U0.005	NA	0.35	0.35	0.027	0.19	0.7	5	1.9	2.2	22	8.12	1.14	34.73
DR-5-10	MID	1522	031278	10/21/03	0.019	U0.005	0.022	U0.005	NA	0.39	0.39	0.052	0.23	0.7	16	4.8	3.3	22	8.08	2.16	33.12
LB-1-10	MID	1430	031258	10/21/03	0.018	U0.005	0.020	U0.005	NA	0.53	0.53	0.050	0.27	1.9	12	NA	4.6	32	7.94	5.75	29.71
LB-2-10	MID	1413	031262	10/21/03	0.020	U0.005	0.023	U0.005	NA	0.43	0.43	0.055	0.30	1.2	9	NA	3.7	35	7.94	4.30	28.83
LB-3-10	MID	1400	031264	10/21/03	0.075	0.007	0.082	U0.005	NA	0.67	0.67	0.065	0.25	0.9	6	NA	3.0	34	7.90	3.76	28.08
LB-4-10	MID	1346	031260	10/21/03	0.056	U0.005	0.059	U0.005	NA	0.55	0.55	0.055	0.27	1.2	12	NA	3.1	32	8.06	6.91	26.78
LB-5-10	1.0M	1330	031256	10/21/03	0.053	0.008	0.061	U0.005	NA	0.45	0.45	0.046	0.23	0.8	13	NA	2.0	22	8.15	1.96	27.74
EQP BLK		0800	031304	10/22/03	0.011	U0.005		U0.005	NA	U0.05		U0.005	U0.05	U0.5	U2	U0.5	U0.2	U2	5.57	U0.05	NA
EQP BLK		0820	031303	10/23/03	0.010	U0.005		U0.005	NA	U0.05		U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.83	U0.05	NA
EQP BLK		0730	031305	10/24/03	0.010	U0.005		U0.005	U0.005	U0.05		U0.005	U0.05	U0.5	U2	NA	U0.2	U2	5.51	U0.05	NA

E MARINE LABORATORY, 1600 Ken Thompson Parkway, Sarasota, FL 34236

CUSTODY SHEET

Kit # 031-0044 Project No. 112-521(Sbmon)

Sampling Date 10/21/03 Log Book Pg #s _____ Batch # 2003109

Samplers R. Myers A. Jayo Mode of Sampling: Niskin

STATION DESIGNATION	TIME (EST)	SAMPLE DEPTH	H - 03 P, Br 125 ml DARK, ICE	D -03 P, 1/2 gal ICE	A - 03 P, 250 ml H_2SO_4 pH < 2 ICE	pH ✓ FIELD	E - 03 Filtered P, 125 ml ICE	F - 03 Filtered P, 250 ml H_2SO_4 pH < 2 ICE	pH ✓ FIELD
DR4	1248	1.0m/Mid	1279	1279	1279	✓	1279	1279	✓
DR2	1320	1.0m/Mid	1282	1282	1282	✓	1282	1282	✓
DR3 (A1 TOTP)	1400	1.0m/Mid	1277D	1277	1277	✓	1277	1277	✓
DR3 (A2 TKN)	1413	1.0m/Mid	1281	1281	1281	✓	1281	1281	✓
DR3	1445	1.0m/Mid	1280	1280	1280	✓	1280	1280	✓
DR5	1522	1.0m/Mid	1278	1278	1278	✓	1278	1278	✓
		1.0m/Mid							
		1.0m/Mid							
EQPBLK	0800	1.0m/Mid	1304	1304	1304	✓	1304	1304	✓
	10/22/03	1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							
		1.0m/Mid							

FRACTION ANALYSES: A - NH_4N*, $NO_{23}N$, TKN, TOTP D - BOD_5**, Color, TSS, VSS***, Turb E - DPO_4P
F** - DNH_4N, $DNO_{23}N$ H - Chl-a (Fluorometric)
* - for SWF Stations only, ** - not For SWF Stations, *** - For DR Stations only

CONTAINER COUNT, THIS PAGE ONLY 30

RELINQUISHED BY: (SAMPLER'S SIGNATURE)	RECEIVED BY:(TRANSPORTER'S SIGNATURE)	DATE/TIME:	COUNT VERIFIED:
	Pat Mnott	10-22-03 0830 EST	✓
RELINQUISHED BY:	RECEIVED BY:	DATE/TIME:	COUNT VERIFIED:

Ice Present: In cold room Temperature Blank: _____ °C Containers verified 100% ✓

SB521.wpd Revised:August 20, 2003

Dona / Roberts Bay Salinity Study of 12-4-02

Waypoint	Time	Relative Sample Depth	Sample Depth (ft)	Water Depth (ft)	Secchi Depth (m)	Spec. Cond. (temp corrected)	Salinity (ppt)	DO (mg/L)	DO Sat %	WaterTemp (C)	pH	Sampling Run	Region Sampled	Tidal Stage at Venice Inlet - predicted
1	6:59	top	0.5	1	No Data	14,340	7.3	6.30	68.2	18.2	No Data	Morning Run	Lyons and Dona Bay	-0.6
2	7:18	top	0.5	1	No Data	24,480	15.1	6.10	65.4	17.6	No Data	Morning Run	Lyons and Dona Bay	-0.6
3	7:26	top	1.5	5	>1.5	25,820	15.9	7.70	83.7	16.7	No Data	Morning Run	Lyons and Dona Bay	-0.6
4	8:55	bottom	9	11	1.9	32,650	20.5	7.72	90.7	16.7	No Data	Morning Run	Lyons and Dona Bay	-0.1
4	8:55	top	1.5	11	1.9	32,060	20	7.24	85.1	16.7	No Data	Morning Run	Lyons and Dona Bay	-0.1
5	9:09	bottom	9	11	3	37,990	24.1	7.81	93.8	17.2	No Data	Morning Run	Lyons and Dona Bay	0
5	9:09	top	1.5	11	3	37,800	24.1	7.60	91.4	17.2	No Data	Morning Run	Lyons and Dona Bay	0
6	9:20	top	1.5	5	1.4	30,190	18.7	7.45	86.9	17.5	No Data	Morning Run	Lyons and Dona Bay	0.1
7	9:30	mid	1.5	3	>0.9	32,350	20.3	7.57	88.9	17.5	No Data	Morning Run	Lyons and Dona Bay	0.2
8	9:33	mid	1.5	2	>0.6	35,450	22.5	7.72	92.3	17.2	No Data	Morning Run	Lyons and Dona Bay	0.2
9	9:40	top	1.5	4	>1.2	39,940	25.6	7.81	94.3	17.4	No Data	Morning Run	Lyons and Dona Bay	0.2
10	9:47	top	1.5	5	>1.5	37,280	23.6	7.43	88.8	17.2	No Data	Morning Run	Lyons and Dona Bay	0.2
11	9:55	top	1.5	5	>1.5	38,700	24.7	7.13	88.1	18.1	No Data	Morning Run	Lyons and Dona Bay	0.3
12	9:58	top	1.5	6	1.7	38,700	24.7	6.22	78	18	No Data	Morning Run	Lyons and Dona Bay	0.4
13	10:02	mid	1.5	3	>0.9	36,600	23.2	6.97	85	18.1	No Data	Morning Run	Lyons and Dona Bay	0.4
14	10:11	top	1.5	4	1.1	38,320	24.4	6.88	84.5	18	No Data	Morning Run	Lyons and Dona Bay	0.5
15	10:17	mid	1.5	3	0.9	35,410	22.3	5.48	68.7	19.2	No Data	Morning Run	Lyons and Dona Bay	0.5
16	10:27	mid	1.5	3	0.9	35,580	23.3	7.86	89.8	19.1	No Data	Morning Run	Lyons and Dona Bay	0.7
17	10:33	top	1.5	6.2	1.8	37,250	23.1	7.01	86.4	18.6	No Data	Morning Run	Lyons and Dona Bay	0.7
18	10:38	mid	1.5	3	0.9	35,400	22.8	6.99	89.1	19.2	No Data	Morning Run	Lyons and Dona Bay	0.7
19	11:10	bottom	9	13	3.7	42,400	27.3	7.94	98.6	17.6	No Data	Morning Run	Lyons and Dona Bay	0.9
19	11:10	top	1.5	13	3.7	42,100	27.1	8.00	98.7	17.7	No Data	Morning Run	Lyons and Dona Bay	0.9
4	12:43	bottom	9	11	2.6	44,590	28.9	7.99	99	18	No Data	Afternoon Run	Lyons and Dona Bay	1.2
4	12:43	top	1.5	11	2.6	44,640	28.9	8.05	102.1	18.1	No Data	Afternoon Run	Lyons and Dona Bay	1.2
5	13:05	bottom	9	9	>2.7	44,560	28.8	7.58	96.1	17.8	No Data	Afternoon Run	Lyons and Dona Bay	1.3

Dona / Roberts Bay Salinity Study of 12-4-02

Waypoint	Time	Relative Sample Depth	Sample Depth (ft)	Water Depth (ft)	Secchi Depth (m)	Spec. Cond. (temp corrected)	Salinity (ppt)	DO (mg/L)	DO Sat %	WaterTemp (C)	pH	Sampling Run	Region Sampled	Tidal Stage at Venice Inlet - predicted
5	13:05	top	1.5	9	>2.7	44,530	28.8	7.63	94.9	17.8	No Data	Afternoon Run	Lyons and Dona Bay	1.3
6	13:15	top	1.5	5	1.5	40,570	26.3	8.04	103.4	18.6	No Data	Afternoon Run	Lyons and Dona Bay	1.3
7	13:21	top	1.5	4	>1.2	39,170	25	7.91	98.2	19.2	No Data	Afternoon Run	Lyons and Dona Bay	1.3
8	13:26	mid	1.5	3	>0.9	42,250	27.2	8.18	103.3	19.2	No Data	Afternoon Run	Lyons and Dona Bay	1.3
9	13:30	top	1.5	6	>1.8	44,510	28.9	7.41	93.4	18.1	No Data	Afternoon Run	Lyons and Dona Bay	1.3
10	13:35	top	1.5	5	1.5	42,570	27.4	7.52	96	18.9	No Data	Afternoon Run	Lyons and Dona Bay	1.3
11	13:41	mid	1.5	3	>0.9	43,010	27.8	7.85	99.3	19.1	No Data	Afternoon Run	Lyons and Dona Bay	1.3
12	13:45	top	1.5	6	1.8	42,070	27.1	7.50	93	19.4	No Data	Afternoon Run	Lyons and Dona Bay	1.3
13	13:48	mid	1.5	3	>0.9	40,810	26.5	7.34	99.7	20.7	No Data	Afternoon Run	Lyons and Dona Bay	1.3
14	13:54	mid	1.5	3	>0.9	41,920	27	7.18	92.2	20	No Data	Afternoon Run	Lyons and Dona Bay	1.3
15	13:59	top	1.5	4	0.9	39,830	25.6	6.68	82.8	19.7	No Data	Afternoon Run	Lyons and Dona Bay	1.3
16	14:06	mid	1.5	3	0.9	40,250	26	7.97	101.8	18.9	No Data	Afternoon Run	Lyons and Dona Bay	1.3
17	14:11	top	1.5	5	1.5	41,260	26.5	7.72	101.2	19.6	No Data	Afternoon Run	Lyons and Dona Bay	1.3
18	14:18	mid	1.5	3	0.9	37,990	24.4	7.71	98.4	20.1	No Data	Afternoon Run	Lyons and Dona Bay	1.3
No Data	8:05	top	0.5	No Data	No Data	3,362	2.14	5.92	No Data	16.44	7.14	Morning Run	Shakett Creek NE of US41	-0.5
No Data	8:15	top	0.5	No Data	No Data	623	0.37	4.39	No Data	16.1	7.43	Morning Run	Shakett Creek NE of US41	-0.5
No Data	8:30	top	0.5	No Data	No Data	4,867	3.18	6.23	No Data	16.37	7.26	Morning Run	Shakett Creek NE of US41	-0.3
No Data	8:40	top	0.5	No Data	No Data	10,930	7.5	5.46	No Data	16.65	7.28	Morning Run	Shakett Creek NE of US41	-0.2
1	9:40	mid	1	2	>0.6	33,620	24.97	8.00	No Data	17.63	7.47	Morning Run	Shakett Creek NE of US41	0.2
2	9:50	mid	2.25	4.5	>1.1	32,230	23.66	7.20	No Data	17.63	7.7	Morning Run	Shakett Creek NE of US41	0.2
3	10:00	mid	1.25	2.5	>0.8	30,000	21.93	7.60	No Data	17.82	7.89	Morning Run	Shakett Creek NE of US41	0.4
4	10:13	mid	1.5	3	>0.9	31,800	23.3	8.00	No Data	17.89	8	Morning Run	Shakett Creek NE of US41	0.5
5	10:24	bottom	6	7	1.5	32,540	23.5	7.50	No Data	18.66	8.08	Morning Run	Shakett Creek NE of US41	0.6
5	10:24	top	0.5	7	1.5	20,990	14.8	6.60	No Data	18	8.24	Morning Run	Shakett Creek NE of US41	0.6
6	10:40	bottom	5.0	5.5	1.25	31,745	22.87	7.40	No Data	18.69	7.96	Morning Run	Shakett Creek NE of US41	0.7

Dona / Roberts Bay Salinity Study of 12-4-02

Waypoint	Time	Relative Sample Depth	Sample Depth (ft)	Water Depth (ft)	Secchi Depth (m)	Spec. Cond. (temp corrected)	Salinity (ppt)	DO (mg/L)	DO Sat %	WaterTemp (C)	pH	Sampling Run	Region Sampled	Tidal Stage at Venice Inlet - predicted
6	10:40	top	0.5	5.5	1.25	23,725	16.35	7.50	No Data	18.9	8.08	Morning Run	Shakett Creek NE of US41	0.7
8	10:59	bottom	7.0	7.5	1.25	29,800	21.28	6.30	No Data	18.75	7.71	Morning Run	Shakett Creek NE of US41	0.8
8	10:59	top	0.5	7.5	1.25	23,310	16.32	7.60	No Data	18.54	7.92	Morning Run	Shakett Creek NE of US41	0.8
9	11:18	mid	0.5	1	>0.3	3,605	2.25	7.70	No Data	17.43	8.25	Morning Run	Shakett Creek NE of US41	0.9
10	11:31	mid	1.125	2.25	>0.7	24,315	16.98	7.50	No Data	18.87	7.6	Morning Run	Shakett Creek NE of US41	0.9
11	11:40	mid	1	2	>0.7	21,421	14.55	7.30	No Data	19.71	7.65	Morning Run	Shakett Creek NE of US41	0.9
12	11:53	mid	0.5	1	>0.3	12,034	7.59	8.40	No Data	19.86	7.96	Morning Run	Shakett Creek NE of US41	0.9
13	13:46	mid	1.5	3	>0.9	39,900	29.14	8.90	No Data	19.21	7.81	Afternoon Run	Shakett Creek NE of US41	1.3
14	13:52	mid	2.5	5	>1.5	39,000	28.25	8.90	No Data	19	7.98	Afternoon Run	Shakett Creek NE of US41	1.3
15	16:00	mid	1.25	1.5	>0.5	34,259	23.85	9.60	No Data	20.45	8.2	Afternoon Run	Shakett Creek NE of US41	1.2
SC Bridge	9:30	top	1	10	No Data	33,300	24.81	7.20	88.8	17.5	7.54	Morning Run	Curry Creek	0.2
CC Bridge	10:00	top	0.7	5	No Data	38,500	29	6.85	No Data	17.7	7.54	Morning Run	Curry Creek	0.4
CC-1	11:45	bottom	3	3.8	No Data	39,500	29.3	7.30	86.5	18.4	7.52	Morning Run	Curry Creek	0.9
CC-1	11:45	top	1	3.8	No Data	39,250	29.21	7.40	92	18.4	7.6	Morning Run	Curry Creek	0.9
CC-2	12:00	bottom	1	1	No Data	39,350	29	6.76	83.8	18.7	7.62	Morning Run	Curry Creek	1
CC-3	12:05	bottom	1	1	No Data	38,600	28.1	7.60	94.6	19	7.49	Morning Run	Curry Creek	1
CC-4	12:10	top	1	3	No Data	37,700	27.3	7.30	92.51	19.21	7.55	Morning Run	Curry Creek	1
CC-5	12:20	mid	1	2.1	No Data	34,600	24.6	7.65	97.2	19.6	7.54	Morning Run	Curry Creek	1.1
CC-6	12:35	mid	1	1.75	No Data	28,300	20	7.60	96.5	19.5	7.31	Morning Run	Curry Creek	1.2
CC-7	12:40	top	1	3	No Data	21,500	14.6	7.54	91.9	19.4	7.4	Morning Run	Curry Creek	1.2
CC-8	12:45	top	1	3	No Data	13,100	8.7	6.96	86.7	18.9	7.29	Morning Run	Curry Creek	1.2
CC-9	12:50	top	1	2.8	No Data	10,600	7.05	7.00	85.5	18	7.3	Morning Run	Curry Creek	1.3
CC-10	13:00	top	1	3.5	No Data	920	0.52	5.60	68.3	16.8	6.3	Morning Run	Curry Creek	1.3
CC-11	13:30	top	1	3	No Data	667	0.38	6.00	80	18.1	6.15	Morning Run	Curry Creek	1.3
CC11	14:20	mid	1	2.2	No Data	666	0.38	5.88	72.4	17.6	5.15	Afternoon Run	Curry Creek	1.3

Dona / Roberts Bay Salinity Study of 12-4-02

Waypoint	Time	Relative Sample Depth	Sample Depth (ft)	Water Depth (ft)	Secchi Depth (m)	Spec. Cond. (temp corrected)	Salinity (ppt)	DO (mg/L)	DO Sat %	WaterTemp (C)	pH	Sampling Run	Region Sampled	Tidal Stage at Venice Inlet - predicted
CC12	14:40	bottom	4	4.5	No Data	1,600	0.9	6.00	74.2	18	6.65	Afternoon Run	Curry Creek	1.3
CC12	14:40	top	1	4.5	No Data	6,200	4	6.00	74.2	18	6.65	Afternoon Run	Curry Creek	1.3
CC13	14:50	top	1	4	No Data	14,200	9.41	7.55	92.5	19.4	7.36	Afternoon Run	Curry Creek	1.2
CC14	14:55	mid	1	1.5	No Data	8,500	5.26	6.80	91	19.6	7.4	Afternoon Run	Curry Creek	1.2
CC15	15:00	top	1	3	No Data	26,000	19	7.62	96	20	7.4	Afternoon Run	Curry Creek	1.2
CC16	15:10	mid	1.5	3	No Data	32,500	22.5	8.01	103	20.6	7.54	Afternoon Run	Curry Creek	1.2
CC6	15:15	top	1	1.5	No Data	31,700	22	6.60	84	20.1	7.61	Afternoon Run	Curry Creek	1.2
CC5	15:20	mid	1	1.5	No Data	36,700	24.8	8.10	106	22	7.76	Afternoon Run	Curry Creek	1.2
CC4	15:30	top	1	3.5	No Data	40,000	27.8	7.95	103.5	21	7.75	Afternoon Run	Curry Creek	1.2
CC3	15:35	mid	1	1.5	No Data	41,000	29	7.60	96	20.4	7.77	Afternoon Run	Curry Creek	1.2
CC2	15:40	mid	1	1.5	No Data	41,000	28.9	7.50	95	20.9	7.73	Afternoon Run	Curry Creek	1.2
CC1	15:50	mid	3.5	6	No Data	41,600	31	8.10	100	18.5	7.69	Afternoon Run	Curry Creek	1.2
CC1	15:50	top	1	6	No Data	41,100	30.2	8.35	105	18.9	7.3	Afternoon Run	Curry Creek	1.2
SCBridge	16:00	bottom	7	9	No Data	42,300	31.4	9.20	110	18.7	7.72	Afternoon Run	Curry Creek	1.2
SCBridge	16:00	top	1	9	No Data	41,500	30.5	8.70	109	19	7.78	Afternoon Run	Curry Creek	1.2
8	6:28	top	0.5	2	>0.3	8746*	0.4*	6.45	65.5*	17.7*	No Data	Morning Run	Hatchett Creek	-0.6
7	9:17	mid	0.5	1	>0.6	7665*	0.4*	4.45	47.7*	16.1*	No Data	Morning Run	Hatchett Creek	0.1
9	10:20	top	1	6.5	>2.0	37900*	23.9*	9.05	83.5*	17.3*	No Data	Morning Run	Hatchett Creek	0.6
10	10:28	mid	6.5	>10	>2.0	40600*	26.1*	9.60	83.8*	17.4*	No Data	Morning Run	Hatchett Creek	0.7
10	10:28	top	1	>10	>2.0	40400*	26*	8.90	83.4*	17.4*	No Data	Morning Run	Hatchett Creek	0.7
11	10:37	bottom	8	9.2	1.6	40250*	25.8*	9.40	73.7*	17.3*	No Data	Morning Run	Hatchett Creek	0.7
11	10:37	top	1	9.2	1.6	38320*	25.4*	8.20	77.3*	17.6*	No Data	Morning Run	Hatchett Creek	0.7
12	10:45	top	1	4.8	>1.5	38310*	24.5*	8.20	79.4*	17.7*	No Data	Morning Run	Hatchett Creek	0.8
12	10:45	bottom	3	4.8	>1.5	38470*	24.6*	8.40	79.3*	17.7*	No Data	Morning Run	Hatchett Creek	0.8
13	10:53	bottom	4	5	1.3	39880*	25.5*	8.30	73.1*	17.4*	No Data	Morning Run	Hatchett Creek	0.8

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Waypoint	Time	Relative Sample Depth	Sample Depth (ft)	Water Depth (ft)	Secchi Depth (m)	Spec. Cond. (temp corrected)	Salinity (ppt)	DO (mg/L)	DO Sat %	WaterTemp (C)	pH	Sampling Run	Region Sampled	Tidal Stage at Venice Inlet - predicted
13	10:53	top	1	5	1.3	39570*	25.3*	8.00	75.4*	17.7*	No Data	Morning Run	Hatchett Creek	0.8
14	11:00	mid	6	>10	1.7	39310*	25*	8.70	79.7*	17.7*	No Data	Morning Run	Hatchett Creek	0.8
14	11:00	top	1	>10	1.7	38970*	24.8*	8.20	76.2*	17.7*	No Data	Morning Run	Hatchett Creek	0.8
15	11:10	top	1	6.1	1.6	37660*	23.3*	7.70	69.2*	17.5*	No Data	Morning Run	Hatchett Creek	0.9
15	11:10	bottom	5	6.1	1.6	38810*	24.8*	8.40	70*	17.5*	No Data	Morning Run	Hatchett Creek	0.9
16	11:25	bottom	2	2.1	>0.6	36650*	23.1*	5.40	65.4*	18*	No Data	Morning Run	Hatchett Creek	0.9
16	11:25	mid	1	2.1	>0.6	No Data	No Data	No Data	No Data	No Data	No Data	Morning Run	Hatchett Creek	0.9
16	11:25	Very Top Layer	0.25	2.1	>0.6	1432*	0.7*	6.50	47.1*	17.2*	No Data	Morning Run	Hatchett Creek	0.9
17	14:32	mid	1	2	>0.6	No Data	No Data	No Data	No Data	No Data	No Data	Afternoon Run	Hatchett Creek	1.3
17	14:32	Very Top Layer	0.17	2	>0.6	2604*	1.3*	6.15	67.3*	19.1*	No Data	Afternoon Run	Hatchett Creek	1.3
17	14:32	bottom	2	2	>0.6	36000*	22.6*	6.13	74.6*	18.8*	No Data	Afternoon Run	Hatchett Creek	1.3
18	14:43	bottom	4	5.9	1.25	41600*	26.8*	9.30	81.2*	18.4*	No Data	Afternoon Run	Hatchett Creek	1.3
18	14:43	top	1	5.9	1.25	No Data	No Data	No Data	No Data	No Data	No Data	Afternoon Run	Hatchett Creek	1.3
18	14:43	Very Top Layer	0.25	5.9	1.25	7920*	0.41*	8.20	63.4*	20.9*	No Data	Afternoon Run	Hatchett Creek	1.3
19	14:50	top	1.0	>10	1.5	42570*	27.3*	9.30	86.7*	18.7*	No Data	Afternoon Run	Hatchett Creek	1.2
19	14:50	mid	6	>10	1.5	43140*	27.4*	9.90	87.6*	18.7*	No Data	Afternoon Run	Hatchett Creek	1.2
19	14:50	top	1	>10	1.5	No Data	No Data	No Data	No Data	No Data	No Data	Afternoon Run	Hatchett Creek	1.2
20	15:00	mid	6	>10	1.8	44250*	28.7*	9.80	85.6*	18.2*	No Data	Afternoon Run	Hatchett Creek	1.2
20	15:00	top	1	>10	1.8	43300*	28*	9.30	88.5*	19*	No Data	Afternoon Run	Hatchett Creek	1.2
21	15:05	mid	6	>10	1.9	44220*	28.8*	10.00	86.2*	18.4*	No Data	Afternoon Run	Hatchett Creek	1.2
21	15:05	top	1	>10	1.9	44220*	28.7*	9.10	87.6*	18.7*	No Data	Afternoon Run	Hatchett Creek	1.2
22	15:10	bottom	4	5.3	>1.6	43590*	28.1*	10.00	87.5*	19*	No Data	Afternoon Run	Hatchett Creek	1.2
22	15:10	top	1	5.3	>1.6	43400*	28.1*	9.50	89.6*	19.1*	No Data	Afternoon Run	Hatchett Creek	1.2
23	15:17	top	1	>10	1.7	43440*	28.1*	9.30	87.8*	19.1*	No Data	Afternoon Run	Hatchett Creek	1.2
23	15:17	mid	6	>10	1.7	45220*	29.3*	9.40	86.4*	18.1*	No Data	Afternoon Run	Hatchett Creek	1.2

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Waypoint	Time	Relative Sample Depth	Sample Depth (ft)	Water Depth (ft)	Secchi Depth (m)	Spec. Cond. (temp corrected)	Salinity (ppt)	DO (mg/L)	DO Sat %	WaterTemp (C)	pH	Sampling Run	Region Sampled	Tidal Stage at Venice Inlet - predicted
24	15:23	mid	6	9	>2.0	45820*	29.7*	9.90	86.6*	18.2*	No Data	Afternoon Run	Hatchett Creek	1.2
24	15:23	top	1	9	>2.0	45650*	29.7*	9.80	89.1*	18.5*	No Data	Afternoon Run	Hatchett Creek	1.2
25	15:28	bottom	5	7	>2.1	45890*	29.8*	9.40	84.5*	18*	No Data	Afternoon Run	Hatchett Creek	1.2
25	15:28	top	1	7	>2.1	45990*	29.9*	9.00	84.5*	18*	No Data	Afternoon Run	Hatchett Creek	1.2
26	16:10	top	1	2.75	>0.9	933*	0.5*	11.80	119.5*	22.4*	No Data	Afternoon Run	Hatchett Creek	1.2