

**IMC-Agrico Company
Industrial Wastewater Monitoring**

AGENCY: IMC-Agrico Company

CONTACT: Ross Franklin
IMC-Agrico Company
P. O. Box 2000
Mulberry, Florida 33860
Phone 941-428-2613

STATUS: Ongoing program.

OBJECTIVE: To monitor industrial wastewater discharges to Payne Creek, Little Payne Creek, and the Peace River.

APPROACH: Weekly grab samples for total phosphorus, total suspended solids, fixed solids, pH, temperatures, TKN, ammonia, dissolved oxygen, and conductivity. Continuous flow measurement is also provided.

SAMPLE SELECTION: Three outfalls into the Peace River south of Bartow, one outfall into Little Payne Creek northwest of Bowling Green, three outfalls into Payne Creek south of Bradley Junction.

SAMPLE EFFORT: Weekly for the life of the mine.

**IMC-Agrico Company
Payne Creek, Little Payne Creek, Gum Swamp Branch
and Horse Creek Monitoring**

AGENCY: IMC-Agrico Company

CONTACT: Ross Franklin
IMC-Agrico Company
P. O. Box 2000
Mulberry, Florida 33860
Phone 941-428-2613

STATUS: Ongoing program.

OBJECTIVE: To document baseline water quality and flow of surface waters as they enter and exit mine properties in Hardee County.

APPROACH: Weekly grab samples for nutrients, physical and inorganic parameters, metals, and radiological concentrations. Some stage measurement is provided.

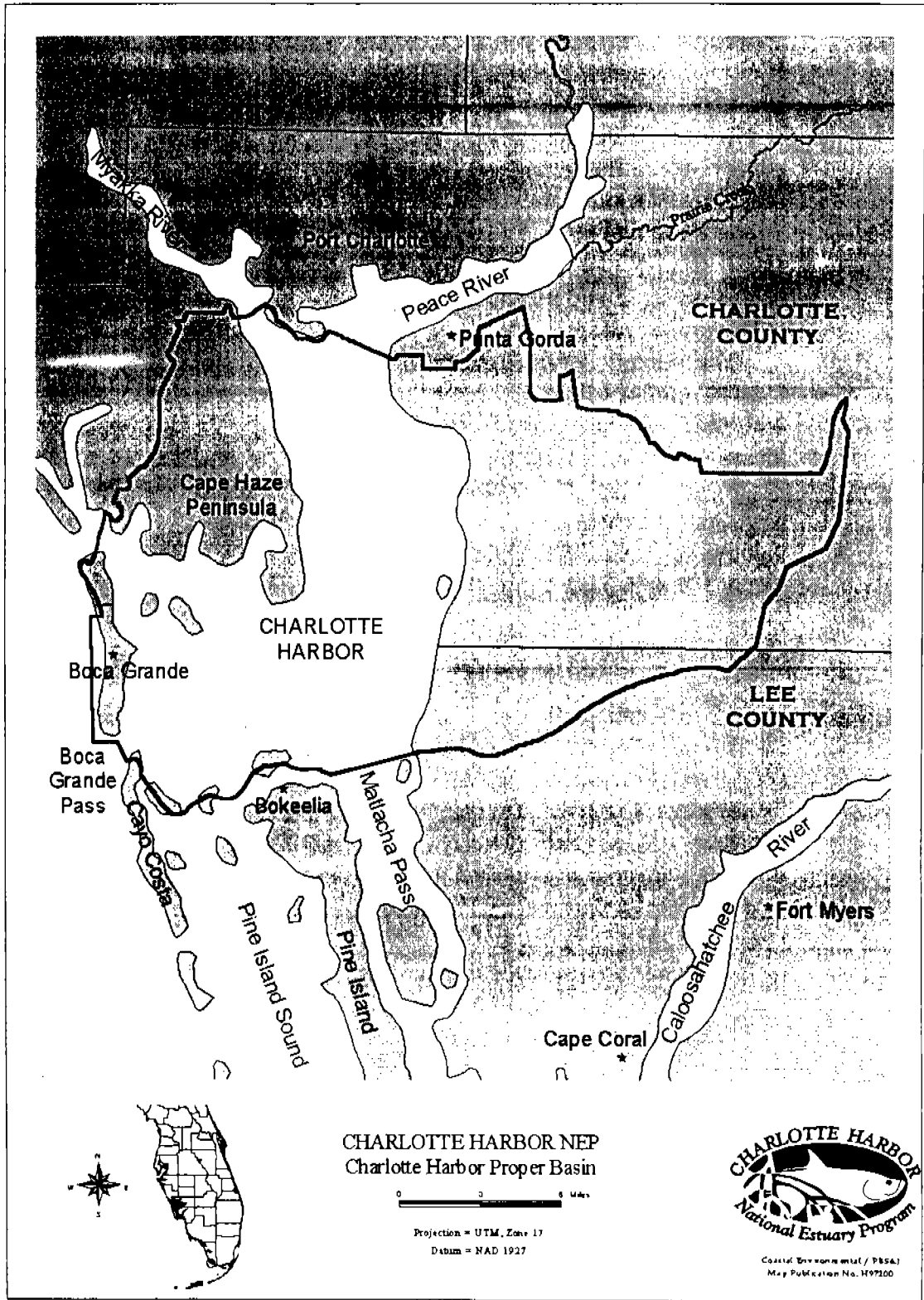
SAMPLE

SELECTION: Two stations on Payne Creek, three stations on Little Payne Creek, one station on Gum Swamp Branch, five stations on Horse Creek, one station on the West Fork of Horse Creek.

SAMPLE

EFFORT: Week for the life of the mining properties.

CHARLOTTE HARBOR PROPER



**Florida Department of Health, Charlotte County Health Department
Charlotte Harbor Microbial Pathogen Project**

AGENCY: Florida Department of Health, Charlotte County Health Department
Water Management District, SWIM
University of South Florida, Marine Sciences
University of Florida
Department of Environmental Protection
Shellfish Program
Punta Gorda Lab

CONTACT: Bob Vincent, Environmental Administrator
DOH Project Manager
Charlotte County Health Department
18500 Murdock Circle
Port Charlotte, FL 33948
Phone: (941) 743-1266

Dr. David Tomasko
Southwest Florida Water Management District
Phone 941-486-1212

STATUS: Ongoing Monitoring

OBJECTIVE: Identify and enumerate microbial pathogens in water column and sediment at 14 stations in Myakka River and Charlotte Harbor over one year's time.

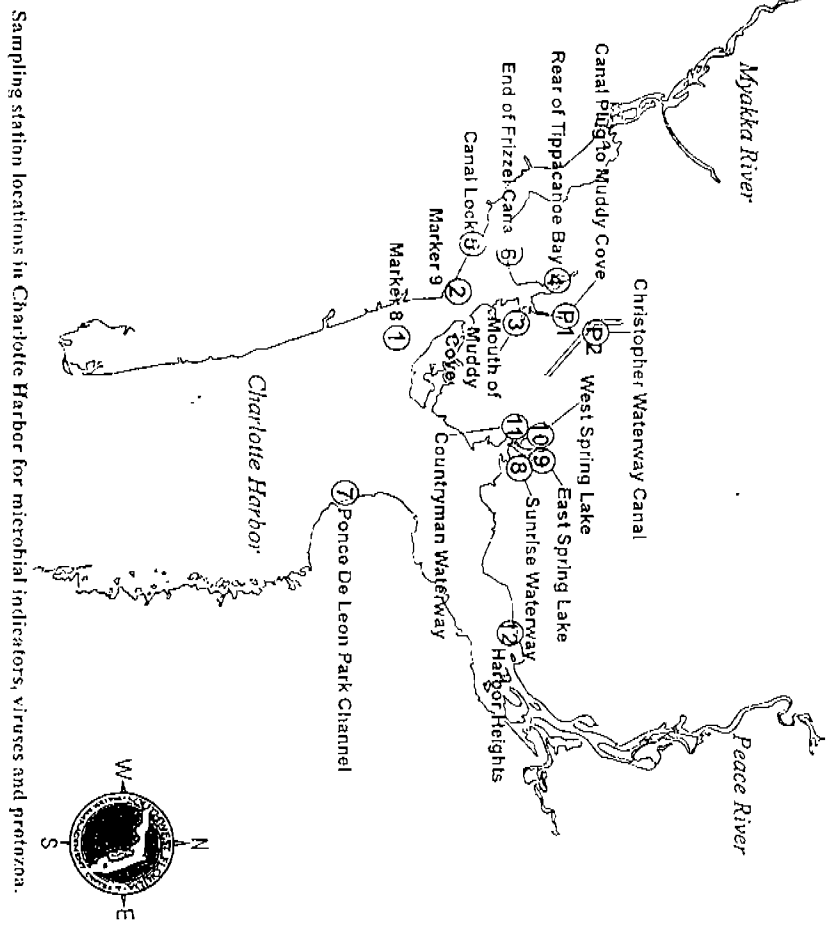
APPROACH: To ascertain if an environmental remediation of a plugged canal near Tippecanoe Bay improved water quality, and to observe microbial pathogen levels in numerous pristine and human influenced locations. Parameters include: Fecal coliform (Fc), Enterococci (E), *Clostridium perfringens* (Cp), Coliphage virus (Cv), Human enterovirus, *Giardia lamblia* & *Cryptosporidium* sp. Both water column and benthic sediment samples will be tested for these organisms. Temperature, salinity and turbidity will also be recorded.

SAMPLE

SELECTION: Fourteen stations were selected to sample repetitively during a year. Twelve of the sites will be water column sampled for the first four (Fc, E, Cp & Cv) indicators monthly. All fourteen sites will be tested for all organisms in sediment and water column quarterly.

SAMPLING

EFFORT: Project began March 1997.



Sampling station locations in Charlotte Harbor for microbial indicators, viruses and protozoa.

Charlotte County
Bathing Beach Coliform Sampling

AGENCY: Florida Department of Health, Charlotte County Health Department

CONTACT: Bob Vincent, Environmental Administrator
Charlotte County Health Department
18500 Murdock Circle
Port Charlotte, FL 33948
Phone: (941) 743-1266

STATUS: Ongoing Monitoring

OBJECTIVE: Identify fecal coliform violations at public bathing beaches in accordance with Chapter 10D-5, Florida Administrative Code.

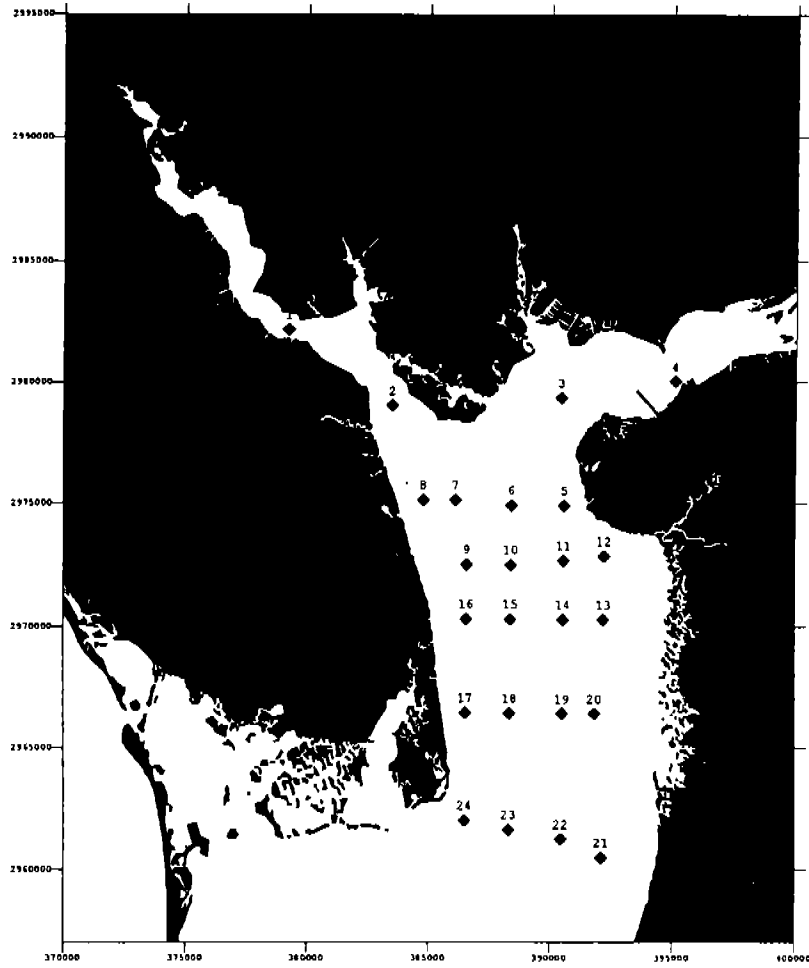
APPROACH: Sample shallow bathing areas at 17 sites in Charlotte County for fecal coliform bacteria, and when lab capabilities exist, for fecal streptococci bacteria.

SAMPLE SELECTION: Each of the sample stations was established to interpret water quality at the bathing beach. Water is collected from a 2-3 foot depth or from a bridges upstream of the beach.

SAMPLING EFFORT: Monthly since September 1994.

**Southwest Florida Water Management District
SWIM Section - Hypoxia in Charlotte Harbor**

- AGENCY:** Southwest Florida Water Management District
Surface Water Improvement and Management (SWIM) Section
- CONTACT:** David Tomasko, Ph.D.
SWFWMD
111 Corporation Way
Venice, FL 34292
Phone: (941) 486-1212 or 1(800) 320-3503
- STATUS:** Ongoing (since June 1996).
- OBJECTIVE:** Determine the spatial and temporal extent of hypoxic (low oxygen) conditions in Upper Charlotte Harbor and the tidal reaches of the Peace and Myakka Rivers.
- APPROACH:** Biweekly sampling (during the wet season) of 16 locations throughout Upper Charlotte Harbor and the tidal reaches of the Peace and Myakka Rivers. Concurrent modeling efforts on rainfall and streamflow relationships.
- SAMPLING SELECTION:** Stations were selected to represent locations of potential hypoxic conditions, based on a review of historic water quality data.
- SAMPLING EFFORT:** Biweekly sampling at 16 stations, each visited twice a day. Temperature, conductivity, salinity and dissolved oxygen are measured at the surface and at 50 cm intervals, until the bottom is reached. Preliminary data collection efforts also included measurements of the amount of dissolved organic matter (color) in samples. Some data are available from the summer of 1995. Sampling scheduled through August 1997.



**Southwest Florida Water Management District
SWIM Section - Water Quality Sampling Charlotte Harbor**

- AGENCY:** Southwest Florida Water Management District
Surface Water Improvement and Management (SWIM) Section
- CONTACT:** Gerold Morrison
SWFWMD/SWIM
7601 Highway 301 North
Tampa, FL 33637
Phone: 1(800) 836-0797 or (813) 986-7481
- STATUS:** Ongoing (since January, 1993).
- OBJECTIVE:** Characterize water quality conditions at 14 sampling stations located in the tidal reaches of the Peace and Myakka Rivers, Charlotte Harbor, and Boca Grande Pass.
- APPROACH:** Monthly sampling is conducted synoptically (within a single tidal cycle), with each station occupied within one hour of predicted low tide.
- SAMPLING SELECTION:** Stations were selected to represent locations sampled by the US Geological Survey during the mid-1980s.
- SAMPLING EFFORT:** Monthly synoptic sampling at 14 stations in Charlotte Harbor, covering a salinity range extending from tidal fresh through polyhaline. Vertical hydrographic profiles and near-surface grab samples are collected at all stations. Additional near-bottom grab samples are collected at stations whose average depth exceeds 3 m. Parameters measured include: temperature, salinity, DO, specific conductance, pH, Secchi depth, irradiance (400-700 nm), turbidity, total suspended solids, dissolved solids, color, TKN, dissolved ammonia, dissolved $\text{NO}_2 + \text{NO}_3$, total P, dissolved P0_4 , TOC, chloride, reactive silica, and chlorophyll-a.

**Charlotte County
Manchester Lock Water Quality Monitoring**

AGENCY: Charlotte County

CONTACT: Jay Johansen
Charlotte County Dept. of Public Works
7000 Florida Street
Punta Gorda, FL 33950
Phone: (941) 575-3600 Fax: (941) 637-9265

STATUS: Ongoing monitoring program, continuous since 1980.

OBJECTIVE: Manchester Lock Permit (U.S. Corps of Engineers permits 73K-1585 and 77B-1029). Yearly data reports submitted to U.S. Army Corps of Engineers.

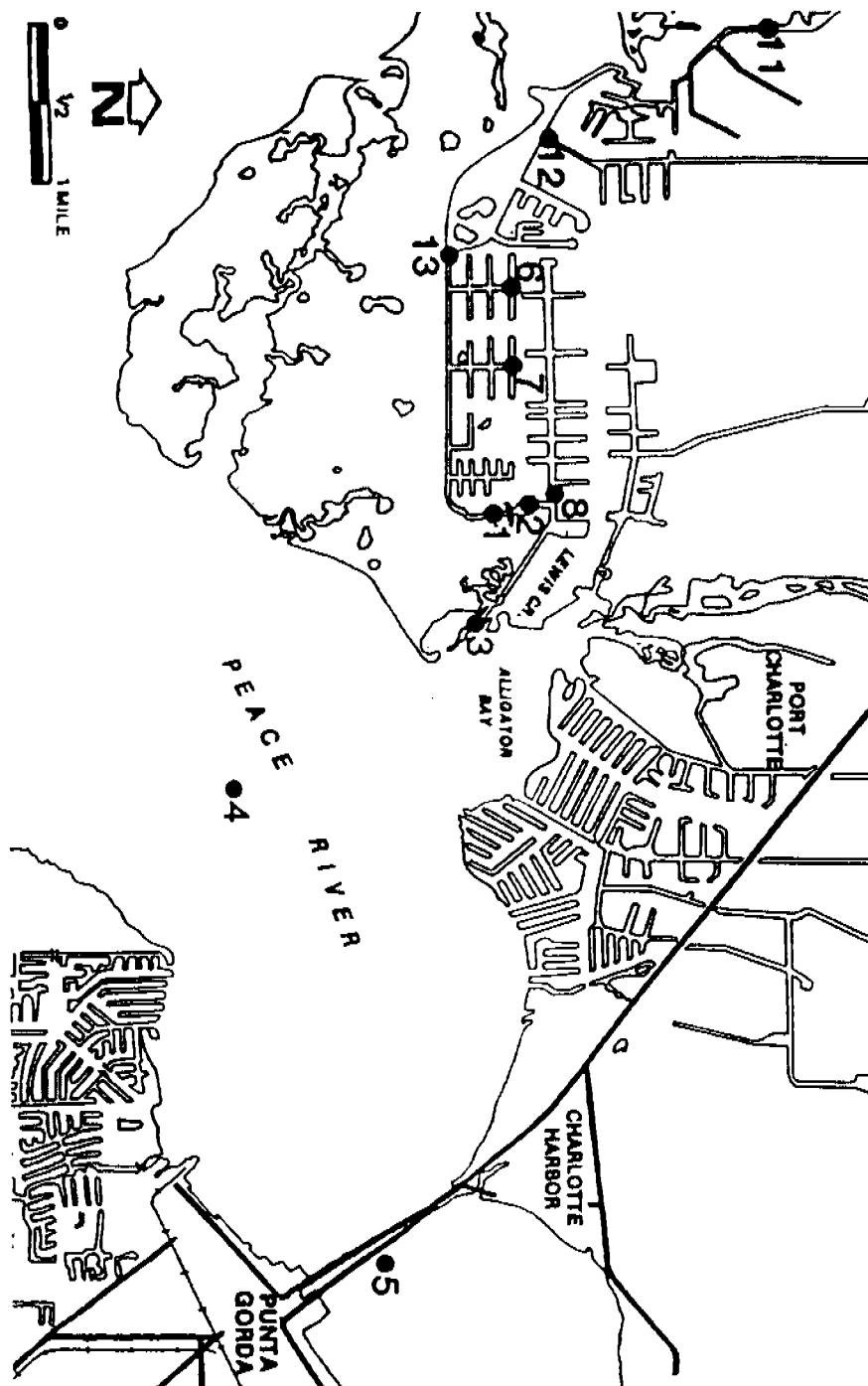
APPROACH: Diel (within two hours of sunset and again within two hours prior to sunrise) with comparisons of stations behind the locks and waters of Charlotte Harbor.

SAMPLE

SELECTION: Eleven sites are sampled during seven months of the year (February, April, June, July August September, and December).

SAMPLING

EFFORT: In each of these months *in situ* Hydrolab water column profile data are collected at each station. Measured parameters include: Dissolved Oxygen, Conductivity, Salinity, pH, Temperature and Redox Potential. These measurements are taken from the surface to bottom at 0.5 meter intervals. During the morning sampling each month, surface and bottom water samples are collected for chemical analyses at each location. The samples are analyzed for: Chloride, Organic Nitrogen (total Kjeldahl), Nitrite Nitrogen, Nitrate + Nitrite-Nitrogen, Ammonia/Ammonium-Nitrogen, Total Organic Carbon, Total Phosphorus, and Total Coliform.



**Charlotte County
South Gulf Cove Army Corps Water Quality Monitoring**

AGENCY: Charlotte County

CONTACT: Jay Johansen
Charlotte County Dept. of Public Works
7000 Florida Street
Punta Gorda, FL 33950
Phone: (941) 575-3600 Fax: (941) 637-9265

STATUS: This monitoring program started in 1979 and ended in 1994 when it was modified and combined in 1995 with a similar Florida Department of Environmental Protection permit monitoring also being conducted for South Gulf Cove.

OBJECTIVE: South Gulf Cove U.S. Army Corps of Engineers permit 76-N-0543.

APPROACH: Physical water column profiles, surface and bottom water samples and sediments were collected. Biological data for invertebrates and fishes. Modified in 1986 adding primary production.

SAMPLE

SELECTION: 15 fixed stations. *In situ* measured parameters were: Dissolved Oxygen, Conductivity, Salinity, pH, Temperature and Redox Potential. These measurements are taken from the surface to bottom at 0.5 meter intervals. Water: Organic Nitrogen (total Kjeldahl), Nitrate+Nitrite-Nitrogen, Ammonia/Ammonium-Nitrogen, Total Organic Carbon, and Silica (SiO₂) Chlorophyll a, fecal coliform, total coliform, fecal strep bacteria and chlorinated hydrocarbon pesticides using EPA method 608. Sediments: Percent Nitrogen and Phosphorus, Total Volatile Solids, Copper, Lead, Zinc, Nickel and Iron.

SAMPLING

EFFORT: Diel samples were taken from 1979-1986 at selected stations; measurement were conducted in January, March, June, July, August, September and October between 5:00 and 9:00 am beginning in 1986. Sediment sampling and chlorinated hydrocarbon pesticide annual surface water scans were conducted on an annual basis. Biological data collected include: Quarterly Ponar grab sampling for benthic invertebrates, and a bimonthly seining survey for fishes at Stations 5, 7 and 8. primary production (carbon uptake) measurements at Stations 1, 5, 6 and 8 during February, April, June, August, October and December. Phytoplankton biomass (chlorophyll a) and radioactive carbon uptake are measured in each of three size fractions. Physical / Chemical data collected in conjunction with this study include: Hydrolab water column profiles, measurements of light extinction, Organic Nitrogen (total Kjeldahl), Nitrate+ Nitrite-Nitrogen, Ammonia/Ammonium-Nitrogen, (SiO₂), Total Phosphorus, Orthophosphorus, Alkalinity and Inorganic Carbon.

Charlotte County
South Gulf Cove FDEP Water Quality Monitoring

AGENCY: Charlotte County

CONTACT: Jay Johansen
Charlotte County Dept. of Public Works
7000 Florida Street
Punta Gorda, FL 33950
Phone: (941) 575-3600 Fax: (941) 637-9265

STATUS: This monitoring program was conducted at 15 sampling locations (see Figure) from 1976 through 1994. Modified in 1995.

OBJECTIVE: South Gulf Cove Florida DEP permit 08-22-3600 and 0819089.

APPROACH: Physical water column profile measurements and water chemistry samples collected at the surface and near bottom from fixed stations.

SAMPLE

SELECTION: Stations 1 through 8, 10, and 12 through 15 for physical profiles. Nutrients collected monthly at stations 1-8, 10, 12. Bacteria- collected monthly at stations 1-8, 10-15. Biological oxygen demand collected monthly Stations 1-8, 13. Oil and greases collected monthly at stations 1-8, 10, 12-15. Trace metals collected twice yearly one foot above bottom at stations 1-8, 10, 12.

SAMPLING

EFFORT: Monthly *in situ* measured parameters were taken for dissolved oxygen, conductivity, salinity, pH, temperature and redox potential, from the surface to bottom at 0.5 meter intervals. Monthly chloride, organic nitrogen (total Kjeldahl), nitrate+nitrite, ammonia, total phosphorus, orthophosphorus, BOD, total and fecal coliform bacteria. Semi-annual cadmium, copper, lead and zinc.

**Charlotte County Stormwater Utility Department
Master Plan**

- AGENCY:** Charlotte County Stormwater Utility Department
- CONTACT:** Charles R. Walter, P.G., Director, Stormwater Utility
Charlotte County Public Works
7000 Florida Street
Punta Gorda, FL 33950
Phone: (941) 575-3600 Fax: (941) 637-9265
- STATUS:** Phase 1, Stormwater Master Plan for Charlotte County is complete. Phase 11 is underway.
- OBJECTIVE:** To rank and prioritize the basins and analyze the water quality and quantity within the primary drainage conveyance to the Charlotte Harbor Estuary. Improvements will be recommended and phased into Charlotte County's Capital Improvement Program.
- APPROACH:** The Stormwater Utility Dept., with the help of its G.I.S. Section, has begun the process of inventory, research and development of its drainage system and infrastructure database. The selection of a technical contractor will provide assistance in analyzing the various components of the stormwater management system.
- SAMPLE SELECTION:** The technical contractor selection process has begun. We expect to have the assistance we need in July 1997.
- SAMPLING EFFORT:** Ten basins have been selected and ranked as high priority.

City of Punta Gorda
Utility Department Water Quality Monitoring

AGENCY: City of Punta Gorda
Utility Department

CONTACT: Bill Harper
Utility Permits/Compliance Coord.
City Of Punta Gorda
900 West Henry Street
Punta Gorda, Florida 33950
Phone: (941) 639-1883

STATUS: Ongoing routine in-house testing by the treatment plant.

OBJECTIVE: Describe water quality in Shell Creek as it related to the raw public drinking water source for Punta Gorda.

APPROACH: Monitoring upstream of Shell Creek Reservoir for basic parameters as indicators of water quality approaching the reservoir where the potable water source is withdrawn just above Hendrickson Dam.

SAMPLE SELECTION: Shell and Prairie Creeks are sampled at the CR764 bridge crossings upstream of the reservoir for pH, Total Alkalinity, Total Hardness, Chloride, Sulfate, TDS and Color and with Conductivity added in early 1996 are included. Just above Hendrickson Dam, parameters include pH, Total Alkalinity, Total and Calcium Hardness, apparent Color, NTU, coliform bacteria, chloride, and TDS.

SAMPLING EFFORT: The bridge sampling has been done weekly from 1984 through 1996 and since early 1997 is being done monthly. The monthly sampling is now the routine and is expected to continue. Just above Hendrickson Dam sampling is on a daily or weekly basis. Sampling has been done daily since 1966 however the records are limited in usability. Data has been kept on computer files since 1985. The routine operational testing is expected to continue.

City of Punta Gorda
Utility Department Drinking Water Quality Monitoring

AGENCY: City of Punta Gorda
Utility Department

CONTACT: Bill Harper
Utility Permits/Compliance Coord.
City Of Punta Gorda
900 West Henry Street
Punta Gorda, Florida 33950
Phone: (941) 639-1883

STATUS: Ongoing. Sampling and Monitoring required by Florida Department of Environmental Protection.

OBJECTIVE: Meet State-required sampling of a potable water supply as per Florida Administrative Code (FAC) 62-550.

APPROACH: Monitoring of water for parameters as indicated by FAC 62-550 relating to potable drinking water requirements.

SAMPLE

SELECTION: Shell Creek just upstream of Hendrickson Dam.

SAMPLING

EFFORT: Sampling is quarterly and annually, collected by plant staff and contracted to outside certified lab. Sampling has been done since 1956, however parameters have changed and increased as the regulations have changed.

City of Punta Gorda
Utility Department Hydrobiological Monitoring Program

AGENCY: City of Punta Gorda
Utility Department

CONTACT: Bill Harper
Utility Permits/Compliance Coord.
City Of Punta Gorda
900 West Henry Street
Punta Gorda, Florida 33950
Phone: (941) 639-1883

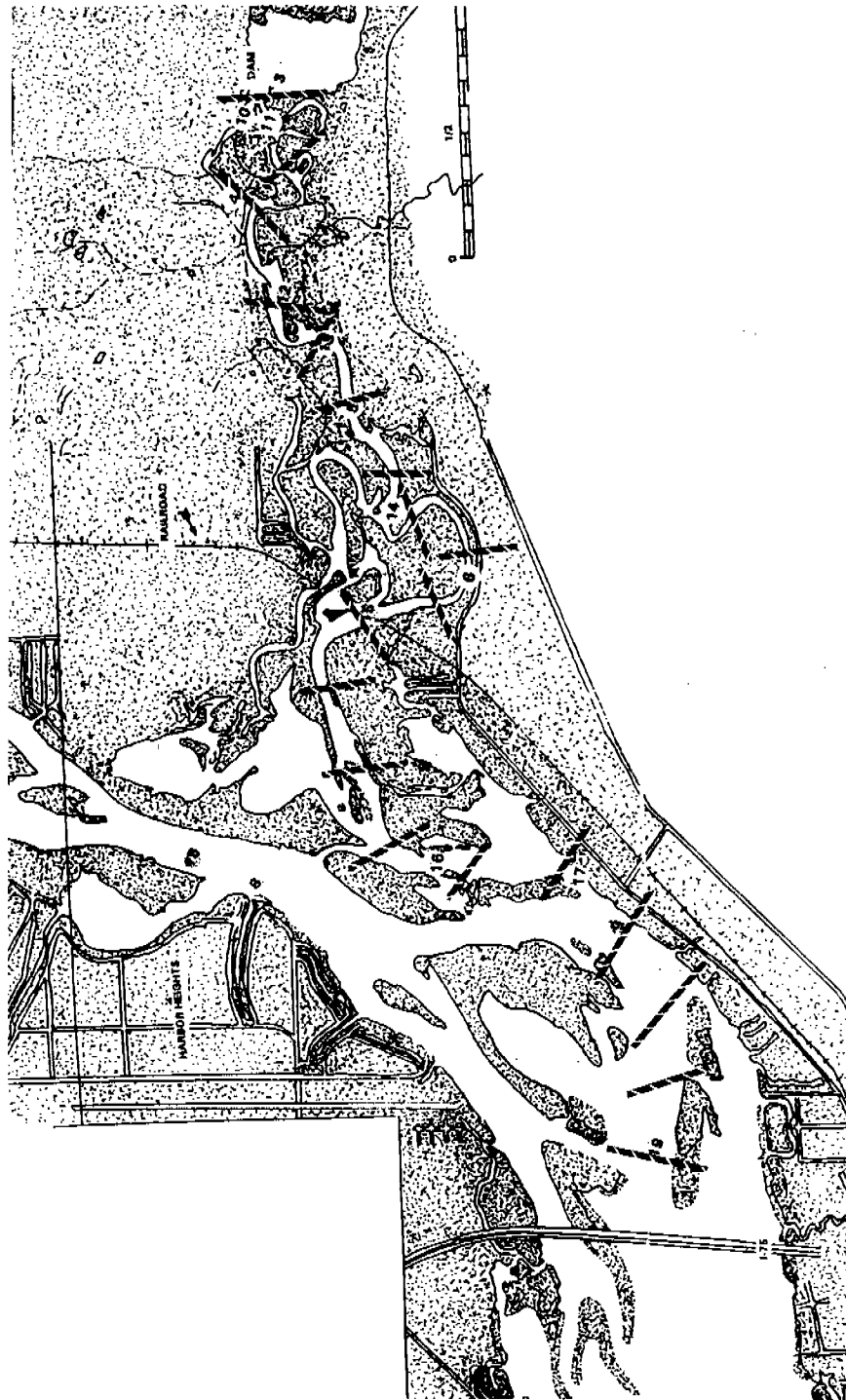
STATUS: Ongoing.

OBJECTIVE: Describe the water quality in reservoir and tidal Shell Creek with respect to flow variations as per a Water Use Permit condition from Southwest Florida Water Management District.

APPROACH: Monitor Shell Creek to assess seasonal water quality and changes. Program is coordinated to be done within two days of the hydrobiological monitoring done by Peace River/Manasota Water Supply Authority.

**SAMPLE
PROTOCOL:** Parameters include TDS, Color, NTU, Nitrate+nitrite, Ammonia-Nitrogen, Total Kjel. Nitrogen, Total Phosphorus, Ortho-phosphate, Silica, Chla-A (uncorrected) and Chla-A (pheophytin corrected) at nine stations. Three stations are above the dam in fresh water, four in tidal Shell Creek, and two in Peace River (above and below confluence with Shell Creek). In-situ profile data of Temperature, Dissolved Oxygen, pH, and Conductivity/Salinity are also done for 19 stations over the same distance as the nine water quality stations.

**SAMPLING
EFFORT:** This monthly sampling program started in Feb 1991 and is expected to continue to Oct 1999, at which time the Hydrobiological Monitoring Plan will be subject to revision.



City of Punta Gorda
Utility Department Wastewater Quality Monitoring

AGENCY: City of Punta Gorda
Utility Department

CONTACT: Bill Harper
Utility Permits/Compliance Coord.
City Of Punta Gorda
900 West Henry Street
Punta Gorda, Florida 33950
Phone: (941) 639-1883

STATUS: Ongoing.

OBJECTIVE: This monitoring is for the EPA National Pollutant Discharge Elimination System Discharge Monitor Report.

APPROACH: Routine site discharge monitoring from the Wastewater Treatment Facility from a 525 acre wastewater effluent land application irrigation system. Parameters include Dissolved Oxygen, TDS, Total Nitrogen, Total Phosphorus, Ammonia, pH, CBOD, and Fecal Coliform.

SAMPLE SELECTION: The discharge is to Myrtle Slough at CR 76 and which is tributary to the tidal portion of Shell Creek just downstream of Hendrickson Dam. The sampling is done at a single controlled outlet from the site at a point prior to merging with the freshwater section of Myrtle Slough.

SAMPLING EFFORT: The monitoring is on the controlled stormwater and groundwater from the underdrained land application fields. The sampling of the listed parameters is done weekly by a 26 hour flow proportional composite sampler and most are done in-house. Sampling has been done since 1985 on a weekly basis, with flow measurements starting in 1991. Since this is a discharge monitoring point, it is expected to continue but is subject to revision.

USGS Water Resources Monitoring - Tampa Subdistrict
Southwest Florida Surface Water

AGENCY: USGS Tampa Subdistrict Office

CONTACT: Cathy Hammett
U.S. Geological Survey
4710 Eisenhower Blvd, B-5
Tampa, Florida 33634-6381
813-884-9336

WEB Sites:

National: <http://h2o.usgs.gov/>

Tampa: <http://www-tampa.er.usgs.gov/>

South Florida Ecosyste: <http://stlwww.er.usgs.gov>

STATUS: On-going

OBJECTIVE: To accumulate data on stage, discharge, and water quality of surface waters over an extended number of water years in order to develop reliable long-term data bases.

APPROACH: Discharge data are recorded over each day and reported as mean daily values by water year (October through September). Water quality data vary among sampling locations both in the physical and chemical constituents as well as frequency of collection.

SAMPLE

SELECTION: Current monitored site locations are shown in the following figure and listed in the following table. Current and historic data are available for both these current sites as well as for past discontinued sites. Data may be obtained from the local U.S. Geological Survey office, or as summary figures and electronic files from the WEB locations cited above.

SAMPLING

EFFORT: Much of the data collected by the U.S. Geological Survey have been summarized in various technical publications. Complete, updated lists are available from the regional office. Such sources include: 1) Water Resources Investigations, 2) Open-File Reports, 3) Professional Papers 4) Water-Supply Papers, 5) Florida Bureau of Geology publications, 6) Journal, WRD Bulletin and miscellaneous articles, 7) HUD flood insurance studies, and 8) Administrative Reports.