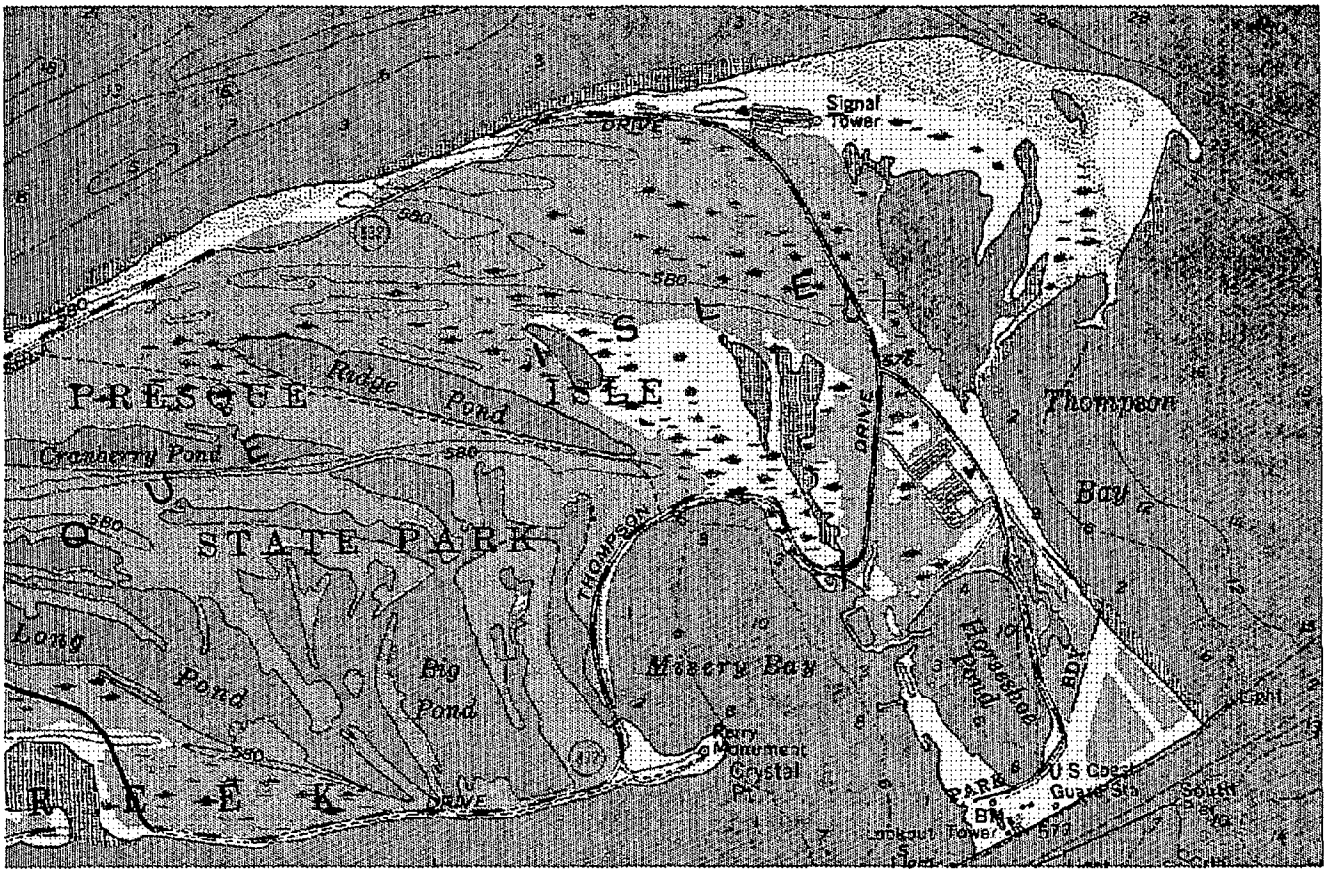
PRESQUE ISLE STATE PARK
PILOT
GEOGRAPHIC INFORMATION SYSTEM
PHASE II

OCTOBER 1995



RECEIVED
OCT 30
LAND & WATER CONSERVATION
DER

Prepared By:

Keith A. Taylor, Park Manager
Tina M. Matula, Intern
Park Resources Management Information System
Department of Conservation and Natural Resources
Bureau of State Parks
Resources Management and Planning Division
Harrisburg, PA 17105

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

Pennsylvania Coastal Zone Management Program

Analog and Digital Topographic Map of Presque Isle State Park

DCNR Grant/Contract No. CZ1:93.04PS

Grant Task No. C21:93-_____

ME No. 94829

A Report from

Pennsylvania Department of Conservation and Natural Resources

Bureau of State Parks

Resources Management Section

to the

National Oceanic and Atmospheric Administration

Pursuant to

NOAA Award No. ____

G70212.P74.Th2 1995

Coastal Zone

Funded and coordinated through Department of Environmental Protection, Office of Resources Management, Bureau of Resources Management, Division of Coastal Zone Management and the Erie Coastry Department of Planning.

Project was financed in part through a Federal Coastal Zone Management Grant from the Pennsylvania Department of Environmental Protection, with funds provided by the NOAA. The views expressed herein are those of the author(s) and do not necessarily reflect the views of NOAA or any of its subagencies.

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ACKNOWLEDGEMENTS

The Bureau of State Parks would like to acknowledge the success of the Presque Isle State Park Pilot GIS Project. This is the result of the generous efforts of people from various agencies. The opportunity to work with a variety of accomplished staff made this project a rewarding experience and a successful project.

Special acknowledgement goes to Eugene Comoss and Regis Crawford and the staff of the Bureau of Facility Design and Construction, for their help with establishing survey control points for use with the program and also, for their help with data collection at Presque Isle State Park and setting up base stations when needed.

Without the guidance and help of Sally Holbert and Todd Plank of Earth Information Services the project would not have progressed as quickly and had sufficient standards developed. Thanks for your patience and assistance on this project.

"Thanks" goes to Tom Coleman of General Telephone Electric for providing information on telephone rights-of-way for Presque Isle State Park.

A special thanks goes to the interns that have worked on the project at various times throughout the three years. The interns that worked on the project include: Lori Felix, Gerald Johnson, Jennifer Graves, Sasha Lucas, Kimberly Karmelowicz, Amy Stimely, Cristen Benhart, and Michael Bialousz.

"Thanks" goes to Harry Leslie and the Presque Isle State Park staff for the guidance with the type of information the park needed and acquiring the data.

EXECUTIVE SUMMARY

Presque Isle State Park is a seven-mile peninsula, encompassing approximately 3,200 acres in size with 1,900 acres in land mass. The state park is managed by the Bureau of State Parks, Department of Conservation and Natural Resources, Commonwealth of Pennsylvania, for recreation and conservation purposes. As the years pass and numerous yearly storms pound away at Presque Isle State Park's shoreline, resulting erosion and sedimentation occur along this shoreline. This results in a change of the shoreline and a continuous growth of the state park. As a result of this constant change, a program is needed to be devised to provide an up-to-date base map of the state park.

This project documents what was the background, types of equipment purchased, training performed, technical assistance, and recommendations. It states procedures set forth for the Bureau of State Parks to use in data collection and mapping. The project was completed through joint ventures with the state agencies, as well as private corporations and individuals.

This report has been organized to present the purpose of the study and background of Presque Isle State Park in Section 1. Section 2 deals with the project initiation which includes the meetings, agreements, equipment purchases, and training. The coverages which were developed are explained in Section 3. Section 4 deals with the applications and procedures for a Geographic Information System plan that were developed for the Bureau of State Parks, in particular, Presque Isle State Park. The final budget is explained in Section 5.

The overall goal of this project was to provide a modern, up-to-date, accurate geographic data base map in digital and cartographic format for use by the state park system in managing Presque Isle State Park resources. The program must be user friendly for park staff.

This project completed and/or enhanced coverages that were in development, wrote applications for their use, and developed additional coverages to meet the needs of Presque Isle State Park. The main emphasis was to create coverages at a 1"-50' scale.

Part of this project resulted in the establishment of guidelines for collecting data and putting information into the system. Step-by-step procedures are given to ensure that the shoreline data is always collected the same. This data will be collected a minimum of three times per year. This will be done in April, July, and November.

The breakdown of the parks acreages as of July 27, 1995, are as follows:

Jurisdictional Area	3,340.89	Acres
500' Off Shore Area	915.38	Acres
Bays	431.29	Acres
Land Mass	1,652.83	Acres
Interior Ponds	341.29	Acres

The following are the recommendations that the Resources Management Section will make to the Bureau of State Parks when the CZM project is complete:

- With ArcView 2.1's capabilities to take GPS data and create coverage, the Bureau should purchase ArcView for a park and let them map the basic information in the park using Resources Management Section's GPS unit. This data would include trails, roads, buildings, utility lines, and structures. This data then could be sent to Central Office for updating Resources Management's plan maps and mini-maps. It would provide base data on doing all the parks.

- To use State Plane, NAD 83 as the standard projection for state park maps and use the north zone for the entire state.

- To establish a GIS coordinator to oversee the GIS program in BSP.
- To use the Department's cartographic section to digitize existing maps into Auto CADD for use by Resources Management Section. The Resources Management Section will use Arc CAD to take maps between Arc Info and Auto CADD.
- To acquire Arc CAD and Arc Scan modules for Arc Info for use with the GIS program.
- To create an accurate park boundary coverage for 116 state parks for the replacement of the inaccurate coverage currently being distributed by the Department.
- To contract with a consultant for the development of a procedure to take Arc Info plot files into Auto CADD for use by the Bureau of Facility Design and Construction.
- To contract for technical support for providing assistance, application development, and troubleshooting.
- To continue to map PNDI species locations as a priority project.
- To evaluate Presque Isle State Park's use of the GIS system after one year of use.

In conclusion, the GIS Program was a success in creating an up-to-date base map. As of September, the park will be able to create a new base map within a day. This includes the collection of data, downloading information, and publishing a map with a new shoreline.

1.0 INTRODUCTION AND BACKGROUND INFORMATION

This section of the report describes the purpose of the project effort, discusses the historical setting, natural resources, recreational opportunities, and shoreline processes of Presque Isle State Park.

1.1 Purpose of Study

Presque Isle State Park is a seven-mile peninsula, encompassing over 3,200 acres in size and 1,900+ acres in land mass. The state park is managed by the Bureau of State Parks, Department of Conservation and Natural Resources, Commonwealth of Pennsylvania, for recreation and conservation purposes. As years pass and numerous yearly storms pound away at Presque Isle State Park's shoreline, erosion and sedimentation occur along this shoreline. This results in a change to the shoreline and a continuous growth of the state park. As a result of this constant change, a program is needed to be devised to provide an up-to-date base map of the state park.

The overall goal of this project was to provide a modern, up-to-date, accurate geographic data base map in digital and cartographic format within 24 hours for use by the state park system in managing Presque Isle State Park resources.

This project consists of preparation of detailed digital map coverages of Presque Isle State Park. Work done by the USGS, in 1992, at 1:12,000 scale, was enhanced through ground verification to match with more detailed Corps of Engineering drawing at a scale of 1:50. Once justified, the new coverages were digitized at 1:50. Features to be included in these more detailed map coverages include: roads and parking lots, beach protection structures, building footprints, one-foot contours, tree lines, annotations and survey control points and elevations. Additional mapped features, such as wetlands identified using the U.S. Fish and Wildlife protocol, were ground verified to match the more detailed coverages.

This project also includes the acquisition of a Global Positioning System (GPS) unit suitable for an accuracy of one to five meters. This equipment was used by private research organizations and subcontractors to locate species of special concern and areas of special concern as well as park staff. Part of this request covered expenses incurred in developing this technology as a direct input tool into detailed GIS coverages.

This part of the project was to collect very detailed topographic data and to prepare an up-to-date lithographic map of the state park for managing the state park for recreational and conservation purposes. In addition, data would be collected digitally for use on a state park operated PC computer system that would allow augmenting and monitoring digital data as it is modified through management decisions and affected by rising and falling lake levels. The project would include acquisition of equipment that meets departmental standards, methods to quickly and accurately update files, on-site training for park personnel, and enhancement of the pilot GIS program.

1.2 Background

Presque Isle State Park, a natural split of land in Lake Erie, is dramatically affected by periodic rising and falling lake levels. This site is extremely unique and has many diverse micro-environments. It also provides habitat for endangered and desirable flora and fauna. Managing this diverse and fragile natural resource is challenging because, in addition to physical concerns associated with natural resource manage-

ment, this resource is subject to intense recreational pressure. An estimated three million people visit this state park each year.

A previously CZM-funded effort with the Bureau of State Parks (Grant Task No. 87-PS.03) ***Presque Isle State Park - Environmentally Sensitive Area Study***, documented the need for a more accurate and up-to-date base map for Presque Isle State Park.

In fiscal year 1992-93, the Bureaus of State Parks, Topographic and Geologic Survey, and the National Mapping Division of the USGS combined resources, used a CZM-funded grant (Task No. 92-PS.02) to establish a Geographic Information System for resource management purposes at Presque Isle State Park. This project was the first attempt on the part of the Department to use a GIS program for park management purposes.

2.0 PROJECT INITIATION

This section deals with the initiative that was undertaken by the Bureau of State Parks to meet with other state and federal agencies to develop a GIS program for Presque Isle State Park. This initiative required establishing agreements and setting up training and specifications for hardware and software.

2.1 Geographical Information System

A GIS Program is basically a set of computer programs that allow the construction, display, and analysis of maps. GIS is an advanced mode of computerized mapping. The use of maps and other drawings is a common activity shared by all the functions of the Bureau of State Parks. The use of GIS increases the comprehensiveness and efficiency of graphic display.

GIS operates first by developing a computerized description of all the information contained on a map or drawing. Each point, line, polygon (area), letter, or number on a map sheet is translated into a series of code numbers (digits) and entered into the computer. This process is referred to as digitizing.

The digitized media can be developed from traditional mylar and Bureau of State Parks' maps or drawings, aerial photographs, database, satellite images, or written descriptions of phenomena from surveyor's notes to electronic scanners.

The main function of a GIS program is the manipulation of the data information by the computer. This is the power of the system. First, a GIS can automatically change scale, combine maps of different scales, add coloration to differentiate features, and add legends and titles to the map without having to redraw or photographically alter the map. This is a major advance in both efficiency and completeness. This frees time for more complex analysis into the problem at hand or for performing other tasks.

GIS allows for new information to be generated from the map base with a remarkable savings of time and effort. Calculations of area (acreage of wetlands, shoreline erosion and acceleration, open fields), linear distances (miles of fencing, roads, earthworks), slope and aspect, and many other land characteristics can automatically be determined with the GIS.

A major strength of GIS is the ability to combine maps and drawings of different scales and themes to develop maps that did not exist previously. For example, a historic vegetation map and a map of present conditions can be automatically

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
-Please note our new name-
DEPARTMENT OF ENVIRONMENTAL PROTECTION
D E P
Rachel Carson State Office Building
P.O. Box 8555
Harrisburg, PA 17105-8555
November 9, 1995

717-787-2529

Bureau of Land and Water Conservation

Neil K. Christerson, Program Specialist
Coastal Programs Division - OCRM
SSMC4 Room 11209 (N/ORM 3)
1305 East West Highway
Silver Spring, MD 20910

RE: DEP File No. CZ1:A(93)

Dear Neil:

Enclosed with this letter are two copies of the final report for the **Detailed Digital Mapping of Presque Isle State Park** (93-PS.04). This project was completed with funds provided by a financial assistance award in the Coastal Zone Management Program for the fiscal year 1993.

Sincerely,

Robert S. Edwards

Robert S. Edwards
Environmental Planner II
Division of Coastal Programs

Enclosure

combined to produce a new map highlighting areas of similarity and change. This is an extremely useful tool for cultural and natural resource management purposes.

2.2 Meetings

This project required meetings with Pennsylvania Department of Conservation and Natural Resources (PA DCNR), Pennsylvania Department of Environmental Protection (PA DEP), private vendors, and the National Park Service (NPS) to pull the project together.

During 1995, several meetings were held between CZM staff and BSP staff on the project. Topics for discussion included changes in the budget breakdown, status of the consultant contract, the extension of the project until September 30, 1995, printer/plotter problems, coding of invoices, progress reports, and that the state match would exceed the amount required.

The final meeting with CZM was held on September 8, 1995, to assure CZM staff the project would be finished by September 30, 1995, and provide information for CZM quarterly report to NOAA.

BSP staff continued to participate in meetings held by the Department's GIS committee to insure that the project development was following the same direction as the Department's other GIS program. In addition, to be kept aware of other agencies progress and coverages so as not to duplicate efforts and for all bureaus to use the same standards.

A meeting with Presque Isle State Park staff, Earth Information Services, and Central Office staff was held on July 13, 1995, at the park. The purpose of this meeting was to determine what data was still needed to meet the requirements of the CZM grant and the park's needs. Items discussed included which coverages are still needed, specific data for these coverages, applications most important to the park, needed training for ArcView and GPS units, and what would be done the last week of July by the interns. The additional coverages needed consisted of a buoy, water samples, beach identification, and signs. In addition, existing coverages needed control points to be established to bring coverages into an acceptable accuracy when plotted on a 1"-50' scale.

Monthly meetings were conducted between Central Office staff and Earth Information Services over the grant time period. These meetings covered topics, such as development of the GIS, determining accuracy, application development, training, budget expenses, and troubleshooting.

2.3 Agreements

In addition to the Memorandum of Understanding dated January 1, 1993, between Division of Coastal Programs, Bureau of Land and Water Conservation and the Bureau of State Parks, two other agreements were entered into to complete the project.

A second agreement with Corvallis Microtechnology, Inc. (CMT) (Exhibit 2-1) for rental of GPS equipment was entered into in July 1995. This equipment was needed to perform additional mapping of features at Presque Isle State Park for when BSP did not have any accurate information with which to create coverages.

The final agreement was with EIS (Exhibit 2-2) for technical assistance. The contract was used to assist the BSP with finding solutions to problems on creating other coverages and writing applications for use by Presque Isle State Park's staff.

EXHIBIT 2-1

OUT-SERVICE TRAINING AUTHORIZATION

ICS ☒ 310 ☐ 320

ON INVOICE OT 691804

DATE PREPARED 3/14/95

PAYEE (EMPLOYE OR TRAINING SOURCE NAME AND ADDRESS)

Corvallis Microtechnology Inc.
413 SW Jefferson Avenue
Corvallis, OR 97333

PAYEE FED. I. D./SOC. SEC. NO.

93-0866253

BILL TO - AGENCY (PROVIDE ORIGINAL AND TWO COPIES OF INVOICE)

DEPARTMENT Environmental Resource

BUREAU/INSTITUTION State Parks

ADDRESS P.O. Box 8551
Harrisburg, PA 17105-8551

EFFECTIVE DATE 3/22/95

TERMINATION DATE 3/23/95

TRAINING SITE (CITY/STATE) Baltimore, MD

EMPLOYE NAME, ADDRESS AND TELEPHONE NO. 717-787-6674

Keith A. Taylor 198-42-1966
Regis Crawford 180-48-5232
Tina Matula 197-32-7628

address

TRAINING SOURCE NAME, ADDRESS AND TELEPHONE NO.

Holiday Inn Inner Harbor
301 W. Lombard Street
Baltimore, MD 21201
410-685-3500

PAYMENT NOT TO EXCEED $ Pre Paid

SEE INSTRUCTIONS ON REVERSE SIDE

CLASSIFICATION

Park Manager III
Survey Technician Supv.
Engineer Scientific, &
Technical Intern

CREDIT OFFERED

CREDIT HOURS PAID IN PREVIOUS 12 MOS.

CLASS MEETS	M	T	W	T	F	S	S
BEGINS				8			
ENDS				4			

LEAVE		
TYPE	HOURS	DAYS

COURSE TITLE AND DESCRIPTION (OUTLINE TRAINING OBJECTIVES AND RELEVANCE OF TRAINING TO EMPLOYE'S PRESENT DUTIES)

Bureau of State Parks, P.O. Box 8551, Harrisburg, PA 17105-8551

Hands-on GPS/GIS Training Seminars

This one day session provides mission (satellite) planning, setup descriptions and job parameters, data collection techniques, post processing data, and export data into GIS (Arc-Info in DER).

This training has been paid through the SPC that purchased the three hand held MC-GPS data collectors. This training is needed so that Bureau of State Parks and Facility Design and Construction will have employees certified in the use of the MC-GPS data collectors and to train additional staff members in the correct use and handling of the equipment.

I HEREBY CERTIFY THAT I WILL ATTEND THE FULL PROGRAM OUTLINED ABOVE.

Keith A Taylor — EMPLOYE'S SIGNATURE — 3/14/95 DATE

SUPERVISOR'S SIGNATURE — DATE 3/14/95

ESTIMATED COSTS FOR AGENCY INFORMATION

LODGING AND SUBSISTENCE EXPENSE	TRANSPORTATION EXPENSES	TOTAL EST. TRAVEL EXPENSES
$ 366.00	$ 0	$

SUMMARY OF TRAINING COSTS

TRAINING COSTS	TRAINING COSTS TO BE PAID BY EMPLOYER
$ Pre Paid	$

$122/person

ACCOUNT CODE

FUND	DEPT	APP	YR	LDG	ORG	COST FUNCTION	OBJ	AMOUNT OF ENCUMBRANCE	LIQUIDATION DOCUMENT NO.	LIQUIDATION AMOUNT

CODED

PRE-AUDIT

POSTED

AGENCY APPROVAL — DATE 3/14/95

COMPTROLLER APPROVAL — DATE

COMMONWEALTH OF PENNSYLVANIA
STD-278 REV. 4-93
OGC #98-K-200
Appv'd OAG 7-13-89

WL 1-14-95 (CK1)

SHOW THIS NUMBER ON INVOICE

SERVICE PURCHASE CONTRACT

EXHIBIT 2-2

ICS ☐ 310 ☐ 320

SP 236661

PROVIDE SERVICE TO (AGENCY)	BILL TO (PROVIDE ORIGINAL AND TWO COPIES OF INVOICE)	PAN NO
Department of Environmental Resources Bureau of State Parks 8th Fl., Market Street State Office Building 400 Market Street Harrisburg, PA 17101-2301	Dept. of Environmental Resources Bureau of State Parks P.O. Box 8551 Harrisburg, PA 17105-8551	DATE PREPARED 1 / 30 / 95 EFFECTIVE DATE 1 / 1 / 95
CONTRACTOR'S NAME AND ADDRESS Commonwealth Engineering Technology, Inc. t/a Earth Information Services 1240 N. Mountain Road Harrisburg, PA 17112	CONTRACTOR'S FEDERAL ID NO./SOC. SEC. NO X 23-2092961 CONTRACTOR'S LICENSE OR REGISTRATION NO. CONTRACTOR'S TELEPHONE NO X 717-541-0644	TERMINATION DATE 12 / 31 / 95 ANTICIPATED DELIVERY DATE / / CONTRACT NOT TO EXCEED $ 15,750.00

SERVICES REQUESTED	QUANTITY	UNIT PRICE	TOTAL PRICE
Provide Geographic Information System (GIS) coverages in accordance with original Service Purchase Contract 239162, as attached. Exercise of renewal option.			
X93681		TOTAL	15,750 00

CONTRACTOR AGREES TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE AND ATTACHMENTS, IF ANY, WHICH ARE PART OF THIS CONTRACT. THIS CONTRACT IS NOT VALID OR ENFORCEABLE UNTIL FULLY EXECUTED, APPROVED AND DELIVERED TO THE CONTRACTOR.

OTHER CONDITIONS OR AGREEMENTS

Contractor agrees to comply with Attachment A, Provisions for Commonwealth Contracts and Attachment B, Federal Requirements, as attached.

PURPOSE AND JUSTIFICATION FOR ABOVE

Technical expertise necessary to follow-through with the development of a GIS System for Presque Isle State Park. The recycled content products provision of Management Directive 215.14 does not apply to this contract.

AGENCY CONTACT	TELEPHONE NO	CONTRACTOR'S SIGNATURE	DATE	CONTRACTOR'S TITLE
Deborah Kauffman	717-783-3305	X [signature]	2/3/95	X President

FUND	DEPT	APP	YR	LDG	ORG	COST FUNCTION	OBJ	AMOUNT OF ENCUMBRANCE		PRE-ENCUMBRANCE NUMBER	AMT. OF PRE-ENC. LIQUIDATED	CODED
016	035	501		5	0100	00025	310	10,575	00	ME 94284	-	PRE-AUDIT
001	035	701	95	6	6600	00113	310	3,375	00			
001	035	134	94	1	6600	60000	310	1,800	00	~~ME 94284~~		POSTED

AUTHORIZED AGENCY ATTORNEY	DATE	COMPTROLLER (OR DESIGNEE)	DATE
[signature]	2/16/95	Corey McCue	6-9-95
OFFICE OF GENERAL COUNSEL (IF REQUIRED)	DATE	AGENCY HEAD (OR DESIGNEE)	DATE
[signature]	2/22/95	Delia M. Capasso	6-2-95
OFFICE OF ATTORNEY GENERAL (IF REQUIRED)	DATE	SECRETARY OF THE BUDGET (OR DESIGNEE)	DATE
[signature]		Deborah Chenu	6/9/95

2.4 Equipment

This section discusses the hardware and software purchased by the BSP to develop a functional GIS program for Presque Isle State Park.

2.4.1 Hardware

In addition to the hardware purchased under the 1992 CZM Grant, Phase I, a HP Paintjet Printer/Plotter, two CMT GPS Data Collectors, and two Data Pagers were purchased.

The Paintjet printer/plotter was acquired to replace the eight-pen plotter at Presque Isle State Park. This replacement was necessary due to ArcView 2 being a postscript-based software. The original pen plotter could not be upgraded to support postscript capabilities. Therefore, a new printer/plotter (Exhibit 2-3) was purchased to enable the state park to produce hard copy maps from their GIS system.

The two GPS units were needed to collect, point, line, and attribute data for such items as the shoreline, roads, trails, water sample sites, beach areas, PNDI, signs, mowing areas, or buoy locations for the production of accurate maps at a 1:50 scale. Previous data during Phase I was taken from digital orthophotographs and mylar and paper maps based on various scales ranging from one inch equals 400 feet to one inch equals 1,000 feet. The accuracy level of one to five meters that the GPS units provide permits the state park coverages to be corrected to meet the established standards for the Bureau of State Park's mapping.

The data pagers provide an extra accessory to the GPS units to allow for real time correction. The benefits of real time correction is the elimination of post processing of data, thus allowing for a more efficient operation.

2.4.2 Software

In addition to the software purchased under the 1992 CZM Grant, Phase I, another copy of ArcView 2, along with a copy Avenue, was purchased.

Another copy of PC ArcView 2 was needed to enable Central Office staff to verify that an exported Arc Info coverage that was exported from a workstation would import correctly into ArcView 2 on a PC, prior to sending it to Presque Isle State Park. The purchase of Avenue would permit the park and Central Office to modify existing applications that were written by the consultants. In addition as needs develop, the staff could write new applications for ArcView 2 for use by the state park.

As of September 30, 1995, the Bureau is running Arc Info version 7.0.2 on a workstation running Solaris 2.4. As for ArcView 2, the Bureau is using release 2.1. Upgrades have been and will continue to be done as needed to keep the Bureau current with technology advancements. Plans are being undertaken to tie the park's computer together with the Central Office computer. This will eliminate the need for mailing disks back and forth between the two offices.

Chris Crestine

EXHIBIT 2-3

COMMONWEALTH OF PA — FIELD PURCHASE ORDER — FL-1388584

SHIP TO: (FOB DESTINATION UNLESS SPECIFIED)
DEPT OF ENVIRONMENTAL RESOURCES
PARKS & FORESTRY ADMINISTRATION
8TH FL RACHEL CARSON ST OFFICE BLDG
400 MARKET ST
HARRISBURG PA 17101

BILL TO: (ORIG & 2 COPIES OF ITEMIZED INVOICE)
DEPT OF ENVIRONMENTAL RESOURCES
PARKS & FORESTRY ADMINISTRATION
P O BOX 8551
HARRISBURG PA 17105 8551

PREP DATE: 5/10/95 DEL DATE: 7/01/95 PRNT DATE: 6/06/95
AGENCY CONTACT: DEB KAUFFMAN
AGENCY PHONE: (717) 783-1896
VENDOR PHONE: (800) 426-7539

CIC SYSTEMS INC
COPLEY SYSTEMS DIV
165 UNIVERSITY AVENUE
WESTWOOD MA 02090

FID/SSN: 650350400
AG REF: CAPASSO-PF
ORD TOTAL: 1,993.00

APPROVALS: AGENCY: DEBRA M CAPASSO Debra M. Capasso
COMPT : JAMES E POTTEIGER

CONTRACT NO.: 748001
EXPIRE DATE: 12/31/95

TERMS: NET 30

COMMODITY INFORMATION

LINE	COMMODITY CODE	QUANTITY	UNIT	PRICE	AMOUNT
0027-001	5810-3125-035 OTHER PRINTERS (EXCLUDE LINE PRINTERS), MFR BY HEWLETT PACKARD	1	EACH	1,645.00	1,645.00
	LINE ITEM 1912, C1656A-ABA, PAINTJET XL300 COLOR POSTSCRIPT PRINTER				
0027-002	5810-3125-035 OTHER PRINTERS (EXCLUDE LINE PRINTERS), MFR BY HEWLETT PACKARD	1	EACH	149.00	149.00
	NON-CONTRACT ITEM				
	C1653A, B SIZE PAPER TRAY, 11 X 17				
0027-003	5810-3125-035 OTHER PRINTERS (EXCLUDE LINE PRINTERS), MFR BY HEWLETT PACKARD	1	EACH	199.00	199.00
	LINE ITEM J2374B, SOFTWARE KIT				

ACCOUNTING INFORMATION

FND	DPT	APP	YR	L	ORGN	CFUNC	CC	OBJ	SO	AMOUNT
001	035	701	95	7	6600	00113	00	425	00	1,993.00

GENERAL INFORMATION

P10 - X96081 - CONTINGENT COMMITMENT - DELIVERY AFTER 7/1/95

JUSTIFICATION: PRINTER IS NEEDED WITH THE PRESQUE ISLE STATE PARK GIS TO TAKE THE DIGITAL COMPUTER COVERAGES AND PRODUCE HARDCOPY MAPS OF VARIOUS COVERAGE COMBINATIONS FOR DISTRIBUTION TO THE STAFF AND PUBLIC. IT WILL ALSO BE USED FOR FIELD VERTIFICATION AND ACCURACY OF THE COVERAGES.

VENDOR INSTRUCTIONS:
DO NOT INCLUDE ON ONE INVOICE ITEMS FROM MORE THAN ONE PURCHASE ORDER.
* SHOW PURCHASE ORDER NUMBER ON ALL PACKAGES AND CORRESPONDENCE.
THE NAME OF THE SHIPPER MUST BE IDENTIFIED ON ALL SHIPMENTS.

2.5 Training

Training was provided to BSP staff by the Environmental Scientific Research Institute (ESRI), Corvallis Microtechnology, Inc., BSP Central Office staff, and EIS. All training was geared towards the use of the various hardware and software for the use in creating coverages and running applications.

Training performed by the various agencies is listed below:

- 8 hours of GPS training by CMT for three people
- 8 hours of GPS training by Bureau staff for nine people
- 40 hours of Advanced Arc Info by ESRI for one person
- 16 hours of Arc View training by EIS for three people (Exhibit 2-4)

3.0 COVERAGES

This section deals with all the coverages that were created or edited for Presque Isle State Park. A brief description of each coverage is provided along with the attributes that are associated with the coverage. In most of the coverages, an exhibit is provided to show the information.

3.1 Shoreline Coverages

These coverages consists of the various shorelines for Presque Isle State Park for July 25, 1994, November 11, 1994, April 26, 1995, and July 26, 1995. The boundary was mapped using GPS equipment and GPS mapping procedures developed by the Bureau of State Parks' Central Office staff. Boundaries were mapped through a combination of walking the shoreline and utilizing an All Terrain Vehicle (ATV). Areas where the staff was unable to drive, the ATVs were walked. The GPS data was then converted into an Arc Info format through procedures developed by the Bureau of State Parks' Central Office staff. Exhibit 3-1 shows these four shorelines. The park will collect shoreline data, a minimum of three times per year. This collection will occur in April, July, and November. Additional shorelines may be collected at anytime the park manager requires it. Attribute data includes weather conditions (wind direction, wind speed, and cloud cover), date, and lake elevation. When comparing shorelines, the lake elevation is critical for accurate evaluations.

The breakdown of the parks acreages as of July 27, 1995, are as follows:

Jurisdictional Area	3,340.89 Acres
500' Off Shore Area	915.38 Acres
Bays	431.29 Acres
Land Mass	1,652.83 Acres
Interior Ponds	341.29 Acres

3.2 One-Foot Contours

This coverage was created from 1983 survey data done by a cooperative effort of the Bureau of State Parks and the Army Corp of Engineers. Because this mapping was being done for the shoreline erosion problem, only the lake side of the Peninsula, back (approximately 800 feet) was mapped. This resulted in this coverage being only 60 percent complete for the park. As funds become available the remaining areas of the state park should be mapped at a one-foot interval. One coverage contains contour lines and the other coverage contains 3,068 elevation control points for calculating elevations. This contour coverage will be a benefit when running analysis of what will happen with a one-, two- or three-foot rise or fall in Lake Erie's

PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: K Taylor

DRAWN BY: PRIMS

DATE: 10/15/1996

LEGEND

- July 1994 Shoreline
- April 1995 Shoreline
- Trails
- Parking Lots
- Breakwaters
- Nov. 1994 Shoreline
- Roads
- Buildings
- Ponds & Lagoons
- April 1995 Shoreline

1" = 900'

SCALE IN FEET

PRESQUE ISLE STATE PARK SHORELINES MAP

DRAWING NUMBER

PMP # 6220

EXHIBIT 3 - 1

elevation. This level of one-foot contour accuracy is not needed for the other state parks by the Bureau. However, if it is available, it will be of benefit to the Bureau of Facility Design and Construction in their project design. Due to the detail of this coverage exhibit is done at a 1" to 200' scale to show the detail of the coverage. Exhibit 3-2 shows one area of the park with the contours and control points.

3.3 Bike Trail

The bike trail for Presque Isle State Park was designed by the Bureau of Facility Design and Construction using base maps from the Presque Isle GIS program. This cooperative effort resulted in a savings of time and money for both agencies. To accomplish this, an AML was created by the consultant to develop 1 to 50 scale maps. The bike trail and the station number were digitized off 25 individual Park Resources Management Information System (PRMIS) drawings. The coverage contains the bike trails, road paving information, and station numbers along the trail. The bike trail was plotted using a sealed map Arc AML to plot 25 individual sheets with match lines. The mapping could be accomplished using either the Bureau of State Parks, Bureau of Facility Design and Construction, or Department of General Services' basic layouts.

These drawings were then turned over to the Bureau of Facility Design and Construction for added specifications to use as design drawings for the capital project. Exhibit 3-3 shows one of the 25 drawings created at half the size it was used at.

3.4 Valves

This coverage is a point cover showing the location for 199 water shut-offs, fire hydrants, and water fountains located throughout Presque Isle State Park. GPS data collectors were utilized to collect the coordinates and attribute data. Attribute data consists of: type of fixture, construction material, building-ID code, and area the valve services. The coverage is critical to the state park because only one staff member knows all the locations of the various water shut-offs, fire hydrants, and water fountains at Presque Isle State Park. As of September 30, 1995, the state park staff will be able to use the GIS program to find the location of each of the valves. This is done by running the X and Y AML application which produces a map (Exhibit 3-4) with the x and y locations on it for the selected valve area. All the staff has to do is take a GPS unit and locate that x,y coordinate to locate a valve as shown on the ArcView map. Exhibit 3-5 shows all the valves in Presque Isle State Park.

3.5 Signs

The sign coverage for Presque Isle State Park was obtained through the use of GPS equipment. Data was collected the last week of July when five interns from the Bureau of State Parks' Central Office spent a week working at Presque Isle State Park using GPS equipment. Data for the signs coverage was collected in groups of two over a two and a half-day period, approximately ten hours total. Only large signs with two wooden posts were done as requested by Presque Isle State Park's management staff. A total of 29 signs were collected along with data on height, width, type of sign, material of the sign and post of the sign, and whether or not the sign is a reflective sign. A unique sign identification number was also assigned to each sign which corresponds to a picture of that particular sign. The pictures were then developed and put on a CD to be used by the state park in Arc View. Exhibit 3-6 shows an Arc View designed map with the area of the sign location and a graphic display of the sign. This method of storing sign data allows the state park to

PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: K Taylor

DRAWN BY: PRIMS

DATE: 10/15/1995

LEGEND

Trails | Park Roads | Docks & Memorial | Contour Lines | Ponds & Lagoons | Groins & Breakwaters | Parking Lots | Structure | Buildings | 1973 Shoreline

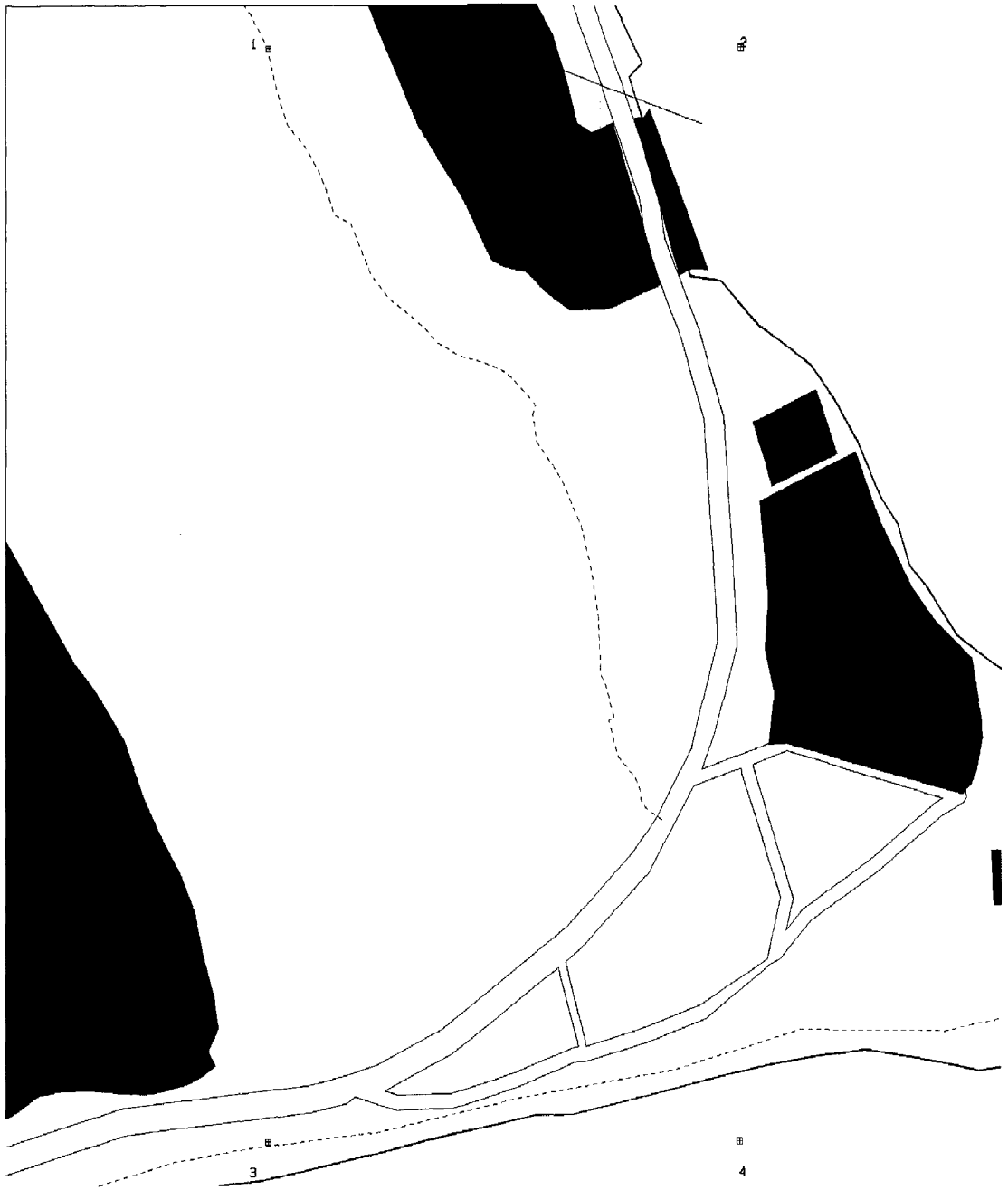
1" = 200'
SCALE IN FEET

PRESQUE ISLE STATE PARK TOPOGRAPHY MAP

DRAWING NUMBER

PMP # 6220

EXHIBIT 3-2



Trails
Park Roads
Park Boundary
Matchline
Ponds & Lagoons
Structure
Groins & Breakwaters
Buildings
Parking Lots

1 1332997.93125 733545.98125

2 1333449.69375 733545.98125

3 1332997.93125 732665.76875

4 1333449.69375 732665.76875

N

NO.	DATE	REVISION	APPR

SUBMITTED

APPROVED

APPROVED

CHECKED BY THE DEPARTMENT OF GENERAL SERVICES

ARCH.	STRUC.	M.P.& E.	PLB'G.	ELEC.	MISC.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF GENERAL SERVICES
HARRISBURG, PENNSYLVANIA

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

CONTRACT NO. DGS 163-20

CONSTRUCTION OF BICYCLE FACILITIES PRESQUE ISLE STATE PARK ERIE, PENNSYLVANIA

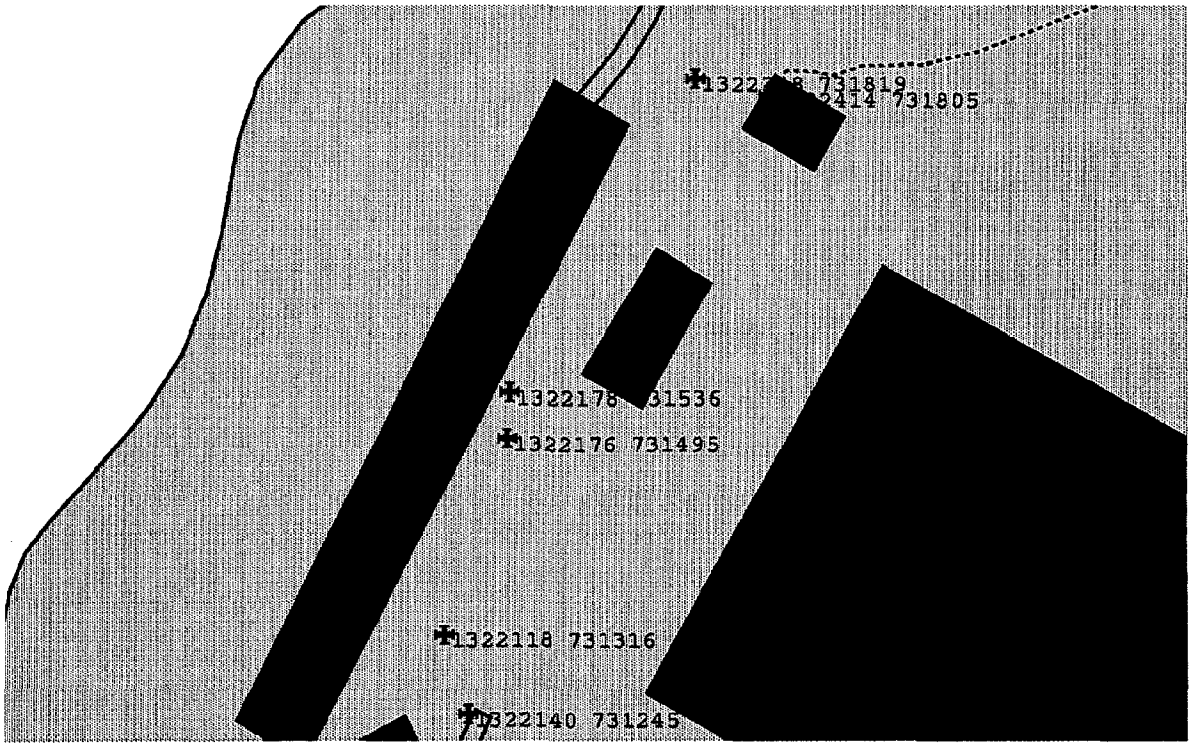
PLAN

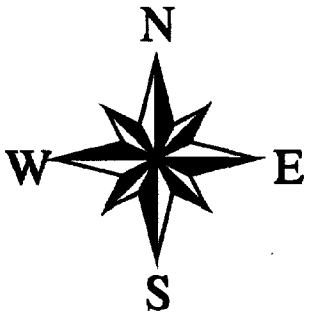
ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY CONTRACTOR AT THE SITE.

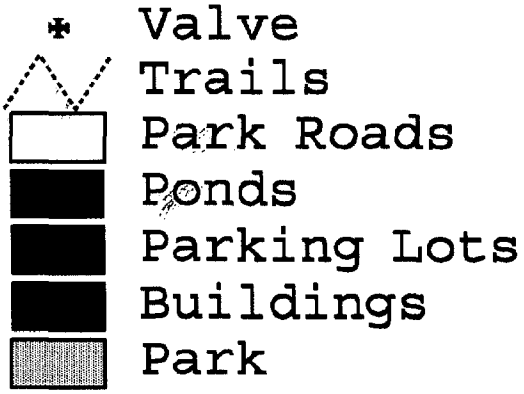
DRAWN BY	DATE	DRAWING NO.
CHECKED BY	SCALE 1" = 100'	1 of 25

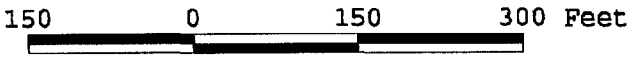
COORDINATE LOCATION MAP

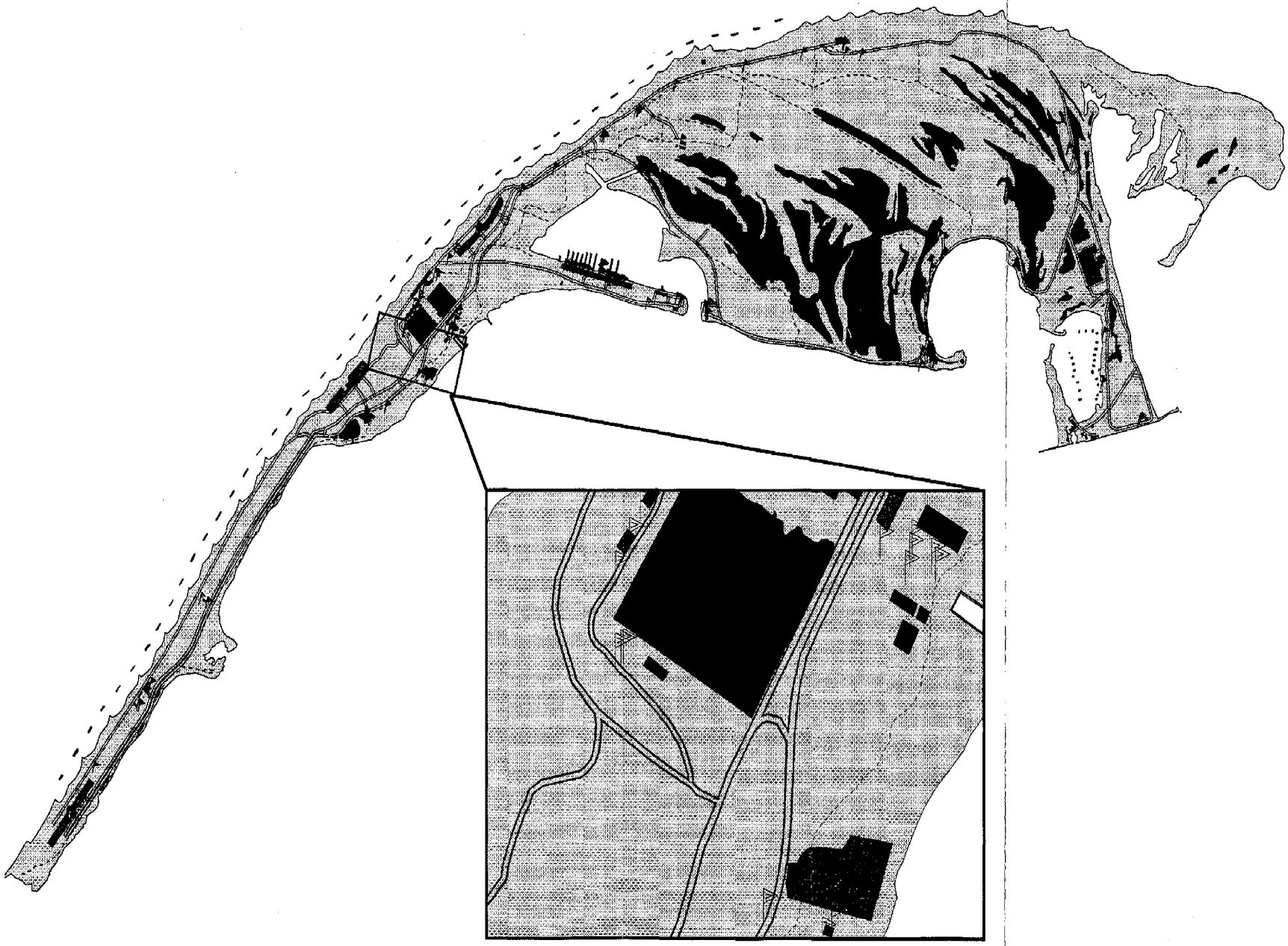
EXHIBIT 3-4











PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED	
DESIGNED BY:	K Taylor
DRAWN BY:	PRIMS
DATE:	10/15/1995

LEGEND

Trails | Park Boundary | Ponds & Lagoons | Groins & Breakwaters | Parking Lots | Various Types Water Valves

Park Roads | Docks & Memorial | Structure | Buildings | April '95 Shoreline

1" = 2,000'
SCALE IN FEET

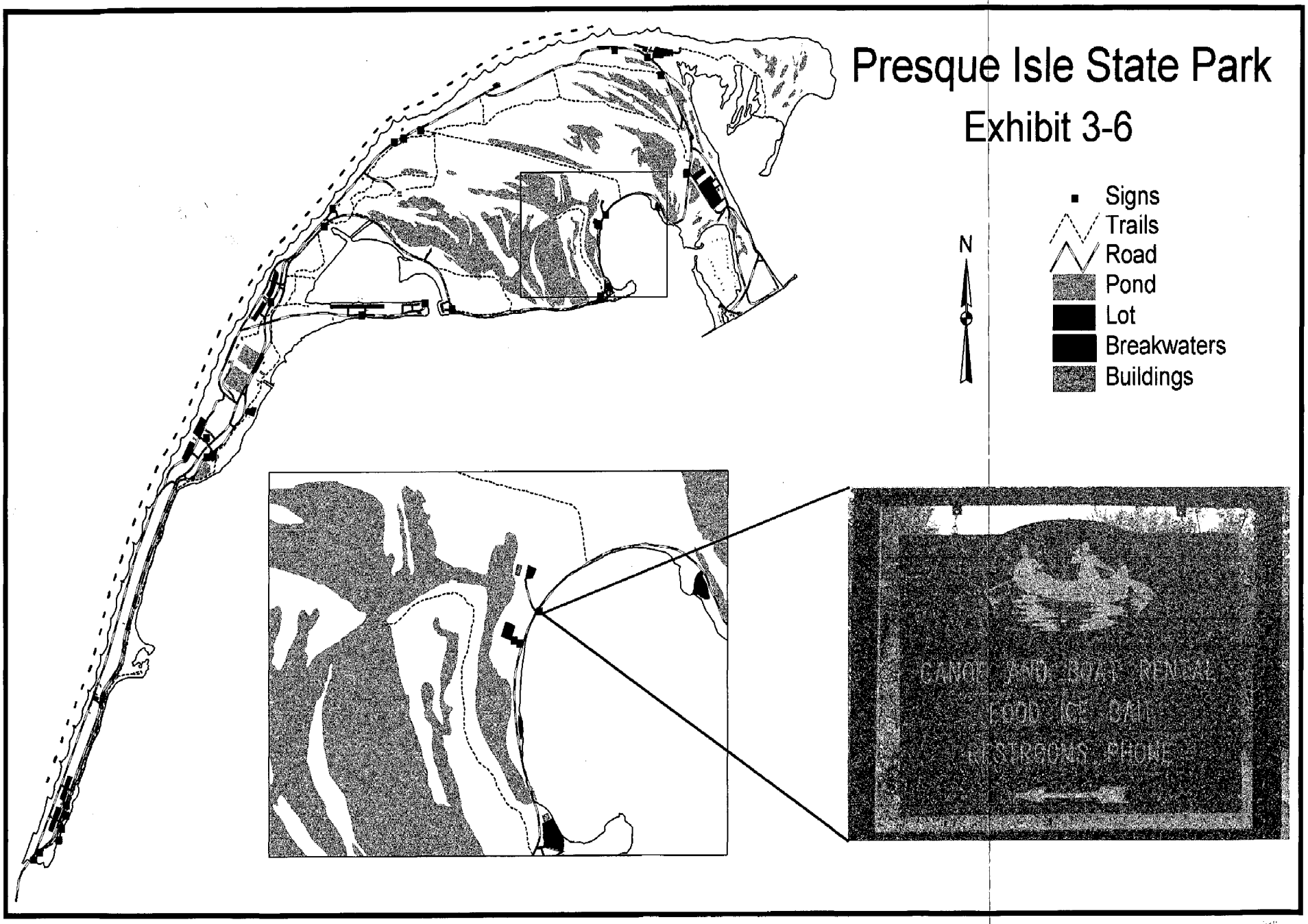
PRESQUE ISLE STATE PARK VALVES MAP

DRAWING NUMBER
PMP # 6220

EXHIBIT 3-5

Presque Isle State Park

Exhibit 3-6



click on a sign that may have been stolen or damaged to see what type of sign it was and the information that was on the sign. Whether or not this is a practical way of storing data has yet to be seen. Over the next year, the state park will use the coverage and make recommendations on whether this is a good application on Arc View. An additional 52 signs that has been inputted previously do not have pictures but have attribute data, such as type of sign, sign construction, height of sign, sign text, whether the sign is a reflective, a sign-ID code, construction material of the sign post, and date of installation. This part of the coverage (Exhibit 3-7) only contains the first seven-tenths of a mile because of the time required to gather the data. It took a two-person crew a period of two and a half days to gather this information. If the state park feels that they need all the 300 plus signs in the state park added to their coverage, park rangers and maintenance staff will be used to gather the data as time permits.

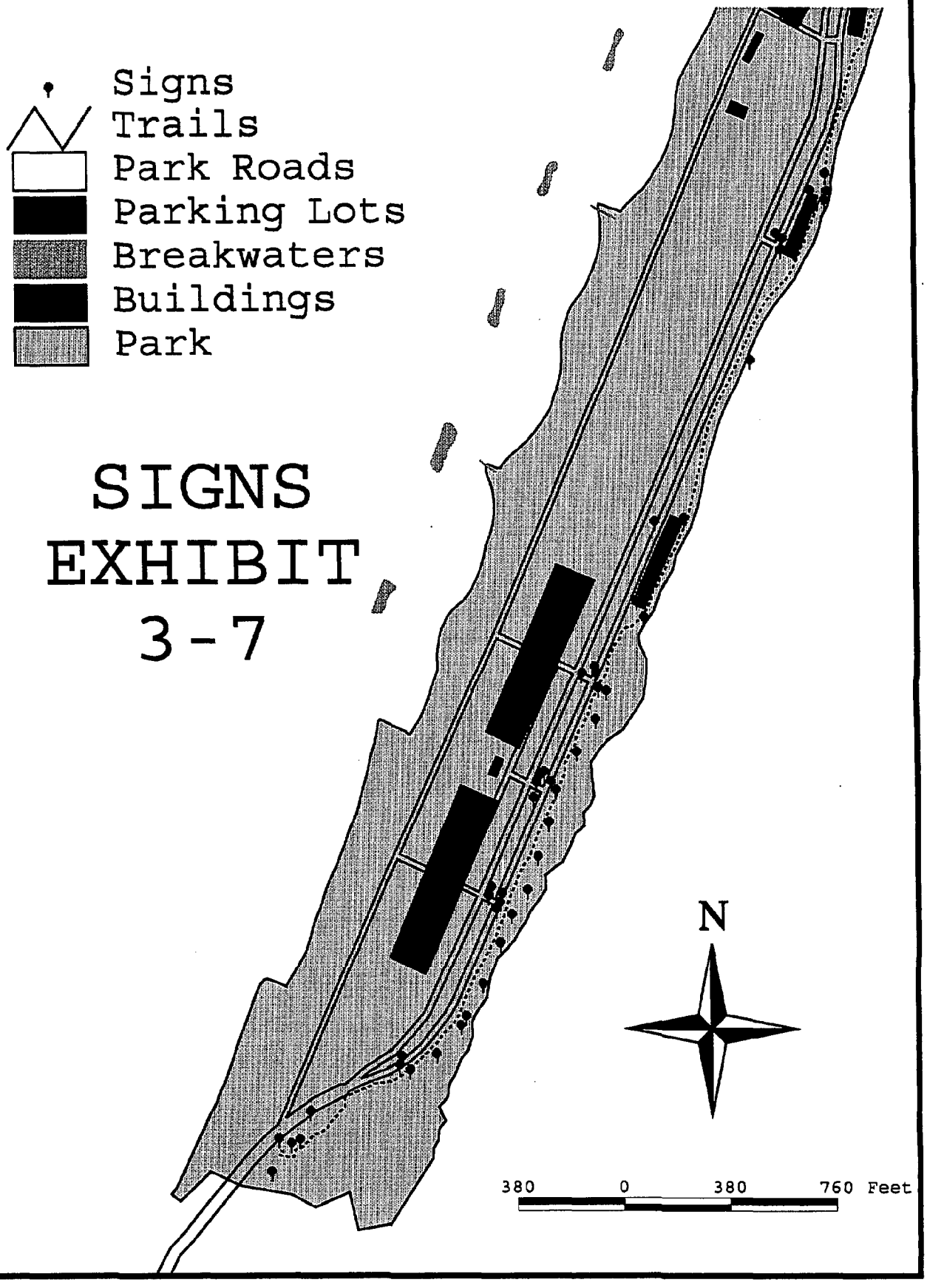
3.6 Species of Special Concern

The coverage of species of special concern for Presque Isle State Park consists mainly of plant species. The decision to concentrate on plants was made by the Resources Management Section because it was felt that this data was more critical than other species to collect. As of September 30, 1995, plant locations for hairy puccoon, silverweed, bushy aster, hoptree, potentilla, paradoxa, lupine, blue flag, and sea rocket have been mapped. This information was gathered using GPS data collectors. Locations of the plants were identified by Jim Bissell from Cleveland Museum of Natural History or the Resources Management Section staff. After weeks of work, this coverage has just begun to be developed. Many more plants need to be located to provide the state park with needed information for making good decisions in regards to protecting these plants. This is one of the primary reasons that a GPS data collector was purchased for Presque Isle State Park. As researchers complete their projects at Presque Isle State Park, the Bureau will request that these areas involving species of special concern be mapped. Mr. Bissell has agreed to GPS all of this field work at Presque Isle State Park for the Bureau of State Parks. He felt that a GPS collector was vital to the collection of this type of data so much that he purchased a unit of his own. Future efforts should consider contracting for species of special concern to be mapped for Presque Isle State Park. It is the only way to best protect these plants if we know where they are located.

There is no exhibit showing PNDI species and their location provided in this report due to the sensitivity of this information. Attributed data for this coverage includes the common name, scientific name, Pennsylvania status, the quality of population, EC-code for PNDI, and if applicable, the Cleveland Museum Number. Any questions, contact Keith Taylor, Resources Management Section.

3.7 Vegetation

This coverage was created by digitizing field maps that were done on a 1" to 400' scale. The only attribute data included in the coverage is the vegetation type and acreage. A look-up table is associated with the coverage; it gives a description of the vegetation cover, name, code, and if applicable pole size, diameter, and dominant species. The basis for this typing is directly related with the resource management plan for Presque Isle State Park. The vegetative survey was done in 1990 by the Bureau of State Parks' staff in cooperation with the Bureau of Forestry. Exhibit 3-8 shows the vegetation on a 1" to 1,000' scale. As you can see on this scale, the map looks like a collage of many colors. The insert shows a section of the state park mapped at a 1" to 250' scale to show detail.


Signs
Trails
Park Roads
Parking Lots
Breakwaters
Buildings
Park
SIGNS
EXHIBIT
3-7
N
380
0
380
760 Feet

PARKS RESOURCES MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: K Taylor

DRAWN BY: PRIMS

DATE: 10/15/1995

LEGEND

Trails, Structure, G2, U4, 03, B12, P22, D13

Park Roads, Breakwaters, H20, M2, A12, B13, D11, D23

Docks, G1, U2, SAND, A13, B23, D12, D21

1" = 2,000' SCALE IN FEET

PRESQUE ISLE STATE PARK VEGETATION MAP

DRAWING NUMBER

PMP # 6220

EXHIBIT 3-8

3.8 Wetlands

This coverage was created from the combination of the National Wetland Inventory (NWI) maps and the state park's vegetation map. Due to the acceptable error factor in the NWI maps, they cannot be used for a good wetland coverage of the state park. The attribute data is identical to the vegetation data. If this coverage is to be used for delineation and design projects, then the boundary lines for the various wetlands should be done using GPS equipment. Exhibit 3-9 shows the various wetlands found at Presque Isle State Park. As the map shows, a large portion of the state park is considered some type of wetland. Therefore, the wetland coverage is critical to the state park management staff when making decisions on natural resource management, maintenance, and development of state park facilities.

3.9 Monuments

Information on Presque Isle State Park's monuments were obtained through the resource management plan for Presque Isle State Park provided by the Bureau of State Parks' Central Office staff. The coverage contains all 32 monuments and their location in the state park. Exhibit 3-10 shows the described location of each monument. Attempts to locate these monuments failed due to not having GPS units with real time correction and a metal detector. It is felt that these monuments are buried under sand, and if they should need to be located, the state park would need to use the GPS equipment with real time corrections and a metal detector to find them.

3.10 Telephone Right-of-Way

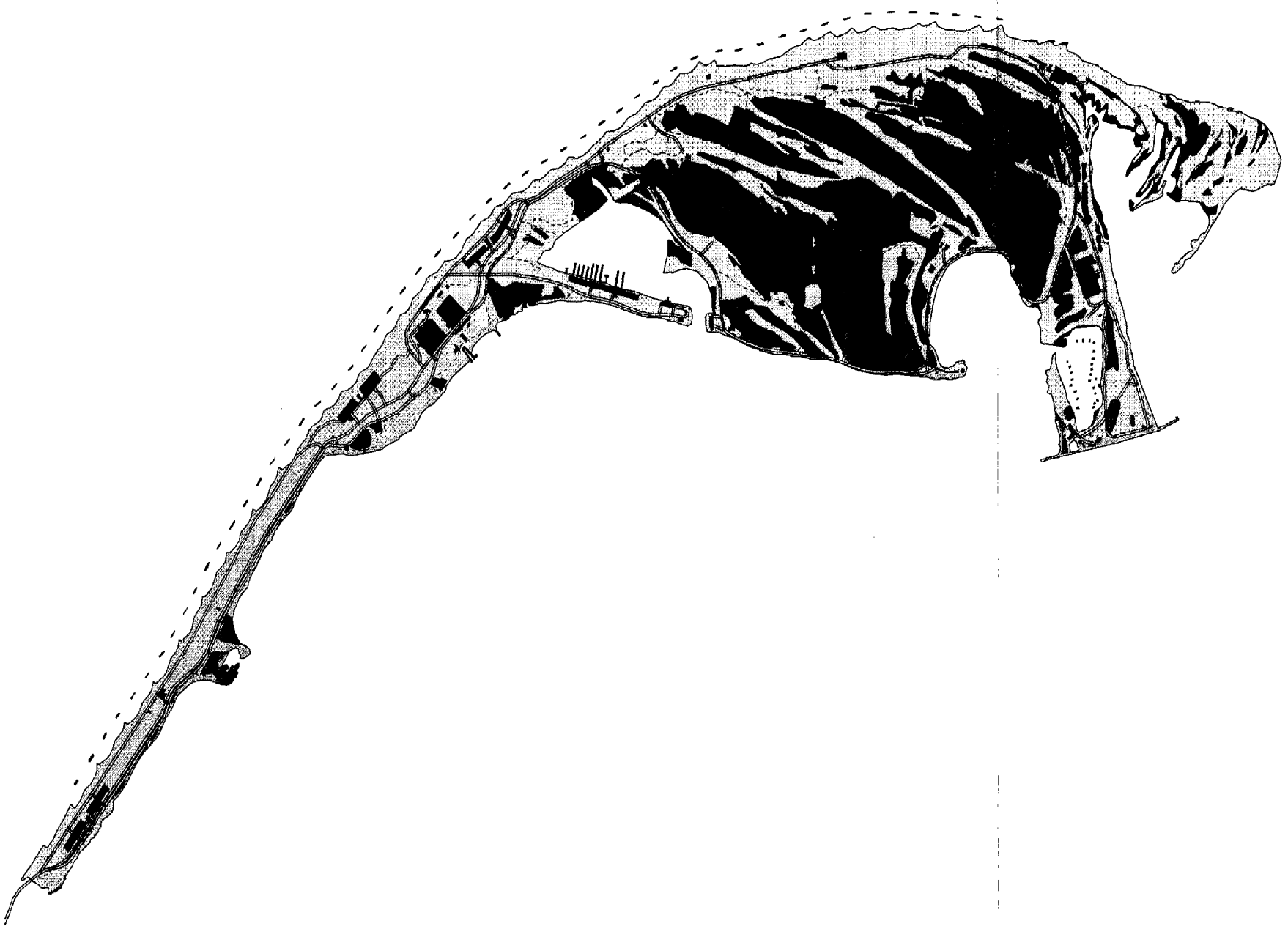
Information on Presque Isle State Parks' telephone lines was received on disk in the form of Intergraph files from Mr. Tom Coleman of GTE. The Intergraph files were converted into Arc Info coverages using the arc command IGDSINFO and IGDSARC. The coverages were edited to contain specific data for our purposes. Exhibit 3-11 shows these lines and poles.

3.11 Water Sample Locations

This coverage was created using GPS equipment during the last week of July 1995 by the Bureau of State Parks' staff in cooperation with Presque Isle State Park's staff. The coverage contains the location of water samples taken at various beaches for the purpose of monitoring coliform bacteria. Samples are taken twice each week after peak swimming periods. Attributes for the coverage include the beach code, beach name, and description of the sample location, for example: east, west, or center. The coverage is helpful to the state park staff when a new staff member is assigned to take samples on the beaches. A map will show the sample locations including the x and y coordinates. An unfamiliar staff member can then use GPS equipment to locate the location where the sample is to be taken. Exhibit 3-12 shows the sample locations in the state park.

3.12 Beaches

This coverage was created using a combination of GPS equipment and existing coverages. Information was collected during the last week of July 1995. The beach areas were mapped by Bureau of State Parks' Central Office staff using an ATV provided by Presque Isle State Park. Attributes of this coverage include: beach code, beach name, whether the beach is guarded or unguarded, number of picnic tables, and the number of lifeguard chairs on each beach. This coverage will enable



PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: K Taylor

DRAWN BY: PRIMS

DATE: 10/15/1995

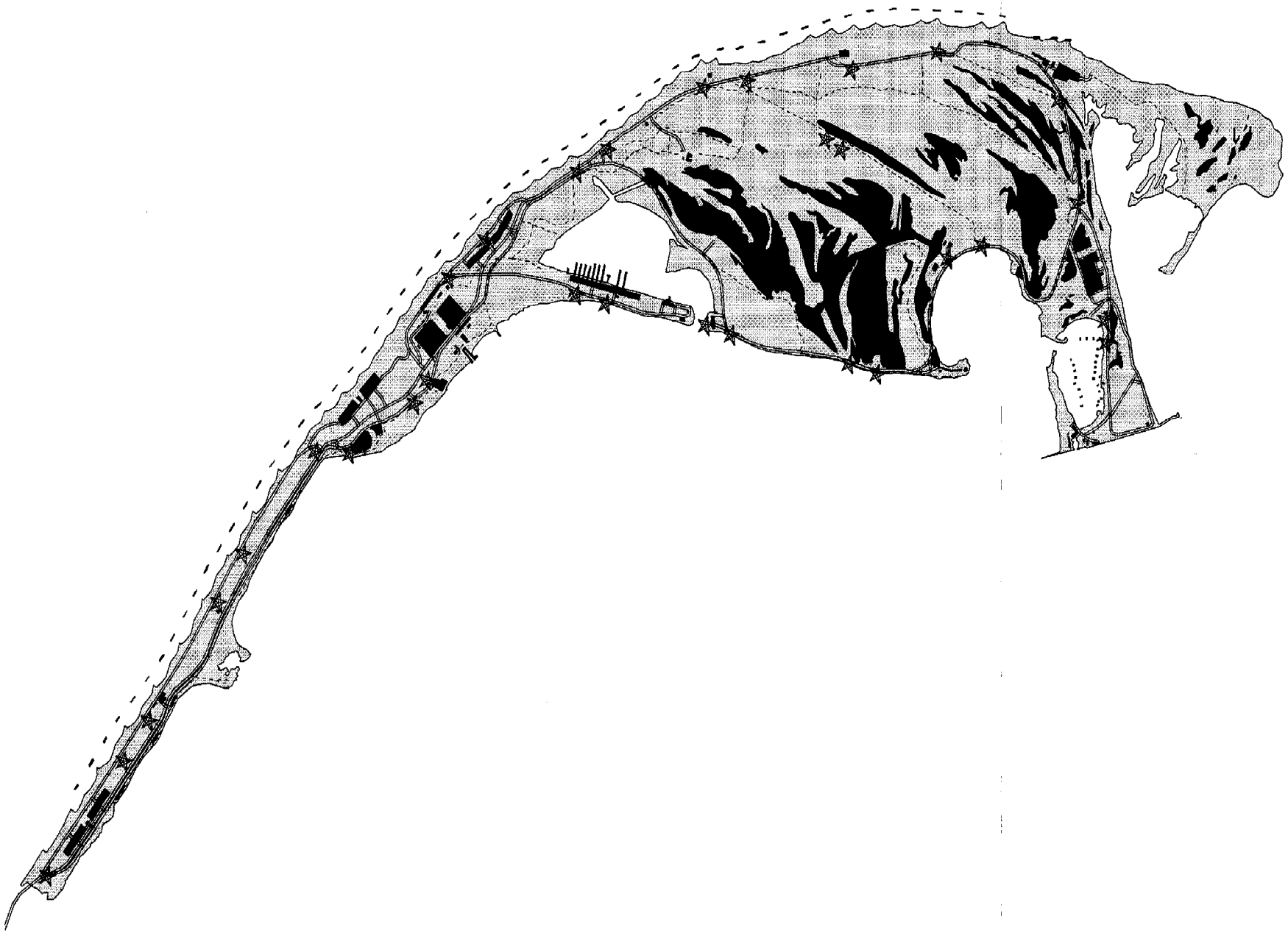
LEGEND

Trails
Park Boundary
Ponds & Lagoons
Groins & Breakwaters
Parking Lots
SCRUB SWAMP
Park Roads
Docks & Memorial
Structure
Buildings
Shoreline
MARSH

1" = 2,000'
SCALE IN FEET

PRESQUE ISLE STATE PARK WETLANDS MAP

DRAWING NUMBER
PMP # 6220
EXHIBIT 3-9



PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: K Taylor

DRAWN BY: PRIMS

DATE: 10/15/1995

LEGEND

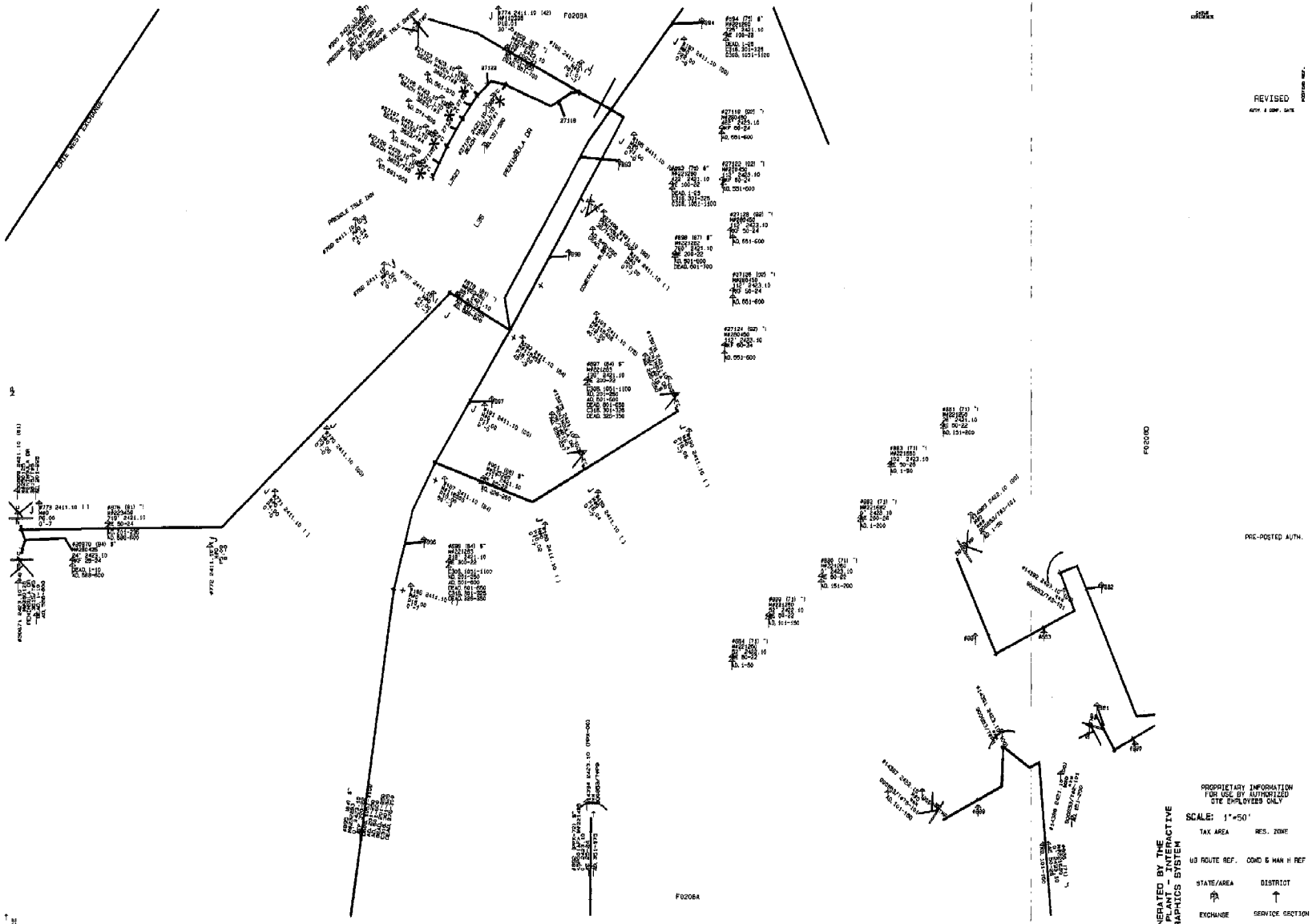
Trails
Park Boundary
Ponds & Lagoons
Groins & Breakwaters
Parking Lots
Concrete Monuments
Park Roads
Docks & Memorial
Structure
Buildings
April '95 Shoreline

1" = 2,000'
SCALE IN FEET

PRESQUE ISLE STATE PARK MONUMENTS MAP

DRAWING NUMBER
PMP # 6220

EXHIBIT 3-10



PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED	
DESIGNED BY:	K Taylor
DRAWN BY:	GTE
DATE:	10/15/1995

LEGEND

TELEPHONE LINES

TELEPHONE POLES INFO

1" = 125'
SCALE IN FEET

PRESQUE ISLE STATE PARK TELEPHONE LINE MAP

F0208C

DRAWING NUMBER
PMP # 6220

EXHIBIT
3-11

PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED	
DESIGNED BY:	T MATULA
DRAWN BY:	PRIMS
DATE:	10/15/1995

LEGEND

- WATER SAMPLING SITES
- Trails
- Park Roads
- Park Boundary
- Docks & Memorial
- Ponds & Lagoons
- Structure
- Groins & Breakwaters
- Buildings
- Parking Lots
- April '95 Shoreline

1" = 2,000'
SCALE IN FEET

PRESQUE ISLE STATE PARK WATER SAMPLE MAP

DRAWING NUMBER
PMP # 6220

EXHIBIT 3-12

the Bureau to analyze very quickly hundreds of pages of report data from the lifeguards over the past years by relating their database to this coverage. Previously it would take hours to figure out which beaches had the greatest number of rescues; the new method will speed up the process to under ten minutes. For example, what beaches had greater than 30 rescues in 1994? A report plus a graphic map will be generated showing rescues on each beach. Exhibit 3-13 shows the 18 guarded beaches as identified by the Presque Isle State Park staff.

3.13 Roads

This updated roads coverage is an enhancement of the original road coverage that was done on a 1" to 1,000' scale to bring us into the 1" to 50' accuracy scale. Along with it having a higher accuracy level, it also includes the width of each of the road segments, type of surface, condition of the road, directional status, name of the road, and its status (primary, secondary, or service). The status category will be used by the state park to map which roads are to receive snow removal first, priority in maintenance and repair, and material needed to make such repairs. Exhibit 3-14 shows a section of the park at a 1" to 100' scale with the type of road and their actual width. Exhibit 3-15 shows all the primary roads in the state park (Peninsula Drive, East Fisher Drive, Thompson Drive), secondary roads (Coast Guard Road, Marina Drive, Pine Tree Drive, West Fisher Drive, Old Peninsula Drive), and service roads.

3.14 Mowing Areas

This coverage was generated using GPS equipment by the Bureau of State Parks' staff during the last week of July 1995. This coverage contains mowing areas that are to be mowed only at certain times of the year due to natural resource concerns.

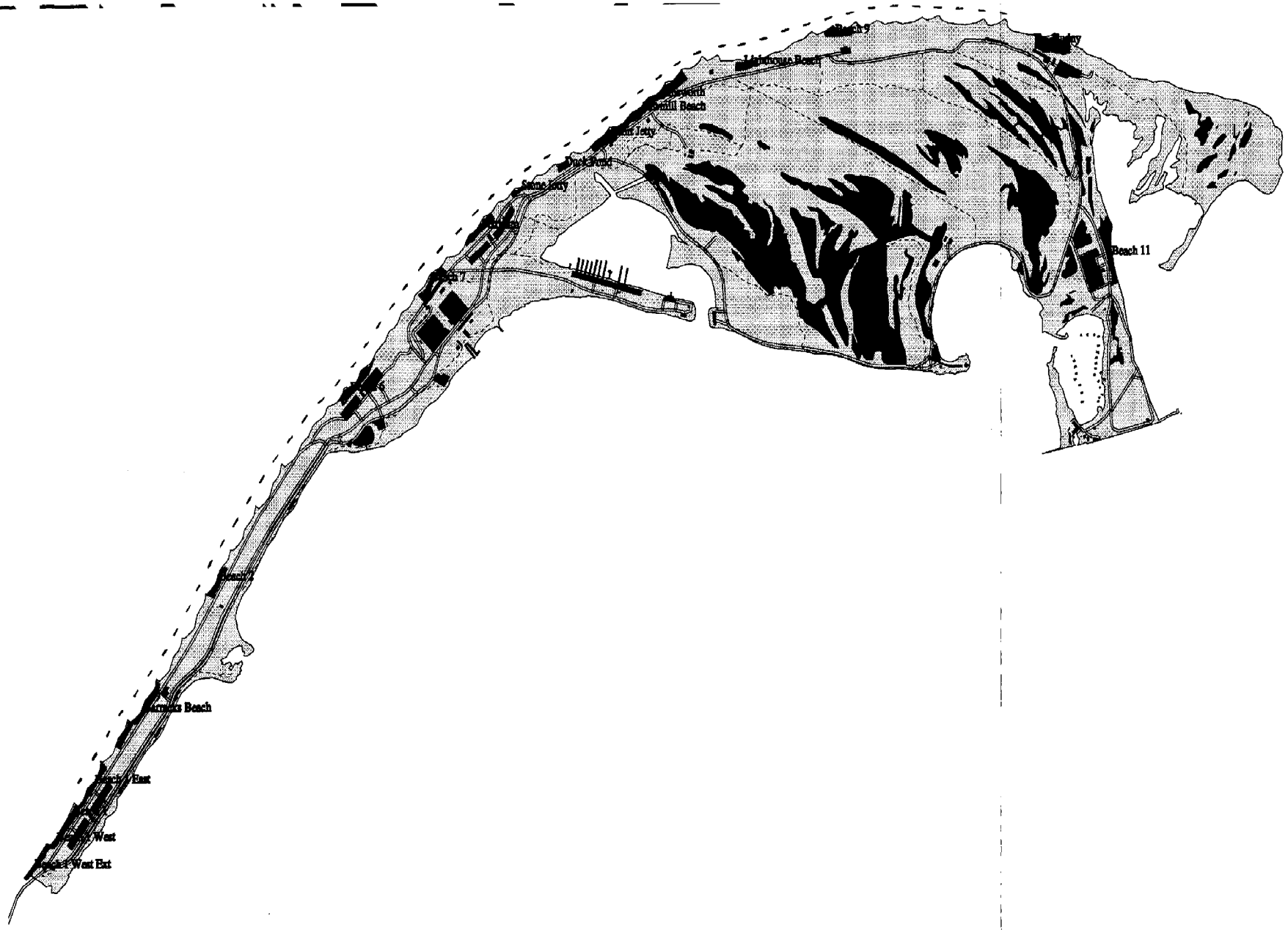
Attributes for the coverage include name of mowing area, dates to be mowed, and concern for the particular mowing area.

The coverage will be used by state park's maintenance staff to show what areas are to be mowed and at what specific date. Exhibit 3-16 shows the location of the mowing area and the name.

3.15 Buoy

This coverage plots the location of the jurisdictional buoys that are placed on the official state park boundary line. Prior to and including 1995 state park staff used two to three staff members with a 500-foot rope to measure from the shoreline to locate the buoys. This had to be done annually because the buoys could not be let out over winter and sometimes after major storms needed to be reset. Also included with this coverage is traffic control buoy locations.

Starting in 1996, the Bureau of State Parks' GIS program will produce a map with the x and y coordinates for each of the buoys. Then, all the park ranger staff will be required to do is take the GPS unit with real time correction capabilities out in a boat, find the location, and drop the buoy. This will save the state park time and money. Exhibit 3-17 shows the buoys that are placed by the park staff.



PARKS RESOURCES MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: T MATULA

DRAWN BY: PRINS

DATE: 10/15/1995

LEGEND

GUARDED BEACHES

Park Roads

Docks & Memorial

Structure

Buildings

April '95 Shoreline

Trails

Park Boundary

Ponds & Lagoons

Groins & Breakwaters

Parking Lots

1" = 2,000'

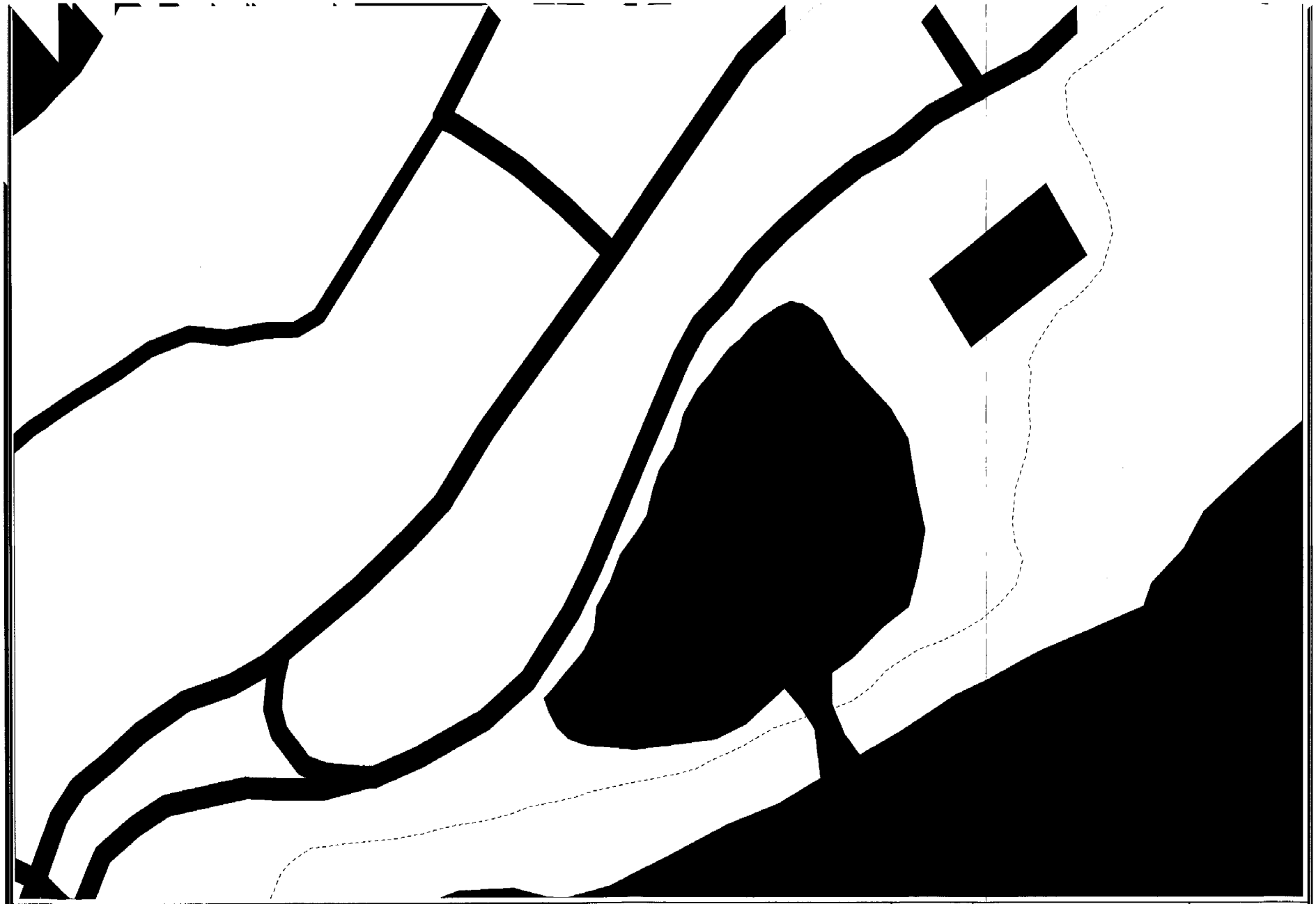
SCALE IN FEET

PRESQUE ISLE STATE PARK BEACHES MAP

DRAWING NUMBER

PMP # 6220

EXHIBIT 3-13



PARKS RESOURCES MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: K Taylor

DRAWN BY: PRIMS

DATE: 10/15/1995

LEGEND

Trails

ROAD CENTERLINE

Ponds & Lagoons

Buildings

PRIMARY ROADS @ ACTUAL WIDTH

SECONDARY ROADS @ ACTUAL WIDTH

SERVICE ROADS @ ACTUAL WIDTH

PRESQUE ISLE BAY LAKE ERIE

1" = 100'

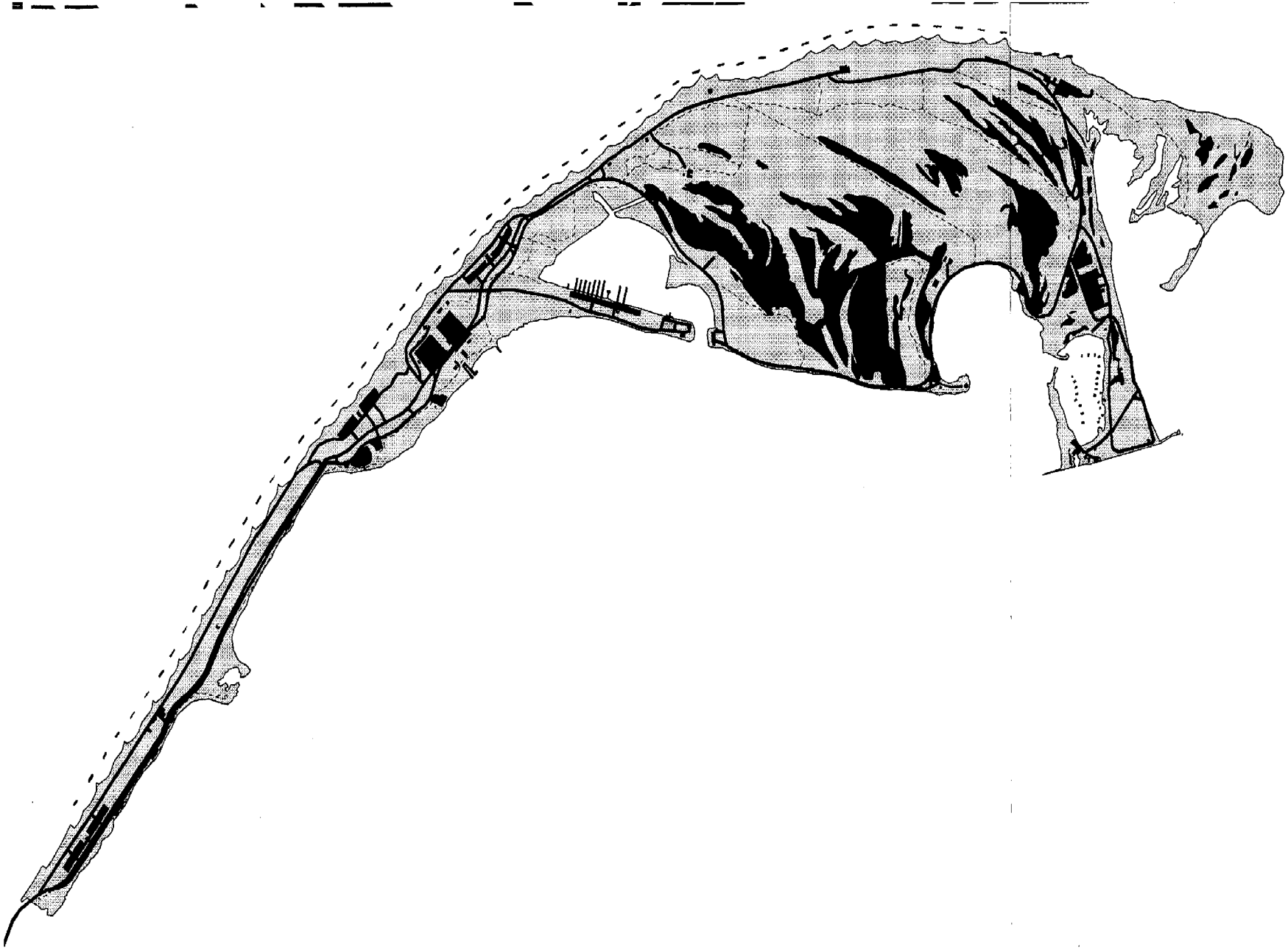
SCALE IN FEET

PRESQUE ISLE STATE PARK ROAD WIDTH MAP

DRAWING NUMBER

PMP # 6220

EXHIBIT 3-14



PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: K Taylor

DRAWN BY: PRIMS

DATE: 10/15/1995

LEGEND

PRIMARY ROADS | SERVICE ROADS | Park Boundary | Ponds & Lagoons | Groins & Breakwaters | Parking Lots

SECONDARY ROADS | Trails | Docks & Memorial | Structure | Buildings | April '95 Shoreline

1" = 2,000'

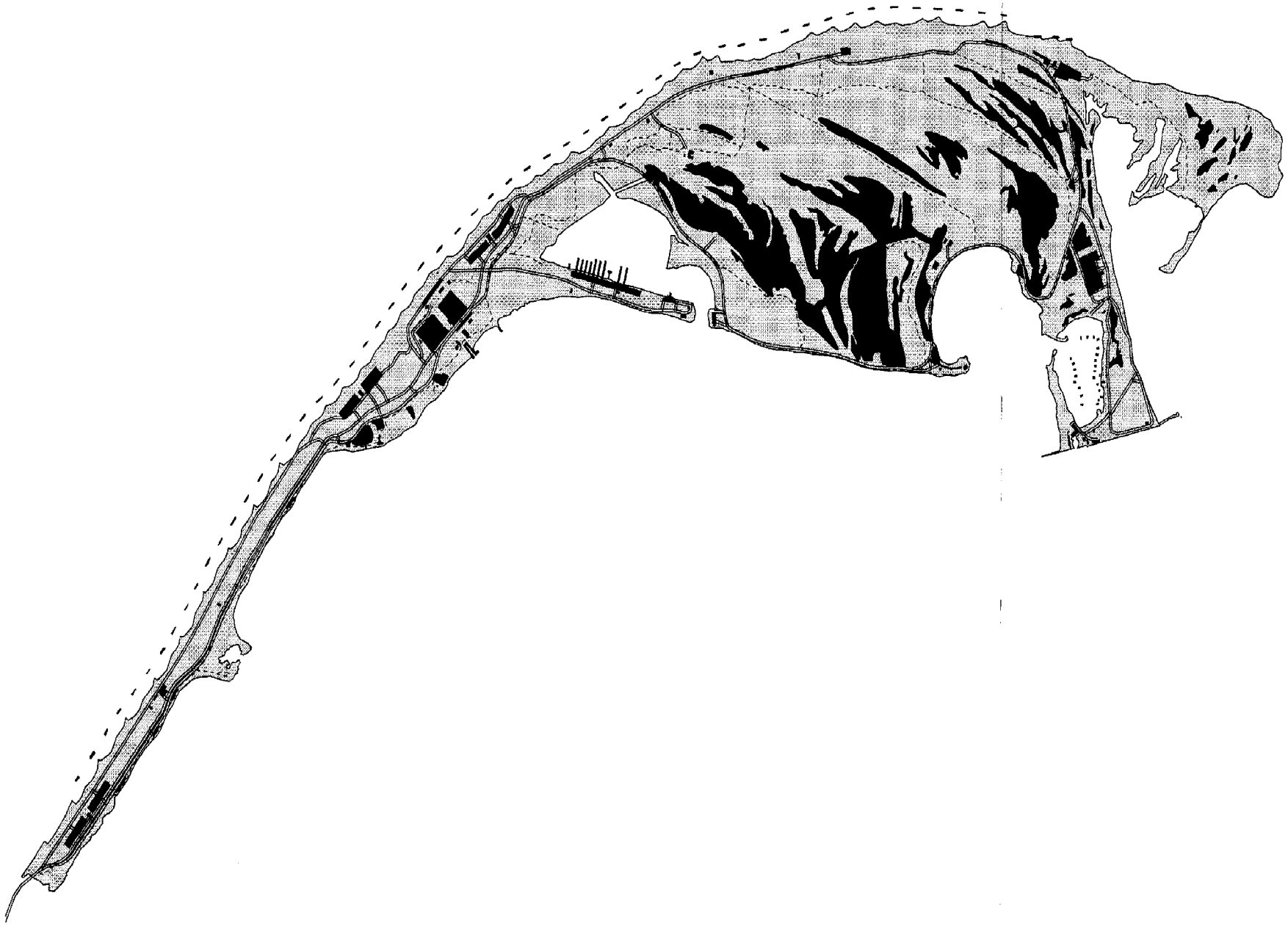
SCALE IN FEET

PRESQUE ISLE STATE PARK ROAD TYPES MAP

DRAWING NUMBER

PMP # 6220

EXHIBIT 3-15



PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS
RESOURCES MANAGEMENT SECTION

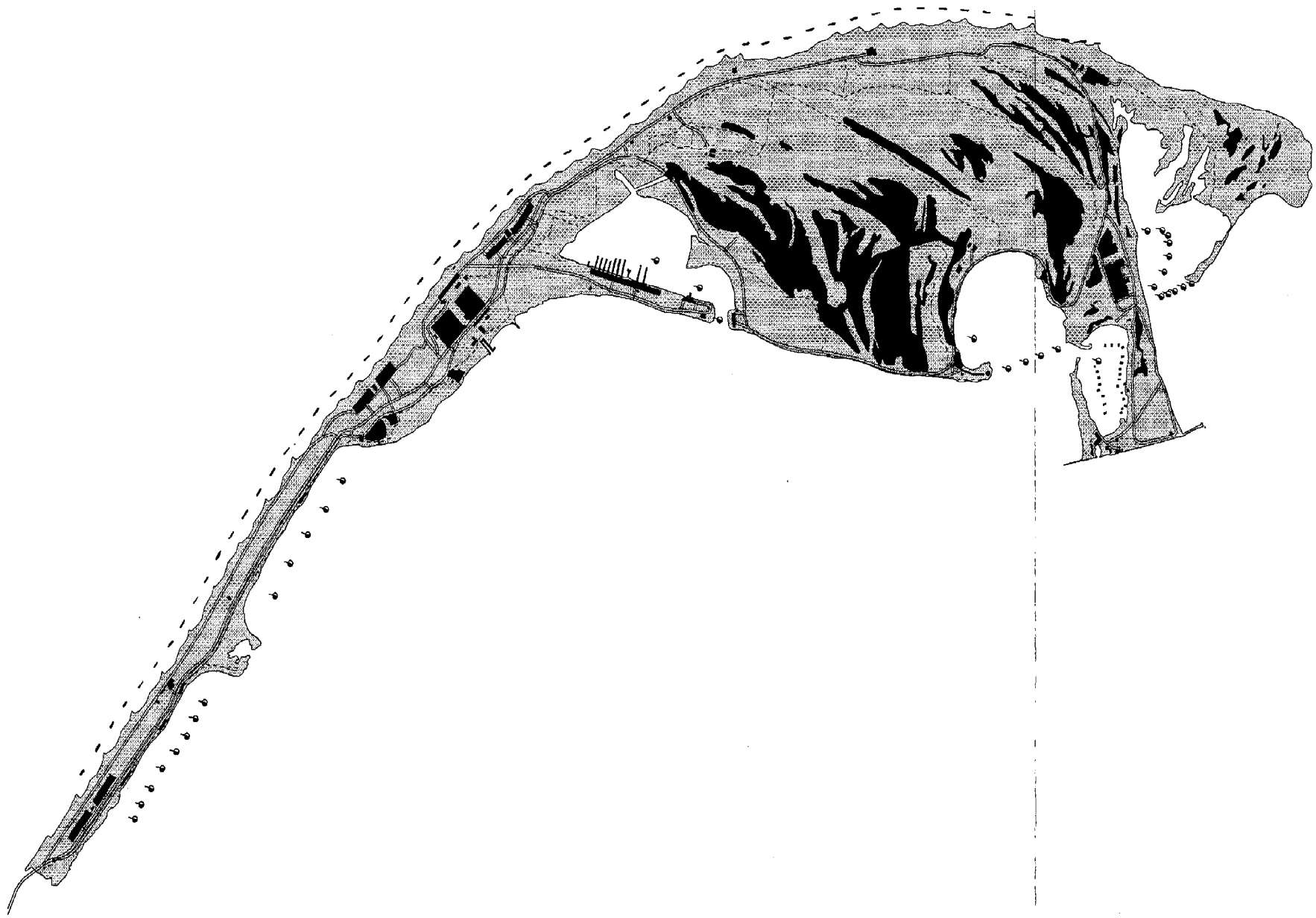
PREPARED
DESIGNED BY: T Matula
DRAWN BY: PRIMS
DATE: 10/15/1995

LEGEND
MOWING AREAS
Park Roads
Docks & Memorial
Structure
Buildings
April '95 Shoreline
Trails
Park Boundary
Ponds & Lagoons
Groins & Breakwaters
Parking Lots

1" = 2,000'
SCALE IN FEET

PRESQUE ISLE STATE PARK MOW AREAS MAP

DRAWING NUMBER
PMP # 6220
EXHIBIT 3-16



PARKS RESOURCES
MANAGEMENT INFORMATION SYSTEMS

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

BUREAU OF STATE PARKS

RESOURCES MANAGEMENT SECTION

PREPARED

DESIGNED BY: T. Matula

DRAWN BY: PRIMS

DATE: 10/15/1995

LEGEND

BUOY LOCATION
Park Roads
Docks & Memorial
Structure
Buildings
April '95 Shoreline
Trails
Park Boundary
Ponds & Lagoons
Groins & Breakwaters
Parking Lots

1" = 2,000'
SCALE IN FEET

PRESQUE ISLE STATE PARK BUOY MAP

DRAWING NUMBER
PMP # 6220

EXHIBIT
3-17

4.0 APPLICATIONS AND PROCEDURES

4.1 GPS Shoreline

A written procedure (Exhibit 4-1) was developed for the staff of the Bureau of State Parks in order to accurately GPS the shoreline of Presque Isle State Park each time. The procedure includes a detailed step-by-step process for setting up the remote unit, creating a new GPS job, logging data, downloading data into a PC, and sending a copy of the files to Central Office. The procedure is necessary to guide employees through a step-by-step process essential for collecting accurate data the exact same way.

4.2 GPS Training

A written procedure describing GPS training guidelines was administered to state park staff. The training guidelines served as a preparation for future applications of the GPS units and updating Presque Isle State Park's shoreline. The training procedures described basic functions of the unit, setting up the unit, logging data, setting up a base station, downloading, correcting, and editing data.

4.3 Scale Map Segment AML

The initial AML was developed by the consultant to assist with the design of the new bike trial at the park. A major requirement was that this AML produce hard copy maps at a 1" to 50' scale. Exhibit 4-2 is the AML used to create these maps. This AML will be modified for use on mapping an arc to a scale of any length that is required by the Bureau. Plans are to increase the capabilities of the AML, to do lines as well as areas and eventually the ability to point and click on features the designer would like to have on the map. It is recommended that efforts continue to develop a method to take these plot files from Arc Info into Auto CADD. This procedure would result in a savings of time for the Department and reducing the duplication of work sometimes done. The central office staff has been able to take the Auto CADD drawings and bring them into Arc Info.

4.4 X,Y Avenue Script

This application was developed by the consultant to enable any park employe with five minutes of training to turn on a computer through Arc View and produce a map showing X and Y coordinates of any point. This application will be used with such coverages as valves, buoys, water sample locations, or monuments. Exhibit 4-3 is the text of the Avenue created script.

4.5 Mapping AML

This AML was designed by the consultant to enable Bureau staff to produce a map containing any coverages so desired without having AML's for every type of map imaginable. All the maps created for the Phase I part of this project had to have individual AML's for each map. Therefore, creating nine AML's for one report. This is very time consuming and duplicates efforts. Exhibit 4-4 will allow the Bureau staff to create maps for Presque Isle State Park as well as any other park we have coverages for as desired by upper management.

Exhibit 4-1

GPS PROCEDURES

The following procedure is to be used when GPS shoreline at Presque Isle State Park. Employe will use the four-wheel ATV and start at the groin next to the condominium.

- Employe will need four-wheel ATV, directions, GPS unit, spare battery, small screw driver, magnetic antenna, green antenna hat, mini-map, pen, and lake elevation reading.

The steps with "• •" can be done at office.

•• Turn GPS receiver on and select GPS JOBS by highlighting <GPS JOBS> and entering.

•• Select <NEW> *F1 Key.*

•• Enter filename: BDY(mm)(yy). (Example: BDY0493)

• Fill in by using keyboard:

Crew:	First Name Initial and Last Name.
Department:	Maintenance, Administration, Ranger, Intern, or Central Office.
Description:	Shoreline GPS.
PATH:	None.
Feature Bank:	Shorelin (use arrow keys to choose).

•• Select <SETUP> *F3 Key.*

•• Select <CONFIRM> *F1 Key* (Display should be remote).

Verify:

Settling Time:	3
Defray Logging Mode:	Dynamic
Session for Static Point:	180
Intvl for Dynamic Mode:	3

•• Select <Display> *F4 Key*

Verify:

Datum:	NAD 83
Unit:	Feet
Height:	MSL
North:	True
Time:	UTC
Offset:	-5 for Eastern Standard Time -4 for Daylight Savings Time
Cord:	SPC
Zone:	3701
State:	Pennsylvania
R:	N

- Select <Warning> *F2 Key*

  Verify:

Nav. Beep:	N
FTR Beep:	Y
Warning Range:	0 Feet
Warning Message:	Y
Warning Beep:	Y

Use keyboard to change any settings.

If all three (log, display, and warning) are okay select <SAVE> *F5 Key*

- Procedure to park boundary groin and position ATV on waters edge.
- Turn GPS receiver on and select GPS JOBS by highlighting or typing "G".
- Select job you named at the office.
- Select <POSITION> *F1 Key*
- Select <FEATURE> *F3 Key*
- Push <BANK> *F1 Key*
- Highlight <SHORE> and push <SEL> *F5 Key*
- Select <ATTRIBUTE> <BANK> *F1 Key.*
  - Weather – Select one option using arrow keys to highlight and push *F5 Key.* Repeat <BANK> for next attribute push *F1 Key.*
  - Wind – Select approximate direction using arrow keys and push *F5 Key.* Repeat <BANK> for next attribute push *F1 Key.*
  - Speed – Select approximate speed by highlighting and pushing *F5 Key.* Repeat <BANK> for next attribute push *F1 Key.*
  - Date – Enter date using keyboard YY-MM-DD and push down arrow key.
  - Lake Elevation – Using keyboard XXX.XX. Do not push any key.

You are now ready to start logging.

- Select <STORE>, push *F4 Key*, and start driving shoreline.
- When you come to groin stop ATV get off and walk shoreline to edge of groin and along groin until you are even with the shoreline, then push <PAUSE> *F1 Key.*
- Walk around to lower side of groin to below the spot where you pushed "pause" and push <CONTINUE> *F1 Key.*
- Walk out about 30 feet and push <PAUSE> *F1 Key* and put a mark in the sand with your foot.
- Walk back to ATV.

- Drive ATV to the spot you marked.
- Push <CONTINUE> *F1 Key* and drive away. Do the above five steps through whenever you encounter a groin or can't drive the shoreline.

  Note: If any areas you can't stay within 5 feet of shore, mark area on mini-map.
- Continue out to the Gull Point Special Management Unit boundary line or as far as the shoreline will permit.
- Walk Gull Point all the way out and around the spit back to where the closure line meets the water.
- At this point select <END> *F4 Key* to stop logging feature.
- Answer <YES> *F5 Key* to question stop logging feature.
- Push <ESC> *Key 4* times to get menu screen.
- Turn off GPS by highlighting <OFF> using arrow keys and push <ENTER>.
- You are done walking line back to ATV and return to office.
- Download data to computer.
- Select CMT from windows.
- Select Utilities.
- Select File Transfer.
- Plug GPS into computer using black adapter in Comm1 port on back.
- Turn GPS on and highlight the GPS job that you just did.
- Select Trans <F3> Key.
- Confirm Config Status for handheld unit:

Direction:	Send
* Port:	Comm1
Bond:	19200
Databits:	8
Parity:	None
Stopbits:	1

  (Use arrow keys or keyboard to change.)
- Make sure configuration matches computer screen except for the port. *[The port is the only thing that can be different between the two configure screens, if you plug the other adapter in Comm2 in the computer.] Make any necessary changes.
- Then push OK on computer.
- Select File Transfer.
- Select Receive.

- On GPS Push <GO> *F1 Key.*
- Watch files transfer. There will be three. Note names (extensions will change).
- Turn off GPS and copy files to disk and send to Keith Taylor in Central Office.

Exhibit 4-2

Trail AML

```
/* trails.aml

&messages &off &info  /* only messages that prompt for something will appear
&severity &error &routine bailout
&terminal 9999 /* sets graphics display
&flushpoints
&sv qcover = [exists junkcov -cover]
    &if %qcover% &then
      KILL junkcov
&sv qcover = [exists segperm -cover]
    &if %qcover% &then
      KILL segperm
&sv qcover = [exists mapetemp -cover]
    &if %qcover% &then
      KILL mapetemp
&type Select the arc coverage to plot
&sv org = [getcover * -line]  /* displays popup of line coverages
COPY %org% junkcov  /* copies selected coverage to junkcov
CREATE mapetemp %org% /* mapetemp used to put box drawn as mape's for each segment
&s cov = junkcov
&sv bffr = 10 /* used to increase mape slightly
&sv paperheight = 19 /* using 19 inches to give a little space on the top and bottom of plot
paper
&sv scale = [response 'Enter the scale to plot at in feet.<50>' 50]  /* As in 1" = 50 '
&sv rf = 12 * %scale%  /* rf fraction.  used in plotscale
&sv ydir = %paperheight% * %scale% /* used in determining radius of selection circle

    &sv tempcov = [exists temppoint -cover]
     &if %tempcov% &then
      KILL temppoint
    &sv qcover = [exists temp1 -cover]
     &if %qcover% &then
      KILL temp1
     &sv qcover = [exists temp2 -cover]
     &if %qcover% &then
      KILL temp2
NODEPOINT %cov% temppoint  /*
AE
DISPLAY 9999
COORDINATE CURSOR
 MAPEXTENT %cov%
 EDITCOV TEMPPOINT
 EDITFEA LABEL
 DRAWENV LABEL
 BC %cov%
 BE arcs
 DRAW
&type Select end point of arc to be divided

 &s triger = .false.  /* makes sure that an arc is selected
 &do &until %triger%
 SEL ONE
 &if [show number select] >= 1 &then
```

```
  &sv triger = .true.
  &else &sv triger = .false.
&end
&getlastpoint
&sv count = 0
&sv x%count%   = %pnt$x%
&sv y%count%   = %pnt$y%
&flushpoints /* Clean out any temporary covers laying around

    &sv qcover = [exists tempbuf -cover]
    &if %qcover% &then
     &sys arc KILL tempbuf
    &sv qcover = [exists temppoint -cover]
    &if %qcover% &then
     &sys arc KILL temppoint

&call pointbuf /* draw a circle around selected point a radius = %ydir%
/**********************************
/* Start Main Loop              *
/* ********************************
&sv goloop = .true.
&do &while %goloop%
  &sv count = %count% + 1
  &flushpoints
  &type Select arc to be segmented and the select where to segment it.
  EF ARCS

  &s triger = .false.
  &do &until %triger%
   SEL ONE
   &if [show number select] >= 1 &then &sv triger = .true.
   &else &sv triger = .false.
  &end

  &getpoint &push
  SPLIT

  &sv key%count% = %pnt$key% /* store the x & y locations to a variable
  &sv x%count%   = %pnt$x%
  &sv y%count%   = %pnt$y%
&call set_angle
&call calc_passthru
&call sel_box
&call draw_mape

 &s bufloop = [query 'Do You Like ? (Y or N)' .TRUE.]
  &if %bufloop% = .FALSE. &then &call reset_mape
   &else
    &do
       &call matchline
       removeback tempbuf
       &call ticadd
       MAPE %cov%
       EC %cov%
       EF ARC
       DRAW
       &call sel_box
```

```
        PUT trash%count%
        DELETE
        &sv goloop = [query 'Want to select another section? (YES / NO)' .TRUE.]
       &if %goloop% = .TRUE. &then &do

        &call pointbuf
        DRAW
       &end
   &end
&end
 &call cleanup
&return



/********************
/* ROUTINE POINTBUF *
/********************
/* uses the point coverage that was generated and places a buffer around it at
/* the specified distance.

&routine pointbuf

&sv qcover = [exists tempbuf -cover]
     &if %qcover% &then &do
      EDITCOV TEMPBUF
      REMOVEEDIT TEMPBUF
      y~
      REMOVEBACK TEMPBUF
      &SYS ARC KILL TEMPBUF
     &end
  CREATE tempbuf %org%

  EDITCOV TEMPBUF
  EDITFEA ARCS
  DRAWENV ARCS
  &pushpoint 8 0 0
  &pushpoint 7 0 0
  &pushpoint 2 [value x%count%] [value y%count%]
  &pushpoint 2 [calc [value x%count%] + %ydir%] [value y%count%]
  &pushpoint 8 0 0
  &pushpoint 5 0 0
  &pushpoint 9 0 0
  ADD

  BC tempbuf 2
  BE ARCS
  EC %cov%
  EF ARCS
  DRAW
  &flushpoints &return



/********************
/* ROUTINE POINTBUF *
/********************
```

```
/* uses the point coverage that was generated and places a buffer around it at
/* the specified distance.

&routine pointbuf

&sv qcover = [exists tempbuf -cover]
    &if %qcover% &then &do
     EDITCOV TEMPBUF
     REMOVEEDIT TEMPBUF
     y~
     REMOVEBACK TEMPBUF
     &SYS ARC KILL TEMPBUF
    &end
 CREATE tempbuf %org%

 EDITCOV TEMPBUF
 EDITFEA ARCS
 DRAWENV ARCS
 &pushpoint 8 0 0
 &pushpoint 7 0 0
 &pushpoint 2 [value x%count%] [value y%count%]
 &pushpoint 2 [calc [value x%count%] + %ydir%] [value y%count%]
 &pushpoint 8 0 0
 &pushpoint 5 0 0
 &pushpoint 9 0 0
 ADD

 BC tempbuf 2
 BE ARCS
 EC %cov%
 EF ARCS
 DRAW
 &flushpoints
&return

/************************
/* ROUTINE TICADD     *
/************************
&routine ticadd
CREATE ticcov%count% %cov%
EF tics
SEL ALL
DELETE
SAVE
&pushpoint 1 [calc [value exmin%count%] + 10] [calc [value eymax%count%] - 10]
&pushpoint 1 [calc [value exmax%count%] - 10] [calc [value eymax%count%] - 10]
&pushpoint 1 [calc [value exmin%count%] + 10] [calc [value eymin%count%] + 10]
&pushpoint 1 [calc [value exmax%count%] - 10] [calc [value eymin%count%] + 10] &pushpoint 9
0 0
ADD
SAVE
REMOVEEDIT ticcov%count% y
&return
```

```
/***********************
/* ROUTINE SET_ANGLE   *
/***********************
&routine set_angle
  &sv minusone = %count% - 1
  &sv angle =  [invangle [value x%minusone%] [value y%minusone%] [value x%count%] [value
y%count%]]
  &sv angle%count% = %angle%
  &sv deg = [radang %angle%]
  &sv deg%count% = %deg%
&return


/***********************
/*ROUTINE SEL_BOX     *
/***********************
&routine sel_box
&sv qcover = [exists segtemp -cover]
     &if %qcover% &then
      &sys arc KILL segtemp
&sv qcover = [exists segbuf -cover]
     &if %qcover% &then
      &sys arc KILL segbuf
MAPE %cov%
EDITFEA ARC
&pushpoint 2 %xll% %yll%
&pushpoint 2 %xur% %yur%

SEL BOX PASSTHRU
PUT segtemp

&return

/********************
/*ROUTINE BUFFERSEG *
/********************
&routine bufferseg


&sys ARC BUFFER segtemp segbuf # # %bffr% # line
MAPE segbuf
&s bufmape = [show mapextent]
DRAW

&return

/**********************
/*ROUTINE DRAW_MAPE  *
/**********************
&routine draw_mape
mape segtemp
&s a = [show mapextent]
&s exmin%count% = [extract 1 %a%]
&s eymin%count% = [extract 2 %a%]
&s exmax%count% = [extract 3 %a%]
&s eymax%count% = [extract 4 %a%]
```

```
editcov mapetemp
editfea arcs
&pushpoint 8 0 0
&pushpoint 6 0 0
&pushpoint 2 [calc [value exmin%count%] - %bffr%] [calc [value eymin%count%] - %bffr%]
&pushpoint 2 [calc [value exmax%count%] + %bffr%] [calc [value eymax%count%] + %bffr%]
&pushpoint 9 0 0
ADD

BC mapetemp
be arcs
draw
&return

/****************************************
/* ROUTINE COMPARING MAPE AND PAGE HEIGHT*
/****************************************

&routine check_mape
&s ydist = [calc [value eymax%count%] + %bffr%] - [calc [value eymin%count%] - %bffr%]
&s t = [angrad 45]
&s deltay = %ydist% / [sin [value angle%count%]]

&return

/**********************
/*ROUTINE RESET_MAPE  *
/**********************
&routine reset_mape

DELETE
REMOVEEDIT mapetemp y
EC %cov%
&s count = %count% - 1

MAPE %cov%
EDITFEA ARC
SEL ALL
UNSPLIT NONE
DRAW
&return


 /***************************
/* ROUTINE CALC_PASSTHRU*
/***************************
&routine calc_passthru

    &sv xll = [calc [value x%minusone%] - 100]
    &sv yll = [calc [value y%minusone%] - 100]
    &sv xur = [calc [value x%minusone%] + 100]
    &sv yur = [calc [value y%minusone%] + 100]


  &return
```

```
/******************
/*ROUTINE MATCHLINE*
/******************

&routine matchline
 &if %deg% <= 90 &then
  &do
    &sv deltax = [sin %angle%] * 100
    &sv deltay = [cos %angle%] * 100

    &sv xur%count% = [calc [value x%count%] + %deltax%]
    &sv yur%count% = [calc [value y%count%] - %deltay%]

    &sv xul%count% = [calc [value x%count%] - %deltax%]
    &sv yul%count% = [calc [value y%count%] + %deltay%]
  &end
  &if %deg% > 90 and %deg% <= 180 &then
  &do
    &s m = %deg% - 90
    &s angle = [angrad %m%]
    &sv deltay = [sin %angle%] * 100
    &sv deltax = [cos %angle%] * 100

    &sv xur%count% = [calc [value x%count%] + %deltax%]
    &sv yur%count% = [calc [value y%count%] + %deltay%]

    &sv xul%count% = [calc [value x%count%] - %deltax%]
    &sv yul%count% = [calc [value y%count%] - %deltay%]
  &end
  &if %deg% > 180 and %deg% <= 270 &then
  &do
    &s m = %deg% - 180
    &s angle = [angrad %m%]
    &sv deltax = [sin %angle%] * 100
    &sv deltay = [cos %angle%] * 100

    &sv xur%count% = [calc [value x%count%] - %deltax%]
    &sv yur%count% = [calc [value y%count%] + %deltay%]

    &sv xul%count% = [calc [value x%count%] + %deltax%]
    &sv yul%count% = [calc [value y%count%] - %deltay%]
  &end   &if %deg% > 270 and %deg% <= 360 &then
  &do
    &s m = %deg% - 270
    &s angle = [angrad %m%]
    &sv deltay = [sin %angle%] * 100
    &sv deltax = [cos %angle%] * 100

  &sv xur%count% = [calc [value x%count%] + %deltax%]
    &sv yur%count% = [calc [value y%count%] + %deltay%]

    &sv xul%count% = [calc [value x%count%] - %deltax%]
    &sv yul%count% = [calc [value y%count%] - %deltay%]
  &end

  /*EC matchline
  EF arcs
```

```
  &pushpoint 8 0 0
  &pushpoint 5 0 0
  &pushpoint 2 [value xul%count%] [value yul%count%]
  &pushpoint 2 [value xur%count%] [value yur%count%]
  &pushpoint 9 0 0
  ADD
  /*PUT matchline y
  &sv qcover = [exists matchline -cover]
    &if %qcover% &then &do
     PUT matchline
     y~
     DELETE
     &end
    &else &do
      PUT matchline
      DELETE
     &end


&return


/************************
/* ROUTINE CLEANUP     *
/************************
/* kills all coverages upon ending the aml.
&routine cleanup
  &sv qcover = [exists tempbuf -cover]
    &if %qcover% &then
     &sys ARC KILL tempbuf
  &sv qcover = [exists segbuf -cover]
    &if %qcover% &then
     &sys ARC KILL segbuf
  &sv qcover = [exists tempgen -cover]
    &if %qcover% &then
     &sys ARC KILL tempgen
  &sv qcover = [exists temppoint -cover]
    &if %qcover% &then       &sys ARC KILL temppoint
  &sv qcover = [exists mapetemp -cover]
    &if %qcover% &then
     &sys ARC KILL mapetemp
   &sv qcover = [exists segperm -cover]
    &if %qcover% &then
     &sys ARC KILL segperm
   &sv qcover = [exists segtemp -cover]
    &if %qcover% &then
     &sys ARC KILL segtemp
   &sv qcover = [exists junkcov -cover]
    &if %qcover% &then
     &sys ARC KILL junkcov
quit n
&s exit = [response 'Do you want to continue and make plot files from the segments? <Y or N>'
y]
&if %exit% = y &then
  &call plot
```

```
&s segkill = [response 'Do you want to clean up the coverages of the individual segments that
you just  created? This will kill the coverages. <Y or N>' y]
&if %segkill% = y &then
  &call fcleanup
&messages &on
&return

/********************
/* PLOT ROUTINE     *
/********************

&routine plot
ap
&s plotcount = 1
&do &until %plotcount% > %count%
clear
map segment%plotcount%
mbegin
pagesize 36 24
/*mape trash%plotcount%
/*mape [calc [value exmin%plotcount%] - %bffr%] [calc [value eymin%plotcount%] - %bffr%]
[calc  /*[value exmax%plotcount%] + %bffr%] [calc [value eymax%plotcount%] + %bffr%]

&call max_mape



mape %xminplt% %yminplt% %xmaxplt% %ymaxplt%
mapposition LL LL
maplimits 2.5 1.75 28.375 22.75
mapposition cen cen
mapunits feet
mapscale %rf%
plot derdsgn.gra
mend
mbegin
lineset plotter3.lin
linesymbol 4  arcs ponds
linesymbol 1
arcs bldgs
linesymbol 79
polys buftrails
linesymbol 2
polys bufroad18
linesymbol 601
arcs matchline
markerset plotter.mrk
markersize .125
markersymbol 37
polygonshades ponds 76
polygonshades bldgs 73
linesymbol 705
arcs bdy1194

tics ticcov%plotcount%

mend
```

```
/*mrotate [calc [value deg%plotcount% ] * -1]
mbegin
markerset north.mrk
markersymbol 5
markersize 3
marker 26 5
/*mrotate [calc [value deg%plotcount% ] * -1]
mend
keyposition 28.5 21
keyseparation .125 .25
keybox 1.0 0.0
textsize .125
lineset plotter3.lin
keyline bikelines.key nobox
keybox 1.0 0.5
shadeset plotter.shd
keyshade bikeshade.key nobox

&call tic_coords
move 28.5 14
textsize .125
textset font.txt
text [quote 1 %exmin% %eymax%]
move 28.5 13.5
text [quote 2 %exmax% %eymax%]
move 28.5 13
text [quote 3 %exmin% %eymin%]
move 28.5 12.5
text [quote 4 %exmax% %eymin%]
move 31.875 2.094
text [quote %plotcount% of %count%] cc
move 30.125 1.922

text [quote 1" = %scale%] cc
map end &s plotcount = %plotcount% + 1
&type 'Plot is complete'

&end
Q
&return
/********************
/*ROUTINE TIC_COORDS
/********************
&routine tic_coords
&s exmin = [calc [value exmin%plotcount%] + 10]
&s eymin = [calc [value eymin%plotcount%] + 10]
&s exmax = [calc [value exmax%plotcount%] - 10]
&s eymax = [calc [value eymax%plotcount%] - 10]

&return

/*************************
/* ROUTINE FINAL CLEAN UP *
/*************************
&routine fcleanup
KILL matchline
&s killcount = 1
```

```
&do &until %killcount% > %count%

KILL trash%killcount%
KILL ticcov%killcount%

&s killcount = %killcount% + 1
&end
&return
/*******************
/* ROUTINE MAX_MAPE*
/*******************

&routine max_mape

&s xv = [calc [value exmax%plotcount%] - [value exmin%plotcount%]]
 &if %xv% < %ydir% &then &do
  &s k =  [calc %ydir% - %xv%]
  &s k2 = [calc %k% / 2]
  &s xmaxplt = [calc [value exmax%plotcount%] + %k2%]
  &s xminplt = [calc [value exmin%plotcount%] - %k2%]
 &end
&else &do
  &s xmaxplt = [value exmax%plotcount%]
  &s xminplt = [value exmin%plotcount%]
  &end
&s yv = [calc [value eymax%plotcount%] - [value eymin%plotcount%]]
&if %yv% < %ydir% &then &do
  &s h =  [calc %ydir% - %yv%]
  &s h2 = [calc %h% / 2]
  &s ymaxplt = [calc [value eymax%plotcount%] + %h2%]
  &s yminplt = [calc [value eymin%plotcount%] - %h2%]
&end &else &do
  &s ymaxplt = [value eymax%plotcount%]
  &s yminplt = [value eymin%plotcount%]
  &end


&return

/********************
/* ROUTINE BAILOUT  *
/********************

&routine bailout
&severity &error &ignore
&messages &on
&return &error Bailing out of AML


/******************
/* Safety Net
/******************

&return
```

Exhibit 4-3

X,Y Location Script

```
/2.1
(Project.1
        Name:       "point.apr"
        CreationDate:
"Thu Aug 24 06:36:53 1995"
        GUIName:    "Project"
        Win:        2
        CSMgr:      3
        Buttons:    4
        Buttons:    5
        Buttons:    6
        Scripts:    7
        GUI:        521
        WorkDir:    691
        WinX:       -4
        WinY:       -4
        WinW:       648
        WinH:       488
        SerialNumber:
"602450117707"
        SelColor:   692
)

(DocWin.2
        Owner:      1
        Open:       1
        X:          5
        Y:          5
        W:          238
        H:          317
)

(CSMgr.3
)

(LButn.4
        HelpTopic:  "New button"
        Update:     "Project.Button1Update"
        Label:      "&New"
        Click:      "Project.Button1"
)

(LButn.5
        Disabled:   1
        HelpTopic:  "Open button"
        Update:     "Project.Button2Update"
        Label:      "&Open"
        Click:      "Project.Button2"
)

(LButn.6
        Disabled:   1
```

```
      HelpTopic:  "Run button"
      Update:     "Project.Button3Update"
      Label:      "&Run"
      Click:      "Project.Button3"
)
(NameDict.7
      Obj:        8
      Obj:        9
)

(Script.8
      Name:       "View.AddXY"
      SourceCode:'''
AddXYCoords\n'**********************************************************\n'Messagebox for
instructions before labeling
begins\n'**********************************************************\n\nackn =
Msgbox.YesNo(\"The  theme to be labeled must be active and be either a point or polygon
theme.  Set the font size using the  WINDOW SYMBOL PALETTE.  Press yes to
contiune.\",\"\",false)\nif (ackn = false)  then  exit\nend\ntheView = av.GetActiveDoc\n'must be
global to work in Calc exp below\n_theProjection =  theView.GetProjection\nproject_
flag = _theProjection.IsNil.Not  'true if projected\ntheTheme =
theView.GetActiveThemes.Get(0)\n\n'Check if point or polygon theme\nif
(((theTheme.GetSrcName.GetSubName = \"point\") or\n    (theTheme.GetSrcName.GetSubName
=  \"polygon\")).Not) then\n  MsgBox.Info(\"Active theme must be polygon or point
theme\",\"\")\n   exit\nend\n\n'get the theme table and current edit state\ntheFTab =
theTheme.GetFTab\ntheFields =  theFTab.GetFields\nedit_state = theFTab.IsEditable\n\n'make
sure table is editable and that fields can be  added\nif (t
heFtab.CanEdit) then\n  theFTab.SetEditable(true)\n  if ((theFTab.CanAddFields).Not) then\n\n
   MsgBox.Info(\"Can't add fields to the table.\"+NL+\"Check write permission.\",\n    \"Can't
add X,Y  coordinates\")\n    exit\n  end\nelse\n  MsgBox.Info(\"Can't modify the feature
table.\"+NL+\n  \"Check  write permission.\",\"Can't add X,Y coordinates\")\n
exit\nend\n\n'Check if fields named \"X-coord\" and  \"Y-coord\" exist\nx_exists =
(theFTab.FindField(\"X-coord\") = NIL).Not\ny_exists =  (theFtab.FindField(\"Y-coord\") =
NIL).Not\n\n'if fields n
amed \"X-coord\" and \"Y-coord\" exist, remove them.\nif (x_exists or y_exists) then\n      if
(x_exists)  then\n      theFTab.RemoveFields({theFTab.FindField(\"X-coord\")})\n    end\n    if
(y_exists) then\n       theFTab.RemoveFields({theFTab.FindField(\"Y-coord\")})\n    end\nend\n
  'Make new fields named \"X- coord\" and \"Y-coord\"\n    x = Field.Make (\"X-
coord\",#FIELD_DECIMAL,18,5)\n    y = Field.Make  (\"Y-coord\",#FIELD_DECIMAL,18,5)\n
theFTab.AddFields({x,y})\n\n   'Get point coordinates or  polygon centroid coordinates\n
if (theTheme.GetSrcName.GetSubName = \"point\") then\n      if (project_flag) then\n
'Projection  defined\n
theFTab.Calculate(\"[Shape].ReturnProjected(_theProjection).GetX\", x)\n
theFTab.Calculate(\"[Shape].ReturnProjected(_theProjection).GetY\", y)\n\n      else\n       'No
projection  defined\n       theFTab.Calculate(\"[Shape].GetX\", x)\n
theFTab.Calculate(\"[Shape].GetY\", y)\n       end 'if\n    else 'polygon case\n      if
(project_flag) then\n        theFTab.Calculate(\"[Shape].ReturnCenter.R
eturnProjected(_theProjection).GetX\", x)\n
theFTab.Calculate(\"[Shape].ReturnCenter.ReturnProjected(_theProjection).GetY\", y)\n
else\n       theFTab.Calculate(\"[Shape].ReturnCenter.GetX\", x)\n
theFTab.Calculate(\"[Shape].ReturnCenter.GetY\", y)\n      end ' if\n    end\n    \n'Return
editing state to  pre-script running
state\n'theFTab.SetEditable(edit_state)\n\n'*****************************************
********\ n'If field name \"Coords\" exist, remove it for
updating.\n'*****************************
**********************\n\nCoords_exists = (theFTab.FindField(\"Coords\") = NIL).Not  \nif
(Coords_exists) then\n
```

```
theFTab.RemoveFields({theFTab.FindField(\"Coords\")})\nend\n\n'************************
******* ****\n'Calculate value of Coord
field\n'************************************\n\ntheTheme.EditTable\ntheTable =
av.GetActiveDoc\ntheVTab = theTable.GetVTab\nf1 = Field.Make (\"Coords\", #FIELD_CHAR,
40, 0)\ntheVTab.AddFields({f1})\ntheVTab.Calculate(\"[X-coord].AsString++[Y-
coord].AsString\",theVTab.FindField(\"Coords\"))\nav.
GetActiveDoc.GetWin.Close\n\n'************************************\n' Need to close
TABLE at this point\n'**********************************
\n\n\n'************************************************\n'Label features using the
Coord
field\n'************************************************\n\nav.ShowMsg(\"Labeling
themes...\")\nav.ShowStopButton\nav.SetStatus(0)\n\ntheView = av.GetActiveDoc\ntheGraphics
= theView.GetGraphics\n\nthePrj = theView.GetProjection\n\ncancelled = false\n\ntheVTab =
theTheme.GetFTab\naField = theVTab.Fi
ndField(\"coords\")\n\n  theTxPos = theTheme.GetTextPositioner\n  av.ShowMsg(\"Labeling
\"+theTheme.GetName+\"...\")\n  theThemeGraphics = theTheme.GetGraphics\n  theVTab =
theTheme.GetFTab\n  theShape = theVTab.GetShapeClass.MakeNull\n  if
(theVTab.GetSelection.Count = 0) then\n    recs = theVTab\n    numRecs =
recs.GetNumRecords\n  else\n    recs = theVTab.GetSelection\n    numRecs = recs.Count\n
end\n\n  recNum = 1\n  for each rec in recs\n  \n    '***************\n    'Create label.\n
  '***************\n
\n    t = theVtab.ReturnValueString(aField, rec)\n    if (t.IsNull) then continue end\n\n    label
= GraphicText.Make(t,0@0)\n    label.SetDisplay(theView.GetDisplay)\n
label.SetSelected(true)\n\n    '***************\n    'Position label.\n    '***************\n
  \n    theVtab.QueryShape(rec,thePrj,theShape)\n    if (theShape.IsNull) then continue end\n
  theSymSize = theTheme.ReturnSymbolSize(rec)\n\n
theTxPos.Calculate(theShape,label.GetExtent,theSymSize,nil)\n
label.SetOrigin(theTxPos.GetOrigin)
\n    label.SetAngle(theTxPos.GetAngle)\n\n    '****************************\n    'Add label
to graphics lists\n    '****************************\n    \n    theGraphics.AddBatch(label)\n
  theThemeGraphics.Add(label)\n\n    numThemes = 1\n    themeNum = 1\n    n = themeNum
* numRecs + recNum\n    d = numThemes * numRecs\n    cancelled = av.SetStatus(100 *
(n/d)).not\n    if (cancelled = true) then\n      break\n    end\n\n    themeNum = themeNum +
1\n  end\n'************************************************\n'Re
turn editing state to pre-script running
state\n'************************************************\n\ntheFTab.SetEditable(edit_sta
te)\n\n    '*********************************************\n  'Stop updating graphics
and clear status message.\n  '*********************************************\n  \n
theGraphics.EndBatch\n  av.SetStatus(100)\n  av.ClearMsg\n\n"
)

(Script.9
    Name:      "View.AddXYUpdate"
    SourceCode:"theView = av.GetActiveDoc\nSELF.SetEnabled(0 <
theView.GetActiveThemes.Count) \n "
)

(DocGUI.521
    Name:      "View"
    Type:      "View"
    Modified:  1
    MenuBar:   522
    ButnBar:   612
    ToolBar:   653
)

(MenuBar.522
```

```
        Child:      523
        Child:      534
        Child:      547
        Child:      566
        Child:      584
    Child:          594
        Child:      604
)

(PMenu.523
        Child:      524
        Child:      525
        Child:      526
        Child:      527
        Child:      528
        Child:      529
        Child:      530
        Child:      531
        Child:      532
        Child:      533
        Label:      "&File"
)

(Choice.524
        Help:       "Closes the active component"
        HelpTopic:  "Close"
        Label:      "&Close"
        Click:      "Project.CloseDoc"
        Shortcut:   "Keys.None"
)

(Choice.525
        Help:       "Closes all components"
        HelpTopic:  "Close All"
        Label:      "Close &All"
        Click:      "Project.CloseAll"
        Shortcut:   "Keys.None"
)

(Space.526
)

(Choice.527
        Help:       "Saves the current project"
        HelpTopic:  "Save Project"
        Label:      "&Save Project"
        Click:      "Project.Save"
        Shortcut:   "Keys.Ctrl+S"
)

(Space.528
)

(Choice.529
        Help:       "Prints the view"
        HelpTopic:  "Print"
        Update:     "Doc.PrintUpdate"
```

```
        Label:      "&Print..."
        Click:      "View.Print"
        Shortcut:   "Keys.None" )

(Choice.530
        Help:       "Edits the printer and the printing options"
        HelpTopic:  "Print Setup"
        Label:      "P&rint Setup..."
        Click:      "Project.PrintSetup"
        Shortcut:   "Keys.None"
)

(Choice.531
        Disabled:   1
        Help:       "Exports the view"
        HelpTopic:  "Export"
        Update:     "View.HasThemesUpdate"
        Label:      "&Export..."
        Click:      "View.ExportDisp"
        Shortcut:   "Keys.None"
)

(Space.532
)

(Choice.533
        Help:       "Exits ArcView"
        HelpTopic:  "Exit"
        Label:      "E&xit"
        Click:      "Project.Exit"
        Shortcut:   "Keys.None"
)

(PMenu.534
        Child:      535
        Child:      536
        Child:      537
        Child:      538
        Child:      539
        Child:      540
        Child:      541
        Child:      542
        Child:      543
        Child:      544
        Child:      545
        Child:      546
        Label:      "&Edit"
)

(Choice.535
        Disabled:   1
        Help:       "Cuts the active themes to the clipboard"
        HelpTopic:  "Cut Themes"
        Update:     "View.ActiveThemesUpdate"
        Label:      "C&ut Themes"
        Click:      "View.CutThemes"
        Shortcut:   "Keys.None" )
```

```
(Choice.536
        Disabled:   1
        Help:       "Copies the active themes to the clipboard"
        HelpTopic:  "Copy Themes"
        Update:     "View.ActiveThemesUpdate"
        Label:      "Cop&y Themes"
        Click:      "View.CopyThemes"
        Shortcut:   "Keys.None"
)

(Choice.537
        Disabled:   1
        Help:       "Removes the active themes from the view"
        HelpTopic:  "Delete Themes"
        Update:     "View.ActiveThemesUpdate"
        Label:      "De&lete Themes"
        Click:      "View.DeleteThemes"
        Shortcut:   "Keys.None"
)

(Space.538
)

(Choice.539
        Disabled:   1
        Help:       "Cuts the selected shapes or graphics to the clipboard"
        HelpTopic:  "Cut Graphics"
        Update:     "View.CutUpdate"
        Label:      "Cu&t Graphics"
        Click:      "View.CutGraphics"
        Shortcut:   "Keys.Ctrl+X"
)

(Choice.540
        Disabled:   1
        Help:       "Copies the selected shapes or graphics to the clipboard"
        HelpTopic:  "Copy Graphics"
        Update:     "View.CutUpdate"
        Label:      "&Copy Graphics"
        Click:      "View.CopyGraphics"
        Shortcut:   "Keys.Ctrl+C"
)

(Choice.541
        Disabled:   1
        Help:       "Removes the selected graphics or shapes from the view"
        HelpTopic:  "Delete Graphics"
        Update:     "View.CutUpdate"
        Label:      "&Delete Graphics"
        Click:      "View.DeleteGraphics"
        Shortcut:   "Keys.Del"
)
 (Choice.542
        Disabled:   1
        Help:       "Merges the selected graphics from the View"
        HelpTopic:  "Merge Graphics"
```

```
        Update:     "View.MergeUpdate"
        Label:      "&Merge Graphics"
        Click:      "View.MergeGraphics"
        Shortcut:   "Keys.None"
)

(Space.543
)

(Choice.544
        Disabled:   1
        Help:       "Inserts the contents of the clipboard"
        HelpTopic:  "Paste"
        Update:     "View.PasteUpdate"
        Label:      "&Paste"
        Click:      "View.Paste"
        Shortcut:   "Keys.Ctrl+V"
)

(Space.545
)

(Choice.546
        Disabled:   1
        Help:       "Selects all graphics in the view"
        HelpTopic:  "Select All Graphics"
        Update:     "View.HasGraphicsUpdate"
        Label:      "Select &All Graphics"
        Click:      "Graphic.SelectAll"
        Shortcut:   "Keys.None"
)

(PMenu.547
        Child:      548
        Child:      549
        Child:      550
        Child:      551
        Child:      552
        Child:      553
        Child:      554
        Child:      555
        Child:      556
        Child:      557
        Child:      558
        Child:      559
        Child:      560
        Child:      561
        Child:      562
        Child:      563
        Child:      564
        Child:      565
Label:              "&View"
)

(Choice.548
        Help:       "Displays the dialog box to edit properties of the view"
        HelpTopic:  "View Properties"
```

```
        Label:      "&Properties..."
        Click:      "View.Properties"
        Shortcut:   "Keys.None"
)

(Space.549
)

(Choice.550
        Help:       "Inserts themes into the view"
        HelpTopic:  "Add Theme"
        Label:      "&Add Theme..."
        Click:      "View.Add"
        Shortcut:   "Keys.Ctrl+T"
)

(Choice.551
        Help:       "Displays a dialog box to insert an event-based theme into the view"
        HelpTopic:  "Add Event Theme"
        Update:     "View.AddEventUpdate"
        Label:      "Add &Event Theme..."
        Click:      "View.AddEvent"
        Shortcut:   "Keys.None"
)

(Choice.552
        Help:       "Creates a new theme"
        HelpTopic:  "New Theme"
        Label:      "&New Theme..."
        Click:      "View.NewTheme"
        Shortcut:   "Keys.None"
)

(Choice.553
        Disabled:   1
        Help:       "Makes all themes visible"
        HelpTopic:  "Themes On/Themes Off"
        Update:     "View.HasThemesUpdate"
        Label:      "&Themes On"
        Click:      "View.ThemesOn"
        Shortcut:   "Keys.None"
)

(Choice.554
        Disabled:   1
        Help:       "Makes all themes invisible"
        HelpTopic:  "Themes On/Themes Off"
        Update:     "View.HasThemesUpdate"
        Label:      "T&hemes Off"
Click:              "View.ThemesOff"
        Shortcut:   "Keys.Esc"
)

(Space.555
)

(Choice.556
```

```
        Disabled:   1
        Help:       "Create a Layout from the View"
        HelpTopic:  "Use Template"
        Update:     "View.HasThemesUpdate"
        Label:      "La&yout..."
        Click:      "View.Layout"
        Shortcut:   "Keys.None"
)

(Space.557
)

(Choice.558
        Disabled:   1
        Help:       "Zooms to the extent of all themes"
        HelpTopic:  "Zoom to Full Extent"
        Update:     "View.HasDataUpdate"
        Label:      "Full E&xtent"
        Click:      "View.ZoomFullExtent"
        Shortcut:   "Keys.None"
)

(Choice.559
        Disabled:   1
        Help:       "Zooms in on the center of the display"
        HelpTopic:  "Zoom In"
        Update:     "View.HasDataUpdate"
        Label:      "Zoom &In"
        Click:      "View.ZoomIn"
        Shortcut:   "Keys.None"
)

(Choice.560
        Disabled:   1
        Help:       "Zooms out from the center of the display"
        HelpTopic:  "Zoom Out"
        Update:     "View.HasDataUpdate"
        Label:      "Zoom &Out"
        Click:      "View.ZoomOut"
        Shortcut:   "Keys.None"
)

(Choice.561
        Disabled:   1
        Help:       "Zooms to the extent of active themes"
        HelpTopic:  "Zoom to Active Theme"
        Update:     "View.ActiveThemesUpdate"
Label:              "&Zoom To Themes"
        Click:      "View.ZoomToThemes"
        Shortcut:   "Keys.None"
)

(Choice.562
        Disabled:   1
        Help:       "Zooms to the extent of the selected features"
        HelpTopic:  "Zoom to Selected"
        Update:     "View.SelectableThemesUpdate"
```

```
        Label:      "Zoom To &Selected"
        Click:      "View.ZoomToSelected"
        Shortcut:   "Keys.None"
)

(Space.563
)

(Choice.564
        Disabled:   1
        Help:       "Finds features in the active themes using the text you enter"
        HelpTopic:  "Find"
        Update:     "View.TabularThemesUpdate"
        Label:      "&Find..."
        Click:      "View.Find"
        Shortcut:   "Keys.Ctrl+F"
)

(Choice.565
        Disabled:   1
        Help:       "Locates an address in the active, matchable theme"
        HelpTopic:  "Locate"
        Update:     "View.LocateUpdate"
        Label:      "&Locate..."
        Click:      "View.Locate"
        Shortcut:   "Keys.None"
)

(PMenu.566
        Child:      567
        Child:      568
        Child:      569
        Child:      570
        Child:      571
        Child:      572
        Child:      573
        Child:      574
        Child:      575
        Child:      576
        Child:      577
        Child:      578
        Child:      579
        Child:      580
        Child:      581
        Child:      582
Child:              583
        Label:      "&Theme"
)

(Choice.567
        Disabled:   1
        Help:       "Displays the dialog box to edit properties of the active theme"
        HelpTopic:  "Theme Properties"
        Update:     "View.ActiveThemesUpdate"
        Label:      "&Properties..."
        Click:      "View.ThemeProperties"
        Shortcut:   "Keys.None"
```

```
)

(Choice.568
      Disabled:   1
      Help:       "Starts or stops editing of shapefile"
      HelpTopic:  "Start/Stop Editing in a view"
      Update:     "View.ToggleEditingUpdate"
      Label:      "Start &Editing"
      Click:      "View.ToggleEditing"
      Shortcut:   "Keys.None"
)

(Choice.569
      Disabled:   1
      Help:       "Converts a theme to a shapefile"
      HelpTopic:  "Convert to Shapefile"
      Update:     "View.ExportUpdate"
      Label:      "Convert to &Shapefile..."
      Click:      "View.Export"
      Shortcut:   "Keys.None"
)

(Space.570
)

(Choice.571
      Disabled:   1
      Help:       "Displays the legends of the active themes"
      HelpTopic:  "Legend Editor"
      Update:     "View.ActiveThemesUpdate"
      Label:      "Edit &Legend..."
      Click:      "View.EditLegend"
      Shortcut:   "Keys.None"
)

(Choice.572
      Disabled:   1
      Help:       "Displays the geocoding editor for address matching"
      HelpTopic:  "Re-match"
      Update:     "View.EditMatchUpdate"
      Label:      "&Re-match..."
      Click:      "View.EditMatch"
      Shortcut:   "Keys.None" )

(Choice.573
      Disabled:   1
      Help:       "Shows or hides the active themes' legends"
      HelpTopic:  "Hide/show Legend"
      Update:     "View.ActiveThemesUpdate"
      Label:      "&Hide/Show Legend"
      Click:      "View.ToggleLegend"
      Shortcut:   "Keys.None"
)

(Space.574
)
```

```
(Choice.575
        Disabled:   1
        Help:       "Labels active, visible themes"
        HelpTopic:  "Auto-label"
        Update:     "View.LabelThemesUpdate"
        Label:      "&Auto-label"
        Click:      "View.LabelThemes"
        Shortcut:   "Keys.Ctrl+L"
)

(Choice.576
        Disabled:   1
        Help:       "Associates selected graphics with active theme"
        HelpTopic:  "Attach Graphics"
        Update:     "View.AddGraphicsUpdate"
        Label:      "Atta&ch Graphics"
        Click:      "View.AddGraphics"
        Shortcut:   "Keys.None"
)

(Choice.577
        Disabled:   1
        Help:       "Clear graphics that are associated with active themes"
        HelpTopic:  "Detach Graphics"
        Update:     "View.ActiveThemesUpdate"
        Label:      "&Detach Graphics"
        Click:      "View.ClearGraphics"
        Shortcut:   "Keys.None"
)

(Space.578
)

(Choice.579
        Disabled:   1
        Help:       "Opens the tables of the active themes"
        HelpTopic:  "Open Theme Table"
        Update:     "View.TabularThemesUpdate"
        Label:      "&Table..."
        Click:      "View.ShowTable"
Shortcut:           "Keys.None"
)

(Choice.580
        Disabled:   1
        Help:       "Displays the Query Builder to select features with a logical expression"
        HelpTopic:  "Query Builder"
        Update:     "View.TabularThemesUpdate"
        Label:      "&Query..."
        Click:      "View.Query"
        Shortcut:   "Keys.Ctrl+Q"
)

(Choice.581
        Disabled:   1
        Help:       "Selects features in the active themes using another theme's features"
        HelpTopic:  "Select By Theme"
```

```
        Update:     "View.SelectableThemesUpdate"
        Label:      "Select &By Theme..."
        Click:      "View.SelectByTheme"
        Shortcut:   "Keys.None"
)

(Choice.582
        Disabled:   1
        Help:       "Unselects the selected features of all active themes"
        HelpTopic:  "Clear Selected Features"
        Update:     "View.TabularThemesUpdate"
        Label:      "Clear Selected &Features"
        Click:      "View.ClearSelect"
        Shortcut:   "Keys.None"
)

(Choice.583
        Disabled:   1
        Help:       "Places coordinate labels beside features"
        Update:     "View.ActiveThemesUpdate"
        Label:      "Label Coordinates"
        Click:      "View.AddXY"
        Shortcut:   "Keys.None"
)

(PMenu.584
        Child:      585
        Child:      586
        Child:      587
        Child:      588
        Child:      589
        Child:      590
        Child:      591
        Child:      592
        Child:      593
        Label:      "&Graphics"
)
 (Choice.585
        Disabled:   1
        Help:       "Displays the property editor for the selected graphic"
        HelpTopic:  "Graphic Properties"
        Update:     "Graphic.HasSelectionUpdate"
        Label:      "&Properties..."
        Click:      "Graphic.Edit"
        Shortcut:   "Keys.None"
)

(Choice.586
        Disabled:   1
        Help:       "Displays a dialog box to adjust size and position of selected graphic"
        HelpTopic:  "Size and Position"
        Update:     "Graphic.SingleSelectionUpdate"
        Label:      "&Size and Position..."
        Click:      "Graphic.SizePos"
        Shortcut:   "Keys.None"
)
```

```
(Space.587
)

(Choice.588
        Disabled:   1
        Help:       "Moves selected graphics in front of other graphics"
        HelpTopic:  "Bring to Front"
        Update:     "Graphic.HasSelectionUpdate"
        Label:      "Bring to &Front"
        Click:      "Graphic.ToFront"
        Shortcut:   "Keys.None"
)

(Choice.589
        Disabled:   1
        Help:       "Moves selected graphics behind other graphics"
        HelpTopic:  "Send to Back"
        Update:     "Graphic.HasSelectionUpdate"
        Label:      "Send to &Back "
        Click:      "Graphic.ToBack"
        Shortcut:   "Keys.None"
)

(Choice.590
        Disabled:   1
        Help:       "Groups selected graphics"
        HelpTopic:  "Grouping and ungrouping graphics"
        Update:     "Graphic.GroupUpdate"
        Label:      "&Group"
        Click:      "Graphic.Group"
        Shortcut:   "Keys.None"
)

(Choice.591
        Disabled:   1
Help: "Ungroups selected graphics"
        HelpTopic:  "Grouping and ungrouping graphics"
        Update:     "Graphic.UngroupUpdate"
        Label:      "&Ungroup"
        Click:      "Graphic.Ungroup"
        Shortcut:   "Keys.None"
)

(Space.592
)

(Choice.593
        Disabled:   1
        Help:       "Aligns the selected graphics"
        HelpTopic:  "Align"
        Update:     "Graphic.HasSelectionUpdate"
        Label:      "&Align..."
        Click:      "Graphic.Align"
        Shortcut:   "Keys.Ctrl+A"
)
```

```
(PMenu.594
        Child:      595
        Child:      596
        Child:      597
        Child:      598
        Child:      599
        Child:      600
        Child:      602
        Child:      603
        Label:      "&Window"
)

(Choice.595
        Help:       "Arranges windows as non-overlapping tiles"
        HelpTopic:  "Tile"
        Label:      "&Tile"
        Click:      "Project.Tile"
        Shortcut:   "Keys.None"
)

(Choice.596
        Help:       "Arranges windows"
        HelpTopic:  "Cascade"
        Label:      "&Cascade"
        Click:      "Project.Cascade"
        Shortcut:   "Keys.None"
)

(Choice.597
        Help:       "Arranges iconified windows"
        HelpTopic:  "Arrange Icons"
        Label:      "&Arrange Icons"
        Click:      "Project.ArrangeIcons"
        Shortcut:   "Keys.None" )

(Space.598
)

(Choice.599
        Help:       "Shows the symbol palette"
        HelpTopic:  "Show Symbol Palette"
        Label:      "Show Symbol &Palette"
        Click:      "Project.ShowHideSymWin"
        Shortcut:   "Keys.Ctrl+P"
)

(Space.600
        ObjectTag:  601
        Update:     "WindowMenuUpdate"
)

(AVStr.601
        S:          "point.apr View1"
)

(Choice.602
        Help:       "Activates point.apr"
```

```
        Label:      "&1 point.apr"
        Click:      "WindowActivate"
        Shortcut:   "Keys.None"
)

(Choice.603
        Help:       "Activates View1"
        Label:      "&2 View1"
        Click:      "WindowActivate"
        Shortcut:   "Keys.None"
)

(PMenu.604
        Child:      605
        Child:      606
        Child:      607
        Child:      608
        Child:      609
        Child:      610
        Child:      611
        Label:      "&Help"
)

(Choice.605
        Help:       "Displays the initial Help contents topic"
        HelpTopic:  "Help on Help Contents"
        Label:      "&Contents"
        Click:      "Project.HelpContents"
        Shortcut:   "Keys.None"
)
 (Choice.606
        Help:       "Displays the Views topic"
        HelpTopic:  "Help on Help for Views"
        Label:      "&Views..."
        Click:      "Project.HelpDocClass"
        Shortcut:   "Keys.None"
)

(Choice.607
        Help:       "Opens the Search dialog box to select a word to search for"
        HelpTopic:  "Help on Search For Help On"
        Label:      "&Search For Help On..."
        Click:      "Project.HelpSearch"
        Shortcut:   "Keys.None"
)

(Choice.608
        Help:       "Provides information on available support options"
        HelpTopic:  "Help on Obtaining Technical Support"
        Label:      "&Obtaining Technical Support..."
        Click:      "Project.HelpSupport"
        Shortcut:   "Keys.None"
)

(Choice.609
        Help:       "Provides instructions for how to obtain help from ArcView"
        HelpTopic:  "Help on How to Get Help"
```

```
        Label:      "&How to Get Help..."
        Click:      "Project.HelpHelp"
        Shortcut:   "Keys.None"
)

(Space.610
)

(Choice.611
        Help:       "Provides information about ArcView"
        HelpTopic:  "About"
        Label:      "&About ArcView..."
        Click:      "Project.About"
        Shortcut:   "Keys.None"
)

(ButnBar.612
        Child:      613
        Child:      615
        Child:      616
        Child:      618
        Child:      619
        Child:      621
        Child:      623
        Child:      625
        Child:      626
        Child:      628
        Child:      630
Child:              632
        Child:      633
        Child:      635
        Child:      637
        Child:      639
        Child:      641
        Child:      643
        Child:      645
        Child:      646
        Child:      648
        Child:      650
        Child:      651
)

(Butn.613
        Help:       "Saves the current project"
        HelpTopic:  "Save Project"
        Icon:       614
        Click:      "Project.Save"
)

(AVIcon.614
        Name:       "Save"
        Res:        "Icons.Save"

)

(Space.615
)
```

```
(Butn.616
      Help:        "Inserts themes into the view"
      HelpTopic:   "Add Theme"
      Icon:        617
      Click:       "View.Add"
)

(AVIcon.617
      Name:        "AddTheme"
      Res:         "Icons.AddTheme"

)

(Space.618
)

(Butn.619
      Disabled:    1
      Help:        "Displays the dialog box to edit properties of the active theme"
      HelpTopic:   "Theme Properties"
      Update:      "View.ActiveThemesUpdate"
      Icon:        620
      Click:       "View.ThemeProperties"
)
 (AVIcon.620
      Name:        "Props"
      Res:         "Icons.Props"

)

(Butn.621
      Disabled:    1
      Help:        "Displays the legends of the active themes"
      HelpTopic:   "Legend Editor"
      Update:      "View.ActiveThemesUpdate"
      Icon:        622
      Click:       "View.EditLegend"
)

(AVIcon.622
      Name:        "Legend"
      Res:         "Icons.Legend"

)

(Butn.623
      Disabled:    1
      Help:        "Opens the tables of the active themes"
      HelpTopic:   "Open Theme Table"
      Update:      "View.TabularThemesUpdate"
      Icon:        624
      Click:       "View.ShowTable"
)

(AVIcon.624
      Name:        "Table"
```

```
        Res:        "Icons.Table"

)

(Space.625
)

(Butn.626
        Disabled:   1
        Help:       "Finds features in the active themes using the text you enter"
        HelpTopic:  "Find"
        Update:     "View.TabularThemesUpdate"
        Icon:       627
        Click:      "View.Find"
)

(AVIcon.627
        Name:       "Find"
        Res:        "Icons.Find"

)

(Butn.628           Disabled:
1
        Help:       "Locates an address in the active, matchable theme"
        HelpTopic:  "Locate"
        Update:     "View.LocateUpdate"
        Icon:       629
        Click:      "View.Locate"
)

(AVIcon.629
        Name:       "AddMatch"
        Res:        "Icons.AddMatch"

)

(Butn.630
        Disabled:   1
        Help:       "Displays the Query Builder to select features with a logical expression"
        HelpTopic:  "Query Builder"
        Update:     "View.TabularThemesUpdate"
        Icon:       631
        Click:      "View.Query"
)

(AVIcon.631
        Name:       "QueryBuilder"
        Res:        "Icons.QueryBuilder"

)

(Space.632
)

(Butn.633
        Disabled:   1
```

```
        Help:       "Places coordinate labels beside features"
        Update:     "View.AddXYUpdate"
        Icon:       634
        Click:      "View.AddXY"
)

(AVIcon.634
        Name:       "Bex"
        Res:        "Icons.Bex"

)

(Butn.635
        Disabled:   1
        Help:       "Zooms to the extent of all themes"
        HelpTopic:  "Zoom to Full Extent"
        Update:     "View.HasDataUpdate"
        Icon:       636
        Click:      "View.ZoomFullExtent"
)
 (AVIcon.636
        Name:       "ZoomView"
        Res:        "Icons.ZoomView"

)

(Butn.637
        Disabled:   1
        Help:       "Zooms to the extent of active themes"
        HelpTopic:  "Zoom to Active Theme"
        Update:     "View.ActiveThemesUpdate"
        Icon:       638
        Click:      "View.ZoomToThemes"
)

(AVIcon.638
        Name:       "ZoomTheme"
        Res:        "Icons.ZoomTheme"

)

(Butn.639
        Disabled:   1
        Help:       "Zooms to the extent of the selected features"
        HelpTopic:  "Zoom to Selected"
        Update:     "View.SelectableThemesUpdate"
        Icon:       640
        Click:      "View.ZoomToSelected"
)

(AVIcon.640
        Name:       "ZoomToSelected"
        Res:        "Icons.ZoomToSelected"

)

(Butn.641
```

```
        Disabled:   1
        Help:       "Zooms in on the center of the display"
        HelpTopic:  "Zoom In"
        Update:     "View.HasDataUpdate"
        Icon:       642
        Click:      "View.ZoomIn"
)

(AVIcon.642
        Name:       "ZoomIn"
        Res:        "Icons.ZoomIn"

)

(Butn.643
        Disabled:   1
        Help:       "Zooms out from the center of the display"
        HelpTopic:  "Zoom Out"
Update:             "View.HasDataUpdate"
        Icon:       644
        Click:      "View.ZoomOut"
)

(AVIcon.644
        Name:       "ZoomOut"
        Res:        "Icons.ZoomOut"

)

(Space.645
)

(Butn.646
        Disabled:   1
        Help:       "Selects features in active themes using selected graphics"
        HelpTopic:  "Select Features Using Shape"
        Update:     "View.SpatialSelectUpdate"
        Icon:       647
        Click:      "View.SpatialSelect"
)

(AVIcon.647
        Name:       "SpatialSelect"
        Res:        "Icons.SpatialSelect"

)

(Butn.648
        Disabled:   1
        Help:       "Unselects the selected features of all active themes"
        HelpTopic:  "Clear Selected Features"
        Update:     "View.TabularThemesUpdate"
        Icon:       649
        Click:      "View.ClearSelect"
)

(AVIcon.649
```

```
        Name:       "SelectNone"
        Res:        "Icons.SelectNone"

)

(Space.650
)

(Butn.651
        Help:       "Changes to ArcView's Helping mode. Press ESC to cancel."
        HelpTopic:  "Context-Sensitive Help"
        Icon:       652
        Click:      "Help.Tool"
)

(AVIcon.652     Name:
"HelpTool"
        Res:        "Icons.HelpTool"

)

(ToolBar.653
        Child:      654
        Child:      656
        Child:      658
        Child:      660
        Child:      662
        Child:      664
        Child:      666
        Child:      668
        Child:      670
        Child:      672
        Child:      674
        Child:      676
        Child:      689
)

(Tool.654
        Disabled:   1
        Help:       "Provides information about a feature"
        HelpTopic:  "Identify tool"
        Update:     "View.TabularThemesUpdate"
        Icon:       655
        Cursor:     "Cursors.ID"
        Apply:      "View.Identify"
)

(AVIcon.655
        Name:       "ID"
        Res:        "Icons.ID"

)

(Tool.656
        Disabled:   1
        Help:       "Selects shapes or graphics by pointing or dragging"
        HelpTopic:  "Pointer tool"
```

```
        Update:     "View.HasDataUpdate"
        Icon:       657
        Cursor:     "Cursors.Select"
        Apply:      "View.Select"
)

(AVIcon.657
        Name:       "Select"
        Res:        "Icons.Select"

)

(Tool.658
        Disabled:   1
Help: "Selects features in the visible, active themes by pointing or dragging"
        HelpTopic:  "Select Feature tool"
        Update:     "View.SelectableThemesUpdate"
        Icon:       659
        Cursor:     "Cursors.Default"
        Apply:      "View.SelectPoint"
)

(AVIcon.659
        Name:       "FeatureSelect"
        Res:        "Icons.FeatureSelect"

)

(Tool.660
        Disabled:   1
        Help:       "Zooms in at a point you click or zooms in on a rectangle you drag"
        HelpTopic:  "Zoom In tool"
        Update:     "View.HasDataUpdate"
        Icon:       661
        Cursor:     "Cursors.ZoomIn"
        Apply:      "View.ZoomInTool"
)

(AVIcon.661
        Name:       "ZoomInTool"
        Res:        "Icons.ZoomInTool"

)

(Tool.662
        Disabled:   1
        Help:       "Zooms out from a point you click or zooms out to include a rectangle you
drag"
        HelpTopic:  "Zoom Out tool"
        Update:     "View.HasDataUpdate"
        Icon:       663
        Cursor:     "Cursors.ZoomOut"
        Apply:      "View.ZoomOutTool"
)

(AVIcon.663
        Name:       "ZoomOutTool"
```

```
        Res:        "Icons.ZoomOutTool"

)

(Tool.664
        Disabled:   1
        Help:       "Drags the display in the direction you move the cursor"
        HelpTopic:  "Pan tool"
        Update:     "View.HasDataUpdate"
        Icon:       665
        Cursor:     "Cursors.Pan"
        Apply:      "View.Pan"
)
(AVIcon.665
        Name:       "Pan"
        Res:        "Icons.Pan"

)

(Tool.666
        Disabled:   1
        Help:       "Measures distance"
        HelpTopic:  "Measure tool"
        Update:     "View.HasDataUpdate"
        Icon:       667
        Cursor:     "Cursors.Measure"
        Apply:      "View.Measure"
)

(AVIcon.667
        Name:       "Measure"
        Res:        "Icons.Measure"

)

(Tool.668
        Disabled:   1
        Help:       "Links an action to a feature"
        HelpTopic:  "Hot Link tool"
        Update:     "View.HotLinkUpdate"
        Icon:       669
        Cursor:     "Cursors.Media"
        Apply:      "View.HotLink"
)

(AVIcon.669
        Name:       "Media"
        Res:        "Icons.Media"

)

(Tool.670
        Disabled:   1
        Help:       "Sets the View's Area Of Interest for library based themes"
        HelpTopic:  "Area Of Interest tool"
        Update:     "View.AOIToolUpdate"
        Icon:       671
```

```
        Cursor:     "Cursors.Default"
        Apply:      "View.AOITool"
)

(AVIcon.671
        Name:       "AOI"
        Res:        "Icons.AOI"

)
 (Tool.672
        Disabled:   1
        Help:       "Labels features"
        HelpTopic:  "Label tool"
        Update:     "View.LabelToolUpdate"
        Icon:       673
        Cursor:     "Cursors.Tag"
        Apply:      "View.LabelTool"
)

(AVIcon.673
        Name:       "Tag"
        Res:        "Icons.Tag"

)

(Tool.674
        Help:       "Creates text on the display"
        HelpTopic:  "Text tool"
        Update:     "View.GraphicToolUpdate"
        Icon:       675
        Cursor:     "Cursors.Text"
        Apply:      "View.TextTool"
        Click:      "SymWin.DisplayFontPanel"
)

(AVIcon.675
        Name:       "Text"
        Res:        "Icons.Text"

)

(ToolMenu.676
        Help:       "Creates a point on the display"
        HelpTopic:  "Draw tool"
        Update:     "View.PointToolUpdate"
        Icon:       677
        Cursor:     "Cursors.CrossHair"
        Apply:      "View.PointTool"
        Click:      "SymWin.DisplayMarkerPanel"
        Child:      678
        Child:      679
        Child:      681
        Child:      683
        Child:      685
        Child:      687
)
```

```
(AVIcon.677
      Name:       "Point"
      Res:        "Icons.Point"

)

(Tool.678         Help:
"Creates a point on the display"
      HelpTopic:  "Draw tool"
      Update:     "View.PointToolUpdate"
      Icon:       677
      Cursor:     "Cursors.CrossHair"
      Apply:      "View.PointTool"
      Click:      "SymWin.DisplayMarkerPanel"
)

(Tool.679
      Help:       "Creates a line on the display"
      HelpTopic:  "Draw tool"
      Update:     "View.GraphicToolUpdate"
      Icon:       680
      Cursor:     "Cursors.CrossHair"
      Apply:      "View.LineTool"
      Click:      "SymWin.DisplayPenPanel"
)

(AVIcon.680
      Name:       "SelectLine"
      Res:        "Icons.SelectLine"

)

(Tool.681
      Help:       "Creates a line with three or more points on the display"
      HelpTopic:  "Draw tool"
      Update:     "View.PolyLineToolUpdate"
      Icon:       682
      Cursor:     "Cursors.CrossHair"
      Apply:      "View.PolyLineTool"
      Click:      "SymWin.DisplayPenPanel"
)

(AVIcon.682
      Name:       "Lines"
      Res:        "Icons.Lines"

)

(Tool.683
      Help:       "Creates a rectangle on the display"
      HelpTopic:  "Draw tool"
      Update:     "View.PolyToolUpdate"
      Icon:       684
      Cursor:     "Cursors.CrossHair"
      Apply:      "View.RectTool"
      Click:      "SymWin.DisplayFillPanel"
)
```

```
(AVIcon.684
        Name:       "Rect"
        Res:        "Icons.Rect"
)

(Tool.685
        Help:       "Creates a circle on the display"
        HelpTopic:  "Draw tool"
        Update:     "View.PolyToolUpdate"
        Icon:       686
        Cursor:     "Cursors.CrossHair"
        Apply:      "View.CircleTool"
        Click:      "SymWin.DisplayFillPanel"
)

(AVIcon.686
        Name:       "Disk"
        Res:        "Icons.Disk"

)

(Tool.687
        Help:       "Creates a polygon on the display"
        HelpTopic:  "Draw tool"
        Update:     "View.PolyToolUpdate"
        Icon:       688
        Cursor:     "Cursors.CrossHair"
        Apply:      "View.PolyTool"
        Click:      "SymWin.DisplayFillPanel"
)

(AVIcon.688
        Name:       "Poly"
        Res:        "Icons.Poly"

)

(Tool.689
        Disabled:   1
        Invisible:  1
        Help:       "Sets the snapping tolerance for the editable theme"
        HelpTopic:  "Snap tool"
        Update:     "View.SnapToolUpdate"
        Icon:       690
        Cursor:     "Cursors.Default"
        Apply:      "View.SnapTool"
)

(AVIcon.690
        Name:       "SnapTool"
        Res:        "Icons.SnapTool"

)

(FN.691
        Path:       "$HOME"
```

```
)
 (TClr.692
      Red:          0xffff
      Green:        0xffff
)
```

Exhibit 4-4

Mapping AML

```
mape 1315480,718120 1340500,740000
pagesize  17 11
mapposition cen cen
mapunits feet
mapscale 24000
mbegin
shadeset colornames.shd
polygonshades /coathanger/6220/master/bdy795 94
polygonshades /coathanger/6220/master/ponds 45
polygonshades /coathanger/6220/master/structpol 31
polygonshades /coathanger/6220/master/erosionpol 28
polygonshades /coathanger/6220/master/bldgs 99
polygonshades /coathanger/6220/master/lot 119
linesymbol 66
arcs /coathanger/6220/master/road
linesymbol 79
arcs /coathanger/6220/master/trails
linesymbol 1
arcs /coathanger/6220/master/bdy795
lineset /coathanger/6220/master/plotter3.lin
linesymbol 805
arcs /coathanger/6220/master/structlin
/*textcolor red
/*labeltext ponds name
mend
mrotate -14
mmove 4 4 4.1 4.2

/*&run bord17.aml
textset plotter.txt
textsymbol 13
move 4.05 .96
textsize .07
text 'K Taylor'
move 4.05 .65
text 'PRIMS'
move 3.75 .38
text '10/15/1995'
textsymbol 17
move 11.6 .5
textsize .07
text ' 1" = 2,000"
textset carto.txt
textsymbol 101
move 12.98 1.12
textsize .22
text 'PRESQUE ISLE'
move 13.05 .8
text 'STATE PARK'
move 13.1 .47
textcolor 'turquoise'
```

```
text 'BASE MAP'
textset font.txt
textsymbol 14
move 15.7 1.05 textsymbol 1
textsize .11
text 6220
lineset /coathanger/6220/master/plotter3.lin
linesymbol 805
plot /coathanger/6220/master/bord17.gra


mfresh
mapunits inches

textset font.txt
textsymbol 14
textsize .1
textoffset 0 0
keyarea 5.75 .25 11.9 1.25
keyseparation .1 .2
keybox .2 .2
keyline base.key nobox
keybox .2 .2
keyshade base-shd.key nobox
move 15.3 .75
textsize .20
text 'EXHIBIT'
move 15.5 .53
text '3- '
/*plot logo1 box *
map end
```

5.0 BUDGET

The budget for the project was divided into three areas. Approximately 55% of the initial budget went to map preparation and the remaining 45% was spent on equipment and technical services. Exhibit 5-1 shows the proposed budget and actual expenditures.

6.0 RECOMMENDATIONS

The following is a list of recommendations that will be made to BSP senior staff for enhancement of the GIS program and implementation statewide.

- With ArcView 2.1's capabilities to take GPS data and create coverage, the Bureau should purchase ArcView for a park and let them map the basic information in the park using Resources Management Section's GPS unit. This data would include trails, roads, buildings, utility lines, and structures. This data then could be sent to Central Office for updating Resources Management's plan maps and mini-maps. It would provide base data on doing all the parks.

- To use State Plane, NAD 83 as the standard projection for state park maps and use the north zone for the entire state.

- To establish a GIS coordinator to oversee the GIS program in BSP.

- To use the Department's cartographic section to digitize existing accurate maps into Auto CADD for use by Resources Management Section. The Resources Management Section will use Arc CAD to take maps between Arc Info and Auto CADD.

- To acquire Arc CAD and Arc Scan modules for Arc Info for use with the GIS program.

- To create an accurate park boundary coverage for 116 state parks for the replacement of the inaccurate coverage currently being distributed by the Department.

- To contract with a consultant for the development of a procedure to take Arc Info plot files into Auto CADD for use by the Bureau of Facility Design and Construction.

- To contract for technical support for providing assistance, application development, and troubleshooting.

- To continue to map PNDI species locations as a priority project.

- To evaluate Presque Isle State Park's use of the GIS system after one year of use.

EXHIBIT 5-1

93 CZM GRANT BUDGET

Work Elements	Planned Costs	Actual Expenditures
Digital Mapping	$ 40,000.00	$ 55,563.56
Administration and Coordinating	10,000.00	11,669.45
Total	$ 50,000.00	$ 67,233.01

Funding Source	Amount
Federal Share (CZM)	$ 20,000.00
State Funds (BSP)	37,813.32
Oil and Gas Funds	8,312.03
Other	1,184.98
Total	$ 67,399.33

Summary

Consultant	Amount
Earth Information Services	$ 18,954.28
Subtotal	$ 18,954.28

Equipment	Amount
Hardware	$ 9,394.75
Software	1,763.00
Supplies	589.58
Miscellaneous	1,328.26
Subtotal	$ 13,075.59

Mapping	Amount
Salary and Wages	$ 34,665.46
Service Purchase Contract	$ 615.00
Subtotal	$ 35,280.46
TOTAL	$ 67,399.33

APPENDIX

Intern comments on the week at Presque Isle State Park

Coverage Description.

COVERAGE DESCRIPTIONS

BUFF	Jurisdictional Park Boundary.
*BDY*****	Shape of shoreline as of a specific date **** dictates month and year.
BAYS	Thompson Bay, Misery Bay, and Marina.
BLDG	All the park buildings on the parks inventory.
PONDS	Interior ponds.
ROAD	All the park roads.
TRAIL	All the park trails and Pontoon tour.
LOTS	All parking lots.
VEG	Vegetation based on Resource Management Plan.
SOILS	Soil types based on the county soil survey.
WET	Various types of wetlands and all natural and man-made ponds.
EROS-POL	Breakwaters.
BEACH	Eighteen guarded beach areas.
MONUMENTS	Thirty-two monuments from resources management plan and two survey control monuments.
BRKWTRS	Actual design size of breakwater.
SAMPLES	Water sample location.
MOWING	Restricted mowing areas.
TOPO	One foot contour lines.
TOPOTS	Survey control points for establishing elevation.
ROW	All public utilities and right-of-ways.
BUOYS	Location of buoys.
SIGNS	Park maintained signs.
ROADBUF	Park roads at their actual width.
ESA	Environmental sensitive areas as declared by RBA study.
PNDI	Species of special concern.
UTILITY	Park-owned water sewer.

STRUCT-POL *STRUCT-LIN*	All man-made structures excluding buildings.
HIST	Historic sites.
ARCHPTS	Archaeologically sensitive points.
ARCPOL	Archaeologically sensitive areas.
EROS-LIN	Jettys and other erosion control measures.
NATURAL	Designated natural areas in state parks.

Intern's Thoughts

Presque Isle Summary

As I prepared for the trip to Presque Isle State Park, I anticipated a trip filled with adventure and excitement. Unfortunately, our trip wasn't everything I expected because of lack of communication as well as the park personnel not being very cooperative to our needs.

Our trip started off with troubles with the base unit because it kept shutting down on the Monday we started our work. Finally, we got the base running and started our work which proceeded to go very well. The problems we had during the week weren't so much with the data and the equipment as much as it was with leadership and communication among the interns. I feel we got a great deal of work done while at Presque Isle, and I feel it was done efficiently. We went there and had a goal to set and we achieved that goal. It's just a lot easier and more relaxing to know you have a leader of some kind to guide you through the week. We had absolutely no leadership which led to many problems. The problems varied from not having a radio so if someone needed assistance that person was there, to a battery being dead and needing to talk to someone, or just simply wanting to know when a person was going to break for lunch.

The park personnel was another problem for us while we were at Presque Isle. The park was notified way in advance that we would be coming to work on this project. When we got there they acted as if we were invading their territory. There were no vehicles available and the individuals who were supposed to assist us had no idea they were even suppose to. The attitudes of the park personnel made us feel very uncomfortable and many times frantic to ask to borrow anything which we needed in a days time.

Overall, I feel the trip to Presque Isle State Park was a very good experience. It taught me a lot about meeting goals and dealing with people of all personalities to achieve goals as a group. I feel being able to work in a group setting, as well as individually, is very important. Communication skills are needed in a work setting almost everywhere you go. I feel we had no communication from our leader which led to many unnecessary problems.

Cristen Benhart

The trip to Presque was an overall success for those on the trip. I felt it was a good learning experience for everyone to become more familiar with the GPS equipment and to get a feel for what to expect while working in the field. During the week we had good days and bad days. A typical bad day included everything from having difficulty picking up satellites to problems using Presque Isle State Park equipment to communication among ourselves as well as Presque Isle State Park staff. For example, certain features required the assistance of Presque Isle State Park staff, but the staff seemed to be uninformed of what they wanted us to do for them. Another problem we had was with the number of extra people we had assisting us. The group was too large on certain days to have everyone doing something that was useful and productive. However, I did feel Presque Isle's intern, Paula, was very helpful, eager and interested in learning what we were doing. It was also very nice to have Rege there to set up and take down his base station.

I felt working in groups of two while in the field worked well for all of us. It was also useful to have access to a pc as well as the laptop, especially at the end of the day when we could download our files and copy them to a disk, while Rege downloaded the base data on the laptop. I also think it saved time to process and correct all files in the same day. It took an hour and a half to two hours to correct and look at that day's files. This also made it easier to schedule what needed to be done in the morning, because we came in that morning knowing what was or was not done correctly the day before. I felt after the second day we all felt more

comfortable. The remainder of the week we had basic problems borrowing Presque Isle State Park's equipment.

Tina Matula

I was very excited about leaving on my birthday, July 23,1995, to work at Presque Isle State Park for the next four days. Along with everyone else, I was anticipating a rather enjoyable week working on the GPS project at Pennsylvania's number one state park.

We all seemed to assume that we would encounter some problems relating to the equipment, however it remained as a very minor problem all week. The biggest problem dealing with the equipment came about Monday setting up the base station. Once that was fixed, however, everything seemed to run swiftly. We ran into other problems that made our week quite a challenge. One problem that we had involved the actual schedule and organization of the project. Because the base went down twice Monday morning, we were forced to altar the schedule extremely. Also, we could have greatly improved on our communicational skills throughout the whole week at the park. Radios became a nuisance when the person you needed to contact did not have one or did not have it turned on. I believe one of our major problems at the park involved the park staff. Evidently, it was not known by all the park staff that we would be needing their assistance whether it be for all-terrain vehicles or simply their knowledge of, for example, all the mowing areas they wanted GPS'd. We did have extra help throughout the week, however, at one point it became somewhat cumbersome. Tuesday, we had seven other interns whose days we were evidently responsible to plan into our dramatically changed schedule.

Overall, the many problems we did encounter did not prevent us from leaving Presque Isle successful. We completed all of the prioritized work and almost all of the other GPS jobs that were to be done in the park. Personally, it has definitely enhanced my knowledge of Global Positioning Systems. I felt very comfortable with the work and was glad to have the full week's worth experience. I believe that the project went relatively well and I was proud and grateful to be a part of it.

Amy Stimely

PRESQUE ISLE TRIP SUMMARY

Our trip to Presque Isle State Park turned out to be one with a variety of experiences. The experiences which the five of us went through should be analyzed now that the trip is over in order to determine what could be done to help improve similar trips in the future.

When working in groups in the field, cooperation is of the utmost importance among individuals. The key to maintaining this cooperation is organization and strong leadership. While at Presque Isle, it was sometimes evident that these two characteristics were lacking a bit. In reality, this began before leaving for the trip. I feel that if we were all briefed a bit more as to what exactly was to take place while in Erie, jobs would have moved along more smoothly and efficiently. Our leader was briefed as to what was to take place, however, this information was only relayed to us in bits and pieces. One meeting with the entire group with an in depth discussion on how and what to do before going on the trip would have been very beneficial. Another possibility could have been a scheduled meeting between the leader and the rest of the group. Because of the many questions surrounding what exactly was to take place, the organization of our group was at times limited which made the entire operation, at times, unstable.

Another problem which should be analyzed deals with the operation of the GPS units themselves by members of the group. Many of us had not used the units since being trained in

May. This definitely slowed us down as many had to figure out how to use them again. Also, being trained and actually doing a job are two very different things. Therefore, it would also have helped to make sure that every member of the group got out on a job first before sending them to one the size of Presque Isle.

A final criticism of the trip was the reception which we were given by a majority of the park staff. Although doing the park a favor and trying to stay out of their way as much as possible, the staff tended to act very cold toward us as if we were not supposed to be there. There were many instances where we could have used their help since they do run the park, however, they were usually not willing to spend the time to do so.

In spite of these criticisms, I feel that the trip was an overall success and an excellent learning experience. We ended up completing most of what we were asked to do and working out in the field is always a great experience. Any trip of this nature will have its problems, so those which we faced should not have been unexpected. Those problems which we dealt with should be kept in mind in the future in order to improve upon other trips.

Mike Bialousz

Presque Isle Summary

Our week at Presque Isle working on the GPS pilot project, was a challenging one. I left Harrisburg with a great deal of confidence and anticipation, hoping that this summer would be even more successful than the project was last summer. We were all eager to help the park develop accurate maps, and learn more about the park.

Overall, I believe that the project as a whole was a success. We collected the majority of the data that we needed, to help make quality maps of the park. We accomplished a lot and also learned a great deal about GPS and team work.

As any team would, we also ran into some problems. Our problems began with the equipment and extended to a lack of communication. We encountered problems with communications with the park personnel, because the majority of the people were not properly informed of our needs and tasks. The park was sent our tentative schedule and the equipment that was needed. We believed that this should have allowed them time to plan ahead for our arrival and assist us along the way. We found that some of the park personnel were not very cooperative in aiding us with our tasks and at time they inhibited us from getting things accomplished.

There was also a communication breakdown within our group. I think things would have gone smoother had we had a more assertive and communicative leader.

Like I said before, overall the project was a success. However, it could have been less difficult for our group and would have been more productive had we developed the communications line that were lacking.

Lori Felix

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