

Last Date For Agency Action: 15-MAY-2003

INDIVIDUAL ENVIRONMENTAL RESOURCE PERMIT STAFF REPORT

Project Name: Savannas Ecosystem Management Project

Permit No.: 56-01710-P

Application No.: 020610-12

Application Type: Environmental Resource (New Construction/Operation)

Location: St Lucie County, S1,2,11,12/T35S/R40E

Permittee : St Lucie County

Operating Entity : St Lucie County

Project Area: 151.55 acres

Project Land Use: Residential

Special Drainage District: NA

Conservation Easement To District : No

Sovereign Submerged Lands: No



PROJECT PURPOSE:

This application is a request for construction and operation of 151.55 acres of retrofit surface water management system to serve an existing 1,273 acre residential development, resulting in water quality benefits to wetlands in the adjacent Savannas State Preserve. Staff recommends approval with conditions.

PROJECT EVALUATION:

PROJECT SITE DESCRIPTION:

The site is located in St. Lucie County, west of the Savannas Preserve, north and south of Midway Road.

South of Midway Road, the project consists of the Indian River Estates subdivision, which discharges directly into the Savannas Preserve by way of roadside swales terminating in open culverts. North of Midway Road, the project consists of an existing borrow pit formerly used as a sand mine.

No wetlands occur within the boundaries of the proposed activities.

PROJECT BACKGROUND:

The Indian River Estates subdivision was constructed in the 1970's. The surface water management system consists of roadside swales discharging to larger ditches that discharge directly into the Savannas Preserve. This system has resulted in water quality degradation within the Preserve as well as reoccurring flooding within Indian River Estates. The District helped with funding of an engineering study and design in order to address these issues.

PROPOSED PROJECT:

The applicant proposes to construct a surface water management (SWM) system to provide retrofit water quality treatment (for 1.5 inches of runoff) and to increase flood protection within Indian River Estates, an existing residential development.

The proposed retrofit SWM system consists of a network of swales, inlets, and culverts designed to collect runoff and direct it to a proposed pump station that will deliver the runoff to existing borrow pits located on the north side of Midway Road. These borrow pits will be modified in order to meet the wet retention/detention criteria for side slopes no steeper than 4 to 1 (horizontal to vertical) to a depth of 2 feet below the control elevation. The flow into the two cells of the borrow pits will be in a series fashion, overflowing from the easterly primary area which will function as a retention area into the westerly cell that will function as a wet detention area. Overflow from the secondary wet detention area will be into the Savannas Preserve north of Midway Road.

Roadside swales within Indian River Estates will also provide water quality treatment. The proposed modifications within the Indian River Estates development includes the construction of structures that will allow detention of the first 0.5 inches of runoff prior to being pumped to the retention/detention system north of Midway Road for additional water quality treatment. After the water quality treatment requirement has been met, the structures will allow flow to the Savannas Preserve, in the historic locations. Please refer to Exhibits 2A to 2AT for project site plan and detail information.

Reference is made to Exhibit No. 2 (Sheets 2A through 2AT), by Hazen and Sawyer, consisting of drainage plans and detail sheets. The drawings have been signed and sealed by Robert B. Taylor, P.E., of Hazen and Sawyer on June 6, 2002 and have been included in this permit by reference (please see permit file). Sheets 2V through 2AF, which include structure and pond details, are also attached to the permit.

WATER QUANTITY :

A goal of the retrofit project is to provide improved flood protection to the Indian River Estates Subdivision. The chosen level of service is the 10 year one day storm.

Discharge Rate :

The calculations submitted by the applicant's engineer demonstrate that the proposed water quality retrofit will not increase the existing net peak rate discharge from the existing Indian River Estates development to the Savannas Preserve.

Discharge Storm Frequency : 10 YEAR-3 DAY

Design Rainfall : 10.5 inches

Basin	Allow Disch (cfs)	Method Of Determination	Peak Disch (cfs)	Peak Stage (ft, NGVD)
Indian River Estates	355	Pre Vs Post	296	18.9

Finished Floors :

The calculations submitted by the applicant's engineer demonstrate that the proposed retrofit will increase the finished floor flood protection within the existing Indian River Estates development.

Road Design :

The calculations submitted by the applicant's engineer demonstrate that the proposed retrofit will improve the existing levels of roadway flood protection within Indian River Estates.

Receiving Body :

Basin	Str.#	Receiving Body
Indian River Estates	BARTOWCS	Savanna Preserve
Indian River Estates	BRADLEYC	Savanna Preserve
Indian River Estates	BRADLEYC	Savanna Preserve
Indian River Estates	EASYCS1	Savanna Preserve
Indian River Estates	EASYCS2	Savanna Preserve
Indian River Estates	HOWARDC	Savanna Preserve
Indian River Estates	Pumps	Secondary Detention area
Indian River Estates	SAVANNAH	Savanna Preserve
Indian River Estates	SAVANNAH	Savanna Preserve
Indian River Estates	SCOTTCS	Savanna Preserve
Borrow Pits	CS1	Savanna Preserve
Borrow Pits	CS2	Savanna Preserve
Borrow Pits	CS3	Savanna Preserve
Borrow Pits	CS4	Savanna Preserve

Discharge Structures:

Bleeders:

Basin	Str#	Count	Type	Width	Height	Length	Dia.	Invert Angle	Invert Elev. (ft, NGVD)
Indian River Estates	BARTOWCS	1	V-Notch	19"	6"				15.5
Indian River Estates	BRADLEYC	1	V-Notch	19"	6"				15.5
Indian River Estates	S1	1	V-Notch	19"	6"				15.5
Indian River Estates	BRADLEYC	1	V-Notch	19"	6"				15.5
Indian River Estates	S2	1	V-Notch	19"	6"				15.5
Indian River Estates	EASYCS1	1	V-Notch	19"	6"				15.5
Indian River Estates	EASYCS2	1	V-Notch	19"	6"				15.5
Indian River Estates	HOWARDC	1	V-Notch	19"	6"				15.5

Discharge Structures:

Bleeders:

Estates	S					15.5
Indian River	SAVANNAH	1	V-Notch	19"	6"	15.5
Estates	CS1					
Indian River	SAVANNAH	1	V-Notch	19"	6"	15.5
Estates	CS2					
Indian River	SCOTTCS	1	V-Notch	19"	6"	
Estates						

Weirs: Basin	Str#	Count	Type	Width	Height	Length	Dia.	Elev. (ft, NGVD)
								16 (crest)
								16 (crest)
								16 (crest)
								16 (crest)
								16 (crest)
Borrow Pits	CS1	1	Sharp Crested	6.1'				
Borrow Pits	CS2	1	Sharp Crested	6.1'				
Borrow Pits	CS3	1	Sharp Crested	6.1'				
Borrow Pits	CS4	1	Sharp Crested	6.1'				
Indian River	BARTOWCS	1	Sharp Crested	6.6'				16 (crest)
Estates								
Indian River	BRADLEYC	1	Sharp Crested	6.6'				16 (crest)
Estates	S1							
Indian River	BRADLEYC	1	Sharp Crested	6.6'				16 (crest)
Estates	S2							
Indian River	EASYCS1	1	Sharp Crested	6.6'				16 (crest)
Estates								
Indian River	EASYCS2	1	Sharp Crested	6.6'				16 (crest)
Estates								
Indian River	HOWARDC	1	Sharp Crested	6.6'				16 (crest)
Estates	S							
Indian River	SAVANNAH	1	Sharp Crested	6.6'				16 (crest)
Estates	CS1							
Indian River	SAVANNAH	1	Sharp Crested	6.6'				16 (crest)
Estates	CS2							
Indian River	SCOTTCS	1	Sharp Crested	6.6'				
Estates								

Water Quality Structures:

Pumps: Basin	Str#	Count	Type	Capacity	Elev. (ft, NGVD)
				19.3cfs	14 (on) / 11.5 (off)
Indian River Estates	Pumps	1	Centrifugal	19.3cfs	14.5 (on) / 11.5 (off)
Indian River Estates	Pumps	1	Centrifugal	19.4cfs	15 (on) / 11.5 (off)
Indian River Estates	Pumps	1	Centrifugal	6.7cfs	10.5 (on) / 9.5 (off)
Indian River Estates	Pumps	1	Centrifugal		

WATER QUALITY :

The retrofit wet retention and detention water quality treatment facilities proposed with this project in conjunction with roadside swales will provide treatment equal to 1.5-inches over the 1,273-acre Indian River Estates Development. The first inch of water quality treatment will be provided in a combination of dry roadside swales and the primary wet retention cell. The secondary wet detention cell will provide an

additional 1/2-inch of water quality treatment prior to discharge into the Savannas Preserve.

The applicant will install and maintain silt screens and other protective measures adjacent to construction areas to prevent erosion into wetlands and other surface waters (Special Condition 11).

Basin	Treatment Method		Vol Req.d (ac-ft)	Vol Prov'd (ac-ft)
Indian River Estates	Treatment	Swale	80.6 acres	52.3
Indian River Estates	Treatment	Wet Retention	12.8 acres	53.7
Indian River Estates	Treatment	Wet Detention	40.8 acres	53
				81.5

WETLANDS:

No portion of the project area contains wetlands. The proposed ditch and culvert improvements within Indian River Estates will occur landward of the jurisdictional limits of the wetlands bordering this project. The side slopes of the borrow pit north of Midway Road do not support wetlands in the areas where construction activities are proposed.

The District anticipates a net improvement in wetland functions, due to no adverse wetland impacts coupled with improved water quality discharging to the Savannas Preserve.

Endangered Species:

Wetlands and portions of the borrow pit near the proposed construction activities contain foraging habitat for herons and other wading birds. However, the District does not anticipate adverse impacts to the foraging habitat as a result of the proposed construction activities. This permit does not relieve the applicant from complying with all applicable rules and any other agencies' requirements if, in the future, endangered/threatened species or species of special concern are discovered on the site.

CERTIFICATION AND MAINTENANCE OF THE WATER MANAGEMENT SYSTEM:

It is suggested that the permittee retain the services of a Professional Engineer registered in the State of Florida for periodic observation of construction of the surface water management (SWM) system. This will facilitate the completion of construction completion certification Form #0881 which is required pursuant to Section 10 of the Basis of Review for Environmental Resource Permit Applications within the South Florida Water Management District, and Rule 40E-4361(2), Florida Administrative Code (F.A.C.).

Pursuant to Chapter 40E-4 F.A.C., this permit may not be converted from the construction phase to the operation phase until certification of the SWM system is submitted to and accepted by this District. Rule 40E-4.321(7) F.A.C. states that failure to complete construction of the SWM system and obtain operation phase approval from the District within the permit duration shall require a new permit authorization unless a permit extension is granted.

For SWM systems permitted with an operating entity who is different from the permittee, it should be noted that until the permit is transferred to the operating entity pursuant to Rule 40E-1.6107, F.A.C., the permittee is liable for compliance with the terms of this permit.

The permittee is advised that the efficiency of a SWM system will normally decrease over time unless the system is periodically maintained. A significant reduction in flow capacity can usually be attributed to partial blockages of the conveyance system. Once flow capacity is compromised, flooding of the project may result. Maintenance of the SWM system is required to protect the public health, safety and the natural resources of the state. Therefore, the permittee must have periodic inspections of the SWM system

performed to ensure performance for flood protection and water quality purposes. If deficiencies are found, it is the responsibility of the permittee to correct these deficiencies in a timely manner.

SOVEREIGN/SUBMERGED LANDS:

A sovereign submerged lands title determination for the proposed project area indicated that lands below the mean high water line of the Savannahs State Preserve are sovereignty lands. The proposed work is not located within wetlands or other surface waters within the Preserve and is not anticipated to adversely affect sovereign submerged lands.

RELATED CONCERNS:**Water Use Permit Status:**

The applicant has indicated that dewatering is not anticipated for construction of this project. If the selected contractor for the project determines that dewatering will be required, then a water use permit will be applied for at that time, as necessary.

This permit does not release the permittee from obtaining all necessary Water Use authorization(s) prior to the commencement of activities which will require such authorization, including construction dewatering and irrigation, unless the work qualifies for a general permit issued pursuant to Section 40E-20 FAC.

Potable Water Supplier:

The proposed project does not include the development of additional structures that would necessitate the providing of additional water utilities.

Waste Water System/Supplier:

The proposed project does not propose development that would necessitate revision of the waste water utilities presently serving the existing development within the Indian River Estates Development.

Right-Of-Way Permit Status:

A Right-of-Way Permit is not required for this project.

DRI Status:

This project is not a DRI.

Historical/Archeological Resources:

No information has been received that indicates the presence of archaeological or historical resources or that the proposed activities could cause adverse impacts to archaeological or historical resources.

DCA/CZM Consistency Review:

The District has not received a finding of inconsistency from the Florida Department of Community Affairs or other commenting agencies regarding the provisions of the federal Coastal Zone Management Plan.

Third Party Interest:

No third party has contacted the District with concerns about this application.

Enforcement:

There has been no enforcement activity associated with this application.

STAFF RECOMMENDATION:

The Staff recommends that the following be issued :

Construction and operation of a 151.55 acre water quality and flood protection retrofit surface water management system, known as Savannas Ecosystem Management Project, to serve an existing 1,273 acre residential development.

Based on the information provided, District rules have been adhered to.

Staff recommendation is for approval subject to the attached
General and Special Conditions.



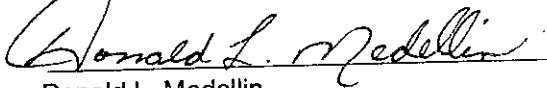
STAFF REVIEW:

NATURAL RESOURCE MANAGEMENT DIVISION APPROVAL

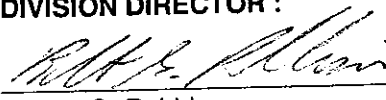
ENVIRONMENTAL EVALUATION


Edward Cronyn

SUPERVISOR


Donald L. Medellin

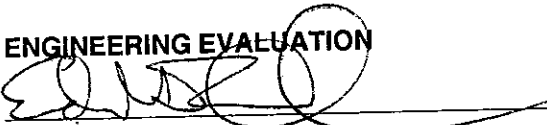
DIVISION DIRECTOR :


Robert G. Robbins

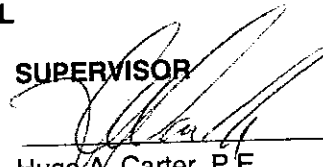
DATE: 4-24-03

SURFACE WATER MANAGEMENT DIVISION APPROVAL

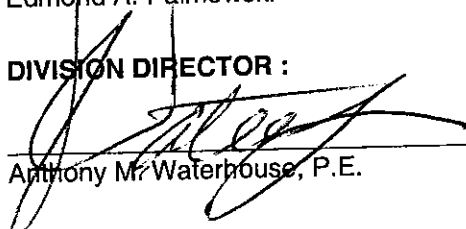
ENGINEERING EVALUATION


Edmond A. Palmowski

SUPERVISOR


Hugo A. Carter, P.E.

DIVISION DIRECTOR :


Anthony M. Waterhouse, P.E.

DATE: 4/25/03

SPECIAL CONDITIONS

1. The construction phase of this permit shall expire on May 15, 2008.
2. Operation of the surface water management system shall be the responsibility of ST LUCIE COUNTY.
3. Discharge Facilities:

Basin: Indian River Estates, Structure: BARTOWCS

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.
1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve
Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: BRADLEYCS1

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.
1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve
Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: BRADLEYCS2

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.
1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve
Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: EASYCS1

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.
1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve
Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: EASYCS2

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.
1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve
Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: HOWARDCS

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.
1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve
Control elev : 15.5 feet NGVD.

SPECIAL CONDITIONS

Basin: Indian River Estates, Structure: Pumps

1-6.7cfs with pump on at elev. 10.5' NGVD and with pump off at elev. 9.5' NGVD.

1-19.3cfs with pump on at elev. 14' NGVD and with pump off at elev. 11.5' NGVD.

1-19.3cfs with pump on at elev. 14.5' NGVD and with pump off at elev. 11.5' NGVD.

1-19.4cfs with pump on at elev. 15' NGVD and with pump off at elev. 11.5' NGVD.

Receiving body : Secondary Detention area

Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: SAVANNAHCS1

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.

1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve

Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: SAVANNAHCS2

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.

1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve

Control elev : 15.5 feet NGVD.

Basin: Indian River Estates, Structure: SCOTTCS

1-6.6' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.

1-19" W X 6" H V-NOTCH with invert at elev. 15.5' NGVD.

Receiving body : Savanna Preserve

Control elev : 15.5 feet NGVD.

Basin: Borrow Pits, Structure: CS1

1-6.1' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.

Receiving body : Savanna Preserve

Control elev : 13.8 feet NGVD.

Basin: Borrow Pits, Structure: CS2

1-6.1' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.

Receiving body : Savanna Preserve

Control elev : 13.8 feet NGVD.

Basin: Borrow Pits, Structure: CS3

SPECIAL CONDITIONS

1-6.1' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.

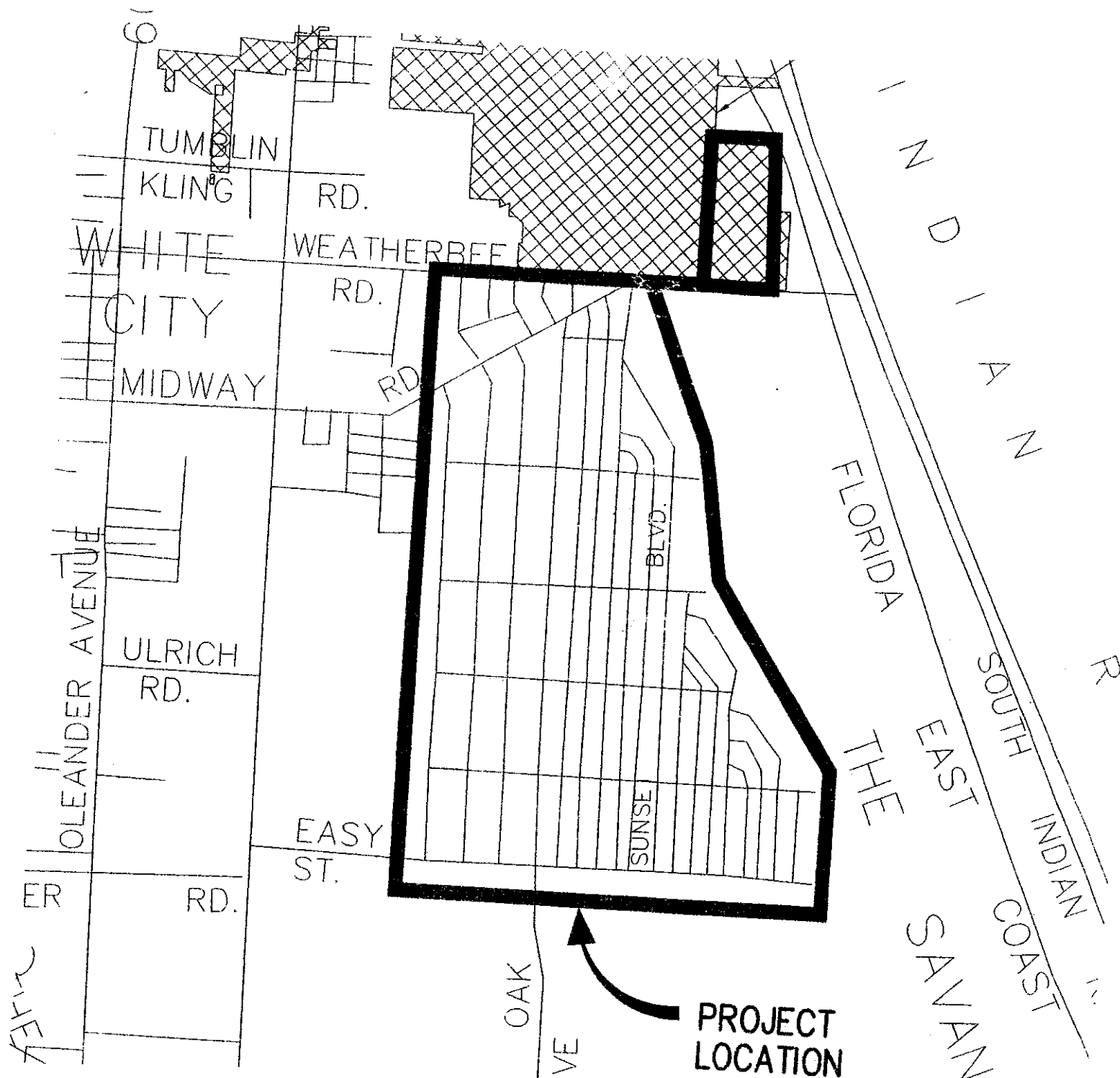
Receiving body : Savanna Preserve
Control elev : 13.8 feet NGVD.

Basin: Borrow Pits, Structure: CS4

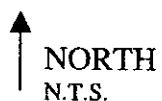
1-6.1' WIDE SHARP CRESTED weir with crest at elev. 16' NGVD.

Receiving body : Savanna Preserve
Control elev : 13.8 feet NGVD.

4. The permittee shall be responsible for the correction of any erosion, shoaling or water quality problems that result from the construction or operation of the surface water management system.
5. Measures shall be taken during construction to insure that sedimentation and/or turbidity violations do not occur in the receiving water.
6. The District reserves the right to require that additional water quality treatment methods be incorporated into the drainage system if such measures are shown to be necessary.
7. Lake side slopes shall be no steeper than 4:1 (horizontal:vertical) to a depth of two feet below the control elevation. Side slopes shall be nurtured or planted from 2 feet below to 1 foot above control elevation to insure vegetative growth, unless shown on the plans.
8. Facilities other than those stated herein shall not be constructed without an approved modification of this permit.
9. A stable, permanent and accessible elevation reference shall be established on or within one hundred (100) feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.
10. The permittee shall provide routine maintenance of all of the components of the surface water management system in order to remove all trapped sediments/debris. All materials shall be properly disposed of as required by law. Failure to properly maintain the system may result in adverse flooding conditions.
11. Silt screens, hay bales, turbidity screens/barriers or other such sediment control measures shall be utilized during construction. The selected sediment control measures shall be installed landward of the adjacent wetlands and other surface waters and shall be properly "trenched" etc, in accordance with Exhibits No. 2AP through 2AT. All areas shall be stabilized and vegetated immediately after construction to prevent erosion into the wetlands and other surface waters.
12. Prior to the commencement of construction, the permittee shall conduct a pre-construction meeting with field representatives, contractors and District staff. The purpose of the meeting will be to discuss construction methods and sequencing include all relevant resource/permitting issues - type and location of turbidity and erosion controls to be implemented during construction, mobilization and staging of contractor equipment, construction dewatering, wetland/buffer protection methods, endangered species protection - with the permittee and contractors. The permittee shall contact the District's Martin /St. Lucie Service Center to schedule the pre-construction meeting.
13. Reference is made to Exhibit No. 2 (Sheets 2A through 2AT), by Hazen and Sawyer, consisting of drainage plans and detail sheets. The drawings have been signed and sealed by Robert B. Taylor, P.E., of Hazen and Sawyer on June 6, 2002 and have been included in this permit by reference (please see permit file). Sheets 2V through 2AF, which include structure and pond details, are also attached to the permit.

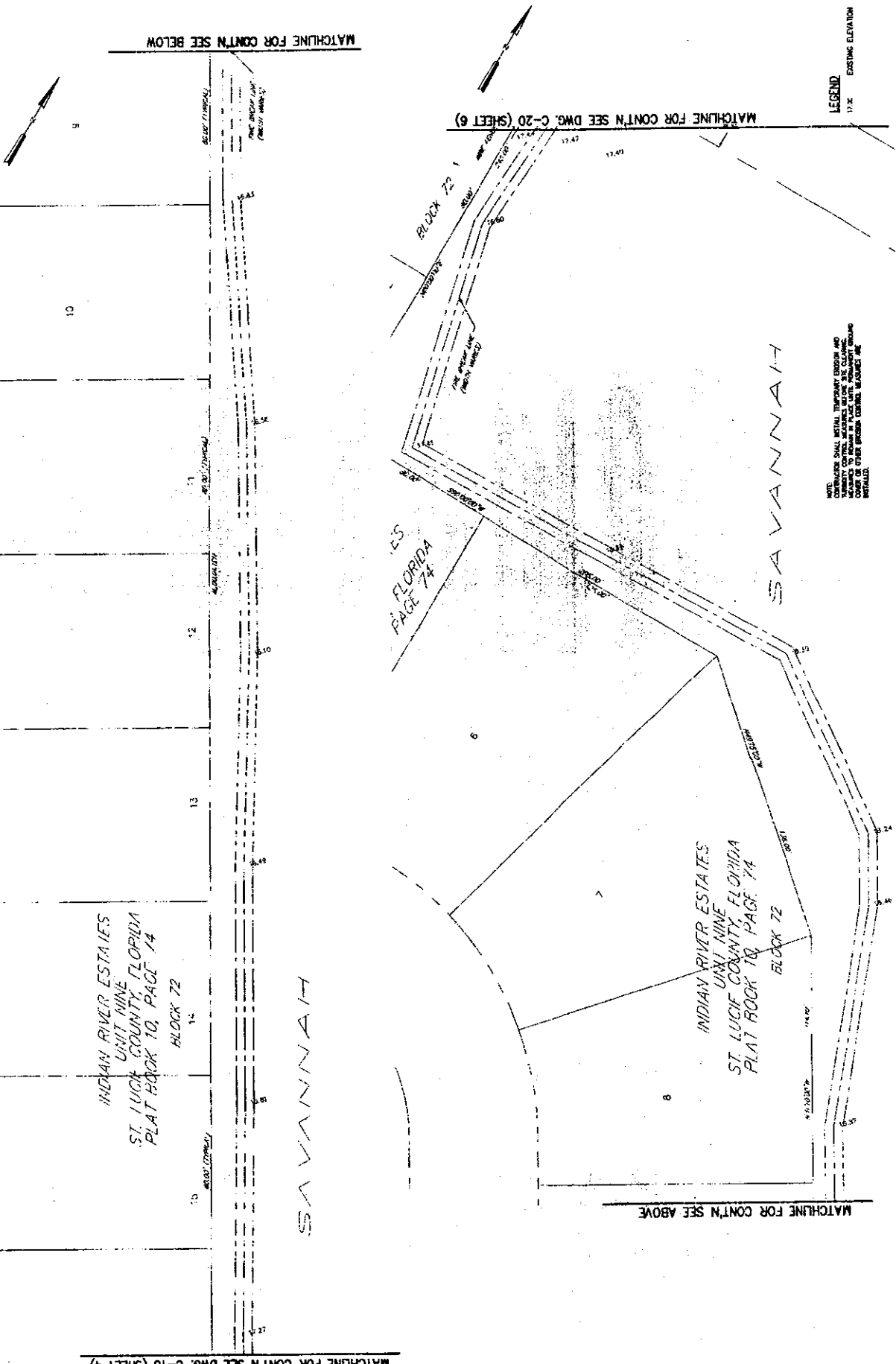


SAVANNAS ECOSYSTEM MANAGEMENT SYSTEM LOCATION MAP



Application 020610-12

Exhibit 1



MATCHLINE FOR CONT'N SEE DWG. C-18 (SHEET 4)

MATCHLINE FOR CONT'N SEE DWG. C-20 (SHEET 6)

LEGEND
17.32 EXISTING ELEVATION

NOTE: INSTALLER SHALL INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES BEFORE THE COMMENCEMENT OF CONSTRUCTION AND MAINTAIN THEM THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF THESE MEASURES.

MATCHLINE FOR CONT'N SEE ABOVE

APPLICATION 020610-12

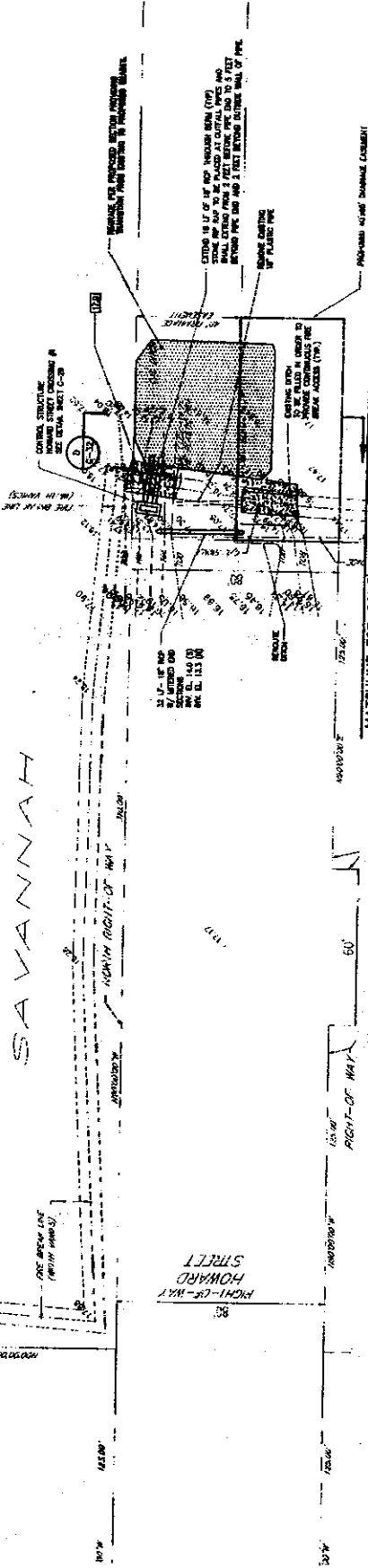
EXHIBIT 2V

DATE: MARCH 2002		SHEET: 23 OF 58		NAME: C-19	
PLAN FIRE BREAK - SHEET 5					
ST. LUCIE COUNTY		SAVANNAH ECOSYSTEM MANAGEMENT			
CONTRACT:	CLIENT PROJECT:	ENGINEER PROJECT:	DATE:	PROJECT:	OFFICE:
AS NOTED	7200 N. JAVELINE	7200 N. JAVELINE	4/1/02	4/1/02	4/1/02
HAZEN AND SAWYER Environmental Engineers & Scientists 200 West 1st Street, Suite 200 St. Lucie, FL 34956 (888) 444-4444					
APPROVED:		APPROVED:			
[Signature]		[Signature]			
PROJECT & DESIGN		PROJECT & DESIGN			
NO. 4480		NO. 4480			
DATE:	DATE:	DATE:	DATE:	DATE:	DATE:
1/23/2002	1/23/2002	1/23/2002	1/23/2002	1/23/2002	1/23/2002
BY:	BY:	BY:	BY:	BY:	BY:
BY:	BY:	BY:	BY:	BY:	BY:

MATCHLINE FOR CONT'N SEE BELOW

23

SAVANNAH



MATCHLINE FOR CONT'N SEE DWG. C-19 (SHEET 5)

MATCHLINE FOR CONT'N SEE DWG. C-21 (SHEET 7)

MATCHLINE FOR CONT'N SEE ABOVE

INDIAN RIVER ESTATES
UNIT SEVEN
ST. LUCIE COUNTY, FLORIDA
PLAT BOOK 10, PAGE 75

13

13

21

22

16

17

18

13

20

21

22

SAVANNAH

LEGEND

EXISTING ELEVATION
PROPOSED ELEVATION

NOTE:
CONTRACTOR SHALL VERIFY EXISTING ELEVATIONS AND
MEASUREMENTS TO BE SHOWN IN THIS PLAN. ANY DISCREPANCY
SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

DATE	BY	CHKD	APP'D	SCALE	CONTRACT	CLIENT PROJECT	DATE	NO. OF SHEETS	DATE
1/27/2009	SPR	SPR	SPR	1"=20'	SAVANNAH	SAVANNAH	4/18/20	1	1

HAZEN AND SAWYER

Environmental Engineers & Scientists

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West Palm Beach, FL 33411

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Fax: 561.833.1101

Web: www.hazenandawyer.com

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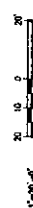
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LEGEND



MATCHLINE FOR CONT'N SEE ABOVE

INDIAN RIVER STATE'S
UNIV. SEVEN
ST. LUCIE COUNTY, FLORIDA
PLAT BOOK 10, PAGE 75

53-10749

SAVANNAH

1

APPLICATION 020610-12
EXHIBIT 2X

MATCHLINE FOR CONT'N SEE DWG. C-22 (SHEET 8)

INDIAN HIVER ESTATES
UNIT SEVEN
ST. LUCIE COUNTY, FLORIDA
PLAT BOOK 47, PAGE 75

11

12

13

14

15

16

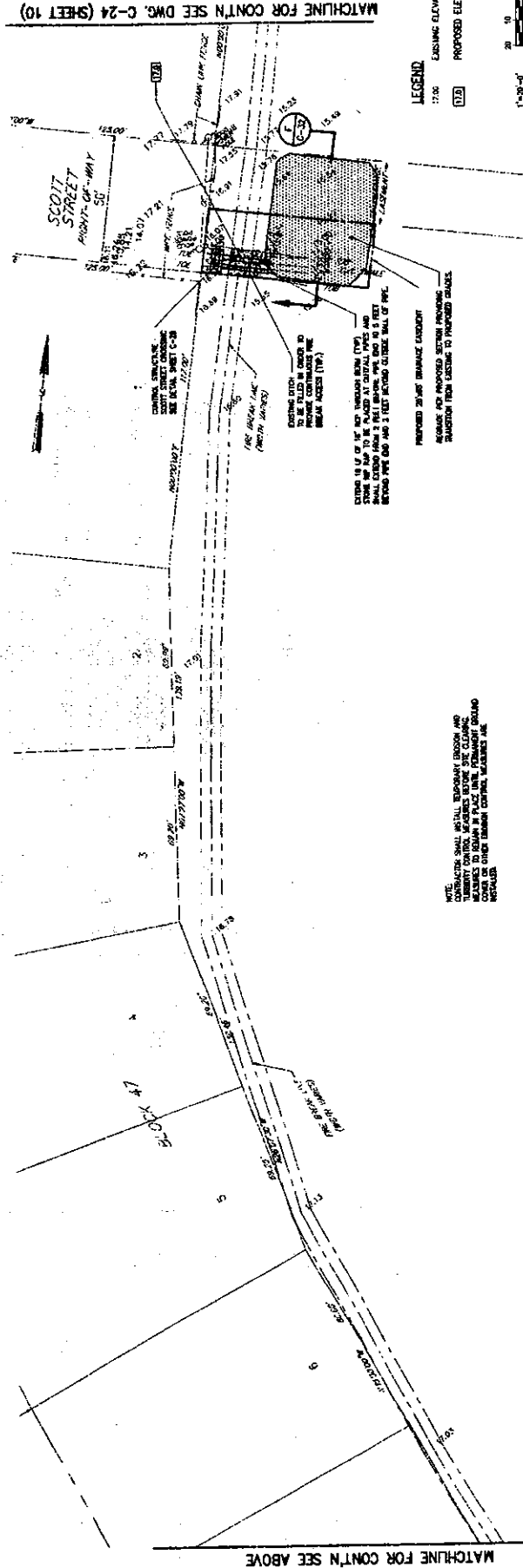
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18

19

20

SAVANNAH



MATCHLINE FOR CONT'N SEE DWG. C-24 (SHEET 10)

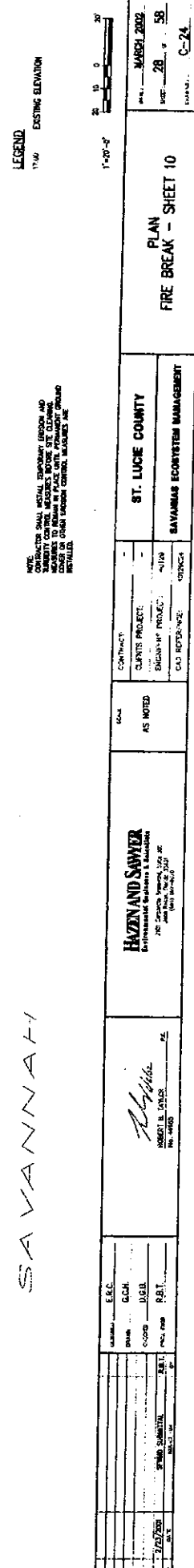
LEGEND
EXISTING ELEVATION
PROPOSED ELEVATION

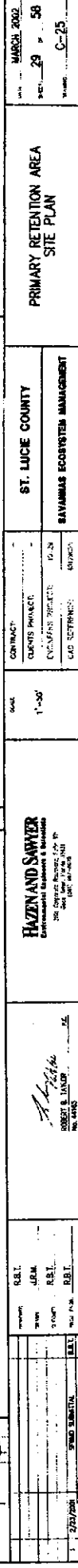
NOTE:
CONTRACTOR SHALL VERIFY EXISTING ELEVATIONS AND
ADJUST PROPOSED ELEVATIONS TO MATCH EXISTING
ELEVATIONS TO REMAIN IN PLACE. ELEVATIONS SHALL
BE BASED ON THE DATUM SHOWN ON THE PLAN.

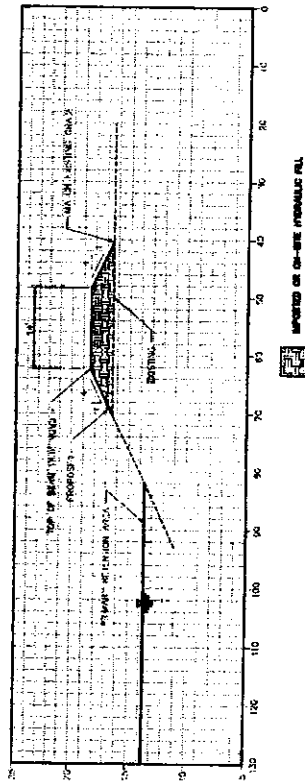
MATCHLINE FOR CONT'N SEE ABOVE

APPLICATION 020610-12
EXHIBIT 2Z

HAZEN AND SAWYER Environmental Engineers & Scientists 1000 Corporate Center Suite 200 St. Lucie, FL 34956 (888) 744-2626		CONTRACT CLIENTS PROJECT EXISTING PROJECT TOTAL IN LICENSE 4015 40152	ST. LUCIE COUNTY SAVANNAH ECOSYSTEM MANAGEMENT	PLAN FIRE BREAK - SHEET 9	MARCH 2002 27 58 C-23
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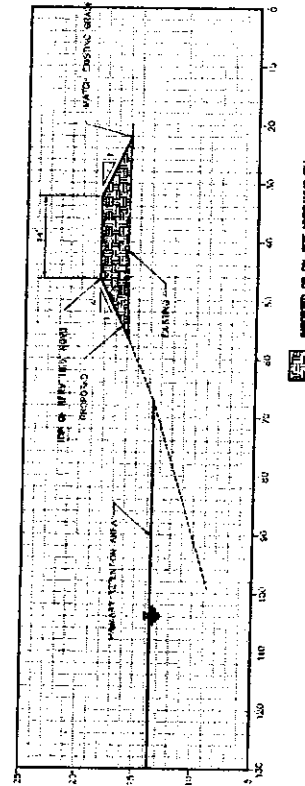






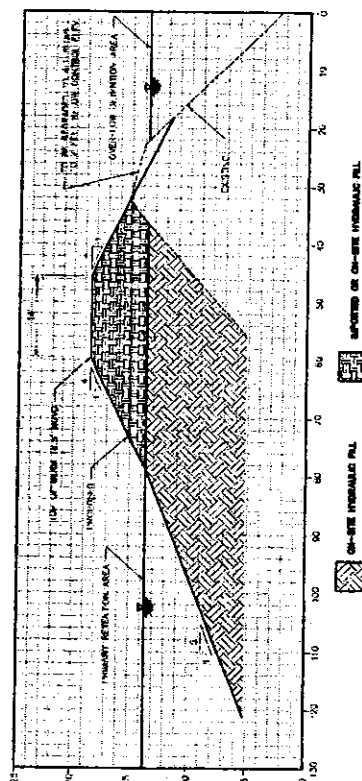
PRIMARY RETENTION AREA
SECTION A

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"



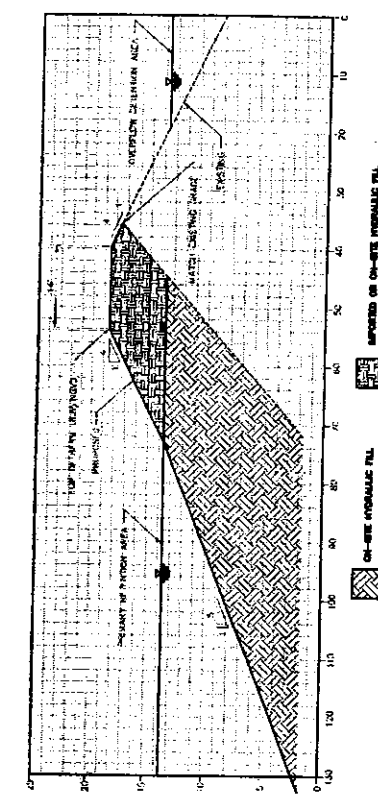
PRIMARY RETENTION AREA
SECTION B

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"



PRIMARY RETENTION AREA
SECTION C

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"



PRIMARY RETENTION AREA
SECTION D

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"

ACQUISITION SUBMITTAL

DECEMBER

020610-12

LEGEND

EXISTING PROFILE

PROPOSED PROFILE

PROJECT PROFILE

DATE: MARCH 2002

30 58

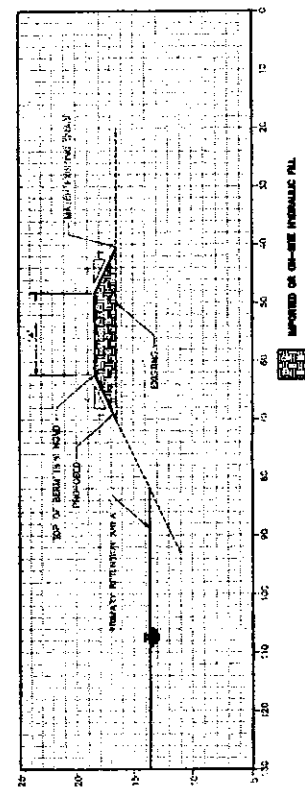
C-26

ST. LUCIE COUNTY	SAVANNAH ECOSYSTEM MANAGEMENT
PROJECT NO. 020610-12	PROJECT NAME SAVANNAH ECOSYSTEM MANAGEMENT
PROJECT LOCATION 107%	PROJECT LOCATION 107%
PROJECT LOCATION 107%	PROJECT LOCATION 107%

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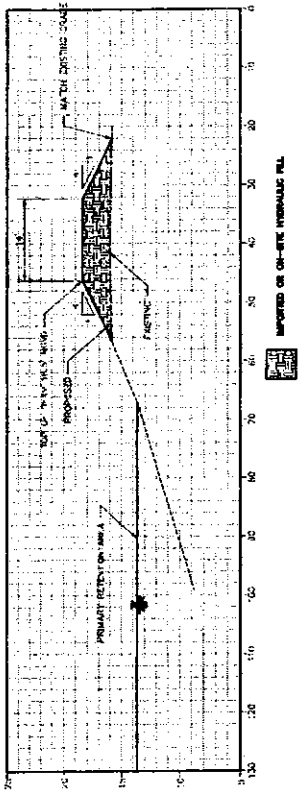
[Signature]
PROJECT ENGINEER
DATE: 03/01/02

REVISION	DATE	BY	APP'D	REV
1	03/01/02	SPM	SPM	1



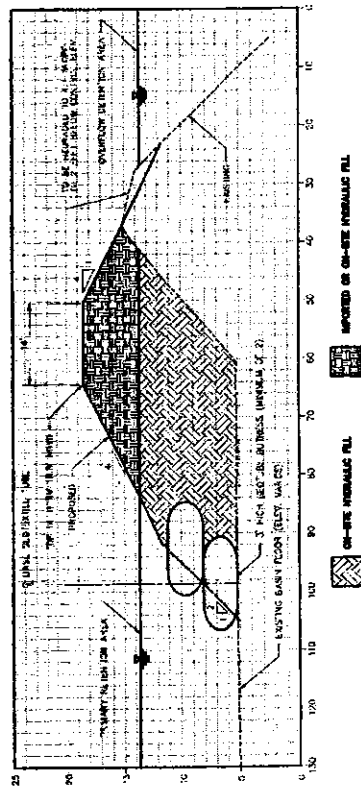
PRIMARY RETENTION AREA SECTION A

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"



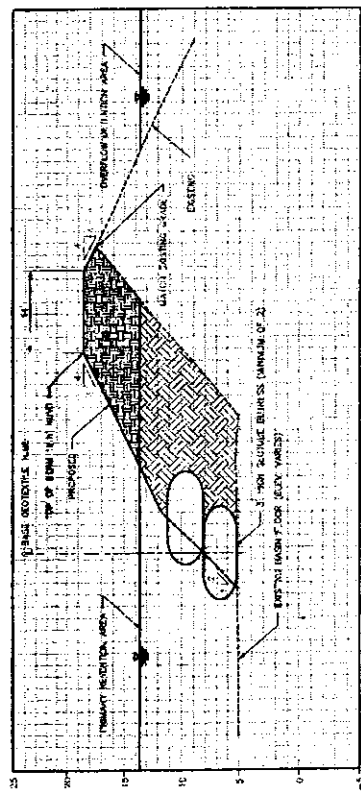
PRIMARY RETENTION AREA SECTION B

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"



PRIMARY RETENTION AREA SECTION C

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"



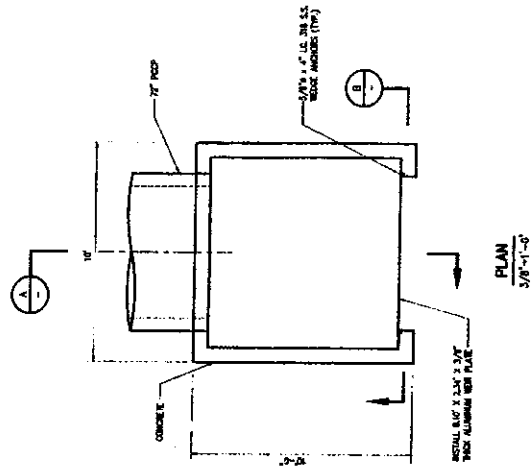
PRIMARY RETENTION AREA SECTION D

HORIZONTAL SCALE 1" = 10'-0" VERTICAL SCALE 1" = 5'-0"

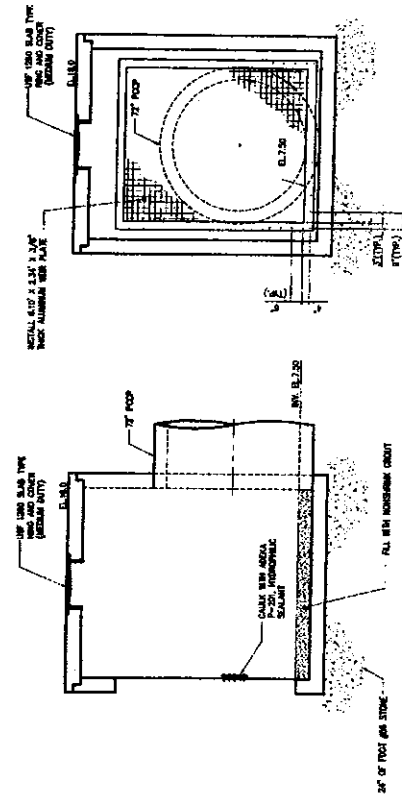
- NOTES:
- CONTRACTOR TO INSTALL NUMBER OF EXISTING TIES (MINIMUM OF 2) NEEDED TO CONSTRUCT EXISTING STRUCTURE. EXISTING TIES SHALL BE INSTALLED IN EXISTING CONSTRUCTION SHALL ADAPT PLAN OF CONSTRUCTION AS AVAILABLE IN EXISTING RECORDS OF INFORMATION.
 - NO DISPOSE OR DISCHARGE OF EXCESS MATERIALS SHALL BE CONDUCTED WITHIN 50 FEET OF BASE EXISTING ROAD.

LEGEND
EXISTING PROFILE
PROPOSED PROFILE

DATE: AS NOTED		CONTRACTOR: ENGINEER: CHECKED: DATE:		ST. LUCIE COUNTY SAVANNAH ECOSYSTEM MANAGEMENT		PRIMARY RETENTION AREA CROSS SECTIONS ALTERNATIVE 2		DATE: MARCH 2002 DRAWN: 31 CHECKED: 56 DATE: 0-27
HAZEN AND SAWYER ENVIRONMENTAL ENGINEERS & ARCHITECTS 1000 N. W. 10th Avenue, Suite 100 Fort Lauderdale, FL 33304		PROJECT: SHEET: OF:		PROJECT: SHEET: OF:		PROJECT: SHEET: OF:		PROJECT: SHEET: OF:



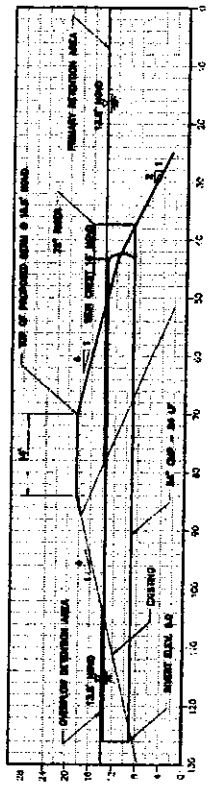
PLAN
3/8"-1'-0"



SECTION B
3/8"-1'-0"

SECTION A
3/8"-1'-0"

PROPOSED FORCE MAIN DISCHARGE STRUCTURE
(TO PRIMARY RETENTION AREA)
N.T.S.



CROSS SECTION OF BERM DETAIL
1'-10"

DATE: MARCH 2002 PAGE: 32 OF 58 PROJECT: C-28	ST. LUCIE COUNTY SAVANNAH ECOSYSTEM MANAGEMENT	CONTRACT: CIVIL PROJECT ENGINEERS PROJECT: 40129 CIVIL ENGINEER: 4070021	HAZEN AND SAWYER Environmental Engineers & Scientists 2000 N. W. 10th Ave., Suite 200 Fort Lauderdale, FL 33304	 ROBERT B. SAWYER P.E. 44165	REVIEWED: R.B.T. DESIGNED: J.R.M. CHECKED: J.R.M. 0.03 0.03 0.03 0.03	1. 2/21/02 2. 3/21/02 3. 3/21/02 4. 3/21/02
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Application No: 020610-12

Permit No: 56-01710-P

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Bureau of Protected Species Mgmt
- X Savannas Preserve State Park - Dan Griffin
- X St. Lucie County Community Development Director
- X St. Lucie County Engineer
- X St. Lucie County Environmental Resource Manager

OTHER INTERESTED PARTIES

- X Sierra Club - Central Florida Group
- X Water Management Institute - Michael N. Vanatta