



CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

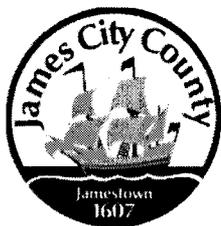
BMP NUMBER: JR041

DATE VERIFIED: June 21, 2012

QUALITY ASSURANCE TECHNICIAN: Leah Hardenbergh

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA



Stormwater Division

MEMORANDUM

DATE: March 11, 2010
TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services
FROM: Jo Anna Ripley, Stormwater
PO: 270712
RE: Files Approved for Scanning

General File ID or BMP ID: JR041

PIN: 4321400001B

Subdivision, Tract, Business or Owner

Name (if known):

Governors Land

Property Description:

Open Space Cypress Isle

Site Address:

1823 Cypress Isle

(For internal use only)

Box 16

Drawer: 7

Agreements: (in file as of scan date)

Y

Book or Doc#:

980024435

Page:

501

498-501

Comments

JR-041

Contents for Stormwater Management Facilities As-built Files

Each file is to contain:

- ① As-built plan
- ② Completed construction certification
- ③ Construction Plan
- ④ Design Calculations
5. Watershed Map
- ⑥ Maintenance Agreement
7. Correspondence with owners
- ⑧ Inspection Records
9. Enforcement Actions

980024435

DECLARATION OF COVENANTS

INSPECTION/MAINTENANCE OF DRAINAGE SYSTEM

THIS DECLARATION, made this 9th day of December, 1998, between Governor's Land Assoc., and all successors in interest, hereinafter referred to as the "COVENANTOR(S)," owner(s) of the following property: Cypress Isle Sub - division being part of the Governor's Land Development, recorded in _____, Deed Book 501, Page No. 498-501 or Instrument No. _____, and James City County, Virginia, hereinafter referred to as the "COUNTY."

WITNESSETH:

We, the COVENANTOR(S), with full authority to execute deeds, mortgages, other covenants, and all rights, titles and interests in the property described above, do hereby covenant with the COUNTY as follows:

1. The COVENANTOR(S) shall provide maintenance for the drainage system including any runoff control facilities, conveyance systems and associated easements, hereinafter referred to as the "SYSTEM," located on and serving the above-described property to ensure that the SYSTEM is and remains in proper working condition in accordance with approved design standards, and with the law and applicable executive regulations. The SYSTEM shall not include any elements located within any Virginia Department of Transportation rights-of-way.
2. If necessary, the COVENANTOR(S) shall levy regular or special assessments against all present or subsequent owners of property served by the SYSTEM to ensure that the SYSTEM is properly maintained.
3. The COVENANTOR(S) shall provide and maintain perpetual access from public right-of-ways to the SYSTEM for the COUNTY, its agent and its contractor.
4. The COVENANTOR(S) shall grant the COUNTY, its agent and its contractor a right of entry to the SYSTEM for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the SYSTEM.
5. If, after reasonable notice by the COUNTY, the COVENANTOR(S) shall fail to maintain the SYSTEM in accordance with the approved design standards and with the law and applicable executive regulations, the COUNTY may perform all necessary repair or maintenance work, and the COUNTY may assess the COVENANTOR(S) and/or all property served by the SYSTEM for the cost of the work and any applicable penalties.
6. The COVENANTOR(S) shall indemnify and save the COUNTY harmless from any and all claims for damages to persons or property arising from the installation, construction, maintenance, repair, operation or use of the SYSTEM.
7. The COVENANTOR(s) shall promptly notify the COUNTY when the COVENANTOR(S) legally transfers any of the COVENANTOR(S)' responsibilities for the SYSTEM. The COVENANTOR(S)' shall supply the COUNTY with a copy of any document of transfer, executed by both parties.
8. The covenants contained herein shall run with the land and shall bind the COVENANTOR(S) and the COVENANTOR(S)' heirs, executors, administrators, successors and assignees, and shall bind all present and subsequent owners of property served by the SYSTEM.
9. This COVENANT shall be recorded in the County Land Records.

DEC 16 1998 02:47

IN WITNESS WHEREOF, the COVENANTOR(S) have executed this DECLARATION OF COVENANTS as of this 9th day of December, 1998.

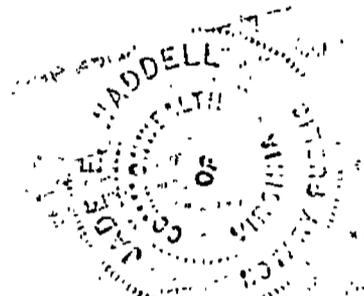
COVENANTOR(S)
Governor's Land Associates
[Signature]
William Allen Ball

ATTEST:

[Signature]

COVENANTOR(S)

ATTEST:



COMMONWEALTH OF VIRGINIA
CITY/COUNTY OF James City

I hereby certify that on this 9 day of December, 1998, before the subscribed, a Notary Public of the State of Virginia, and for the County of James City, aforesaid personally appeared William Allen Ball and did acknowledge the foregoing instrument to be their Act.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal this 9 day of December, 1998.

Jack E. Woodhill
Notary Public

My Commission expires: December 31, 2000

Approved as to form:

[Signature]

DEC 16 02 48

Virginia, City of Williamsburg and County of James City, to Wit:
in the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City the 9th day of December, 1998. This Declaration was presented with certificate annexed and admitted to record at 1:15 o'clock
Teste: Helene S. Ward, Clerk
by [Signature]
Deputy Clerk

This Declaration of Covenants prepared by:

Raymond E. Keeney
(Print Name)

V. P.
(Title)

2700 Two Rivers Rd
(Address)

Williamsburg, Va 23185
(City) (State) (Zip)

Construction Certification for Stormwater Management/BMP Facilities

Governors Land BMP Facility #9 (Cypress Isle)
James City County, Virginia

Prepared By:

Robert C. Moss, PE
Earthworks Consulting Engineers, Inc.
4305 Cutshaw Ave.
Richmond, Virginia 23230
Phone: (804) 355-4567
Fax: (804) 355-5958

Prepared For:

James H. Bennett, PE
Governor's Land Associates
120 Tredegar Street
Richmond, Virginia 23219
Phone: (804) 819-2352
Fax: (804) 819-2209

I certify to the best of my knowledge and belief that the earthen embankment for this Stormwater Management/BMP facility was constructed in general accordance with the provisions of the approved design plan, specifications, and stormwater management plan, except as specifically noted.

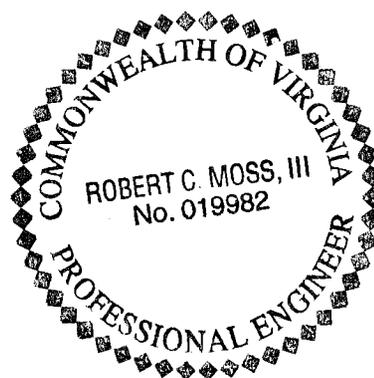
This certification pertains to the stability and content of the facility's earthen embankment, whose construction was not monitored but was later investigated by an engineer utilizing handauger borings.

No exceptions made.

By:



Robert C. Moss, PE
Earthworks Consulting Engineers, Inc.



Dated: 3/28/03

James City County, Virginia
Environmental Division

Stormwater Management/BMP Facilities
Record Drawing/Construction Certification
Review Tracking Form

LOCATION: NEAR (NORTH OF)
1832 CYPRESS ISLE
LOT 15.

County Plan No.: S-79-98
Project Name: GOVERNORS LAND - CYPRESS ISLE
Stormwater Management Facility: DRY POND w/ SHALLOW MARSH

Phase: I II III
 Information Received. Date: 12/25/01 AES
 Administrative Check. Date: 10/28/01 AES No sign/seal
 Record Drawing. Date: 10/28/01 AES No sign/seal
 Construction Certification. Date: _____
 RD/CC Standard Forms (Required after Feb 1st 2001 Only)
 Insp/Maint Agreement. Info: #980024435 P. 247 REC. 12-16-98
 BMP Maintenance Plan. Location: None.
 Other: _____

Standard E&SC Note on Approved Plan Requiring RD/CC or County comment in plan review file.
 Yes No Location: AB+CC

Assign County BMP ID Code Code: JR 041

Log into Division's "As-Built" Tracking Log

Add Location to GIS Database Map. Obtain GIS site information (GPIN, Owner, Site Area, Address, etc.)

Preliminary Log into BMP Database (BMP ID #, Site Plan #, GPIN, Project Name)

Active Project File Review (correspondence, H&H, etc.).

Initial As-Built File setup (label, copy hydraulics, BMP information, etc.).

Inspector Check of RD/CC. JB

Pre-Inspection Drawing Review - Approved Plan (Quick look prior to field inspection).

Final Inspection (FI) Performed Date: 2/5/03 R.H.

Record Drawing (RD) Review Date: 1/8/03 R.H.

Construction Certification (CC) Review Date: _____

Actions:

No comments.

Comments. Letter Forwarded. Date: 2/18/03 SJT

Record Drawing (RD)

Construction Certification (CC)

Construction-Related (CR)

Site Issues (SI)

Other: 1/25/03 AES (RD)

Second Submission: _____

Third Submission: _____

Acceptable for stormwater management facility purposes (RD/CC/CR/Other). Proceed with bond release.

Notify Darryl/Joan/Pat of acceptability using email (preferred), form or verbal.

Check/Clean active file of any remaining material and finish "As-Built" file.

Add to County BMP Inventory/Inspection schedule (Phase I, II or III).

Copy Final Inspection Report into County BMP Inspection Program file.

Digital Photographs obtained.

Add to JCC Hydrology & Hydraulic database (optional).

BMP Certification Information Acceptable

Plan Reviewer: [Signature]

Date: 6/26/03

Con 1/1/99

owner: Governors Land Found
2700 Two Rivers Road
w m by 23185
R4



James City County, Virginia
Environmental Division

Stormwater Management / BMP Facilities
Record Drawing and Construction Certification Forms

(Note: In accordance with the requirements of the Chesapeake Bay Preservation Ordinance, Chapter 23, Section 23-10(4), BMP's shall be designed and constructed in accordance with the manual entitled James City County Guidelines for Design and Construction of Stormwater Management BMP's. Erosion and sediment control policy and approved plans generally require that at the completion of the project and prior to release of surety, an "as-built" plan prepared by a registered Professional Engineer or Certified Land Surveyor must be provided for the drainage system for the project, including any Best Management Practice (BMP) facilities. In addition, for BMP facilities involving the construction of an impounding structure or dam embankment, certification is required by a Professional Engineer who has inspected the structure during its construction. Currently there are over 20 water quality type BMP's accepted by the County.)

Section 1 - Site Information:

Project Name: GOVERNOR'S LAND CYPRESS ISLE
Structure/BMP Name: STORMWATER MANAGEMENT POND
Project Location: GOVERNOR'S LAND AT TWO RIVERS (SW END, ON ISLAND)
BMP Location: EAST END OF CYPRESS ISLE (ROADWAY)
County Plan No.: 5 - 79 - 98

Project Type: Residential Business Commercial Office Institutional Industrial Public Roadway Other
Tax Map/Parcel No.: (43-2) (14 - 0 - 0016)
BMP ID Code (if known): JR041
Zoning District: INDUSTRIAL
Land Use: RESIDENTIAL / OPEN SPACE
Site Area (sf or acres): 3.45 AC

Brief Description of Stormwater Management/BMP Facility: SHALLOW
EXTENDED DETENTION DRY POND WITH MARSH AUGMENTATION

Nearest Visible Landmark to SWM/BMP Facility: EASTERN CUL-DE-SAC OF CYPRESS ISLE (ROADWAY)

Nearest Vertical Ground Control (if known):
 ICC Geodetic Ground Control USGS Temporary Arbitrary Other
Station Number or Name: 348
Datum or Reference Elevation: NGVD 1929
Control Description:
Control Location from Subject Facility: 6000' N NORTH OF SITE

Section 2 - Stormwater Management / BMP Facility Construction Information:

PreConstruction Meeting Held for Construction of SWM/BMP Facility: Yes No Unknown
Approx. Construction Start Date for SWM/BMP Facility: Winter 1998
Facility Monitored by County Representative during Construction: Yes No Unknown
Name of Site Work Contractor Who Constructed Facility: C. A. BARNES
Name of Professional Firm Who Routinely Monitored Construction: UNKNOWN
Date of Completion for SWM/BMP Facility: UNKNOWN
Date of Record Drawing/Construction Certification Submittal: 10/29/01

(Note: Record Drawing and Construction Certifications are required within thirty (30) days of the completion of Stormwater Management and/or BMP facility construction. Record Drawings and Construction Certifications must be reviewed and approved by the James City County Environmental Division prior to final inspection, acceptance and bond or surety release.)

Section 3 - Owner / Designer / Contractor Information:

Owner/Developer: *(Note: Site Owner or Applicant responsible for development of the project.)*
Name: GOVERNOR'S LAND ASSOCIATES % STONEHOUSE DEV. COMPANY
Mailing Address: 9701 Mill Pond Road
TOANO, VIRGINIA
Business Phone: 234-5000 Fax: 234-5111
Contact Person: MR. JAMES H. BENNETT Title: VICE PRESIDENT - DEVELOPMENT

Design Professional: *(Note: Professional Engineer or Certified Land Surveyor responsible for the design and preparation of plans and specifications for the Stormwater Management / BMP facility.)*
Firm Name: AES CONSULTING ENGINEERS
Mailing Address: 5240 OLDE TOWNE ROAD, SUITE 1
WILLIAMSBURG, VIRGINIA 23188
Business Phone: 253-0040
Fax: 220-8994
Responsible Plan Preparer: J. MARC BENNETT
Title: SENIOR PROJECT MANAGER
Plan Name: CYPRESS ISLE
Firm's Project No. 773-4-2
Plan Date: 8/98
Sheet No.'s Applicable to SWM/BMP Facility: 5 | 6 | 1 | 1 | 1

BMP Contractor: *(Note: Site Work Contractor directly responsible for construction of the Stormwater Management / BMP facility.)*
Name: C. A. BARNES CONTRACTOR INC.
Mailing Address: P.O. Box 1489
YORKTOWN VIRGINIA 23692
Business Phone: 757-898-7282
Fax: 757-898-1282
Contact Person: ST SCOTT ST. CLAIR
Site Foreman/Supervisor: UNKNOWN
Specialty Subcontractors & Purpose (for BMP Construction Only): _____

Section 4 - Professional Certifications:

Certifying Professionals: (Note: A Registered Professional Engineer or Certified Land Surveyor is responsible for preparation of a Record Drawing, sometimes referred to as an As-Built plan, for the drainage system for the project including any Stormwater Management/BMP Facilities. A Registered Professional Engineer is responsible for the inspection, monitoring and certification of Stormwater Management / BMP facilities during its construction.)

Record Drawing and Construction Certifications for Stormwater Management / BMP Facilities

Record Drawing Certification

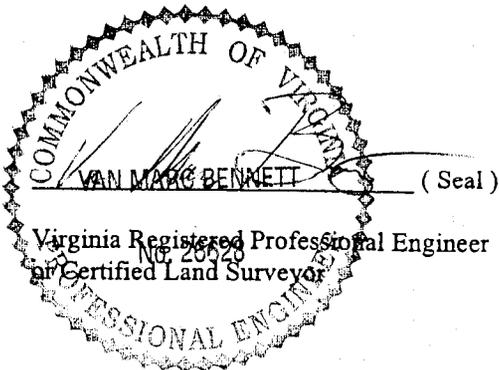
Firm Name: AES CONSULTING ENGINEERS
 Mailing Address: 5248 OLDF TOWNE ROAD, Suite 704
Williamsburg, Virginia 23192
 Business Phone: 253-0040
 Fax: 220-3994
 Name: V. MARC BENNETT
 Title: SENIOR PROJECT MANAGER
 Signature: V. Marc Bennett
 Date: 10/28/01

Construction Certification

Firm Name: _____
 Mailing Address: _____
 Business Phone: _____
 Fax: _____
 Name: _____
 Title: _____
 Signature: _____
 Date: _____

I hereby certify to the best of my knowledge and belief that this record drawing represents the actual condition of the Stormwater Management / BMP facility. The facility appears to conform with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.

I hereby certify to the best of my knowledge and belief that this Stormwater Management/BMP facility was monitored and constructed in accordance with the provisions of the approved design plan, specifications and stormwater management plan, except as specifically noted.



 (Seal)
 Virginia Registered Professional Engineer

Section 5 - Record Drawing and Construction Certification Requirements and Instructions:

- PreConstruction Meeting - Provides an opportunity to review SWM / BMP facility construction, maintenance and operation plans and address any questions regarding construction and/or monitoring of the structure. The design engineer, certifying professionals (if different), Owner/Applicant, Contractor and County representative(s) are encouraged to attend the preconstruction meeting. Advanced notice to the Environmental Division is requested. Usually, this requirement can be met simultaneously with Erosion and Sediment Control preconstruction meetings held for the project.
- A fully completed ***STORMWATER MANAGEMENT / BMP FACILITIES, RECORD DRAWING and CONSTRUCTION CERTIFICATION FORM*** and ***RECORD DRAWING CHECKLIST***. All applicable sections shall be completed in their entirety and certification statements signed and sealed by the registered professional responsible for individual record drawing and/or construction certification.
- The Record Drawing shall be prepared by a Registered Professional Engineer or Certified Land Surveyor for the drainage system of the project including any Best Management Practices.
- Construction Certification. Construction of Stormwater Management / BMP facilities which contain impoundments, embankments and related engineered appurtenances including subgrade preparation, compacted soils, structural fills, liners, geosynthetics, filters, seepage controls, cutoffs, toe drains, hydraulic flow control structures, etc. shall be visually observed and monitored by a Registered Professional Engineer or his/her authorized representative. The Engineer must certify that the structure, embankment and associated appurtenances were built in accordance with the approved design plan, specifications and stormwater management plan and standard accepted construction practice and shall submit a written certification and/or drawings to the Environmental Division as required. Soil and compaction test reports, concrete test reports, inspection reports, logs and other required construction material or installation documentation may be required by the Environmental Division to substantiate the certification, if specifically requested. The Engineer shall have the authority and responsibility to make minor changes to the approved plan, in coordination with the assigned County inspector, in order to compensate for unsafe or unusual conditions encountered during construction such as those related to bedrock, soils, groundwater, topography, etc. as long as changes do not adversely affect the integrity of the structure(s). Major changes to the approved design plan or structure must be reviewed and approved by the original design professional and the James City County Environmental Division.
- Record Drawing and Construction Certifications are required within **thirty (30) days** of the completion of Stormwater Management / BMP facility construction. Submittals must be reviewed and accepted by James City County Environmental Division prior to final inspection, acceptance and bond/surety release.

Dual Purpose Facilities - Completion of construction also includes an interim stage for Stormwater Management / BMP facilities which serve dual purpose as temporary sediment basins during construction and as permanent stormwater management / BMP facilities following construction, once development and stabilization are substantially complete. For these dual purpose facilities, construction certification is required once the temporary sediment basin phase of construction is complete. Final record drawing and construction certification of additional permanent components is required once permanent facility construction is complete.

Interim Construction Certification is required for those dual purpose embankment-type facilities that are generally ten (10) feet or greater in dam height (*) and may not be converted, modified or begin function as a permanent SWM / BMP structure for a period generally ranging from six (6) to eighteen (18) months or more from issuance of a Land Disturbance permit for construction.

Interim or final record drawing and construction certifications are not required for temporary sediment basins which are designed and constructed in accordance with current minimum standards and specifications for temporary sediment basins per the Virginia Erosion and Sediment Control Handbook (VESCH); have a temporary service life of less than eighteen (18) months; and will be removed completely once associated disturbed areas are stabilized, unless a distinct hazard to the public's health, safety and welfare is determined by the Environmental Division due to the size or presence of the structure or due to evidence of improper construction.

(*Note: Dam Height as referenced above is generally defined as the vertical distance from the natural bed of the stream or waterway at the downstream toe of the embankment to the top of the embankment structure in accordance with 4VAC50-20-30, Virginia Impoundment Structure Regulations and the Virginia Dam Safety Program.)

Record Drawings shall provide, at a minimum, all information as shown within these requirements and the attached **RECORD DRAWING CHECKLIST** specific to the type of SWM/BMP facility being constructed. Other additional record data may be formally requested by the James City County Environmental Division. (*Note: Refer to the current edition of the James City County Guidelines for Design and Construction of Stormwater Management BMP's manual for a complete list of acceptable BMP's. Currently there are over 20 acceptable water quality type BMP's accepted by the County.*)

Record Drawings shall consist of blue/black line prints and a reproducible (mylar, sepia, diazo, etc.) set of the approved stormwater management plan including applicable plan views, profiles, sections, details, maintenance plans, etc. as related to the subject SWM / BMP facility. The set shall indicate "**RECORD DRAWING**" in large text in the lower right hand corner of each sheet with record elevations, dimensions and data drawn in a clearly annotated format and/or boxed beside design values. Approved design plan values, dimensions and data shall not be removed or erased. Drawing sheet revision blocks shall be modified as required to indicate record drawing status. Elevations to the nearest 0.1' are sufficiently accurate except where higher accuracy is needed to show positive drainage. Certification statements as shown in Section 4 of the Record Drawing and Construction Certification Form, *or similar forms thereof*, and professional signatures and seals, with dates matching that of the record drawing status in the revision or title block, are also required on all associated record drawing plans, prints or reproducible.

Submission Requirements. Initial and subsequent submissions for review shall consist of a minimum of one (1) blue/black line set for record drawings and one copy of the construction certification documents with appropriate transmittal. Under certain circumstances, it is understood that the record drawing and construction certification submissions may be performed by different professional firms. Therefore, record drawing submission may be in advance of construction certification or vice versa. Upon approval and prior to release of bond/surety, final submission shall include one (1) reproducible set of the record drawings, one (1) blue/black line set of the record drawings and one (1) copy of the construction certification. Also for current and/or future incorporation into the County BMP database and GIS system, it is requested that the record drawings also be submitted to the Environmental Division on a diskette or CD-ROM in an acceptable electronic file format such as *.dxf, *.dwg, etc. or in a standard scanned and readable format. The electronic file requirement can be discussed and coordinated with Environmental Division staff at the time of final submission.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

I. Methods and Presentation: (Required for all Stormwater Management / BMP facilities.)

- XX 1. All constructed facilities meet approved design plans, unless otherwise shown. Record information or deviations from approved design plan shown in clearly annotated format and/or boxed beside design values.
- XX 2. Elevations to the nearest 0.1' unless higher accuracy is needed to show positive drainage.
- XX 3. All plan sheets labeled with "RECORD DRAWING" in large text in lower right hand corner (Approved County Plan Number and BMP ID Code can be included if known).
- XX 4. All plan sheet revision blocks modified to indicate date and record drawing status.
- XX 5. All plan sheets have certification statements and certifying professional's signature and seal.

II. Minimum Standards: (Required for all Stormwater Management / BMP facilities, as applicable.)

- XX 1. All requirements of Section I (Methods and Presentation) apply to this section.
- XX 2. Plan Views: Show general location, arrangement and dimensions. Location and alignment shall generally match approved design plans.
- XX 3. Profile or elevations along top or berm of the facility. At a minimum, elevations are required at each end, at intervals not to exceed 50 feet and where low spots may be present. Top of embankment or berm elevations must be no less than design elevation plus any settlement allowances.
- N/A 4. Top widths, berm widths and embankment side slopes.
- XX 5. Show length, width and depth of facility or grading, contours or spot elevations as required to verify permanent pool and design storage volumes were met or were reasonably close to the approved design. Evaluation of as-built grading, contours, spot elevations, or cross-sections, may be necessary by the professional to ensure approved design configurations, depths and volumes were closely maintained. If grading or elevations are significantly different from the approved plan, the Environmental Division shall be contacted immediately to determine whether the variation is acceptable or whether further evidence will be required. Facilities which do not closely resemble approved plan grades, elevations or configurations may require regrading by the Contractor; check volumetric computations; and/or a check hydraulic routing to ensure approved design water surface elevations, discharges or freeboard were closely maintained.
- N/A 6. Cross-section of the embankment through the principal spillway or outlet barrel. Must extend at least 100 ft. downstream of the pipe outlet or to recorded site property line, whichever is closer. Proper correlation is required between principal spillway (control structure) crest, emergency spillway crest, orifice and weirs and the top of the dam or facility. All elevations and dimensions must reasonably match the design plan or be sequentially relative to each other and the facility must reflect the required design storage volume(s) and/or design depth. NO REAL EMBANKMENT
MAINTAINED EXCAVATED BMP
- N/A 7. Profile or elevations along the entire centerline of the emergency spillway. Emergency spillway may be steeper, but no flatter or narrower than design.
- XX 8. Elevation of the principal spillway crest or outlet crest of the structure.

- XY 9. Primary control structure (riser) diameter or dimensions, height, type of material and base size. Indicate provisions for access that are present such as steps, ladders, etc.
- XY 10. Dimensions, locations and elevations of outlet orifices, weirs, slots and drains.
- N/A 11. Type and size of anti-vortex and trash rack device. Height, diameter, dimensions, bar spacings (if applicable) and elevations relative to the principal spillway crest. Indicate if lockable hatch is present or not.
- N/A 12. Type, location, size and number of anti-seep collars or documentation of other methods utilized for seepage control. **May need to obtain this information during construction.**
- N/A 13. Top of impervious core embankment, core trench limits and elevation of cut-off trench bottom. **May need to obtain this information during construction.**
- XY 14. Elevation of the principal spillway barrel (outlet pipe) inlet and outlet invert.
- XY 15. Outlet barrel diameter, length, slope, type and thickness class of material and type of flared end sections, headwall or endwall.
- INC 16. Outfall protection dimension, type and depth of rock and if underlain filter fabric is present.
- INC 17. BMP interior and periphery landscaping zones conform with arrangements and requirements of the approved design plan.
- N/A 18. Maintenance plan taken from approved design plan transposed onto record drawing set.
- N/A 19. Fencing location and type, if applicable to facility.
- INC 20. BMP vicinity properly cleaned of stockpiles and construction debris.
- INC 21. No visual signs of erosion or channel degradation immediately downstream of facility.
- INC 22. Any other information formally requested by the Environmental Division specific to the constructed SWM/BMP facility.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

III. Group A - Wet Ponds (Includes A-1 Small Wet Ponds; A-2 Wet Ponds; A-3 Wet Ext Det Ponds.)

- INC A1. All requirements of Section II, Minimum Standards, apply to Group A facilities.
- XY A2. Principal spillway consists of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
- N/A A3. Sediment forebays or pretreatment devices provided at inlets to pond. Generally 4 to 6 ft. deep.
- N/A A4. Access for maintenance and equipment is provided to the forebay(s). Access corridors are at least 12 ft. wide, have a maximum slope of 15 percent and are adequately stabilized to withstand heavy equipment or vehicle use.
- INC A5. Adequate fixed vertical sediment depth markers installed in the forebay(s) for future sediment monitoring purposes.
- N/A A6. Pond liner (if required) provided. Either clay liners, polyliners, bentonite liners or use of chemical soil additives based on requirements of the approved plan.
- N/A A7. Minimum 6 percent slope safety bench extending a minimum of 15 feet outward from normal pool edge and/or an aquatic bench extending a minimum of 10 feet inward from the normal shoreline with a maximum depth of 12 inches below the normal pool elevation, if applicable, per the approved design plans. (Note: Safety benches may be waived if pond side slopes are no steeper than 4H:1V).
- XY A8. No trees are present within a zone 15 feet around the embankment toe and 25 feet from the principal spillway structure.
- N/A A9. Wet permanent pool, typically 3 to 6 feet deep, is provided and maintains level within facility.
- N/A A10. Low flow orifice has a non-clogging mechanism.
- N/A A11. A pond drain pipe with valve was provided.
- XY A12. Pond side slopes are not steeper than 3H:1V, unless approved plan allowed for steeper slope.
- N/A A13. End walls above barrels (outlet pipe) greater than 48 inch in diameter are fenced to prevent a fall hazard.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete) UNK UNDETD

IV. Group B - Wetlands (*Includes B-1 Shallow Marsh; B-2 Ext Det Shallow Wetlands; B-3 Pond Wetland System and B-4 Pocket Wetland*)

- XX B1. Same requirements as Group A Wet Ponds.
- XX B2. Minimum 2:1 length to width flow path provided across the facility.
- N/A B3. Micropool provided at or around outlet from BMP (generally 3 to 6 ft. deep).
- UNK B4. Wetland type landscaping provided in accordance with approved plan. Includes correct pondscaping zones, plant species, planting arrangements, wetland beds, etc. Wetland plants include 5 to 7 emergent wetland species. Individual plants at 18 inches on center in clumps.
- INC B5. Adequate wetland buffer provided (Typically 25 ft. outward from maximum design water surface elevation and 15 ft. setback to structures). (*BUFFER IS AVAILABLE*)
- UNK B6. No more than one-half (1/2) of the wetland surface area is planted.
- UNK B7. Topsoil or wetland mulch provided to support vigorous growth of wetland plants.
- UNK B8. Planting zones staked or flagged in field and locations subsequently established by appropriate field surveying methods for record drawing presentation.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

V. Group C - Infiltration Practices (Includes C-1 Infiltration Trench; C-2 Infiltration Trench;
C-3 Infiltration Basin; and C-4 Infiltration Basin)

- N/A C1. All requirements of Section II, Minimum Standards, apply to Group C facilities as applicable.
- C2. Facility is not located on fill slopes or on natural ground in excess of six (6) percent.
- C3. Pretreatment devices provided prior to entry into the infiltration facility. Acceptable pretreatment devices include sediment forebays, sediment basins, sediment traps, sump pits or inlets, grass channels, plunge pools or other acceptable measures.
- C4. Three (3) or more of the following pretreatment devices provided to protect long term integrity of structure: grass channel; grass filter strip; bottom sand layer; upper filter fabric layer; use of washed bank run gravel aggregate.
- C5. Sides of infiltration practice lined with filter fabric.
- C6. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- C7. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- C8. Minimum one hundred (100) foot separation horizontally from any known water supply well and minimum one hundred (100) foot separation upslope from any building.
- C9. Minimum twenty-five (25) foot separation down gradient from any structure.
- C10. Stormwater outfalls provided for overflow associated with larger design storms.
- C11. No visual signs of erosion or channel degradation immediately downstream of facility.
- C12. Facility does not currently cause any apparent surface or subsurface water problems to downgrade properties.
- C13. Observation well provided.
- N/A C14. Adequate, direct access provided to the facility for future maintenance, operation and inspection.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VI. Group D - Filtering Systems (Includes D-1 Bioretention Cells; D-2 Surface Sand Filters; D-3 Underground Sand Filters; D-4 Perimeter Sand Filters; D-5 Organic Filters; and D-6 Pocket Sand Filters)

- N/A D1. All requirements of Section II, Minimum Standards, apply to Group D facilities.
- D2. Sediment pretreatment devices provided.
- D3. For D-1 BMPs (Bioretention Cells), pretreatment consisting of a grass filter strip below level spreader (deflector); a gravel diaphragm; and mulch and planting soil layers were provided.
- D4. For D-1 BMPs (Bioretention Cells), plantings consist of native plant species; vegetation provided was based on zones of hydric tolerances; trees and understory of shrubs and herbaceous materials were provided; woody vegetation is absent from inflow locations; and trees are located around facility perimeter.
- D5. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- D6. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed .
- D7. Filtering system is off-line from storm drainage conveyance system.
- D8. Overflow outlet has adequate erosion protection.
- D9. Deflector, diversion, flow splitter or regulator structure provided to divert the water quality volume to the filtering structure.
- D10. Minimum four (4) inch perforated underdrain provided in a clean aggregate envelope layer beneath the facility.
- D11. Minimum fifty (50) foot separation from any slope fifteen (15) percent or greater. Minimum one hundred (100) foot separation horizontally from any known water supply well. Minimum one hundred (100) foot separation upslope and twenty-five (25) foot separation downslope from any building.
- D12. Stabilization and acceptable vegetative cover established over contributing drainage area prior to conveyance of stormwater to the facility.
- D13. No visual signs of erosion or channel degradation immediately downstream of facility.
- N/A D14. Adequate, direct access provided to the pretreatment area and/or filter bed for future maintenance.

**STORMWATER MANAGEMENT / BMP FACILITIES
AS-BUILT PLAN CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

VII. Group E - Open Channel Systems (Includes E-1 Wet Swales (Check Dams); E-2 Dry Swales; and E-3 Biofilters)

- N/A E1. All requirements of Section II, Minimum Standards, apply to Group E facilities as applicable.
- _____ E2. Open channel system has constructed longitudinal slope of less than four (4) percent.
- _____ E3. No visual signs of erosion in the open channel system's soil and/or vegetative cover.
- _____ E4. Open channel side slopes are no steeper than 2H:1V at any location. Preferred channel sideslope is 3H:1V or flatter.
- _____ E5. No visual signs of ponding are present at any location in the open channel system, except at rock check dam locations for E-1 systems (Wet Swales).
- _____ E6. For E-2 BMPs (Dry Swales), an underdrain system was provided.
- _____ E7. Treated timber or rock check dams provided as pretreatment devices for the open channel system.
- _____ E8. Gravel diaphragm provided in areas where lateral sheet flow from impervious surfaces are directly connected to the open channel system.
- _____ E9. Grass cover/stabilization in the open channel system appears adaptable to the specific soils and hydric conditions for the site and along the channel system.
- _____ E10. Open channel system areas with grass covers higher than four (4) to six (6) inches were properly mowed.
- _____ E11. Facility was not used for erosion and sediment control purposes and sediment was prevented from entering the facility to the greatest extent possible during construction.
- _____ E12. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.
- _____ E13. For E-3 BMPs (Biofilters), the bottom width is six (6) feet maximum at any location.
- _____ E14. For E-3 BMPs (Biofilters), sideslopes are 3H:1V maximum at any location.
- _____ E15. For E-3 BMPs (Biofilters), the constructed channel slope is less than or equal to three (3) percent at any location.
- N/A E16. For E-3 BMPs (Biofilters), the constructed grass channel is approximately equivalent to the constructed roadway length.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: **XX** Acceptable **N/A** Not Applicable **Inc** Incomplete)

VIII. Group F - Extended Dry Detention (Includes F-1 Timber Walls; and F-2 Dry Extended Detention with Forebay)

- N/A F1. All requirements of Section II, Minimum Standards, apply to Group F facilities.
- _____ F2. Basin bottom has positive slope and drainage from all basin inflow points to the riser (or outflow) location.
- _____ F3. Timber wall BMP used in intermittent stream only. (ie. Prohibited in perennial streams.)
- _____ F4. Forebay provided approximately 20 ft. upstream of the facility. Forebays generally 4 to 6 feet in depth.
- _____ F5. A reverse slope pipe, vertical stand pipe or mini-barrel and riser was provided to prevent clogging.
- _____ F6. Principal spillway and outlet barrel provided consisting of reinforced concrete pipe with O-Ring gaskets for watertight joint construction.
- _____ F7. Mini-barrel and riser, if used, contains a removable trash rack to reduce clogging.
- _____ F8. Low flow orifice, if used, has a minimum diameter of three (3) inches or two (2) inches if internal orifice control was utilized and a small, cage type external trash rack.
- _____ F9. Timbers properly reinforced or concrete footing provided if soil conditions were prohibitive.
- _____ F10. Timber wall cross members extended to a minimum depth of two (2) feet below ground elevation.
- _____ F11. Protection against erosion and scour from the low flow orifice and weir-flow trajectory provided.
- _____ F12. Stilling basin or standard outlet protection provided at principal spillway outlet.
- _____ F13. Adequate, direct access provided to the facility. Access corridor to facility is at least ten (10) feet wide, slope is less than twenty (20) percent and appropriate stabilization provided for equipment and vehicle use. Access extends to forebay, standpipe and timber wall, as applicable.
- _____ F14. No visual signs of undercutting of timber walls or clogging of the low orifice were present.
- _____ F15. No visual signs of erosion or channel degradation immediately downstream of facility.
- N/A F16. No visible signs of accumulated silt/sediment were present in the facility following construction or alternately, accumulated silt/sediment was properly removed and no adverse affects to the function of the facility are anticipated.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

IX. Group G - Open Spaces (Includes All Open Space Types G-1; G-2; and G-3)

- | | | |
|------------|-----|---|
| <u>N/A</u> | G1. | All requirements of Section II, Minimum Standards, apply to Group G facilities as applicable. |
| — | G2. | Constructed impervious areas appear to conform with locations indicated on the approved plan and appear less than sixty (60) percent impervious in accordance with the requirements of the James City County Chesapeake Bay Preservation Ordinance. |
| — | G3. | Dedicated open space areas are in undisturbed common areas, conservation easements or are protected by other enforceable instruments that ensures perpetual protection. |
| — | G4. | Provisions included to clearly specify how the natural vegetated areas utilized as dedicated open space will be managed and field identified (marked). |
| — | G5. | Adequate protection measures were implemented during construction to protect the defined dedicated open space areas. |
| <u>N/A</u> | G6. | Dedicated open space areas were not disturbed during construction (ie. cleared, grubbed or graded). |

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

(Key for Checklist is as follows: XX Acceptable N/A Not Applicable Inc Incomplete)

X. Storm Drainage Systems (Associated with BMP's Only)

(Includes all incidental stormwater drainage conveyance systems associated with SWM/BMP facilities such as onsite or offsite storm drains, open channels, inlets, manholes, junctions, outlet protections, deflectors, etc. These facilities are external to the treatment function of, but are directly associated with drainage to and/or from a constructed SWM/BMP facility. The intent of this portion of the certification is to accurately identify the type and quantity of inflow or outflow points associated with the facility for future reference. The Professional may use his/her own discretion to determine inclusive facilities to meet the intent of this section. As a general rule, storm drainage systems would include incidental facilities to the nearest access structure upslope or downslope from the normal physical limits of the facility or 800 feet of storm drainage conveyance system length, whichever is less.)

- XX SD1. All requirements of Section II, Minimum Standards, apply to Storm Drainage Systems.
- XX SD2. Horizontal location of all pipe and structures relative to the SWM/BMP facility.
- XX SD3. Type, top elevation and invert elevation of all access type structures (inlets, manholes, etc.).
- INC SD4. Material type, size or diameter, class, invert elevations, lengths and slopes for all pipe segments.
- INC SD5. Class, length, width and depth of riprap and outlet protections or dimensions of special energy dissipation structures.

XII. Other Systems

(Includes any non-typical, specialty, manufactured or innovative stormwater management/BMP practices or systems generally accepted for use as or in conjunction with other acceptable stormwater management / BMP practices. Requires evidence of prior satisfactory industry use and prior Environmental Division approval, waiver or exception .)

- N/A O1. All requirements of Section II, Minimum Standards, apply to this section.
- N/A O2. Certification criteria to be determined on a case-by-case basis by the Environmental Division specific to the proposed SWM/BMP facility.

**STORMWATER MANAGEMENT / BMP FACILITIES
RECORD DRAWING CHECKLIST**

XIII. References *(The James City County Record Drawing and Construction Certification Forms and Checklists for Stormwater Management / BMP facilities were developed using the following sources and references.)*

- Baltimore County, Maryland Soil Conservation District, As-Built Stormwater Management Pond Checklist.
- James City County, Virginia, Guidelines for Design and Construction of Stormwater Management BMP's (October 1999).
- James City County, Virginia, Stormwater Detention/Retention Basin Design Checklist and Erosion and Sediment Control and Stormwater Management Design Plan Checklists.
- James City County Stormwater Policy Framework, Final Report of the James City County BMP Policy Project, October 1998, The Center for Watershed Protection.
- Prince Georges County, Maryland, As-Built Requirements Retention or Detention Pond/Basin.
- Prince William County, Virginia, Stormwater Management Fact Sheet.
- Stafford County, Virginia, As-Built Plan Checklist.
- Stormwater Management Design Manual, NRCS Maryland Code No. 378, Pond Standards and Specifications.
- USEPA/Watershed Management Institute, Stormwater Management Inspection Forms.
- Virginia Impounding Structure Regulations (Dam Safety), Department of Conservation & Recreation, 1997.
- Virginia Erosion and Sediment Control Handbook, Third Edition 1992, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.
- Virginia Stormwater Management Handbook, 1999 edition, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation.

File: Shared\SWMProg\BMP\Certi\RDCC.wpd

Record Drawing/Construction Certification Submittal for a BMP Facility

Date: 12/31/01

Inspector: Pat Menichino
 Gerry Lewis
 Beth Davis
 Mike Woolson
 Joe Buchite
 Other: _____

Project: GOVERNORS LAND - CYPRESS ISLE
BMP Facility: DRY POND w/ SHALLOW MARSH
Plan No. S-79-98
BMP ID Code: JR041

(North of Lot 15
1832 Cypress Isle -
END OF CUL-DE-SAC)

I have received a transmittal for a Record Drawing and Construction Certification for the above referenced facility on Dec 28 '01. Prior to full engineering review of these items and a field inspection, I am first forwarding the items to you to cursory review in case any major field changes were performed that I should be aware of and/or to ensure the record drawing accurately portrays what you saw in the field. Please review the drawing and return to me promptly so I can proceed with the review for certification purposes.

During my review, I will look at issues related to the BMP and its primary inflow and outflow conveyance systems, and will make comment in the following areas: Record Drawing (RD), Construction Certification (CC) and Construction-Related (CR) punch list items. If you have any other related non-BMP site issues such as erosion, stabilization, removal of erosion & sediment controls, etc. that are not related to the BMP, I can easily add these items to any comment letter that I may forward to the Owner/Engineer. Let me know if any outstanding site issues remain.

If I don't hear from you I will ask you if any other outstanding issues remain before I forward any letters to the Owner/Engineer.

Scott

SWMPProg\BMP\ConInsp\Insp.trans

— outlet issue. (op)

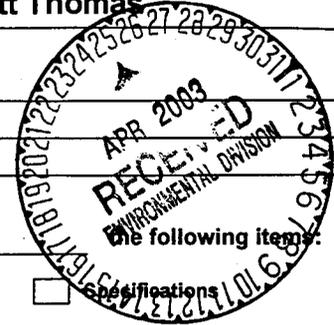
AES CONSULTING ENGINEERS

Engineering, Surveying and Planning
 5248 Olde Towne Road, Suite 1
 Williamsburg, Virginia 23188
 Phone: (757) 253-0040
 Fax: (757) 220-8994

LETTER OF TRANSMITTAL

DATE: 23-Apr-03	JOB NO. 7173-09
ATTENTION: Scott Thomas	
RE : Governor's Land	

TO : James City County
 Environmental Division
 101 Mounts Bay Road
 Williamsburg, VA 23187



WE ARE SENDING YOU: Attached Under separate cover via _____

Shop drawings Prints Plans Samples Specifications
 Copy of letter Change order Other Construction Certification

COPIES	DATE	NO.	DESCRIPTION
1	4-23-03		As-Built drawing (Mylar) - Wingfield Lake JR017
1	4-23-03		As-Built drawing (Black line) - Wingfield Lake JR017
1	4-23-03		Memo responding to letter from County - Wingfield Lake JR017
1	4-23-03		As-Built drawing (Mylar) - Cypress Isle JR041
1	4-23-03		As-Built drawing (Black line) - Cypress Isle JR041
1	4-23-03		Memo responding to letter from County - Cypress Isle JR041
1	4-23-03		Routing computations using As-Built information JR041
1	4-23-03		As-Built drawing (Mylar) - Barrett's Point Pond JR042
1	4-23-03		As-Built drawing (Black line) - Barrett's Point Pond JR042
1	4-23-03		Memo responding to letter from County - Barrett's Point Pond JR042
1	4-23-03		As-Built drawing (Mylar) - Wythe-Hamlet Dry Pond JR040
1	4-23-03		As-Built drawing (Black line) - Wythe-Hamlet Dry Pond JR040
1	4-23-03		Memo responding to letter from County - Wythe-Hamlet Dry Pond JR040
1	4-23-03		As-Built drawing (Mylar) - Travis Pond Dry Pond #2
1	4-23-03		As-Built drawing (Black line) - Travis Pond Dry Pond #2
1	4-23-03		Memo responding to letter from County - Travis Pond Dry Pond #2
1	4-23-03		As-Built drawing (Mylar) - Two Rivers Point Timber Structure JR036
1	4-23-03		As-Built drawing (Black line) - Two Rivers Point Timber Structure JR036
1	4-23-03		Memo responding to letter from County - Two Rivers Point Timber JR036
1	4-23-03		As-Built drawing (Mylar) - Wingfield Lake Timber Structure JR031
1	4-23-03		As-Built drawing (Black line) - Wingfield Lake Timber Structure JR031
1	4-23-03		Memo responding to letter from County - Wingfield Lake Timber JR031

THESE ARE TRANSMITTED as checked below:

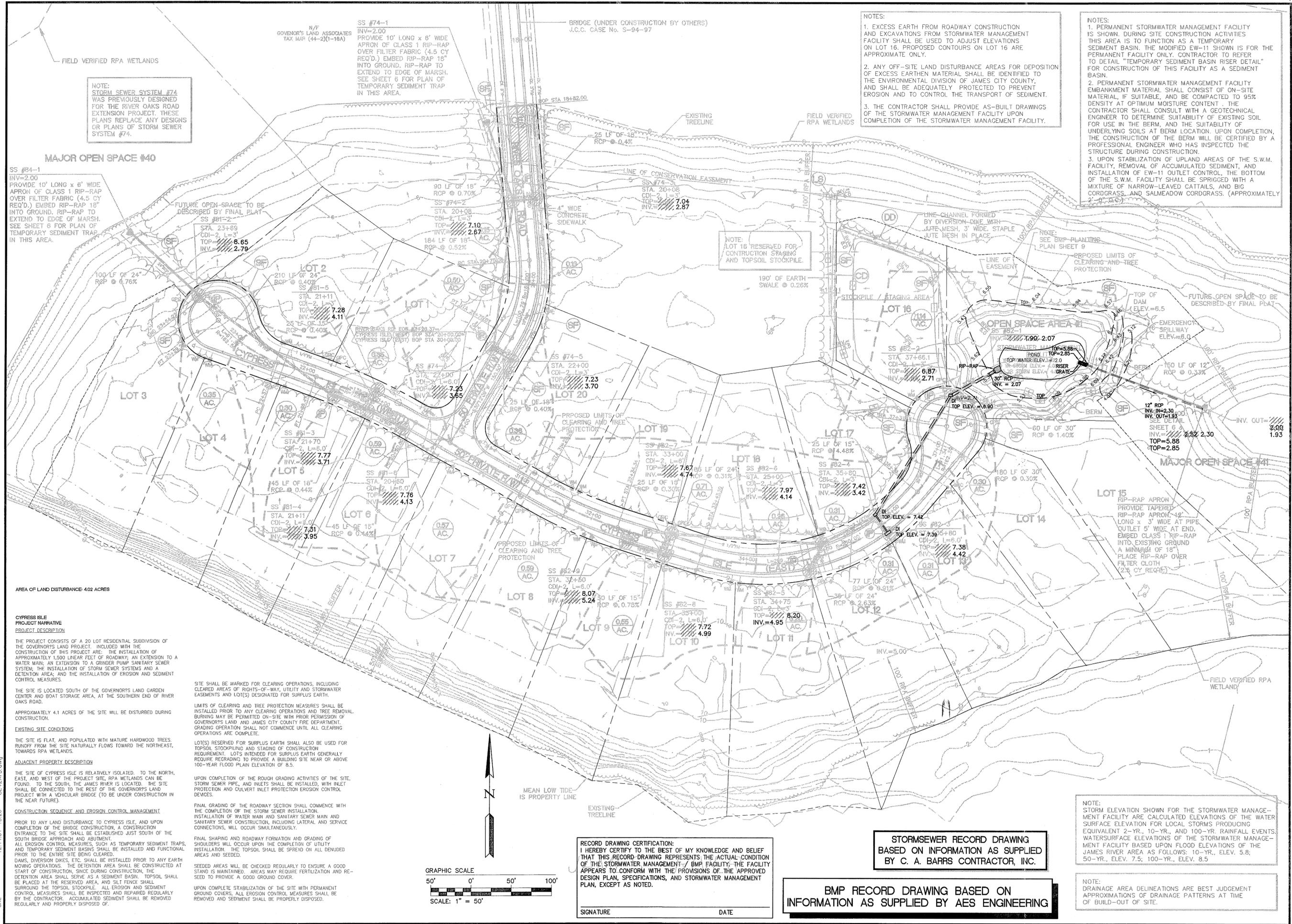
For Approval Approved as submitted Resubmit _____ copies for approval
 For your use Approved as noted Submit _____ copies for distribution
 As requested Returned for corrections Return _____ Corrected prints
 For review and comment For Signature _____
 FOR BIDS DUE _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

If you have any questions please contact me. Thank you.

COPIES TO: file

SIGNED: Victoria Bains
 Victoria Bains



NOTE:
STORM SEWER SYSTEM #74 WAS PREVIOUSLY DESIGNED FOR THE RIVER OAKS ROAD EXTENSION PROJECT. THESE PLANS REPLACE ANY DESIGNS OR PLANS OF STORM SEWER SYSTEM #74.

SS #74-1
INV=2.00
PROVIDE 10' LONG x 8' WIDE APRON OF CLASS 1 RIP-RAP OVER FILTER FABRIC (4.5 CY REQ'D.) EMBED RIP-RAP 18" INTO GROUND. RIP-RAP TO EXTEND TO EDGE OF MARSH. SEE SHEET 6 FOR PLAN OF TEMPORARY SEDIMENT TRAP IN THIS AREA.

BRIDGE (UNDER CONSTRUCTION BY OTHERS)
J.C.C. CASE No. S-94-97

NOTES:
1. EXCESS EARTH FROM ROADWAY CONSTRUCTION AND EXCAVATIONS FROM STORMWATER MANAGEMENT FACILITY SHALL BE USED TO ADJUST ELEVATIONS ON LOT 16. PROPOSED CONTOURS ON LOT 16 ARE APPROXIMATE ONLY.
2. ANY OFF-SITE LAND DISTURBANCE AREAS FOR DEPOSITION OF EXCESS EARTHEN MATERIAL SHALL BE IDENTIFIED TO THE ENVIRONMENTAL DIVISION OF JAMES CITY COUNTY, AND SHALL BE ADEQUATELY PROTECTED TO PREVENT EROSION AND TO CONTROL THE TRANSPORT OF SEDIMENT.
3. THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF THE STORMWATER MANAGEMENT FACILITY UPON COMPLETION OF THE STORMWATER MANAGEMENT FACILITY.

NOTES:
1. PERMANENT STORMWATER MANAGEMENT FACILITY IS SHOWN. DURING SITE CONSTRUCTION ACTIVITIES THIS AREA IS TO FUNCTION AS A TEMPORARY SEDIMENT BASIN. THE MODIFIED EW-11 SHOWN IS FOR THE PERMANENT FACILITY ONLY. CONTRACTOR TO REFER TO DETAIL "TEMPORARY SEDIMENT BASIN RISER DETAIL" FOR CONSTRUCTION OF THIS FACILITY AS A SEDIMENT BASIN.
2. PERMANENT STORMWATER MANAGEMENT FACILITY EMBANKMENT MATERIAL SHALL CONSIST OF ON-SITE MATERIAL, IF SUITABLE, AND BE COMPACTED TO 95% DENSITY AT OPTIMUM MOISTURE CONTENT. THE CONTRACTOR SHALL CONSULT WITH A GEOTECHNICAL ENGINEER TO DETERMINE SUITABILITY OF EXISTING SOIL FOR USE IN THE BERM, AND THE SUITABILITY OF UNDERLYING SOILS AT BERM LOCATION. UPON COMPLETION, THE CONSTRUCTION OF THE BERM WILL BE CERTIFIED BY A PROFESSIONAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.
3. UPON STABILIZATION OF UPLAND AREAS OF THE S.W.M. FACILITY, REMOVAL OF ACCUMULATED SEDIMENT, AND INSTALLATION OF EW-11 OUTLET CONTROL, THE BOTTOM OF THE S.W.M. FACILITY SHALL BE SPRIGGED WITH A MIXTURE OF NARROW-LEAVED CATTAILS, AND BIG CORDGRASS, AND SALMEADOW CORDGRASS. (APPROXIMATELY 2' @ 6" C/S)

SS #84-1
INV=2.00
PROVIDE 10' LONG x 8' WIDE APRON OF CLASS 1 RIP-RAP OVER FILTER FABRIC (4.5 CY REQ'D.) EMBED RIP-RAP 18" INTO GROUND. RIP-RAP TO EXTEND TO EDGE OF MARSH. SEE SHEET 6 FOR PLAN OF TEMPORARY SEDIMENT TRAP IN THIS AREA.

AREA OF LAND DISTURBANCE: 4.02 ACRES

CYPRESS ISLE PROJECT NARRATIVE
PROJECT DESCRIPTION

THE PROJECT CONSISTS OF A 20 LOT RESIDENTIAL SUBDIVISION OF THE GOVERNORS LAND PROJECT. INCLUDED WITH THE CONSTRUCTION OF THIS PROJECT ARE: THE INSTALLATION OF APPROXIMATELY 1,800 LINEAR FEET OF ROADWAY, AN EXTENSION TO A WATER MAIN, AN EXTENSION TO A GRINDER PUMP SANITARY SEWER SYSTEM; THE INSTALLATION OF STORM SEWER SYSTEMS AND A DETENTION AREA; AND THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.

THE SITE IS LOCATED SOUTH OF THE GOVERNORS LAND GARDEN CENTER AND BOAT STORAGE AREA, AT THE SOUTHERN END OF RIVER OAKS ROAD.

APPROXIMATELY 4.1 ACRES OF THE SITE WILL BE DISTURBED DURING CONSTRUCTION.

EXISTING SITE CONDITIONS

THE SITE IS FLAT, AND POPULATED WITH MATURE HARDWOOD TREES. RUNOFF FROM THE SITE NATURALLY FLOWS TOWARD THE NORTHEAST, TOWARDS RPA WETLANDS.

ADJACENT PROPERTY DESCRIPTION

THE SITE OF CYPRESS ISLE IS RELATIVELY ISOLATED. TO THE NORTH, EAST, AND WEST OF THE PROJECT SITE, RPA WETLANDS CAN BE FOUND. TO THE SOUTH, THE JAMES RIVER IS LOCATED. THE SITE SHALL BE CONNECTED TO THE REST OF THE GOVERNORS LAND PROJECT WITH A VEHICULAR BRIDGE (TO BE UNDER CONSTRUCTION IN THE NEAR FUTURE).

CONSTRUCTION SEQUENCE AND EROSION CONTROL MANAGEMENT

PRIOR TO ANY LAND DISTURBANCE TO CYPRESS ISLE, AND UPON COMPLETION OF THE BRIDGE CONSTRUCTION, A CONSTRUCTION ENTRANCE TO THE SITE SHALL BE ESTABLISHED JUST SOUTH OF THE SOUTH BRIDGE APPROACH AND ABUTMENT.

ALL EROSION CONTROL MEASURES, SUCH AS TEMPORARY SEDIMENT TRAPS, AND TEMPORARY SEDIMENT BASINS SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO THE ENTIRE SITE BEING CLEARED.

DAMS, DIVERSION DIKES, ETC. SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS. THE DETENTION AREA SHALL BE CONSTRUCTED AT START OF CONSTRUCTION. SINCE DURING CONSTRUCTION, THE DETENTION AREA SHALL SERVE AS A SEDIMENT BASIN. TOPSOIL SHALL BE PLACED AT THE RESERVED AREA, AND SILT FENCE SHALL SURROUND THE TOPSOIL STOCKPILE. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND REPAIRED REGULARLY BY THE CONTRACTOR. ACCUMULATED SEDIMENT SHALL BE REMOVED REGULARLY AND PROPERLY DISPOSED OF.

SITE SHALL BE MARKED FOR CLEARING OPERATIONS, INCLUDING CLEARED AREAS OF RIGHTS-OF-WAY, UTILITY AND STORMWATER EASEMENTS AND LOT(S) DESIGNATED FOR SURPLUS EARTH.

LIMITS OF CLEARING AND TREE PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING OPERATIONS AND TREE REMOVAL. BURNING MAY BE PERMITTED ON-SITE WITH PRIOR PERMISSION OF GOVERNORS LAND AND JAMES CITY COUNTY FIRE DEPARTMENT. GRADING OPERATION SHALL NOT COMMENCE UNTIL ALL CLEARING OPERATIONS ARE COMPLETE.

LOT(S) RESERVED FOR SURPLUS EARTH SHALL ALSO BE USED FOR TOPSOIL STOCKPILING AND STAGING OF CONSTRUCTION REQUIREMENT. LOTS INTENDED FOR SURPLUS EARTH GENERALLY REQUIRE REGRADING TO PROVIDE A BUILDING SITE NEAR OR ABOVE 100-YEAR FLOOD PLAIN ELEVATION OF 8.5.

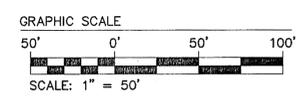
UPON COMPLETION OF THE ROUGH GRADING ACTIVITIES OF THE SITE, STORM SEWER PIPE, AND INLETS SHALL BE INSTALLED, WITH INLET PROTECTION AND OULVERT INLET PROTECTION EROSION CONTROL DEVICES.

FINAL GRADING OF THE ROADWAY SECTION SHALL COMMENCE WITH THE COMPLETION OF THE STORM SEWER INSTALLATION. INSTALLATION OF WATER MAIN AND SANITARY SEWER MAIN AND SANITARY SEWER CONSTRUCTION, INCLUDING LATERAL AND SERVICE CONNECTIONS, WILL OCCUR SIMULTANEOUSLY.

FINAL SHAPING AND ROADWAY FORMATION AND GRADING OF SHOULDERS WILL OCCUR UPON THE COMPLETION OF UTILITY INSTALLATION. THE TOPSOIL SHALL BE SPREAD ON ALL DENUDE AREAS AND SEED.

SEEDING AREAS WILL BE CHECKED REGULARLY TO ENSURE A GOOD STAND IS MAINTAINED. AREAS MAY REQUIRE FERTILIZATION AND RE-SEED TO PROVIDE A GOOD GROUND COVER.

UPON COMPLETE STABILIZATION OF THE SITE WITH PERMANENT GROUND COVERS, ALL EROSION CONTROL MEASURES SHALL BE REMOVED AND SEDIMENT SHALL BE PROPERLY DISPOSED.



RECORD DRAWING CERTIFICATION:
I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT / BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS, AND STORMWATER MANAGEMENT PLAN, EXCEPT AS NOTED.

SIGNATURE _____ DATE _____

STORMSEWER RECORD DRAWING
BASED ON INFORMATION AS SUPPLIED
BY C. A. BARRS CONTRACTOR, INC.

BMP RECORD DRAWING BASED ON
INFORMATION AS SUPPLIED BY AES ENGINEERING

NOTE:
STORM ELEVATION SHOWN FOR THE STORMWATER MANAGEMENT FACILITY ARE CALCULATED ELEVATIONS OF THE WATER SURFACE ELEVATION FOR LOCAL STORMS PRODUCING EQUIVALENT 2-YR., 10-YR., AND 100-YR. RAINFALL EVENTS. WATERSURFACE ELEVATIONS OF THE STORMWATER MANAGEMENT FACILITY BASED UPON FLOOD ELEVATIONS OF THE JAMES RIVER AREA AS FOLLOWS: 10-YR., ELEV. 5.8; 50-YR., ELEV. 7.5; 100-YR., ELEV. 8.5

NOTE:
DRAINAGE AREA DELINEATIONS ARE BEST JUDGEMENT APPROXIMATIONS OF DRAINAGE PATTERNS AT TIME OF BUILD-OUT OF SITE.

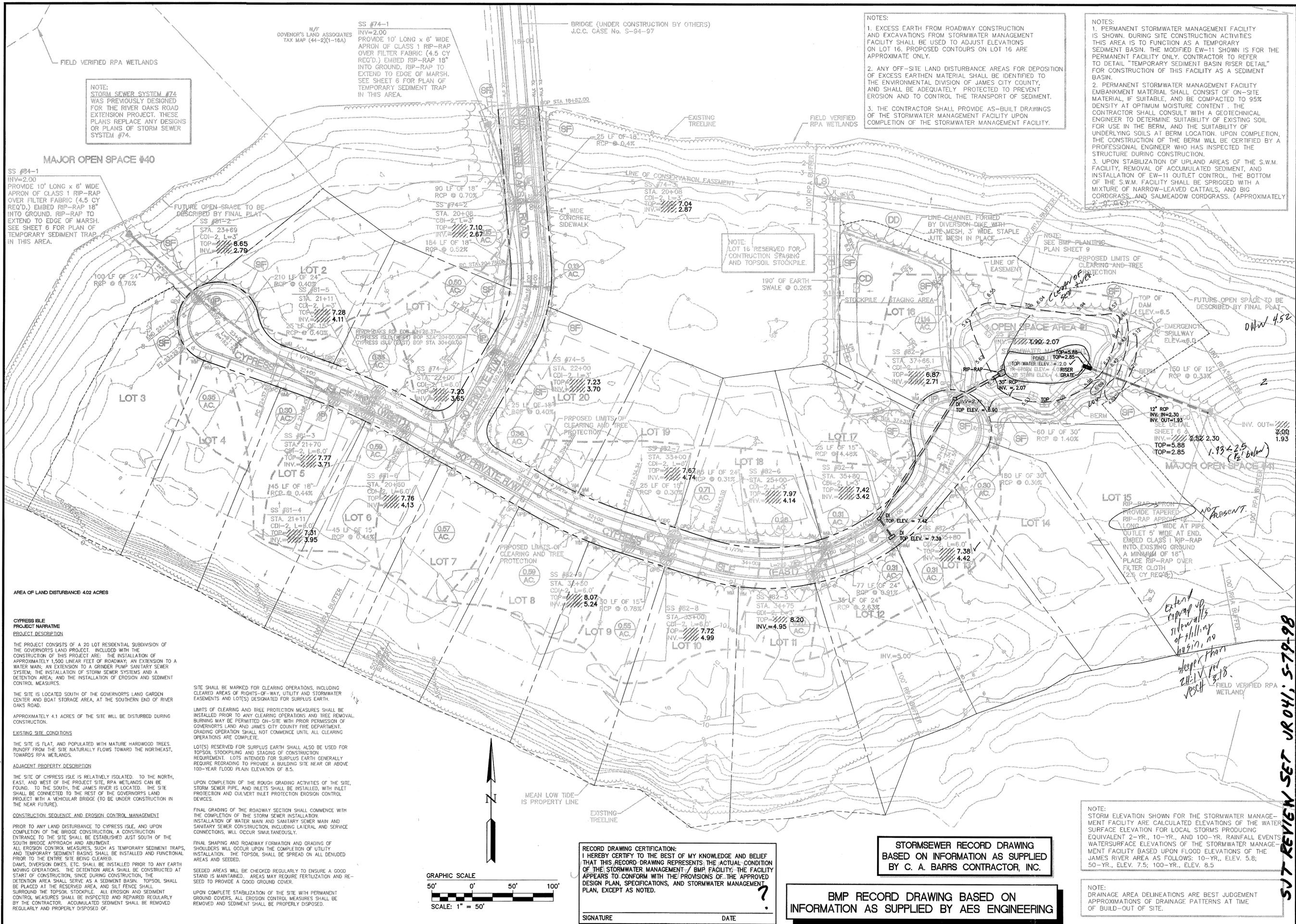
NO.	DATE	REVISION / COMMENT / NOTE
1	11/10/09	RECORD DRAWING
2	6/00	RECORD DRAWING
3	12/27/00	RECORD DRAWING (ADDITIONAL)
4	10/28/01	RECORD DRAWING

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994



DESIGNED	DRAWN
VMB/RDS	RDS
Scale	Date
1"=50'	8/98
Project No.	7173-4-2
Drawing No.	5

GRADING, DRAINAGE + EROSION AND SEDIMENT CONTROL
CYPRESS ISLE
THE GOVERNOR'S LAND
At Terra Rivers
JAMES CITY COUNTY
FOUNDRY DISTRICT
VIRGINIA



NOTES:
 1. EXCESS EARTH FROM ROADWAY CONSTRUCTION AND EXCAVATIONS FROM STORMWATER MANAGEMENT FACILITY SHALL BE USED TO ADJUST ELEVATIONS ON LOT 16. PROPOSED CONTOURS ON LOT 16 ARE APPROXIMATE ONLY.
 2. ANY OFF-SITE LAND DISTURBANCE AREAS FOR DEPOSITION OF EXCESS EARTHEN MATERIAL SHALL BE IDENTIFIED TO THE ENVIRONMENTAL DIVISION OF JAMES CITY COUNTY, AND SHALL BE ADEQUATELY PROTECTED TO PREVENT EROSION AND TO CONTROL THE TRANSPORT OF SEDIMENT.
 3. THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF THE STORMWATER MANAGEMENT FACILITY UPON COMPLETION OF THE STORMWATER MANAGEMENT FACILITY.

NOTES:
 1. PERMANENT STORMWATER MANAGEMENT FACILITY IS SHOWN. DURING SITE CONSTRUCTION ACTIVITIES THIS AREA IS TO FUNCTION AS A TEMPORARY SEDIMENT BASIN. THE MODIFIED EW-11 SHOWN IS FOR THE PERMANENT FACILITY ONLY. CONTRACTOR TO REFER TO DETAIL "TEMPORARY SEDIMENT BASIN RISER DETAIL" FOR CONSTRUCTION OF THIS FACILITY AS A SEDIMENT BASIN.
 2. PERMANENT STORMWATER MANAGEMENT FACILITY EMBANKMENT MATERIAL SHALL CONSIST OF ON-SITE MATERIAL, IF SUITABLE, AND BE COMPACTED TO 95% DENSITY AT OPTIMUM MOISTURE CONTENT. THE CONTRACTOR SHALL CONSULT WITH A GEOTECHNICAL ENGINEER TO DETERMINE SUITABILITY OF EXISTING SOIL FOR USE IN THE BERM, AND THE SUITABILITY OF UNDERLYING SOILS AT BERM LOCATION. UPON COMPLETION, THE CONSTRUCTION OF THE BERM WILL BE CERTIFIED BY A PROFESSIONAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.
 3. UPON STABILIZATION OF UPLAND AREAS OF THE S.W.M. FACILITY, REMOVAL OF ACCUMULATED SEDIMENT, AND INSTALLATION OF EW-11 OUTLET CONTROL, THE BOTTOM OF THE S.W.M. FACILITY SHALL BE SPRIGGED WITH A MIXTURE OF NARROW-LEAVED CATTAILS, AND BIG CORDGRASS, AND SALMEADOW CORDGRASS. (APPROXIMATELY 2' - 0" O.C.)

NO.	DATE	REVISION / COMMENT / NOTE
1	10/28/01	RECORD DRAWING
2	11/10/99	RECORD DRAWING
3	10/28/01	RECORD DRAWING (ADDITIONAL)
4	10/28/01	RECORD DRAWING

NOTE:
 STORM SEWER SYSTEM #74 WAS PREVIOUSLY DESIGNED FOR THE RIVER OAKS ROAD EXTENSION PROJECT. THESE PLANS REPLACE ANY DESIGNS OR PLANS OF STORM SEWER SYSTEM #74.

SS #84-1
 INV.=2.00
 PROVIDE 10' LONG x 6' WIDE APRON OF CLASS 1 RIP-RAP OVER FILTER FABRIC (4.5 CY REQ'D.) EMBED RIP-RAP 18" INTO GROUND. RIP-RAP TO EXTEND TO EDGE OF MARSH. SEE SHEET 6 FOR PLAN OF TEMPORARY SEDIMENT TRAP IN THIS AREA.

SS #74-1
 INV.=2.00
 PROVIDE 10' LONG x 6' WIDE APRON OF CLASS 1 RIP-RAP OVER FILTER FABRIC (4.5 CY REQ'D.) EMBED RIP-RAP 18" INTO GROUND. RIP-RAP TO EXTEND TO EDGE OF MARSH. SEE SHEET 6 FOR PLAN OF TEMPORARY SEDIMENT TRAP IN THIS AREA.

SS #74-2
 STA. 20+08
 CDI-2, L=3'
 TOP=7.10
 INV.=2.67
 164 LF OF 18" RCP @ 0.52%

SS #74-3
 STA. 21+11
 CDI-2, L=3'
 TOP=7.28
 INV.=4.11
 210 LF OF 24" RCP @ 0.40%

SS #74-4
 STA. 22+00
 CDI-2, L=3'
 TOP=7.23
 INV.=3.70
 25 LF OF 18" RCP @ 0.40%

SS #74-5
 STA. 22+40
 CDI-2, L=3'
 TOP=7.23
 INV.=3.70
 25 LF OF 18" RCP @ 0.40%

SS #74-6
 STA. 23+00
 CDI-2, L=3'
 TOP=7.23
 INV.=3.70
 25 LF OF 18" RCP @ 0.40%

SS #74-7
 STA. 23+40
 CDI-2, L=3'
 TOP=7.23
 INV.=3.70
 25 LF OF 18" RCP @ 0.40%

FUTURE OPEN SPACE TO BE DESCRIBED BY FINAL PLAT
 SS #81-2
 STA. 23+69
 CDI-2, L=3'
 TOP=6.65
 INV.=2.79
 100 LF OF 24" RCP @ 0.76%

LOT 2
 STA. 21+11
 CDI-2, L=3'
 TOP=7.28
 INV.=4.11
 210 LF OF 24" RCP @ 0.40%

LOT 3
 100 LF OF 24" RCP @ 0.76%

LOT 4
 100 LF OF 24" RCP @ 0.76%

LOT 5
 145 LF OF 18" RCP @ 0.44%

LOT 6
 45 LF OF 15" RCP @ 0.44%

LOT 7
 45 LF OF 15" RCP @ 0.44%

LOT 8
 100 LF OF 15" RCP @ 0.78%

LOT 9
 100 LF OF 15" RCP @ 0.78%

LOT 10
 100 LF OF 15" RCP @ 0.78%

LOT 11
 100 LF OF 15" RCP @ 0.78%

LOT 12
 100 LF OF 15" RCP @ 0.78%

LOT 13
 100 LF OF 15" RCP @ 0.78%

LOT 14
 100 LF OF 15" RCP @ 0.78%

LOT 15
 100 LF OF 15" RCP @ 0.78%

LOT 16
 100 LF OF 15" RCP @ 0.78%

LOT 17
 100 LF OF 15" RCP @ 0.78%

LOT 18
 100 LF OF 15" RCP @ 0.78%

LOT 19
 100 LF OF 15" RCP @ 0.78%

LOT 20
 100 LF OF 15" RCP @ 0.78%

LOT 21
 100 LF OF 15" RCP @ 0.78%

LOT 22
 100 LF OF 15" RCP @ 0.78%

LOT 23
 100 LF OF 15" RCP @ 0.78%

LOT 24
 100 LF OF 15" RCP @ 0.78%

LOT 25
 100 LF OF 15" RCP @ 0.78%

LOT 26
 100 LF OF 15" RCP @ 0.78%

AREA OF LAND DISTURBANCE: 402 ACRES

CYPRESS ISLE PROJECT NARRATIVE PROJECT DESCRIPTION

THE PROJECT CONSISTS OF A 20 LOT RESIDENTIAL SUBDIVISION OF THE GOVERNOR'S LAND PROJECT. INCLUDED WITH THE CONSTRUCTION OF THIS PROJECT ARE: THE INSTALLATION OF APPROXIMATELY 1,500 LINEAR FEET OF ROADWAY, AN EXTENSION TO A WATER MAIN, AN EXTENSION TO A GRINDER PUMP SANITARY SEWER SYSTEM; THE INSTALLATION OF STORM SEWER SYSTEMS AND A DETENTION AREA; AND THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.

THE SITE IS LOCATED SOUTH OF THE GOVERNOR'S LAND GARDEN CENTER AND BOAT STORAGE AREA, AT THE SOUTHERN END OF RIVER OAKS ROAD.

APPROXIMATELY 4.1 ACRES OF THE SITE WILL BE DISTURBED DURING CONSTRUCTION.

EXISTING SITE CONDITIONS

THE SITE IS FLAT, AND POPULATED WITH MATURE HARDWOOD TREES. RUNOFF FROM THE SITE NATURALLY FLOWS TOWARD THE NORTHEAST, TOWARDS RPA WETLANDS.

ADJACENT PROPERTY DESCRIPTION

THE SITE OF CYPRESS ISLE IS RELATIVELY ISOLATED. TO THE NORTH, EAST, AND WEST OF THE PROJECT SITE, RPA WETLANDS CAN BE FOUND. TO THE SOUTH, THE JAMES RIVER IS LOCATED. THE SITE SHALL BE CONNECTED TO THE REST OF THE GOVERNOR'S LAND PROJECT WITH A VEHICULAR BRIDGE (TO BE UNDER CONSTRUCTION IN THE NEAR FUTURE).

CONSTRUCTION SEQUENCE AND EROSION CONTROL MANAGEMENT

PRIOR TO ANY LAND DISTURBANCE TO CYPRESS ISLE, AND UPON COMPLETION OF THE BRIDGE CONSTRUCTION, A CONSTRUCTION ENTRANCE TO THE SITE SHALL BE ESTABLISHED JUST SOUTH OF THE SOUTH BRIDGE APPROACH AND ABUTMENT.

ALL EROSION CONTROL MEASURES, SUCH AS TEMPORARY SEDIMENT TRAPS, AND TEMPORARY SEDIMENT BASINS SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO THE ENTIRE SITE BEING CLEARED.

DAMS, DIVERSION DIKES, ETC. SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS. THE DETENTION AREA SHALL BE CONSTRUCTED AT START OF CONSTRUCTION. SINCE DURING CONSTRUCTION, THE DETENTION AREA SHALL SERVE AS A SEDIMENT BASIN. TOPSOIL SHALL BE PLACED AT THE RESERVED AREA, AND SILT FENCE SHALL SURROUND THE TOPSOIL STOCKPILE. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND REPAIRED REGULARLY BY THE CONTRACTOR. ACCUMULATED SEDIMENT SHALL BE REMOVED REGULARLY AND PROPERLY DISPOSED OF.

THE SITE SHALL BE MARKED FOR CLEARING OPERATIONS, INCLUDING CLEARED AREAS OF RIGHTS-OF-WAY, UTILITY AND STORMWATER EASEMENTS AND LOT(S) DESIGNATED FOR SURPLUS EARTH.

LIMITS OF CLEARING AND TREE PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING OPERATIONS AND TREE REMOVAL. BURNING MAY BE PERMITTED ON-SITE WITH PRIOR PERMISSION OF GOVERNOR'S LAND AND JAMES CITY COUNTY FIRE DEPARTMENT. GRADING OPERATION SHALL NOT COMMENCE UNTIL ALL CLEARING OPERATIONS ARE COMPLETE.

LOT(S) RESERVED FOR SURPLUS EARTH SHALL ALSO BE USED FOR TOPSOIL STOCKPILING AND STAGING OF CONSTRUCTION REQUIREMENT. LOTS INTENDED FOR SURPLUS EARTH GENERALLY REQUIRE REGRADING TO PROVIDE A BUILDING SITE NEAR OR ABOVE 100-YEAR FLOOD PLAIN ELEVATION OF 8.5.

UPON COMPLETION OF THE ROUGH GRADING ACTIVITIES OF THE SITE, STORM SEWER PIPE, AND INLETS SHALL BE INSTALLED, WITH INLET PROTECTION AND CULVERT INLET PROTECTION EROSION CONTROL DEVICES.

FINAL GRADING OF THE ROADWAY SECTION SHALL COMMENCE WITH THE COMPLETION OF THE STORM SEWER INSTALLATION. INSTALLATION OF WATER MAIN AND SANITARY SEWER MAIN AND SANITARY SEWER CONSTRUCTION, INCLUDING LATERAL AND SERVICE CONNECTIONS, WILL OCCUR SIMULTANEOUSLY.

FINAL SHAPING AND ROADWAY FORMATION AND GRADING OF SHOULDERS WILL OCCUR UPON THE COMPLETION OF UTILITY INSTALLATION. THE TOPSOIL SHALL BE SPREAD ON ALL DENuded AREAS AND SEED.

SEEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE A GOOD STAND IS MAINTAINED. AREAS MAY REQUIRE FERTILIZATION AND RE-SEED TO PROVIDE A GOOD GROUND COVER.

UPON COMPLETE STABILIZATION OF THE SITE WITH PERMANENT GROUND COVERS, ALL EROSION CONTROL MEASURES SHALL BE REMOVED AND SEDIMENT SHALL BE PROPERLY DISPOSED.

11.06.01-16:13
 GL42A-5.dwg
 SRL

RECORD DRAWING CERTIFICATION:
 I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT / BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS, AND STORMWATER MANAGEMENT PLAN, EXCEPT AS NOTED.

SIGNATURE _____ DATE _____

STORMSEWER RECORD DRAWING
 BASED ON INFORMATION AS SUPPLIED
 BY C. A. BARRS CONTRACTOR, INC.

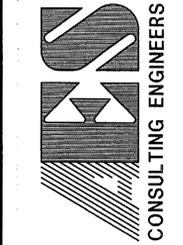
BMP RECORD DRAWING BASED ON
 INFORMATION AS SUPPLIED BY AES ENGINEERING

NOTE:
 STORM ELEVATION SHOWN FOR THE STORMWATER MANAGEMENT FACILITY ARE CALCULATED ELEVATIONS OF THE WATER SURFACE ELEVATION FOR LOCAL STORMS PRODUCING EQUIVALENT 2-YR., 10-YR., AND 100-YR. RAINFALL EVENTS. WATERSURFACE ELEVATIONS OF THE STORMWATER MANAGEMENT FACILITY BASED UPON FLOOD ELEVATIONS OF THE JAMES RIVER AREA AS FOLLOWS: 10-YR., ELEV. 5.8; 50-YR., ELEV. 7.5; 100-YR., ELEV. 8.5

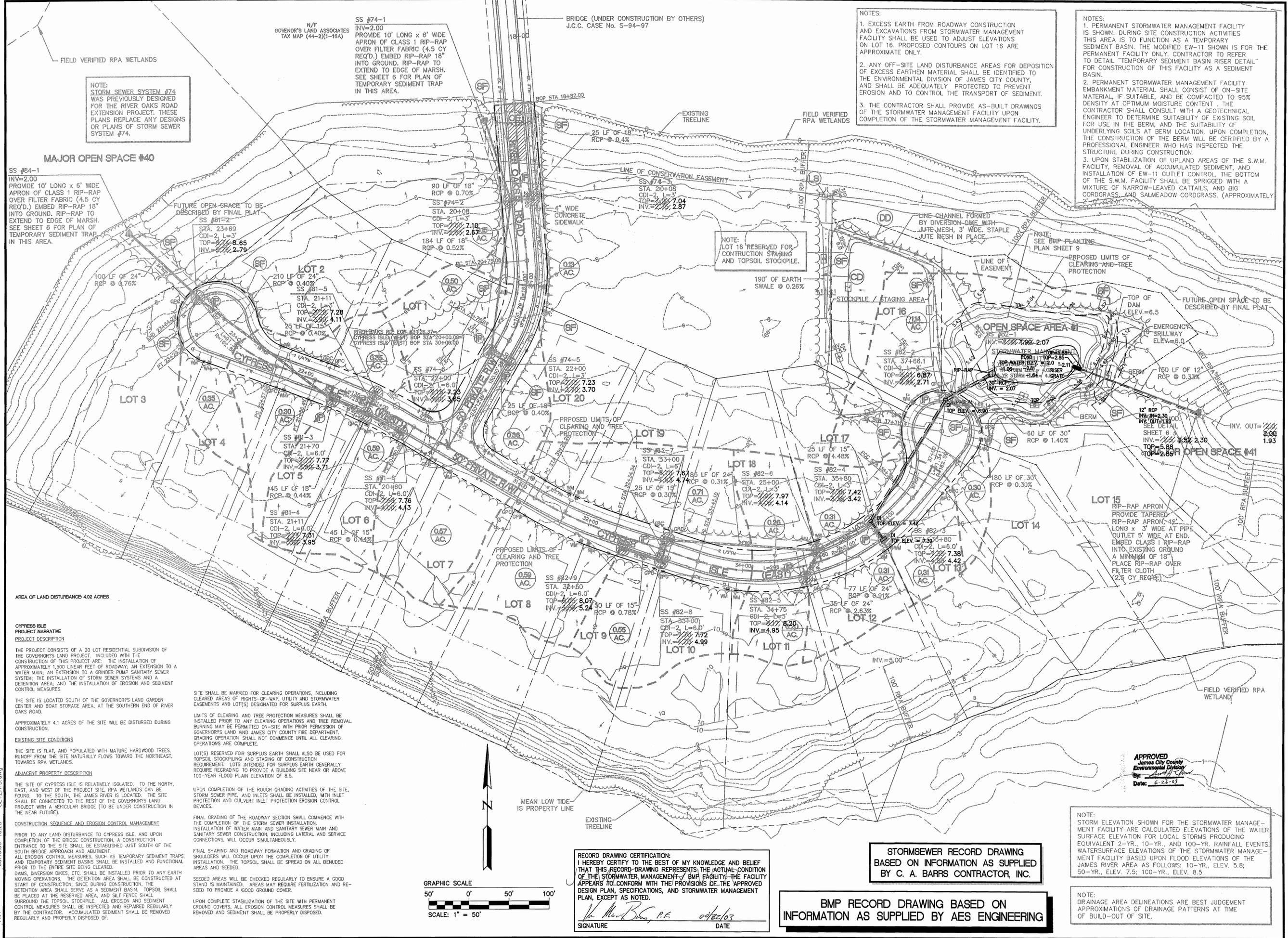
NOTE:
 DRAINAGE AREA DELINEATIONS ARE BEST JUDGEMENT APPROXIMATIONS OF DRAINAGE PATTERNS AT TIME OF BUILD-OUT OF SITE.

6.00
 4.52
 1.57' FB MK

5248 Olde Towne Road, Suite 1
 Williamsburg, Virginia 23188
 (757) 253-0040
 Fax (757) 250-8994



GRADING, DRAINAGE + EROSION AND SEDIMENT CONTROL	DESIGNED	Drawn
CYPRESS ISLE	VMB/RDS	RDS
THE	Scale	Date
GOVERNOR'S LAND	1" = 50'	8/98
At Two Rivers	Project No.	7173-4-2
JAMES CITY COUNTY	Drawing No.	5
FOURTH DISTRICT		



NOTE:
STORM SEWER SYSTEM #74
WAS PREVIOUSLY DESIGNED
FOR THE RIVER OAKS ROAD
EXTENSION PROJECT. THESE
PLANS REPLACE ANY DESIGNS
OR PLANS OF STORM SEWER
SYSTEM #74.

NOTE:
LOT 16 RESERVED FOR
CONSTRUCTION STAGING
AND TOPSOIL STOCKPILE.

NOTES:
1. EXCESS EARTH FROM ROADWAY CONSTRUCTION
AND EXCAVATIONS FROM STORMWATER MANAGEMENT
FACILITY SHALL BE USED TO ADJUST ELEVATIONS
ON LOT 16. PROPOSED CONTOURS ON LOT 16 ARE
APPROXIMATE ONLY.
2. ANY OFF-SITE LAND DISTURBANCE AREAS FOR DEPOSITION
OF EXCESS EARTHEN MATERIAL SHALL BE IDENTIFIED TO
THE ENVIRONMENTAL DIVISION OF JAMES CITY COUNTY,
AND SHALL BE ADEQUATELY PROTECTED TO PREVENT
EROSION AND TO CONTROL THE TRANSPORT OF SEDIMENT.
3. THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF
THE STORMWATER MANAGEMENT FACILITY UPON
COMPLETION OF THE STORMWATER MANAGEMENT FACILITY.

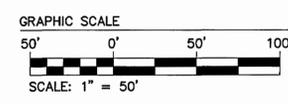
NOTES:
1. PERMANENT STORMWATER MANAGEMENT FACILITY
IS SHOWN. DURING SITE CONSTRUCTION ACTIVITIES
THIS AREA IS TO FUNCTION AS A TEMPORARY
SEDIMENT BASIN. THE MODIFIED EW-11 SHOWN IS FOR THE
PERMANENT FACILITY ONLY. CONTRACTOR TO REFER TO
DETAIL "TEMPORARY SEDIMENT BASIN RISER DETAIL"
FOR CONSTRUCTION OF THIS FACILITY AS A SEDIMENT
BASIN.
2. PERMANENT STORMWATER MANAGEMENT FACILITY
EMBANKMENT SHALL CONSIST OF ON-SITE
MATERIAL, IF SUITABLE, AND BE COMPACTED TO 95%
DENSITY AT OPTIMUM MOISTURE CONTENT. THE
CONTRACTOR SHALL CONSULT WITH A GEOTECHNICAL
ENGINEER TO DETERMINE SUITABILITY OF EXISTING SOIL
FOR USE IN THE BERM, AND THE SUITABILITY OF
UNDERLYING SOILS AT BERM LOCATION. UPON COMPLETION,
THE CONSTRUCTION OF THE BERM WILL BE CERTIFIED BY A
PROFESSIONAL ENGINEER WHO HAS INSPECTED THE
STRUCTURE DURING CONSTRUCTION.
3. UPON STABILIZATION OF UPLAND AREAS OF THE S.W.M.
FACILITY, REMOVAL OF ACCUMULATED SEDIMENT, AND
INSTALLATION OF EW-11 OUTLET CONTROL, THE BOTTOM
OF THE S.W.M. FACILITY SHALL BE SPRIGGED WITH A
MIXTURE OF NARROW-LEAVED CATTAILS, AND BIG
CORDGRASS, AND SALMEADOW CORDGRASS. (APPROXIMATELY
2' x 2' PLANTING)

REVISIONS AS PER JAMES CITY COUNTY REVIEW	VMB
RECORD DRAWING (ADDITIONAL)	VMB
RECORD DRAWING	VMB
RECORD DRAWING	VMB
REVISION / COMMENT / NOTE	BY
5/17/03	
10/28/01	
12/27/00	
6/00	
11/10/99	
NO. DATE	

AREA OF LAND DISTURBANCE 4.02 ACRES

CYPRESS ISLE PROJECT NARRATIVE
PROJECT DESCRIPTION
THE PROJECT CONSISTS OF A 20 LOT RESIDENTIAL SUBDIVISION OF THE GOVERNOR'S LAND PROJECT. INCLUDED WITH THE CONSTRUCTION OF THIS PROJECT ARE: THE INSTALLATION OF APPROXIMATELY 1,500 LINEAR FEET OF ROADWAY; AN EXTENSION TO A WATER MAIN; AN EXTENSION TO A GRINDER PUMP SANITARY SEWER SYSTEM; THE INSTALLATION OF STORM SEWER SYSTEMS AND A DETENTION AREA; AND THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES.
THE SITE IS LOCATED SOUTH OF THE GOVERNOR'S LAND GARDEN CENTER AND BOAT STORAGE AREA, AT THE SOUTHERN END OF RIVER OAKS ROAD.
APPROXIMATELY 4.1 ACRES OF THE SITE WILL BE DISTURBED DURING CONSTRUCTION.
EXISTING SITE CONDITIONS
THE SITE IS FLAT, AND POPULATED WITH MATURE HARDWOOD TREES. RUNOFF FROM THE SITE NATURALLY FLOWS TOWARD THE NORTHEAST, TOWARDS RPA WETLANDS.
ADJACENT PROPERTY DESCRIPTION
THE SITE OF CYPRESS ISLE IS RELATIVELY ISOLATED. TO THE NORTH, EAST, AND WEST OF THE PROJECT SITE, RPA WETLANDS CAN BE FOUND. TO THE SOUTH, THE JAMES RIVER IS LOCATED. THE SITE SHALL BE CONNECTED TO THE REST OF THE GOVERNOR'S LAND PROJECT WITH A VEHICULAR BRIDGE (TO BE UNDER CONSTRUCTION IN THE NEAR FUTURE).
CONSTRUCTION SEQUENCE AND EROSION CONTROL MANAGEMENT
PRIOR TO ANY LAND DISTURBANCE TO CYPRESS ISLE, AND UPON COMPLETION OF THE BRIDGE CONSTRUCTION, A CONSTRUCTION ENTRANCE TO THE SITE SHALL BE ESTABLISHED JUST SOUTH OF THE SOUTH BRIDGE APPROACH AND ABUTMENT.
ALL EROSION CONTROL MEASURES, SUCH AS TEMPORARY SEDIMENT TRAPS, AND TEMPORARY SEDIMENT BASINS SHALL BE INSTALLED AND FUNCTIONAL PRIOR TO THE ENTIRE SITE BEING CLEARED.
DAMS, DIVERSION DIKES, ETC. SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS. THE EXTENSION AREA SHALL BE CONSTRUCTED AT START OF CONSTRUCTION, SINCE DURING CONSTRUCTION, THE DETENTION AREA SHALL SERVE AS A SEDIMENT BASIN. TOPSOIL SHALL BE PLACED AT THE RESERVED AREA, AND SILT FENCE SHALL SURROUND THE TOPSOIL STOCKPILE. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND REPAIRED REGULARLY BY THE CONTRACTOR. ACCUMULATED SEDIMENT SHALL BE REMOVED REGULARLY AND PROPERLY DISPOSED OF.

SITE SHALL BE MARKED FOR CLEARING OPERATIONS, INCLUDING CLEARED AREAS OF RIGHTS-OF-WAY, UTILITY AND STORMWATER EASEMENTS AND LOT(S) DESIGNATED FOR SURPLUS EARTH.
LIMITS OF CLEARING AND TREE PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING OPERATIONS AND TREE REMOVAL. BURNING MAY BE PERMITTED ON-SITE WITH PRIOR PERMISSION OF GOVERNOR'S LAND AND JAMES CITY COUNTY FIRE DEPARTMENT. GRADING OPERATION SHALL NOT COMMENCE UNTIL ALL CLEARING OPERATIONS ARE COMPLETE.
LOT(S) RESERVED FOR SURPLUS EARTH SHALL ALSO BE USED FOR TOPSOIL STOCKPILING AND STAGING OF CONSTRUCTION REQUIREMENT. LOTS INTENDED FOR SURPLUS EARTH GENERALLY REQUIRE REGRADING TO PROVIDE A BUILDING SITE NEAR OR ABOVE 100-YEAR FLOOD PLAIN ELEVATION OF 8.5.
UPON COMPLETION OF THE ROUGH GRADING ACTIVITIES OF THE SITE, STORM SEWER PIPE, AND INLETS SHALL BE INSTALLED, WITH INLET PROTECTION AND CULVERT INLET PROTECTION EROSION CONTROL DEVICES.
FINAL GRADING OF THE ROADWAY SECTION SHALL COMMENCE WITH THE COMPLETION OF THE STORM SEWER INSTALLATION. INSTALLATION OF WATER MAIN AND SANITARY SEWER MAIN AND SANITARY SEWER CONSTRUCTION, INCLUDING LATERAL AND SERVICE CONNECTIONS, WILL OCCUR SIMULTANEOUSLY.
FINAL SHAPING AND ROADWAY FORMATION AND GRADING OF SHOULDER WILL OCCUR UPON THE COMPLETION OF UTILITY INSTALLATION. THE TOPSOIL SHALL BE SPREAD ON ALL DEBUNDLED AREAS AND SEEDED.
SEDED AREAS WILL BE CHECKED REGULARLY TO ENSURE A GOOD STAND IS MAINTAINED. AREAS MAY REQUIRE FERTILIZATION AND RE-SEED TO PROVIDE A GOOD GROUND COVER.
UPON COMPLETE STABILIZATION OF THE SITE WITH PERMANENT GROUND COVERS, ALL EROSION CONTROL MEASURES SHALL BE REMOVED AND SEDIMENT SHALL BE PROPERLY DISPOSED.



RECORD DRAWING CERTIFICATION:
I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD-DRAWING REPRESENTS THE ACTUAL-CONDITION OF THE STORMWATER MANAGEMENT / BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS, AND STORMWATER MANAGEMENT PLAN, EXCEPT AS NOTED.
Vanessa Barrs, P.E.
SIGNATURE DATE 04/22/03

STORMSEWER RECORD DRAWING
BASED ON INFORMATION AS SUPPLIED
BY C. A. BARRS CONTRACTOR, INC.

BMP RECORD DRAWING BASED ON
INFORMATION AS SUPPLIED BY AES ENGINEERING

NOTE:
DRAINAGE AREA DELINEATIONS ARE BEST JUDGEMENT
AND APPROXIMATIONS OF DRAINAGE PATTERNS AT TIME
OF BUILD-OUT OF SITE.

APPROVED
James City County
Environmental Division
By: *[Signature]*
Date: 6-26-03

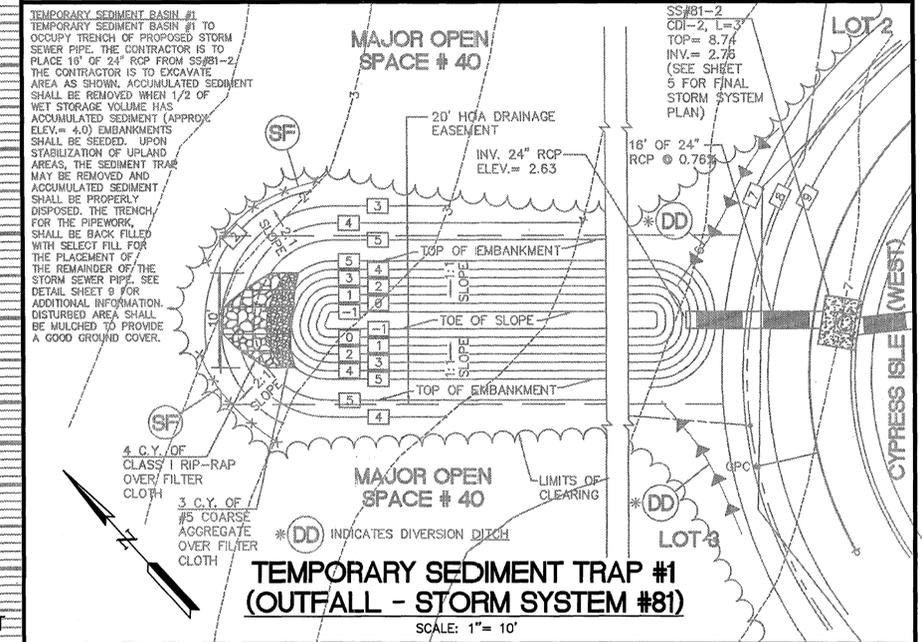
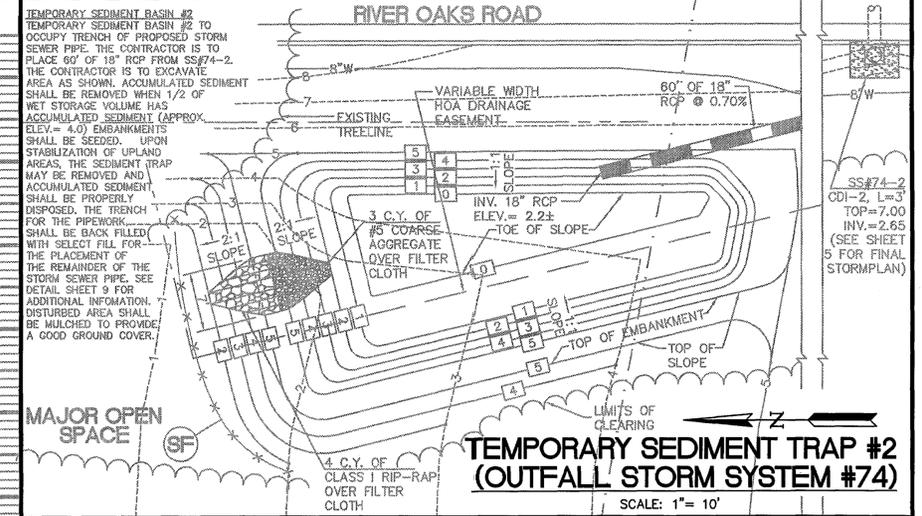
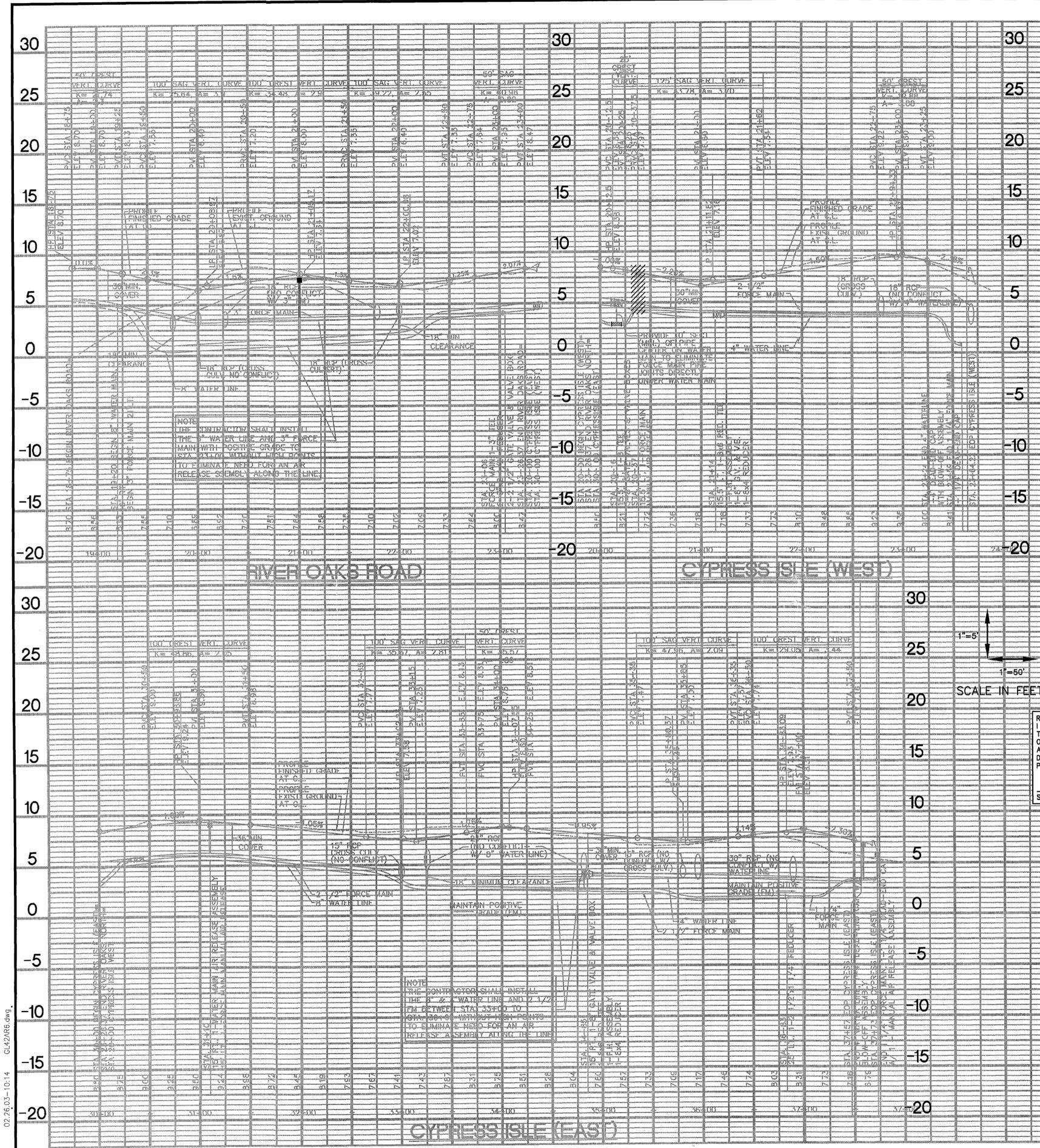
NOTE:
STORM ELEVATION SHOWN FOR THE STORMWATER MANAGEMENT FACILITY ARE CALCULATED ELEVATIONS OF THE WATER SURFACE ELEVATION FOR LOCAL STORMS PRODUCING EQUIVALENT 2-YR., 10-YR., AND 100-YR. RAINFALL EVENTS. WATERSURFACE ELEVATIONS OF THE STORMWATER MANAGEMENT FACILITY BASED UPON FLOOD ELEVATIONS OF THE JAMES RIVER AREA AS FOLLOWS: 10-YR., ELEV. 5.8; 50-YR., ELEV. 7.5; 100-YR., ELEV. 8.5

5248 Old Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994



GRADING, DRAINAGE + EROSION AND SEDIMENT CONTROL
CYPRESS ISLE
THE
GOVERNOR'S LAND
All Tree Rivers
JAMES CITY COUNTY
VIRGINIA
FOUNTAIN DISTRICT

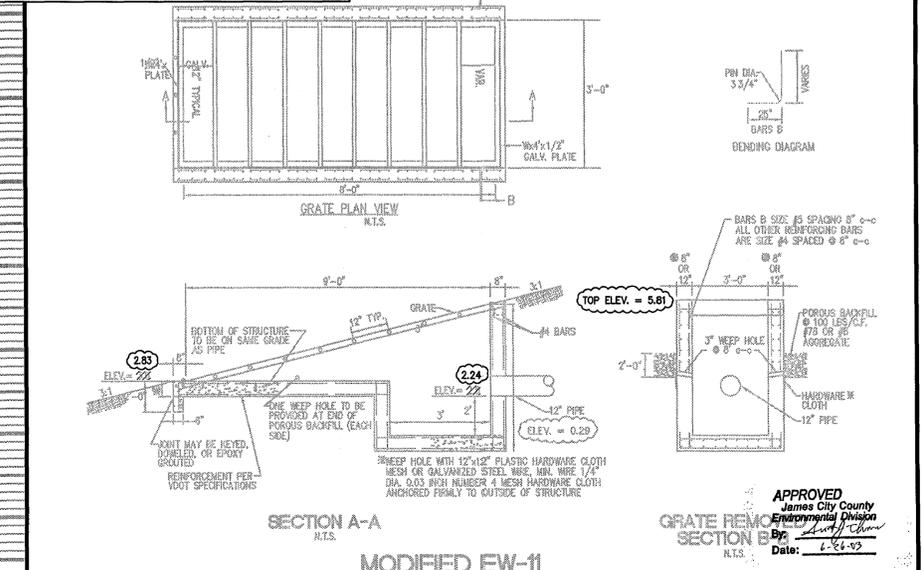
Designed	VMB/RDS	Drawn	RDS
Scale	1"=50'	Date	8/98
Project No.	7173-4-2		
Drawing No.	5		



RECORD DRAWING CERTIFICATION:
 I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT / BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS, AND STORMWATER MANAGEMENT PLAN, EXCEPT AS NOTED.

Signature: *W. Mark Bantz, P.E.* Date: *06/26/03*

- NOTES**
- ALL CAST-IN-PLACE CONCRETE TO BE CLASS A3, FOR PRECAST USE 4,000 PSI MIN.
 - REINFORCING STEEL TO HAVE A MINIMUM 1-1/2" COVER.
 - BARS FROM MAY BE PRECAST OR CAST-IN-PLACE.
 - ALL PIPE FOR GRATE, STRUCTURAL TUBING, AND RELATED HARDWARE TO BE GALVANIZED.



APPROVED
 James City County
 Environmental Division
 By: *[Signature]*
 Date: *6-24-03*

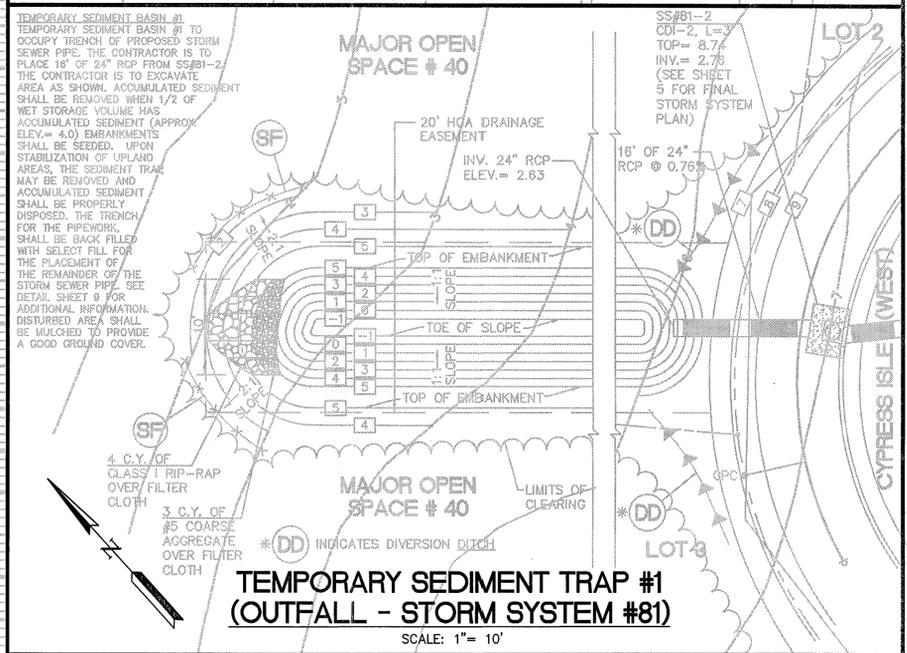
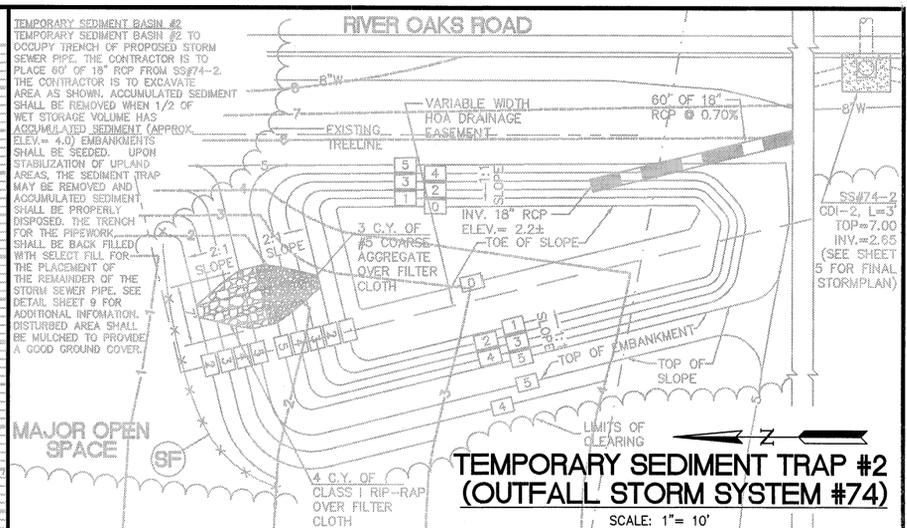
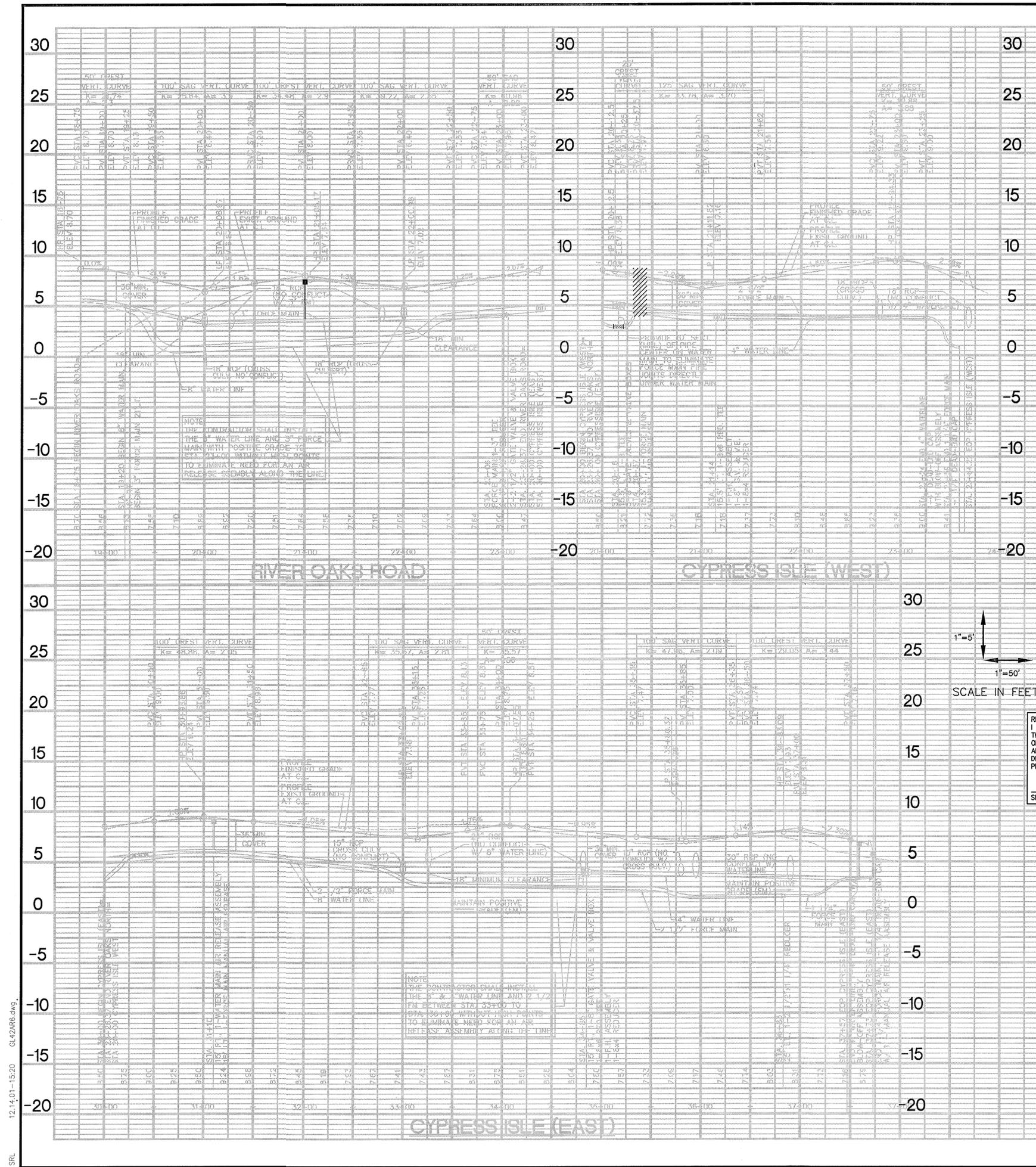
No.	DATE	REVISION / COMMENT / NOTE
5	10/28/01	RECORD DRAWING
4	10/28/01	RECORD DRAWING
3	12/7/98	REVISED PER JCC REVIEW (THIS SHEET UNCHANGED)
2	11/7/16	REVISED PER JAMES CITY COUNTY REVIEW COMMENTS
1	10/24/01	REVISED PER JAMES CITY COUNTY REVIEW COMMENTS

5248 Old Towne Road, Suite 1
 Williamsburg, Virginia 23188
 (757) 253-0040
 Fax (757) 220-8994



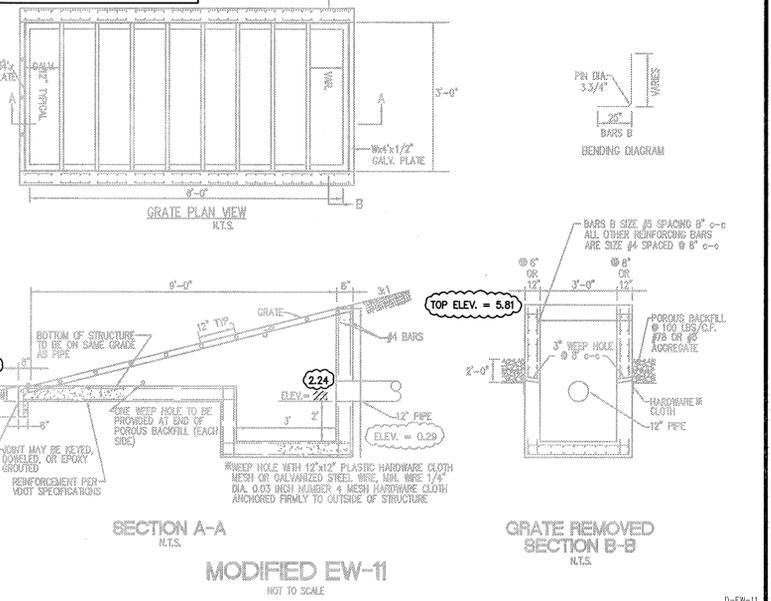
PROFILES
 CYPRESS ISLE
 THE
 GOVERNOR'S LAND
at True Rivers

DESIGNED: VMB/RDS
 DRAWN: RDS
 SCALE: 1"=50'
 DATE: 8/98
 PROJECT NO.: 7173-4-2
 DRAWING NO.: 6



RECORD DRAWING CERTIFICATION:
I HEREBY CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS RECORD DRAWING REPRESENTS THE ACTUAL CONDITION OF THE STORMWATER MANAGEMENT / BMP FACILITY. THE FACILITY APPEARS TO CONFORM WITH THE PROVISIONS OF THE APPROVED DESIGN PLAN, SPECIFICATIONS, AND STORMWATER MANAGEMENT PLAN, EXCEPT AS NOTED.

SIGNATURE _____ DATE _____



- NOTES**
- ALL CAST-IN-PLACE CONCRETE TO BE CLASS A3. FOR PRECAST USE 4,000 PSI MIN.
 - REINFORCING STEEL TO HAVE A MINIMUM 1-1/2" COVER.
 - THIS ITEM MAY BE PRECAST OR CAST-IN-PLACE.
 - ALL PIPE FOR GRATE, STRUCTURAL TUBING, AND RELATED HARDWARE TO BE GALVANIZED.

No.	DATE	REVISION / COMMENT / NOTE
5	10/29/09	RECORD DRAWING
4	6/00	RECORD DRAWING
3	12/98	REVISED PER JCC REVIEW (THIS SHEET UNCHANGED)
2	11/16	REVISED PER JAMES CITY COUNTY REVIEW COMMENTS
1	10/26	REVISED PER JAMES CITY COUNTY REVIEW COMMENTS

5248 Old Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994



PROFILES
CYPRESS ISLE
THE
GOVERNOR'S LAND
All Trunc Rivers

DESIGNED: VMB/RDS
DRAWN: RDS
SCALE: 1" = 50'
DATE: 8/98

Project No. 7173-4-2
Drawing No. 6

POWHATAN DISTRICT
JAMES CITY COUNTY
VIRGINIA

James City County, Virginia
Environmental Division

Stormwater Management/BMP
Record Drawing Review Form

County Plan No. 5-79-98
 Project Name: Gov. Land - Cypress Island
 Stormwater Management Facility: JR-041

Component	Approved Plan	Record Drawing	OK
Top of dam (lowest point)	6.5	6.09	
Top of Dam (reported)	6.5	"	
Top width of dam			
Crest of riser	^{3.4} 2.5	2.85	
Crest of Emerg. Spillway	6.0	NA	
Low Water elevation			
Normal Water level			
Bottom of pond elevation			
Inflow Pipe size (1)	30" RCP	30" RCP	
Inflow Pipe size (2)			
Inflow Pipe size (3)			
Barrel Diameter (inches)	12" RCP	12" RCP	
100 yr Storm Elevation	4.52		
Trash rack/anti-vortex type	GATE	12	
Forbay, baffle wall, etc.	NO		
Pond drain elevation			

Date: _____

Name: _____

RD not signed or sealed.

AES CONSULTING ENGINEERS

Engineering, Surveying and Planning

5248 Olde Towne Road, Suite 1

WILLIAMSBURG, VIRGINIA 23188

LETTER OF TRANSMITTAL

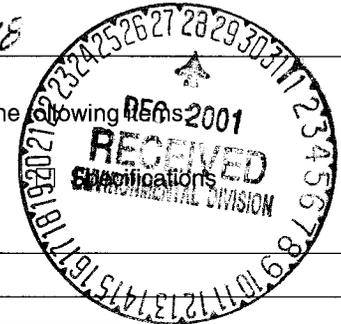
(757) 253-0040
FAX (757) 220-8994

DATE <i>December 25, 2001</i>	JOB NO. <i>7173-4-2</i>
ATTENTION <i>Mr. Mike Woolsten, Mr. Scott Thomas</i>	
RE: <i>CYPRESS ISLE BMP AS-BUILTS JR041; S-79-98</i>	

TO *James City County Environmental Division*

WE ARE SENDING YOU Attached Under separate cover via _____ the following

- Shop drawings Prints Plans Samples
 Copy of letter Change order _____



COPIES	DATE	NO.	DESCRIPTION
<i>2</i>			<i>Working Copies of Record Drawings</i>
<i>1</i>			<i>Record Drawing Certificates</i>

THESE ARE TRANSMITTED as checked below:

- For approval Approved as submitted Resubmit _____ copies for approval
 For your use Approved as noted Submit _____ copies for distribution
 As requested Returned for corrections Return _____ corrected prints
 For review and comment _____
 FOR BIDS DUE _____ PRINTS RETURNED AFTER LOAN TO US

REMARKS

COPY TO _____ SIGNED: *V. Mac B...*

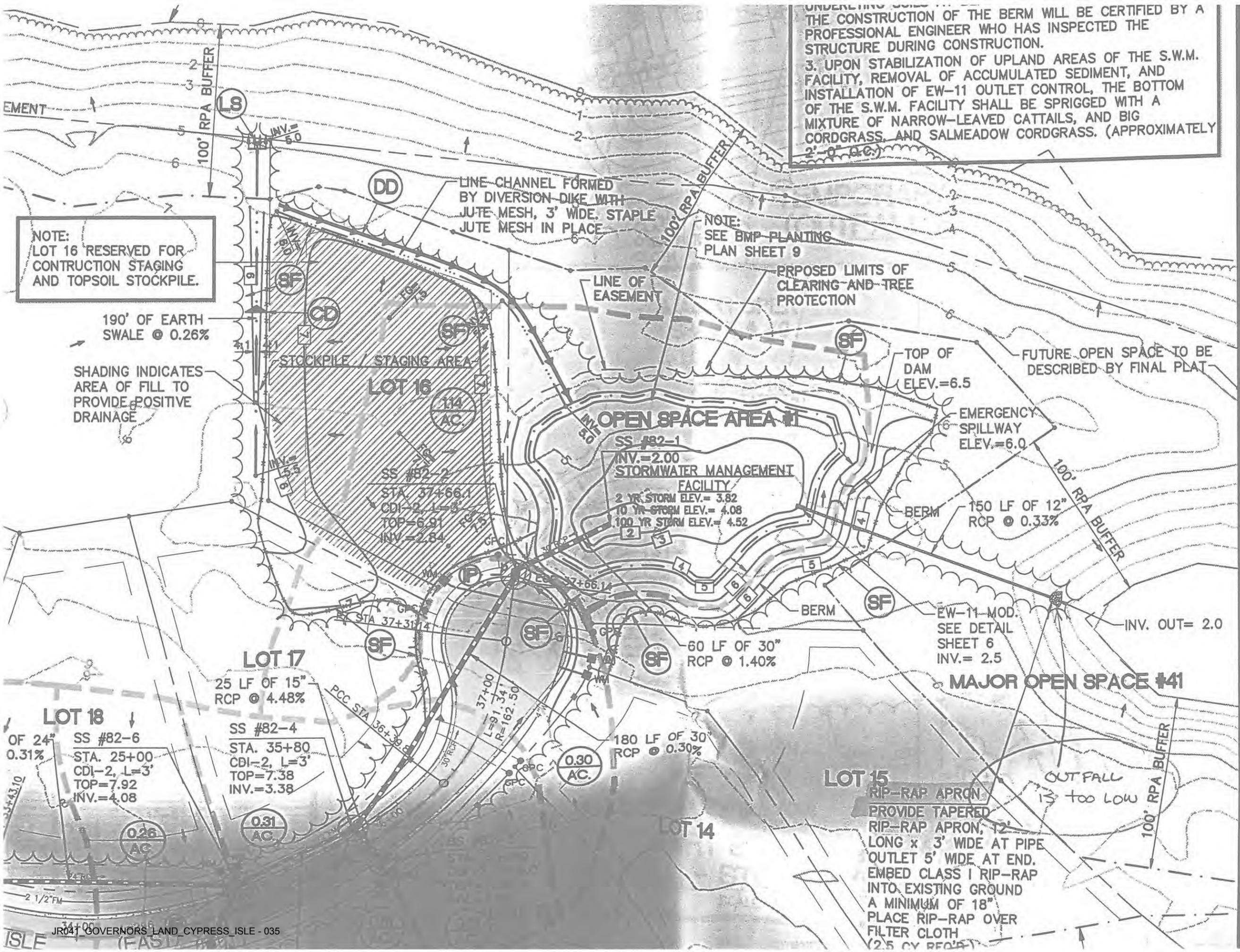
UNDERLYING SOILS... THE CONSTRUCTION OF THE BERM WILL BE CERTIFIED BY A PROFESSIONAL ENGINEER WHO HAS INSPECTED THE STRUCTURE DURING CONSTRUCTION.

3. UPON STABILIZATION OF UPLAND AREAS OF THE S.W.M. FACILITY, REMOVAL OF ACCUMULATED SEDIMENT, AND INSTALLATION OF EW-11 OUTLET CONTROL, THE BOTTOM OF THE S.W.M. FACILITY SHALL BE SPRIGGED WITH A MIXTURE OF NARROW-LEAVED CATTAILS, AND BIG CORDGRASS, AND SALMEADOW CORDGRASS. (APPROXIMATELY 2'-0" O.C.)

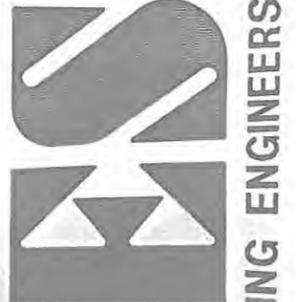
				REVISED AS	
			2	12/98	
			1	10/26	
			No.	DATE	

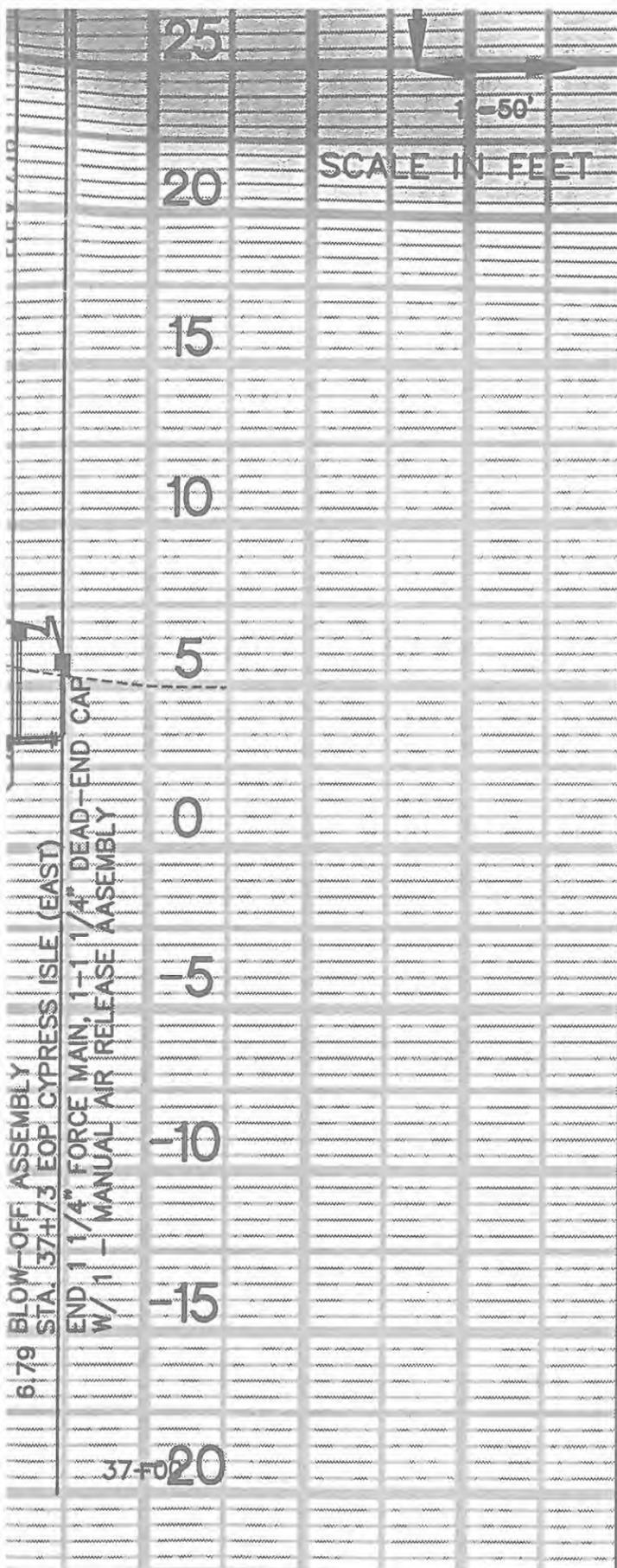
NOTE: LOT 16 RESERVED FOR CONSTRUCTION STAGING AND TOPSOIL STOCKPILE.

NOTE: SEE BMP-PLANTING PLAN SHEET 9



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OVER FILTER CLOTH

TEMPORARY SEDIMENT TRAP #1 (OUTFALL - STORM SYSTEM #81)

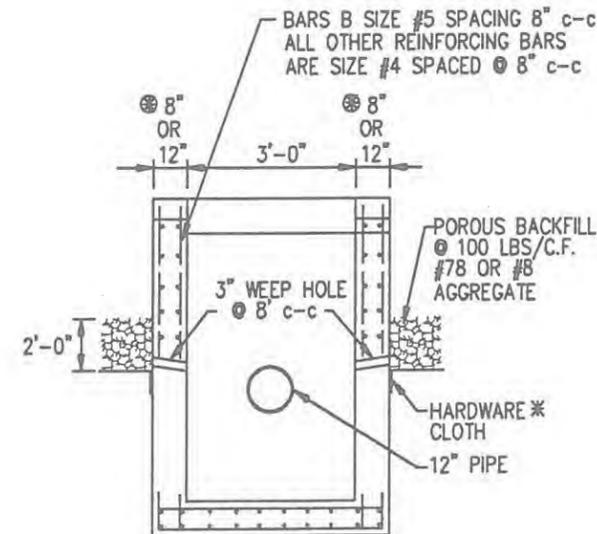
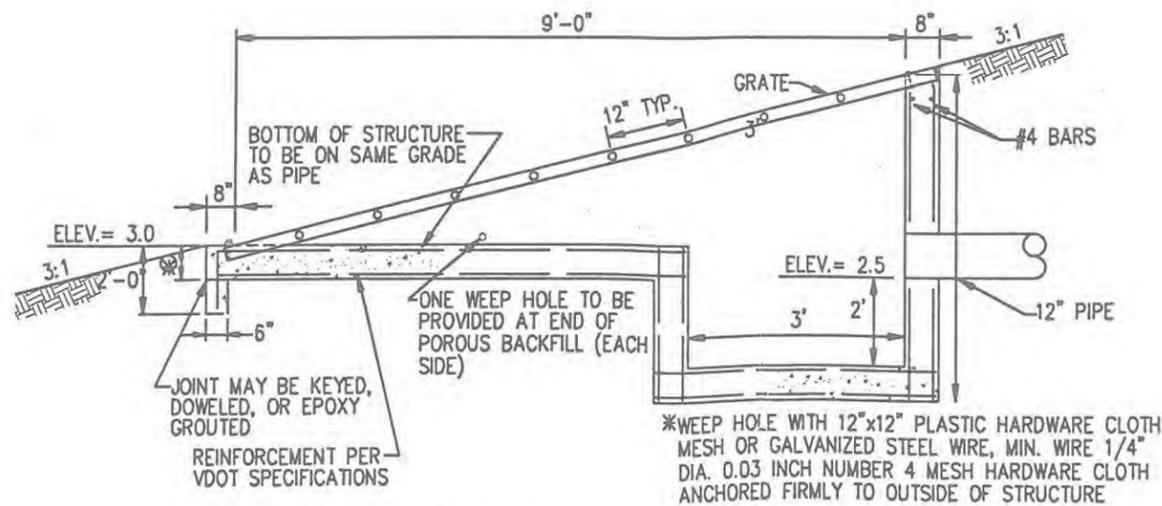
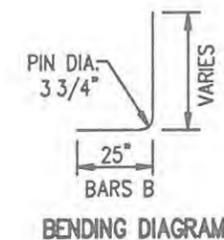
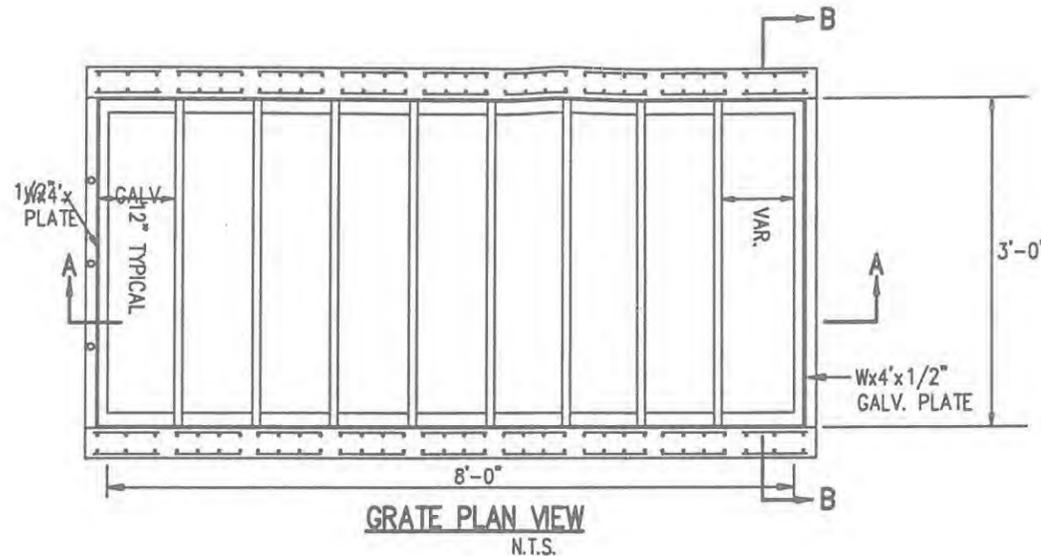
SCALE: 1" = 10'

1" = 50'
SCALE IN FEET

EW-11m

NOTES

- ALL CAST-IN-PLACE CONCRETE TO BE CLASS A3. FOR PRECAST USE 4,000 PSI MIN.
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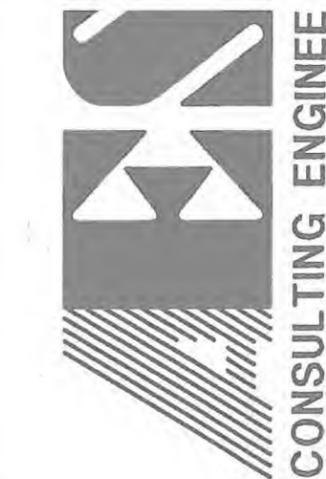


SECTION A-A
N.T.S.

GRATE REMOVED
SECTION B-B
N.T.S.

MODIFIED EW-11 NOT TO SCALE

D-EW-11



VIRGINIA

JAMES CITY COUNTY

POWhatan DISTRICT

PROFILES
CYPRESS ISLE

THE
GOVERNOR'S LAND

All Two Rivers

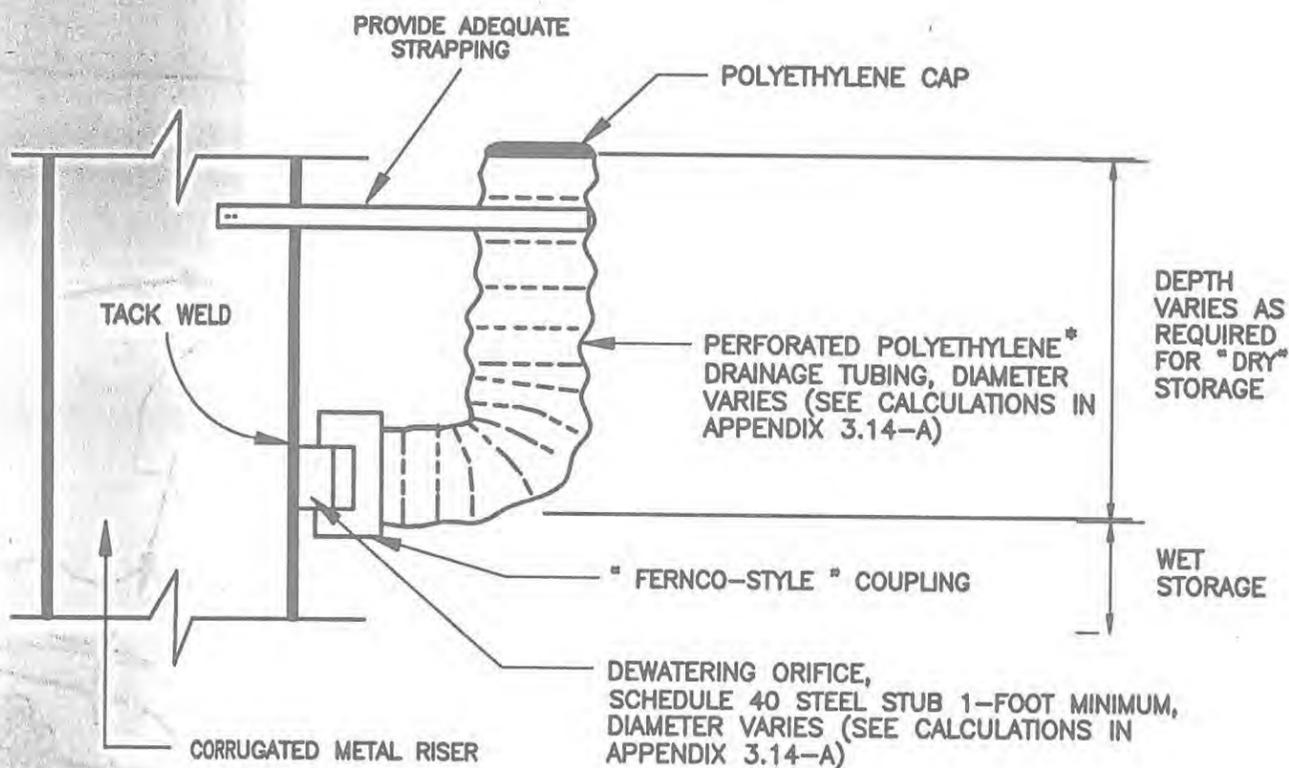
Designed VMB/RDS	Drawn RDS
Scale 1" = 50'	Date 8/98

Project No.
7173-4-2

Drawing No.

6

BASINS

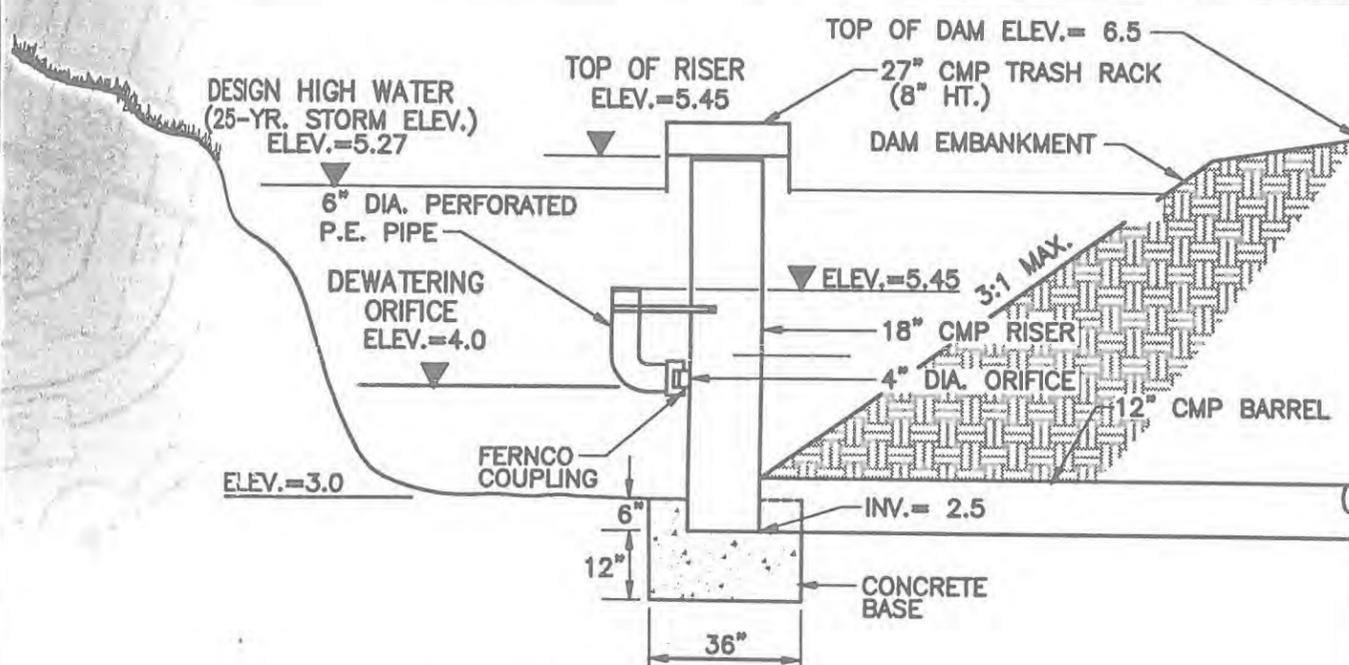


NOTE: WITH CONCRETE RISER, USE PVC SCHEDULE 40 STUB FOR DEWATERING ORIFICE

* DRAINAGE TUBING SHALL COMPLY WITH ASTM F667 AND AASHTO M294

SOURCE: VA. DSWC

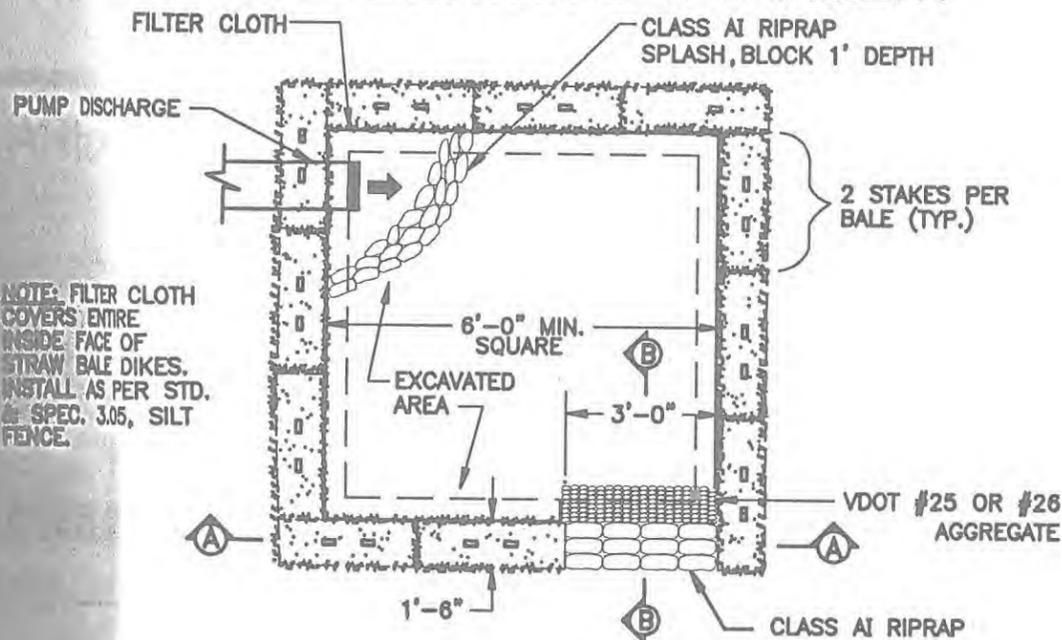
PLATE. 3.14-15



TEMPORARY SEDIMENT BASIN RISER DETAIL

NOT TO SCALE

TRENCH DEWATER CONTAINMENT



NOTE: FILTER CLOTH COVERS ENTIRE INSIDE FACE OF STRAW BALE DIKES. INSTALL AS PER STD. SPEC. 3.05, SILT FENCE.

PLAN VIEW

EXISTING GROUND

No.	DATE	REVISION / COMMENT / NOTE
2	12/98	REVISED AS PER JCC REVIEW (THIS SHEET UNCHANGED)
1	10/26	REVISED AS PER JAMES CITY COUNTY REVIEW



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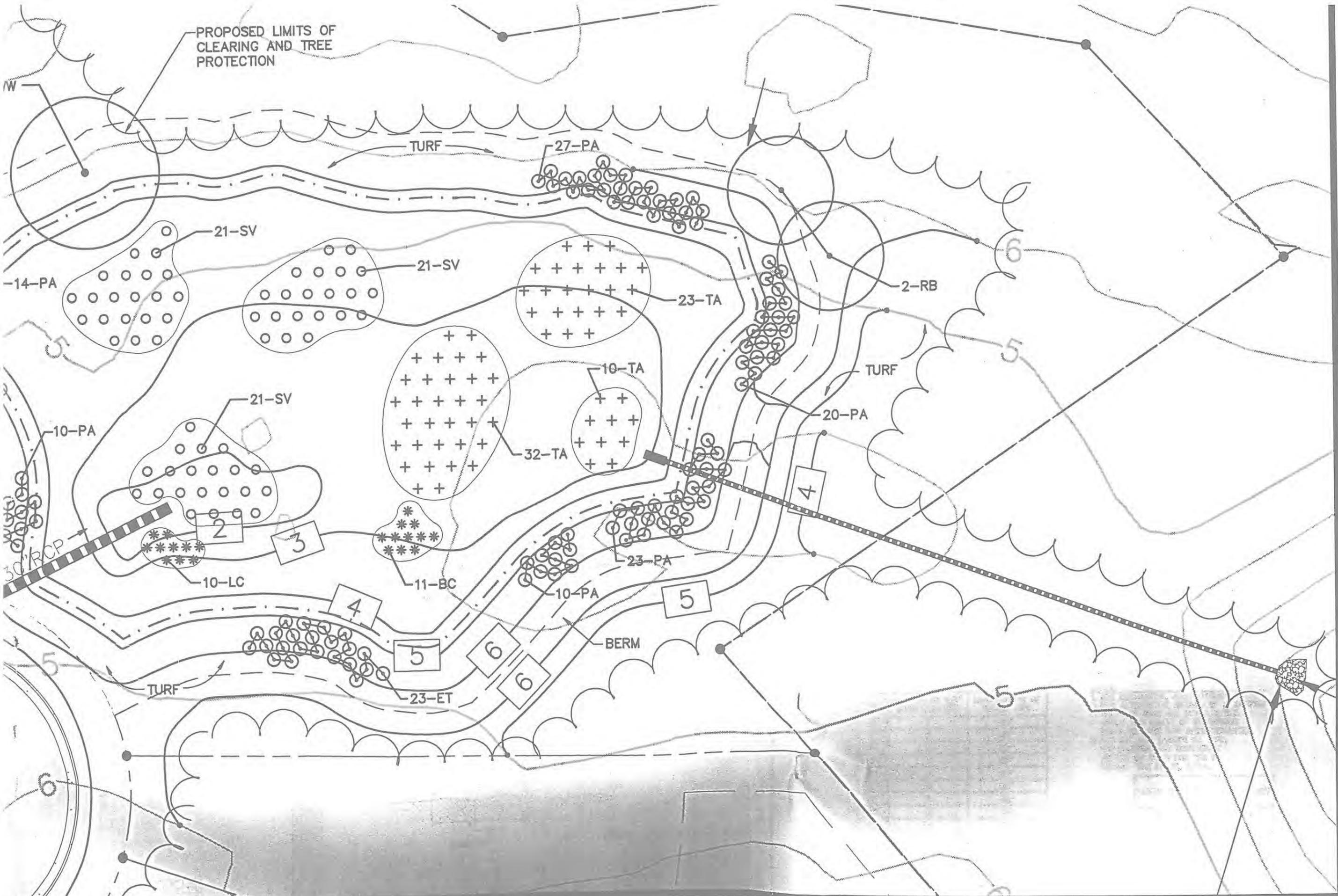


CONSULTING ENGINEERS



LAND

en4



PROPOSED LIMITS OF
CLEARING AND TREE
PROTECTION

TURF

27-PA

21-SV

21-SV

23-TA

2-RB

14-PA

21-SV

32-TA

10-TA

20-PA

10-PA

10-LC

11-BC

10-PA

23-PA

BERM

23-ET

TURF



5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040



**WORKSHEET FOR BMP POINT SYSTEM AS OF AUGUST 1998
GOVERNOR'S LAND AT TWO RIVERS**

A. STRUCTURAL BMP POINT ALLOCATION (EXISTING STRUCTURES)

ITEM	BMP DESIGN TYPE	FACILITY NAME	BMP POINTS		FRACTION OF SITE SERVED BY BMP	WEIGHTED BMP POINTS
WET PONDS	DESIGN TYPE 3 ON DESIGN TYPE 7	TRAVIS POND WINGFIELD LAKE FOWLER'S LAKE WHITTAKER LAKE KITCHUM'S POND BENNETT'S POND HORNE'S LAKE	11.0	X	$\frac{436.04}{1465.22} =$	3.27
	DESIGN TYPE 7	BARRETT'S POINTE	9.0	X	$\frac{3.94}{1465.22} =$	0.02
DRY PONDS	DESIGN TYPE 3	DRY POND #1 DRY POND #2 TIMBER STRUCT. #8	6.0	X	$\frac{140.34}{1465.22} =$	0.57
DRY PONDS	DESIGN TYPE 2 (TIMBER)	TIMBER STRUCT. #5 TIMBER STRUCT. #9	4.0	X	$\frac{44.44}{1465.22} =$	0.12
	TIMBER STRUCTURES	TIMBER STRUCT. #1 TIMBER STRUCT. #2 TIMBER STRUCT. #3 TIMBER STRUCT. #4	2.0	X	$\frac{43.40}{1465.22} =$	0.06
DRY PONDS	MARSH AUGMENTED BMP	MARSH AUGM. BMP #1 MARSH AUGM. BMP #2 MARSH AUGM. BMP #2	9.0	X	$\frac{15.80}{1465.22} =$	0.10
	DESIGN TYPE 3	DRY POND #1 DRY POND #2	2.0	X	$\frac{78.05}{1465.22} =$	0.11
DRY PONDS	TIMBER STRUCTURES WITH MARSH AUGMENTED	TIMBER STRUCT. #6 TIMBER STRUCT. #7	6.0	X	$\frac{40.38}{1465.22} =$	0.17
	GOLF COURSE INFILTRATION TRENCHES		10.0	X	$\frac{121.20}{1465.22} =$	0.83
					SUBTOTAL	5.25

**WORKSHEET FOR BMP POINT SYSTEM AS OF AUGUST 1998
GOVERNOR'S LAND AT TWO RIVERS
(CONTINUED)**

B.	<u>STRUCTURAL BMP POINT ALLOCATION (PROPOSED STRUCTURES)</u>			
DRY PONDS	NO ADDITIONAL STRUCTURAL BMP PROPOSED			0.00
			SUBTOTAL	0.00
	TOTAL WEIGHTED STRUCTURAL BMP POINTS			<u>5.25</u>
C.	<u>NATURAL OPEN SPACE CREDIT</u> (SEE ATTACHED SHEETS OF MAJOR OPEN SPACE AND OPEN SPACE TABULATIONS)			
	<u>FRACTION OF SITE</u>		<u>NATURAL OPEN SPACE CREDIT</u>	POINTS FOR NATURAL OPEN SPACE
	647.92 1465.22	X 100%	0.11% =	4.42
D.	<u>TOTAL WEIGHTED POINTS</u>			
	<u>STRUCTURAL BMP POINTS</u>		<u>NATURAL OPEN SPACE POINTS</u>	<u>TOTAL BMP POINTS</u>
	5.25	+	4.42 =	<u>9.67</u>

PRELIMINARY

**WORKSHEET FOR BMP POINT SYSTEM AS OF AUGUST 1998
GOVERNOR'S LAND AT TWO RIVERS**

MAJOR OPEN SPACE AND NATURAL OPEN SPACE TABULATION

I. MAJOR OPEN SPACE (AS NUMBERED ON BMP PLAN WITH CIRCLE)

	<u>ACRES</u>
1	22.74
2	0.50
3	29.38
4	2.03
5	1.15
6	0.66
7	1.46
8	5.74
9	24.21
10	3.94
11	2.57
12	1.72
13	1.95
14	3.18
15	0.29
16	1.63
17	10.14
18	4.17
19	1.27
20	0.96
21	1.76
22	4.13
23	12.41
24	25.58
25	1.71
26	0.55
27	1.28
28	11.89
29	8.23
30	1.95
31	3.31
32	3.17
33	0.87
34	7.57
35	7.10
36	17.85
37	4.57
38	9.48
39	6.97
40 (formerly Future Open Space #15)	7.18
41 (formerly Future Open Space #17)	7.97
THE POINT	7.47
SUBTOTAL	272.69 AC.+/-

PRELIMINARY

II.	SUBDIVISION OPEN SPACES (AS NUMBERED ON BMP PLAN WITH SQUARES)	
	BAY 1, POD 1 (TRAVIS POND)	5.66
	BAY 1, POD 2 (WHITTAKER ISLAND, BLOCK A)	5.80
	BAY 1, POD 3 (WHITTAKER ISLAND, BLOCK B)	1.43
	BAY 1, POD 4 (PARKSIDE)	5.64
	TOTAL BAY 1	18.53 AC.+/-
	BAY 2, POD 1 (HORNE'S LAKE)	4.87
	BAY 2, POD 2 (HARPER'S MILL)	12.72
	BAY 2, POD 3 (NATHANIEL'S GREEN)	4.27
	BAY 2, POD 4 (NATHANIEL'S GREEN, BLOCK "B")	1.15
	BAY 2, POD 5 (NATHANIEL'S RUN)	1.60
	TOTAL BAY 2	24.61 AC.+/-
	BAY 3, POD 1 (FOWLER'S LAKE)	1.04
	BAY 3, POD 2A (RIVER OAKS NORTH - BLOCK B)	0.00
	BAY 3, POD 2B	4.48
	BAY 3, POD 3A (FOUNDER'S HILL)	2.37
	BAY 3, POD 3B (FOUNDER'S HILL)	0.97
	BAY 3, POD 4 (RIVER OAKS NORTH)	-0-
	TOTAL BAY 3	8.86 AC.+/-
	BAY 4, POD 1 (THE HARBOR AT TWO RIVERS)	0.11
	BAY 4, POD 2 (CYPRESS ISLE)	1.06
	BAY 4, POD 3 (BARRET'S POINTE)	1.16
	BAY 4, POD 4 (TWO RIVERS POINT)	-0-
	TOTAL BAY 4	2.33 AC.+/-
	BAY 5, POD 1 (WINGFIELD LAKE)	5.37
	BAY 5, POD 2 (HEARTHSTONE, KITCHUM'S POND, BLOCK A AND PLANTER'S ROUND)	1.76
	BAY 5, POD 3 (KITCHUM POND, BLOCK "B")	0.96
	BAY 5, POD 4	0.96
	TOTAL BAY 5	9.05 AC.+/-
	BAY 6, POD 1	0.00
	BAY 6, POD 2 (KITCHUM'S POND - BLOCK 'C')	0.23
	TOTAL BAY 6	0.23 AC.+/-
	SUBTOTAL OF OPEN AREAS IN SUBDIVISIONS	88.22 AC.+/-
III.	PARK EAST (RECREATIONAL SITE)	
	POOL AREA	3.79 AC.+/-
	TENNIS FACILITY	1.47 AC.+/-
	SUBTOTAL	5.26 AC.+/-
IV.	GOLF COURSE	20.00 AC.+/-
V.	CONSERVATION EASEMENT	201.00 AC.+/-

VI. FUTURE OPEN AREA (AS NUMBERED ON BMP PLAN WITH HEXAGON)

	ACRES	
1.		32.69
2.		5.90
3.	DELETE	
4.	DELETE	
5.	DELETE	
6.	DELETE	
7.		0.31
8.	DELETE	
9.		1.85
10.		
11.	DELETE	
12.	DELETE	
13.	(REVISED - PART NOW LISTED AS MAKOR OPEN SPACE #39)	6.40
14.	DELETE	
15.	DELETED - NOW LISTED AS MAJOR OPEN SPACE #40	
16.	DELETE	
17.	DELETED - NOW LISTED AS MAJOR OPEN SPACE #41	
18.		7.13
19.		1.80
20.		4.67
SUBTOTAL		60.75 AC.+/-

VII. TOTAL NATURAL OPEN SPACE 647.92 AC.+/-

S:\JOBS\7173\00\WORDPROC\SPRESHT\717300.XLS

PRELIMINARY

Reservoir Report

Reservoir No. 5 - Cyp.Isle BMP (AS-BUILT)

Hydraflow Hydrographs by Intelsolve

Pond Data

Pond storage is based on known contour areas. Average end area method used.

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	3.00	6,436	0	0
1.00	4.00	13,053	9,745	9,745
2.00	5.00	15,527	14,290	24,035
3.00	6.00	19,828	17,678	41,712

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0 ✓	0.0	0.0	0.0
Span in	= 12.0	0.0	0.0	0.0
No. Barrels	= 1	0	0	0
Invert El. ft	= 2.30 <i>2.24</i>	0.00	0.00	0.00
Length ft	= 150.0	0.0	0.0	0.0
Slope %	= 0.25	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 3.00	10.00	0.00	0.00
Crest El. ft	= 3.00	5.50	0.00	0.00
Weir Coeff.	= 3.33	3.33	0.00	0.00
Weir Type	= Riser	Rect	---	---
Multi-Stage	= Yes	No	No	No

*12" 0.75
12" 1-93
1.17' TAILWATER*

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 3.10 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	Civ D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	3.00	0.00	---	---	---	0.00	0.00	---	---	---	0.00
1.00	9,745	4.00	2.39	---	---	---	2.38	0.00	---	---	---	2.38
2.00	24,035	5.00	3.50	---	---	---	3.48	0.00	---	---	---	3.48
3.00	41,712	6.00	4.33	---	---	---	4.28	11.77	---	---	---	16.05

As Built Routing due to Submerged Condition

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Rational	7.02	1	38	28,005	---	---	---	Cypress Isle BMP Pre-Development
2	Rational	20.99	1	11	24,242	---	---	---	Cypress Isle Post-Development
4	Reservoir	4.65	1	32	23,927	2	4.52	17,105	Post-dev. routed
6	Reservoir	0.65	1	37	21,993	2	5.50	23,151	routed sed. bas.
8	Reservoir	3.17	1	34	22,952	2	4.66	19,245	AS-BUILT ROUTED

*100-YEAR
AB Routing*

Proj. file: cypressbmp.GPW

Return Period: 100 yr

Run date: 03-20-2003

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Rational	5.57	1	38	22,231	---	----	----	Cypress Isle BMP Pre-Development
2	Rational	17.27	1	11	19,951	---	----	----	Cypress Isle Post-Development
4	Reservoir	4.26	1	31	19,692	2	4.27	13,587	Post-dev. routed
6	Reservoir	0.44	1	37	18,082	2	5.27	19,049	routed sed. bas.
8	Reservoir	2.89	1	33	18,717	2	4.40	15,496	AS-BUILT ROUTED

Proj. file: cypressbmp.GPW	Return Period: 25 yr	Run date: 03-20-2003
----------------------------	----------------------	----------------------

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description	
1	Rational	4.78	1	38	19,075	---	-----	-----	Cypress Isle BMP Pre-Development	
2	Rational	14.41	1	11	16,641	---	-----	-----	Cypress Isle Post-Development	
4	Reservoir	3.94	1	31	16,425	2	4.08	10,953	Post-dev. routed	
6	Reservoir	0.40	1	37	15,026	2	5.09	15,852	routed sed. bas.	
8	Reservoir	2.65	1	33	15,451	2	4.20	12,662	AS-BUILT ROUTED	
Proj. file: cypressbmp.GPW				Return Period: 10 yr			Run date: 03-20-2003			

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description	
1	Rational	3.44	1	38	13,744	—	—	—	Cypress Isle BMP Pre-Development	
2	Rational	10.98	1	11	12,679	—	—	—	Cypress Isle Post-Development	
4	Reservoir	3.42	1	30	12,515	2	3.82	7,991	Post-dev. routed	
6	Reservoir	0.35	1	37	11,340	2	4.84	12,042	routed sed. bas.	
8	Reservoir	2.33	1	32	11,540	2	3.96	9,371	AS-BUILT ROUTED	
Proj. file: cypressbmp.GPW				Return Period: 2 yr			Run date: 03-20-2003			

CYPRESS ISLE
STORM SEWER TABULATION
SYSTEM # 74

DATA FILE: SYSTEM74.ST3
RAINFALL FILE: JCCN.RN3
PRINTED: 10-22-1998

10 YEAR DESIGN STORM

Q = CIA

I = 45.948 / (Tc + 10.200) ^ 0.693

PAGE 1 OF 1

LINE No.	INC AREA (AC)	RNOFF COEFF (C)	INC C*A	SUM C*A	TIME CONC (MIN)	RNFAL INT I (IPH)	TOTAL FLOW Q=CA*I, AdQ (CFS)	PIPE CAP (CFS)	PIPE SIZE HT/W (IN)	PIPE LEN (FT)	PIPE SLOPE (%)	HYD GRD SLOPE (%)	VEL UP/DN (FPS)	HYD GRD UP/DOWN (FT)	INVERT UP/DOWN (FT)	COMMENTS/ DOWNSTREAM LINE #
2	0.1	0.70	0.1	0.1	5.0	6.97	0.63	4.1	15	25	0.400	0.030	0.52	6.04	2.75	SS#74-2 - SS#74-3
							0.63 0.0		15				0.52	6.03	2.65	1
1	0.2	0.70	0.1	0.7	10.2	5.69	4.05	8.9	18	90	0.722	0.149	2.29	5.93	2.65	SS#74-1 - SS#74-2
							4.05 0.0		18				2.29	5.80	2.00	OUTFALL
4	0.4	0.60	0.2	0.2	9.0	5.93	1.28	4.1	15	25	0.400	0.121	1.04	6.27	3.70	SS#74-6 - SS#74-5
							1.28 0.0		15				1.04	6.24	3.60	3
3	0.5	0.60	0.3	0.5	9.1	5.90	3.04	7.5	18	184	0.516	0.084	1.72	6.19	3.60	SS#74-6 - SS#74-2
							3.04 0.0		18				1.72	6.03	2.65	1

CYPRESS ISLE
STORM SEWER TABULATION
SYSTEM #81

DATA FILE: SYSTEM81.ST3
RAINFALL FILE: JCCN.RN3
PRINTED: 10-20-1998

10 YEAR DESIGN STORM

Q = CIA

I = 45.948 / (Tc + 10.200) ^ 0.693

PAGE 1 OF 1

LINE No.	INC AREA (AC)	RNOFF COEFF (C)	INC C*A	SUM C*A	TIME CONC (MIN)	RNFAL INT 1 (IPH)	TOTAL FLOW Q=CA*I, AdQ (CFS)	PIPE CAP (CFS)	PIPE SIZE HT/W (IN)	PIPE LEN (FT)	PIPE SLOPE (%)	HYD GRD SLOPE (%)	VEL UP/DN (FPS)	HYD GRD UP/DOWN (FT)	INVERT UP/DOWN (FT)	COMMENTS/ DOWNSTREAM LINE #
4	0.3	0.60	0.2	0.2	7.0	6.40	1.34	4.1	15	25	0.400	0.133	1.10	6.36	3.90	SS#81-4 - SS#81-5
							1.34 0.0	15					1.10	6.33	3.80	3
3	0.6	0.50	0.3	0.8	10.3	5.67	4.48	7.0	18	45	0.444	0.182	2.54	6.21	3.80	SS#81-3 - SS#81.4
							4.48 0.0	18					2.54	6.13	3.60	2
2	0.3	0.50	0.2	0.9	10.5	5.63	5.29	14.3	24	210	0.400	0.055	1.68	6.07	3.60	SS#81-2 - SS#81-3
							5.29 0.0	24					1.68	5.96	2.76	1
1	0.3	0.70	0.2	1.2	11.7	5.42	6.42	19.7	24	100	0.760	0.081	2.04	5.88	2.76	SS#81-1 - SS#81-2
							6.42 0.0	24					2.04	5.80	2.00	OUTFALL
5	0.6	0.50	0.3	0.3	10.0	5.72	1.63	4.3	15	46	0.435	0.135	1.33	6.39	4.00	SS#81-4 - SS#81-6
							1.63 0.0	15					1.33	6.33	3.80	3

CYPRESS ISLE
STORM SEWER TABULATION
SYSTEM #82

DATA FILE: SYSTEM82.ST3
RAINFALL FILE: JCCN.RN3
PRINTED: 10-22-1998

10 YEAR DESIGN STORM

Q = CIA

I = 45.948 / (Tc + 10.200) ^ 0.693

PAGE 1 OF 1

LINE No.	INC AREA (AC)	RNOFF COEFF (C)	INC C*A	SUM C*A	TIME CONC (MIN)	RNFAL INT I (IPH)	TOTAL FLOW Q=CA*I, AdQ (CFS)	PIPE CAP (CFS)	PIPE SIZE HT/W (IN)	PIPE LEN (FT)	PIPE SLOPE (%)	HYD GRD SLOPE (%)	VEL UP/DN (FPS)	HYD GRD UP/DOWN (FT)	INVERT UP/DOWN (FT)	COMMENTS/ DOWNSTREAM LINE #
3	0.3	0.60	0.2	0.2	8.0	6.15	1.14	13.7	15	25	4.480	0.096	0.93	6.15	4.50	SS#82-3 - SS#82-4
							1.14 0.0	15					0.93	6.12	3.38	2
2	0.3	0.60	0.2	1.8	9.9	5.75	10.15	22.5	30	180	0.300	0.061	2.07	6.04	3.38	SS#82-2 - SS#82-4
							10.15 0.0	30					2.07	5.93	2.84	1
1	0.3	0.60	0.2	1.9	10.9	5.56	10.82	48.5	30	60	1.400	0.070	2.20	5.84	2.84	SS#82-1 - SS#82-2
							10.82 0.0	30					2.20	5.80	2.00	OUTFALL
7	0.6	0.60	0.4	0.4	8.0	6.15	2.22	5.6	15	50	0.760	0.239	1.81	7.00	5.08	SS#82-8 - SS#82-9
							2.22 0.0	15					1.81	6.88	4.70	6
6	0.6	0.50	0.3	0.6	8.3	6.09	3.90	3.5	15	25	0.300	0.365	3.18	6.69	4.70	SS#82-7 - SS#82-8
							3.90 0.0	15					3.18	6.60	4.63	5
5	0.7	0.71	0.5	1.1	8.4	6.06	6.93	12.6	24	185	0.310	0.086	2.27	6.51	4.64	SS#82-6 - SS#82-7
							6.93 0.0	24					2.21	6.35	4.07	4
4	0.3	0.50	0.1	1.4	9.4	5.84	8.14	21.6	24	77	0.909	0.129	2.59	6.22	4.08	SS#82-4 - SS#82-6
							8.14 0.0	24					2.59	6.12	3.38	2
8	0.2	0.60	0.1	0.1	8.0	6.15	0.74	10.5	15	35	2.629	0.032	0.60	6.36	5.00	SS#82-6 - SS#82-5
							0.74 0.0	15					0.60	6.35	4.08	4

STORM WATER INLET COMPUTATIONS

FORM LD 204
REV. 6-85

ROUTE: CYPRESS ISLE (WEST)

PROJECT: CYPRESS ISLE

DATE: 7/23/98

CONDITION	STORM SYTEM NO. (SS#)	INLET			STATION	DRAINAGE AREA (AC.)	C	C x A	SUM C x A	I (IN / HR)	Q INCR.(CFS)	Q CARRYOVER (CFS)	Q(TOTAL) GUTTER FLOW	S GUTTER SLOPE (FT/FT)	SX CROSS SLOPE (FT/FT)	T (SPREAD - FT)	W (FT)	W/T	Sw (FT/FT)	Sw / Sx	Eo (CHART #10)	a	Sw= a/(12W)	Se(FT/FT)= Sx+ SwEo	Ll(FT)	CHART#15	P EFFEC. LENGTH (FT)	L / Lt	d (FT)	E (#16)	h (FT)	Q INTERCEPTED CFS	d / Sx	Qb CARRYOVER CFS	SPREAD @ SAG (FT)	REMARKS	SHEET: 3 OF: 4					
		NUMBER	TYPE	LENGTH																																						
GRADE	81-6			6'	20+00L	0.39	0.5	0.2	0.2	3.5	0.7	-	0.7	0.01	0.02	4	2																									
					20+60L	0.18	0.5	0.09	0.09	3.5	0.32	0.7	1.015	0.022	0.02	4.1	2	0.49	0.08	4	0.94	2"	0.08	0.1		9.5	0.63	0.85	0.87					0.15 CFS				OK				
					21+11L	0.26	0.5	0.1	0.1	3.5	0.4	0.15	0.55	0.002	0.02	5.9	2																						OK			
SAG	81-4			6'	21+11L							0.99						0.08	4						9.6	0.13	0.33	0.39					6.5'					OK				
					21+11L	0.3	0.5	0.15	0.15	3.5	0.53	0.01	0.54	0.002	0.02	5.9	2																						OK			
GRADE	81-3			6'	21+70L	0.15	0.5	0.08	0.08	3.5	0.28	0.28	0.56	0.015	0.02	2.8	2	0.71	0.08	4	0.98	2"	0.08	0.1		6.6	0.91	0.98	0.55					0.01 CFS					OK			
CULDESAC					22+03L	0.15	0.5	0.08	0.08	3.5	0.28	-	0.28	0.15	0.02	1.6	2																							OK		
					23+69L	0.27	0.7	0.19	0.19	3.5	0.66	-	0.66	0.001	0.02	8	2																							OK(CUL-DE-SAC)		
SAG	81-2			3'	23+69	0.35	0.7	0.25	0.25	3.5	0.88	-	0.87		0.02			0.08	4							6.6	0.14	0.33	0.42					6.7						OK		
					23+69R	0.08	0.7	0.06	0.06	3.5	0.21	-	0.21	0.001	0.02	3.8	2																								OK	
					21+11R	0.23	0.6	0.14	0.14	3.5	0.5	-	0.5	0.002	0.02	5.6	2																								OK	
SAG	81-5			3'	21+11R	0.38	0.6	0.23	0.23	3.5	0.8	-	0.8		0.02			0.08	4							6.6	0.14	0.33	0.42					7							OK	
					21+11R	0.15	0.6	0.09	0.09	3.5	0.3	-	0.3	0.002	0.02	3.9	2																								OK	

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

(with or without an emergency spillway)



Project CYPRESS ISLE

Basin # 1 Location CYPRESS ISLE EAST CUL-DE-SAC

Total area draining to basin: 4.6 acres.

Basin Volume Design

Wet Storage:

1. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

$$67 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{308} \text{ cu. yds.}$$

2. Available basin volume = 308 cu. yds. at elevation 3.9. (From storage - elevation curve)

3. Excavate 308 cu. yds. to obtain required volume*.

* Elevation corresponding to required volume = invert of the dewatering orifice.

4. Available volume before cleanout required.

$$33 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{154} \text{ cu. yds.}$$

5. Elevation corresponding to cleanout level = 3.45.

(From Storage - Elevation Curve)

6. Distance from invert of the dewatering orifice to cleanout level = 0.55 ft.
(Min. = ~~1.0~~ ft.) EL OF DEWATERING ORIFICE = 4.00.
0.55

(WIDE FLAT SEDIMENT POND)

Dry Storage:

7. Minimum required volume = 67 cu. yds. x Total Drainage Area (acres).

$$67 \text{ cu. yds.} \times \underline{4.6} \text{ acres} = \underline{308} \text{ cu. yds.} = 5$$

8. Total available basin volume at crest of riser* = 1185 cu. yds. at elevation 5.45. (From Storage - Elevation Curve)

* Minimum = 134 cu. yds./acre of total drainage area.

9. Diameter of dewatering orifice = 4" in.

$Q = 0.38$
 $EL = 4.58$ $H = 0.58$
 (FOR RELEASE RATE = 0.38 CFS
 CALC. = 4.4" ϕ , USE 4" ϕ)

10. Diameter of flexible tubing = 6 in. (diameter of dewatering orifice plus 2 inches).

Preliminary Design Elevations

11. Crest of Riser = 5.45

Top of Dam = 6.5

Design High Water = 5.27 (25 year storm)

Upstream Toe of Dam = 3.0

Basin Shape

12. $\frac{\text{Length of Flow}}{\text{Effective Width}} = \frac{L}{We} = \frac{130}{80}$

If > 2, baffles are not required _____

If < 2, baffles are required FOREBAY PROVIDED

Runoff

13. $Q_2 = \underline{14.4}$ cfs (From Chapter 5)

14. $Q_{25} = \underline{17.3}$ cfs (From Chapter 5)

Principal Spillway Design

15. With emergency spillway, required spillway capacity $Q_p = Q_2 = \underline{2.95}$ cfs. (riser and barrel)

Without emergency spillway, required spillway capacity $Q_p = Q_{25} = \underline{\quad}$ cfs. (riser and barrel)

16. With emergency spillway:

$$\text{Assumed available head (h)} = \frac{(6.0 - 5.45)}{0.55} \text{ ft. (Using } Q_2)$$

$$h = \text{Crest of Emergency Spillway Elevation} - \text{Crest of Riser Elevation}$$

Without emergency spillway:

$$\text{Assumed available head (h)} = \text{_____ ft. (Using } Q_{25})$$

$$h = \text{Design High Water Elevation} - \text{Crest of Riser Elevation}$$

17. Riser diameter (D_r) = 18 in. Actual head (h) = 0.55 ft.

(From Plate 3.14-8.)

Note: Avoid orifice flow conditions.

18. Barrel length (l) = 150 ft.

$$\text{Head (H) on barrel through embankment} = \text{3.59 ft.}$$

(From Plate 3.14-7).

19. Barrel diameter = 12 in.

(From Plate 3.14-B [concrete pipe] or Plate 3.14-A [corrugated pipe]).

20. Trash rack and anti-vortex device

$$\text{Diameter} = \text{27 inches.}$$

$$\text{Height} = \text{8 inches.}$$

(From Table 3.14-D).

Emergency Spillway Design

21. Required spillway capacity $Q_e = Q_{25} - Q_p = \text{14.3 cfs.}$

22. Bottom width (b) = 10 ft.; the slope of the exit channel (s) = 0.06 ft./foot; and the minimum length of the exit channel (x) = 33 ft.

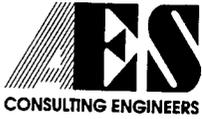
(From Table 3.14-C).

Anti-Seep Collar Design

23. Depth of water at principal spillway crest (Y) = 3 ft.
 Slope of upstream face of embankment (Z) = 3:1.
 Slope of principal spillway barrel (S_b) = 0.3 %
 Length of barrel in saturated zone (L_s) = _____ ft. *NEE NUMBER*
24. Number of collars required = 0 dimensions = N/A
 (from Plate 3.14-12).

Final Design Elevations

25. Top of Dam = 6.5
 Design High Water = 5.27
 Emergency Spillway Crest = 6.0
 Principal Spillway Crest = 5.45
 Dewatering Orifice Invert = 4.0
 Cleanout Elevation = 3.45
 Elevation of Upstream Toe of Dam
 or Excavated Bottom of "Wet Storage
 Area" (if excavation was performed) = 3.0
 RELEASE RATE = 0.44 CFS



5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax: (757) 220-8994

PROJECT CYPRESS ISLE
PROJECT NO. 7173-4-2
SUBJECT CYPRESS ISLE SEDIMENT BASIN
SHEET NO. 1 OF
CALCULATED BY VMB DATE 3/17/98

DEWATERING ORIFICE DESIGN

USING EQUATIONS

$$A = \frac{Q}{(64.32 \times h)^{1/2} \times (0.6)}$$

AND

$$d = 2 \times \left(\frac{A}{3.14} \right)^{1/2}$$

$$\begin{aligned} Q &= S / 21,600 \text{ SECONDS} \\ &= (308 \text{ CY})(27 \text{ CF/CY}) / 21,600 \text{ SECONDS} \\ &= 0.3850 \text{ CFS} \end{aligned}$$

$$h = \text{AVERAGE HEAD} = \frac{5.45 - 3.45}{2} = 1$$

$$\text{SO } A = \frac{0.3850}{(64.32 \times 1)^{1/2} \times 0.6} = \frac{0.3850}{4.812} = 0.0800$$

$$d = 2 \times \left(\frac{0.08}{3.14} \right)^{1/2} = 2 \times 0.1596 = 0.3192$$

USE 4" ORIFICE



5248 Old Towne Road, Suite 1
 Williamsburg, Virginia 23188
 (757) 253-0040
 Fax: (757) 220-8994

STORM EVENT**	DRAINAGE AREA (AC)	PRE-DEVELOPMENT RUNOFF (CFS)	POST-DEVELOPMENT RUNOFF (CFS)	SWM RECEASE RATE (CFS)	WATER SURFACE ELEVATION
2-yr	4.61	3.44	11.0	3.42	3.82
10-yr	4.61	4.78	14.4	3.94	4.08
25-yr	4.61	5.57	17.3	4.26	4.27
100-yr	4.61	7.02	21.0	4.65	4.52 DHW
25-yr*	4.61		17.3	0.44	5.27

* 25-yr POST DEVELOPMENT STORM EVENT ROUTED THRU TEMPORARY SEDIMENT BASIN

** LOCALIZED STORM EVENT

PROJECT Cypress Isle Revised
 PROJECT NO. 7173-4-2 (REV)
 SUBJECT SWM Facility Performance
 SHEET NO. 1 OF 1
 CALCULATED BY YMB DATE 8/4/99

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Return period (yrs)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Rational	3.4	1	38	13,744	2	---	----	----	Cypress Isle BMP 2
2	Rational	4.8	1	38	19,075	10	---	----	----	Cypress Isle 10-yr
3	Rational	5.6	1	38	22,231	25	---	----	----	Cypress Isle 25-yr
4	Rational	7.0	1	38	28,005	100	---	----	----	Cypress Isle 100-y
5	Rational	11.0	1	11	12,679	2	---	----	----	Cypress Isle 2-yr
6	Rational	14.4	1	11	16,641	10	---	----	----	Cypress Isle 10-yr
7	Rational	17.3	1	11	19,951	25	---	----	----	Cypress Isle 25-yr
8	Rational	21.0	1	11	24,242	100	---	----	----	Cypress Isle 100-y
10	Reservoir	3.4	1	30	12,515	2	5	3.82	7,991	2-yr Post-dev. rou
11	Reservoir	3.9	1	31	16,425	10	6	4.08	10,953	10-yr storm routed
12	Reservoir	4.3	1	31	19,692	25	7	4.27	13,587	25-yr storm routed
13	Reservoir	4.7	1	32	23,927	100	8	4.52	17,106	100-yr storm route
15	Reservoir	0.4	1	37	18,082	25	7	5.27	19,049	25-yr routed sed.

Proj. file: cypressbmp.GPW

IDF file: jcc.IDF

Run date: 08-19-1998

Hydrograph Report

Hyd. No. 1

Cypress Isle BMP 2-yr Pre-Development

Hydrograph type	= Rational	Peak discharge	= 3.44 cfs
Storm frequency	= 2 yrs	Time interval	= 1 min
Drainage area	= 4.6 ac	Runoff coeff.	= 0.35
Intensity	= 2.13 in	Time of conc. (Tc)	= 38 min
I-D-F Curve	= jcc.IDF	Reced. limb factor	= 2.5

Total Volume = 13,744 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

4	0.36
9	0.82
14	1.27
19	1.72
24	2.18
29	2.63
34	3.08
39	3.41
44	3.23
49	3.05
54	2.86
59	2.68
64	2.50
69	2.32
74	2.14
79	1.96
84	1.78
89	1.60
94	1.41
99	1.23
104	1.05
109	0.87
114	0.69
119	0.51

...End

Hydrograph Report

Hyd. No. 2

Cypress Isle 10-yr pre-development

Hydrograph type = Rational
Storm frequency = 10 yrs
Drainage area = 4.6 ac
Intensity = 2.96 in.
I-D-F Curve = jcc.IDF

Peak discharge = 4.78 cfs
Time interval = 1 min
Runoff coeff. = 0.35
Time of conc. (Tc) = 38 min
Reced. limb factor = 2.5

Hydrograph Discharge Table

Total Volume = 19,075 cuft

Time -- Outflow
(min cfs)

4	0.50
9	1.13
14	1.76
19	2.39
24	3.02
29	3.65
34	4.28
39	4.73
44	4.48
49	4.23
54	3.98
59	3.72
64	3.47
69	3.22
74	2.97
79	2.72
84	2.47
89	2.21
94	1.96
99	1.71
104	1.46
109	1.21
114	0.96
119	0.70

...End

Hydrograph Report

Hyd. No. 3

Cypress Isle 25-yr Pre-Development

Hydrograph type = Rational
Storm frequency = 25 yrs
Drainage area = 4.6 ac
Intensity = 3.45 in.
I-D-F Curve = jcc.IDF

Peak discharge = 5.57 cfs
Time interval = 1 min
Runoff coeff. = 0.35
Time of conc. (Tc) = 38 min
Reced. limb factor = 2.5

Total Volume = 22,231 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

4	0.59
9	1.32
14	2.05
19	2.79
24	3.52
29	4.25
34	4.99
39	5.51
44	5.22
49	4.93
54	4.63
59	4.34
64	4.05
69	3.75
74	3.46
79	3.17
84	2.87
89	2.58
94	2.29
99	1.99
104	1.70
109	1.41
114	1.11
119	0.82

...End

Hydrograph Report

Hyd. No. 4

Cypress Isle 100-yr Pre-development

Hydrograph type = Rational
Storm frequency = 100 yrs
Drainage area = 4.6 ac
Intensity = 4.35 in
I-D-F Curve = jcc.IDF

Peak discharge = 7.02 cfs
Time interval = 1 min
Runoff coeff. = 0.35
Time of conc. (Tc) = 38 min
Reced. limb factor = 2.5

Total Volume = 28,005 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

4	0.74
9	1.66
14	2.59
19	3.51
24	4.43
29	5.36
34	6.28
39	6.94
44	6.58
49	6.21
54	5.84
59	5.47
64	5.10
69	4.73
74	4.36
79	3.99
84	3.62
89	3.25
94	2.88
99	2.51
104	2.14
109	1.77
114	1.40
119	1.03

...End

Hydrograph Report

Hyd. No. 5

Cypress Isle 2-yr Post-Development

Hydrograph type = Rational
Storm frequency = 2 yrs
Drainage area = 4.6 ac
Intensity = 3.90 in.
I-D-F Curve = jcc.IDF

Peak discharge = 10.98 cfs
Time interval = 1 min
Runoff coeff. = 0.61
Time of conc. (Tc) = 11 min
Reced. limb factor = 2.5

Total Volume = 12,679 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

2	2.00
7	6.99
12	10.57
17	8.54
22	6.51
27	4.47
32	2.44

...End

Hydrograph Report

Hyd. No. 6

Cypress Isle 10-yr Post-development

Hydrograph type = Rational
Storm frequency = 10 yrs
Drainage area = 4.6 ac
Intensity = 5.12 in.
I-D-F Curve = jcc.IDF

Peak discharge = 14.41 cfs
Time interval = 1 min
Runoff coeff. = 0.61
Time of conc. (Tc) = 11 min
Reced. limb factor = 2.5

Total Volume = 16,641 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

2	2.62
7	9.17
12	13.87
17	11.21
22	8.54
27	5.87
32	3.20

...End

Hydrograph Report

Hyd. No. 7

Cypress Isle 25-yr Post-development

Hydrograph type = Rational
Storm frequency = 25 yrs
Drainage area = 4.6 ac
Intensity = 6.14 in.
I-D-F Curve = jcc.IDF

Peak discharge = 17.27 cfs
Time interval = 1 min
Runoff coeff. = 0.61
Time of conc. (Tc) = 11 min
Reced. limb factor = 2.5

Total Volume = 19,951 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

2	3.14
7	10.99
12	16.63
17	13.43
22	10.24
27	7.04
32	3.84

...End

Hydrograph Report

Hyd. No. 8

Cypress Isle 100-yr Post Development

Hydrograph type = Rational
Storm frequency = 100 yrs
Drainage area = 4.6 ac
Intensity = 7.46 in.
I-D-F Curve = jcc.IDF

Peak discharge = 20.99 cfs
Time interval = 1 min
Runoff coeff. = 0.61
Time of conc. (Tc) = 11 min
Reced. limb factor = 2.5

Total Volume = 24,242 cuft

Hydrograph Discharge Table

Time -- Outflow
(min cfs)

2	3.82
7	13.36
12	20.21
17	16.32
22	12.44
27	8.55
32	4.66

...End

Reservoir Report

Reservoir No. 1 - Cypress Isle BMP

Pond Data

Pond storage is based on known contour areas

Stage / Storage Table

Stage ft	Elevation ft	Contour area sqft	Incr. Storage cuft	Total storage cuft
0.00	3.00	6,436	0	0
1.00	4.00	13,053	9,745	9,745
2.00	5.00	15,527	14,290	24,035
3.00	6.00	19,828	17,678	41,713

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	0.0	0.0	0.0
Span in	= 12.0	0.0	0.0	0.0
No. Barrels	= 1	0	0	0
Invert El. ft	= 2.50	0.00	0.00	0.00
Length ft	= 160.0	0.0	0.0	0.0
Slope %	= 0.31	0.00	0.00	0.00
N-Value	= .013	.000	.000	.000
Orif. Coeff.	= 0.60	0.00	0.00	0.00
Multi-Stage	= ----	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 3.0	10.0	0.0	0.0
Crest El. ft	= 3.00	5.50	0.00	0.00
Weir Coeff.	= 3.00	3.00	0.00	0.00
Eqn. Exp.	= 1.50	1.50	0.00	0.00
Multi-Stage	= Yes	No	No	No

Tailwater Elevation = 2.80 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Discharge cfs
0.00	0	3.00	0.59	---	---	---	0.00	0.00	---	---	0.00
0.10	975	3.10	0.93	---	---	---	0.28	0.00	---	---	0.28
0.20	1,949	3.20	1.30	---	---	---	0.80	0.00	---	---	0.80
0.30	2,924	3.30	1.67	---	---	---	1.48	0.00	---	---	1.48
0.40	3,898	3.40	1.81	---	---	---	2.28	0.00	---	---	1.81
0.50	4,873	3.50	2.67	---	---	---	3.18	0.00	---	---	2.67
0.60	5,847	3.60	2.93	---	---	---	4.18	0.00	---	---	2.93
0.70	6,822	3.70	3.16	---	---	---	5.27	0.00	---	---	3.16
0.80	7,796	3.80	3.38	---	---	---	6.44	0.00	---	---	3.38
0.90	8,771	3.90	3.59	---	---	---	7.68	0.00	---	---	3.59
1.00	9,745	4.00	3.78	---	---	---	9.00	0.00	---	---	3.78

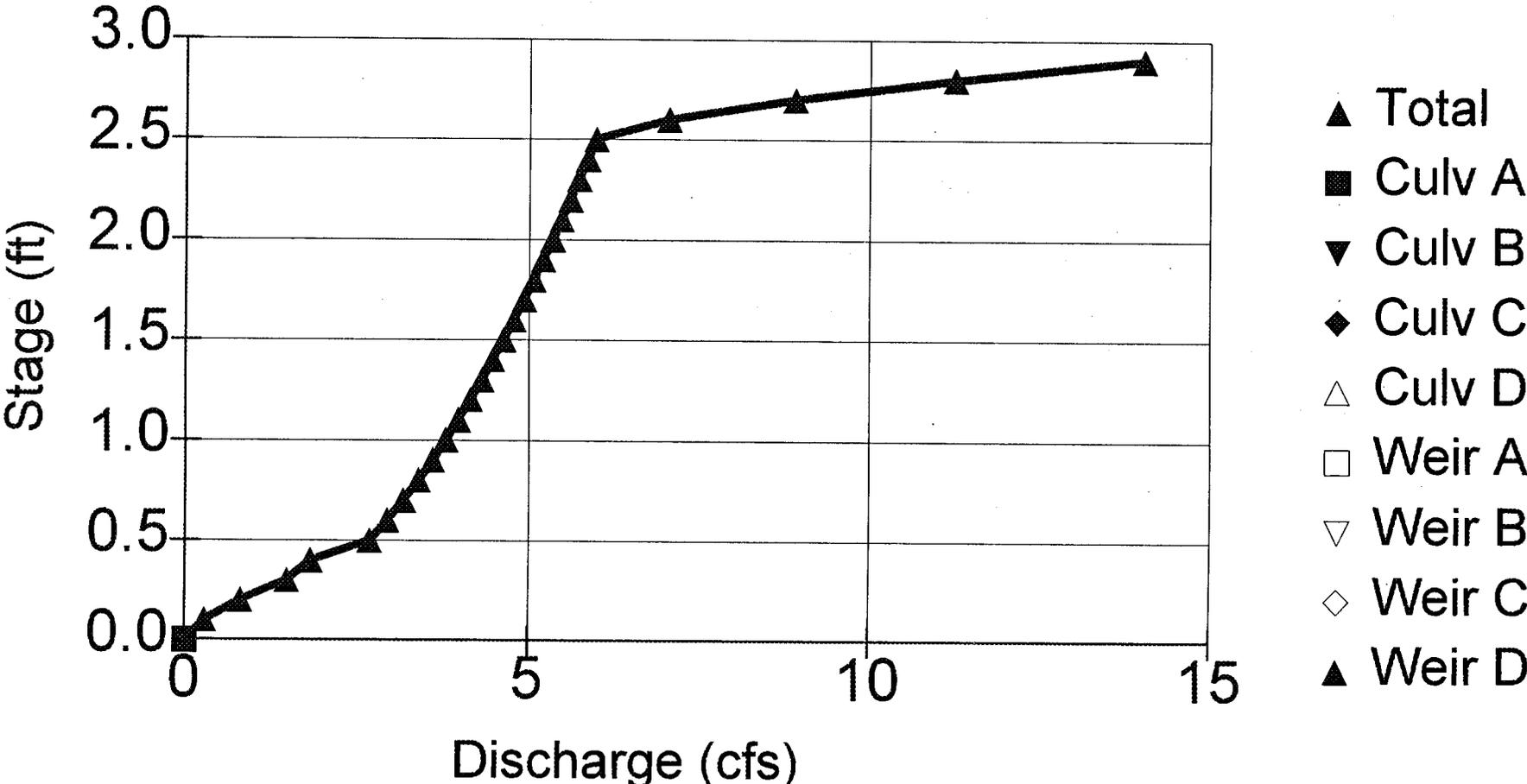
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Stage / Storage / Discharge Table

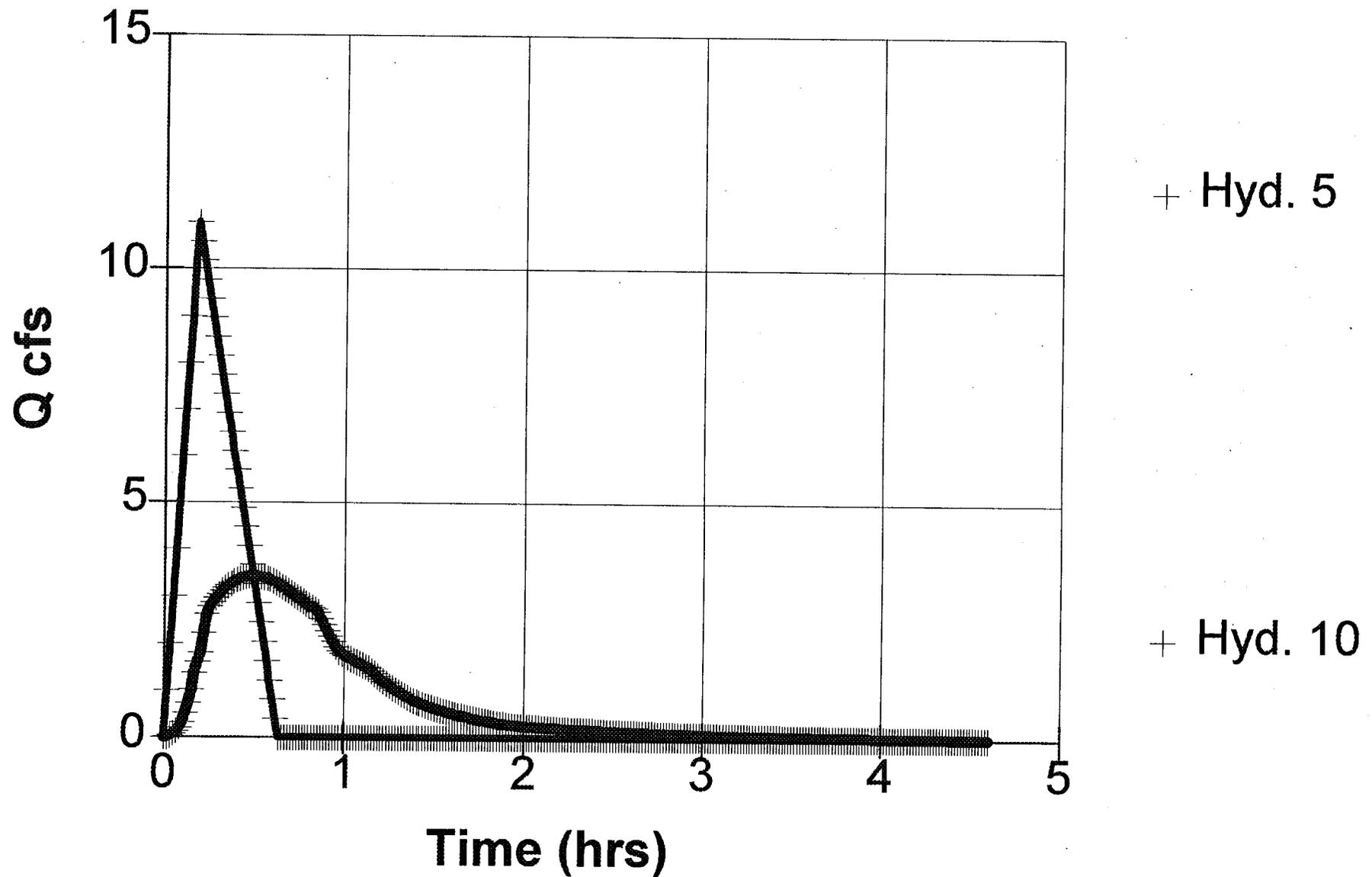
Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Discharge cfs
1.10	11,174	4.10	3.97	---	---	---	10.38	0.00	---	---	3.97
1.20	12,603	4.20	4.14	---	---	---	11.83	0.00	---	---	4.14
1.30	14,032	4.30	4.31	---	---	---	13.34	0.00	---	---	4.31
1.40	15,461	4.40	4.47	---	---	---	14.91	0.00	---	---	4.47
1.50	16,890	4.50	4.63	---	---	---	16.53	0.00	---	---	4.63
1.60	18,319	4.60	4.78	---	---	---	18.21	0.00	---	---	4.78
1.70	19,748	4.70	4.93	---	---	---	19.95	0.00	---	---	4.93
1.80	21,177	4.80	5.07	---	---	---	21.73	0.00	---	---	5.07
1.90	22,606	4.90	5.21	---	---	---	23.57	0.00	---	---	5.21
2.00	24,035	5.00	5.35	---	---	---	25.46	0.00	---	---	5.35
2.10	25,803	5.10	5.48	---	---	---	27.39	0.00	---	---	5.48
2.20	27,571	5.20	5.61	---	---	---	29.37	0.00	---	---	5.61
2.30	29,338	5.30	5.73	---	---	---	31.39	0.00	---	---	5.73
2.40	31,106	5.40	5.86	---	---	---	33.46	0.00	---	---	5.86
2.50	32,874	5.50	5.98	---	---	---	35.58	0.00	---	---	5.98
2.60	34,642	5.60	6.10	---	---	---	37.73	0.95	---	---	7.05
2.70	36,410	5.70	6.21	---	---	---	39.93	2.68	---	---	8.90
2.80	38,177	5.80	6.33	---	---	---	42.17	4.93	---	---	11.26
2.90	39,945	5.90	6.44	---	---	---	44.45	7.59	---	---	14.03
3.00	41,713	6.00	6.55	---	---	---	46.77	10.61	---	---	17.16

...End

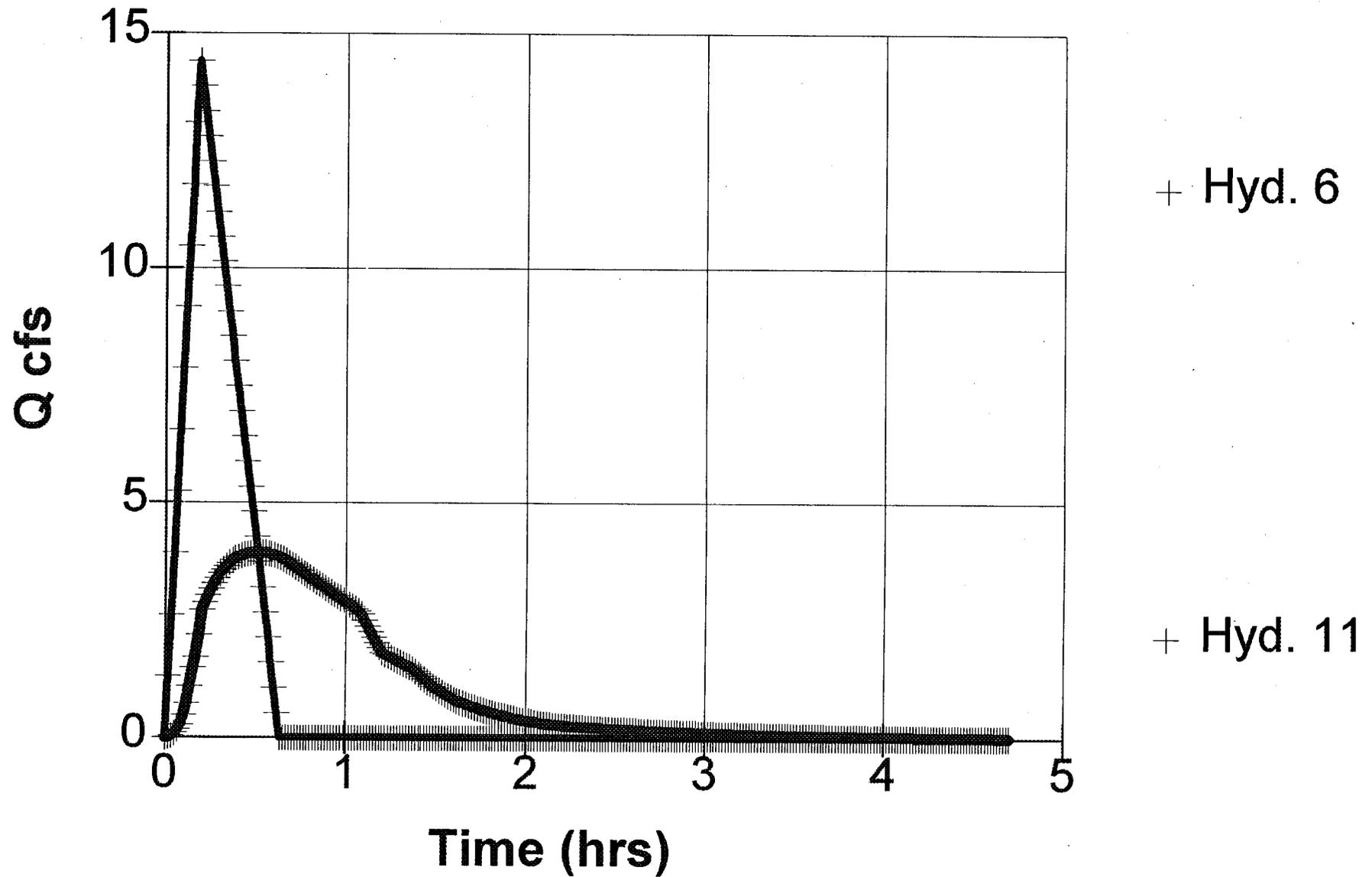
Cypress Isle BMP



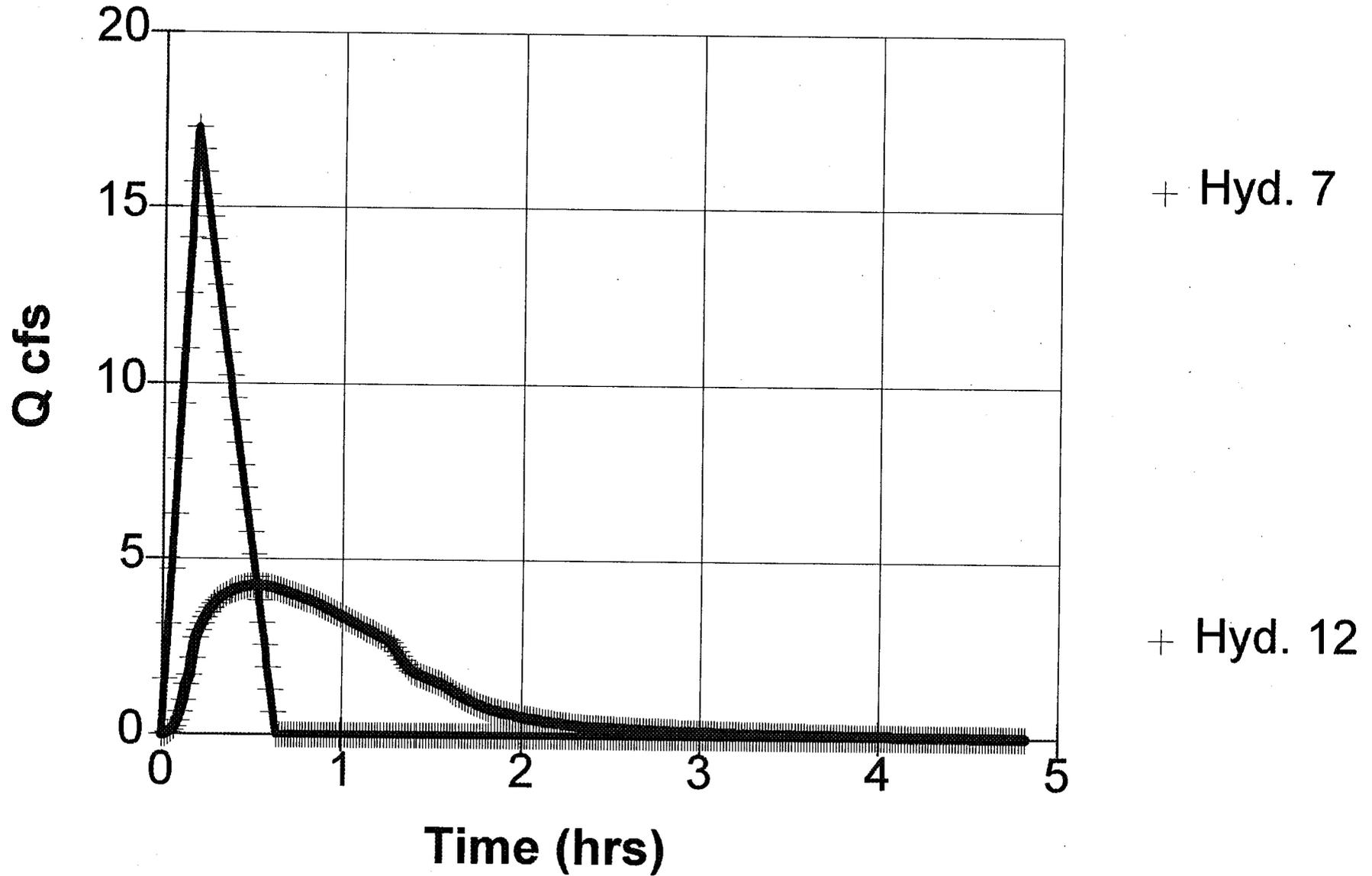
10 - Reservoir - 2 Yr - $Q_p = 3.42$ cfs



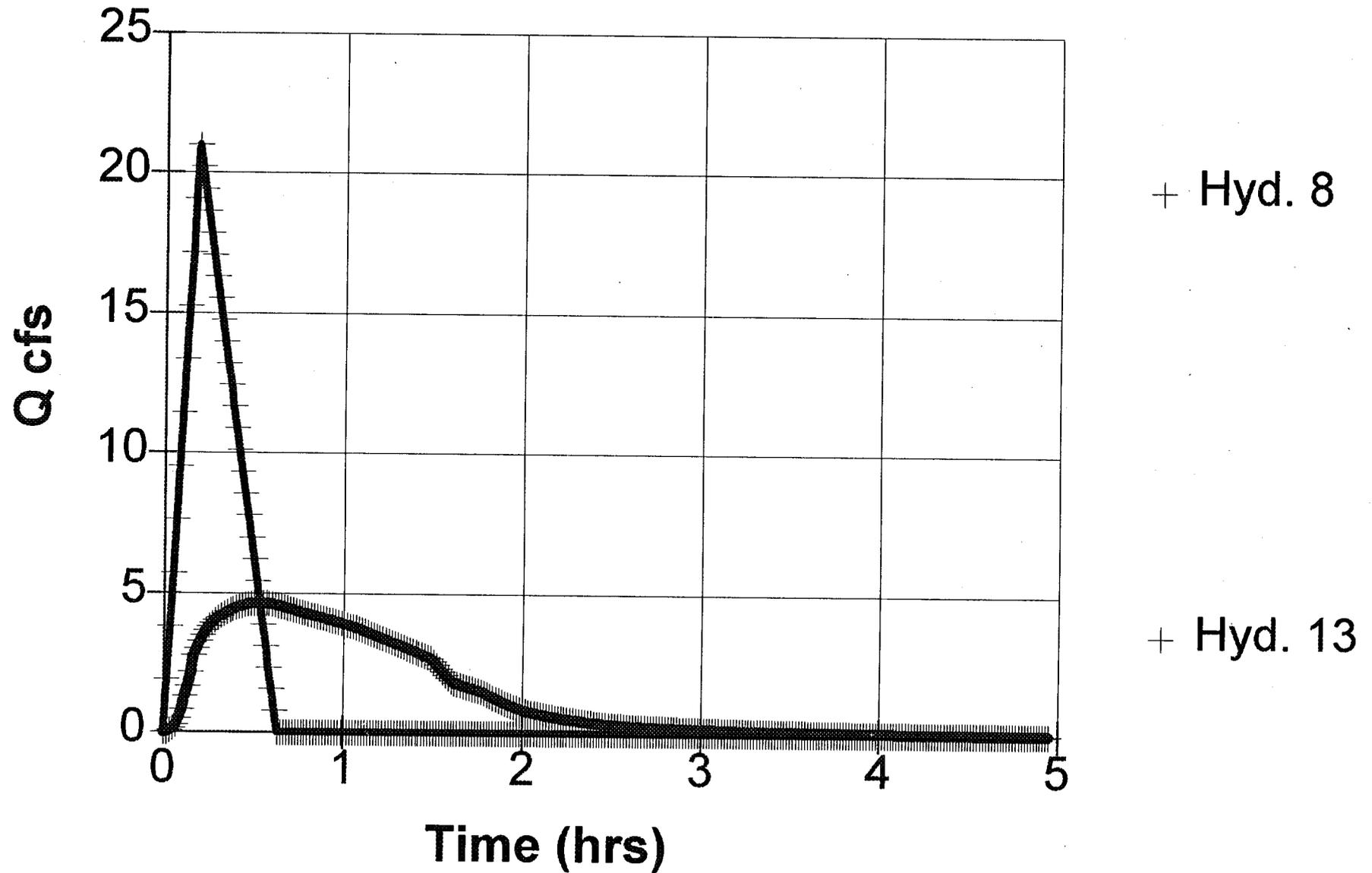
11 - Reservoir - 10 Yr - $Q_p = 3.94$ cfs



12 - Reservoir - 25 Yr - $Q_p = 4.26$ cfs



13 - Reservoir - 100 Yr - $Q_p = 4.65$ cfs



Reservoir Report

Reservoir No. 2 - Cypress Isle Sed. Pond

Pond Data

Pond storage is based on known contour areas

Stage / Storage Table

Stage ft	Elevation ft	Contour area sqft	Incr. Storage cuft	Total storage cuft
0.00	4.00	13,053	0	0
1.00	5.00	15,527	14,290	14,290
2.00	6.00	19,828	17,678	31,968

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 12.0	4.0	0.0	0.0
Span in	= 12.0	4.0	0.0	0.0
No. Barrels	= 1	1	0	0
Invert El. ft	= 2.50	4.00	0.00	0.00
Length ft	= 150.0	0.5	0.0	0.0
Slope %	= 0.30	0.00	0.00	0.00
N-Value	= .017	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= ----	Yes	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 4.7	0.0	0.0	0.0
Crest El. ft	= 5.45	0.00	0.00	0.00
Weir Coeff.	= 3.00	0.00	0.00	0.00
Eqn. Exp.	= 1.50	0.00	0.00	0.00
Multi-Stage	= Yes	No	No	No

Tailwater Elevation = 2.80 ft

Stage / Storage / Discharge Table

Note: All outflows have been analyzed under inlet and outlet control.

Stage ft	Storage cuft	Elevation ft	Civ A cfs	Civ B cfs	Civ C cfs	Civ D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Discharge cfs
0.00	0	4.00	2.00	0.00	---	---	0.00	---	---	---	0.00
0.10	1,429	4.10	2.10	0.02	---	---	0.00	---	---	---	0.02
0.20	2,858	4.20	2.20	0.09	---	---	0.00	---	---	---	0.09
0.30	4,287	4.30	2.29	0.15	---	---	0.00	---	---	---	0.15
0.40	5,716	4.40	2.38	0.20	---	---	0.00	---	---	---	0.20
0.50	7,145	4.50	2.47	0.23	---	---	0.00	---	---	---	0.23
0.60	8,574	4.60	2.55	0.28	---	---	0.00	---	---	---	0.28
0.70	10,003	4.70	2.63	0.31	---	---	0.00	---	---	---	0.31
0.80	11,432	4.80	2.71	0.33	---	---	0.00	---	---	---	0.33
0.90	12,861	4.90	2.79	0.36	---	---	0.00	---	---	---	0.36
1.00	14,290	5.00	2.86	0.38	---	---	0.00	---	---	---	0.38

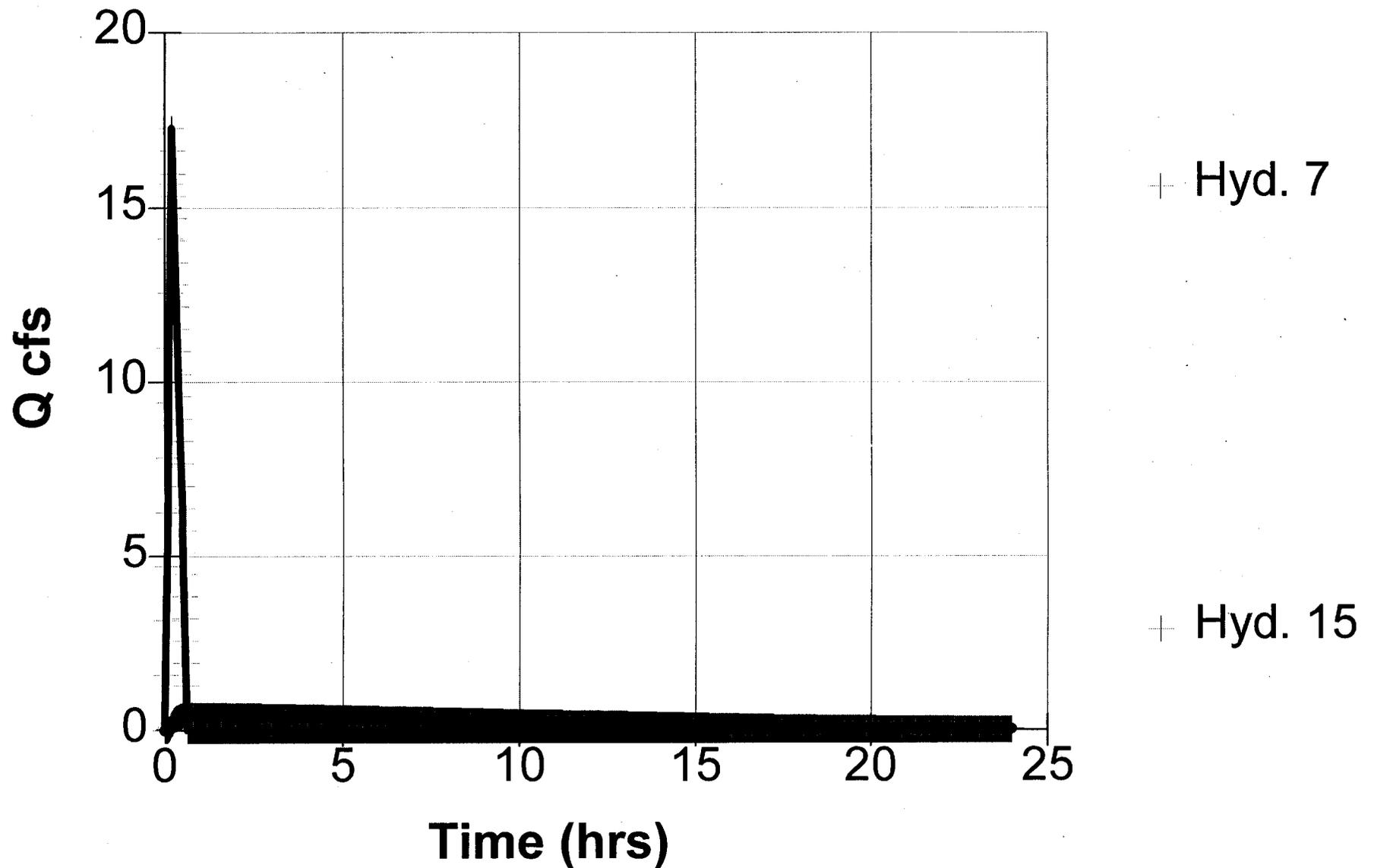
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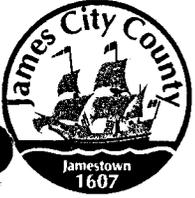
Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Discharge cfs
1.10	16,058	5.10	2.94	0.41	---	---	0.00	---	---	---	0.41
1.20	17,826	5.20	3.01	0.43	---	---	0.00	---	---	---	0.43
1.30	19,593	5.30	3.08	0.45	---	---	0.00	---	---	---	0.45
1.40	21,361	5.40	3.14	0.47	---	---	0.00	---	---	---	0.47
1.50	23,129	5.50	3.21	0.49	---	---	0.16	---	---	---	0.64
1.60	24,897	5.60	3.28	0.50	---	---	0.82	---	---	---	1.32
1.70	26,665	5.70	3.34	0.52	---	---	1.76	---	---	---	2.28
1.80	28,432	5.80	3.40	0.52	---	---	2.92	---	---	---	3.40
1.90	30,200	5.90	3.46	0.00	---	---	4.26	---	---	---	3.46
2.00	31,968	6.00	3.52	0.00	---	---	5.75	---	---	---	3.52

...End

15 - Reservoir - 25 Yr - $Q_p = 0.44$ cfs





DEVELOPMENT MANAGEMENT

101-E MOUNTS BAY ROAD, P.O. BOX 8784, WILLIAMSBURG, VIRGINIA 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-MAIL: devtman@james-city.va.us

CODE COMPLIANCE
(757) 253-6626
codecomp@james-city.va.us

ENVIRONMENTAL DIVISION
(757) 253-6670
environ@james-city.va.us

PLANNING
(757) 253-6685
planning@james-city.va.us

COUNTY ENGINEER
(757) 253-6678
INTEGRATED PEST MANAGEMENT
(757) 253-2620

February 18, 2003

Mr. James H. Bennett
Governors Land Associates
9701 Mill Pond Run
Toano, Va. 23168

*Respect
6-2-03*

Re: Governor's Land - Cypress Isle
County Plan No. S-79-98
Dry Pond with Shallow Marsh
County BMP ID Code: JR 041

Dear Mr. Bennett:

The Environmental Division has reviewed a record drawing as submitted to our office on December 28th 2001 for the above referenced BMP. The record drawing provides as-built information for a dry pond with shallow marsh facility situated northeast of the cul-de-sac at the end of Cypress Isle East.

Based on our review of the project and a concurrent field inspection as performed on February 5th 2003, the following items must be addressed prior to release of the developer's surety instrument for the stormwater management/BMP facility at the site:

Construction Certification:

*✓
OK
3-28-03
ECE inc.*

1. In accordance with the Note # 18 on Sheet 8 and Note # 3 on Sheet 5 of the approved plan, construction certification was required for the BMP. None was provided. The certification can be in letter format or by use of the certification statements in Section 4 of the *James City County, Stormwater Management / BMP Facilities, Record Drawing and Construction Certification, Standard Forms & Instructions.*

Record Drawing:

*✓
OK
6-26-03*

2. The professional certification on Sheet 1 (Sheet 5) of the record drawing is blank and requires signature and date.

*✓
OK
6-26-03*

3. Based on the approved design and constructed top of dam information, approximately 1.57 ft. of freeboard exists from design high water to the low top of dam spot elevation (El. 6.09). However, the outfall end of the 12-inch barrel through the dam was not constructed in accordance with the approved plan. The approved plan called for the outlet end of the 12-inch barrel to daylight to existing ground (at El. 2.0) and have a standard Class I riprap outlet protection pad. Based on asbuilt elevations and field observation, the outfall invert was

constructed well below existing ground elevation in a sump type condition. Provide routing computations using asbuilt elevations to show a submerged barrel outfall condition as such will not increase the 100-year design high water surface elevation to a point where freeboard is reduced to less than 1 ft. or the dam is overtopped at Elevation 6.08.

Construction - Related Items:

✓
OP 4.
6-2-03
Stabilize with seed and mulch or matting all bare soil areas present on the dam embankment, especially the downstream face.

✓
OP 5.
6-2-03
Clean and remove accumulated sediment and vegetation within 10 ft. of the outfall end of the single 30-inch storm drain pipe which leads into the BMP from the cul-de-sac. Inflow pipes into BMPs shall not be obstructed with sediment and vegetation.

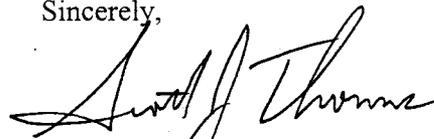
✓
OP 6.
6-2-03
Clean and remove all vegetation within 10 ft. of the primary flow control structure for the BMP. The primary flow control structure is a modified EW-11 riser structure at the east end of the BMP. Flow into the riser shall not be obstructed by vegetation.

✓
OP 7.
6-2-03
The outlet end of the barrel through the dam was not constructed in accordance with the approved plan. The approved plan called for the outlet end of the 12-inch barrel to daylight to existing ground and have a standard Class I riprap outlet protection pad. Based on asbuilt elevations and field observation, the outfall invert was constructed well below existing ground elevation in a sump type condition. The sideslope walls of the sump are near vertical and are in an unstable, erosive condition. Cut the side walls to an appropriate slope and line with geotextile and riprap in accordance with Minimum Standard & Specification 3.18 and 3.19 of the VESCH. (Note: Impacts to stabilize the outfall cannot exceed the extent of disturbance proposed under the approved plan and/or wetland permit for the project.) Riprap & 9' x 12' HYD CALCS w/ HW CONDITION.

Once this work is satisfactorily completed, contact our office appropriately. We can then proceed with final release of the surety on the project. One reproducible and one blue/black line set of the record drawings will be required once the above items are adequately addressed.

Please contact me at 757-253-6639 or the assigned Environmental Division inspector, Joe Buchite at 757-253-6643 if you have any further comments or questions.

Sincerely,



Scott J. Thomas, P.E.
Civil Engineer
Environmental Division

cc: Marc Bennett, AES - via fax
Joe Buchite, JCC Environmental Division Inspector

G:\AsBuilts\S7998.jr041

Memorandum

DATE: April 23, 2003
TO: Scott Thomas
FROM: Victoria Bains
SUBJECT: Cypress Isle extended Detention Basin, County BMP ID Code: JR041

In response to your letter dated February 18, 2003 AES Consulting Engineers has taken several actions.

Construction Certification:

Being provided by Earthworks Consulting Engineers, Inc.

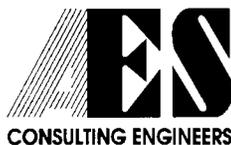
Record Drawings:

Professional certification is signed and dated.

We have rerun the hydraulic analysis for Cypress Isle with as-built information. As you will see on the Reservoir Report, a more conservative tailwater was used than what is actually out there. In doing this, the as-built information only increased the maximum elevation for the 100-year storm by 0.14 ft. This increases the maximum elevation for the 100-year storm to 4.66' that is 1.42' below the dam elevation of 6.08'. Even though the outfall condition is a submerged barrel the pond is functioning within the perimeters set for this facility.

Construction – Related Items:

Bare areas have had topsoil added and seeded and mulched to stabilize. Accumulated sediment and vegetation within 10 ft. of outfall and primary flow structure have been cleaned and removed. The side slopes of the sump have been cut to a 3:1 slope and riprap has been installed on the bottom and side slopes of the sump with filter fabric.



5248 Olde Towne Road • Suite 1 • Williamsburg, Virginia 23188
(757) 253-0040 • Fax (757) 220-8994 • E-mail aes@aesva.com



**James City County Environmental Division
Stormwater Management / BMP Inspection Report
Detention and Retention Pond Facilities**

5-79-98

County BMP ID Code (if known): JR-041

Name of Facility: Cypress Isle BMP No.: _____ of _____ Date: 2/5/03

Location: GOVERNORS LAND - Lot 15 Cypress Isle

Name of Owner: _____

Name of Inspector: Rick Hall

Type of Facility: DRY pond w/ shallow marsh

Weather Conditions: clear, cold Type: Final Inspection County BMP Inspection Program Owner Inspection

If an inspection item is not applicable, mark NA, otherwise mark the appropriate column.

- O.K. - The item checked is in adequate condition and the maintenance program is currently satisfactory. No action required.
- Routine - The item checked requires attention, but does not present an immediate threat to the function/integrity of the BMP.
- Urgent - The item checked requires immediate attention to keep the BMP operational and to prevent damage to the facility.

Provide an explanation and details in the comment column, if routine or urgent are marked.

Facility Item	O.K.	Routine	Urgent	Comments
Embankments and Side Slopes:				
Grass Height	✓			
Vegetation Condition	✓			
Tree Growth	✓			
Erosion	✓			
Trash & Debris	✓			
Seepage	✓			
Fencing or Benches	—			
Interior Landscaping/Planted Areas: <input type="checkbox"/> None <input type="checkbox"/> Constructed Wetland/Shallow Marsh <input checked="" type="checkbox"/> Naturally Established Vegetation				
Vegetated Conditions	✓			<u>cut grass + marsh grasses</u>
Trash & Debris	✓			<u>along pond perimeter</u>
Floating Material	✓			
Erosion	✓			
Sediment	✓			
Dead Plant	✓			
Aesthetics	✓			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Water Pools: <input checked="" type="checkbox"/> Permanent Pool (Retention Basin) <input type="checkbox"/> Shallow Marsh (Detention Basin) <input type="checkbox"/> None, Dry (Detention Basin)				
Shoreline Erosion	✓			
Algae	✓			
Trash & Debris	✓			
Sediment	✓			
Aesthetics	✓			<i>HAS AERATION PUMP</i>
Other				
Inflows (Describe Types/Locations): <i>30" RCP FROM STREET DRAIN</i>				
Condition of Structure	✓			
Erosion	✓			
Trash and Debris	✓			
Sediment	✓			
Outlet Protection	✓			
Other				
Principal Flow Control Structure - Riser, Intake, etc. (Describe Type): <i>Concrete grate box</i>				
Condition of Structure	✓			
Corrosion	✓			
Trash and Debris	✓			
Sediment	✓			
Vegetation	✓			
Other				
Principal Outlet Structure - Barrel, Conduit, etc.: <i>12" RCP</i>				
Condition of Structure	✓			
Settlement	✓			
Trash & Debris	✓			<i>Outlet of barrel under water in excavated trench in wet mud area.</i>
Erosion/Sediment	✓			
Outlet Protection	✓			
Other				
Emergency Spillway (Overflow): <i>Grass swale</i>				
Vegetation	✓			
Lining	✓			
Erosion	✓			
Trash & Debris	✓			
Other				
Notes:				

Facility Item	O.K.	Routine	Urgent	Comments
Nuisance Type Conditions:				
Mosquito Breeding	✓			
Animal Burrows	✓			
Graffiti	✓			
Other				
Surrounding Perimeter Conditions:				
Land Uses	✓			
Vegetation	✓			
Trash & Debris	✓			
Aesthetics	✓			
Access /Maintenance Roads or Paths	✓			
Other				

Remarks:

*Invert out is higher than invert out of nearest D.I.
 Side slopes landscaped with bay berries.
 Algae in pool.*

Overall Environmental Division Internal Rating: 4

Signature: *Rick Hall*
 Title: *ENVIR. Specialist*

Date: *2/5/03*

Date Record Created:

WS_BMPNO:

Print Record

Created By:

JR041

PRINTED ON
Thursday, March 11, 2010
2:39:28 PM

WATERSHED JR
 BMP ID NO 041
 PLAN NO S-79-98
 TAX PARCEL (43-2)(14-1B)
 PIN NO 4321400001B
 CONSTRUCTION DATE 1/1/1999
 PROJECT NAME Governors Land - Cypress Isle
 FACILITY LOCATION Near (north of) 1832 Cypress Isle Lot 15
 CITY-STATE Williamsburg, VA
 CURRENT OWNER Governor's Land Foundation
 OWNER ADDRESS 2700 Two Rivers Road
 OWNER ADDRESS 2
 CITY-STATE-ZIP CODE Williamsburg, VA 23188
 OWNER PHONE
 MAINT AGREEMENT Yes
 EMERG ACTION PLAN No

Get Last BMP No

Return to Menu

MAINTENANCE PLAN

SITE AREA acre

LAND USE

old BMP TYP

JCC BMP CODE

POINT VALUE

SVC DRAIN AREA acres

SERVICE AREA DESCR

IMPERV AREA acres

RECV STREAM

EXT DET-WQ-CTRL

WTR QUAL VOL acre-ft

CHAN PROT CTRL

CHAN PROT VOL acre-ft

SW/FLOOD CONTROL

GEOTECH REPORT

No

3.45

SF Residential

Dry Pond

F2 Dry ED with forebay

4

4.6

SF Lots & Roadways, Open Space

1.15

UT of James River

Yes

0.55

No

0

Yes

No

CTRL STRUC DESC

CTRL STRUC SIZE inches

OTLT BARRL DESC

OTLT BARRL SIZE inch

EMERG SPILLWAY

DESIGN HW ELEV

PERM POOL ELEV

2-YR OUTFLOW cfs

10-YR OUTFLOW cfs

REC DRAWING

CONSTR CERTIF

LAST INSP DATE 2/5/2003

INTERNAL RATING

MISC/COMMENTS

Barrel outfall submerged. AB routing performed.

Mod EW-11

36 x 96

RCP Barrel

12

No

4.66

2.00

3.96

4.20

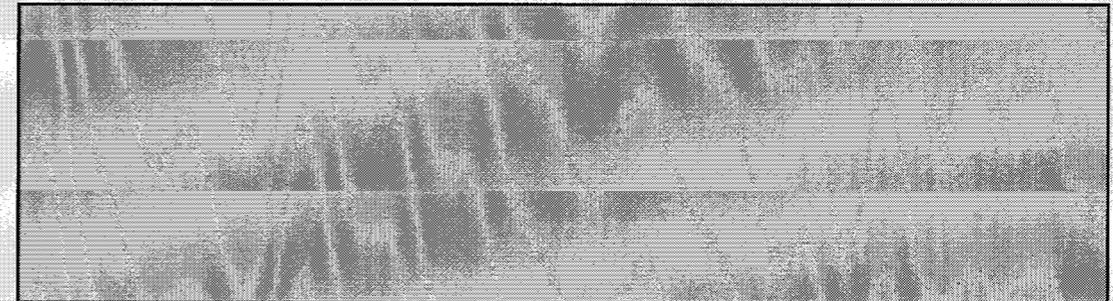
Yes

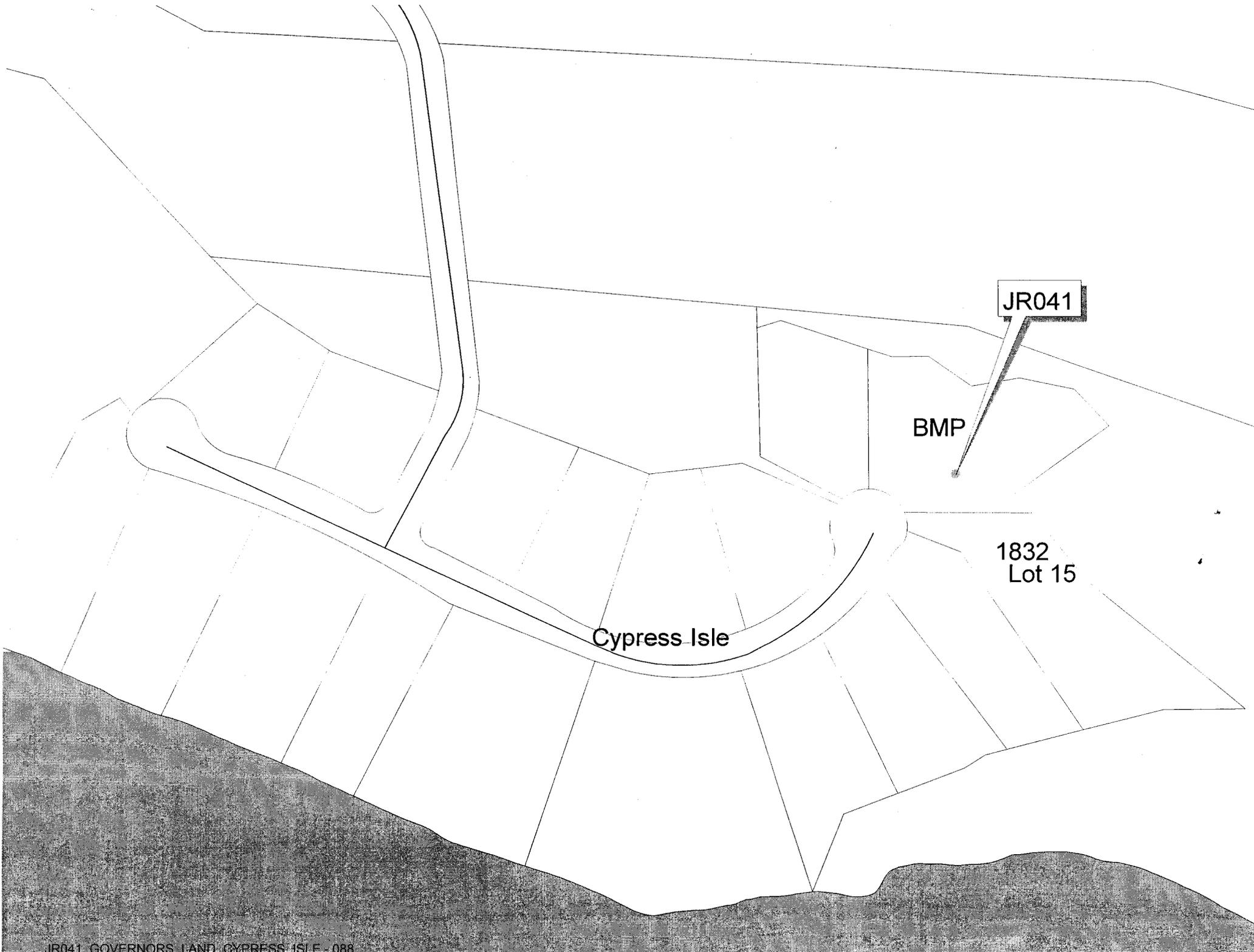
Yes

Inspected by:

4

Additional Comments:





JR041

BMP

1832
Lot 15

Cypress Isle