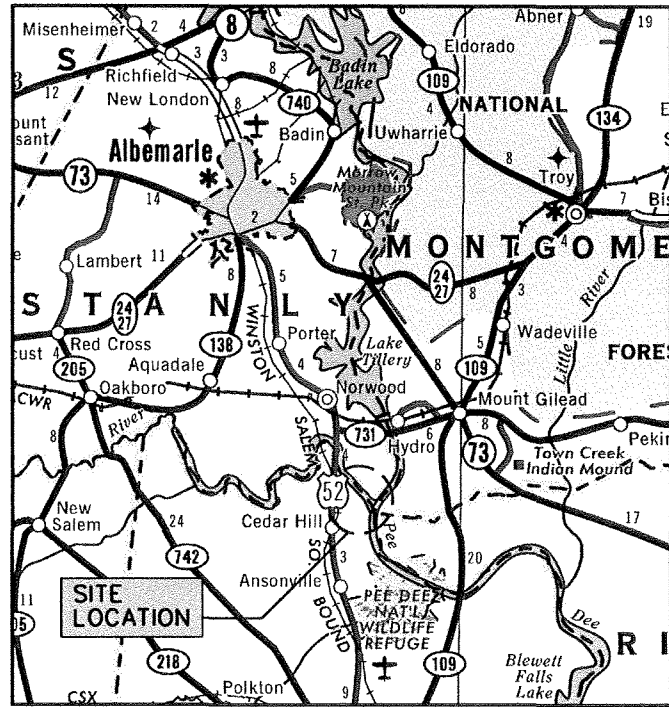


PROJECT: BISHOP SITE STREAM AND WETLAND RESTORATION

BISHOP SITE STREAM AND WETLAND RESTORATION

ANSON COUNTY, NORTH CAROLINA



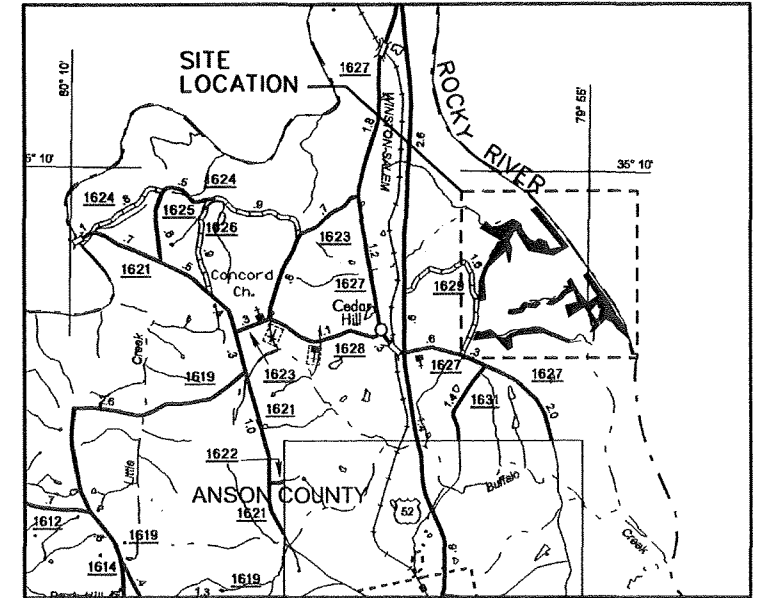
LOCATION MAP
NOT TO SCALE

LOCATION:

SITE IS LOCATED IN NORTHERN ANSON COUNTY, APPROXIMATELY 3 MILES NORTH OF THE TOWN OF ANSONVILLE AND APPROXIMATELY 1.5 MILES EAST OF THE TOWN OF CEDAR HILL NEAR THE CONFLUENCE OF THE ROCKY RIVER AND THE PEE DEE RIVER.

TYPE OF WORK: STREAM AND WETLAND RESTORATION / ENHANCEMENT

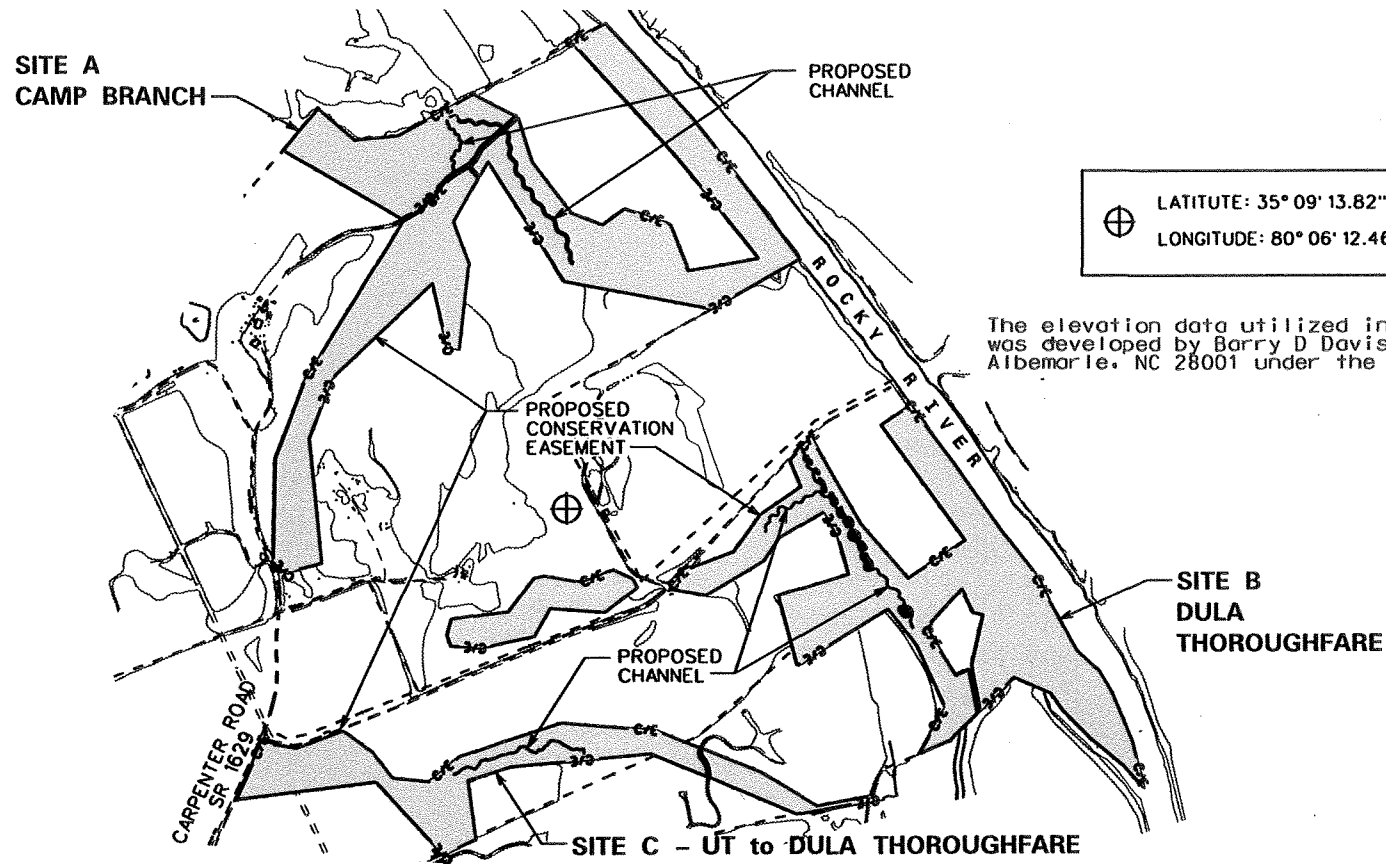
- STREAM RESTORATION / ENHANCEMENT
- WETLAND RESTORATION / ENHANCEMENT
- IN-STREAM STRUCTURES
- FLOODPLAIN GRADING
- NEW CHANNEL CONSTRUCTION
- SITE PLANTING



VICINITY MAP
NOT TO SCALE

⊕ LATITUDE: 35° 09' 13.82"
LONGITUDE: 80° 06' 12.46"

The elevation data utilized in the Bishop As-Built Plans was developed by Barry D Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis. PLS L-4384



RECEIVED

OCT 23 2007

NC ECOSYSTEM
ENHANCEMENT PROGRAM

CAMP BRANCH:

CONSERVATION EASEMENT AREA: 94.9± ACRES
AREA OF DISTURBANCE: 22.4± ACRES

DULA THOROUGHFARE:


CONSERVATION EASEMENT AREA: 70.8± ACRES
AREA OF DISTURBANCE: 24.6± ACRES

UT to DULA THOROUGHFARE:

CONSERVATION EASEMENT AREA: 33.7± ACRES
AREA OF DISTURBANCE: 11.3± ACRES

FILE

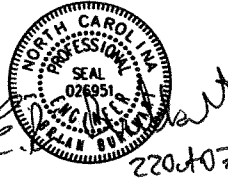
Prepared in the office of:

 **EcoScience Corporation**
101 Hayes St., Suite 101 Ph: 919 824-3433
Raleigh, North Carolina 27604 Fax: 919 824-3558

ENGINEER: DAVID G. MODLIN

PROJECT MANAGER: JAMES D. COOPER

SEAL:



Prepared for:

**ECOSYSTEM
ENHANCEMENT PROGRAM**
Raleigh, North Carolina

No.	Revisions	Date
1	REV'D SHEETS A-2B, A-3, B-2B, B-3, C-2B, C-3	09/29/05 JDC
2	AS-BUILT	JULY 2007

Desn. By:	JDC	Dwn. By:	MAF	Ckd. By:	EBB
Date:	JUL 2007				
ESC Project No:	04-212				
SHEET					
1					

INDEX OF SHEETS

- 1: TITLE SHEET
- 1A: INDEX OF SHEETS / GENERAL NOTES
- 1B: ELEMENT SYMBOLOGY
- 2: SITE ACCESS

CAMP BRANCH

- A: CONSTRUCTION SEQUENCE
- A-1: MORPHOLOGICAL TABLE / SHEAR STRESS TABLE
- A-1A: POOL RADIUS TABLE / RIFFLE TABLE
- A-2: TYPICAL SECTIONS
- A-2A, A-2B: GENERAL DETAILS
- A-2C: NEW CHANNEL CENTERLINE DATA
- A-3: SUMMARY OF QUANTITIES / SUMMARY OF EARTHWORK
- A-4: EXISTING CONDITIONS
- A-5: NEW CHANNEL LAYOUT
- A-6, A-6A: SITE PLAN
- A-7: PROFILE - CAMP BRANCH -C- CHANNEL
- A-7A: AS-BUILT PROFILE - CAMP BRANCH -C- CHANNEL
- A-8: PROFILE - UT to CAMP BRANCH -A- CHANNEL
- A-8A: AS-BUILT PROFILE - UT to CAMP BRANCH -A- CHANNEL
- A-EC1, A-EC1A: EROSION CONTROL PLAN
- A-EC2: EROSION CONTROL DETAILS
- A-L1: PLANTING PLAN
- X1-X4: CROSS-SECTIONS
- X1A-X4A: AS-BUILT CROSS-SECTIONS

DULA THOROUGHFARE

- B: CONSTRUCTION SEQUENCE
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- B-2: TYPICAL SECTIONS / GENERAL DETAILS
- B-2A, B-2B: GENERAL DETAILS
- B-2C: NEW CHANNEL CENTERLINE DATA
- B-3: SUMMARY OF QUANTITIES / SUMMARY OF EARTHWORK
- B-4: EXISTING CONDITIONS
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- B-6: SITE PLAN
- B-7: PROFILE - DULA THOROUGHFARE -T- CHANNEL
- B-7A: AS-BUILT PROFILE - DULA THOROUGHFARE -T- CHANNEL
- B-8: PROFILE - DULA THOROUGHFARE -D- CHANNEL
- B-8A: AS-BUILT PROFILE - DULA THOROUGHFARE -D- CHANNEL
- B-EC1: EROSION CONTROL PLAN
- B-EC2: EROSION CONTROL DETAILS
- B-L1: PLANTING PLAN
- X5-X7: CROSS-SECTIONS
- X5A-X7A: AS-BUILT CROSS-SECTIONS

UT TO DULA THOROUGHFARE

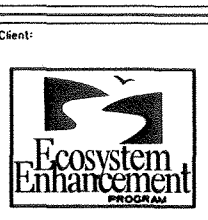
- C: CONSTRUCTION SEQUENCE
- C-1: MORPHOLOGICAL TABLE / STRUCTURE TABLE - NOT APPLICABLE
- C-2: TYPICAL SECTIONS
- C-2A, C-2B: GENERAL DETAILS
- C-3: SUMMARY OF QUANTITIES / SUMMARY OF EARTHWORK
- C-4: EXISTING CONDITIONS
- C-5: NEW CHANNEL LAYOUT - NOT APPLICABLE
- C-6: SITE PLAN
- C-7: PROFILE - UT TO DULA THOROUGHFARE - NOT APPLICABLE
- C-EC1: EROSION CONTROL PLAN
- C-EC2: EROSION CONTROL DETAILS
- C-L1: PLANTING PLAN
- X: CROSS-SECTIONS - NOT APPLICABLE

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING STANDARDS:
 - A) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, ENGLISH" DATED JANUARY 2002, AND ANY SUPPLEMENTS THERETO ISSUED PRIOR TO THE DATE OF RECEIPT OF BIDS.
 - B) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION "ROADWAY STANDARD DRAWINGS, ENGLISH" DATED JANUARY 2002 AND ANY SUPPLEMENTS ISSUED THERETO PRIOR TO THE DATE OF RECEIPT OF BIDS.
 - C) REQUIREMENTS OF THE DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES.
2. ALL CONSERVATION EASEMENT CORNER MARKERS HAVE BEEN PLACED BY OTHERS. THE CONTRACTOR SHOULD CONFIRM THE CONSERVATION EASEMENT BOUNDARIES BEFORE COMMENCING WORK.
3. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND DIMENSIONS WHICH AFFECT NEW WORK PRIOR TO ANY CONSTRUCTION.
4. THE CONTRACTOR IS SOLEY RESPONSIBLE FOR ALL SAFETY ACCORDING TO CURRENT OSHA REGULATIONS.
5. THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING ANY DISTURBANCE OR DAMAGE TO UTILITIES AND SHALL BE RESPONSIBLE FOR IMMEDIATELY REPAIRING ANY DAMAGES AT A COST INCIDENT TO THIS CONTRACT. CALL BEFORE YOU DIG --- 1-800-632-4949.
6. THE EXISTING CHANNELS TO BE FILLED SHALL BE FILLED TO THE MAXIMUM EXTENT FEASIBLE WITH MATERIAL EXCAVATED FROM ON-SITE AND STOCKPILED ADJACENT TO REACHES OF THE OLD CHANNEL. DISTURBANCES SHALL BE PROTECTED IN ACCORDANCE WITH THE APPROVED SEDIMENT AND EROSION CONTROL PLAN.
7. SILT FENCE SHALL BE PLACED BETWEEN STOCKPILE AREAS AND THE EXISTING CHANNEL AND SHALL BE INSTALLED ACCORDING TO THE APPROVED SEDIMENT AND EROSION CONTROL PLAN.
8. THE CONTRACTOR MAY UTILIZE THE DESIGNATED STAGING AREA AND THE AREA INSIDE THE PROPOSED CONSERVATION EASEMENT FOR STAGING AND STOCKPILING EQUIPMENT AND MATERIALS.
9. THE COORDINATE SYSTEM IS THE NAD 83 STATE PLANE GRID. THE VERTICAL DATUM IS BASED ON NVD 1929.
10. EXISTING GRAVEL ACCESS ROADS WILL BE LEFT IN "AS IS OR BETTER" CONDITION. STONE, CLASS ABC, HAS BEEN ESTIMATED AND INCLUDED IN THE QUANTITY ESTIMATES SHOULD EXISTING GRAVEL ROADS NEED REPAIR AT THE PROJECT CONCLUSION. AN ALLOWANCE OF 3 INCHES OF CLASS ABC STONE AND 16-FOOT WIDTH OF EXISTING ROAD WERE ESTIMATED FOR THE ENTIRE LENGTH OF EXISTING ACCESS ROADS. FINAL PAY QUANTITIES WILL BE ON ACTUAL QUANTITIES USED FOR IMPROVED EXISTING ACCESS ROADS.
11. SHOULD ACCESS ROADS AS SHOWN ON THE PLAN SHEETS REQUIRE IMPROVEMENT, CLASS A STONE AND FILTER FABRIC HAVE BEEN ESTIMATED AND INCLUDED IN THE QUANTITY ESTIMATE. AN ALLOWANCE OF 480 TONS OF CLASS A STONE AND 1333 SQUARE YARDS OF FILTER FABRIC WERE ESTIMATED PER 1000 FEET OF 12-FOOT WIDE IMPROVED ACCESS ROAD. QUANTITIES ESTIMATED ALLOW FOR IMPROVING THE ENTIRE LENGTH OF EACH ACCESS ROAD SHOWN ASSUMING WORST CASE WEATHER CONDITIONS. FINAL PAY QUANTITIES WILL BE ON ACTUAL QUANTITIES USED FOR IMPROVED ACCESS ROADS. THE PROPOSED ACCESS ROADS WILL BE REMOVED OR REMAIN AS INDICATED ON PLAN SHEET 2.
12. THE BISHOP SITE STREAM / WETLAND RESTORATION PROJECT DRAINAGE IS SHOWN ON FIRM MAP NO. 3702840050B. THE PROJECT IS IN FLOOD ZONE A. NO DETAILED FLOOD STUDY HAS BEEN PERFORMED FOR THIS AREA OF ANSON COUNTY.
13. ALL ELEVATIONS AND GRADING POINTS WERE DERIVED FROM TOPOGRAPHIC MAPPING PROVIDED TO ECOSCIENCE CORPORATION BY THE OWNER. SUPPLEMENTAL SURVEYING WAS PROVIDED BY K2 DESIGN, GOLDSBORO, NC. THE GRADING PLAN AND SPECIFIED ELEVATIONS, AS SHOWN, ARE RELATIVE TO THIS TOPOGRAPHIC MAPPING. TOPOGRAPHIC DISCREPANCIES IDENTIFIED AS A RESULT OF FIELD SURVEYS DURING CONSTRUCTION MAY BE ADJUSTED AT THE DISCRETION OF THE PROJECT MANAGER. ALSO, EARTHWORK QUANTITY ESTIMATES WERE DERIVED FROM ELEVATION CONTOURS SHOWN ON THESE PLANS.



REVISIONS	
1	AS-BUILT - JULY 2007



Client:

Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**INDEX OF
SHEETS /
GENERAL NOTES**

Des. By:	JDC	Des. By:	MAF
Ckd. By:	EBB	Date:	JUL 2007
Scale:	NO SCALE		
ESC Project No.:	04-212		

SHEET

1A

ECOSCIENCE CORPORATION ELEMENT SYMBOLOGY



TOPOGRAPHY & HYDROGRAPHY

MAJOR CONTOUR -650.....
MINOR CONTOUR
GRAVEL / DIRT ROAD	-----
PAVED ROAD	=====
WETLAND / SWAMP	
DIRECTION OF FLOW	→
EXISTING STREAM	-----
EXISTING WETLAND BOUNDARY	---WLB---
HIGH QUALITY WETLAND BOUNDARY	---HQ WLB---
MEDIUM QUALITY WETLAND BOUNDARY	---MQ WLB---
LOW QUALITY WETLAND BOUNDARY	---LQ WLB---
PROPOSED WETLAND BOUNDARY	---WLB---
EXISTING SPOT ELEVATION	+648
PROPOSED SPOT ELEVATION	648

BOUNDARIES, PROPERTIES, AND EASEMENTS

COUNTY LINE	-----
CITY LINE	-----
PROPERTY LINE	---P---
EXISTING IRON PIN	EIP
RIGHT OF WAY	---R/W---
PROPERTY MONUMENT	ECM
PARCEL NUMBER	⑥
ESC BENCHMARK	▲ ESC-BM1
NCDOT MONUMENT	▣ NCDOT-BM5
UTILITY EASEMENT	---E---
POWER LINE	---P---
EXISTING EASEMENT	---E---
PROPOSED CONSERVATION EASEMENT	---C/E---

BUILDINGS & OTHER STRUCTURES

BUILDINGS	
WELL	W
BRIDGE	
BOX CULVERT OR TUNNEL	
CULVERT	
BRIDGE WING WALL, HEAD WALL, AND END WALL	CONC WW
HEAD AND END WALL	CONC HW
PIPE CULVERT	
FOOTBRIDGE	
DRAINAGE BOXES	CB
EXISTING FENCE	---x---x---x---
POWER POLE	
TELEPHONE POLE	
LIGHT POLE	
POWER LINE TOWER	
SANITARY SEWER MANHOLE	
STORM SEWER MANHOLE	
SANITARY SEWER	---SS---SS---
STORM SEWER	---S---S---
FOOTBRIDGE	
TRAIL, FOOTPATH	
RAIL ROAD	CSX TRANSPORTATION

VEGETATION

SINGLE TREE	
SINGLE SHRUB	
EXISTING WOODS LINE	

PROPOSED FEATURES AND STRUCTURES

PROPOSED CONSTRUCTION ENTRANCE	
PROPOSED ROCK SILL	

PROPOSED FEATURES AND STRUCTURES

RADIUS OF CURVATURE CENTER MARK	+R2
CHANNEL FORD	
CROSS-VANE	
MODIFIED CROSS-VANE	
J-HOOK VANE	
STEP CROSS-VANE	
LOG VANE	
ROOT WAD	
TEMPORARY STAGING AREA, SOIL STOCKPILING	
NEW CHANNEL	
BORROW AREA	
CHANNEL BACKFILL	
MEANDER REVETMENT	
RIPRAP APRON	
IMPERVIOUS CHANNEL BLOCK	
TOP OF RIFFLE	TR1
BOTTOM OF RIFFLE	BR1
CONSTRUCTED BERM	
PROPOSED WOVEN WIRE FENCE	
PROPOSED BARBED WIRE FENCE	
PROPOSED SAFETY FENCE	---SF---
PROPOSED SILT FENCE	---//---
PROPOSED MAJOR CONTOURS	---755---
PROPOSED MINOR CONTOURS
PROPOSED DIVERSION DITCH	
LIMITS OF DISTURBANCE	-----
PROPOSED ACCESS ROAD	-----
PROPOSED CLEARING LIMITS	-----
PROPOSED STONE OUTLET	

REVISIONS



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**ELEMENT
SYMBOLGY**

Dwn. By: JDC Dwn. By: MAF

Chk. By: DGM Date: JUN 2005

Scale: NO SCALE

ESC Project No.: 04-212

SHEET

1B

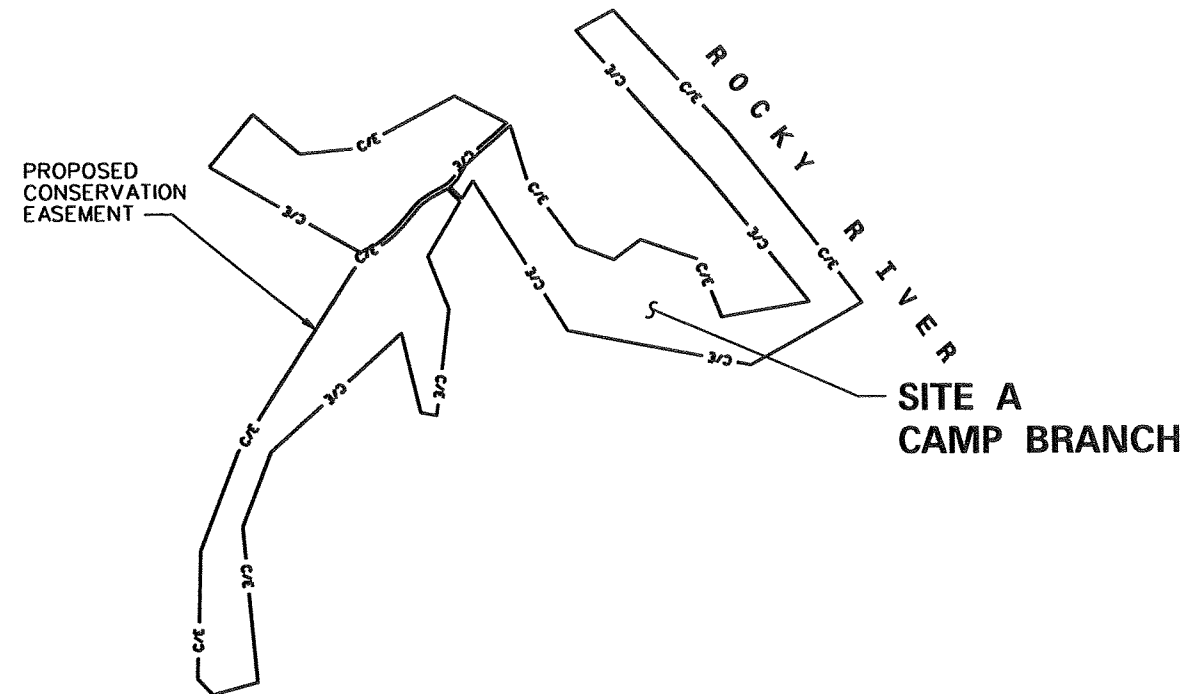
CONSTRUCTION SEQUENCE

1. MOBILIZE EQUIPMENT AND MATERIALS TO CAMP BRANCH SITE.
2. ESTABLISH ACCESS ROADS AND STAGING AREAS AS DEPICTED ON THE PLANS OR AS DIRECTED BY THE PROJECT MANAGER AND MARK CONSTRUCTION EQUIPMENT ACCESS LOCATIONS WITH VISIBLE MARKERS. CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED AND SERVICED WITHIN THE LIMITS OF THE ESTABLISHED STAGING AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL STAGING AREAS IN AN ENVIRONMENTALLY SENSITIVE MANNER.
3. INSTALL IMPROVEMENTS TO SITE ACCESS ROAD IF REQUIRED AND INSTALL TEMPORARY EROSION CONTROL MEASURES (I.E., SILT FENCE, STONE OUTLETS, ETC.) AS REQUIRED.
4. AT THE END OF EACH DAY OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY SEED AND MULCH AND APPLY COIR FIBER MATTING, AS APPROPRIATE, TO ALL DISTURBED AREAS. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES ON A DAILY BASIS THROUGHOUT THE CONSTRUCTION PERIOD.
5. THE UT TO CAMP BRANCH SHALL BE DUG IN THE DRY EASTWARD FROM THE EXISTING ACCESS ROAD AND CONNECTED TO CAMP BRANCH. THE EXISTING LOW AREA PARALLEL TO THE UT SHALL BE FILLED WITH MATERIAL FROM THE UT EXCAVATION.
6. CAMP BRANCH AND THE ASSOCIATED FLOODPLAIN WORK SHALL BE DUG IN THE DRY WITH THE WASTE MATERIAL TEMPORARILY STOCKPILED BETWEEN THE PROPOSED CHANNEL AND THE EXISTING CHANNEL. THE PROPOSED PERMANENT FORD SHALL BE CONSTRUCTED AT THIS TIME, ALSO IN THE DRY. IT IS ASSUMED THE CONNECTION AT THE BOTTOM END OF THE PROJECT CAN BE MADE AT THIS TIME WITHOUT CONSEQUENCES.
7. A PUMP-AROUND OPERATION SHALL BE PROVIDED JUST ABOVE THE DIVERGENCE OF EXISTING CAMP BRANCH AND THE PROPOSED CAMP BRANCH TO FACILITATE THE CONSTRUCTION OF THE PROPOSED CHANNEL BLOCK AND CONNECTION OF EXISTING CAMP BRANCH TO THE NEW CHANNEL.
8. THE EXISTING CAMP BRANCH SHALL BE BACKFILLED WITH THE STOCKPILED MATERIAL FROM THE EXCAVATION OF THE NEW CHANNEL. THE EXISTING DITCH SECTION PARALLELING THE EXISTING ACCESS ROAD SHALL BE EXTENDED TO TIE TO THE NEW LOCATION CAMP BRANCH. NO WORK IS ANTICIPATED AT THE PIPE AT THE BREAK IN THE CONSERVATION EASEMENT.
9. THE PROPOSED FORD ACROSS THE EXISTING ACCESS ROAD AT THE UT TO CAMP BRANCH SHALL BE CONSTRUCTED FOLLOWED BY THE PROPOSED CHANNEL BLOCK. THE PURPOSE OF THE BLOCK IS TO DIRECT FLOW FROM THE UT HEADWATER ALONG THE NEW UT CHANNEL TO CAMP BRANCH.
10. THE CONTRACTOR SHALL COMPACT THE PROPOSED FILL IN THE FILLED CHANNELS TO 90 PERCENT PROCTOR. THE PROPOSED CHANNEL BLOCKS SHALL HAVE A CORE OF IMPERVIOUS SELECT MATERIAL AS SPECIFIED IN THE PROJECT DETAIL AND SPECIAL PROVISIONS.
11. THE CONTRACTOR SHALL PLACE FINAL WASTE MATERIAL IN AREAS DESIGNATED ON THE PLANS AND AT THE DIRECTION OF THE PROJECT MANAGER. STOCKPILE AREAS SHALL BE PROTECTED BY SILT FENCING AS APPROPRIATE.
12. ONCE CONSTRUCTION IS COMPLETE, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION MATERIALS FROM THE CONSERVATION EASEMENT, DISPOSE OF THEM IN AN APPROVED DUMP SITE AND SCARIFY ANY COMPACTED AREAS AS DIRECTED BY THE PROJECT MANAGER. TO COMPLETE SEEDING AND MULCHING, ALL DISTURBED AREAS SHALL BE DISKED OR PLOWED TO CREATE MICRO TOPOGRAPHY TO THE SATISFACTION OF THE PROJECT MANAGER AND PERMANENTLY SEEDED AND MULCHED. STONE APPLIED TO ACCESS ROADS, IF ANY, SHALL REMAIN OR BE REMOVED AS INDICATED ON PLAN SHEET 2.

SITE A CAMP BRANCH




TYPE OF WORK: STREAM AND WETLAND RESTORATION / ENHANCEMENT

- STREAM RESTORATION / ENHANCEMENT
- FLOODPLAIN GRADING
- NEW CHANNEL CONSTRUCTION
- SITE PLANTING



INDEX OF SHEETS

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- A: CONSTRUCTION SEQUENCE**
 - A-1: MORPHOLOGICAL TABLE / SHEAR STRESS TABLE**
 - A-1A: POOL RADIUS TABLE / RIFFLE TABLE**
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 - A-2A, A-2B: GENERAL DETAILS**
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 - A-4: EXISTING CONDITIONS**
 - A-5: NEW CHANNEL LAYOUT**
 - A-6, A-6A: SITE PLAN**
 - A-7: PROFILE - CAMP BRANCH -C- CHANNEL**
 - A-7A: AS-BUILT PROFILE - CAMP BRANCH -C- CHANNEL**
 - A-8: PROFILE - UT to CAMP BRANCH -A- CHANNEL**
 - A-8A: AS-BUILT PROFILE - UT to CAMP BRANCH -A- CHANNEL**
 - A-EC1, A-EC1A: EROSION CONTROL PLAN**
 - A-EC2: EROSION CONTROL DETAILS**
 - A-L1: PLANTING PLAN**
 - X1-X4: CROSS-SECTIONS**
 - X1A-X4A: AS-BUILT CROSS-SECTIONS**

<p style="text-align: center;"><i>Prepared in the office of:</i></p> <div style="text-align: center;">  <p>EcoScience Corporation 1801 Hayes St., Suite 101 Raleigh, North Carolina 27604 Ph: 919 828-3433 Fax: 919 828-3514</p> </div> <p>ENGINEER: DAVID G. MODLIN</p> <p>PROJECT MANAGER: JAMES D. COOPER</p>	<p>SEAL:</p> <div style="text-align: center;">  <p>22007</p> </div>	<p style="text-align: center;"><i>Prepared for:</i></p> <div style="text-align: center;">  <p>ECOSYSTEM ENHANCEMENT PROGRAM Raleigh, North Carolina</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">No.</td> <td style="width: 60%;">Revisions</td> <td style="width: 30%;">Date</td> </tr> <tr> <td>1</td> <td>REV'D SHEETS A-2B, A-3,</td> <td>09/29/05 JDC</td> </tr> <tr> <td>2</td> <td>AS-BUILT</td> <td>JULY 2007</td> </tr> </table>	No.	Revisions	Date	1	REV'D SHEETS A-2B, A-3,	09/29/05 JDC	2	AS-BUILT	JULY 2007	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Dsn. By: JDC</td> <td style="width: 25%;">Dwn. By: MAF</td> <td style="width: 25%;">Chk. By: EBB</td> </tr> <tr> <td colspan="3">Date: JUL 2007</td> </tr> <tr> <td colspan="3">ESC Project No: 04-212</td> </tr> <tr> <td colspan="3" style="text-align: center; padding: 20px;">SHEET</td> </tr> <tr> <td colspan="3" style="text-align: center; padding: 20px;">A</td> </tr> </table>	Dsn. By: JDC	Dwn. By: MAF	Chk. By: EBB	Date: JUL 2007			ESC Project No: 04-212			SHEET			A		
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Date: JUL 2007																											
ESC Project No: 04-212																											
SHEET																											
A																											

REVISIONS



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**TYPICAL
SECTIONS**

CAMP BRANCH

Dsn. By:

Dwn. By:

JDC

MAF

Ckd. By:

Date:

DGM

JUN 2005

Scale:

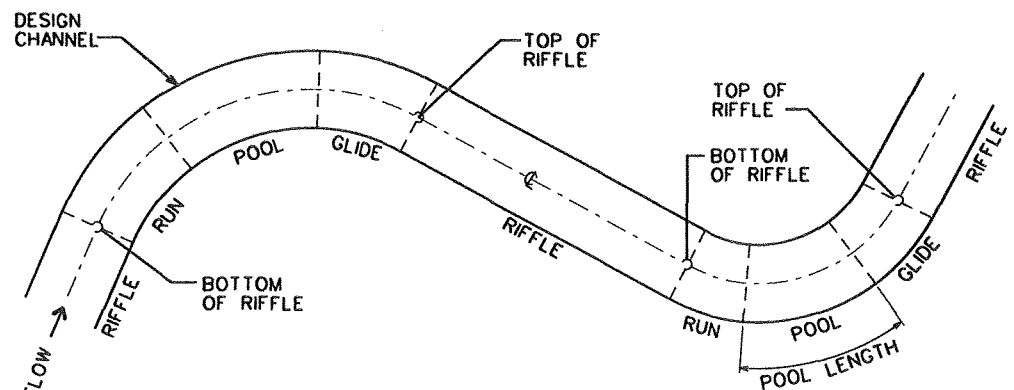
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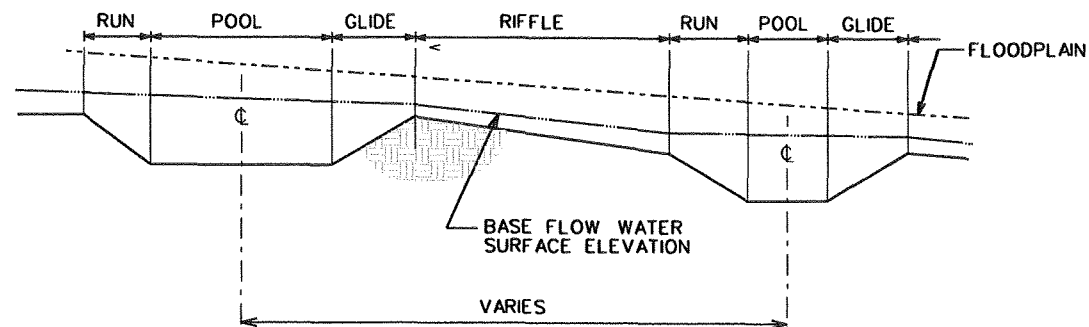
04-212

SHEET

A-2

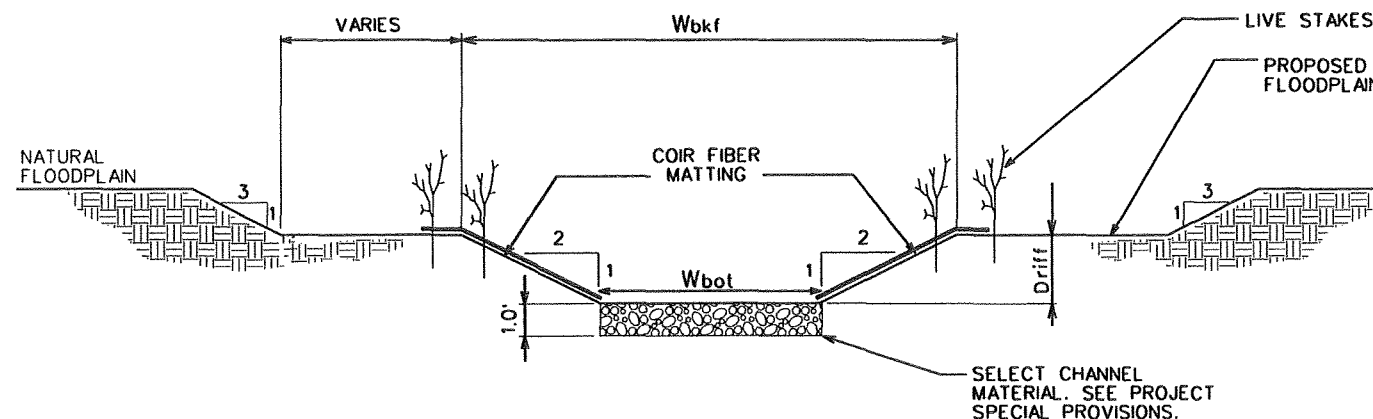


TYPICAL CHANNEL PLAN VIEW

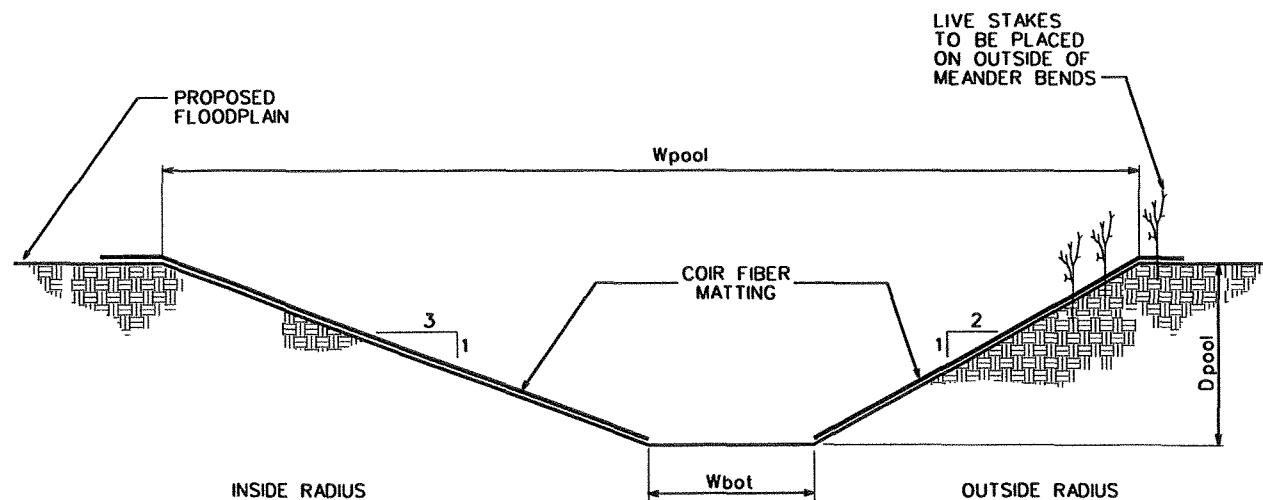


TYPICAL CHANNEL PROFILE

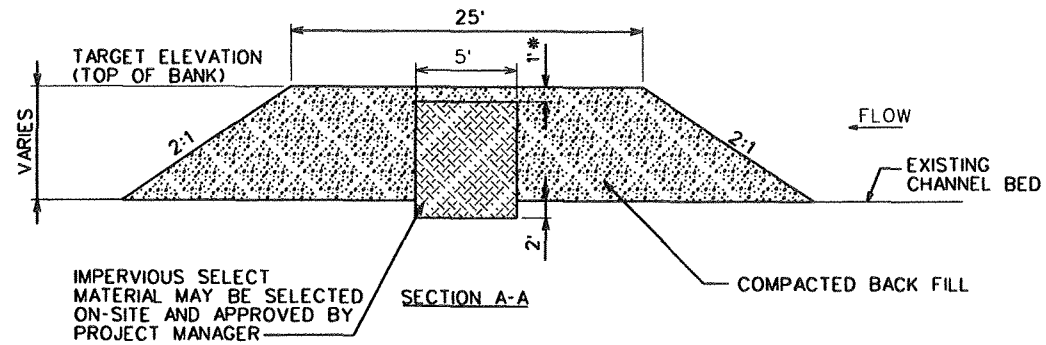
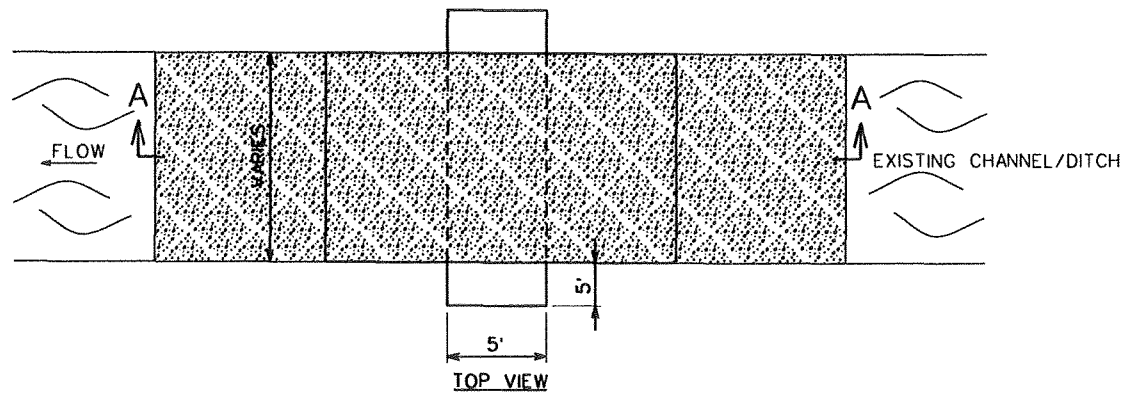
CROSS-SECTION DIMENSIONS							
REACH	Wbkf (ft.)	Wbot (ft.) Riffle	Driff (ft.)	Wpool (ft.)	Wbot (ft.) Pool	Dpool (ft.)	Width/Depth Ratio
CAMP BRANCH	19	11	2	25	10	3	11.9
UT TO CAMP BRANCH	6	2.8	0.8	8	2.5	1.1	10



TYPICAL RIFFLE CROSS-SECTION



TYPICAL POOL CROSS-SECTION



NOTES:

1. CHANNEL PLUG WILL BE INITIALLY FILLED WITH AVAILABLE WASTE AND COMPACTED TO NINETY-FIVE PERCENT STANDARD PROCTOR.
2. THEN A CENTRAL PORTION FIVE FEET WIDE WILL BE REMOVED AND REPLACED WITH IMPERVIOUS SELECT MATERIAL (SEE SPECIAL PROVISIONS).
3. THE IMPERVIOUS SELECT MATERIAL WILL BE KEYED INTO THE ORIGINAL BANK A MINIMUM OF FIVE FEET AND INTO THE ORIGINAL BED A MINIMUM OF TWO FEET.

**IMPERVIOUS CHANNEL BLOCK
CAMP BRANCH**

**IMPERVIOUS CHANNEL BLOCK
UT to CAMP BRANCH**

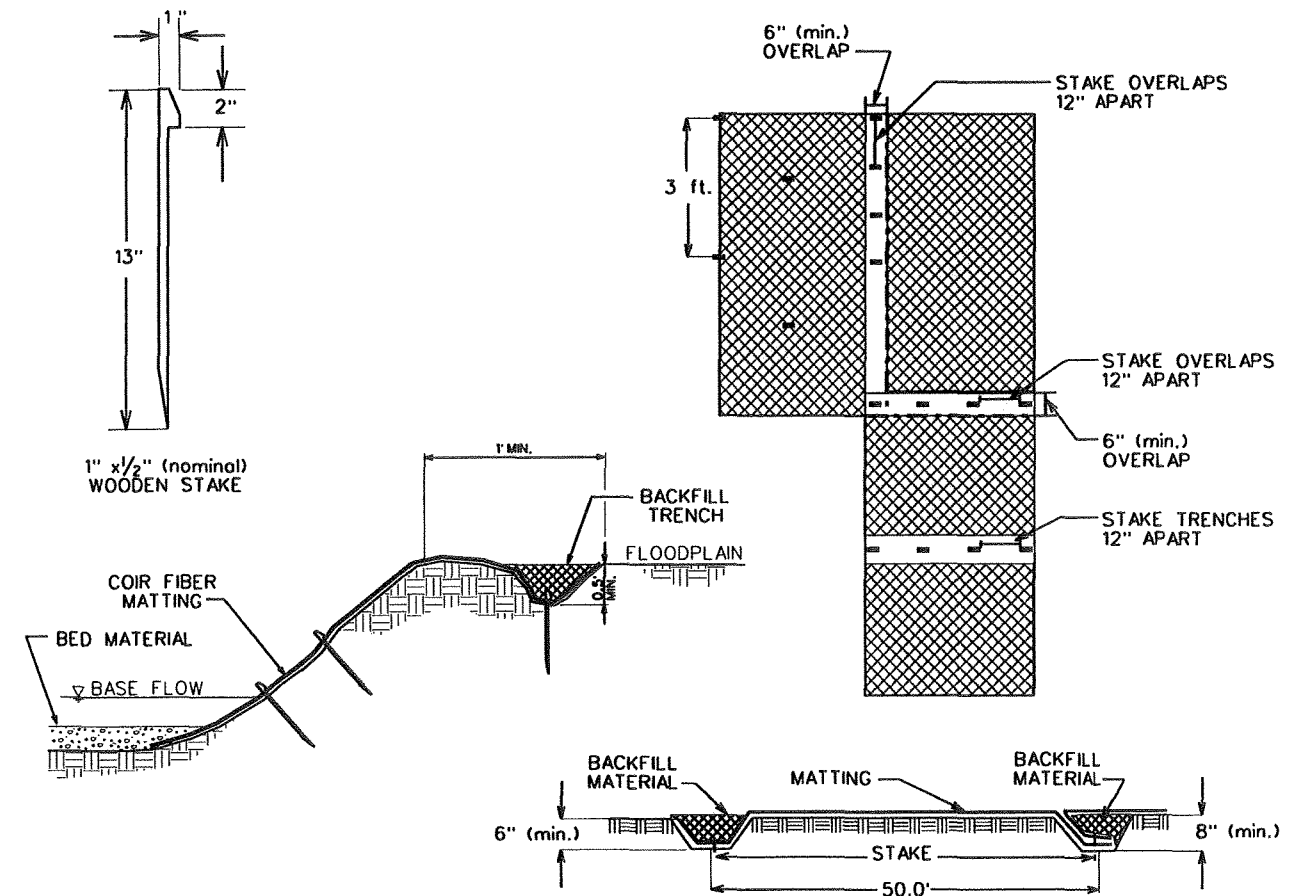
NOTES:

1. THE IMPERVIOUS SELECT MATERIAL WILL BE KEYED INTO THE ORIGINAL BANK A MINIMUM OF TWO FEET AND INTO THE ORIGINAL BED A MINIMUM OF ONE FOOT.
- * 2. IN THE UT TO CAMP BRANCH CHANNEL ONLY, THE IMPERVIOUS SELECT MATERIAL SHALL EXTEND TO THE TOP OF THE IMPERVIOUS CHANNEL BLOCK AND HAVE NO BACKFILL LAYER ON TOP.

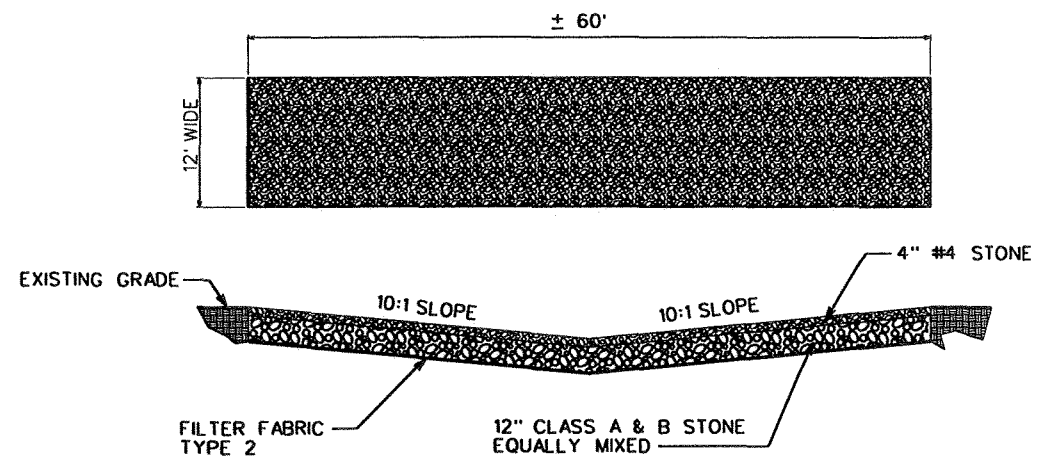
NOTES:

1. CONTRACTOR TO EXCAVATE APPROXIMATELY ONE FOOT DEEP CHANNEL FOR PERMANENT STREAM CROSSING.
2. LAY FILTER FABRIC ALONG ENTIRE LENGTH OF BED.
3. FILL WITH EIGHT INCHES OF "CLASS A" STONE, FOLLOWED BY FOUR INCHES OF #4 STONE TO BRING FINISHED GRADE UP TO LEVEL OF PROPOSED STREAM BED.

**PERMANENT CHANNEL FORD
UT to CAMP BRANCH**



COIR FIBER MATTING DETAIL



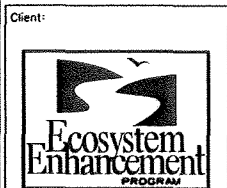
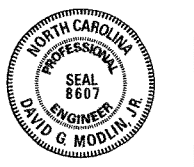
NOTES:

1. CONTRACTOR TO EXCAVATE APPROXIMATELY SIXTEEN INCHES DEEP CHANNEL FOR PERMANENT STREAM CROSSING.
2. LAY FILTER FABRIC ALONG ENTIRE LENGTH OF BED.
3. FILL WITH TWELVE INCHES OF "CLASS A" AND "CLASS B" STONE, EQUALLY MIXED, FOLLOWED BY FOUR INCHES OF #4 STONE TO BRING FINISHED GRADE UP TO LEVEL OF PROPOSED STREAM BED.

**PERMANENT CHANNEL FORD
CAMP BRANCH**



REVISIONS



Project:
**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

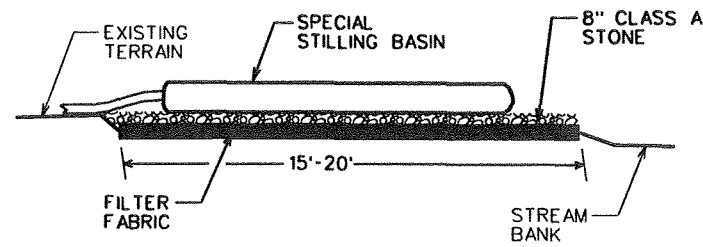
ANSON COUNTY,
NORTH CAROLINA

Title:
**GENERAL
DETAILS

CAMP BRANCH**

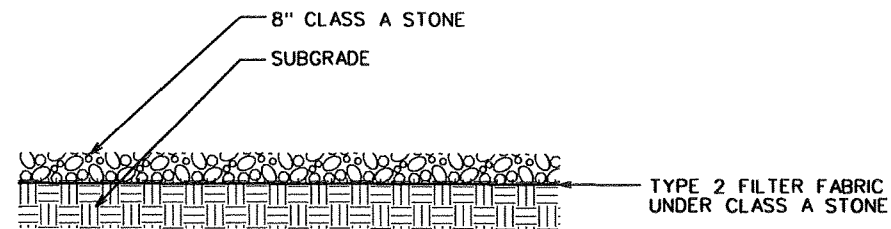
Dsn. By:	JDC	Dwn. By:	MAF
Ckd. By:	DGM	Date:	JUN 2005
Scale:	NO SCALE		
ESC Project No.:	04-212		

SHEET
A-2A



NOTE:
 1. WHEN PUMPING CLEAN WATER, THE CONTRACTOR MAY PROVIDE A STABILIZED OUTLET BY OMITTING THE SPECIAL STILLING BASIN AND PROVIDING THE ROCK PAD AS SHOWN WITH MINIMUM DIMENSIONS 10 FEET WIDE BY 15 FEET LONG.

**SPECIAL STILLING BASIN
 WITH ROCK PAD**

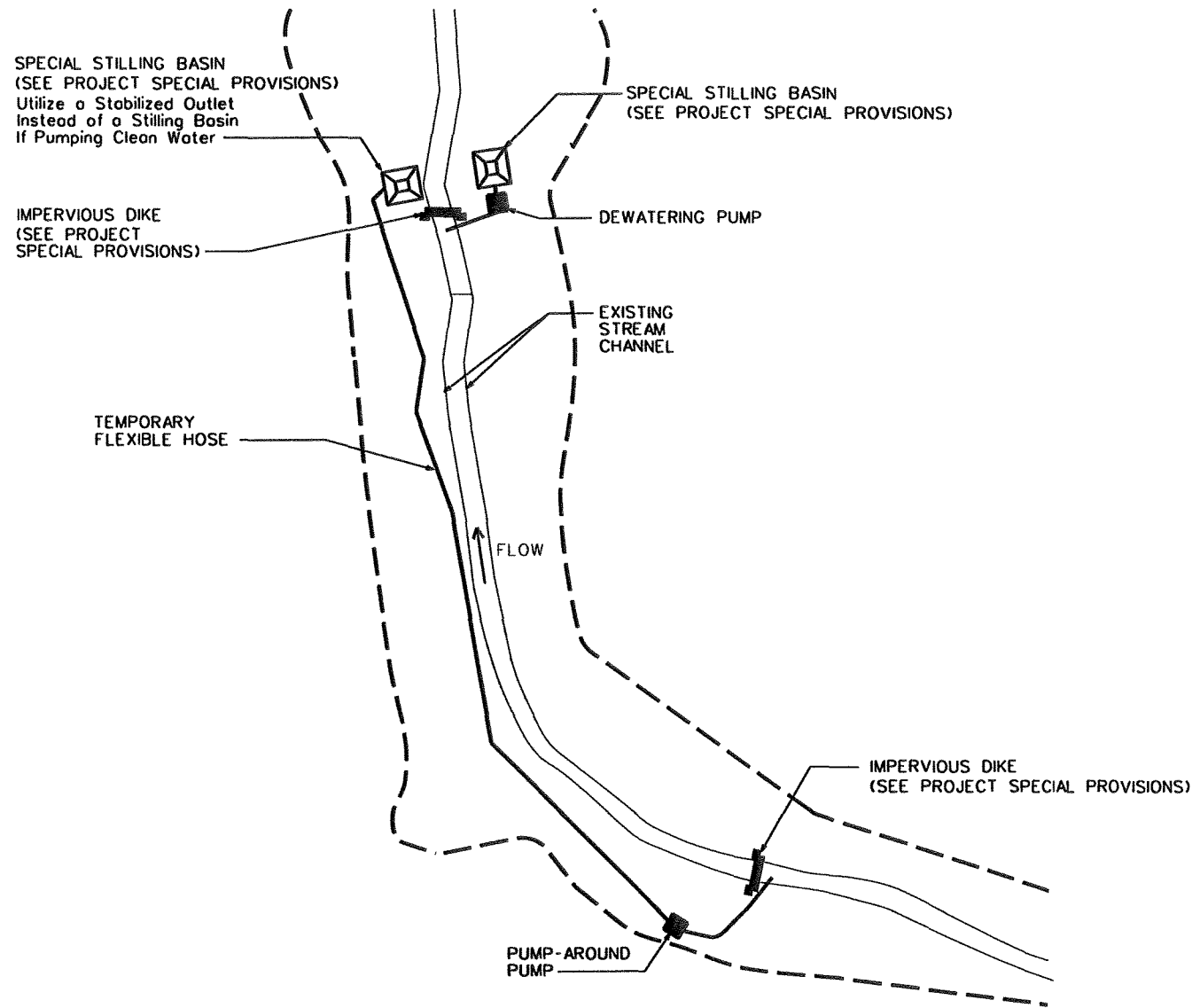


NOTES:
 1. THIS IS THE MINIMUM ACCEPTABLE SECTION.

**ACCESS ROAD SECTION DETAIL
 SUGGESTED OR EQUIVALENT**

- NOTES:**
1. ALL EXCAVATION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
 2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW WHEN NECESSARY.
 3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
 4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, DIVERSION PIPES, PUMPS AND HOSES.
 5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.

- SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA**
1. INSTALL SPECIAL STILLING BASIN(S).
 2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
 3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
 4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
 5. PERFORM STREAM RESTORATION WORK IN ACCORDANCE WITH THE PLANS.
 6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES, REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
 7. ALL GRADING AND STABILIZATION MUST BE COMPLETED AT THE END OF EACH DAY WITHIN THE PUMP AROUND AREAS BETWEEN THE IMPERVIOUS DIKES. THE IMPERVIOUS DIKE LOCATIONS AS SHOWN ON THIS SHEET ONLY SHOW THE UPPER AND LOWER EXTENT OF WORK FOR EACH STREAM SEGMENT. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF THE IMPERVIOUS DIKE(S) FOR EACH DAY'S WORK.
 8. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.



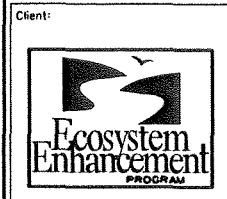
TYPICAL PUMP-AROUND OPERATION



REVISIONS

NO.	DATE	DESCRIPTION

LAND QUALITY COMMENTS



Project:

**BISHOP SITE
 STREAM /
 WETLAND
 RESTORATION
 PLAN**

ANSON COUNTY,
 NORTH CAROLINA

Title:

**GENERAL
 DETAILS**

CAMP BRANCH

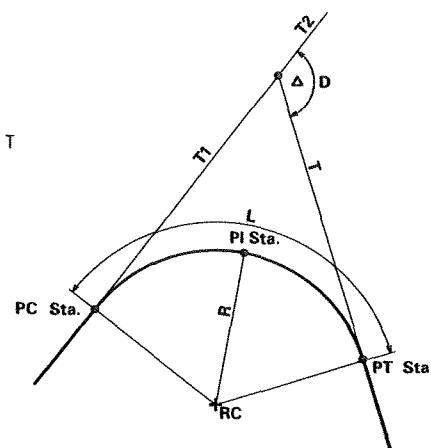
Dsn. By:	JDC	Dwn. By:	MAF
Ckd. By:	DGM	Date:	JUN 2005
Scale:	NO SCALE		
ESC Project No.:	04-212		

SHEET

A-2B

**-A- CHANNEL CURVE DATA
UT to CAMP BRANCH**

<p>1</p> <p>P.J. Sta. 0+38.01 D = 74' 16" 25.56° (RT) T = 12.12 L = 20.74 R = 16.00 P.C. Sta. 0+25.90 P.T. Sta. 0+46.64 Back = N 32° 49' 26.38" W Ahead = N 41° 26' 59.18" E</p>	<p>6</p> <p>P.J. Sta. 2+18.05 D = 68° 01' 30.30" (LT) T = 12.82 L = 22.56 R = 19.00 P.C. Sta. 2+05.23 P.T. Sta. 2+27.79 Back = N 64° 33' 32.57" E Ahead = N 03° 27' 57.74" W</p>	<p>11</p> <p>P.J. Sta. 4+02.54 D = 76° 33' 52.49" (RT) T = 12.63 L = 21.38 R = 16.00 P.C. Sta. 3+89.91 P.T. Sta. 4+11.29 Back = N 66° 47' 17.71" W Ahead = N 09° 46' 34.78" E</p>	<p>16</p> <p>P.J. Sta. 5+72.19 D = 40° 25' 16.56" (LT) T = 6.99 L = 13.40 R = 19.00 P.C. Sta. 5+65.19 P.T. Sta. 5+78.60 Back = N 03° 18' 56.67" W Ahead = N 43° 44' 13.22" W</p>
<p>2</p> <p>P.J. Sta. 0+68.07 D = 78° 08' 07.12" (LT) T = 13.80 L = 23.18 R = 17.00 P.C. Sta. 0+54.27 P.T. Sta. 0+77.45 Back = N 41° 26' 59.18" E Ahead = N 36° 41' 07.94" W</p>	<p>7</p> <p>P.J. Sta. 2+56.22 D = 98° 30' 42.01" (RT) T = 18.57 L = 27.51 R = 16.00 P.C. Sta. 2+37.64 P.T. Sta. 2+65.15 Back = N 03° 27' 57.74" W Ahead = S 84° 57' 15.73" E</p>	<p>12</p> <p>P.J. Sta. 4+39.19 D = 89° 27' 54.33" (LT) T = 16.84 L = 26.54 R = 17.00 P.C. Sta. 4+22.35 P.T. Sta. 4+48.89 Back = N 09° 46' 34.78" E Ahead = N 79° 41' 19.55" W</p>	<p>17</p> <p>P.J. Sta. 6+05.94 D = 72° 37' 10.89" (RT) T = 22.05 L = 38.02 R = 30.00 P.C. Sta. 5+83.90 P.T. Sta. 6+21.92 Back = N 43° 44' 13.22" W Ahead = N 28° 52' 57.67" E</p>
<p>3</p> <p>P.J. Sta. 0+97.92 D = 79° 07' 21.88" (RT) T = 14.87 L = 24.86 R = 18.00 P.C. Sta. 0+83.05 P.T. Sta. 1+07.90 Back = N 36° 41' 07.94" W Ahead = N 42° 26' 13.94" E</p>	<p>8</p> <p>P.J. Sta. 2+98.33 D = 106° 02' 32.52" (LT) T = 22.58 L = 31.46 R = 17.00 P.C. Sta. 2+75.75 P.T. Sta. 3+07.21 Back = S 84° 57' 15.73" E Ahead = N 10° 59' 48.25" W</p>	<p>13</p> <p>P.J. Sta. 4+76.92 D = 89° 36' 31.86" (RT) T = 14.90 L = 23.46 R = 15.00 P.C. Sta. 4+62.03 P.T. Sta. 4+85.49 Back = N 79° 41' 19.55" W Ahead = N 09° 55' 12.31" E</p>	<p>17</p> <p>P.J. Sta. 6+05.94 D = 72° 37' 10.89" (RT) T = 22.05 L = 38.02 R = 30.00 P.C. Sta. 5+83.90 P.T. Sta. 6+21.92 Back = N 43° 44' 13.22" W Ahead = N 28° 52' 57.67" E</p>
<p>4</p> <p>P.J. Sta. 1+40.33 D = 110° 29' 10.11" (LT) T = 21.62 L = 28.93 R = 15.00 P.C. Sta. 1+18.72 P.T. Sta. 1+47.64 Back = N 42° 26' 13.94" E Ahead = N 68° 02' 56.17" W</p>	<p>9</p> <p>P.J. Sta. 3+29.71 D = 55° 58' 42.87" (RT) T = 10.63 L = 19.54 R = 20.00 P.C. Sta. 3+19.09 P.T. Sta. 3+38.63 Back = N 10° 59' 48.25" W Ahead = N 44° 58' 54.61" E</p>	<p>14</p> <p>P.J. Sta. 5+16.43 D = 109° 44' 43.75" (LT) T = 28.43 L = 38.31 R = 20.00 P.C. Sta. 4+88.00 P.T. Sta. 5+26.31 Back = N 09° 55' 12.31" E Ahead = S 80° 10' 28.56" W</p>	<p>4</p> <p>P.J. Sta. 2+35.99 D = 56° 54' 01.41" (RT) T = 27.09 L = 49.66 R = 50.00 P.C. Sta. 2+08.90 P.T. Sta. 2+58.56 Back = N 64° 04' 45.40" E Ahead = S 59° 01' 13.19" E</p>
<p>5</p> <p>P.J. Sta. 1+94.54 D = 132° 36' 28.74" (RT) T = 38.73 L = 39.35 R = 17.00 P.C. Sta. 1+55.81 P.T. Sta. 1+95.15 Back = N 68° 02' 56.17" W Ahead = N 64° 33' 32.57" E</p>	<p>10</p> <p>P.J. Sta. 3+73.48 D = 111° 46' 12.33" (LT) T = 20.67 L = 27.31 R = 14.00 P.C. Sta. 3+52.81 P.T. Sta. 3+80.12 Back = N 44° 58' 54.61" E Ahead = N 66° 47' 17.71" W</p>	<p>15</p> <p>P.J. Sta. 5+48.99 D = 96° 30' 34.77" (RT) T = 20.17 L = 30.32 R = 18.00 P.C. Sta. 5+28.82 P.T. Sta. 5+59.14 Back = S 80° 10' 28.56" W Ahead = N 03° 18' 56.67" W</p>	<p>5</p> <p>P.J. Sta. 2+95.41 D = 40° 20' 31.79" (LT) T = 16.90 L = 32.39 R = 46.00 P.C. Sta. 2+78.51 P.T. Sta. 3+10.90 Back = S 59° 01' 13.19" E Ahead = N 80° 38' 15.02" E</p>

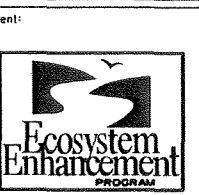
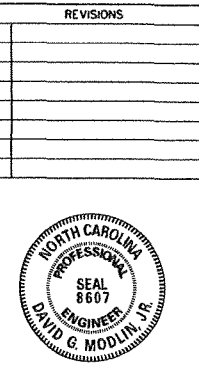


PI Sta. = center of pool
 Δ = deflection angle (Δ) between tangent lines T2 and T1 measured along direction of travel
 L = arc/pool length
 T/T1 = tangent length
 R = radius of curvature
 PC Sta. = point of curvature (where arc/pool begins)
 PT Sta. = point of terminus (where arc/pool ends)

**-C- CHANNEL CURVE DATA
CAMP BRANCH**

<p>1</p> <p>P.J. Sta. 0+36.53 D = 60° 16' 42.22" (LT) T = 34.84 L = 63.12 R = 60.00 P.C. Sta. 0+01.69 P.T. Sta. 0+64.82 Back = S 49° 04' 03.77" E Ahead = N 70° 39' 14.00" E</p>	<p>6</p> <p>P.J. Sta. 3+72.28 D = 55° 40' 21.65" (RT) T = 30.10 L = 55.39 R = 57.00 P.C. Sta. 3+42.18 P.T. Sta. 3+97.57 Back = N 80° 38' 15.02" E Ahead = S 43° 41' 23.33" E</p>	<p>11</p> <p>P.J. Sta. 7+58.99 D = 64° 20' 30.56" (RT) T = 25.16 L = 44.92 R = 40.00 P.C. Sta. 7+33.83 P.T. Sta. 7+78.75 Back = S 48° 24' 21.44" E Ahead = S 15° 56' 09.12" W</p>	<p>16</p> <p>P.J. Sta. 11+22.86 D = 61° 14' 41.94" (LT) T = 37.88 L = 68.41 R = 64.00 P.C. Sta. 10+84.98 P.T. Sta. 11+53.39 Back = Due South Ahead = S 61° 14' 41.94" E</p>	<p>21</p> <p>P.J. Sta. 15+75.23 D = 85° 33' 33.31" (RT) T = 53.67 L = 86.61 R = 58.00 P.C. Sta. 15+21.55 P.T. Sta. 16+08.17 Back = S 68° 59' 42.35" E Ahead = S 16° 33' 50.97" W</p>
<p>2</p> <p>P.J. Sta. 1+12.69 D = 60° 49' 54.34" (RT) T = 24.66 L = 44.59 R = 42.00 P.C. Sta. 0+88.03 P.T. Sta. 1+32.62 Back = N 70° 39' 14.00" E Ahead = S 48° 30' 51.66" E</p>	<p>7</p> <p>P.J. Sta. 4+98.65 D = 60° 58' 29.93" (RT) T = 34.74 L = 62.79 R = 59.00 P.C. Sta. 4+63.92 P.T. Sta. 5+26.70 Back = S 43° 41' 23.33" E Ahead = S 17° 17' 06.60" W</p>	<p>12</p> <p>P.J. Sta. 8+34.31 D = 73° 40' 37.61" (LT) T = 46.45 L = 79.73 R = 62.00 P.C. Sta. 7+87.86 P.T. Sta. 8+67.59 Back = S 15° 56' 09.12" W Ahead = S 07° 44' 28.49" E</p>	<p>17</p> <p>P.J. Sta. 12+12.29 D = 46° 23' 08.26" (RT) T = 32.56 L = 61.53 R = 76.00 P.C. Sta. 11+79.73 P.T. Sta. 12+41.26 Back = S 61° 14' 41.94" E Ahead = S 14° 51' 33.69" E</p>	<p>22</p> <p>P.J. Sta. 16+54.66 D = 59° 35' 37.24" (LT) T = 25.77 L = 46.81 R = 45.00 P.C. Sta. 16+28.89 P.T. Sta. 16+75.70 Back = S 16° 33' 50.97" W Ahead = S 43° 01' 46.27" E</p>
<p>3</p> <p>P.J. Sta. 1+67.58 D = 67° 24' 22.94" (LT) T = 28.01 L = 49.41 R = 42.00 P.C. Sta. 1+39.57 P.T. Sta. 1+88.98 Back = S 48° 30' 51.66" E Ahead = N 64° 04' 45.40" E</p>	<p>8</p> <p>P.J. Sta. 5+57.00 D = 57° 04' 22.74" (LT) T = 22.30 L = 40.84 R = 41.00 P.C. Sta. 5+34.70 P.T. Sta. 5+75.54 Back = S 17° 17' 06.60" W Ahead = S 39° 47' 16.14" E</p>	<p>13</p> <p>P.J. Sta. 9+07.54 D = 55° 30' 41.31" (RT) T = 24.21 L = 44.57 R = 46.00 P.C. Sta. 8+83.34 P.T. Sta. 9+27.90 Back = S 07° 44' 28.49" E Ahead = S 02° 13' 47.17" E</p>	<p>18</p> <p>P.J. Sta. 12+85.22 D = 50° 09' 50.65" (LT) T = 23.87 L = 44.65 R = 51.00 P.C. Sta. 12+61.35 P.T. Sta. 13+06.00 Back = S 14° 51' 33.69" E Ahead = S 65° 01' 24.33" E</p>	<p>23</p> <p>P.J. Sta. 17+11.39 D = 55° 38' 51.63" (RT) T = 23.75 L = 43.71 R = 45.00 P.C. Sta. 16+87.64 P.T. Sta. 17+31.34 Back = S 43° 01' 46.27" E Ahead = S 12° 37' 05.36" W</p>
<p>4</p> <p>P.J. Sta. 2+35.99 D = 56° 54' 01.41" (RT) T = 27.09 L = 49.66 R = 50.00 P.C. Sta. 2+08.90 P.T. Sta. 2+58.56 Back = N 64° 04' 45.40" E Ahead = S 59° 01' 13.19" E</p>	<p>9</p> <p>P.J. Sta. 6+04.53 D = 64° 08' 12.21" (RT) T = 25.06 L = 44.78 R = 40.00 P.C. Sta. 5+79.47 P.T. Sta. 6+24.25 Back = S 39° 47' 16.14" E Ahead = S 24° 20' 56.07" W</p>	<p>14</p> <p>P.J. Sta. 9+78.87 D = 68° 42' 44.90" (LT) T = 27.34 L = 47.97 R = 40.00 P.C. Sta. 9+51.53 P.T. Sta. 9+99.50 Back = S 02° 13' 47.17" E Ahead = S 70° 56' 32.07" E</p>	<p>19</p> <p>P.J. Sta. 13+73.31 D = 57° 07' 16.21" (RT) T = 28.85 L = 52.84 R = 53.00 P.C. Sta. 13+44.47 P.T. Sta. 13+97.30 Back = S 65° 01' 24.33" E Ahead = S 07° 54' 08.12" E</p>	<p>24</p> <p>P.J. Sta. 17+73.61 D = 71° 17' 34.89" (LT) T = 33.71 L = 58.48 R = 47.00 P.C. Sta. 17+39.90 P.T. Sta. 17+98.38 Back = S 12° 37' 05.36" W Ahead = S 58° 40' 29.53" E</p>
<p>5</p> <p>P.J. Sta. 2+95.41 D = 40° 20' 31.79" (LT) T = 16.90 L = 32.39 R = 46.00 P.C. Sta. 2+78.51 P.T. Sta. 3+10.90 Back = S 59° 01' 13.19" E Ahead = N 80° 38' 15.02" E</p>	<p>10</p> <p>P.J. Sta. 6+72.41 D = 72° 45' 17.51" (LT) T = 42.73 L = 73.65 R = 58.00 P.C. Sta. 6+29.68 P.T. Sta. 7+03.33 Back = S 24° 20' 56.07" W Ahead = S 48° 24' 21.44" E</p>	<p>15</p> <p>P.J. Sta. 10+50.09 D = 70° 56' 32.07" (RT) T = 29.21 L = 50.77 R = 41.00 P.C. Sta. 10+20.87 P.T. Sta. 10+71.64 Back = S 70° 56' 32.07" E Ahead = Due South</p>	<p>20</p> <p>P.J. Sta. 14+67.39 D = 61° 05' 34.23" (LT) T = 37.77 L = 68.24 R = 64.00 P.C. Sta. 14+29.62 P.T. Sta. 14+97.86 Back = S 07° 54' 08.12" E Ahead = S 68° 59' 42.35" E</p>	

NOTE:
FOR NEW CHANNEL LAYOUT, SEE SHEET A-5.



Project:
**BISHOP SITE
 STREAM /
 WETLAND
 RESTORATION
 PLAN**
 ANSON COUNTY,
 NORTH CAROLINA

Title:
**NEW CHANNEL
 CENTERLINE
 DATA
 CAMP BRANCH**

Dsn. By: JDC
 Dwn. By: MAF
 Ckd. By: DGM
 Date: JUN 2005
 Scale: NO SCALE
 ESC Project No.: 04-212

SHEET
A-2C



SUMMARY OF QUANTITIES

**CAMP BRANCH -C- CHANNEL
AND UT TO CAMP BRANCH -A- CHANNEL**

SUMMARY OF QUANTITIES Bishop Site Stream/Wetland Restoration - Camp Branch				
ITEM	SPEC	ITEM DESCRIPTION	QUANTITIES	UNIT
1	SP1	Mobilization	1	LS
2	SP2	Construction Surveying	1	LS
3	SP3	Grading	1	LS
4	1056	Filter Fabric, Type 2	1850	SY
5	1605	Temporary Silt Fence	3520	LF
6	1610	Stone for Erosion Control, Class A	675	TON
7	1610	Stone for Erosion Control, Class B	90	TON
8	1610	Stone for Erosion Control, No. 4	30	TON
9	1610	Stone for Erosion Control, ABC	925	TON
10	1610	Stone for Erosion Control, No. 57	40	TON
11	1615	Temporary Mulching	15	ACR
12	1620	Seed for Temporary Seeding	975	LB
13	1620	Fertilizer for Temporary Seeding	2.25	TON
14	1630	Silt Excavation	300	CY
15	1660	Permanent Seeding and Mulching	15	ACR
16	1661	Seed for Repair Seeding	325	LB
17	1661	Fertilizer for Repair Seeding	0.75	TON
18	1662	Supplemental Seeding	325	LB
19	SP6	Coir Fiber Matting, 900 gm	4000	SY
20	SP8	Impervious Select Material	150	CY
21	SP9	Pump Around Operation	1	LS
22	SP10	Special Stilling Basin	2	EA
23	SP12	Bare Root Seedlings	30450	EA
24	SP13	Live Staking	4700	EA
25	SP14	Invasive Plant Removal	1	LS
26	SP5	Safety Fence	400	LF
27	SP16	Channel Substrate	350	TON
28	SP17	Disking/Scarification	10	ACR

Estimates do include quantities for Class A stone and filter fabric for improved on-site access roads if required by weather conditions. The quantities are approximately 480 T of Class A Stone and 1333 SY filter fabric per 1000 linear feet of 12-foot wide improved access road as shown on the plans. ABC Stone is estimated to leave existing farm road in "AS IS or BETTER" condition. Note that all quantities are estimates for information and bid comparison purposes only.

SUMMARY OF EARTHWORK

QUANTITIES IN CUBIC YARDS

UT to CAMP BRANCH -A- CHANNEL

Xsection	Total Cut		EXCAVATION	Total Fill			FILL	BORROW	WASTE
	sq ft	cu ft		sq ft	cu ft	cu ft + %			
0	3.3	0		0	0				
80	5.3	344.0	13	1.3	52.0	62	2	0	10
133	8.7	371.0	14	5.9	190.8	229	8	0	5
228	5.7	684.0	25	4.5	494.0	593	22	0	3
320	5.7	524.4	19	2.8	335.8	403	15	0	4
436	5.7	661.2	24	3.1	342.2	411	15	0	9
600	5.7	934.8	35	0.0	254.2	305	11	0	23
		3519	130		1669		74	0	56
									56
Project Total			130						56

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING AND CLEARING AND GRUBBING WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING." A SHRINKAGE FACTOR OF 1.2 WAS ASSUMED.

CAMP BRANCH -C- CHANNEL

Xsection	Total Cut		EXCAVATION	Total Fill			FILL	BORROW	WASTE
	sq ft	cu ft		sq ft	cu ft	cu ft + %			
0	250.4	0		0	0				
120	136.6	23220.0	860	15.8	948.0	1138	42	0	818
260	157.2	20566.0	762	23.3	2737.0	3284	122	0	640
420	222.8	30400.0	1126	55.7	6320.0	7584	281	0	845
560	211.7	30415.0	1126	33.0	6209.0	7451	276	0	851
680	134.0	20742.0	768	81.8	6888.0	8266	306	0	462
760	163.2	11888.0	440	83.9	6628.0	7954	295	0	146
820	208.2	11142.0	413	80.9	4944.0	5933	220	0	193
900	259.2	18696.0	692	44.6	5020.0	6024	223	0	469
1060	192.3	36120.0	1338	94.8	11152.0	13382	496	0	842
1120	200.1	11772.0	436	112.4	6216.0	7459	276	0	160
1280	205.2	32424.0	1201	138.6	20080.0	24096	892	0	308
1360	291.5	19868.0	736	128.4	10680.0	12816	475	0	261
1460	307.1	29930.0	1109	178.6	15350.0	18420	682	0	426
1560	365.5	33630.0	1246	127.2	15290.0	18348	680	0	566
1700	517.9	61838.0	2290	108.8	16520.0	19824	734	0	1556
1800	512.3	51510.0	1908	0.0	5440.0	6528	242	0	1666
1810	0.0	2561.5	95	0.0	0.0	0	0	0	95
		446723	16545		140422		6241	0	10304
									10304
Project Total			16545						10304

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING AND CLEARING AND GRUBBING WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING." A SHRINKAGE FACTOR OF 1.2 WAS ASSUMED.



REVISIONS
1 QUANTITIES REVISED



Project:
**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**
ANSON COUNTY,
NORTH CAROLINA

Title:
**SUMMARY OF
QUANTITIES /
SUMMARY OF
EARTHWORK
CAMP BRANCH**

Dsn. By: JDC Dsn. By: MAF
Ckd. By: DGM Date: JUN 2005
Scale: NO SCALE
ESC Project No.: 04-212

SHEET
A-3



EcoScience Corporation

Raleigh, North Carolina

REVISIONS



Client:



Project:

BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN

ANSON COUNTY,
NORTH CAROLINA

Title:

EXISTING
CONDITIONS

CAMP BRANCH

Dsn. By:

Dwn. By:

JDC MAF

Ckd. By:

Date:

DGM JUN 2005

Scale:

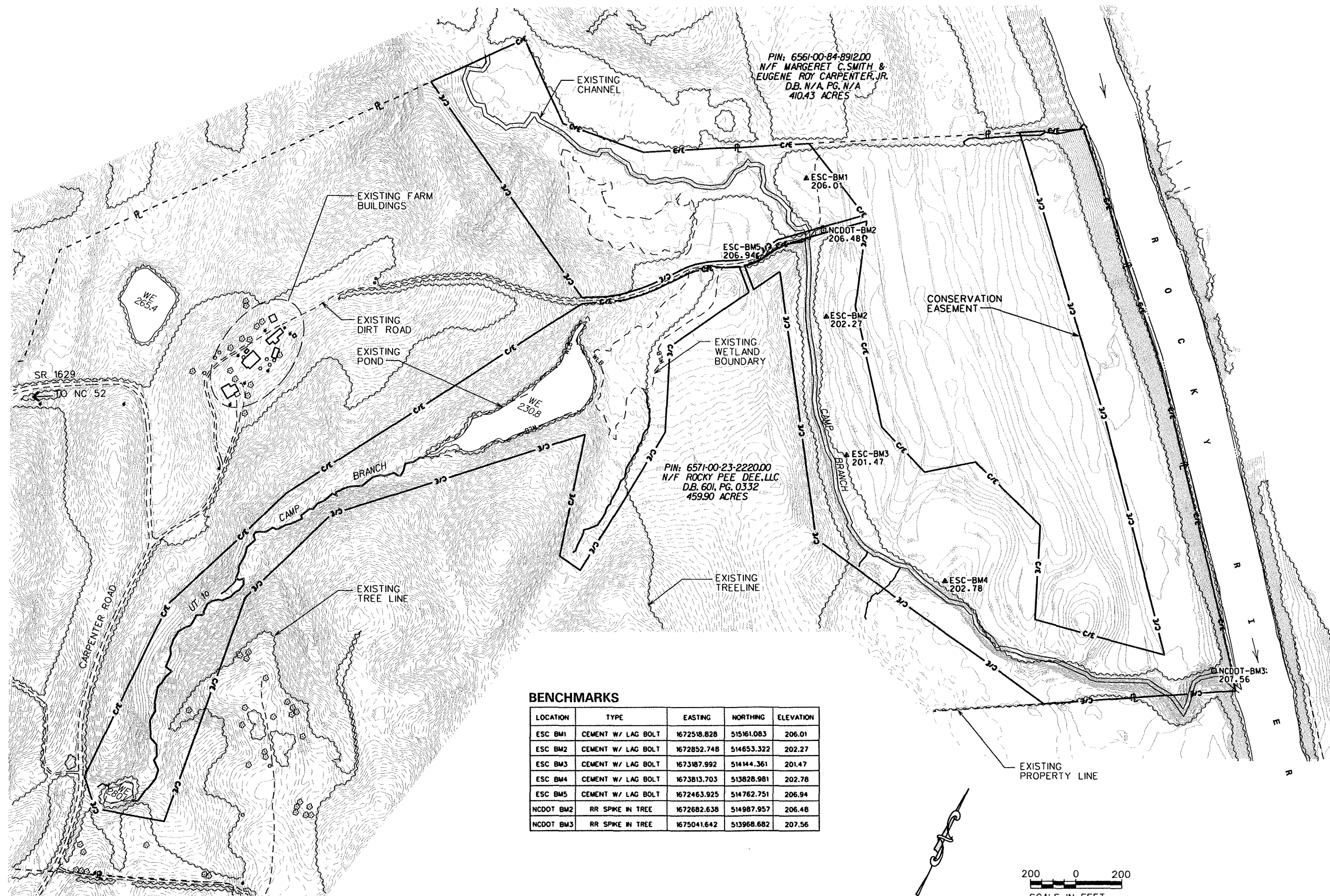
AS SHOWN

ESC Project No.:

04-212

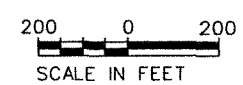
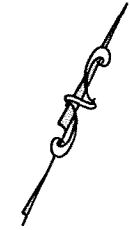
SHEET

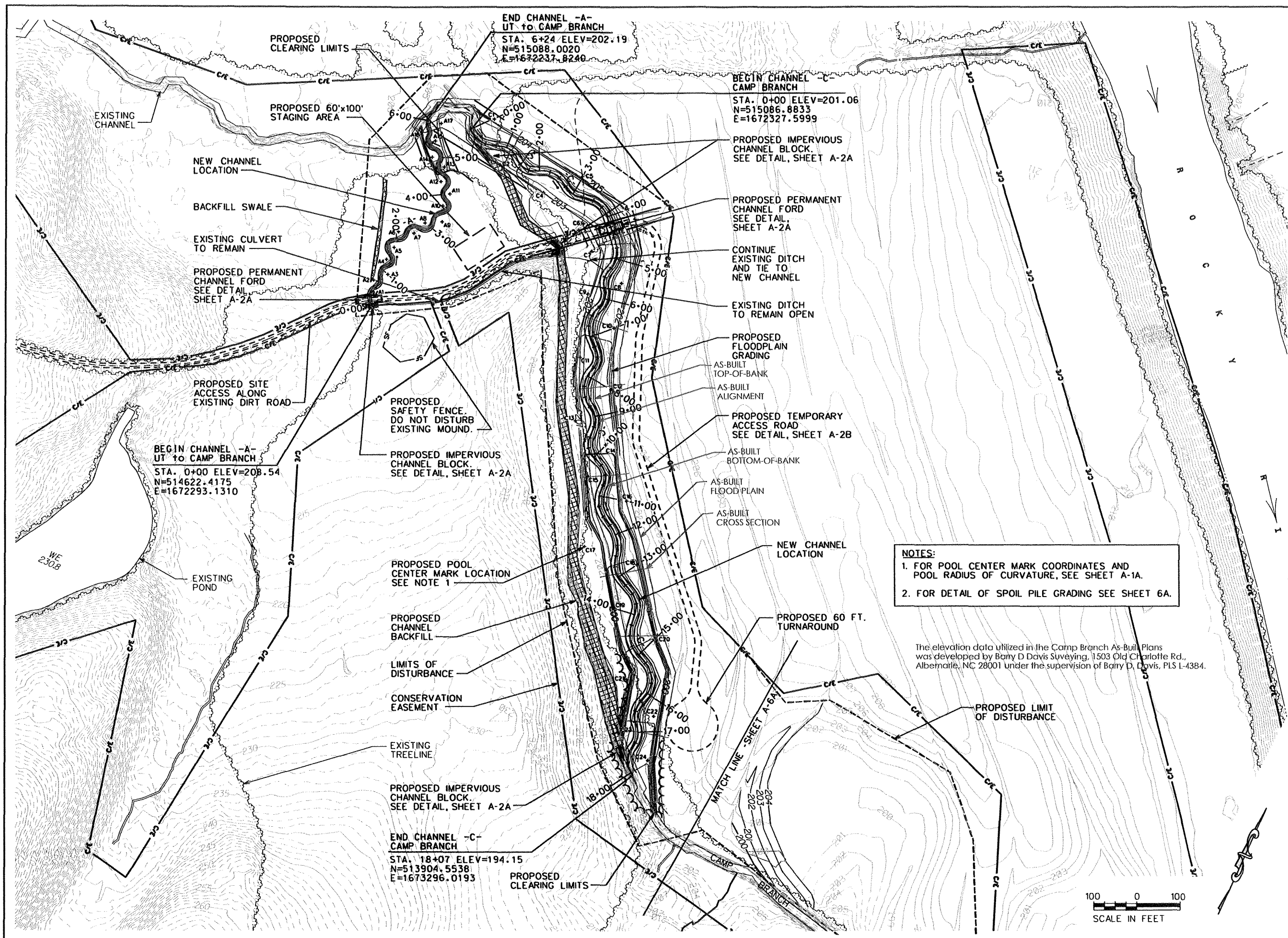
A-4



BENCHMARKS

LOCATION	TYPE	EASTING	NORTHING	ELEVATION
ESC BM1	CEMENT W/ LAG BOLT	1672518.828	515161.083	206.01
ESC BM2	CEMENT W/ LAG BOLT	1672852.748	514653.322	202.27
ESC BM3	CEMENT W/ LAG BOLT	1673187.992	514144.361	201.47
ESC BM4	CEMENT W/ LAG BOLT	1673813.703	513828.981	202.78
ESC BM5	CEMENT W/ LAG BOLT	1672463.925	514762.751	206.94
NCDOT BM2	RR SPKE IN TREE	1672682.638	514987.957	206.48
NCDOT BM3	RR SPKE IN TREE	1675041.642	513968.682	207.56





END CHANNEL -A-
UT to CAMP BRANCH
STA. 6+24 ELEV=202.19
N=515088.0020
E=1672237.8240

BEGIN CHANNEL -C-
CAMP BRANCH
STA. 0+00 ELEV=201.06
N=515086.8833
E=1672327.5999

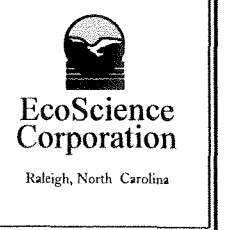
BEGIN CHANNEL -A-
UT to CAMP BRANCH
STA. 0+00 ELEV=208.54
N=514622.4175
E=1672293.1310

PROPOSED IMPERVIOUS
CHANNEL BLOCK.
SEE DETAIL, SHEET A-2A

END CHANNEL -C-
CAMP BRANCH
STA. 18+07 ELEV=194.15
N=513904.5538
E=1673296.0193

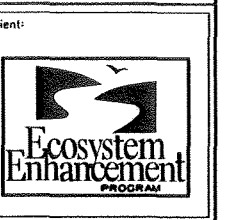
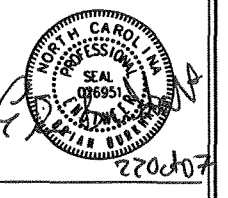
NOTES:
1. FOR POOL CENTER MARK COORDINATES AND
POOL RADIUS OF CURVATURE, SEE SHEET A-1A.
2. FOR DETAIL OF SPOIL PILE GRADING SEE SHEET 6A.

The elevation data utilized in the Camp Branch As-Built Plans was developed by Barry D Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384.



REVISIONS

1	AS-BUILT - JULY 2007

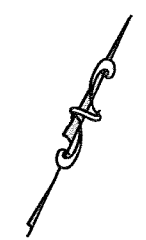
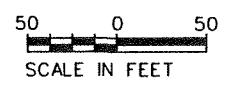
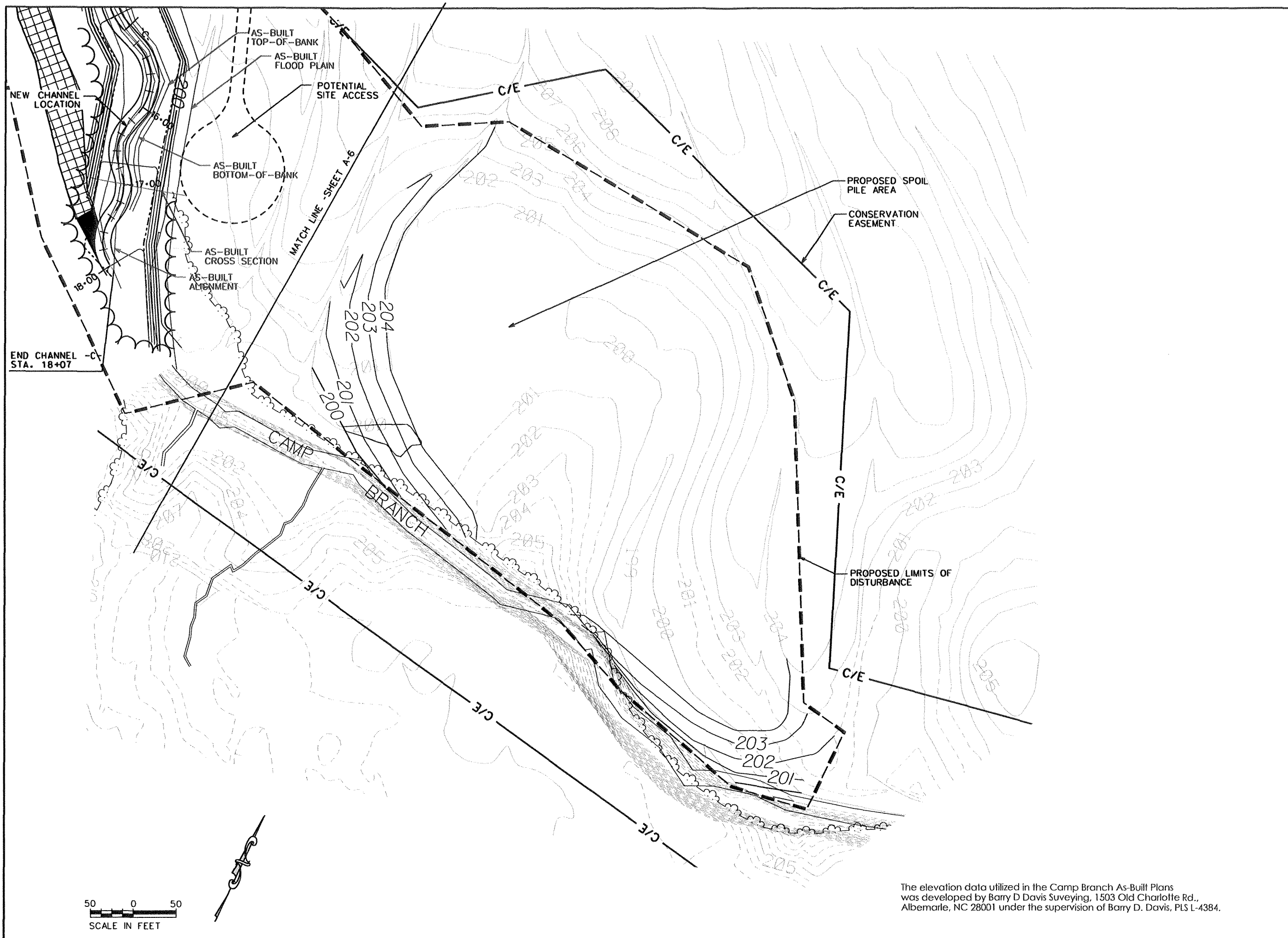


Client:
**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**
ANSON COUNTY,
NORTH CAROLINA

Project:
**SITE PLAN
CAMP BRANCH**

Dsn. By:	JDC	Dwn. By:	MAF
Ckd. By:	EBB	Date:	JUL 2007
Scale:	AS SHOWN		
ESC Project No.:	04-212		

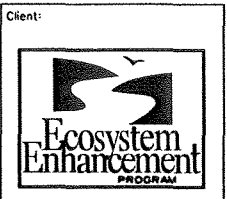
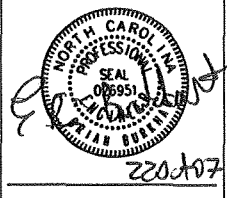
SHEET
A-6



The elevation data utilized in the Camp Branch As-Built Plans was developed by Barry D Davis Suveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384.



REVISIONS	
1	AS-BUILT - JULY 2007



Client:

Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**SITE PLAN
CAMP BRANCH**

Dsn. By:	JDC	Dwn. By:	MAF
Ckd. By:	EBB	Date:	JUL 2007
Scale:	AS SHOWN		
ESC Project No.:	04-212		

SHEET

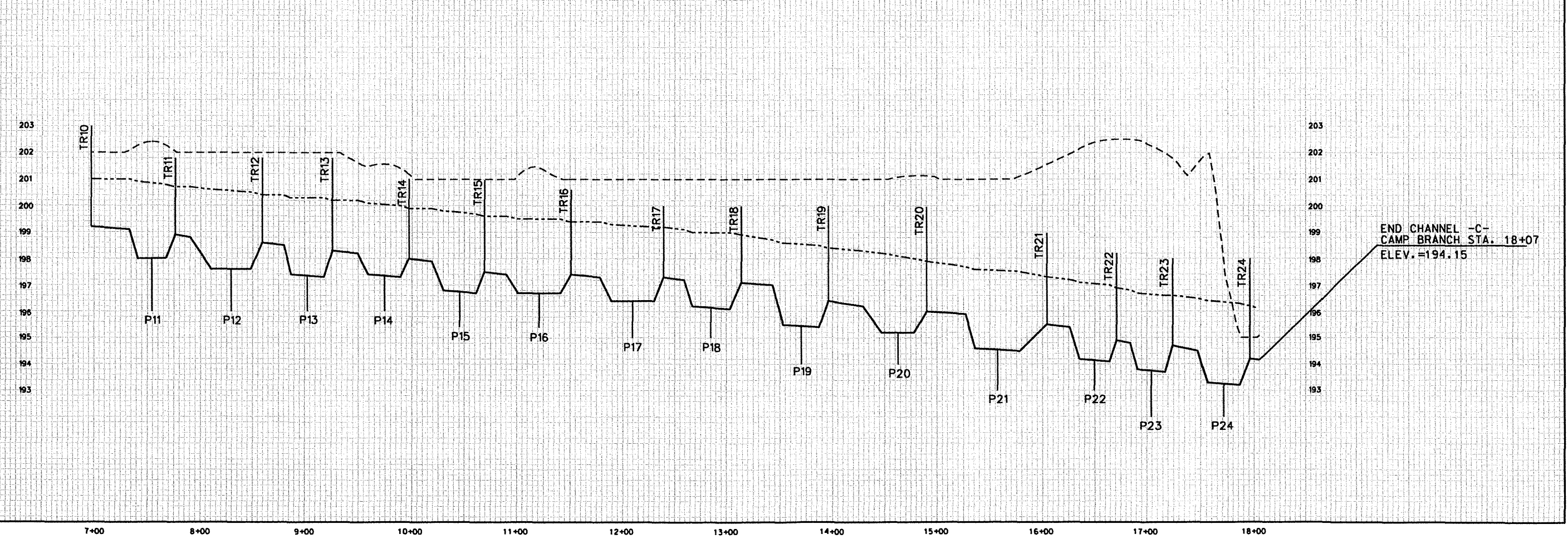
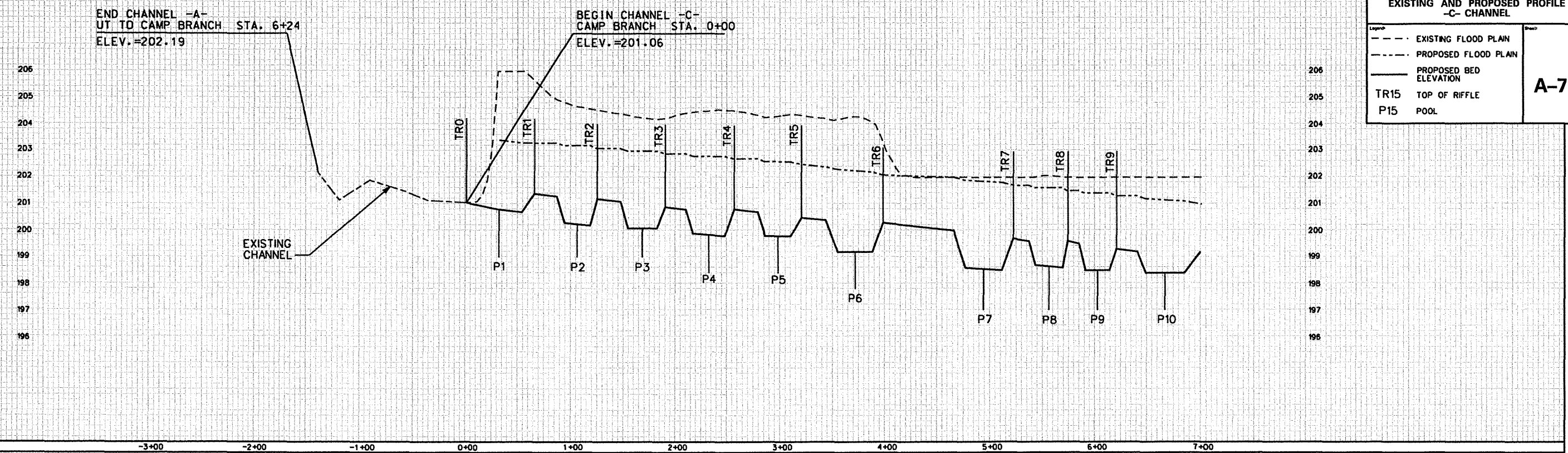
A-6A

ECOSYSTEM ENHANCEMENT PROGRAM

PROJECT: BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH

TITLE: EXISTING AND PROPOSED PROFILE -C- CHANNEL

Legend	Sheet
- - - EXISTING FLOOD PLAN	A-7
- - - PROPOSED FLOOD PLAN	
— PROPOSED BED ELEVATION	
TR15 TOP OF RIFFLE	
P15 POOL	

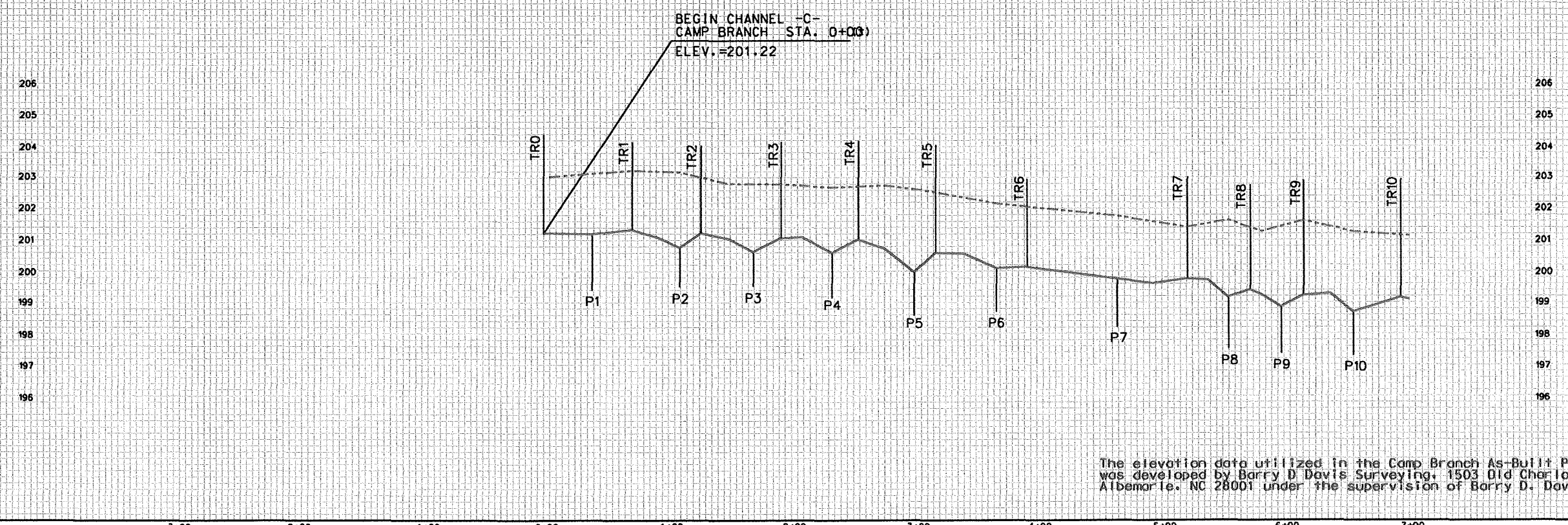


ECOSYSTEM ENHANCEMENT PROGRAM

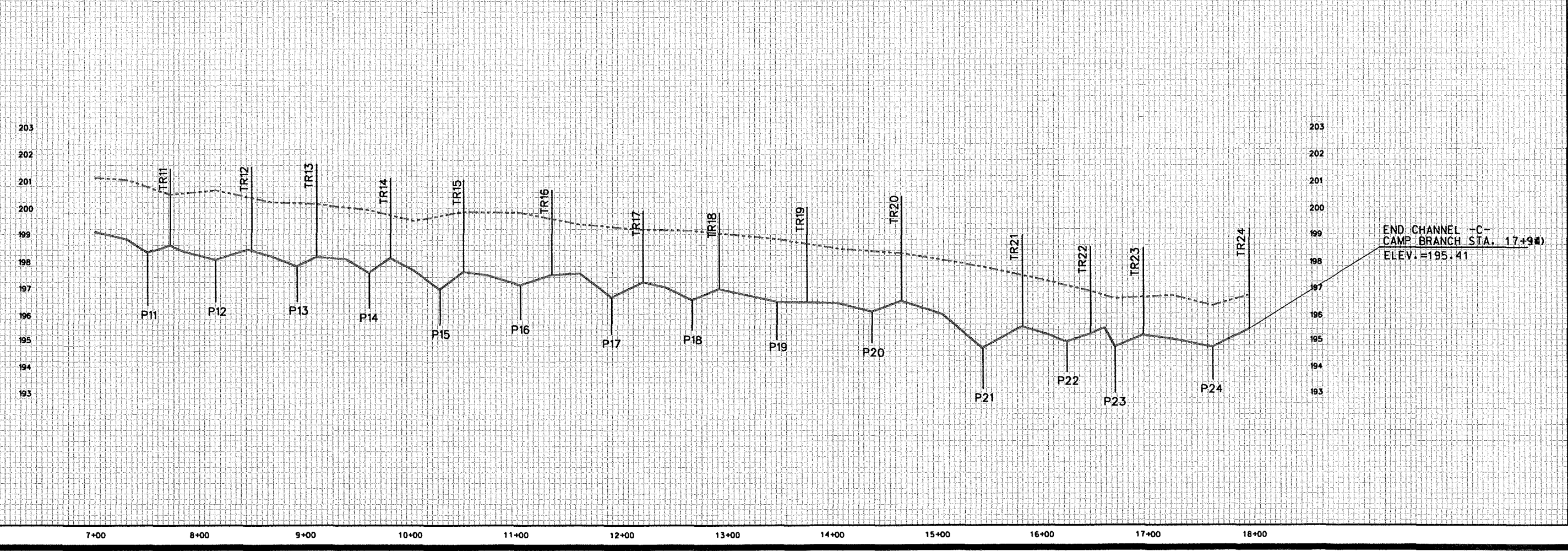
BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH

EXISTING AND PROPOSED PROFILE -C- CHANNEL

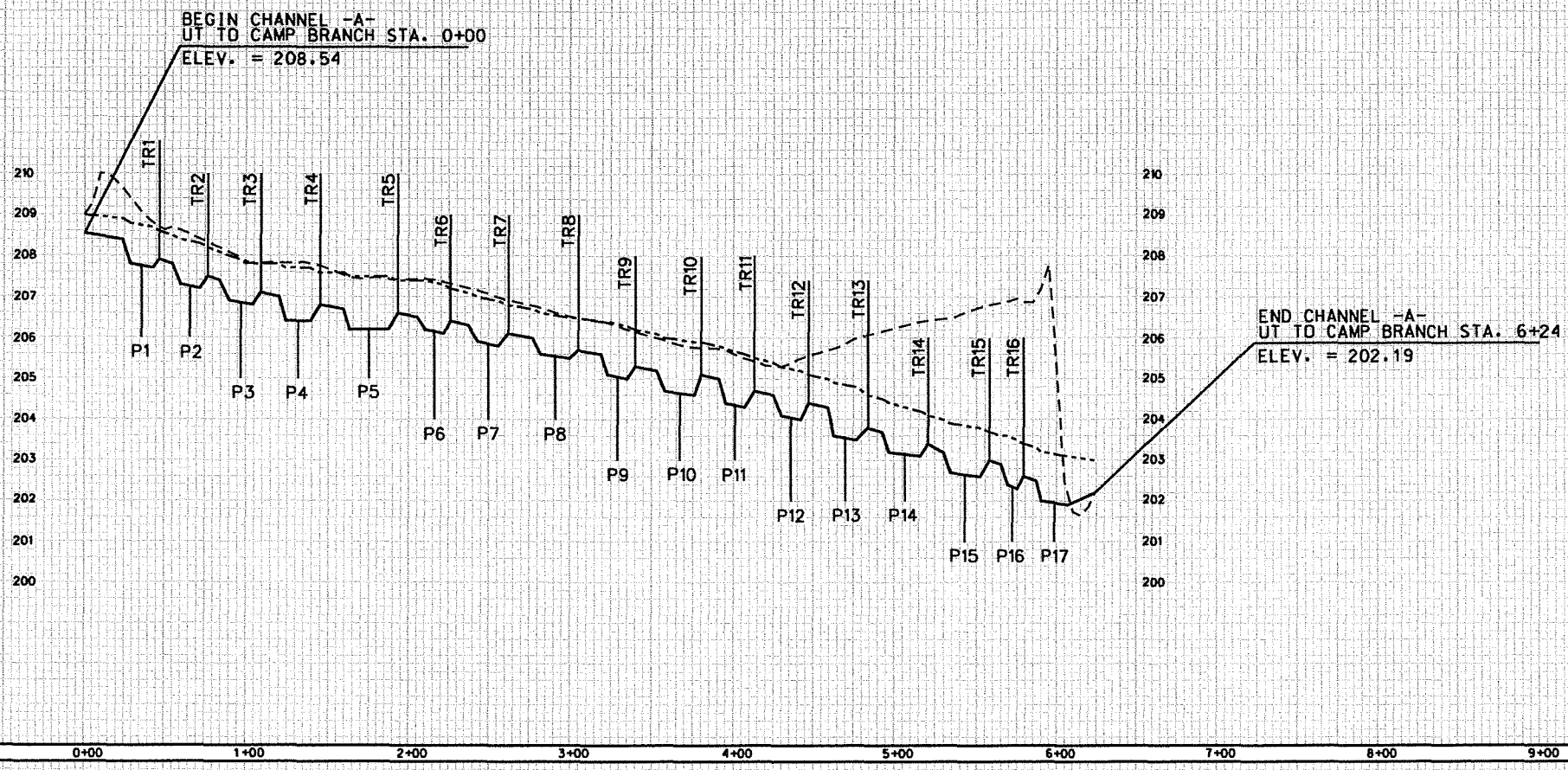
Legend	Sheet
— SURVEY AS-BUILT	A-7A
- - - FLOOD PLAN	
— BED ELEVATION	
TR15 TOP OF RIFFLE P15 POOL	



The elevation data utilized in the Camp Branch As-Built Plans was developed by Barry D. Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384.



Project #	04-212	Date	JUN 2005	Scale	AS SHOWN
Des. By.	MAF	Chk. By.	JDC	Drawn By.	DGM
Client	ECOSYSTEM ENHANCEMENT PROGRAM				
Project	BISHOP SITE STREAM AND WETLAND RESTORATION UT TO CAMP BRANCH				
Title	EXISTING AND PROPOSED PROFILE -A- CHANNEL				
Legend	- - - - - EXISTING FLOOD PLAN - - - - - PROPOSED FLOOD PLAN ——— PROPOSED BED ELEVATION TR15 TOP OF RIFFLE P15 POOL				A-8

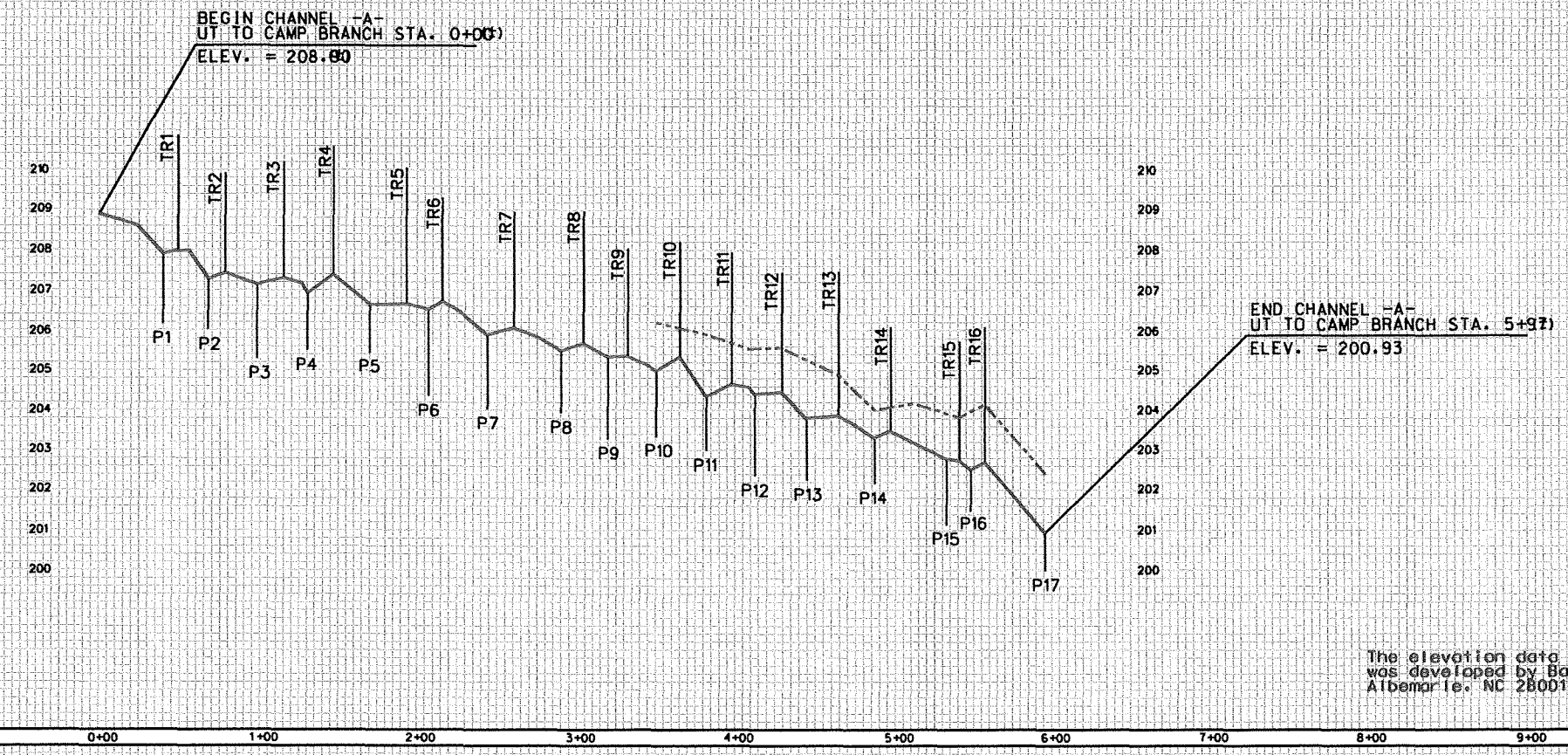


ECOSYSTEM ENHANCEMENT PROGRAM

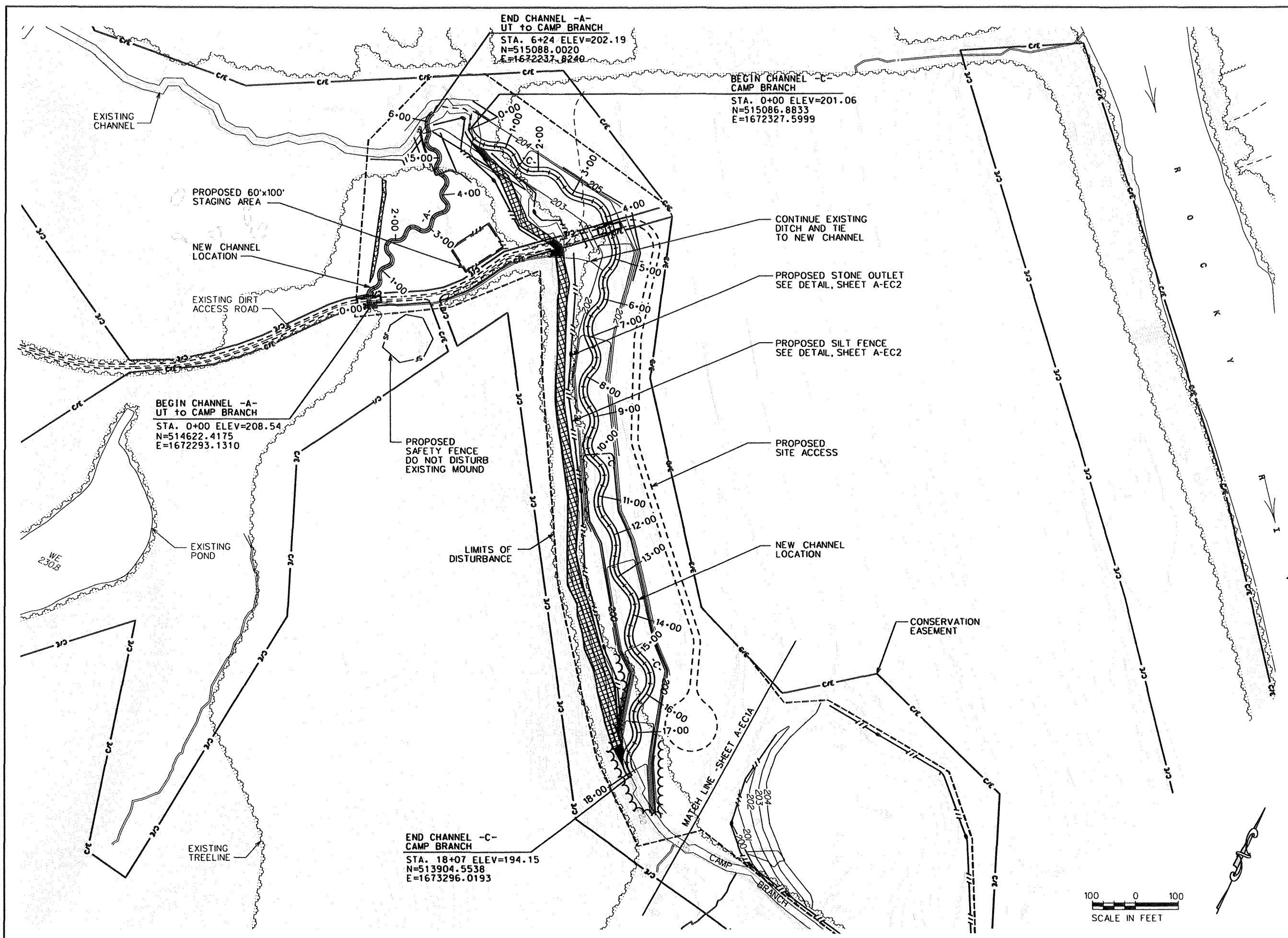
Project: BISHOP SITE STREAM AND WETLAND RESTORATION UT TO CAMP BRANCH

Title: EXISTING AND PROPOSED PROFILE -A- CHANNEL

Legend:	Survey AS-BUILT	Sheet:
	--- FLOOD PLAN	
	— BED ELEVATION	
	TR15 TOP OF RIFFLE	A-8A
	P15 POOL	



The elevation data utilized in the Camp Branch As-Built Plans was developed by Barry D. Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384



END CHANNEL -A-
UT to CAMP BRANCH
STA. 6+24 ELEV=202.19
N=515088.0020
E=1672237.8240

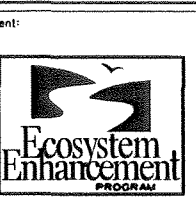
BEGIN CHANNEL -C-
CAMP BRANCH
STA. 0+00 ELEV=201.06
N=515086.8833
E=1672327.5999

BEGIN CHANNEL -A-
UT to CAMP BRANCH
STA. 0+00 ELEV=208.54
N=514622.4175
E=1672293.1310

END CHANNEL -C-
CAMP BRANCH
STA. 18+07 ELEV=194.15
N=513904.5538
E=1673296.0193



REVISIONS



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

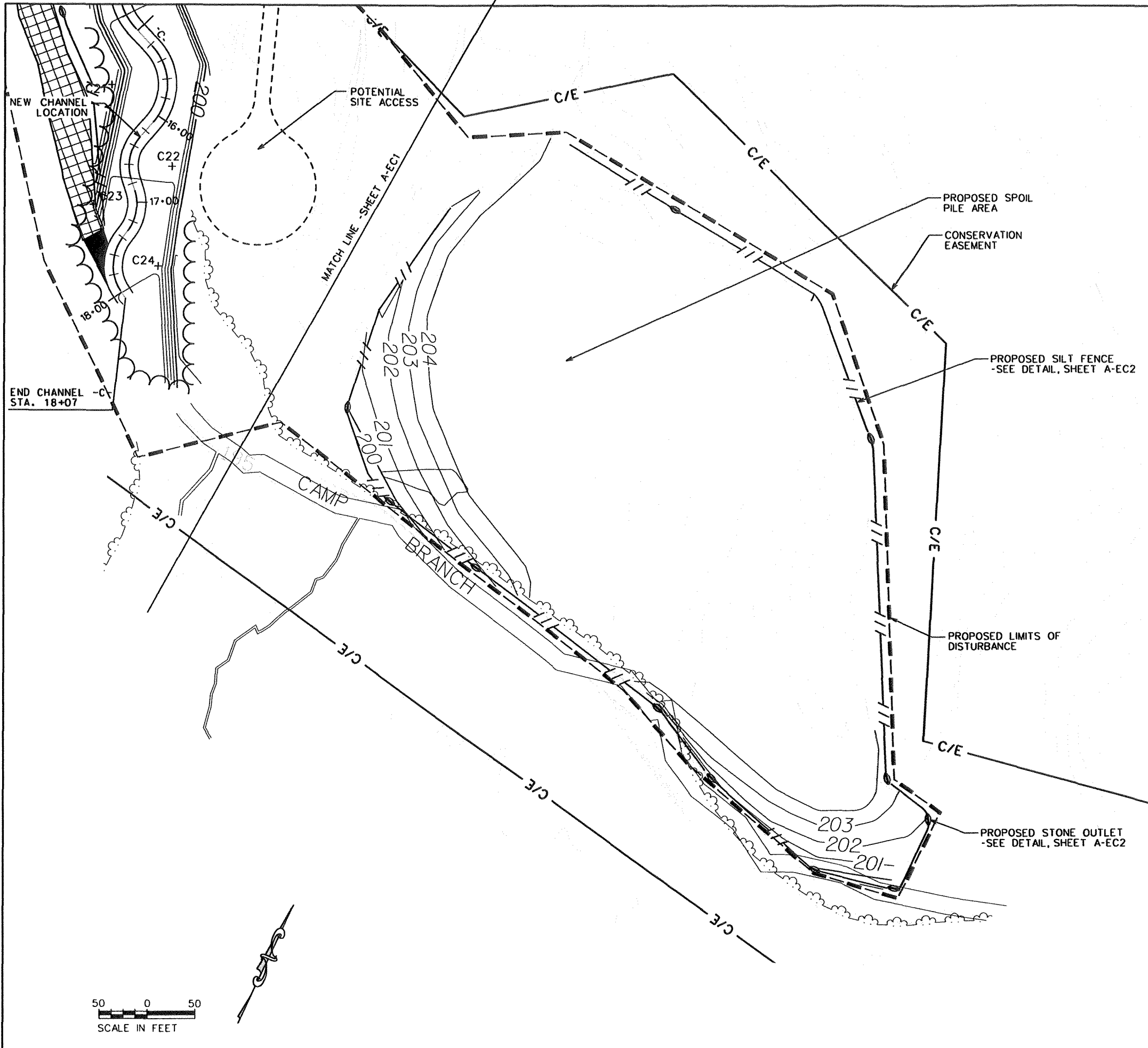
**EROSION
CONTROL
PLAN**

CAMP BRANCH

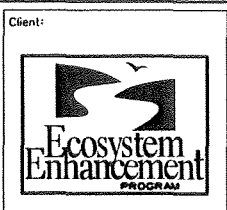
Dsn. By:	JDC	Dwn. By:	MAF
Ckd. By:	DGM	Date:	JUN 2005
Scale:	AS SHOWN		
ESC Project No.:	04-212		

SHEET

A-EC1



REVISIONS



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

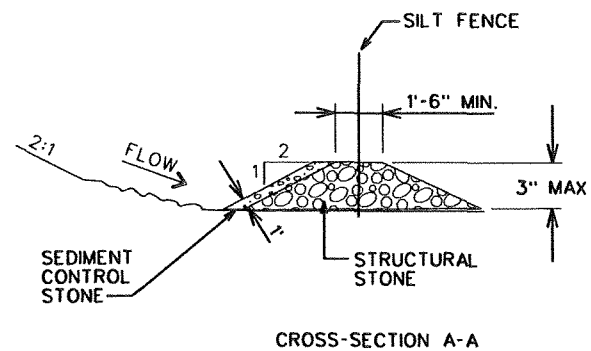
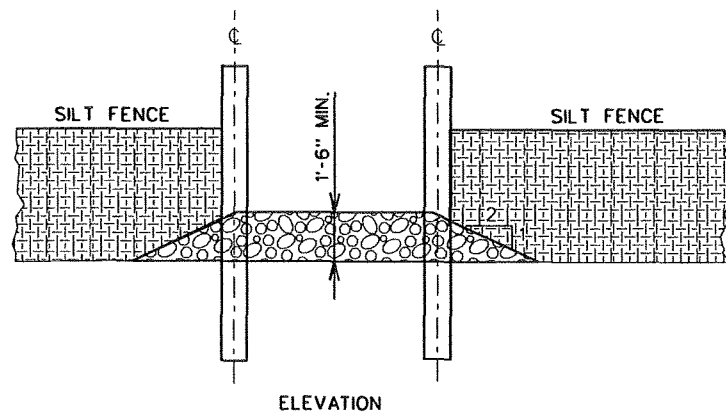
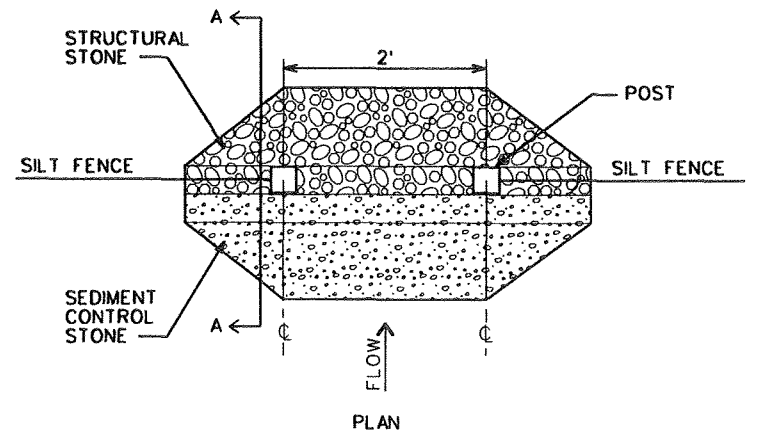
**EROSION
CONTROL
PLAN**

CAMP BRANCH

Des. By:	JDC	Dwn. By:	MAF
Ckd. By:	DGM	Date:	JUN 2005
Scale:	AS SHOWN		
ESC Project No.:	04-212		

SHEET

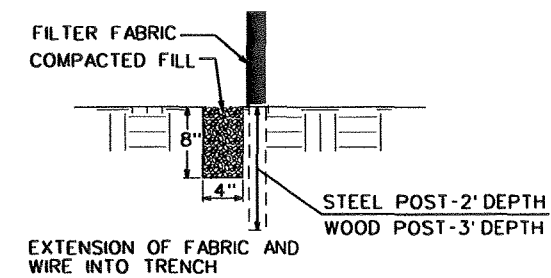
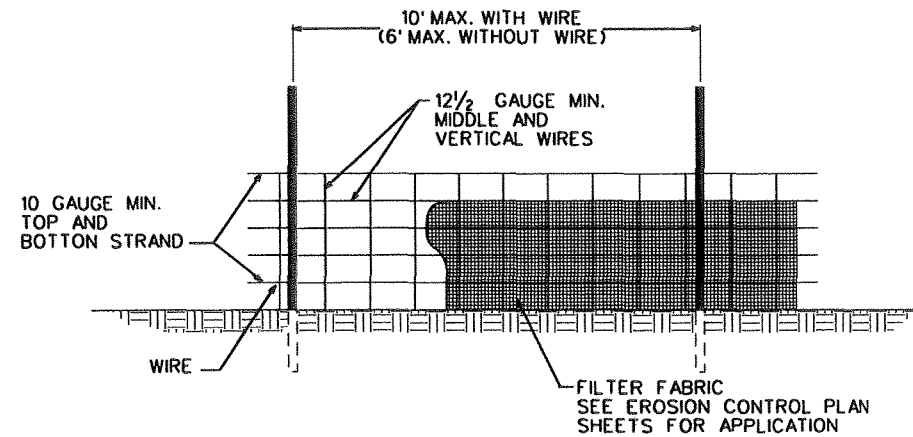
A-EC1A



NOTES:

1. STRUCTURAL STONE SHALL BE CLASS B STONE FOR EROSION CONTROL PURPOSES.
2. SEDIMENT CONTROL STONE SHALL BE NO. 5 OR NO. 57 STONE.

STONE OUTLET DETAIL



NOTES:

1. USE WIRE A MINIMUM OF 32 INCHES IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12 INCH STAY SPACING.
2. USE FILTER FABRIC A MINIMUM OF 36 INCHES IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
3. PROVIDE 5 FOOT STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.
4. USE 6 FOOT WOOD POST WITH 3 INCH DIAMETER.

NCDOT BMP'S FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES, 5.1.1, AUGUST 2003

TEMPORARY SILT FENCE

NCDOT STD, DWG. 1605.01



EcoScience Corporation

Raleigh, North Carolina

REVISIONS

NO.	DESCRIPTION



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**EROSION
CONTROL
DETAILS**

CAMP BRANCH

Dsn. By:

Dwn. By:

JDC

MAF

Ckd. By:

Date:

DGM

JUN 2005

Scale:

NO SCALE

ESC Project No.:

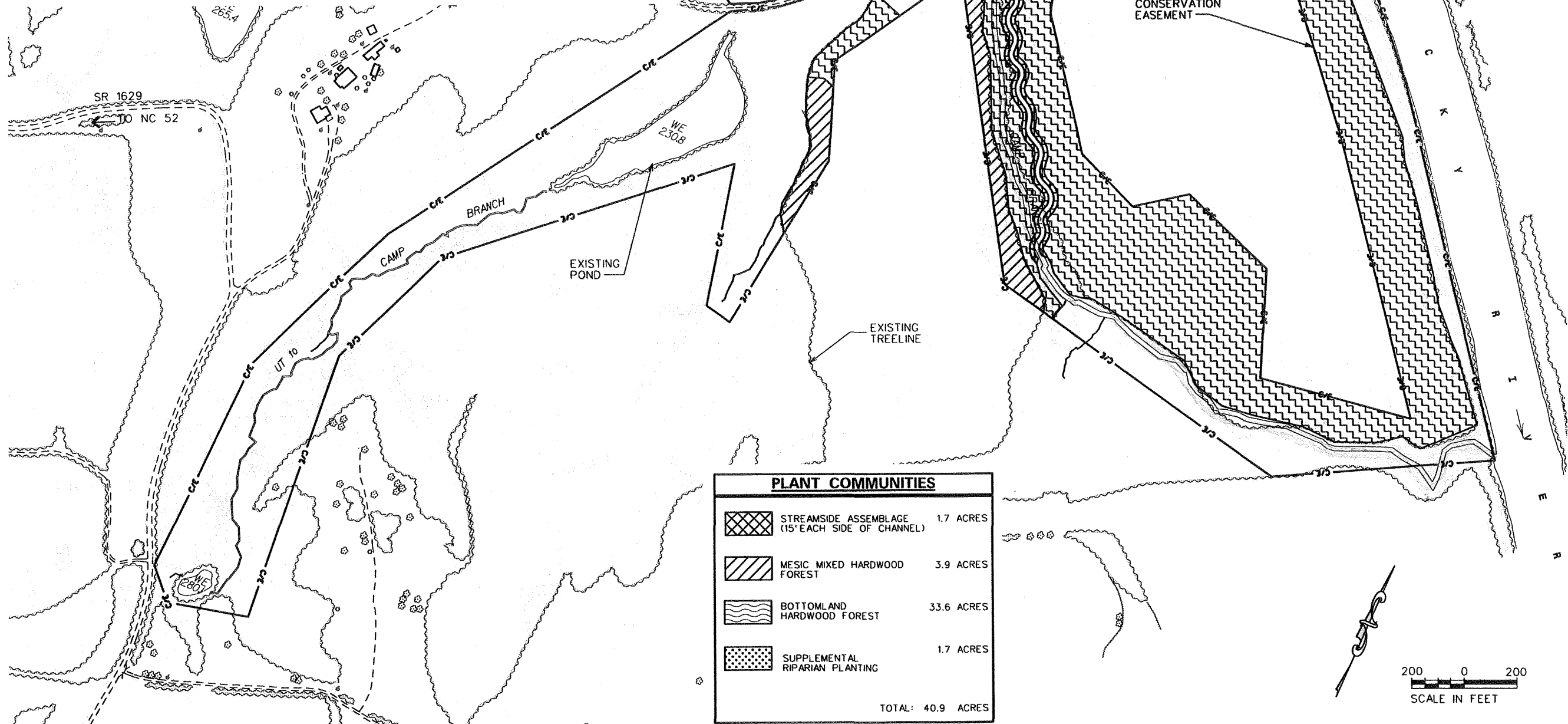
04-212

SHEET

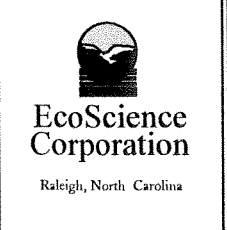
A-EC2

Species ¹	Common Name	Number Planted	% of Total	Number Planted	% of Total	Number Planted	% of Total	Number Planted	% of Total	Number Planted	Number Planted
<i>Quercus michauxii</i>	swamp chestnut oak	2056	9					20	6	2076	2100
<i>Ulmus americana</i>	American elm	1599	7					33	10	1632	2500
<i>Celtis laevigata</i>	sugarberry	1599	7					20	6	1619	3100
<i>Fraxinus pennsylvanica</i>	green ash	1599	7					20	6	1619	2500
<i>Carya ovata</i>	shagbark hickory	1599	7					20	6	1619	1700
<i>Quercus phellos</i>	willow oak	2056	9					20	6	2076	2100
<i>Nyssa biflora</i>	swamp tupelo	1599	7					20	6	1619	2500
<i>Platanus occidentalis</i>	sycamore	1599	7					20	6	1619	1700
<i>Quercus nigra</i>	water oak	1599	7					20	6	1619	2500
<i>Carya cordiformis</i>	bitter-nut hickory	1599	7					20	6	1619	
<i>Quercus pagoda</i>	cherrybark oak	1599	7					20	6	1619	1700
<i>Carpinus caroliniana</i>	musclewood	1599	7					33	10	1632	
<i>Asimina triloba</i>	pawpaw	1371	6					33	10	1404	1400
<i>Ilex opaca</i>	American holly	1371	6			212	8	33	10	1616	
<i>Arundinaria gigantea</i>	giant cane			370	8					370	
<i>Betula nigra</i>	river birch			555	12					555	1600
<i>Cornus amomum</i>	silky dogwood			555	12					555	1600
<i>Alnus serrulata</i>	tag alder			555	12					555	
<i>Cephalanthus occidentalis</i>	buttonbush			462	10					462	1500
<i>Sambucus canadensis</i>	elderberry			555	12					555	
<i>Viburnum dentatum</i>	arrow-wood			462	10					462	
<i>Viburnum nudum</i>	possum-haw			555	12					555	
<i>Vaccinium corymbosum</i>	highbush blueberry			555	12					555	
<i>Fagus grandifolia</i>	American beech					371	14			371	400
<i>Carya tomentosa</i>	mockernut hickory					318	12			318	400
<i>Carya glabra</i>	sweet pignut hickory					318	12			318	400
<i>Quercus alba</i>	white oak					424	16			424	500
<i>Quercus rubra</i>	northern red oak					371	14			371	400
<i>Quercus falcata</i>	southern red oak					371	14			371	400
<i>Cornus florida</i>	dogwood					265	10			265	300
Total		22844	100	4624	100	2650	100	332	100	30450	31300

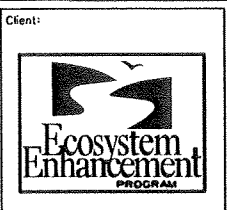
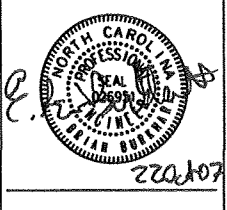
¹All stems are assumed to be bare-root seedlings



PLANT COMMUNITIES		
	STREAMSIDE ASSEMBLAGE (15' EACH SIDE OF CHANNEL)	1.7 ACRES
	MESIC MIXED HARDWOOD FOREST	3.9 ACRES
	BOTTOMLAND HARDWOOD FOREST	33.6 ACRES
	SUPPLEMENTAL RIPARIAN PLANTING	1.7 ACRES
		TOTAL: 40.9 ACRES



REVISIONS	
1	AS-BUILT - JULY 2007



Project:
**BISHOP SITE
 STREAM /
 WETLAND
 RESTORATION
 PLAN**
 ANSON COUNTY,
 NORTH CAROLINA

Title:
**PLANTING
 PLAN**
CAMP BRANCH

Des. By: JDC Dwn. By: MAF
 Ckd. By: EBB Date: JUL 2007

Scale: AS SHOWN

ESC Project No.: 04-212

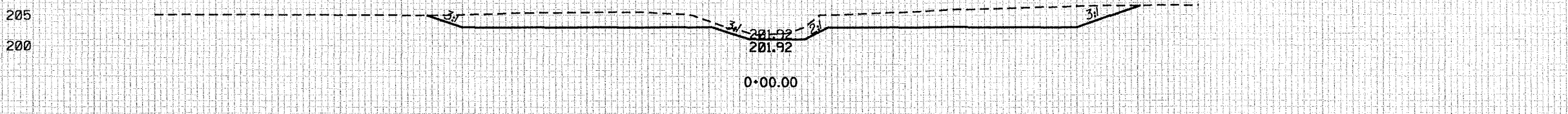
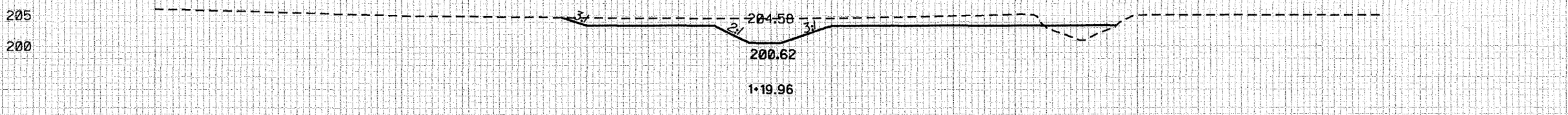
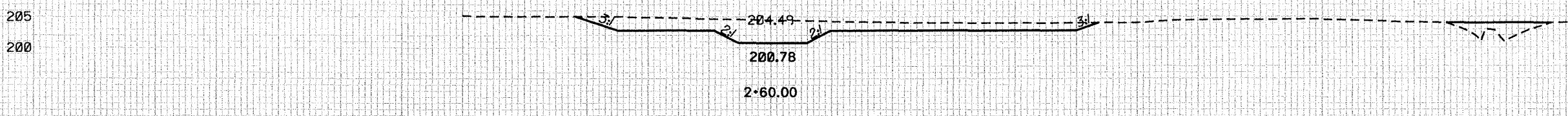
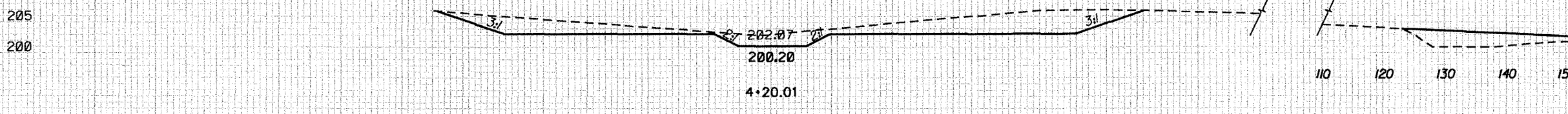
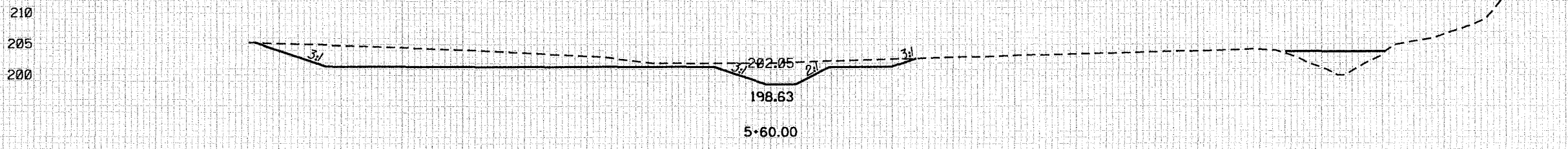
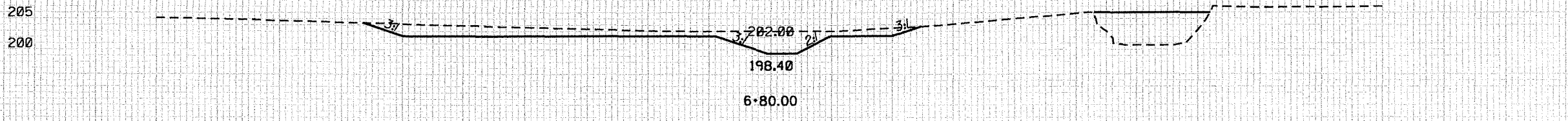
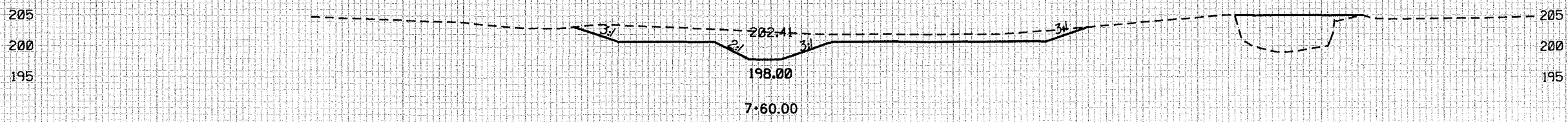
SHEET
A-L1

Class: ECOSYSTEM ENHANCEMENT PROGRAM

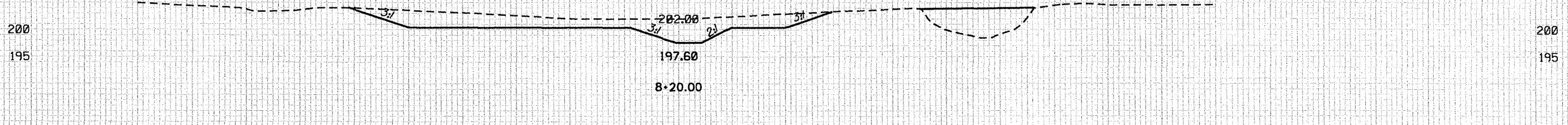
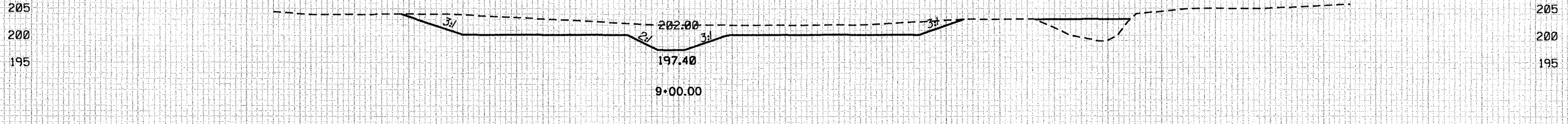
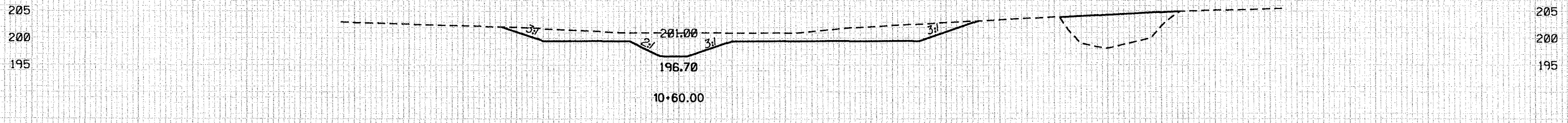
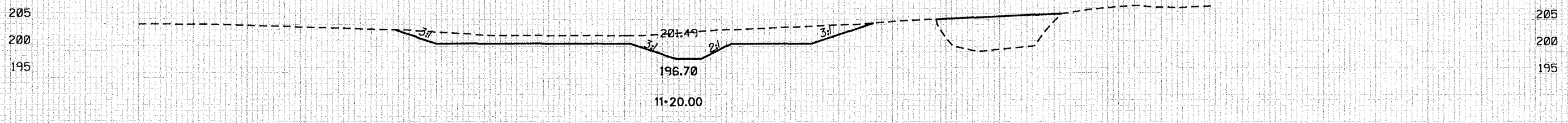
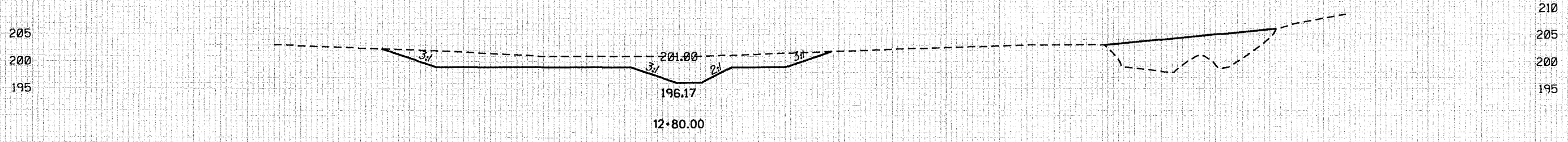
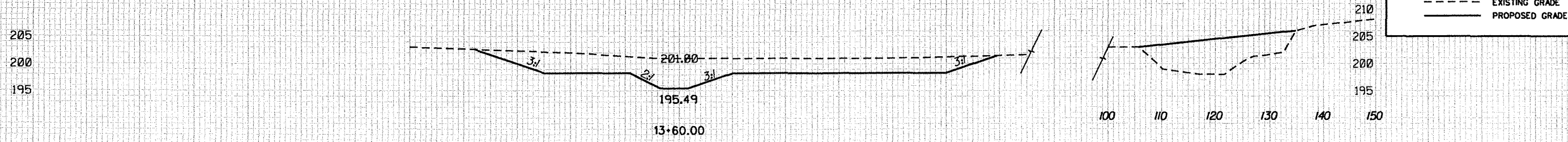
Project: BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH

Type: CROSS-SECTIONS -C- CHANNEL Sheet: X1

Legend:
 - - - - - EXISTING GRADE
 _____ PROPOSED GRADE



Project #	04-212	Date	JUN 2005
Drawn By	MAF	Check By	JDC
Scale	AS SHOWN		
ECOSYSTEM ENHANCEMENT PROGRAM			
Project			
BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH			
Type	CROSS-SECTIONS - C- CHANNEL	Sheet	X2
Legend			
---		EXISTING GRADE	
—		PROPOSED GRADE	



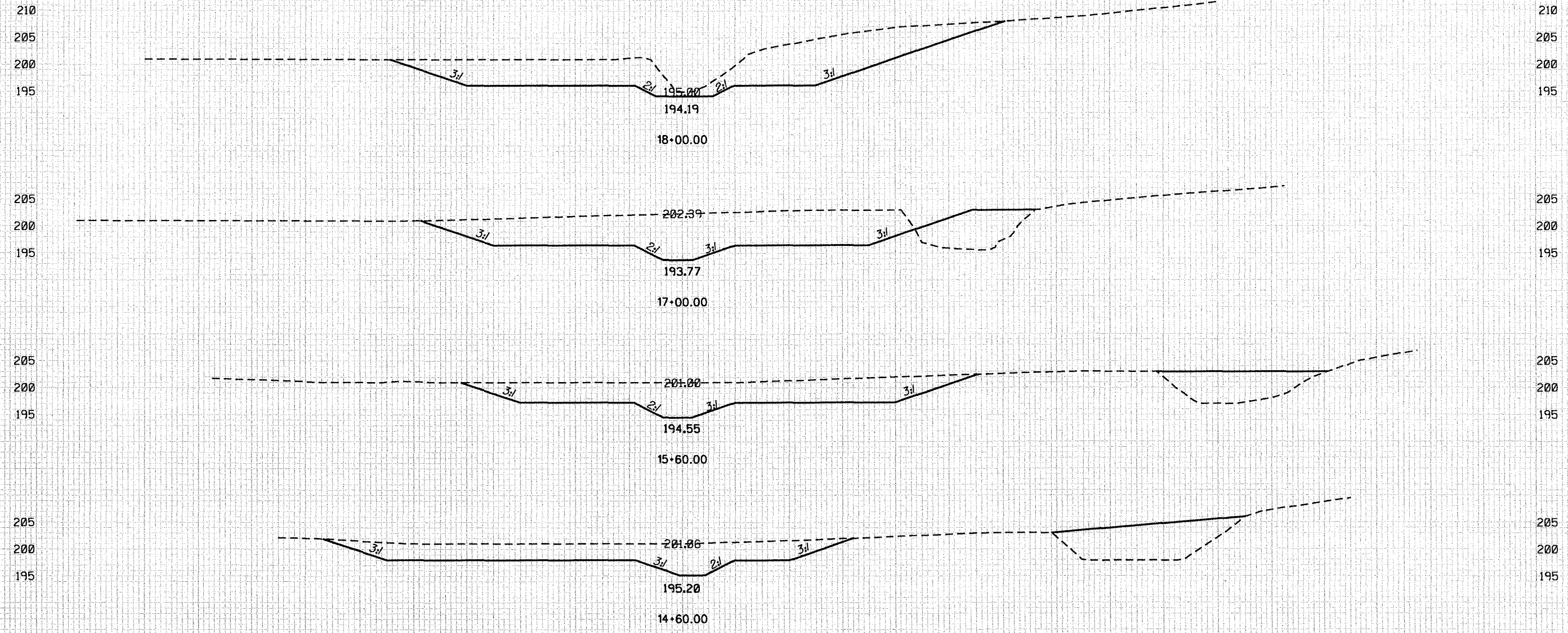
ECOSYSTEM ENHANCEMENT PROGRAM

BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH

CROSS-SECTIONS -C- CHANNEL **X3**

Legend:

- EXISTING GRADE
- PROPOSED GRADE

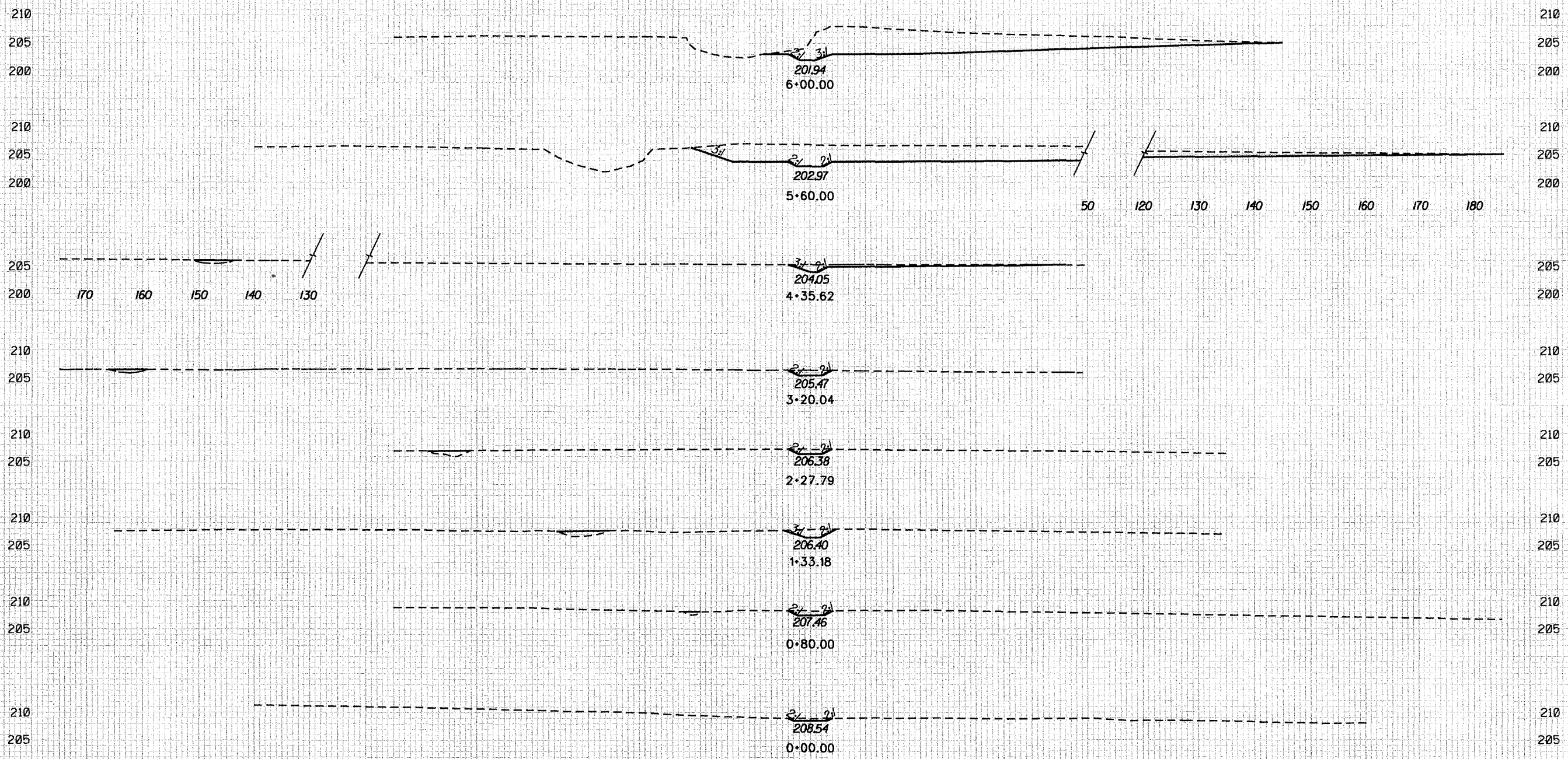


Client: ECOSYSTEM ENHANCEMENT PROGRAM

Project: BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH

Title: CROSS-SECTIONS -A- CHANNEL Sheet: X4

Legend:
 - - - - - EXISTING GRADE
 _____ PROPOSED GRADE



80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80

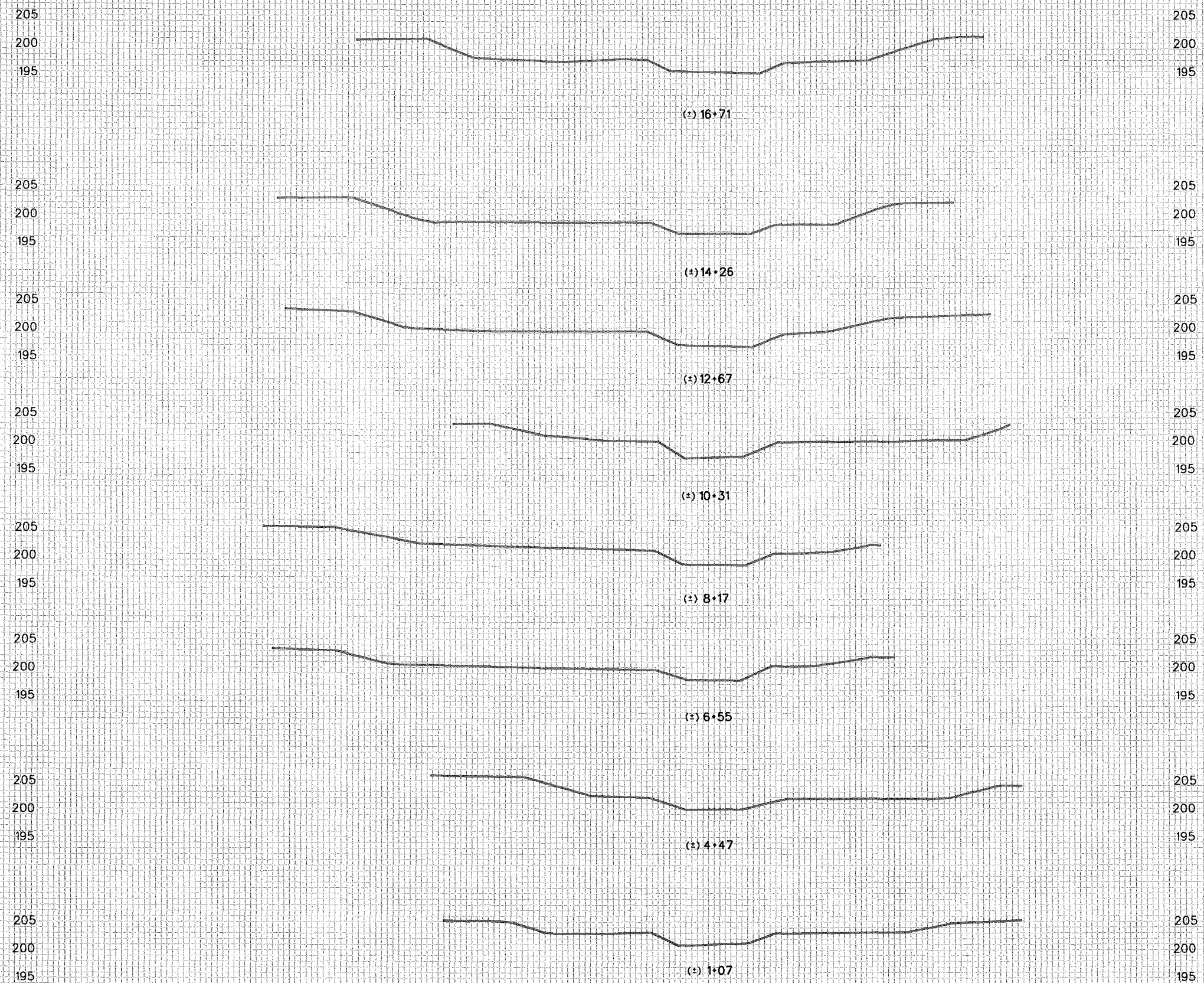
Project: 04-212 Date: JULY 2007
Drawn by: JFH Check by: JDC EBB Scale: AS SHOWN

Class: ECOSYSTEM ENHANCEMENT PROGRAM

Project: BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH

Title: CROSS-SECTIONS -C- CHANNEL Sheet: X1A

Legend: — SURVEY AS-BUILT GRADE

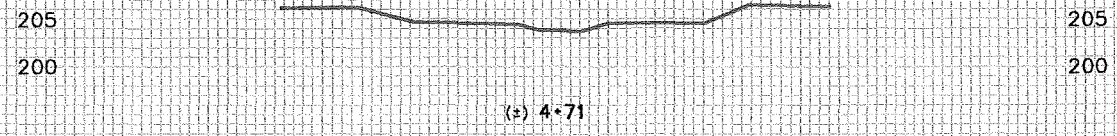


The elevation data utilized in the Camp Branch As-Built Plots was developed by Barry D Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384

80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80

70 60 50 40 30 20 10 0 10 20 30 40 50 60 70

Project #	04-212	Date	JULY 2007
Drawn By:	JFH	Check By:	JDC
Scale	AS SHOWN	ECB	
ECOSYSTEM ENHANCEMENT PROGRAM			
BISHOP SITE STREAM AND WETLAND RESTORATION CAMP BRANCH			
Type	CROSS-SECTIONS -A- CHANNEL	Sheet	X4A
Legend	—— SURVEY AS-BUILT GRADE		



The elevation data utilized in the Camp Branch As-Built Plans was developed by Barry D. Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384

70 60 50 40 30 20 10 0 10 20 30 40 50 60 70

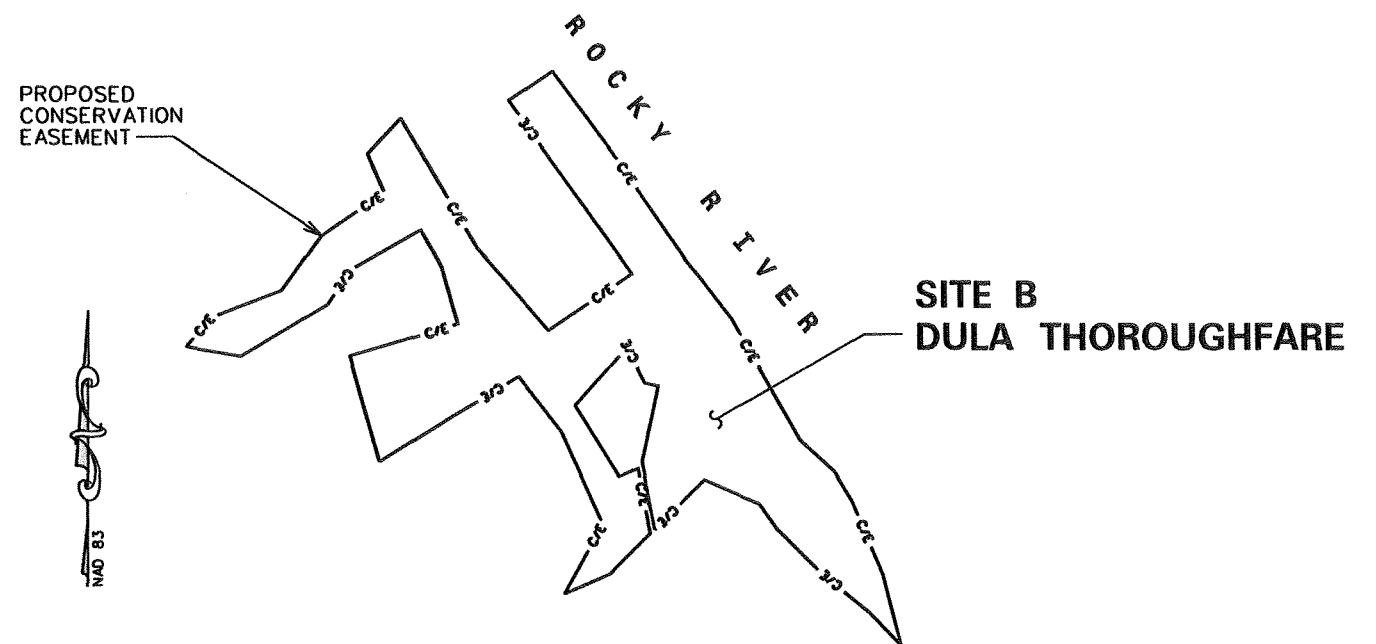
CONSTRUCTION SEQUENCE

1. MOBILIZE EQUIPMENT AND MATERIALS TO DULA SITE.
2. ESTABLISH ACCESS ROADS AND STAGING AREAS AS DEPICTED ON THE PLANS OR AS DIRECTED BY THE PROJECT MANAGER AND MARK CONSTRUCTION EQUIPMENT ACCESS LOCATIONS WITH VISIBLE MARKERS. CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED AND SERVICED WITHIN THE LIMITS OF THE ESTABLISHED STAGING AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL STAGING AREAS IN AN ENVIRONMENTALLY SENSITIVE MANNER.
3. INSTALL IMPROVEMENTS TO SITE ACCESS ROAD IF REQUIRED AND INSTALL TEMPORARY EROSION CONTROL MEASURES (I.E., SILT FENCE, STONE OUTLETS, ETC.) AS REQUIRED.
4. AT THE END OF EACH DAY OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY SEED AND MULCH AND APPLY COIR FIBER MATTING, AS APPROPRIATE, TO ALL DISTURBED AREAS. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES ON A DAILY BASIS THROUGHOUT THE CONSTRUCTION PERIOD.
5. INSTALL PUMP-AROUND OPERATION JUST BELOW THE CONFLUENCE OF THE WEST PORTION OF DULA THOROUGHFARE (-D-) WITH THE EASTERN PORTION (-T-). ALL WORK BELOW THIS POINT SHALL BE CONSTRUCTED IN THE "DRY". THIS INCLUDES THE FLOODPLAIN GRADING, THE DEVELOPMENT OF THE VERNAL POOLS AND THE EXCAVATION OF THE PROPOSED CHANNEL. THE CONTRACTOR SHALL INITIATE THE PUMP-AROUND OPERATION ON A SCHEDULE THAT EFFICIENTLY PROSECUTES PROJECT WORK.
6. THE CONTRACTOR SHALL COMPACT THE PROPOSED FILL IN THE FILLED CHANNELS TO 90 PERCENT PROCTOR. THE PROPOSED CHANNEL BLOCKS SHALL HAVE A CORE OF IMPERVIOUS SELECT MATERIAL AS SPECIFIED IN THE PROJECT DETAIL AND SPECIAL PROVISIONS. THE VERNAL POOL AT APPROXIMATE STATION 19+00 SHALL BE "NOTCHED" TO DIRECT OVERFLOW TOWARD THE NEW CHANNEL.
7. INSTALL PUMP-AROUND OPERATIONS ABOVE STATION 0+00 ON THE WESTERN PORTION OF DULA THOROUGHFARE (-D-) AND ABOVE STATION 0+00 AT CULVERT AT THE BEGINNING OF THE EASTERN SECTION (-T-). THESE PUMP-AROUNDS MAY DIRECT PROPERLY TREATED WATER TO THE NEWLY CREATED STABILIZED CHANNEL AND THE PROPOSED WORK SHALL BE CONSTRUCTED IN THE "DRY".
8. THE CONTRACTOR SHALL PLACE BORROW MATERIAL IN AREAS DESIGNATED ON THE PLANS AND AT THE DIRECTION OF THE PROJECT MANAGER. STOCKPILE AREAS SHALL BE PROTECTED BY SILT FENCING AS APPROPRIATE.
9. ONCE CONSTRUCTION IS COMPLETE THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION MATERIALS FROM THE CONSERVATION EASEMENT, DISPOSE OF THEM IN AN APPROVED DUMP SITE, AND SCARIFY ANY COMPACTED AREAS AS DIRECTED BY THE PROJECT MANAGER. TO COMPLETE PERMANENT SEEDING AND MULCHING, ALL DISTURBED AREAS SHALL BE DISKED OR PLOWED TO CREATE MICRO TOPOGRAPHY TO THE SATISFACTION OF THE PROJECT MANAGER AND PERMANENTLY SEEDED AND MULCHED. STONE APPLIED TO ACCESS ROAD, IF ANY, SHALL REMAIN OR BE REMOVED AS INDICATED ON PLAN SHEET 2.

SITE B DULA THOROUGHFARE


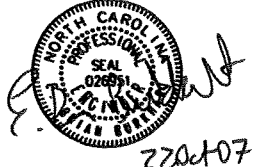

TYPE OF WORK: STREAM AND WETLAND RESTORATION / ENHANCEMENT

- STREAM RESTORATION / ENHANCEMENT
- FLOODPLAIN GRADING
- WETLAND RESTORATION / ENHANCEMENT
- NEW CHANNEL CONSTRUCTION
- SITE PLANTING



INDEX OF SHEETS

- DULA THOROUGHFARE**
- B: CONSTRUCTION SEQUENCE**
 - B-1: RADIUS TABLE / SHEAR STRESS TABLE**
 - B-2: TYPICAL SECTIONS / GENERAL DETAILS**
 - B-2A, B-2B: GENERAL DETAILS**
 - B-2C: NEW CHANNEL CENTERLINE DATA**
 - B-3: SUMMARY OF QUANTITIES / SUMMARY OF EARTHWORK**
 - B-4: EXISTING CONDITIONS**
 - B-5: NEW CHANNEL LAYOUT**
 - B-6: SITE PLAN**
 - B-7: PROFILE - DULA THOROUGHFARE -T- CHANNEL**
 - B-7A: AS-BUILT PROFILE - DULA THOROUGHFARE -T- CHANNEL**
 - B-8: PROFILE - DULA THOROUGHFARE -D- CHANNEL**
 - B-8A: AS BUILT PROFILE - DULA THOROUGHFARE -D- CHANNEL**
 - B-EC1: EROSION CONTROL PLAN**
 - B-EC2: EROSION CONTROL DETAILS**
 - B-L1: PLANTING PLAN**
 - X5-X7: CROSS-SECTIONS**
 - X5A-X7A: AS-BUILT CROSS-SECTIONS**

<p style="text-align: center;"><i>Prepared in the office of:</i></p> <div style="text-align: center;">  <p>EcoScience Corporation 1101 Hayes St., Suite 101 Ph: 919 424-3433 Raleigh, North Carolina 27604 Fax: 919 424-3538</p> </div> <p>ENGINEER: DAVID G. MODLIN</p> <p>PROJECT MANAGER: JAMES D. COOPER</p>	<p>SEAL:</p> <div style="text-align: center;">  <p>220207</p> </div>	<p style="text-align: center;"><i>Prepared for:</i></p> <div style="text-align: center;">  <p>ECOSYSTEM ENHANCEMENT PROGRAM Raleigh, North Carolina</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Revisions</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>REV'D SHEETS B-2B, B-3</td> <td>09/29/05 JDG</td> </tr> <tr> <td>2</td> <td>AS-BUILT</td> <td>JUL 2007</td> </tr> </tbody> </table>	No.	Revisions	Date	1	REV'D SHEETS B-2B, B-3	09/29/05 JDG	2	AS-BUILT	JUL 2007	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;"><i>Dsn. By:</i></td> <td>JDC</td> <td style="font-size: small;"><i>Dwn. By:</i></td> <td>JDC</td> <td style="font-size: small;"><i>Ckd. By:</i></td> <td>EBB</td> </tr> <tr> <td colspan="6" style="font-size: small;"><i>Date:</i> JUL 2007</td> </tr> <tr> <td colspan="6" style="font-size: small;"><i>ESC Project No:</i> 04-212</td> </tr> <tr> <td colspan="6" style="text-align: center; font-size: small;">SHEET</td> </tr> <tr> <td colspan="6" style="text-align: center; font-size: 2em; font-weight: bold;">B</td> </tr> </table>	<i>Dsn. By:</i>	JDC	<i>Dwn. By:</i>	JDC	<i>Ckd. By:</i>	EBB	<i>Date:</i> JUL 2007						<i>ESC Project No:</i> 04-212						SHEET						B					
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<i>ESC Project No:</i> 04-212																																										
SHEET																																										
B																																										

CURVE RADIUS TABLE

CURVE ID	NORTHING	EASTING	RADIUS OF CURVATURE (FT.)
D1	511 701.2133	1674842.6507	30.00
D2	511 723.9248	1674898.4724	30.00
D3	511 776.8248	1674882.3079	25.00
D4	511 792.4309	1674935.0515	30.00
D5	511 837.8210	1674960.9682	20.00
D6	511 862.4778	1675005.2406	30.00
D7	511 907.9580	1675063.9353	35.00
D8	511 902.4409	16751 30.2828	25.00
D9	511 953.2149	16751 56.0843	30.00
D10	511 941.9471	1675225.8063	40.00
D11	51 2008.4578	1675254.0567	25.00
D12	511 983.7727	1675310.2663	35.00
T1	51 2318.5653	1675164.6548	40.00
T2	51 2291.7653	1675219.4537	20.00
T3	51 2253.6505	1675207.3186	20.00
T4	51 2239.8899	1675255.6814	30.00
T5	51 2180.7288	1675244.6142	30.00
T6	51 2163.5826	1675355.0795	80.00
T7	51 2058.4660	1675320.6382	29.00
T8	51 2017.2264	1675381.2954	40.00
T9	51 1947.8574	1675392.2492	30.00
T10	51 1931.0049	1675457.8222	30.00
T11	51 1856.3837	1675428.4163	50.00
T12	51 1840.8237	1675512.0724	35.00
T13	51 1757.5694	1675556.0557	50.00
T14	51 1658.3154	1675614.2386	45.00
T15	51 1564.1474	1675601.0327	50.00
T16	51 1568.5737	1675711.0115	60.00
T17	51 1510.7953	1675656.3041	19.57
T18	51 1485.2761	1675710.1305	40.00
T19	51 1419.5770	1675664.4838	40.00
T20	51 1395.5051	1675730.7029	30.00
T21	51 1426.5711	1675742.1843	60.00
T22	51 1349.2322	1675788.7683	30.00
T23	51 1357.8615	1675795.0251	20.00
T24	51 1362.8636	1675854.9586	40.00
T25	51 1273.2071	1675837.2276	50.00
T26	51 1257.0528	1675926.1340	40.00
T27	51 1163.0873	1675940.9706	50.00
T28	51 1154.1092	1676010.4440	20.00
T29	51 1100.3818	1676003.0692	30.00
T30	51 1095.4024	1676057.8437	25.00
T31	51 1011.9360	1676041.7702	60.00
T32	51 0947.2153	1676145.2711	60.00

CURVE ID D1-D12 = DULA THOROUGHFARE -D- CHANNEL
 CURVE ID T1-T32 = DULA THOROUGHFARE -T- CHANNEL

FLOODPLAIN ELEVATION TABLE -T- CHANNEL

Station	Proposed Floodplain Elevation
0+00	202.2
1+50	202.0
2+75	201.9
3+60	201.8
4+50	201.8
5+75	201.6
6+90	201.5
8+25	201.3
9+75	201.1
11+25	201.0
12+00	200.9
13+00	200.9
15+00	200.7
16+75	200.4
18+15	200.2
20+00	200.0
20+56	200.0

FLOODPLAIN ELEVATION TABLE -D- CHANNEL

Station	Proposed Floodplain Elevation
0+00	206.1
1+10	205.4
2+25	204.7
3+90	203.8
5+10	203.0
6+30	202.4
7+34	201.8

SHEAR STRESS TABLE

Flows in CFS				
Dula Thoroughfare	Upper	Lower		
1-Yr. Event	20	22		
2-Yr. Event	31	34		
10-Yr. Event	82	90		
Shear Stress in LB/SQ.FT.				
Proposed	Station	Left OB	Channel	Right OB
Upper Dula (WEST)				
1-Yr. Event	0+00	0.13	0.32	0.11
2-Yr. Event	0+00	0.16	0.37	0.14
10-Yr. Event	0+00	0.23	0.48	0.20
Lower Dula (EAST)				
1-Yr. Event	7+00	0.03	0.08	0.03
2-Yr. Event	7+00	0.08	0.21	0.07
10-Yr. Event	7+00	0.21	0.42	0.21

NOTE:

MORPHOLOGICAL TABLE AND RIFFLE TABLE NOT APPLICABLE TO PROPOSED DULA THOROUGHFARE RESTORATION/ENHANCEMENT.



EcoScience Corporation

Raleigh, North Carolina

REVISIONS



Client:



Project:

**BISHOP SITE
 STREAM /
 WETLAND
 RESTORATION
 PLAN**

ANSON COUNTY,
 NORTH CAROLINA

Title:

**RADIUS
 TABLE /
 SHEAR STRESS
 TABLE**

**DULA
 THOROUGHFARE**

Dsn. By:

Dwn. By:

JDC

MAF

Ckd. By:

Date:

DGM

JUN 2005

Scale:

NO SCALE

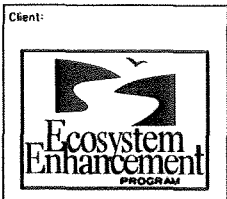
ESC Project No.:

04-212

SHEET

B-1

REVISIONS

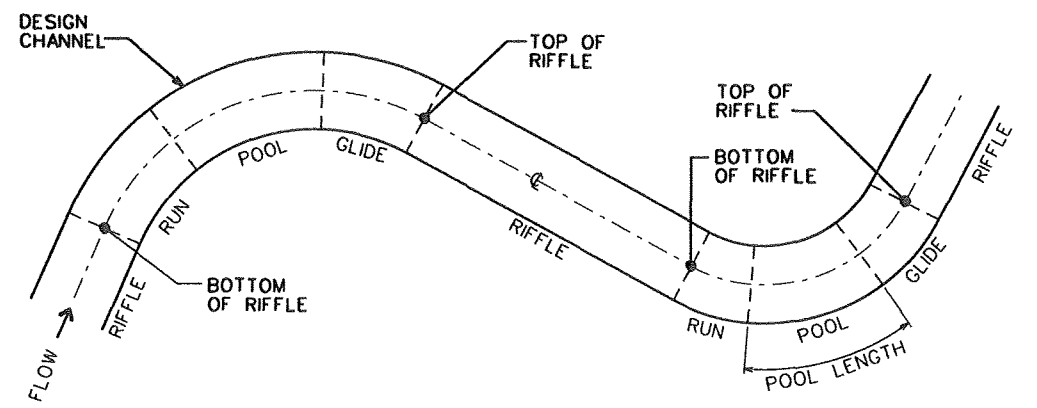


Client:
BISHOP SITE STREAM / WETLAND RESTORATION PLAN
ANSON COUNTY, NORTH CAROLINA

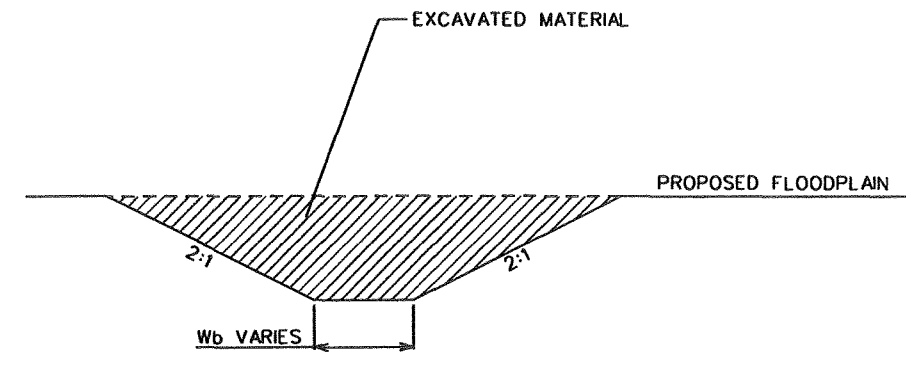
Title:
TYPICAL SECTIONS / GENERAL DETAILS
DULA THOROUGHFARE

Dsn. By: JDC
Dwn. By: MAF
Ckd. By: DGM
Date: JUN 2005
Scale: NO SCALE
ESC Project No.: 04-212

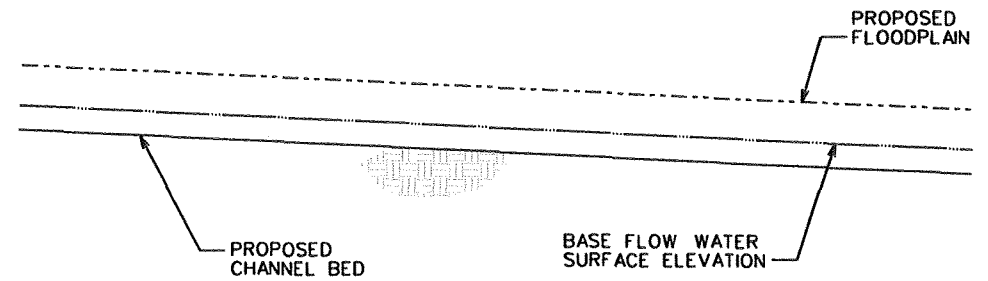
SHEET
B-2



TYPICAL CHANNEL PLAN VIEW

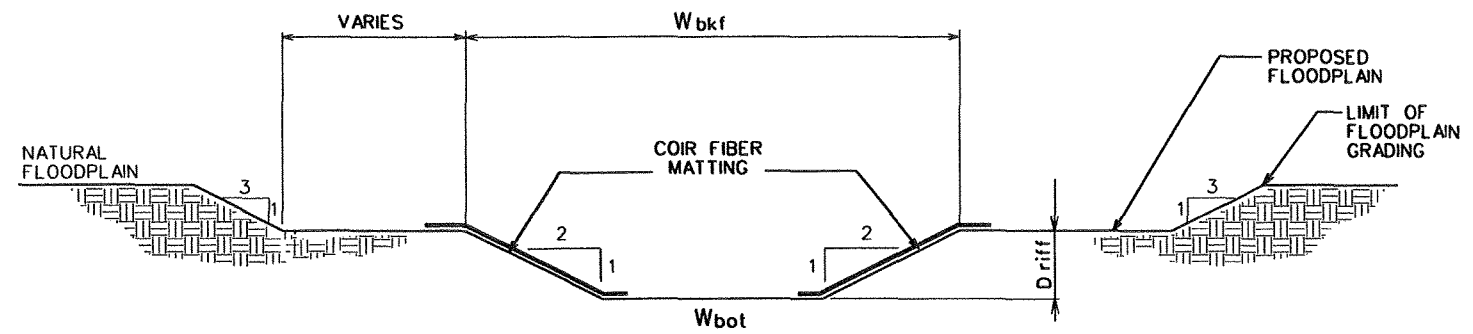


TYPICAL VERNAL POOL



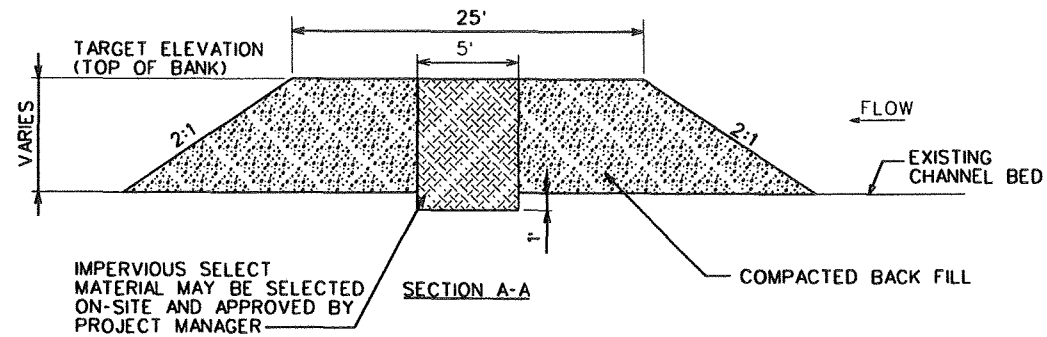
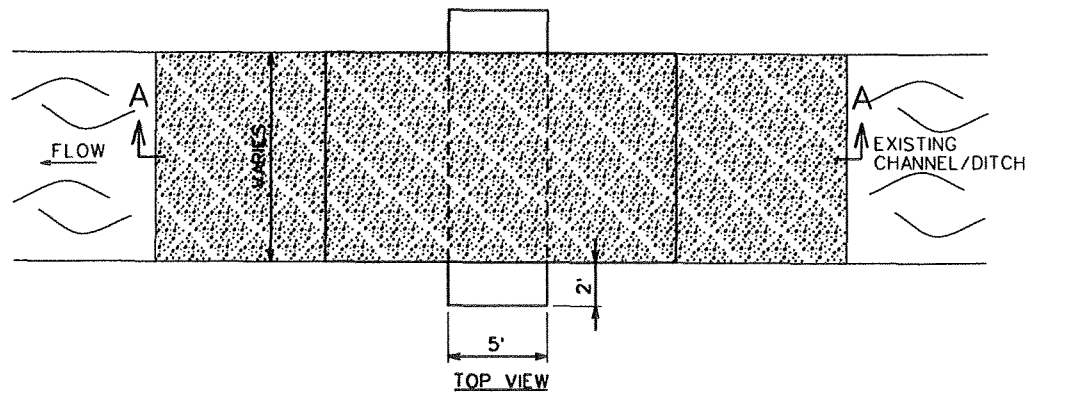
TYPICAL CHANNEL PROFILE

CROSS-SECTION DIMENSIONS							
REACH	W _{bkf} (FT.)	W _{bot} (FT.) RIFFLE	Driff (FT.)	W _{pool} (FT.)	W _{bot} (FT.) POOL	D _{pool} (FT.)	WIDTH/DEPTH RATIO
DULA THOROUGHFARE	6.0	2.0	1.0	N/A	N/A	N/A	9.0



TYPICAL CROSS-SECTION

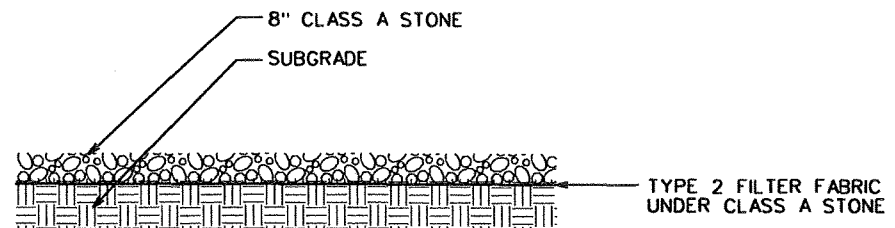
NOTE: USE 6.5-FOOT COIR FIBER EACH SIDE.



**IMPERVIOUS CHANNEL BLOCK
DULA THOROUGHFARE**

NOTE:

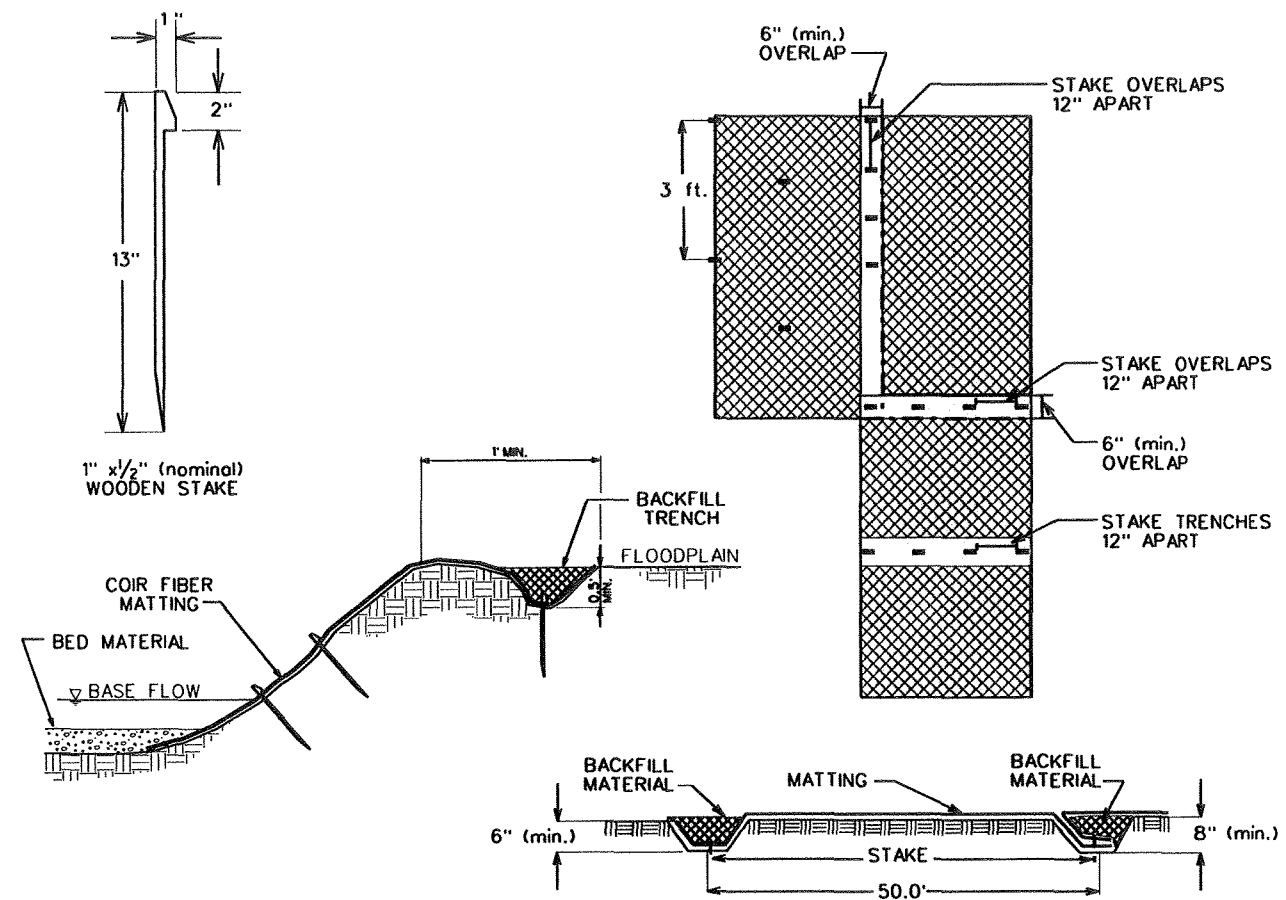
1. CHANNEL PLUG WILL BE INITIALLY FILLED WITH AVAILABLE WASTE AND COMPACTED TO NINETY-FIVE PERCENT STANDARD PROCTOR.
2. THEN A CENTRAL PORTION 5 FEET LONG WILL BE REMOVED AND REPLACED WITH IMPERVIOUS SELECT MATERIAL.
3. THE IMPERVIOUS SELECT MATERIAL WILL BE KEYED INTO THE ORIGINAL BANK A MINIMUM OF 2 FEET AND INTO THE ORIGINAL BED A MINIMUM OF 1 FEET.



NOTES:

1. THIS IS THE MINIMUM ACCEPTABLE SECTION.

**ACCESS ROAD SECTION DETAIL
SUGGESTED OR EQUIVALENT**



COIR FIBER MATTING DETAIL



EcoScience Corporation

Raleigh, North Carolina

REVISIONS



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**GENERAL
DETAILS**

**DULA
THOROUGHFARE**

Dsn. By:

Dwn. By:

JDC

MAF

Ckd. By:

Date:

DGM

JUN 2005

Scale:

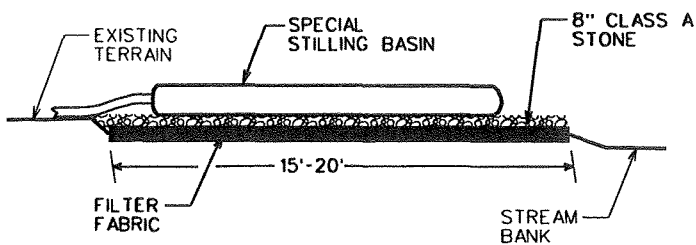
NO SCALE

ESC Project No.:

04-212

SHEET

B-2A

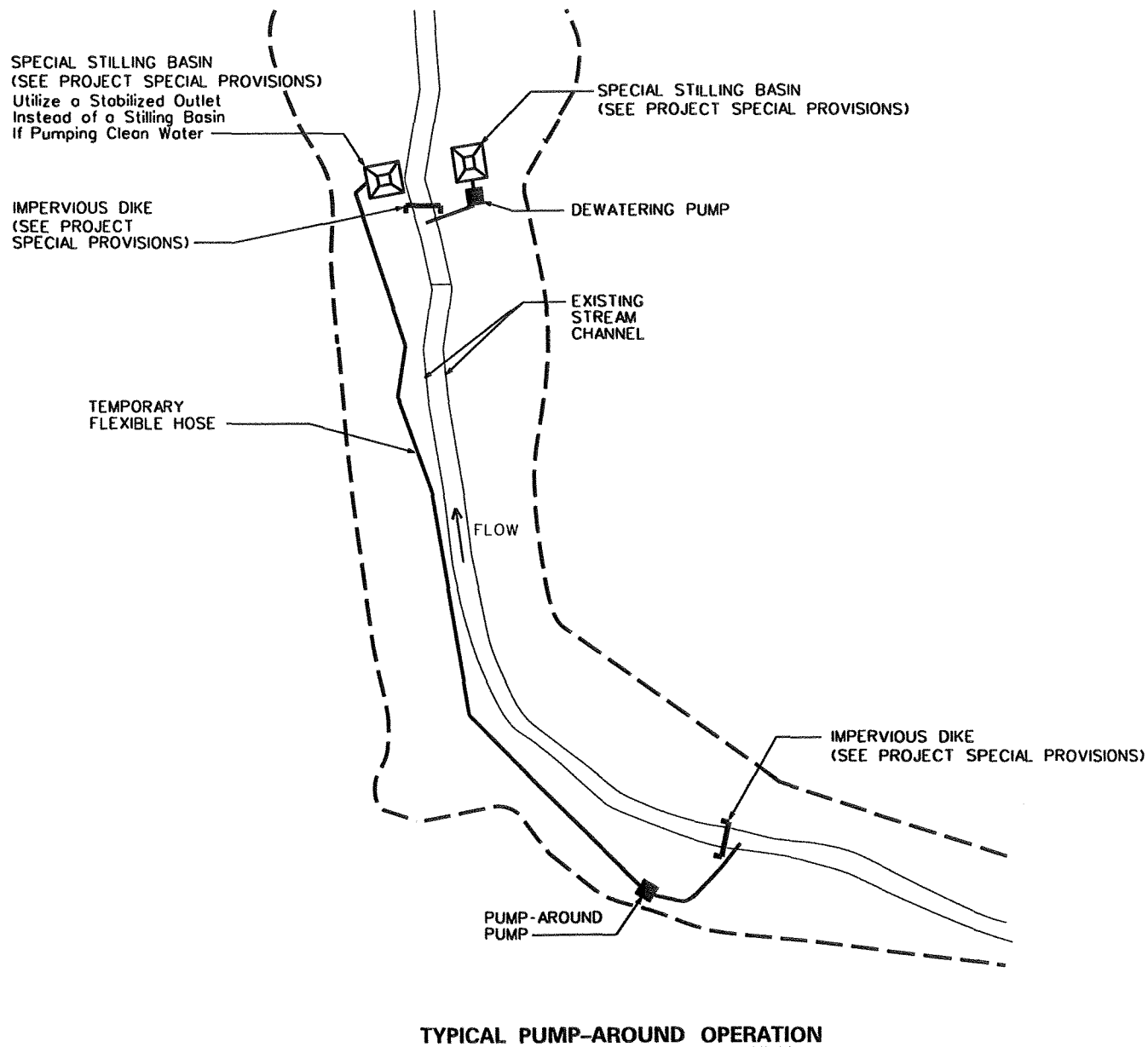


NOTE:
 1. WHEN PUMPING CLEAN WATER, THE CONTRACTOR MAY PROVIDE A STABILIZED OUTLET BY OMITTING THE SPECIAL STILLING BASIN AND PROVIDING THE ROCK PAD AS SHOWN WITH MINIMUM DIMENSIONS 10 FEET WIDE BY 15 FEET LONG.

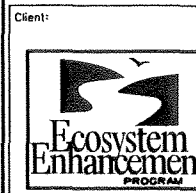
**SPECIAL STILLING BASIN
 WITH ROCK PAD**

- NOTES:**
1. ALL EXCAVATION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
 2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW WHEN NECESSARY.
 3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
 4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, DIVERSION PIPES, PUMPS AND HOSES.
 5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.

- SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA**
1. INSTALL SPECIAL STILLING BASIN(S).
 2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
 3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
 4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
 5. PERFORM STREAM RESTORATION WORK IN ACCORDANCE WITH THE PLANS.
 6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
 7. ALL GRADING AND STABILIZATION MUST BE COMPLETED AT THE END OF EACHDAY WITHIN THE PUMP AROUND AREAS BETWEEN THE IMPERVIOUS DIKES. THE IMPERVIOUS DIKE LOCATIONS AS SHOWN ON THIS SHEET ONLY SHOW THE UPPER AND LOWER EXTENT OF WORK FOR EACH STREAM SEGMENT. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF THE IMPERVIOUS DIKE(S) FOR EACH DAY'S WORK.
 8. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.



REVISIONS	LAND QUALITY COMMENTS



Client:
 Project:
**BISHOP SITE
 STREAM /
 WETLAND
 RESTORATION
 PLAN**
 ANSON COUNTY,
 NORTH CAROLINA

Title:
**GENERAL
 DETAILS**
**DULA
 THOROUGHFARE**

Dsn. By: JDC	Des. By: MAF
Clk. By: DGM	Date: JUN 2005
Scale: NO SCALE	
ESC Project No.: 04-212	

SHEET
B-2B

-D- CHANNEL CURVE DATA

<p>1</p> <p>Curve DT2-1 P.J. Sta. 0+22.59 D = 38° 04' 42.88" (LT) T = 10.3528 L = 19.9379 R = 30.0000 P.C. Sta. 0+12.24 P.T. Sta. 0+32.17 Back = N 21° 18' 50.99" E Ahead = N 16° 45' 51.89" W</p>	<p>5</p> <p>Curve DT2-5 P.J. Sta. 2+38.05 D = 122° 32' 04.65" (LT) T = 36.4813 L = 42.7727 R = 20.0000 P.C. Sta. 2+01.57 P.T. Sta. 2+44.35 Back = S 77° 12' 53.54" E Ahead = N 19° 44' 58.19" W</p>	<p>9</p> <p>Curve DT2-9 P.J. Sta. 5+11.4 D = 85° 04' 08.82" (LT) T = 27.5232 L = 44.5421 R = 30.0000 P.C. Sta. 4+83.61 P.T. Sta. 5+28.16 Back = S 78° 06' 45.80" E Ahead = N 16° 49' 05.37" E</p>
<p>2</p> <p>Curve DT2-2 P.J. Sta. 0+64.67 D = 83° 39' 34.80" (RT) T = 26.8512 L = 43.8041 R = 30.0000 P.C. Sta. 0+37.82 P.T. Sta. 0+81.62 Back = N 16° 45' 51.89" W Ahead = N 66° 53' 42.91" E</p>	<p>6</p> <p>Curve DT2-6 P.J. Sta. 3+21.70 D = 133° 04' 09.64" (RT) T = 69.1096 L = 69.6749 R = 30.0000 P.C. Sta. 2+52.59 P.T. Sta. 3+22.27 Back = N 19° 44' 58.19" W Ahead = S 66° 40' 48.55" E</p>	<p>10</p> <p>Curve DT2-10 P.J. Sta. 5+65.70 D = 70° 17' 19.26" (RT) T = 28.1587 L = 49.0708 R = 40.0000 P.C. Sta. 5+37.54 P.T. Sta. 5+86.61 Back = N 16° 49' 05.37" E Ahead = N 87° 06' 24.63" E</p>
<p>3</p> <p>Curve DT2-3 P.J. Sta. 1+09.51 D = 82° 41' 23.77" (LT) T = 21.9978 L = 36.0803 R = 25.0000 P.C. Sta. 0+87.51 P.T. Sta. 1+23.60 Back = N 66° 53' 42.91" E Ahead = N 15° 47' 40.86" W</p>	<p>7</p> <p>Curve DT2-7 P.J. Sta. 3+89.07 D = 82° 53' 06.45" (LT) T = 30.9029 L = 50.6316 R = 35.0000 P.C. Sta. 3+58.16 P.T. Sta. 4+08.79 Back = S 66° 40' 48.55" E Ahead = N 30° 26' 04.99" E</p>	<p>11</p> <p>Curve DT2-11 P.J. Sta. 6+30.16 D = 51° 10' 36.51" (LT) T = 11.9718 L = 22.3301 R = 25.0000 P.C. Sta. 6+18.18 P.T. Sta. 6+40.51 Back = N 87° 06' 24.63" E Ahead = N 35° 55' 48.12" E</p>
<p>4</p> <p>Curve DT2-4 P.J. Sta. 1+74.76 D = 118° 34' 47.32" (RT) T = 50.5055 L = 62.0882 R = 30.0000 P.C. Sta. 1+24.26 P.T. Sta. 1+86.34 Back = N 15° 47' 40.86" W Ahead = S 77° 12' 53.54" E</p>	<p>8</p> <p>Curve DT2-8 P.J. Sta. 4+55.63 D = 71° 27' 09.20" (RT) T = 17.9817 L = 31.7711 R = 25.0000 P.C. Sta. 4+37.65 P.T. Sta. 4+68.82 Back = N 30° 26' 04.99" E Ahead = S 78° 06' 45.80" E</p>	<p>12</p> <p>Curve DT2-12 P.J. Sta. 6+96.46 Delta = 101° 38' 45.90" (RT) T = 42.9495 L = 62.0921 R = 35.0000 P.C. Sta. 6+53.51 P.T. Sta. 7+15.60 Back = N 35° 55' 48.12" E Ahead = S 42° 25' 25.97" E</p>

PI Sta. = center of pool

D = deflection angle (Δ) between tangent lines T2 and T1 measured along direction of travel

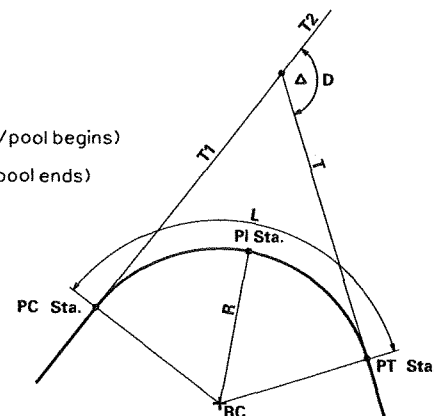
L = arc/pool length

T/T1 = tangent length

R = radius of curvature

PC Sta. = point of curvature (where arc/pool begins)

PT Sta. = point of terminus (where arc/pool ends)



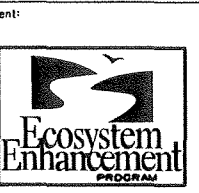
NOTE:
FOR NEW CHANNEL LAYOUT, SEE SHEET B-5.

-T- CHANNEL CURVE DATA

<p>1</p> <p>Curve DTT-1 P.J. Sta. 0+45.66 D = 49° 04' 31.92" (RT) T = 18.2609 L = 34.2612 R = 40.0000 P.C. Sta. 0+27.40 P.T. Sta. 0+61.66 Back = S 33° 24' 34.00" E Ahead = S 15° 39' 57.91" W</p>	<p>6</p> <p>Curve DTT-6 P.J. Sta. 2+91.60 D = 60° 37' 01.59" (LT) T = 46.7642 L = 84.6375 R = 80.0000 P.C. Sta. 2+44.84 P.T. Sta. 3+29.47 Back = S 1° 26' 18.77" E Ahead = S 62° 03' 20.36" E</p>	<p>11</p> <p>Curve DTT-11 P.J. Sta. 6+36.37 D = 72° 16' 17.94" (RT) T = 36.5085 L = 63.0689 R = 50.0000 P.C. Sta. 5+99.86 P.T. Sta. 6+62.93 Back = S 64° 22' 58.49" E Ahead = S 7° 53' 19.45" W</p>	<p>16</p> <p>Curve DTT-16 P.J. Sta. 11+54.44 D = 42° 28' 21.10" (LT) T = 23.3162 L = 44.4771 R = 60.0000 P.C. Sta. 10+92.13 P.T. Sta. 11+36.60 Back = S 4° 18' 59.26" E Ahead = S 46° 47' 20.35" E</p>	<p>21</p> <p>Curve DTT-21 P.J. Sta. 13+55.35 D = 21° 43' 25.17" (LT) T = 11.5127 L = 22.7490 R = 60.0000 P.C. Sta. 13+43.84 P.T. Sta. 13+66.59 Back = N 85° 12' 54.94" E Ahead = N 63° 29' 29.78" E</p>	<p>26</p> <p>Curve DTT-26 P.J. Sta. 15+93.85 D = 85° 14' 20.84" (LT) T = 36.8071 L = 59.5081 R = 40.0000 P.C. Sta. 15+57.04 P.T. Sta. 16+16.55 Back = S 5° 10' 04.61" W Ahead = S 80° 04' 16.23" E</p>	<p>31</p> <p>Curve DTT-31 P.J. Sta. 19+10.78 D = 100° 33' 01.80" (RT) T = 72.2069 L = 105.2962 R = 60.0000 P.C. Sta. 18+38.58 P.T. Sta. 19+43.87 Back = S 79° 05' 59.21" E Ahead = S 21° 27' 02.59" W</p>
<p>2</p> <p>Curve DTT-2 P.J. Sta. 0+91.98 D = 88° 00' 20.03" (LT) T = 19.3157 L = 30.7197 R = 20.0000 P.C. Sta. 0+72.66 P.T. Sta. 1+03.38 Back = S 15° 39' 57.91" W Ahead = S 72° 20' 22.11" E</p>	<p>7</p> <p>Curve DTT-7 P.J. Sta. 3+71.14 D = 76° 26' 18.83" (RT) T = 22.8366 L = 38.6890 R = 29.0000 P.C. Sta. 3+48.31 P.T. Sta. 3+87.00 Back = S 62° 03' 20.36" E Ahead = S 14° 22' 58.47" W</p>	<p>12</p> <p>Curve DTT-12 P.J. Sta. 7+08.77 D = 100° 15' 21.66" (LT) T = 41.9011 L = 61.2429 R = 35.0000 P.C. Sta. 6+66.86 P.T. Sta. 7+28.11 Back = S 7° 53' 19.45" W Ahead = N 87° 37' 57.78" E</p>	<p>17</p> <p>Curve DTT-17 P.J. Sta. 11+50.79 D = 71° 51' 14.23" (RT) T = 14.1811 L = 24.5438 R = 19.5710 P.C. Sta. 11+36.60 P.T. Sta. 11+61.15 Back = S 45° 52' 25.19" E Ahead = S 25° 58' 49.04" W</p>	<p>22</p> <p>Curve DTT-22 P.J. Sta. 13+85.33 D = 42° 12' 04.94" (RT) T = 11.5764 L = 22.0966 R = 50.0000 P.C. Sta. 13+73.75 P.T. Sta. 13+95.85 Back = N 63° 29' 29.78" E Ahead = S 74° 18' 25.29" E</p>	<p>27</p> <p>Curve DTT-27 P.J. Sta. 16+93.38 D = 85° 14' 49.42" (RT) T = 46.0153 L = 74.3921 R = 50.0000 P.C. Sta. 16+47.36 P.T. Sta. 17+21.76 Back = S 80° 04' 16.23" E Ahead = S 5° 10' 33.19" W</p>	<p>32</p> <p>Curve DTT-32 P.J. Sta. 19+90.87 D = 44° 36' 15.40" (LT) T = 24.6104 L = 46.7095 R = 60.0000 P.C. Sta. 19+66.26 P.T. Sta. 20+12.97 Back = S 21° 27' 02.59" W Ahead = S 23° 09' 12.80" E</p>
<p>3</p> <p>Curve DTT-3 P.J. Sta. 1+20.81 D = 82° 08' 49.25" (RT) T = 17.4308 L = 28.6747 R = 20.0000 P.C. Sta. 1+03.38 P.T. Sta. 1+32.06 Back = S 72° 20' 22.11" E Ahead = S 9° 48' 27.13" W</p>	<p>8</p> <p>Curve DTT-8 P.J. Sta. 4+67.68 D = 108° 44' 00.32" (LT) T = 55.8029 L = 75.9102 R = 40.0000 P.C. Sta. 4+11.88 P.T. Sta. 4+87.79 Back = S 14° 22' 58.47" W Ahead = N 85° 38' 58.16" E</p>	<p>13</p> <p>Curve DTT-13 P.J. Sta. 8+51.26 D = 117° 39' 01.51" (RT) T = 82.6419 L = 102.6694 R = 50.0000 P.C. Sta. 7+68.61 P.T. Sta. 8+71.28 Back = N 87° 37' 57.78" E Ahead = S 25° 16' 59.29" W</p>	<p>18</p> <p>Curve DTT-18 P.J. Sta. 11+94.88 D = 80° 16' 26.64" (LT) T = 33.7273 L = 56.0419 R = 40.0000 P.C. Sta. 11+61.15 P.T. Sta. 12+17.19 Back = S 25° 03' 53.87" W Ahead = S 55° 12' 32.76" E</p>	<p>23</p> <p>Curve DTT-23 P.J. Sta. 14+12.43 D = 65° 35' 56.51" (RT) T = 12.8889 L = 22.8984 R = 20.0000 P.C. Sta. 13+99.54 P.T. Sta. 14+22.44 Back = S 74° 18' 25.29" E Ahead = S 8° 42' 28.78" E</p>	<p>28</p> <p>Curve DTT-28 P.J. Sta. 17+37.07 D = 64° 34' 38.58" (LT) T = 12.6380 L = 22.5418 R = 20.0000 P.C. Sta. 17+24.43 P.T. Sta. 17+46.97 Back = S 5° 10' 33.19" W Ahead = S 59° 24' 05.39" E</p>	
<p>4</p> <p>Curve DTT-4 P.J. Sta. 1+64.72 D = 84° 41' 19.74" (LT) T = 27.3404 L = 44.3430 R = 30.0000 P.C. Sta. 1+37.38 P.T. Sta. 1+81.72 Back = S 9° 48' 27.13" W Ahead = S 74° 52' 52.61" E</p>	<p>9</p> <p>Curve DTT-9 P.J. Sta. 5+19.14 D = 81° 09' 53.09" (RT) T = 25.6971 L = 42.4978 R = 30.0000 P.C. Sta. 4+93.45 P.T. Sta. 5+35.94 Back = N 85° 38' 58.16" E Ahead = S 13° 11' 08.75" E</p>	<p>14</p> <p>Curve DTT-14 P.J. Sta. 9+94.63 D = 104° 48' 54.61" (LT) T = 58.4497 L = 82.3216 R = 45.0000 P.C. Sta. 9+36.18 P.T. Sta. 10+18.50 Back = S 25° 16' 59.29" W Ahead = S 79° 31' 55.31" E</p>	<p>19</p> <p>Curve DTT-19 P.J. Sta. 12+44.5 D = 68° 38' 43.06" (RT) T = 27.3093 L = 47.9234 R = 40.0000 P.C. Sta. 12+17.19 P.T. Sta. 12+65.11 Back = S 55° 12' 32.76" E Ahead = S 13° 26' 10.29" W</p>	<p>24</p> <p>Curve DTT-24 P.J. Sta. 14+49.70 D = 60° 05' 19.50" (LT) T = 23.1353 L = 41.9499 R = 40.0000 P.C. Sta. 14+26.57 P.T. Sta. 14+68.52 Back = S 8° 42' 28.78" E Ahead = S 68° 47' 48.27" E</p>	<p>29</p> <p>Curve DTT-29 P.J. Sta. 17+86.87 D = 64° 24' 15.10" (RT) T = 18.8935 L = 33.7220 R = 30.0000 P.C. Sta. 17+67.97 P.T. Sta. 18+01.69 Back = S 59° 24' 05.39" E Ahead = S 5° 00' 09.71" W</p>	
<p>5</p> <p>Curve DTT-5 P.J. Sta. 2+08.85 D = 73° 26' 33.84" (RT) T = 22.3787 L = 38.4545 R = 30.0000 P.C. Sta. 1+86.47 P.T. Sta. 2+24.92 Back = S 74° 52' 52.61" E Ahead = S 1° 26' 18.77" E</p>	<p>10</p> <p>Curve DTT-10 P.J. Sta. 5+81.68 D = 51° 11' 49.74" (LT) T = 14.3727 L = 26.8068 R = 30.0000 P.C. Sta. 5+67.31 P.T. Sta. 5+94.12 Back = S 13° 11' 08.75" E Ahead = S 64° 22' 58.49" E</p>	<p>15</p> <p>Curve DTT-15 P.J. Sta. 10+61.14 D = 75° 12' 56.06" (RT) T = 41.4560 L = 65.6380 R = 50.0000 P.C. Sta. 10+22.63 P.T. Sta. 10+88.26 Back = S 79° 31' 55.31" E Ahead = S 4° 18' 59.26" E</p>	<p>20</p> <p>Curve DTT-20 P.J. Sta. 13+14.60 D = 108° 13' 15.35" (LT) T = 41.4560 L = 56.6643 R = 30.0000 P.C. Sta. 12+73.14 P.T. Sta. 13+29.80 Back = S 13° 26' 10.29" W Ahead = N 85° 12' 54.94" E</p>	<p>25</p> <p>Curve DTT-25 P.J. Sta. 15+22.07 D = 73° 57' 52.89" (RT) T = 37.6536 L = 64.5464 R = 50.0000 P.C. Sta. 14+84.41 P.T. Sta. 15+48.96 Back = S 68° 47' 48.27" E Ahead = S 5° 10' 04.61" W</p>	<p>30</p> <p>Curve DTT-30 P.J. Sta. 18+24.43 D = 84° 06' 08.92" (LT) T = 22.5506 L = 36.6966 R = 25.0000 P.C. Sta. 18+01.88 P.T. Sta. 18+38.58 Back = S 5° 00' 09.71" W Ahead = S 79° 05' 59.21" E</p>	



REVISIONS



Client:
**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

Project:
ANSON COUNTY,
NORTH CAROLINA

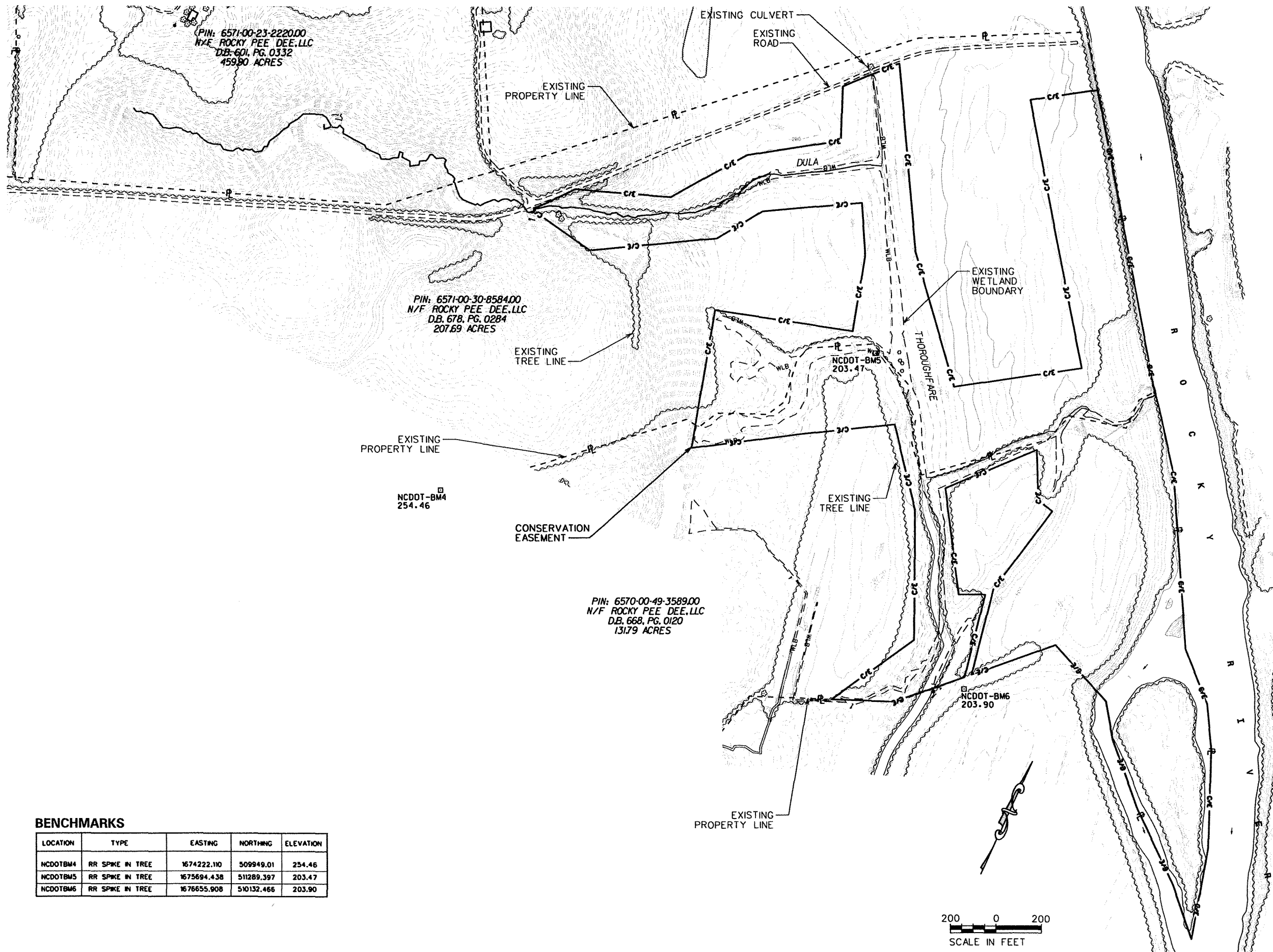
Title:
**NEW CHANNEL
CENTERLINE
DATA
DULA
THOROUGHFARE**

Dwn. By:	JDC	Dwn. By:	MAF
Ckd. By:	DGM	Date:	JUN 2005

Scale:
NO SCALE

ESC Project No.:
04-212

SHEET
B-2C

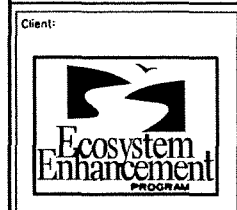


BENCHMARKS

LOCATION	TYPE	EASTING	NORTHING	ELEVATION
NCDOTBM4	RR SPIKE IN TREE	1674222.110	509949.01	254.46
NCDOTBM5	RR SPIKE IN TREE	1675694.438	511289.397	203.47
NCDOTBM6	RR SPIKE IN TREE	1676655.908	510132.466	203.90



REVISIONS



Client: **Ecosystem Enhancement PROGRAM**

Project: **BISHOP SITE STREAM / WETLAND RESTORATION PLAN**

ANSON COUNTY, NORTH CAROLINA

Title: **EXISTING CONDITIONS**
DULA THOROUGHFARE

Dsn. By: JDC Dwn. By: MAF
 Ckd. By: DGM Date: JUN 2005

Scale: AS SHOWN
 ESC Project No.: 04-212

SHEET **B-4**

REVISIONS

NO.	DESCRIPTION



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**NEW CHANNEL
LAYOUT
DULA
THOROUGHFARE**

Des. By: JDC
Dwn. By: MAF

Ckd. By: DGM
Date: JUN 2005

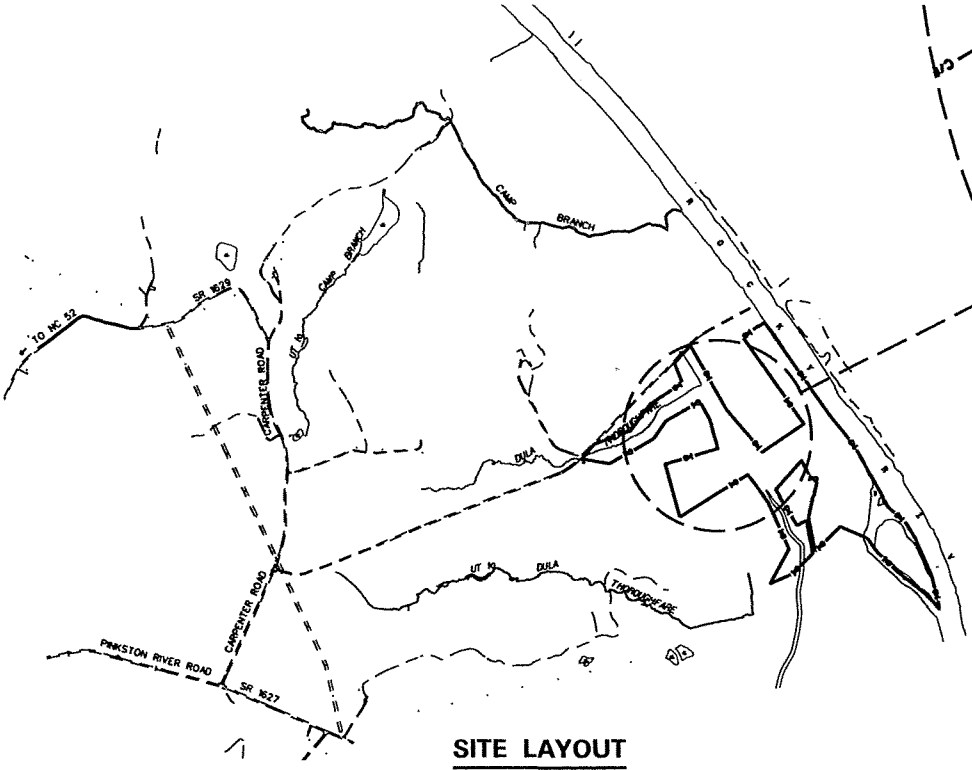
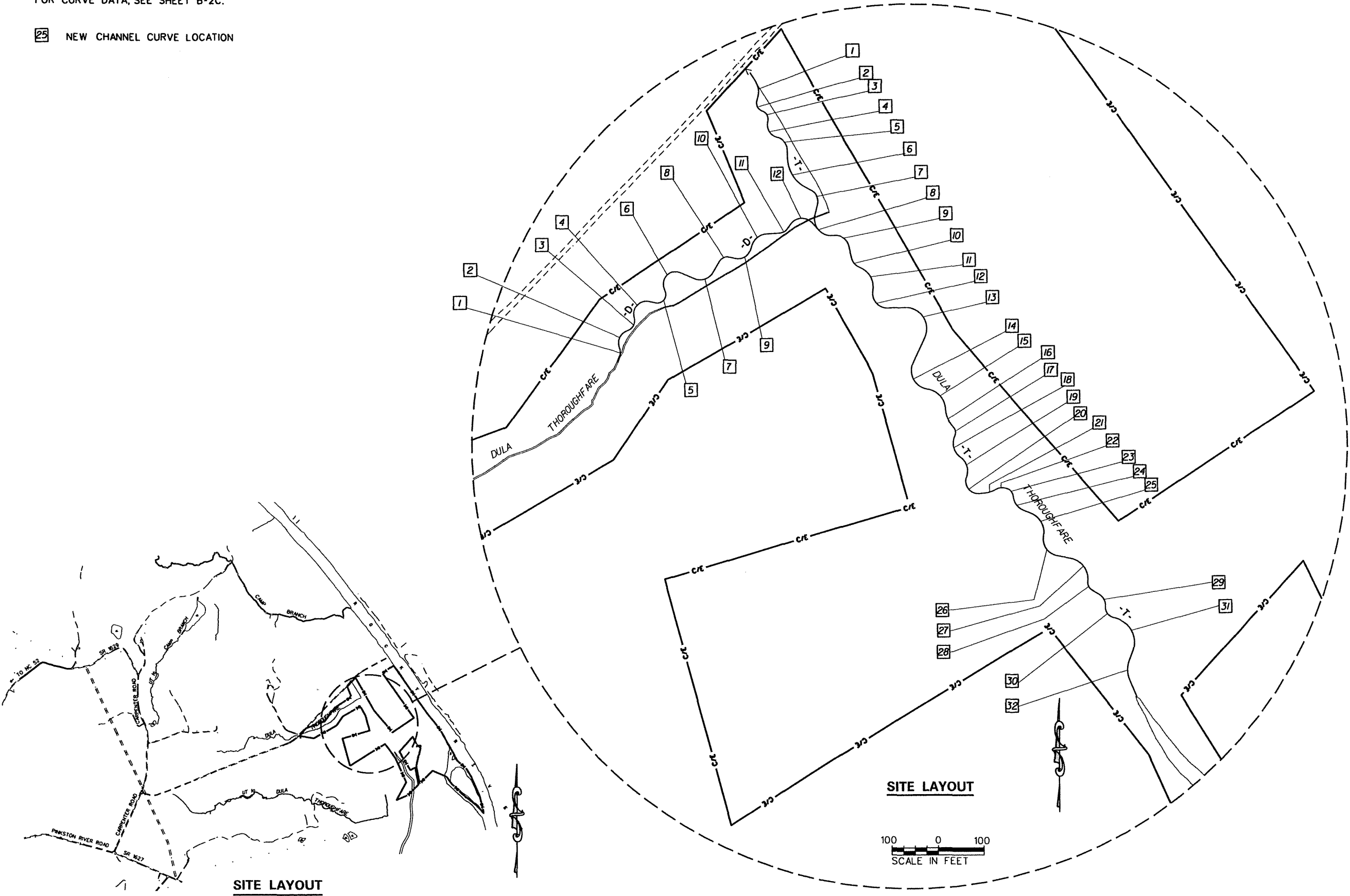
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ESC Project No.: 04-212

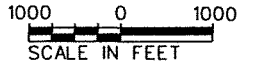
SHEET

NOTE:
FOR CURVE DATA, SEE SHEET B-2C.

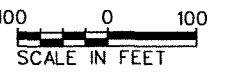
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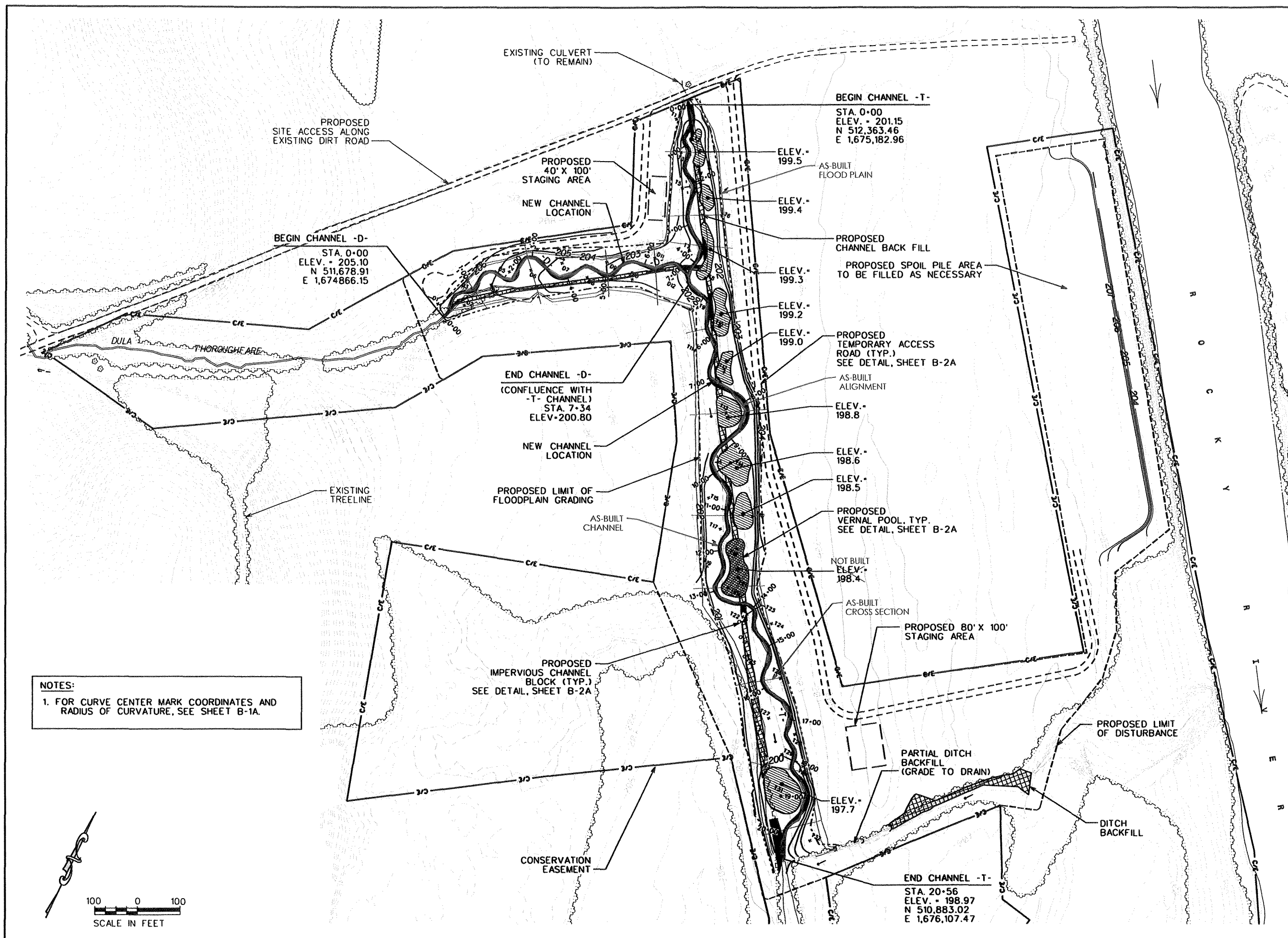


SITE LAYOUT



SITE LAYOUT





NOTES:
 1. FOR CURVE CENTER MARK COORDINATES AND RADIUS OF CURVATURE, SEE SHEET B-1A.

EcoScience Corporation
 Raleigh, North Carolina

REVISIONS

1	AS-BUILT - JULY 2007
---	----------------------

Professional Engineer Seal for North Carolina, No. 22067

Client: **Ecosystem Enhancement PROGRAM**

Project: **BISHOP SITE STREAM / WETLAND RESTORATION PLAN**
 ANSON COUNTY, NORTH CAROLINA

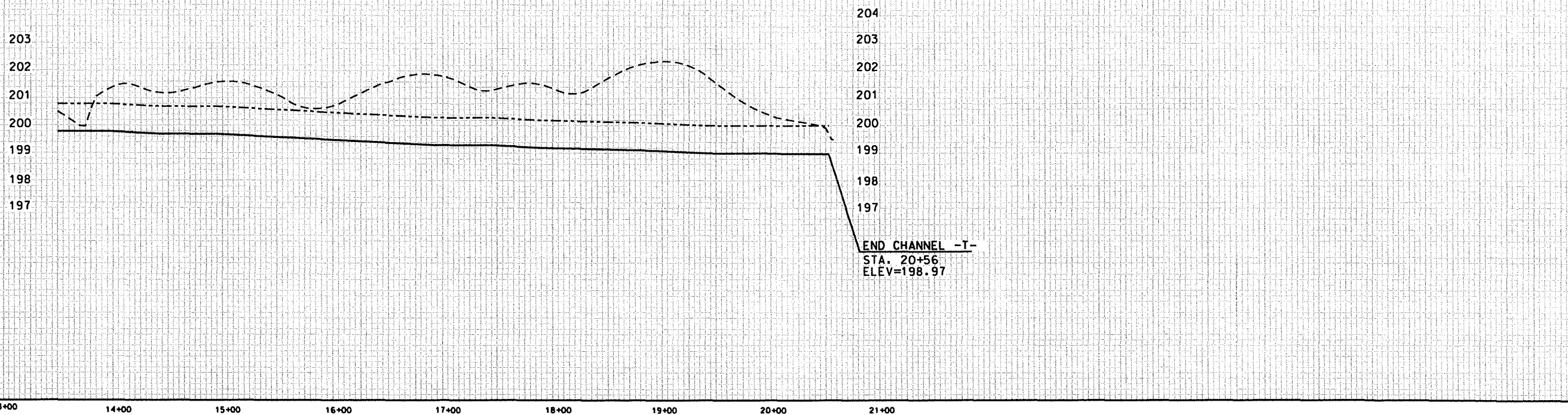
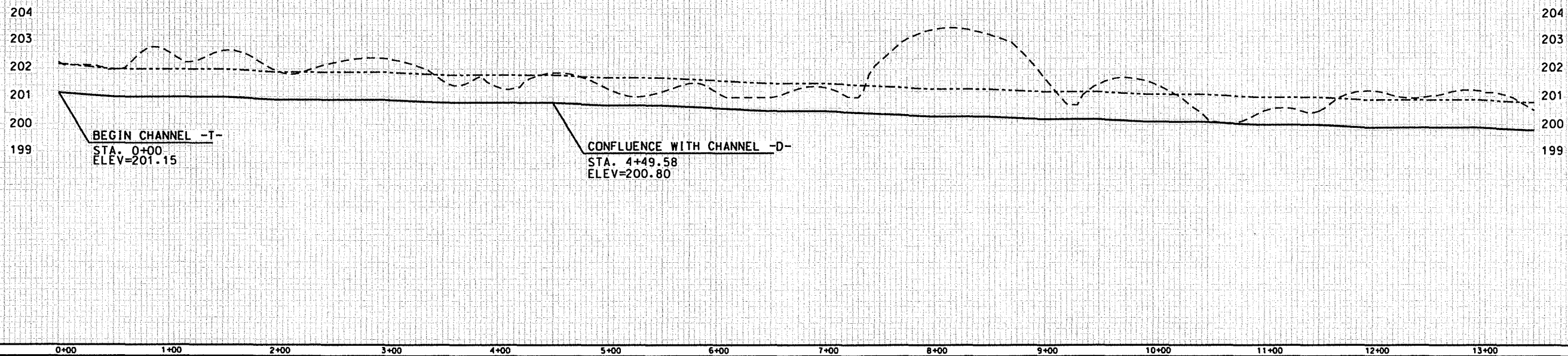
Title: **SITE PLAN**
DULA THOROUGHFARE

Des. By: JDC	Des. By: MAF
Ckd. By: EBB	Date: JUL 2007
Scale: AS SHOWN	

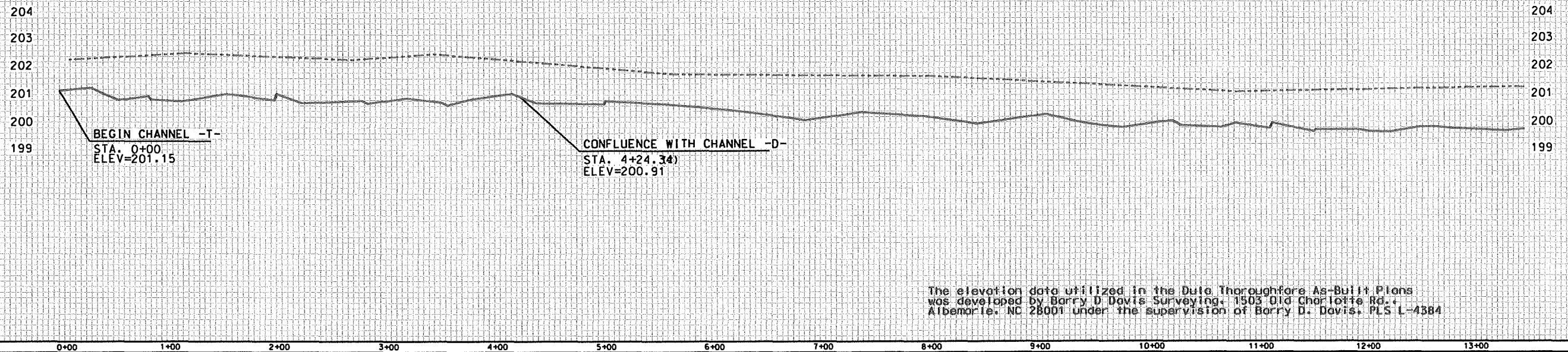
ESC Project No.: 04-212

SHEET **B-6**

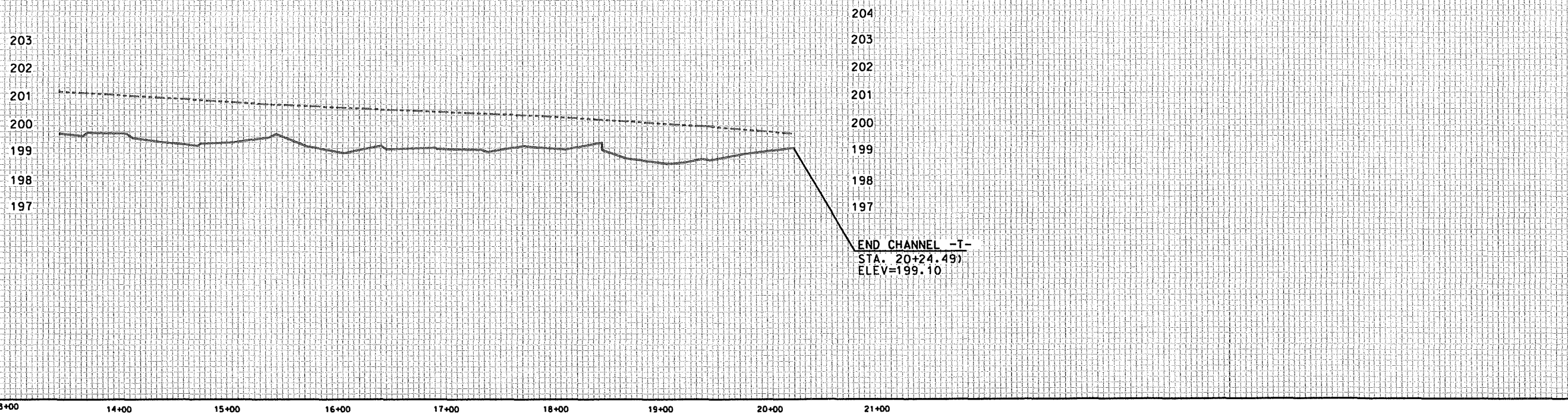
Project #	04-212	Date	MAR 2005	Scale	H: 1"=50' V: 1"=2'
Drawn By	JDG	Check By	JDC	DWG	
ECOSYSTEM ENHANCEMENT PROGRAM					
Project: BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE					
Title: EXISTING AND PROPOSED PROFILE -T- CHANNEL (EASTERN CHANNEL)					
Legend					Sheet
---	EXISTING FLOOD PLAN				B-7
- - -	PROPOSED FLOOD PLAN				
—	PROPOSED BED ELEVATION				



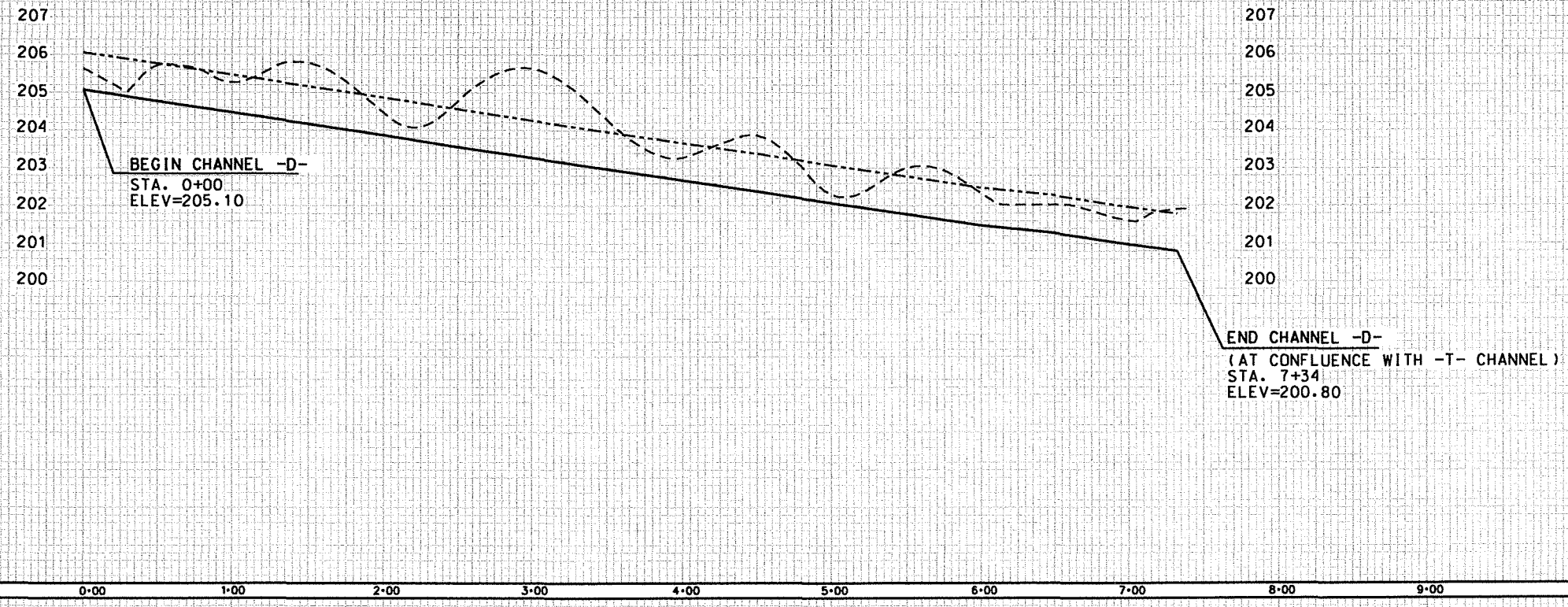
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Drawn By	JFH	Checked By	JDC	Est. No.	EBB
Client					
ECOSYSTEM ENHANCEMENT PROGRAM					
Project					
BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE					
Title					
EXISTING AND PROPOSED PROFILE -T- CHANNEL (EASTERN CHANNEL)					
Legend					
SURVEY AS-BUILT				Sheet	
FLOOD PLAN				B-7A	
BED ELEVATION					



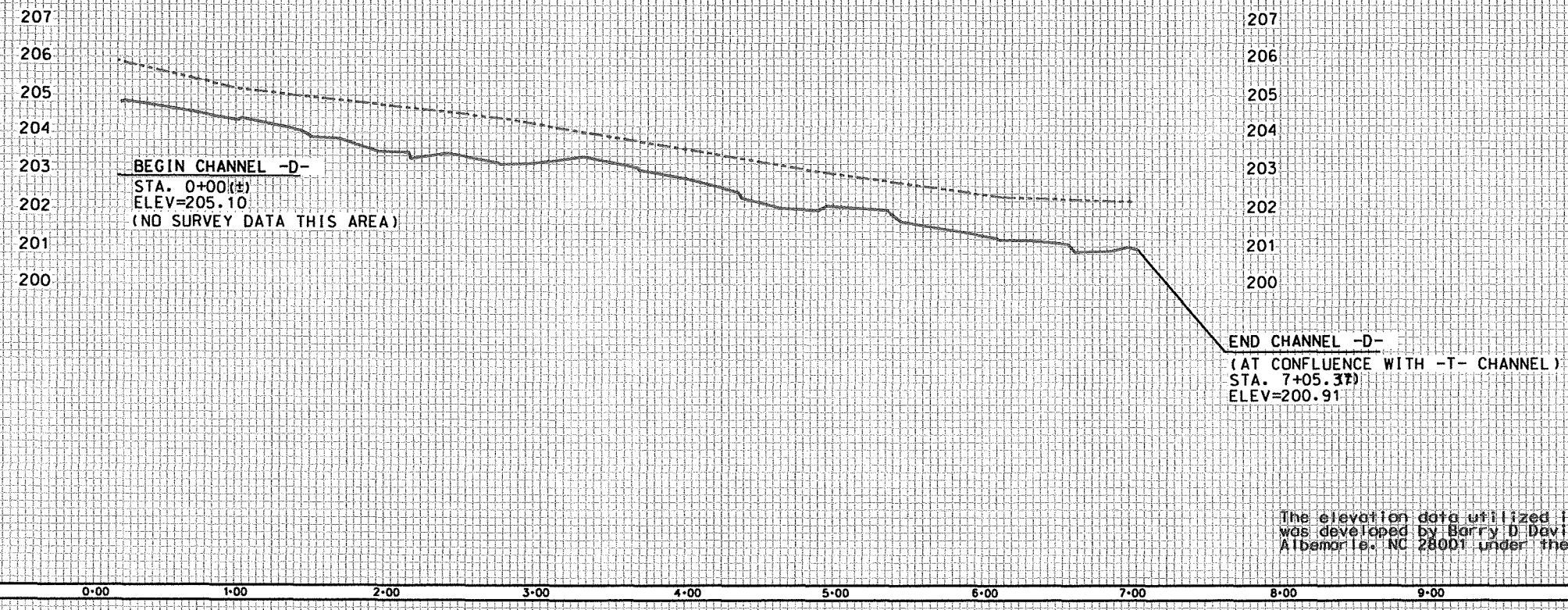
The elevation data utilized in the Dula Thoroughfare As-Built Plans was developed by Barry D Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384



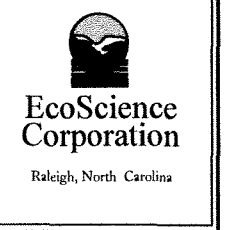
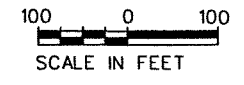
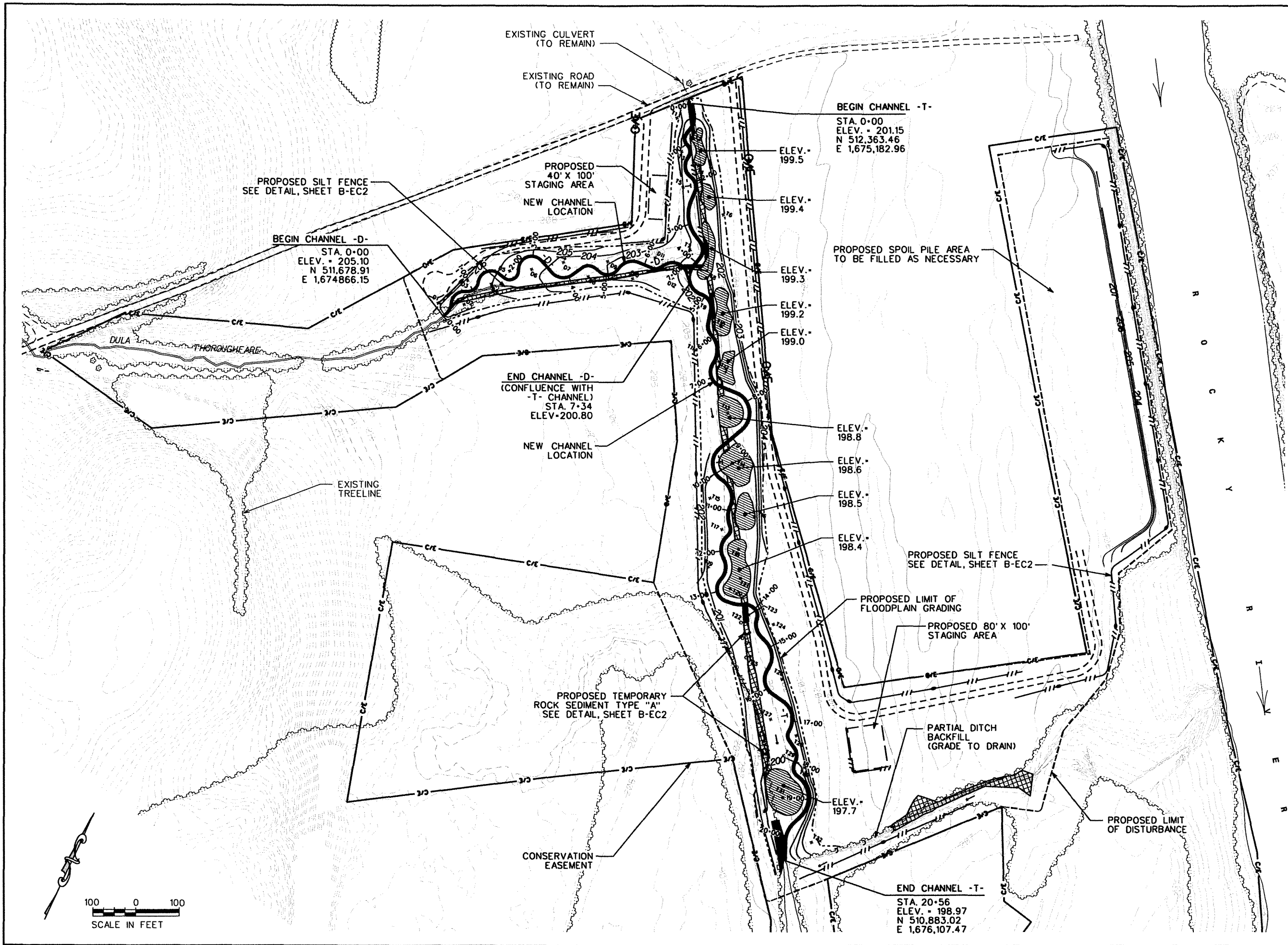
Project #	04-212	Date	MAR 2005	Scale	H: 1"=50' V: 1"=2'
Des. By	JDG	Chk. By	JDC	Drawn By	DGM
ECOSYSTEM ENHANCEMENT PROGRAM					
BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE					
EXISTING AND PROPOSED PROFILE -D- CHANNEL (WESTERN CHANNEL)					
Legend					Sheet
- - - -	EXISTING FLOOD PLAN				B-8
- - - -	PROPOSED FLOOD PLAN				
————	PROPOSED BED ELEVATION				



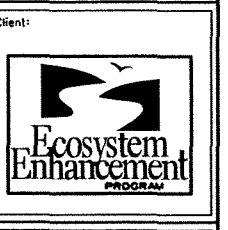
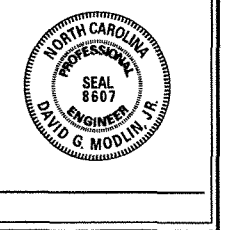
Project: D4-212	Date: JULY 2007	Scale: H: 1"=50'
Drawn By: JFH	Check By: JDC	Scale: V: 1"=2'
ECOSYSTEM ENHANCEMENT PROGRAM		
BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE		
EXISTING AND PROPOSED PROFILE -D- CHANNEL (WESTERN CHANNEL)		
Legend:		Sheet: B-8A
— SURVEY AS-BUILT		
- - - FLOOD PLAN		
— BED ELEVATION		



The elevation data utilized in the Dula Thoroughfare As-Built Plans was developed by Barry D Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28801 under the supervision of Barry D. Davis, PLS L-4384



REVISIONS



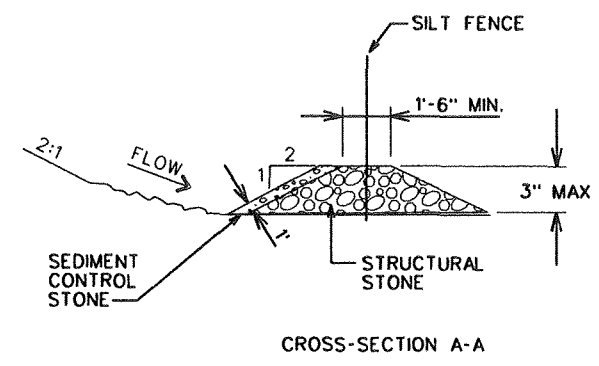
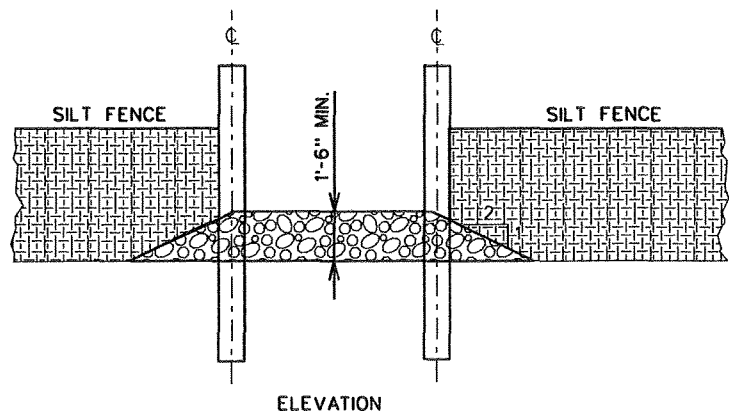
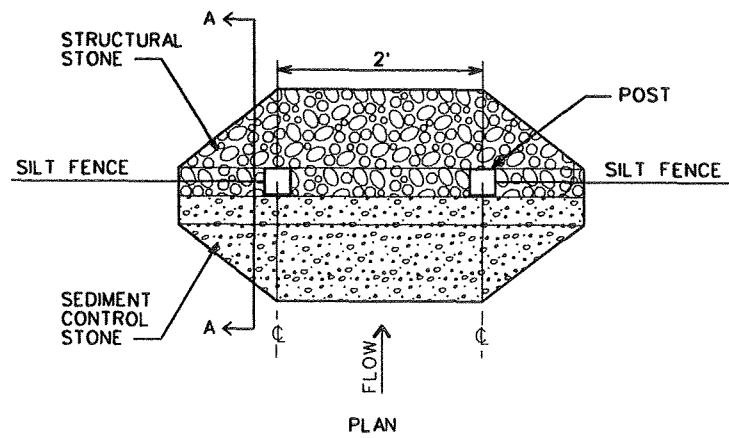
Client: **BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

Project: **ANSON COUNTY,
NORTH CAROLINA**

Title: **EROSION
CONTROL
PLAN
DULA
THOROUGHFARE**

Des. By:	JDC	Dwn. By:	MAF
Ckd. By:	DGM	Date:	JUN 2005
Scale:	AS SHOWN		
ESC Project No.:	04-212		

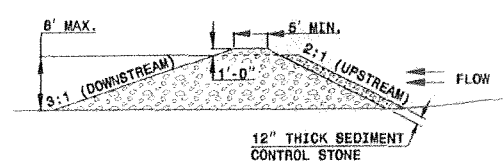
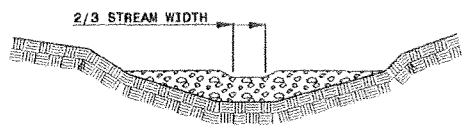
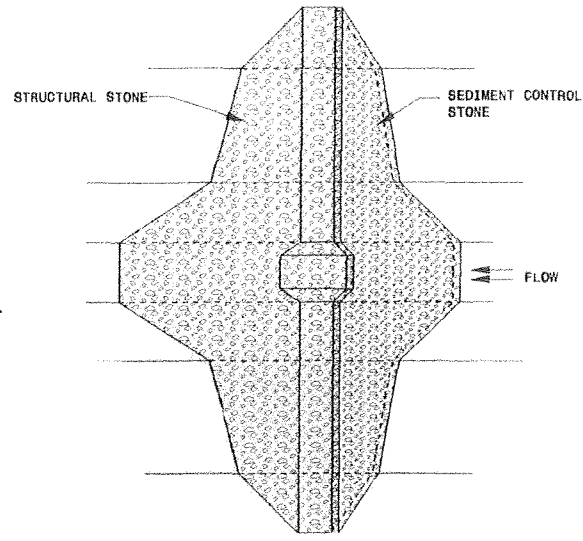
SHEET
B-EC1



- NOTES:**
1. STRUCTURAL STONE SHALL BE (CLASS "B") STONE FOR EROSION CONTROL PURPOSES.
 2. SEDIMENT CONTROL STONE SHALL BE NO. 5 OR NO. 57 STONE.

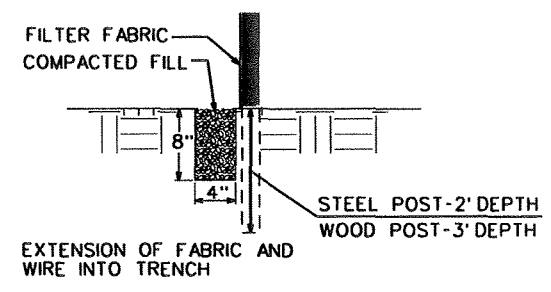
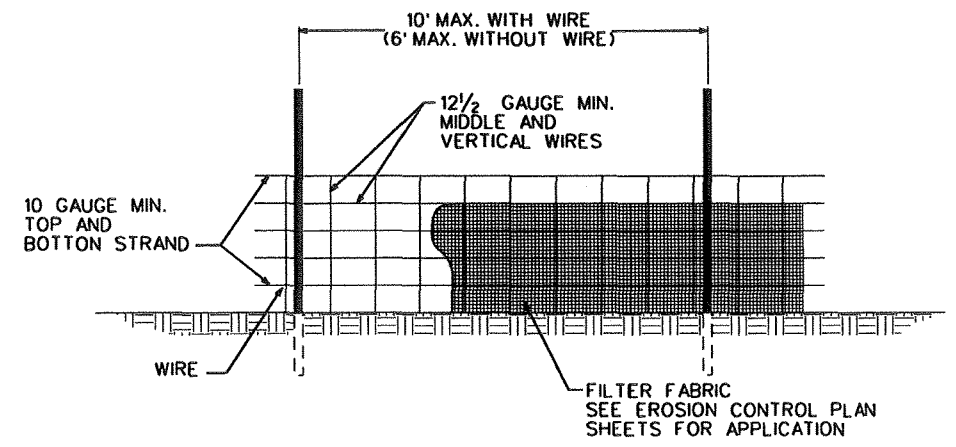
STONE OUTLET DETAIL

- NOTE:**
- USE CLASS B STONE FOR STRUCTURAL STONE AND PAY FOR AT THE CONTRACT UNIT PRICE PER TON STONE FOR EROSION CONTROL, CLASS B.
- USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL AND PAY FOR AT THE CONTRACT UNIT PRICE PER TON SEDIMENT CONTROL STONE.
- DO NOT USE SEDIMENT DAM IN LIVE STREAM.



TEMPORARY ROCK SEDIMENT DAM TYPE "A"

(NCDOT 1634.01)



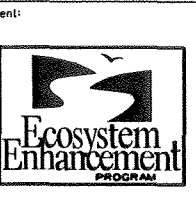
- NOTES:**
1. USE WIRE A MINIMUM OF 32 INCHES IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12 INCH STAY SPACING.
 2. USE FILTER FABRIC A MINIMUM OF 36 INCHES IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
 3. PROVIDE 5 FOOT STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.
 4. USE 6 FOOT WOOD POST WITH 3 INCH DIAMETER.

NCDOT BMP'S FOR CONSTRUCTION AND MAINTENANCE ACTIVITIES, 5.1.1, AUGUST 2003

TEMPORARY SILT FENCE
NCDOT STD, DWG. 1605.01



REVISIONS



Client: **Ecosystem Enhancement Program**

Project: **BISHOP SITE STREAM / WETLAND RESTORATION PLAN**

ANSON COUNTY, NORTH CAROLINA

Title: **EROSION CONTROL DETAILS**

DULA THOROUGHFARE

Dwn. By: JDC	Dwn. By: MAF
Ckd. By: DGM	Date: JUN 2005
Scale: NO SCALE	
ESC Project No.: 04-212	

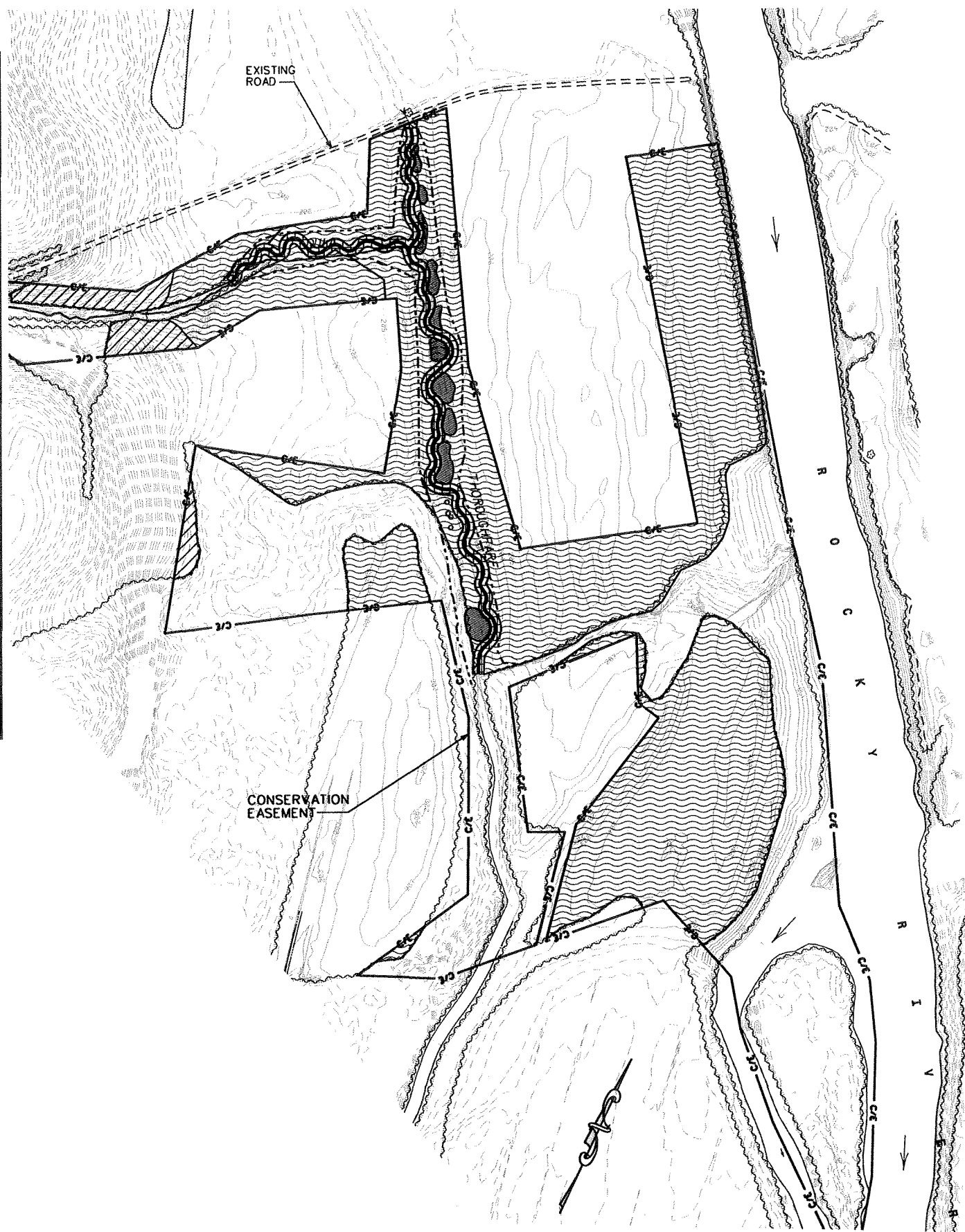
SHEET

B-EC2

PLANTING TABLE

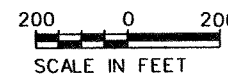
Vegetation Association		Bottomland Hardwood Forest		Stream-side Assemblage		Mesic Mixed Hardwood Forest		Total	Total
Stems/Acre (Spacing)		680 (8 feet x 8-feet)		2720 (4 feet x 4-feet)		680 (8-feet x 8-feet)			
Planted Area (acres)		34.1		1.8		1.7		37.6	
Species ¹	Common Name	Number Planted	% of Total	Number Planted	% of Total	Number Planted	% of Total	Number Planted	Number Planted
<i>Quercus michauxii</i>	swamp chestnut oak	2087	9					2087	2100
<i>Ulmus americana</i>	American elm	1623	7					1623	1700
<i>Celtis laevigata</i>	sugarberry	1623	7					1623	1700
<i>Fraxinus pennsylvanica</i>	green ash	1623	7					1623	3300
<i>Carya ovata</i>	shagbark hickory	1623	7					1623	1700
<i>Quercus phellos</i>	willow oak	2087	9					2087	2100
<i>Nyssa biflora</i>	swamp tupelo	1623	7					1623	3300
<i>Platanus occidentalis</i>	sycamore	1623	7					1623	1700
<i>Quercus nigra</i>	water oak	1623	7					1623	3100
<i>Carya cordiformis</i>	bitter-nut hickory	1623	7					1623	
<i>Quercus pagoda</i>	cherrybark oak	1623	7					1623	1700
<i>Carpinus caroliniana</i>	musclewood	1623	7					1623	
<i>Asimina triloba</i>	pawpaw	1391	6					1391	1400
<i>Ilex opaca</i>	American holly	1391	6			92	8	1483	
<i>Arundinaria gigantea</i>	giant cane			392	8			392	
<i>Betula nigra</i>	river birch			588	12			588	2000
<i>Cornus amomum</i>	silky dogwood			490	10			490	2000
<i>Salix nigra</i> ²	black willow			490	10			490	
<i>Ainus serrulata</i>	tag alder			490	10			490	
<i>Cephalanthus occidentalis</i>	buttonbush			490	10			490	1000
<i>Sambucus canadensis</i>	elderberry			490	10			490	
<i>Viburnum dentatum</i>	arrow-wood			490	10			490	
<i>Viburnum nudum</i>	possum-haw			490	10			490	
<i>Vaccinium corymbosum</i>	highbush blueberry			490	10			490	
<i>Fagus grandifolia</i>	American beech					162	14	162	200
<i>Carya tomentosa</i>	mockernut hickory					139	12	139	200
<i>Carya glabra</i>	sweet pignut hickory					139	12	139	200
<i>Quercus alba</i>	white oak					185	16	185	200
<i>Quercus rubra</i>	northern red oak					162	14	162	200
<i>Quercus falcata</i>	southern red oak					162	14	162	200
<i>Cornus florida</i>	dogwood					116	10	116	200
Total		23186	100	4900	100	1157	100	29243	30200

¹All stems are to be bare-root seedlings except where noted
²Live stakes are acceptable for black willow individuals if bare-root seedlings are unavailable

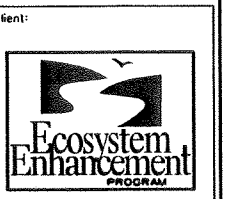
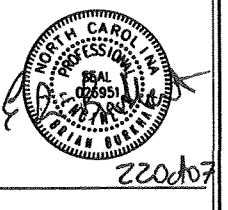


PLANT COMMUNITIES		
	STREAMSIDE ASSEMBLAGE (15' EACH SIDE OF CHANNEL)	1.8 ACRES
	MESIC MIXED HARDWOOD FOREST	1.7 ACRES
	BOTTOMLAND HARDWOOD FOREST	34.1 ACRES
TOTAL: 37.6 ACRES		

- NOTES:**
- THERE SHALL BE NO PLANTING IN AREAS DESIGNATED AS VERNAL POOLS. - SEE SHEET B-6, "SITE PLAN, DULA THOROUGHFARE"
 - STREAMSIDE ASSEMBLAGE PLANTING SHALL BE LIMITED TO AN AREA 15' FROM BANKS OF PROPOSED CHANNEL.
 - EXISTING TREE LINE SHALL MARK LIMIT OF PROPOSED PLANTING EXCEPT WHERE EXISTING TREELINE IS TO BE MODIFIED FOR PROPOSED CHANNEL.



REVISIONS	
1	AS-BUILT - JULY 2007



Project:
**BISHOP SITE
 STREAM /
 WETLAND
 RESTORATION
 PLAN**
 ANSON COUNTY,
 NORTH CAROLINA

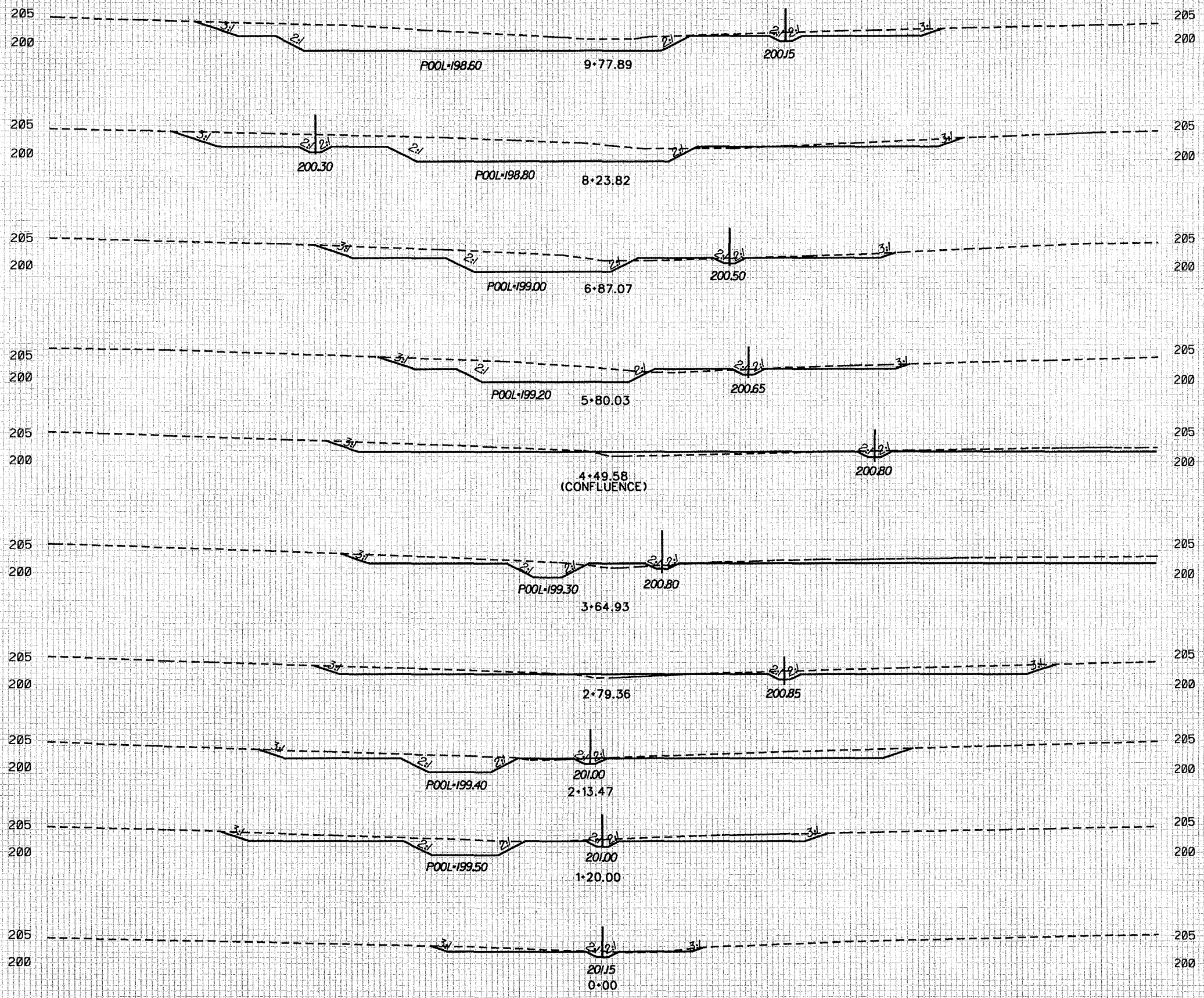
Title:
**PLANTING
 PLAN**
**DULA
 THOROUGHFARE**

Dsn. By: JDC Dwn. By: MAF
 Ckd. By: EBB Date: JUL 2007

Scale:
 AS SHOWN
 ESC Project No.:
 04-212

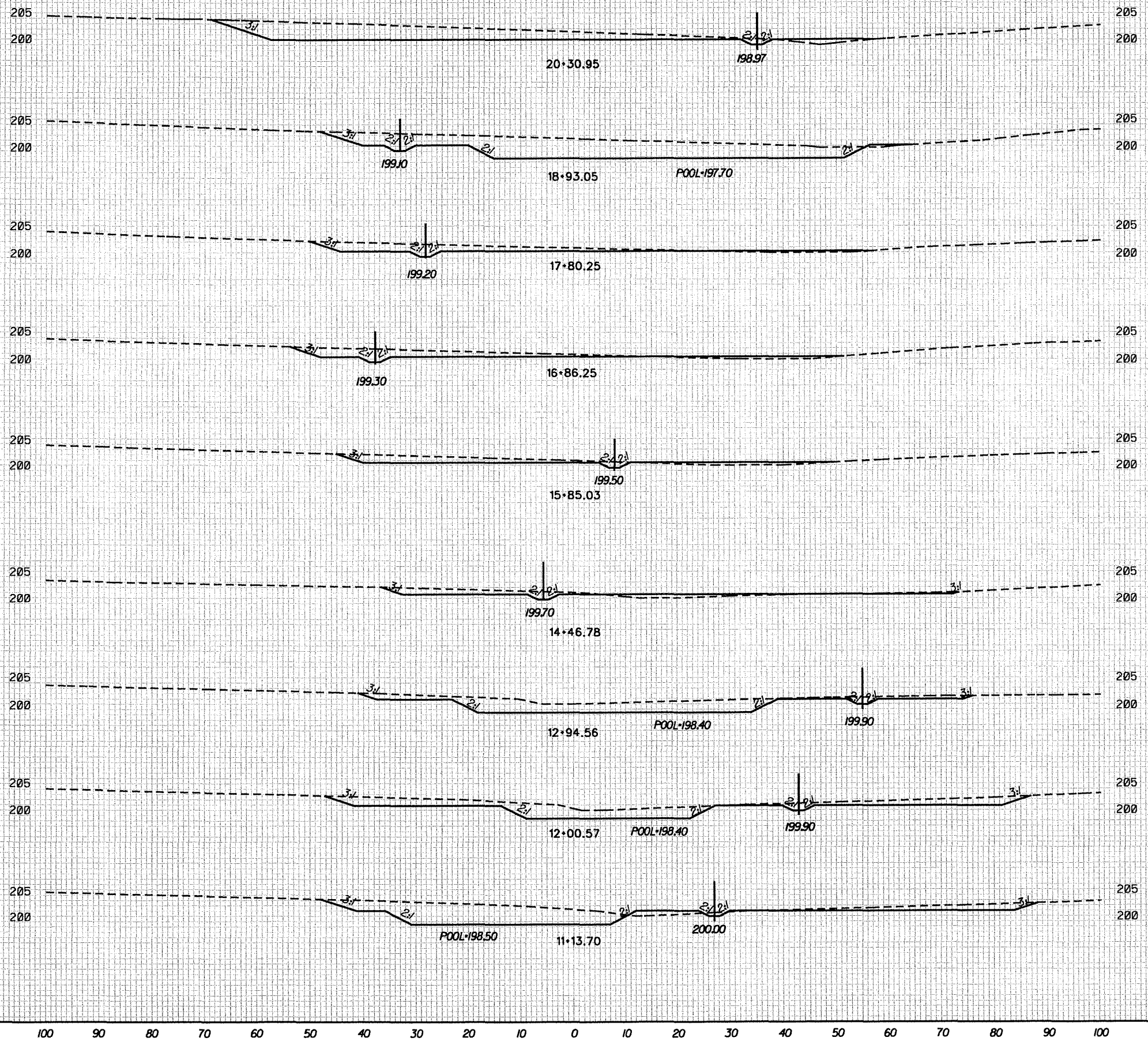
SHEET
B-L1

Project #	04-212	Date	MAR 2005
Drawn By	JDG	Check By	JDC
Scale	1" = 10'	Drawn	DGM
ECOSYSTEM ENHANCEMENT PROGRAM			
BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE			
Title	CROSS-SECTIONS -T- (EAST) CHANNEL	Sheet	X5
Legend			
---		EXISTING GRADE	
---		PROPOSED GRADE	



100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

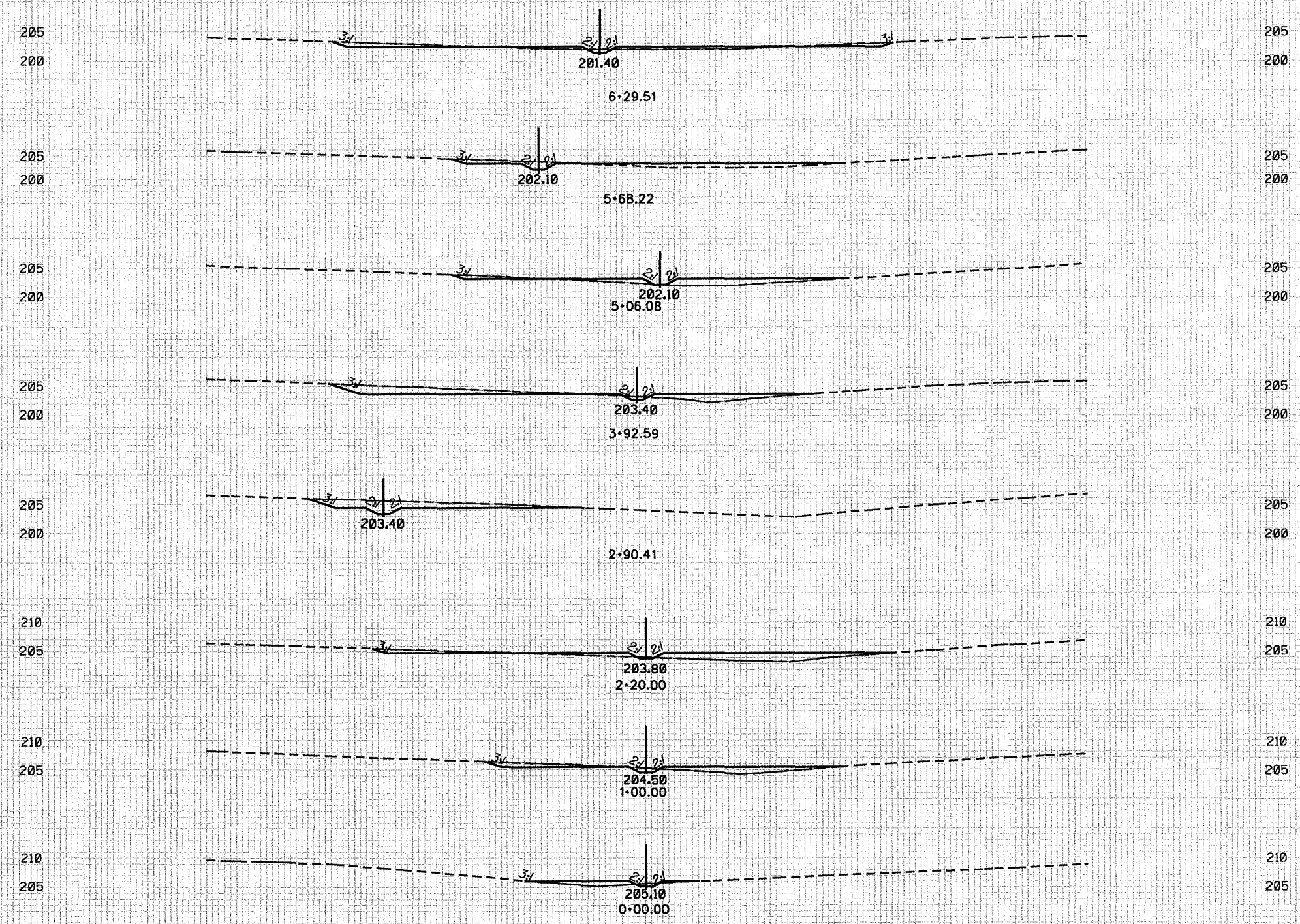
Project #	04-212	Date	MAR 2005
Drawn By	JOG	Check By	JDC
Scale	1"=10'	Sheet	
ECOSYSTEM ENHANCEMENT PROGRAM			
BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE			
CROSS-SECTIONS -T- (EAST CHANNEL)		X6	
Legend			
- - - - - EXISTING GRADE			
————— PROPOSED GRADE			



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100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

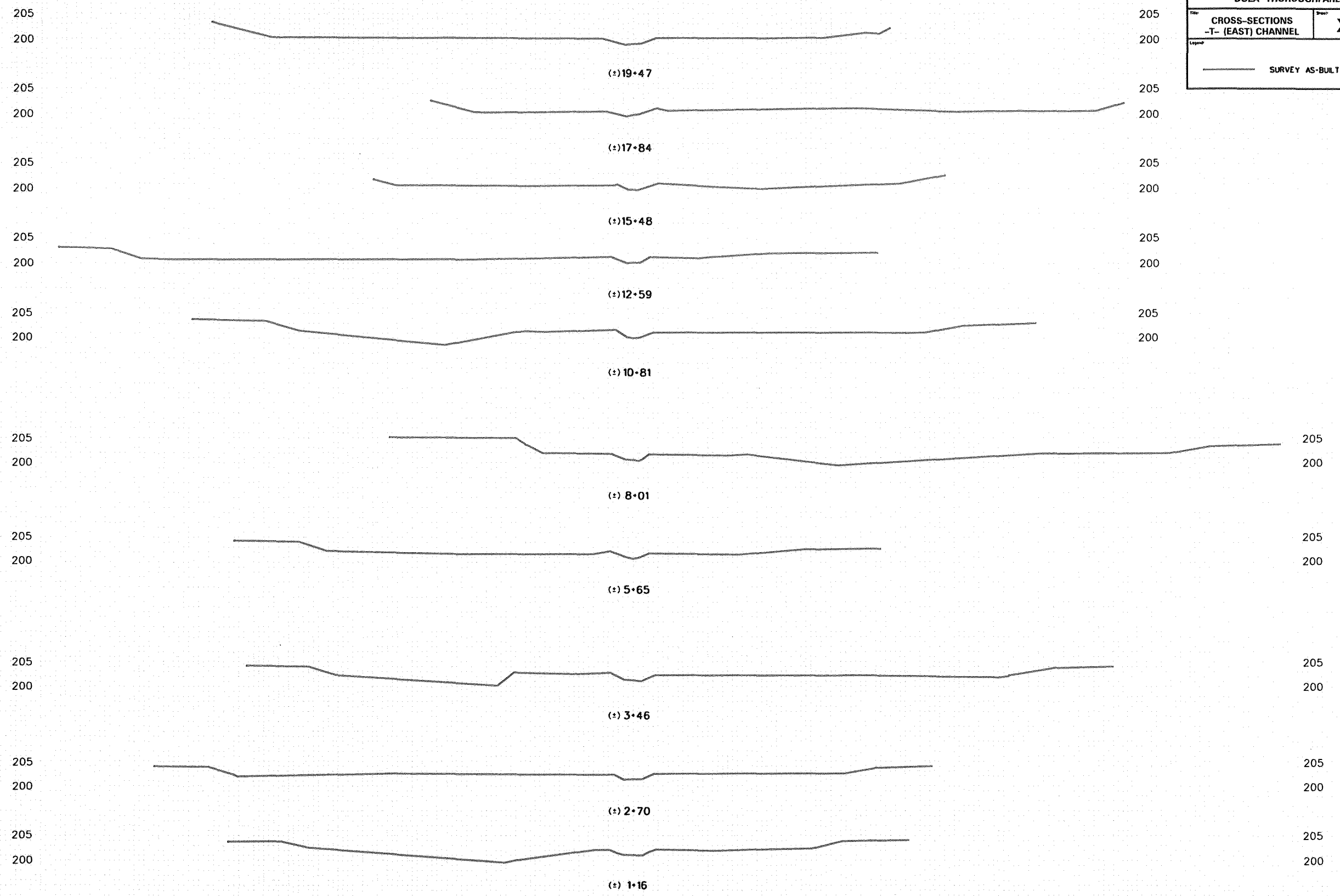
Project #	04-212	Date	MAR 2005
Drawn by	JDC	Checked by	JDC
Disc. by	DGM	Scale	1" = 10'
ECOSYSTEM ENHANCEMENT PROGRAM			
Project: BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE			
Type	CROSS-SECTIONS -D- (WEST) CHANNEL	Sheet	X7
Legend	- - - - - EXISTING GRADE ———— PROPOSED GRADE		



100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

PROJECT #	04-212	DATE	JULY 2007
DESIGNED BY	JFH	CHECKED BY	JDC
DRAWN BY	EBB	SCALE	1"=10'
ECOSYSTEM ENHANCEMENT PROGRAM			
PROJECT			
BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE			
FILE		SHEET	
CROSS-SECTIONS -T- (EAST) CHANNEL		X5A	
LEGEND			
———— SURVEY AS-BUILT GRADE			



The elevation data utilized in the Dula Thoroughfare As-Built Plans was developed by Barry D Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384

100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

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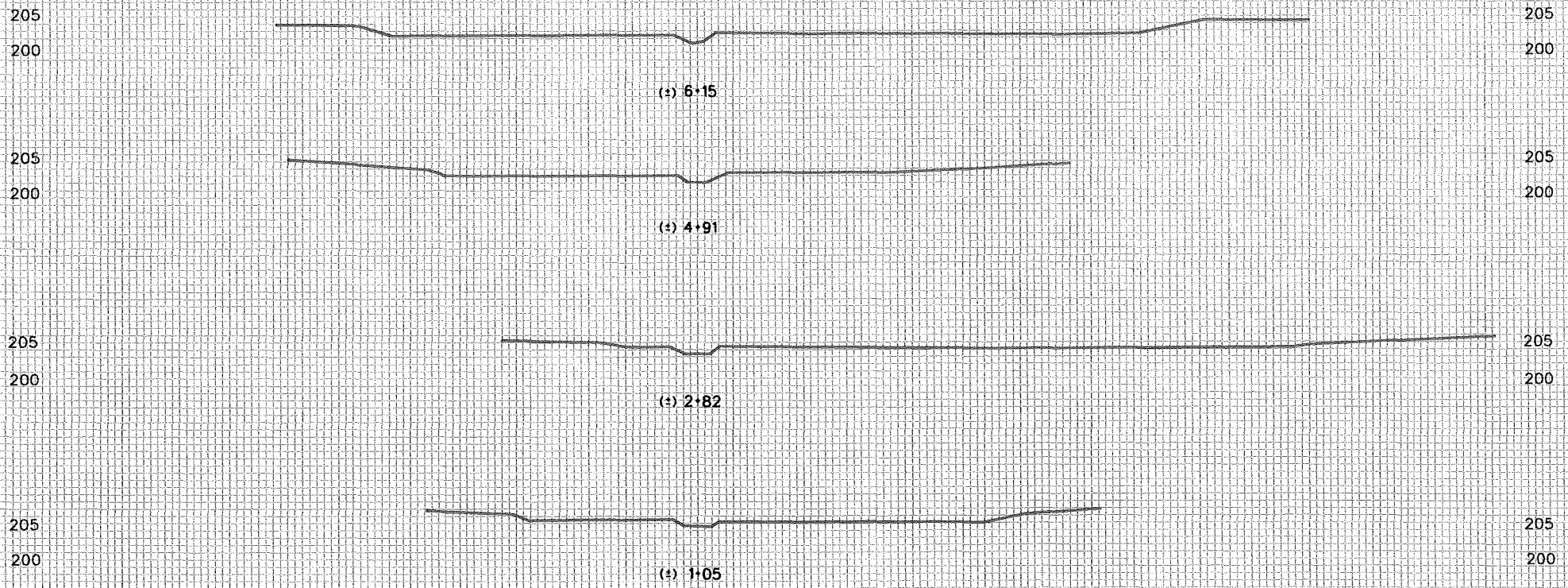
Project # 04-212 Date JULY 2007
Drawn By JFH Check By JDC EBB Scale 1"=10'

ECOSYSTEM ENHANCEMENT PROGRAM

Project: BISHOP SITE STREAM AND WETLAND RESTORATION DULA THOROUGHFARE

Sheet: CROSS-SECTIONS -D- (WEST) CHANNEL X7A

Legend: SURVEY AS-BUILT GRADE



The elevation data utilized in the Dula Thoroughfare As-Built Plans was developed by Barry D. Davis Surveying, 1503 Old Charlotte Rd., Albemarle, NC 28001 under the supervision of Barry D. Davis, PLS L-4384

90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100

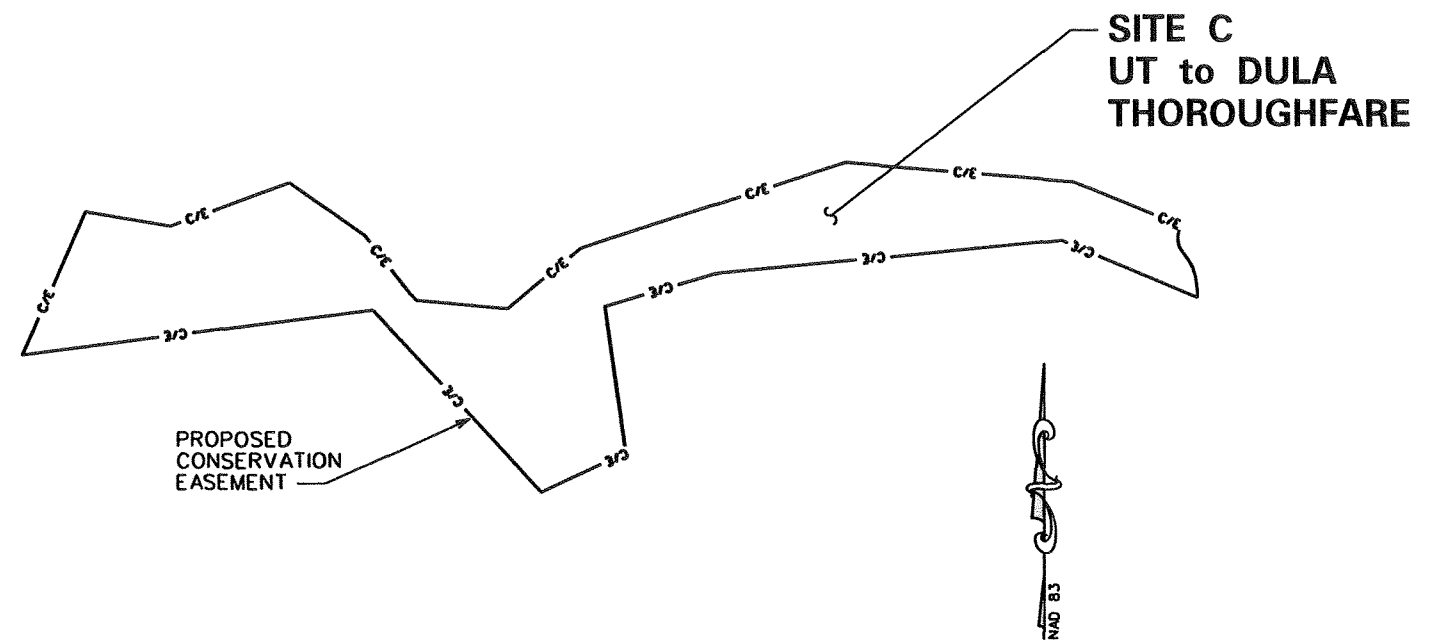
CONSTRUCTION SEQUENCE

1. MOBILIZE EQUIPMENT AND MATERIALS TO THE UT TO DULA THOROUGHFARE SITE.
2. ESTABLISH ACCESS ROADS AND STAGING AREAS AS DEPICTED ON THE PLANS OR AS DIRECTED BY THE PROJECT MANAGER AND MARK CONSTRUCTION EQUIPMENT ACCESS LOCATIONS WITH VISIBLE MARKERS. CONSTRUCTION EQUIPMENT SHALL BE MAINTAINED AND SERVICED WITHIN THE LIMITS OF THE ESTABLISHED STAGING AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL STAGING AREAS IN AN ENVIRONMENTALLY SENSITIVE MANNER.
3. INSTALL IMPROVEMENTS TO SITE ACCESS ROAD(S) IF REQUIRED AND INSTALL TEMPORARY EROSION CONTROL MEASURES (I.E., SILT FENCE, ROCK OUTLETS, ETC.) AS REQUIRED.
4. AT THE END OF EACH DAY OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY SEED AND MULCH AND APPLY COIR FIBER MATTING, AS APPROPRIATE, TO ALL DISTURBED AREAS. IN ADDITION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TEMPORARY EROSION CONTROL MEASURES ON A DAILY BASIS THROUGHOUT THE CONSTRUCTION PERIOD.
5. INSTALL PUMP-AROUND OPERATION JUST ABOVE THE UPSTREAM SERIES OF GRADE CONTROL STRUCTURES. CONSTRUCT THE GRADE CONTROL STRUCTURES PER DETAIL AND AS SHOWN ON PLAN SHEET C-2B. THE STRUCTURE ELEVATION AND SPACING SHALL DETERMINED IN THE FIELD BY THE DESIGNER. PROCEED DOWNSTREAM TO THE NEXT SERIES OF GRADE CONTROL STRUCTURES. CONSTRUCT IN LIKE MANNER. PROCEED TO THE FINAL SERIES OF STRUCTURES. CONSTRUCT IN LIKE MANNER.
6. PROCEEDING FROM THE UPSTREAM END OF THE PROPOSED CHANNEL WORK, THE CONTRACTOR SHALL MOVE SPOIL PILES GENERALLY LOCATED BETWEEN THE RELIC STREAM AND THE DUG STREAM TO FILL THE DUG STREAM IN AN EFFORT TO RESTORE THE RELIC STREAM. A SINGLE CONTINUOUS STREAM SHALL BE FORMED FROM THE TWO ADJACENT CHANNELS. DUE TO THE MINOR INSTREAM WORK ASSOCIATED WITH THE CONNECTION OF CHANNEL SEGMENTS, THE SIZE OF THE CHANNELS AND THE PROXIMITY OF THE TWO CHANNELS, THIS WORK SHALL BE PERFORMED IN THE WET.
7. THE CONTRACTOR SHALL PLACE THE EXISTING BORROW MATERIAL IN AREAS AT THE DIRECTION OF THE PROJECT MANAGER.
8. CONSTRUCT THE PERMANENT CHANNEL FORD AT THE DOWNSTREAM END OF THE PROJECT AS SHOWN IN THE DETAIL ON SHEET C-2A AND ON PLAN SHEET C-6. THIS WORK SHALL REQUIRE A PUMP-AROUND OPERATION AND SHALL BE CONSTRUCTED IN THE DRY.
9. ONCE CONSTRUCTION IS COMPLETE THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION MATERIALS FROM THE CONSERVATION EASEMENT, DISPOSE OF THEM IN AN APPROVED DUMP SITE AND SCARIFY ANY COMPACTED AREAS AS DIRECTED BY THE PROJECT MANAGER. TO COMPLETE PERMANENT SEEDING AND MULCHING, ALL DISTURBED AREAS SHALL BE DISKED OR PLOWED TO CREATE MICROTPOGRAPHY TO THE SATISFACTION OF THE PROJECT MANAGER AND PERMANENTLY SEEDED AND MULCHED. IMPROVED ACCESS ROADS, IF ANY, SHALL REMAIN. STONE APPLIED TO ACCESS ROADS, IF ANY, SHALL REMAIN OR BE REMOVED AS INDICATED ON PLAN SHEET 2.

SITE C UT TO DULA THOROUGHFARE

TYPE OF WORK: STREAM AND WETLAND RESTORATION / ENHANCEMENT


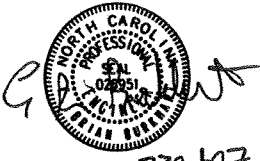

- STREAM ENHANCEMENT
- WETLAND RESTORATION / ENHANCEMENT
- SITE PLANTING



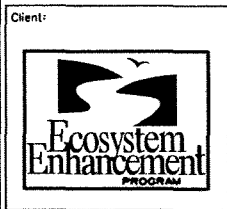
INDEX OF SHEETS

UT TO DULA THOROUGHFARE

- C: CONSTRUCTION SEQUENCE
- C-1: MORPHOLOGICAL TABLE / STRUCTURE TABLE - NOT APPLICABLE
- C-2: TYPICAL SECTIONS
- C-2A, C-2B: GENERAL DETAILS
- C-3: SUMMARY OF QUANTITIES / SUMMARY OF EARTHWORK
- C-4: EXISTING CONDITIONS
- C-5: NEW CHANNEL LAYOUT - NOT APPLICABLE
- C-6: SITE PLAN
- C-7: PROFILE - UT TO DULA THOROUGHFARE - NOT APPLICABLE
- C-EC1: EROSION CONTROL PLAN
- C-EC2: EROSION CONTROL DETAILS
- C-L1: PLANTING PLAN
- X: CROSS-SECTIONS - NOT APPLICABLE

<p style="text-align: center;"><i>Prepared in the office of:</i></p> <div style="text-align: center;">  <p>EcoScience Corporation 101 Hayes St., Suite 101 Ph: 919 824-3433 Raleigh, North Carolina 27604 Fax: 919 824-3514</p> </div> <p>ENGINEER: DAVID G. MODLIN</p> <p>PROJECT MANAGER: JAMES D. COOPER</p>	<p>SEAL:</p> 	<p style="text-align: center;"><i>Prepared for:</i></p> <div style="text-align: center;">  <p>ECOSYSTEM ENHANCEMENT PROGRAM Raleigh, North Carolina</p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No.</th> <th>Revisions</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>REV'D SHEETS C-2B, C-3</td> <td style="text-align: center;">09/29/05 JDC</td> </tr> <tr> <td style="text-align: center;">2</td> <td>AS-BUILT</td> <td style="text-align: center;">JUL 2007</td> </tr> </tbody> </table>	No.	Revisions	Date	1	REV'D SHEETS C-2B, C-3	09/29/05 JDC	2	AS-BUILT	JUL 2007	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;"><i>Desn. By:</i></td> <td style="text-align: center;">JDC</td> <td style="font-size: small;"><i>Dwn. By:</i></td> <td style="text-align: center;">JDC</td> <td style="font-size: small;"><i>Ckd. By:</i></td> <td style="text-align: center;">EBB</td> </tr> <tr> <td colspan="6"><i>Date:</i> JUL 2007</td> </tr> <tr> <td colspan="6"><i>ESC Project No:</i> 04-212</td> </tr> <tr> <td colspan="6" style="text-align: center;">SHEET</td> </tr> <tr> <td colspan="6" style="text-align: center; font-size: 2em; font-weight: bold;">C</td> </tr> </table>	<i>Desn. By:</i>	JDC	<i>Dwn. By:</i>	JDC	<i>Ckd. By:</i>	EBB	<i>Date:</i> JUL 2007						<i>ESC Project No:</i> 04-212						SHEET						C					
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SHEET																																										
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REVISIONS	



Project:
**BISHOP SITE
 STREAM /
 WETLAND
 RESTORATION
 PLAN**

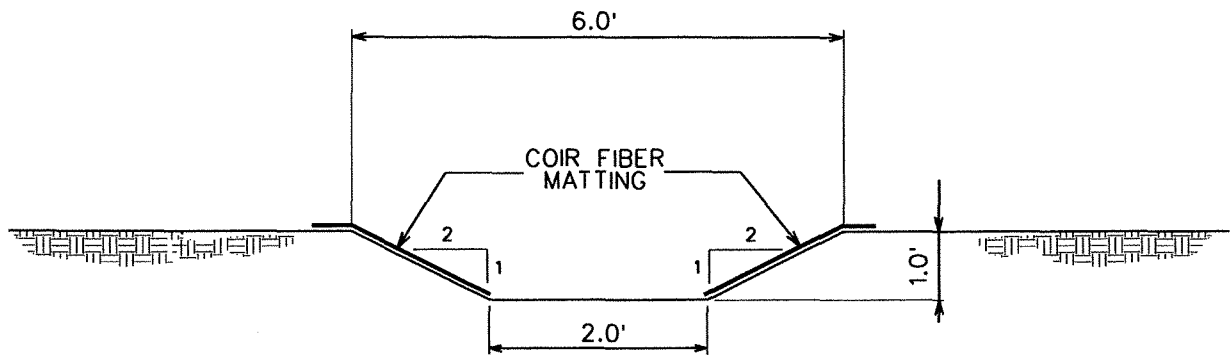
ANSON COUNTY,
 NORTH CAROLINA

Title:
**TYPICAL
 SECTIONS**

**UT TO DULA
 THOROUGHFARE**

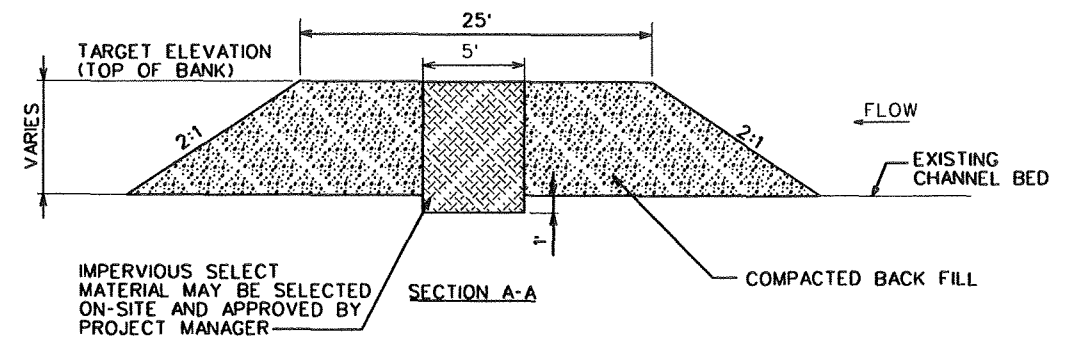
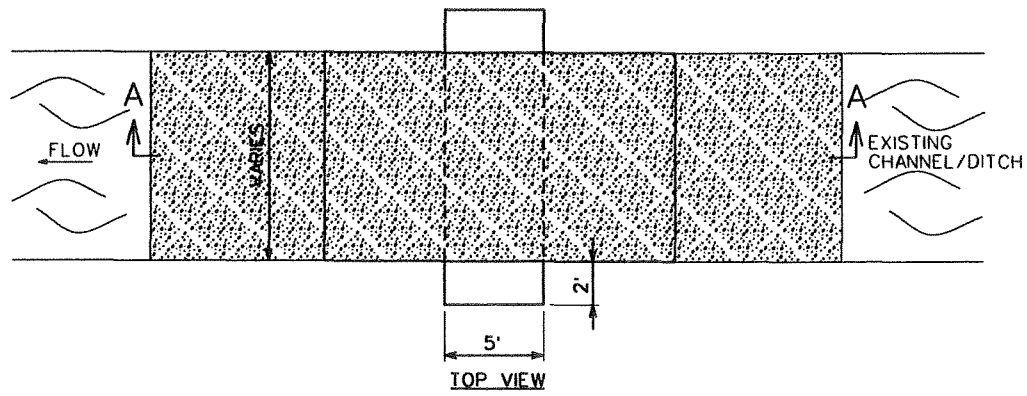
Dwn. By: JDC	Dwn. By: MAF
Ckd. By: DGM	Date: JUN 2005
Scale: NO SCALE	
ESC Project No.: 04-212	

SHEET
C-2



TYPICAL CHANNEL CROSS-SECTION
 NOTE: USE 6.5-FOOT COIR FIBER EACH SIDE.

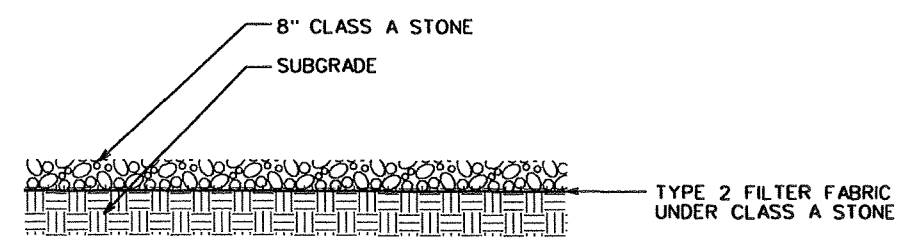
NOTE:
 1. THE RELIC CHANNEL SHALL NOT BE DISTURBED BUT AS NEEDED.
 THIS CROSS SECTION IS A GUIDE FOR REQUIRED CHANNEL WORK.



**IMPERVIOUS CHANNEL BLOCK
DULA THOROUGHFARE**

NOTE:

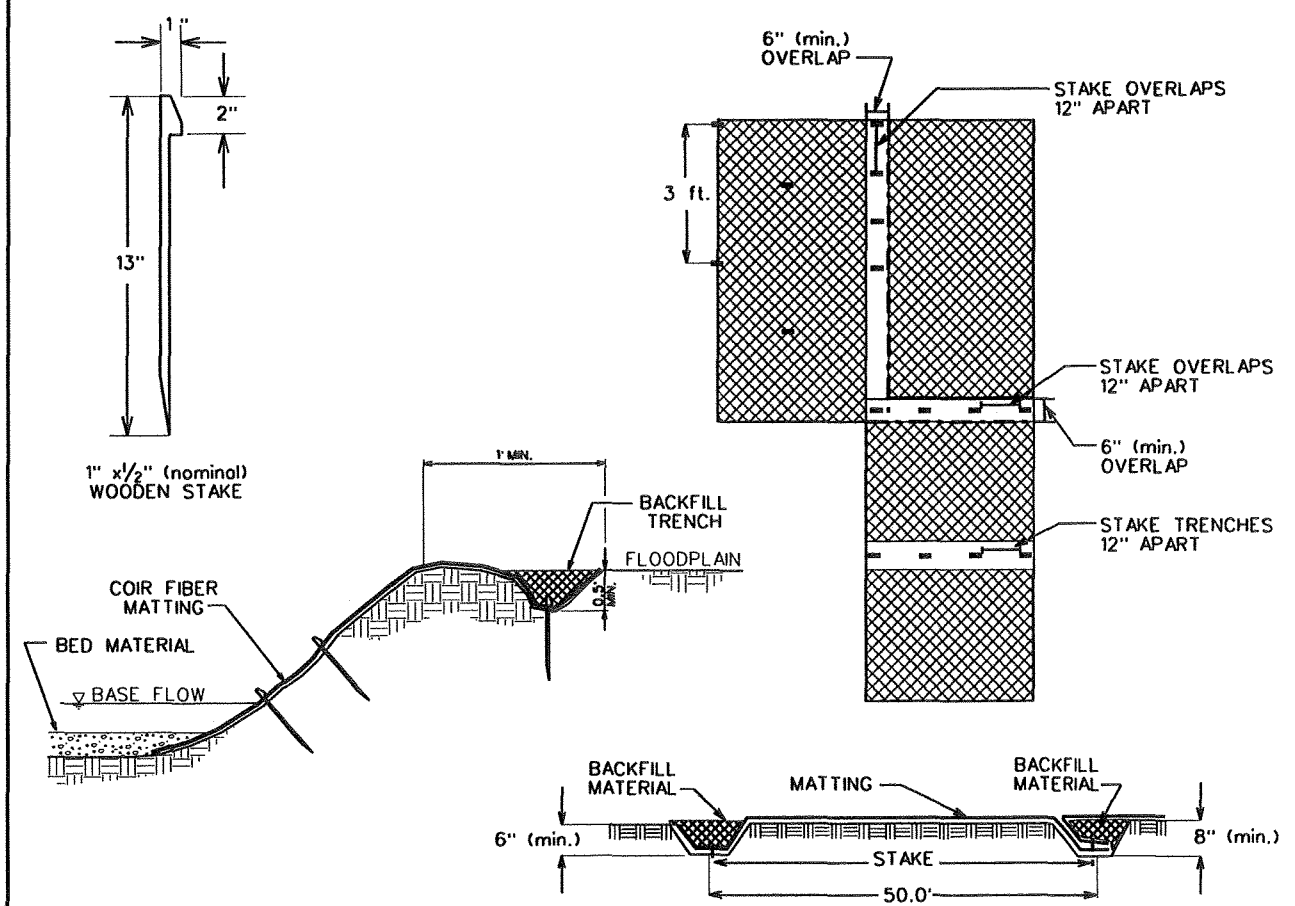
1. CHANNEL PLUG WILL BE INITIALLY FILLED WITH AVAILABLE WASTE AND COMPACTED TO NINETY-FIVE PERCENT STANDARD PROCTOR.
2. THEN A CENTRAL PORTION 5 FEET LONG WILL BE REMOVED AND REPLACED WITH IMPERVIOUS SELECT MATERIAL.
3. THE IMPERVIOUS SELECT MATERIAL WILL BE KEYED INTO THE ORIGINAL BANK A MINIMUM OF 2 FEET AND INTO THE ORIGINAL BED A MINIMUM OF 1 FEET.



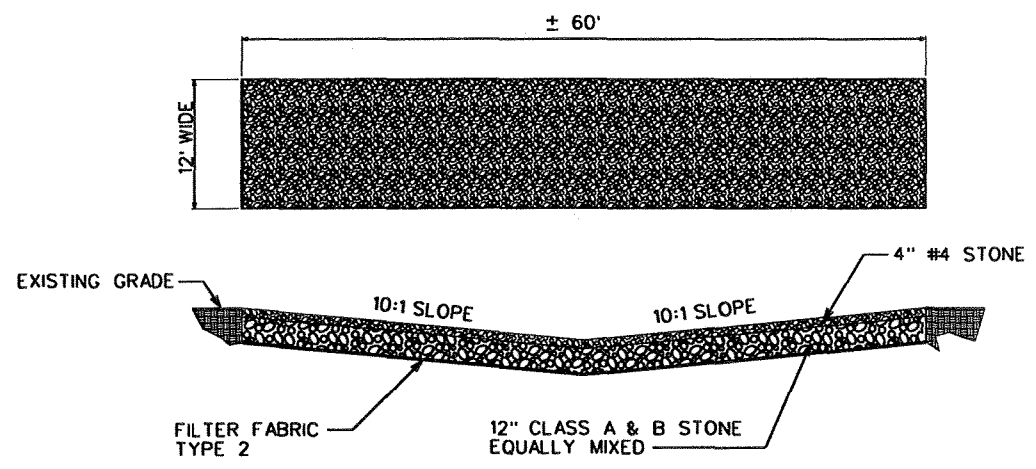
NOTES:

1. THIS IS THE MINIMUM ACCEPTABLE SECTION.

**ACCESS ROAD SECTION DETAIL
SUGGESTED OR EQUIVALENT**



COIR FIBER MATTING DETAIL



NOTES:

1. CONTRACTOR TO EXCAVATE APPROXIMATELY SIXTEEN INCHES DEEP CHANNEL FOR PERMANENT STREAM CROSSING.
2. LAY FILTER FABRIC ALONG ENTIRE LENGTH OF BED.
3. FILL WITH TWELVE INCHES OF "CLASS A" AND "CLASS B" STONE, EQUALLY MIXED, FOLLOWED BY FOUR INCHES OF #4 STONE TO BRING FINISHED GRADE UP TO LEVEL OF PROPOSED STREAM BED.

PERMANENT CHANNEL FORD



REVISIONS

NO.	DESCRIPTION



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**GENERAL
DETAILS**

**UT TO DULA
THOROUGHFARE**

Des. By: JDC Des. By: MAF

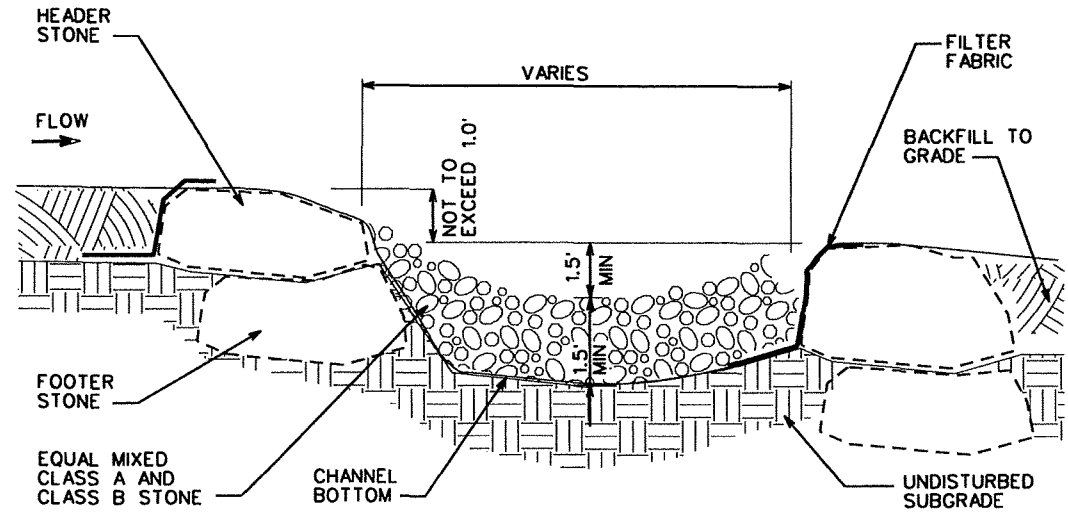
Ckd. By: DGM Date: JUN 2005

Scale: **NO SCALE**

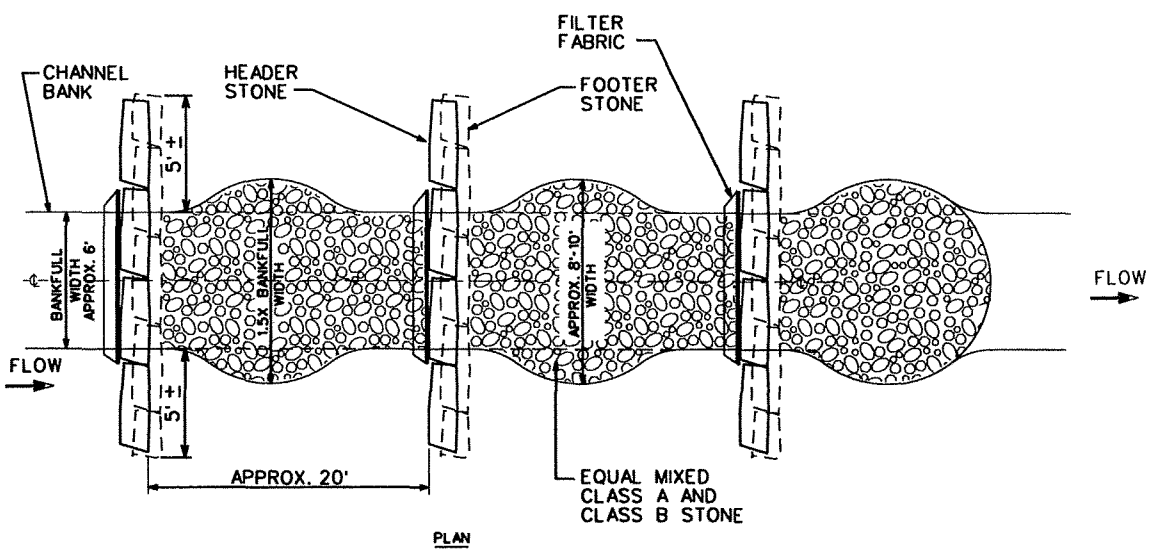
ESC Project No.: 04-212

SHEET

C-2A

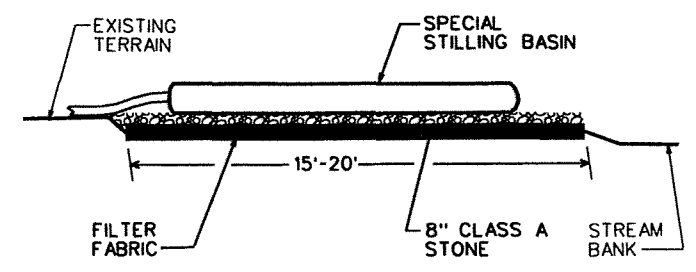


PROFILE



PLAN

TYPICAL ROCK SILL
NOT TO SCALE



NOTE:
1. WHEN PUMPING CLEAN WATER, THE CONTRACTOR MAY PROVIDE A STABILIZED OUTLET BY OMITTING THE SPECIAL STILLING BASIN AND PROVIDING THE ROCK PAD AS SHOWN WITH MINIMUM DIMENSIONS 10 FEET WIDE BY 15 FEET LONG.

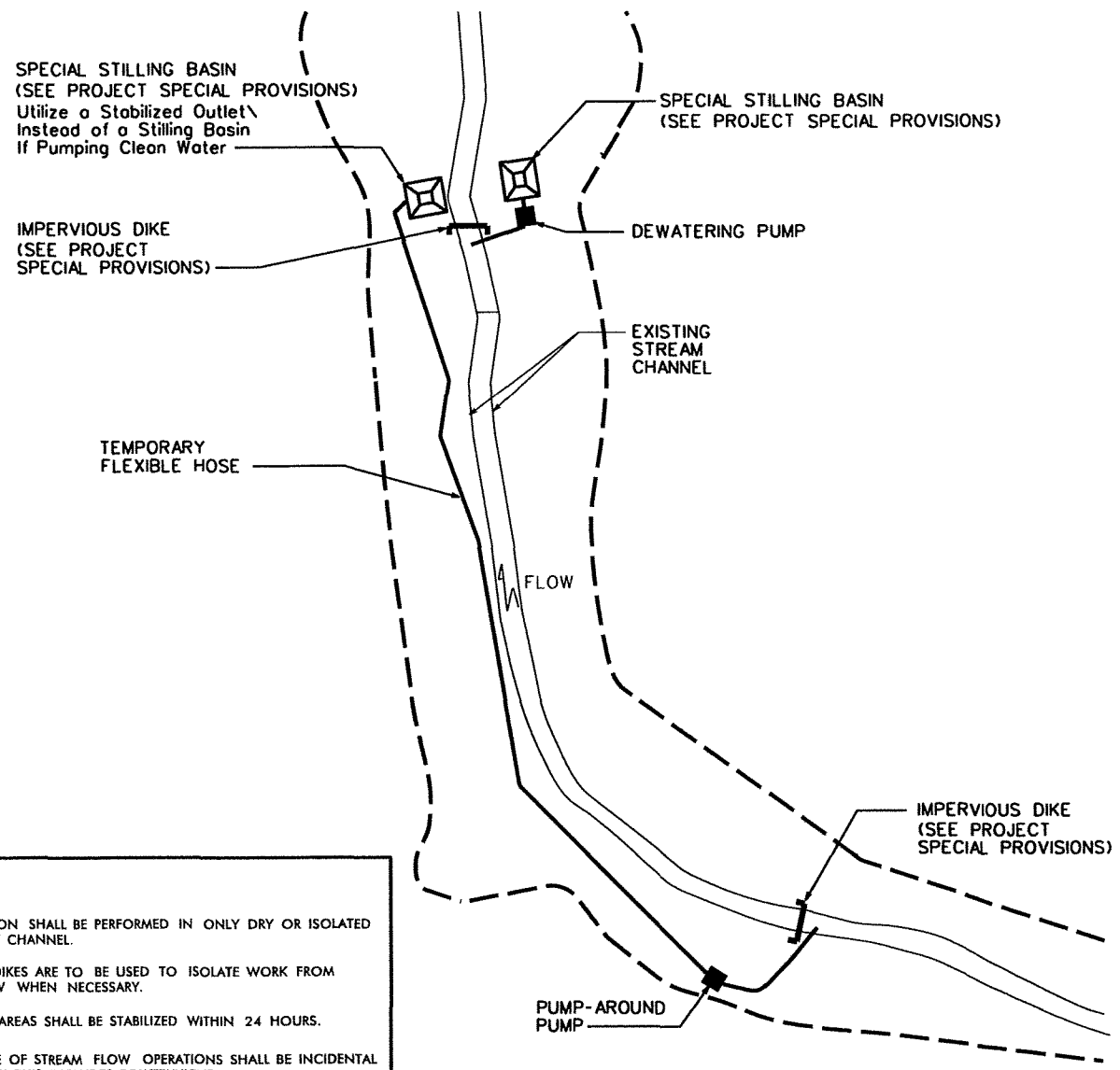
SPECIAL STILLING BASIN WITH ROCK PAD

NOTES:

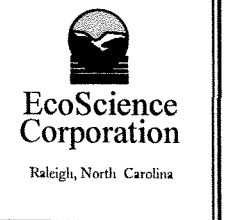
1. ALL EXCAVATION SHALL BE PERFORMED IN ONLY DRY OR ISOLATED SECTIONS OF CHANNEL.
2. IMPERVIOUS DIKES ARE TO BE USED TO ISOLATE WORK FROM STREAM FLOW WHEN NECESSARY.
3. ALL GRADED AREAS SHALL BE STABILIZED WITHIN 24 HOURS.
4. MAINTENANCE OF STREAM FLOW OPERATIONS SHALL BE INCIDENTAL TO THE WORK. THIS INCLUDES POLYETHYLENE SHEETING, DIVERSION PIPES, PUMPS AND HOSES.
5. PUMPS AND HOSES SHALL BE OF SUFFICIENT SIZE TO DEWATER THE WORK AREA.

SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

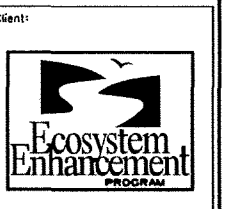
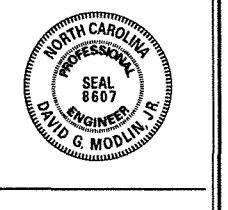
1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. PERFORM STREAM RESTORATION WORK IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. ALL GRADING AND STABILIZATION MUST BE COMPLETED AT THE END OF EACH DAY WITHIN THE PUMP AROUND AREAS BETWEEN THE IMPERVIOUS DIKES. THE IMPERVIOUS DIKE LOCATIONS AS SHOWN ON THIS SHEET ONLY SHOW THE UPPER AND LOWER EXTENT OF WORK FOR EACH STREAM SEGMENT. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE LOCATION OF THE IMPERVIOUS DIKE(S) FOR EACH DAY'S WORK.
8. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.



TYPICAL PUMP-AROUND OPERATION



REVISIONS
1. LAND QUALITY COMMENTS



Client: **BISHOP SITE STREAM / WETLAND RESTORATION PLAN**
ANSON COUNTY, NORTH CAROLINA

Title: **GENERAL DETAILS**
UT TO DULA THOROUGHFARE

Des. By: JDC Dwn. By: MAF
Ckd. By: DGM Date: JUN 2005
Scale: **NO SCALE**
ESC Project No.: 04-212

SHEET
C-2B

△ SUMMARY OF QUANTITIES

SUMMARY OF QUANTITIES				
Bishop Site Stream/Wetland Restoration - UT to Dula Thoroughfare				
ITEM	SPEC	ITEM DESCRIPTION	QUANTITIES	UNIT
53	SP1	Mobilization	1	LS
54	SP2	Construction Surveying	1	LS
55	SP3	Grading	1	LS
56	200	Select Tree Removal	25	EA
57	1056	Filter Fabric, Type 2	6430	SY
58	1605	Temporary Silt Fence	1380	LF
59	SP15	Boulder, Header and Footer	120	TON
60	1610	Stone for Erosion Control, Class A	2400	TON
61	1610	Stone for Erosion Control, Class B	105	TON
62	1610	Stone for Erosion Control, No. 4	14	TON
63	1610	Stone for Erosion Control, No. 57	6	TON
64	1615	Temporary Mulching	4	ACR
65	1620	Seed for Temporary Seeding	260	LB
66	1620	Fertilizer for Temporary Seeding	0.6	TON
67	1630	Silt Excavation	50	CY
68	1660	Permanent Seeding and Mulching	4	ACR
69	SP6	Coir Fiber Matting, 900 gm	1000	SY
70	SP8	Impervious Select Material	40	CY
71	SP9	Pump Around Operation	1	LS
72	SP10	Special Stilling Basin	4	EA
73	SP12	Bare Root Seedlings	16531	EA
74	SP14	Invasive Plant Removal	1	LS
75	SP17	Disking/Scarification	2	ACR

Estimates do include quantities for Class A stone and filter fabric for improved on-site access roads if required by weather conditions. The quantities are approximately 480 T of Class A Stone and 1333 SY filter fabric per 1000 linear feet of 12-foot wide improved access road as shown on the plans. Note that all quantities are estimates for information and bid comparison purposes only.

**SUMMARY OF EARTHWORK
QUANTITIES IN CUBIC YARDS**

UT to DULA THOROUGHFARE

Xsection	Total Cut		EXCAVATION	Total Fill			FILL	BORROW	WASTE
	sq ft	cu ft		sq ft	cu ft	cu ft + %			
0	1.3	0		15.0	0				
991	1.3	1288.3	48	15.0	14865.0	17838	661	613	0
		1288	48		14865		661	613	0
									-613
Project Total			48						-613

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING AND CLEARING AND GRUBBING WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING." A SHRINKAGE FACTOR OF 1.2 WAS ASSUMED.



REVISIONS
1 QUANTITIES REVISED



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**SUMMARY OF
QUANTITIES /
SUMMARY OF
EARTHWORK

UT TO DULA
THOROUGHFARE**

Des. By:

JDC MAF

Ckd. By:

DGM JUN 2005

Scale:

NO SCALE

ESC Project No.:

04-212

SHEET

C-3



EcoScience Corporation

Raleigh, North Carolina

REVISIONS

NO.	DATE	DESCRIPTION



Client:



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**EXISTING
CONDITIONS

UT TO DULA
THOROUGHFARE**

Des. By: JDC Own. By: MAF

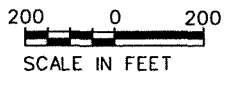
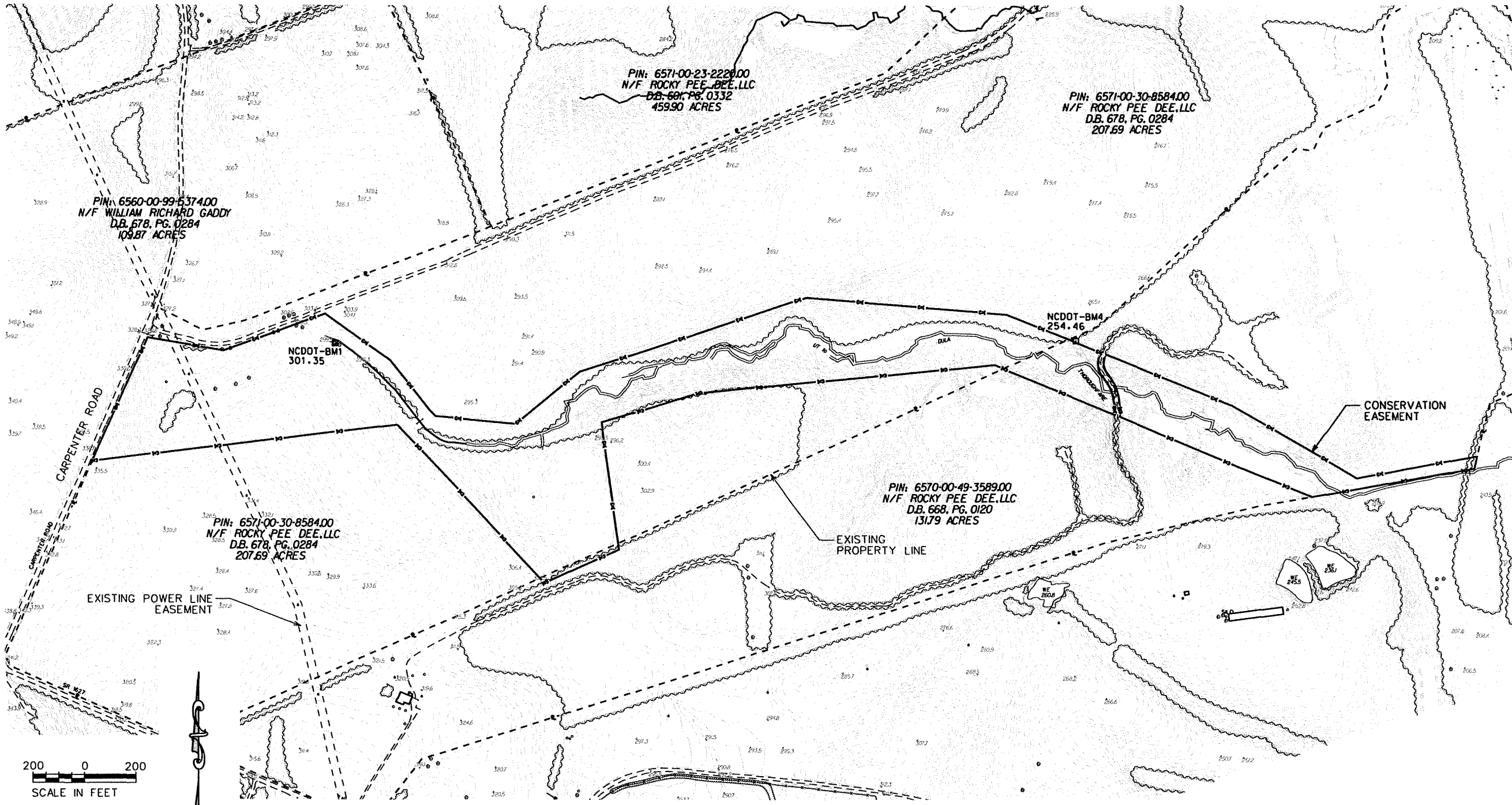
Ckd. By: DGM Date: JUN 2005

Scale: AS SHOWN

ESC Project No.: 04-212

SHEET

C-4



BENCHMARKS

LOCATION	TYPE	EASTING	NORTHING	ELEVATION
NCDOT BM1	RR SPIKE IN TREE	1671382.477	509938.956	301.35
NCDOT BM4	RR SPIKE IN TREE	1674222.110	509949.013	254.46



EcoScience Corporation

Raleigh, North Carolina

REVISIONS

1	AS-BUILT - JULY 2007



2/20/07

Client:



Project:

BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN

ANSON COUNTY,
NORTH CAROLINA

Title:

SITE PLAN
UT TO DULA
THOROUGHFARE

Dsn. By:

Dwn. By:

JDC

MAF

Ckd. By:

Date:

EBB

JUL 2007

Scale:

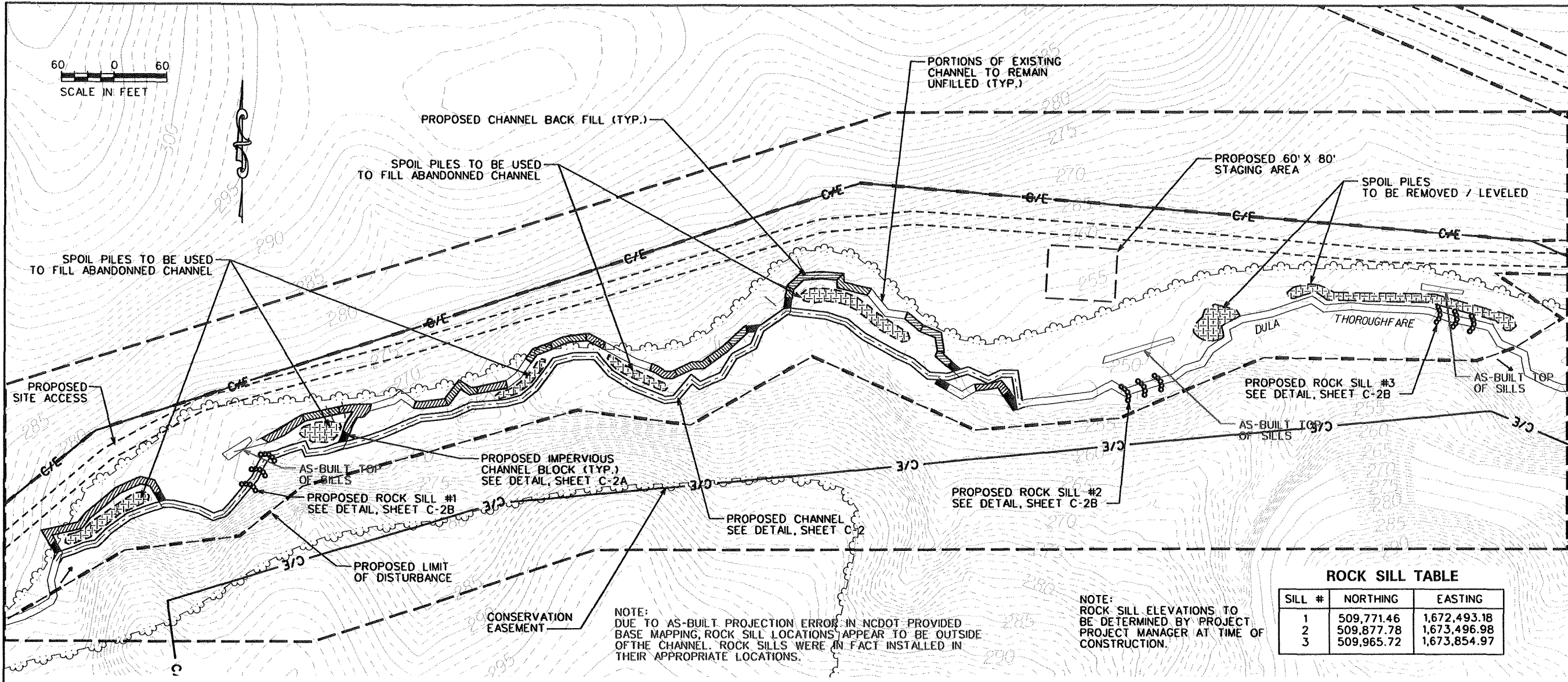
AS SHOWN

ESC Project No.:

04-212

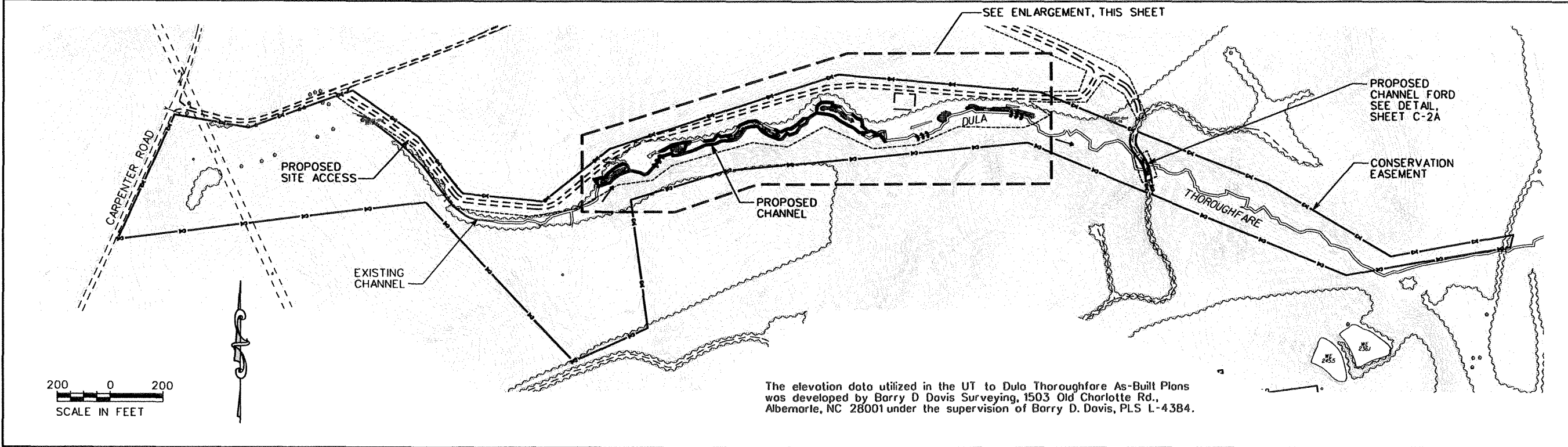
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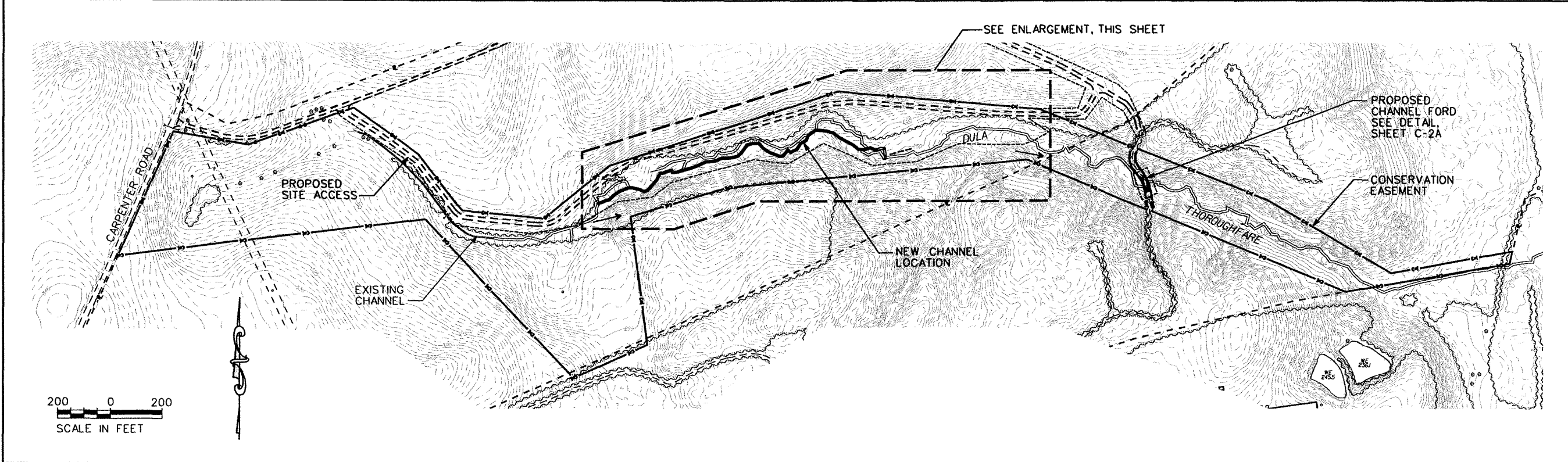
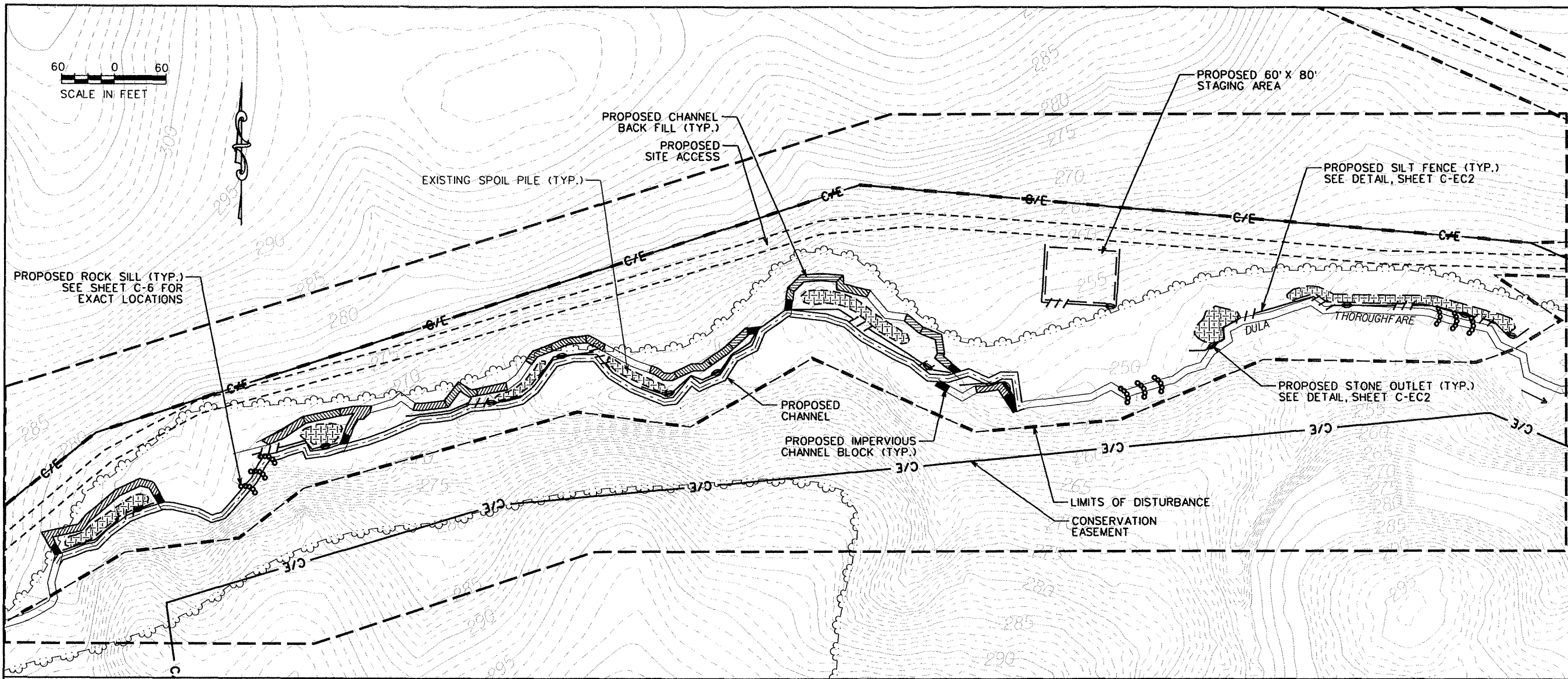
C-6



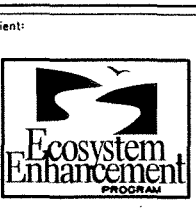
ROCK SILL TABLE

SILL #	NORTHING	EASTING
1	509,771.46	1,672,493.18
2	509,877.78	1,673,496.98
3	509,965.72	1,673,854.97





REVISIONS



Project:

**BISHOP SITE
STREAM /
WETLAND
RESTORATION
PLAN**

ANSON COUNTY,
NORTH CAROLINA

Title:

**EROSION
CONTROL
PLAN**

**UT TO DULA
THOROUGHFARE**

Dsn. By: JDC Dwn. By: MAF

Ckd. By: DGM Date: JUN 2005

Scale: AS SHOWN

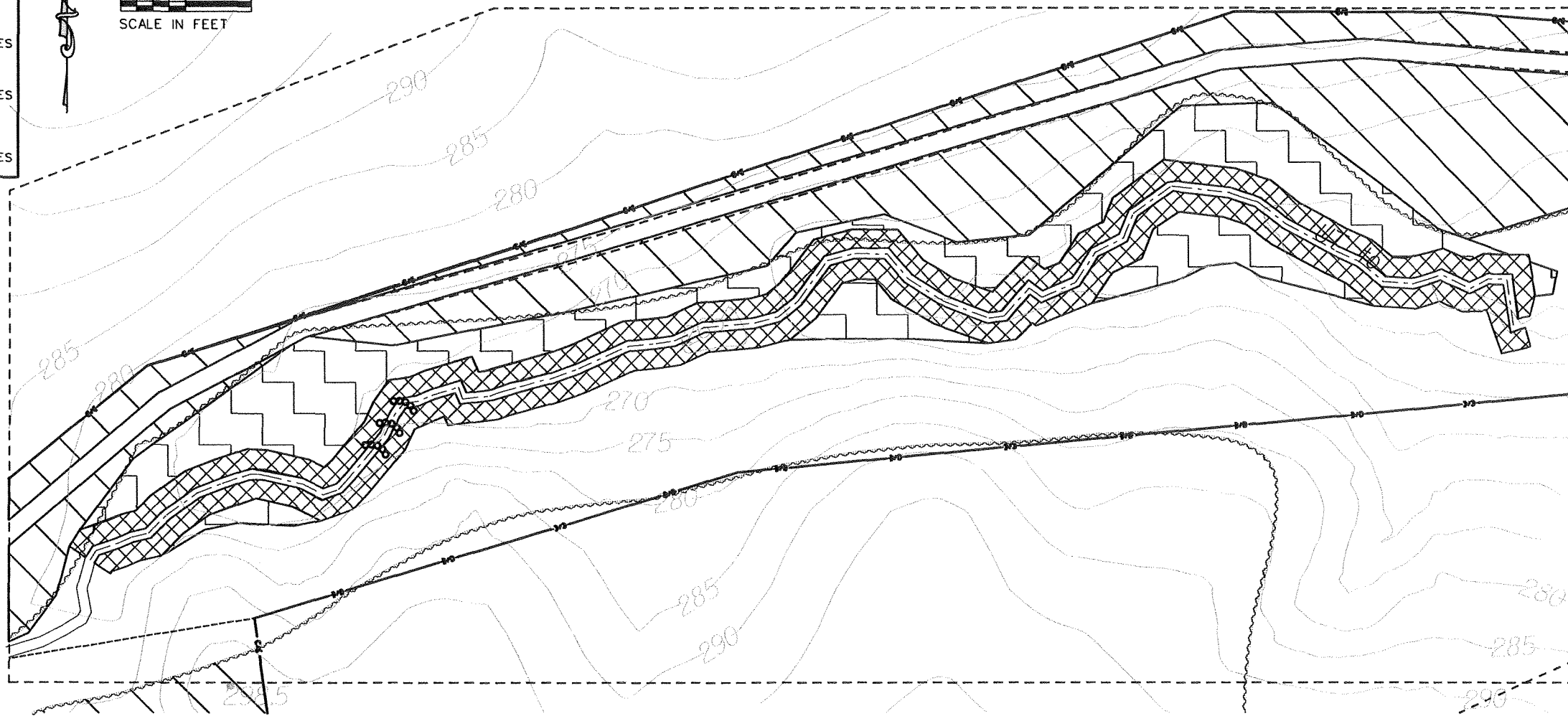
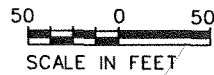
ESC Project No.: 04-212

SHEET

C-EC1

PLANT COMMUNITIES

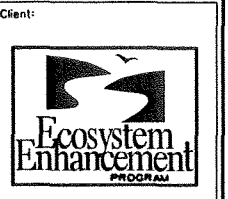
	STREAMSIDE ASSEMBLAGE (15' EACH SIDE OF CHANNEL)	0.9 ACRES
	MESIC MIXED HARDWOOD FOREST	17.6 ACRES
	BOTTOMLAND HARDWOOD FOREST	3.1 ACRES
		TOTAL: 21.6 ACRES



REVISIONS

1	AS-BUILT - JULY 2007
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27 Oct 07



Client:

Project:

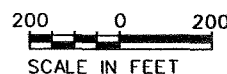
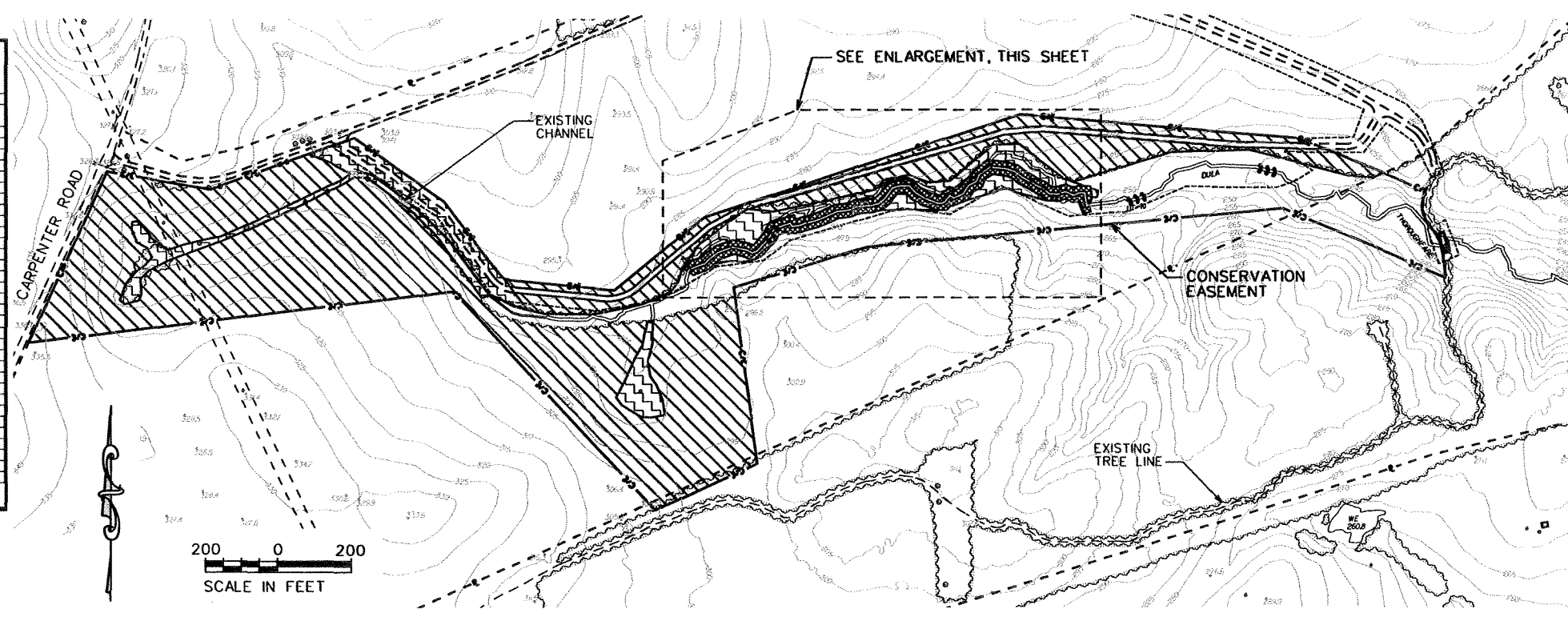
BISHOP SITE STREAM / WETLAND RESTORATION PLAN

ANSON COUNTY, NORTH CAROLINA

PLANTING TABLE

Vegetation Association		Bottomland Hardwood Forest		Stream-side Assemblage		Mesic Mixed Hardwood Forest		Total	
Stems/Acre (Spacing)		680 feet x 8-feet		4 feet x 4-feet		680 feet x 8-feet		21.6	
Planted Area (acres)		3.1		0.9		17.6		21.6	
Species ¹	Common Name	Number Planted	% of Total	Number Planted	% of Total	Number Planted	% of Total	Number Planted	Number Planted
<i>Quercus michauxii</i>	swamp chestnut oak	190	9			190	200		
<i>Ulmus americana</i>	American elm	148	7			148	200		
<i>Celtis baccata</i>	sugarberry	148	7			148	200		
<i>Fraxinus pennsylvanica</i>	green ash	148	7			148	400		
<i>Carya ovata</i>	shagbark hickory	148	7			148	200		
<i>Quercus phellos</i>	willow oak	190	9			190	200		
<i>Nyssa biflora</i>	swamp tupelo	148	7			148	400		
<i>Platanus occidentalis</i>	sycamore	148	7			148	200		
<i>Quercus nigra</i>	walnut oak	148	7			148	400		
<i>Carya cordiformis</i>	bitter-nut hickory	148	7			148	200		
<i>Quercus pagoda</i>	chestnut oak	148	7			148	200		
<i>Carpinus caroliniana</i>	musclewood	148	7			148	200		
<i>Asimina triloba</i>	passionfruit	126	6			126	200		
<i>Ilex opaca</i>	American holly	126	6			126	1083		
<i>Arundinaria gigantea</i>	giant cane			196	8	196	196		
<i>Betula nigra</i>	river birch			294	12	294	1100		
<i>Cornus amomum</i>	silky dogwood			245	10	245	900		
<i>Salix nigra</i>	black willow			245	10	245	245		
<i>Alnus serrulata</i>	hop alder			245	10	245	245		
<i>Cephalanthus occidentalis</i>	buttonbush			245	10	245	900		
<i>Sambucus canadensis</i>	elderberry			245	10	245	245		
<i>Viburnum dentatum</i>	arrowwood			245	10	245	245		
<i>Viburnum nudum</i>	possum-haw			245	10	245	245		
<i>Vaccinium corymbosum</i>	highbush blueberry			245	10	245	245		
<i>Fagus grandifolia</i>	American beech					1676	14	1676	1700
<i>Carya tomentosa</i>	mockernut hickory					1436	12	1436	1500
<i>Carya glabra</i>	sweet pignut hickory					1436	12	1436	1500
<i>Quercus alba</i>	white oak					1915	16	1915	2000
<i>Quercus rubra</i>	northern red oak					1676	14	1676	1700
<i>Quercus falcata</i>	southern red oak					1676	14	1676	1700
<i>Cornus florida</i>	dogwood					1197	10	1197	1200
Total		2112	100	2450	100	11969	100	16531	17000

¹All stems are to be bare-root seedlings except where noted.
 *Live stakes are acceptable for black willow individuals if bare-root seedlings are unavailable.



Title:

PLANTING PLAN

UT TO DULA THOROUGHFARE

Dsn. By: JDC Dwn. By: MAF

Ckd. By: EBB Date: JUL 2007

Scale: AS SHOWN

ESC Project No.: 04-212

SHEET

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