CORRECTIVE MEASURES STUDY FOR HIGHWAY 21 BRIDGE AT CHOCCOLOCCO CREEK ALABAMA D.O.T. PROJECT No: STPAA-62(15) TALLADEGA/CALHOUN COUNTIES

Submitted By:

Solutia Inc.
702 Clydesdale Avenue
Anniston, Alabama 36201

Revision 1
June 29, 2000

1. INTRODUCTION

This Corrective Measures Study (CMS) presents the preferred corrective measures to be implemented at the site of a new bridge to be constructed by the Alabama Department of Transportation (ALDOT) on Highway 21 over Choccolocco Creek. The bridge is located within the 100-year floodplain of the creek. Solutia Inc. (Solutia) is currently investigating this portion of the floodplain pursuant to a Resource Conservation and Recovery Act (RCRA) Post Closure Permit issued to Solutia on January 7, 1997 by the Alabama Department of Environmental Management (ADEM) (Permit No. ALD 004 019 048). Although that investigation is on-going, Solutia has agreed to prepare this CMS in accordance with Appendix C of the permit and in response to a request by ALDOT and ADEM.

1.1 Background and Description of Current Situation

The Alabama Department of Transportation (ALDOT) is progressing with the planned expansion of Route 21 to incorporate a divided highway system. Construction of a section of the planned highway expansion from Cooper Lane to the existing 4-Lane at Oxford (Sheet No. 1 of the attached drawings) is scheduled to begin in April 2000. The construction site is located in both Talladega and Calhoun Counties, as shown on Sheet 1. It lies within the 100-year floodplain of Choccolocco Creek and the ground surface is relatively flat, with a small slope towards the creek.

Previous environmental studies have identified polychlorinated biphenyls (PCBs) in some sediments within the construction area. The sampling locations for these previous investigations are shown on Sheet Nos. 2 and 3 of the drawings, while the results of PCB analyses in soil are shown on Sheet Nos. 4 through 10. PCB-containing soils were generally encountered to depths in the range of 0 to 4 feet, and as deep as 6 feet in isolated areas. On the drawings, the PCB concentrations have been color coded to reflect values falling in one of three ranges: orange for concentrations exceeding 50 mg/kg, yellow for concentrations between 50 and 1 mg/kg, and green for concentrations less than

1 mg/kg. The number of samples having PCB concentrations falling in one of the three ranges is as follows:

- 28 samples contained PCB concentrations greater than 50 mg/kg,
- 192 samples contained PCB concentrations between 1 and 50 mg/kg, and
- 241 samples contained PCB concentrations less than 1 mg/kg.

Solutia will construct corrective measures to remove and/or isolate PCBs at levels in excess of 1 mg/kg prior to the commencement of ALDOT construction efforts. Several alternatives are available for satisfying this objective and are evaluated in this CMS. All of these alternatives will include the following common elements:

- Clearing and disposal of trees within the construction right-of-way (ROW);
- Excavating and segregating affected sediments from the locations of proposed bridge bents, from the utility corridor, and from a drainage ditch to be constructed on the north side of the creek; and
- Managing excavated sediments.

Because of the need to begin bridge construction in April, it is desirable to begin implementing these common elements as early as possible. Since none of them will involve the final disposition of affected soils and sediments, they qualify as Interim Measures under the permit. Accordingly, an Interim Measures Plan was submitted to ADEM on January 4, 2000 describing the details of these common elements. These are summarized as follows:

- The area within the construction right-of-way (ROW) will be cleared by cutting trees at or near ground surface. As a result, grubbing will not be required. The trees will be reduced to chips that will be spread over an area within the ROW, but outside the proposed roadway embankment. The area to be cleared is shown on Sheet No. 11 of the drawings.

- Utility pipelines (4-inch gas and 20-inch water) on the south side of Choccolocco Creek will be rerouted within a utility corridor. Soils will be excavated from within the corridor to a maximum depth of six feet, or until the PCB concentration in the soil reduces to 1 mg/kg, whichever occurs first. Confirmation soil sampling will be carried out after initial excavation to verify that the soils remaining in the floor of the excavation have PCB concentrations less than or equal to 1 mg/kg. If the PCB concentrations exceed 1 mg/kg at a depth of six feet, the excavation will be stopped and a geotextile fabric will be installed as a marker layer.

- The utility corridor excavation will be expanded, as shown on Sheet No. 12 of the drawings, to create a clean zone for two pipe jacking pits. It is expected that the pits will be a maximum of 16 feet deep. However, jacking pits will be excavated until confirmation sampling indicates PCB levels at or below 1 mg/kg. If either pipe jacking pit excavation reaches the total depth required by the utility companies for pipe jacking (a maximum of 15 feet) and PCB levels are above 1 mg/kg, an additional one foot of soil will be excavated and one foot of clean backfill will be added.

- Some sediments in the drainage ditch located adjacent to the eastern toe of the road embankment, north of the creek, were found to contain PCBs. Excavation will be carried out along the drainage ditch within the limits (horizontal and vertical) listed in the excavation schedule shown on Sheet No. 13 of the drawings. Confirmation sampling will be performed using the same protocol as described previously. Total excavation depths will not exceed four feet below grade. Where confirmation sampling indicates that PCB levels exceed 1 mg/kg at a depth of four feet, the excavation will be stopped and a geotextile fabric marker will be installed.

- Sediment excavation will be performed in the footprint of the proposed Bridge Bent 4, as shown on Sheet No. 14. Excavation limits (horizontal and vertical) are listed on Sheet No. 14. Confirmation sampling will be performed to verify removal of sediments containing PCBs at concentrations exceeding 1 mg/kg. Should confirmation sampling indicate PCB levels above 1 mg/kg, a geotextile marker layer will be installed.

- As shown on Sheet No. 12, soils excavated from the ditch (approximately 300 cu. yd.) and the utility corridor (approximately 3,700 cu. yd.) with PCB concentrations greater than 1 mg/kg, but less than 50 mg/kg, will be placed in a temporary stockpile within the proposed roadway embankment. Excavated soil

with PCB concentrations greater than 50 mg/kg will be segregated and disposed of off-site at a TSCA approved landfill (approximately 1,000 cu. yd.) in accordance with all applicable regulations.

- Erosion protection will be provided in construction areas (those having excavated or disturbed soils). This protection includes covering all exposed soil areas with non-woven geotextile. Sediment migration will be controlled by installing silt fencing along the tributary and Choccolocco Creek adjacent to construction areas and the construction of a check dam in the tributary ditch on the southern side of the creek. Erosion and sediment control features are shown on Sheet No. 15 of the drawings.

1.2 Corrective Action Objectives

The objectives of the corrective action are the following:

- to minimize potential human and ecological exposure to PCB-impacted sediments, both during construction and in the long term;
- to prevent erosion and downstream transport of PCB-impacted sediments during construction; and
- to remove sediments containing PCBs at concentrations in excess of 50 mg/kg and dispose of them in accordance with all applicable regulations.

The corrective measure alternatives evaluated in this report are designed to satisfy these objectives.

2. SCREENING OF CORRECTIVE MEASURE TECHNOLOGIES

The available technologies to address the excavated soils in the temporary stockpile area, as well as other affected soils within the work area, fall into three broad groups: a) treatment and/or fixation (either *ex situ* or *in situ*); b) removal (complete or partial); and c) containment and isolation. Each of these groups is separately discussed below.

2.1 Treatment and/or Fixation

While a significant amount of research work regarding the treatment and/or fixation of PCBs in environmental media is on-going, none of the technologies can be considered to be effective at this time. The effectiveness, useful life, and reliability are all considered to be uncertain for any of these technologies. Therefore, no treatment/fixation technologies are considered to be suitable for use on this project and will not be considered for inclusion in any corrective measure alternatives.

2.2 Removal

Removal would consist of excavation of all or some portion of the affected soils and disposal at a permitted Subtitle D landfill.

2.3 Containment and Isolation

Containment and isolation technologies at this site consist of the construction of a cover over impacted soils.

3. EVALUATION OF CORRECTIVE MEASURE ALTERNATIVES

Prior to implementation of any of the final measures evaluated in this study, the Interim Measures summarized in Section 1.1 will have been completed. Thus, any excavated soils and sediments with PCB concentrations greater than 50 mg/kg will have been transported off-site to a permitted TSCA disposal site, satisfying one of the corrective action objectives listed in Section 1.2. Materials with PCB concentrations between 1 mg/kg and 50 mg/kg will have been stockpiled along the new roadway alignment. Consequently, the alternative final corrective measures evaluated in this CMS are those which satisfy the remaining two corrective action objectives listed in Section 1.2. Therefore, these alternatives only address the impacted soils within the limits of the work area required by ALDOT for bridge and roadway construction, including the stockpiled soils. PCB-impacted soils outside the limits of the work area which contain PCBs will be evaluated in an off-site CMS to be performed at a later date.

Based on the corrective action objectives defined in Section 1.2 and an evaluation of the available technologies, the corrective action alternatives which are considered to be feasible for use in the ditch are the following:

- Alternative 1 Excavation and off-site disposal of all impacted soils and sediments in the work area with PCB concentrations in excess of 1 mg/kg.
- Alternative 2 Containment and isolation of all soils and sediments with PCB concentrations between 1 mg/kg and 50 mg/kg.

Each of these alternatives is evaluated in this section.

3.1 Alternative 1 - Excavation and Off-Site Disposal of all Affected Soils and Sediments

3.1.1 Description

This alternative involves the excavation of all soils and sediments within the limits of the work area which contain PCB concentrations in excess of 1 mg/kg and disposal of these materials at a permitted Subtitle D facility. The soils in the temporary stockpile constructed during the Interim Measures will also be disposed of at the same facility. The limits of the work area are shown on Sheet 16 of the attached drawings and the area included within these limits is approximately 8.2 acres. Based on the analytical results shown on Sheets 4 through 10 of the drawing package, it is estimated that the average depth of excavation in the work area will be three feet. Consequently, the excavated volume will be approximately 40,000 cu. yd. The volume contained in the temporary stockpile is expected to be an additional 3,000 cu. yd. Samples from the base of the excavation will be analyzed to ensure that the PCB removal limit of 1 mg/kg is satisfied and all excavated material will be replaced with clean, compacted backfill. It is likely that this backfill will have to be imported from an off-site borrow source.

3.1.2 Effectiveness

This alternative will result in the removal of all PCB-impacted soils and sediments within the work area. However, because of the extensive area of excavation, construction operations will likely result in the re-suspension and downstream transport of impacted sediments.

3.1.3 Useful Life

This alternative provides an unlimited service life.

3.1.4 Operation and Maintenance

This alternative will not require periodic operation and maintenance.

3.1.5 Reliability

Excavation and off-site disposal is a proven technology that has been widely used in the past.

3.1.6 Implementability

Because of the significant excavation and backfill quantities involved in this alternative, it is anticipated that the overall construction schedule will be lengthened by at least two months, increasing the likelihood of the work being inundated by stormwater. This will result in re-suspension and downstream transport of impacted sediments.

3.1.7 Safety of Installation

Excavation and transport of impacted soils will present potential risks to users of Highway 21 from increased vehicular traffic and trucks entering and leaving the highway. It is estimated that upwards of 8,000 truckloads of material will have to be transported on- and off-site. This will represent a very significant increase over the current road usage. As well, some of the material may have to be dried prior to transport, depending on the moisture content. Given the lack of significant open areas for spreading and drying, drying operations may present a significant constraint on the project schedule.

3.1.8 Environmental

Excavation of sediments with PCB concentrations in excess of 1 mg/kg will preclude future contact with these soils. However, excavation does entail potential short-term impacts if downstream transport of fugitive sediments occurs during construction. These impacts can be minimized by the use of effective erosion and sediment controls during excavation. However, because of the extensive area of excavation within a low lying floodplain, it is unlikely that these impacts can be totally prevented.

3.1.9 Human Health

Implementation of this alternative will result in long-term reduction in potential exposure to the materials removed. However, this alternative presents the greatest short term potential risks to highway users from construction traffic. In addition, it increases the potential long-term risks associated with exposure to creek sediments since it will probably result in migration of impacted soils into the creek (refer to Section 3.1.8).

Although these corrective measures are being performed under RCRA, excavation and disposal of materials with PCB concentrations in excess of 1 mg/kg exceeds the requirements of the Toxic Substances Control Act (TSCA) regulations governing self-implementing on-site cleanups in low occupancy areas (40 CFR 761.61 (a) (4) (i) (B)) and, in fact, satisfies the requirements for a high occupancy area (40 CFR 761.61 (a) (4) (i) (A)). The bridge site satisfies the definition of a low occupancy area given in 40 CFR 761.3.

3.1.10 Institutional

Since the excavated materials will contain PCBs at concentrations below 50 mg/kg, they can be disposed of at a Subtitle D landfill; however, the materials will have to be transported by a licensed Special Waste Hauler. No other institutional controls will be required.

3.1.11 Cost

The total cost to implement this alternative is primarily dependent on the volume of material to be excavated. A review of the investigation results summarized on the attached Sheets 4 through 10 suggests that soils and sediments may have to be removed from most of the work area shown on Sheet 16. Assuming an average depth of excavation of three feet over an area of approximately eight acres, the resulting volume of excavated material is 40,000 cu yd. This same volume of clean backfill will be required to return the site to the original grade. An additional 3,000 cu. yd. of soil in the

temporary stockpile will also have to be transported off site for disposal. With these assumptions, the cost of this alternative is estimated to be about $3,724,000. This does not include the cost of the Interim Measures, since these measures are common to both of the alternatives evaluated in this CMS. Details of this cost estimate are shown below:

Direct Capital Costs		
Soil and Sediment Excavation	40,000 cu. yd. @ $8/cu. yd.	$ 320,000
Transportation (43,000 cu. yd.)	65,000 tons @ $10/ton	$ 650,000
Disposal	43,000 cu. yd. @ $30/cu. yd.	$1,290,000
Backfill (including transport)	40,000 cu. yd. @ $10/cu. yd.	$ 400,000
Subtotal Direct Capital Costs		**$2,660,000**
Indirect Capital Costs		
Engineering and Oversight	20%	$ 532,000
Contingency	20%	$ 532,000
Subtotal Indirect Capital Costs		**$1,064,000**
Total Capital Cost		**$3,724,000**
Operation and Maintenance (O&M) Costs		
Annual O&M costs		None
Total Present Value Cost		**$3,724,000**

3.2 Alternative 2 – Containment and Isolation of Affected Soils and Sediments

3.2.1 Description

This alternative involves covering the soil in the temporary stockpile with additional clean earth fill required to construct the roadway embankment. As well, a soil cover will be constructed over the entire work area, as shown on Sheet 16 of the attached drawings.

At the end of construction, the soils in the temporary stockpile will be effectively and permanently isolated beneath the roadway embankment which will function as a multi-layer cover system. At a minimum, this cover system includes stabilization under a geotextile, and up to ten feet of fill material as cover. Under the roadway itself, the cover will also include a thick layer of asphalt pavement. The cover over the rest of the construction area will consist of a geotextile fabric placed on the existing ground surface and covered with 12 inches of clean soil (refer to Sheet 16 of the attached drawings).

In addition to construction of these covers, that portion of the tributary ditch on the south side of the creek and east of the new roadway embankment which lies within the work area shown on Sheet 16 will be lined. At this time, it is planned to use a prefabricated articulated concrete mat lining. However, ALDOT may elect to use a rip-rap lining instead. A rip-rap lining will be constructed in the drainage ditch to be excavated on the north side of the creek, east of the new bridge (refer to Sheet 17).

3.2.2 Effectiveness

PCB-impacted sediments will be covered with a soil cover, thus preventing future erosion or direct contact. Consequently, this alternative effectively closes the exposure pathways of concern at this site.

3.2.3 Useful Life

This alternative will provide an unlimited service life, provided that the soil cover is adequately maintained.

3.2.4 Operation and Maintenance

Periodic maintenance will be required to maintain the cover integrity, involving annual visual inspections for signs of erosion and an Inspection and Monitoring Plan has been prepared. Any damage observed during these inspections will have to be repaired by filling erosion gullies with soil or rip-rap. As well, a healthy vegetative cover will have

to be maintained on the covered area. This vegetative layer can be low maintenance species which will not require mowing. No other operation and maintenance procedures will be required.

3.2.5 Reliability

The multi-layer cover system will prevent the erosion of PCB-containing soils. This cover system includes a geotextile fabric anchored into the underlying soil along with 12 inches of cover soil. In specific areas of the ROW, additional measures will be used to further prevent erosion. These include stone armor on the creek banks at bent locations and concrete or rip-rap along the bottom and sides of the drainage ditches. Construction details for these protective measures are presented on Sheet Nos. 16 and 17 of the drawings.

Soils under the new roadway embankment will also be protected from erosive forces by the multi-layer cover system. Specific elements of the cover system include a thick layer of asphalt pavement, up to ten feet of fill material, a geogrid, and a geotextile. The effectiveness and reliability of this cover system in isolating the affected soils and in preventing erosion are supported by long-term performance experience with similar systems at a large number of similar sites elsewhere.

3.2.6 Implementability

This alternative minimizes the volume of earthworks required to satisfy the corrective action objectives. The soils in the temporary stockpile will not be moved and, in fact, will reduce the volume of fill required by ALDOT to construct the roadway embankment. The volume of additional fill required for the soil cover on the work areas outside of the embankment is modest (estimated to be less than 7,000 cu. yd.). Consequently, the construction schedule will be much shorter than for Alternative 1.

3.2.7 Safety of Installation

Since the volume of fill required by this alternative is modest, increased risks associated with construction traffic are minimized. Additionally, since no additional PCB-containing material will be transported off-site, increased risks associated with the increased traffic volume from transporting this material are avoided.

3.2.8 Environmental

Because this alternative does not include extensive excavation, the possibility of impacted materials migrating into the creek is minimized. However, robust erosion and sediment control measures will still be required during and after construction to prevent the cover material from being washed into the creek during storm events. This concern will be mitigated once vegetation is established on the cover. Until that time, however, measures such as those shown on Sheet 15 will be required.

Minimization of the potential for migration of impacted materials into the creek, together with the erosion resistance offered by this alternative, makes it protective of the environment.

3.2.9 Human Health

This alternative provides a containment system which isolates the PCB-containing soils in both the short and long terms. Consequently, it mitigates risks associated with the two exposure pathways of concern at this site: - migration of affected soils and sediments in surface water runoff and direct contact with the affected soils and sediments. Therefore, this alternative is protective of human health.

Although these corrective measures are being performed under RCRA, containment and isolation by capping soils and sediments with PCB concentrations between 1 mg/kg and 50 mg/kg satisfies the TSCA requirements for a self-implementing cleanup in a low occupancy area (40 CFR 761.61 (a) (4) (i) (B))

3.2.10 Institutional

Institutional controls for this alternative are provided by the fact that all of the proposed corrective measures will be constructed within the ALDOT right-of-way. Consequently, access and future construction activities will be limited and controlled by ALDOT.

3.2.11 Cost

The total present value cost to implement this alternative is estimated to be approximately $512,000, including engineering, construction oversight, a 20 percent contingency, and operation and maintenance (O&M) costs. This estimate does not include the cost of the Interim Measures, since these measures are common to both alternatives evaluated in this CMS. For purposes of estimating the O&M costs, it is assumed that there will be an annual inspection which will result in two days of repair work filling erosion gullies in the soil cover. The cost estimate is detailed below:

Direct Capital Costs		
Geotextile fabric	300,000 sq. ft. @ $0.15/sq. ft.	$ 45,000
Fill (including transport)	7,000 cu. yd. @ $10.00/cu. yd.	$ 70,000
Geogrid	160,000 sq. ft. @ $1.00/sq. ft.	$160,000
Rip-rap and ditch lining	Lump Sum	$ 60,000
Subtotal Direct Capital Costs		**$335,000**
Indirect Capital Costs		
Engineering and Oversight	20%	$ 67,000
Contingency	20%	$ 67,000
Subtotal Indirect Capital Costs		**$134,000**
Total Capital Costs		**$469,000**

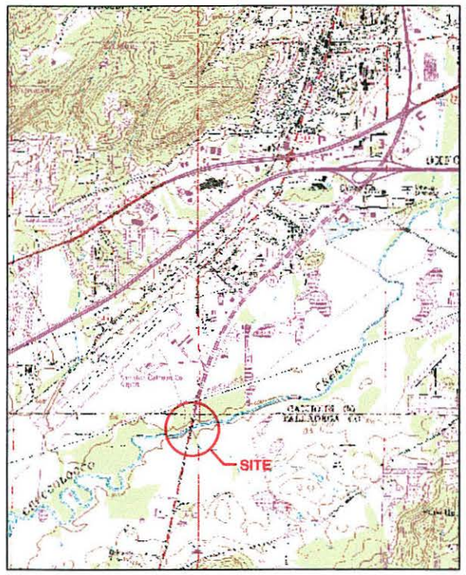
Operation and Maintenance (O&M) Costs		
Annual Inspection		$ 800
Annual Repairs (labor, materials & equipment)	2 days @ $1000/day	$ 2,000
Present Value of O&M Costs (discounted at 5 percent over 30 years)		**$ 43,000**
Total Present Value Costs		**$512,000**

4. Recommended Final Corrective Measures

Both of the alternatives evaluated in the preceding section satisfy the corrective action objectives listed in Section 1.2, in conjunction with the Interim Measures summarized in Section 1.1. Alternative 1, removal and off-site disposal of all soils and sediments with PCB concentrations greater than 1 mg/kg, reduces the potential long term risk of human and ecological exposure to these materials in the floodplain, but probably increases the likelihood of these materials migrating into the creek during construction. This could result in increased potential long term risks from creek sediments. It also presents significant short term risks because of the increased volume of construction traffic, the longer construction schedule, and the relatively large excavation.

Alternative 2, containment and isolation (by capping) of all soils and sediments with PCB concentrations between 1 mg/kg and 50 mg/kg, is fully protective of human health and the environment, and it satisfies the TSCA regulations applicable to the remediation of PCB-containing soils in a low occupancy area. With proper maintenance (Section 3.2.4), this corrective action will provide a reliable means of minimizing long term risks associated with potential human and ecological exposure. It will also eliminate potential erosion and downstream transport of PCB-containing soils and sediments. Because this alternative minimizes the amount of fill required, the short term risks arising from increased construction traffic and extended construction schedule are also minimized. In addition, the absence of any significant excavation will minimize the possibility of erosion and downstream migration of affected soils and sediments during construction.

Because Alternative 2 satisfies the corrective action objectives, is protective of human health and the environment, and results in lower short term risks than Alternative 1, it is recommended that it be implemented as the Final Corrective Measure at this site.

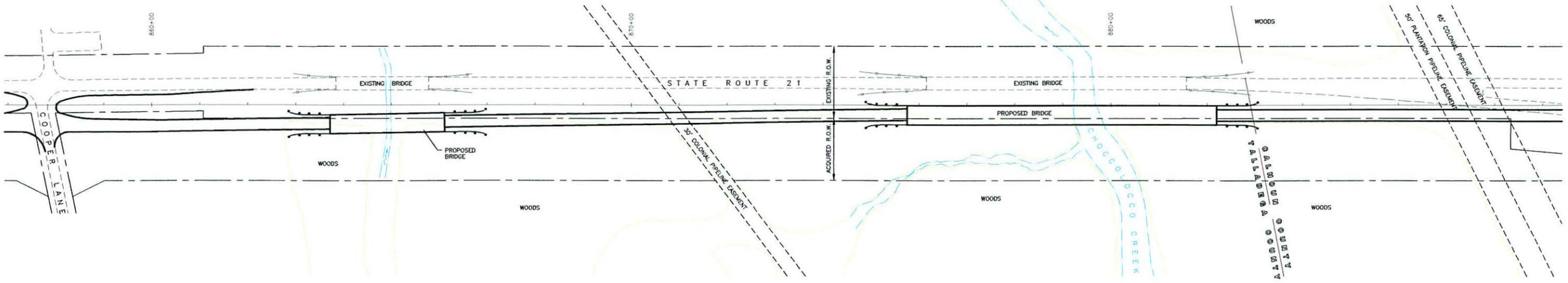


VICINITY MAP

SCALE: 1" = 2000'

CORRECTIVE MEASURES STUDY

ALABAMA
DEPARTMENT OF TRANSPORTATION
PROJECT NO. STPAA-62(15)
ON S.R. 21 FROM COOPER LANE TO EXISTING 4-LANE AT OXFORD
TALLADEGA/CALHOUN COUNTIES



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SCALE IN FEET

NOTE:

PROPOSED BRIDGE ALIGNMENT AND BENT LOCATIONS SHOWN HEREIN WERE TAKEN FROM DRAWINGS RECEIVED FROM THE ALABAMA DEPARTMENT OF TRANSPORTATION, PROJECT NO. STPAA-62 (24), ON DECEMBER 14, 1999.

REV	DESCRIPTION OF REVISION	BY	DATE
0			

SOLUTIA
300 Birmingham Highway
Anniston, AL 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED BY:	
DRAWN BY:	SAF/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
SITE MAP

REVISION: 0

PROJECT 460097T143

DRAWING

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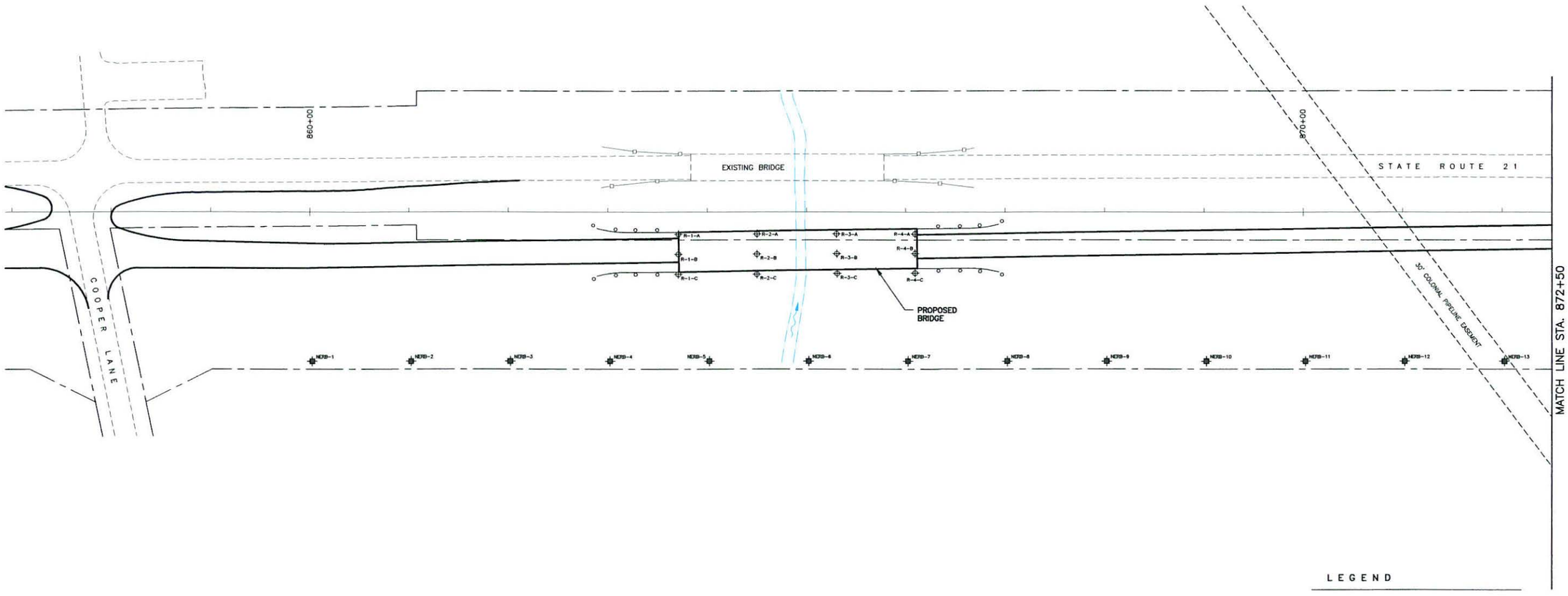

LEGEND

- PHASE I BORING SAMPLE LOCATION LAW REPORT DATED FEBRUARY 1997.
- BORING SAMPLE LOCATION LAW REPORT DATED MARCH 1998.

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SCALE IN FEET

REV	DESCRIPTION OF REVISION	BY	DATE
0			

SOLUTIA
300 Birmingham Highway
Anniston, AL 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED BY:	
DRAWN BY:	SAF/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
RELIEF BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 2 OF 16

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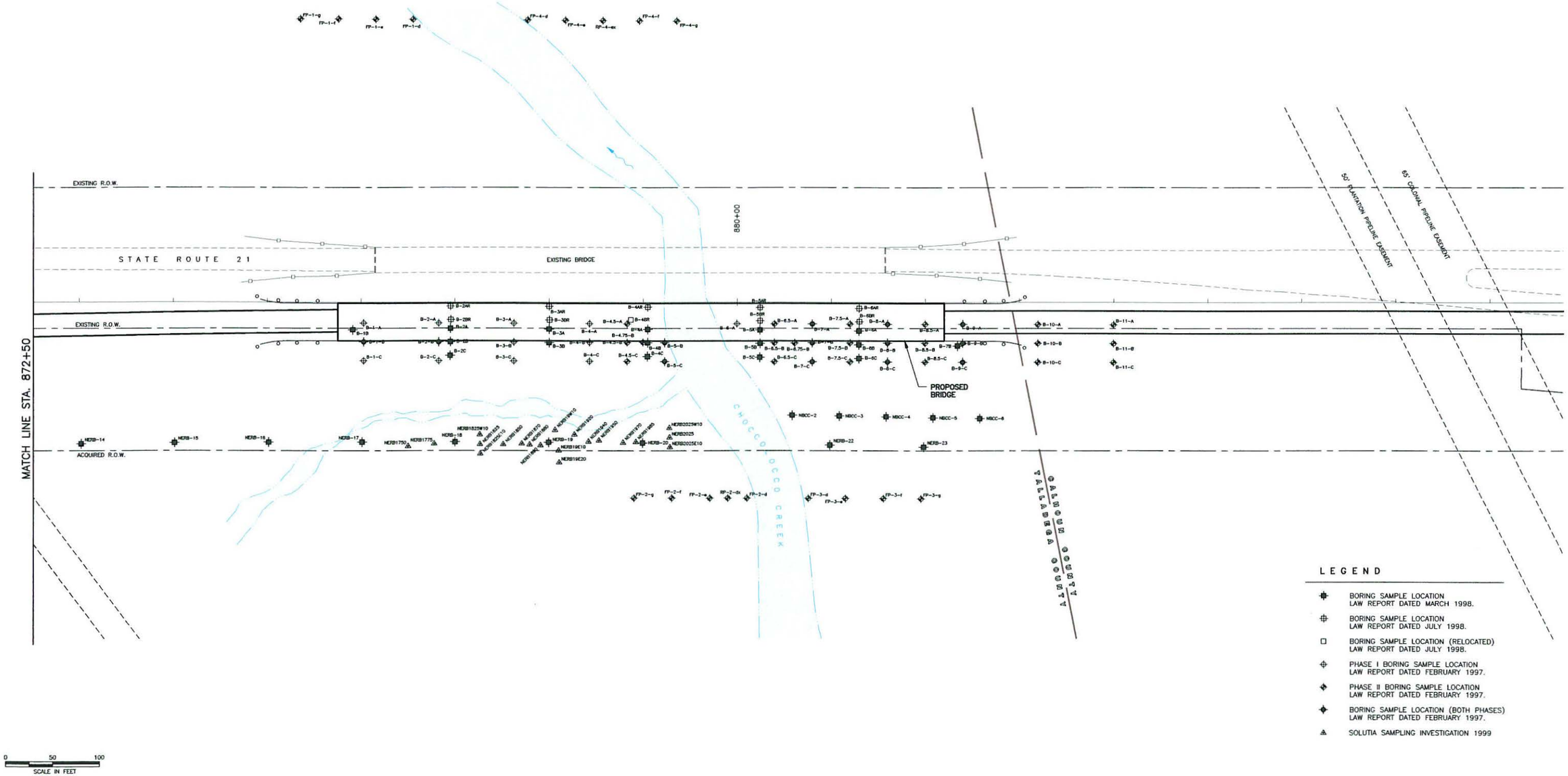

REV	DESCRIPTION OF REVISION	BY	DATE
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SOLUTIA
300 Birmingham Highway
Anniston, AL 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

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DRAWN BY:	SAF/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
MAIN BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 3 OF 16

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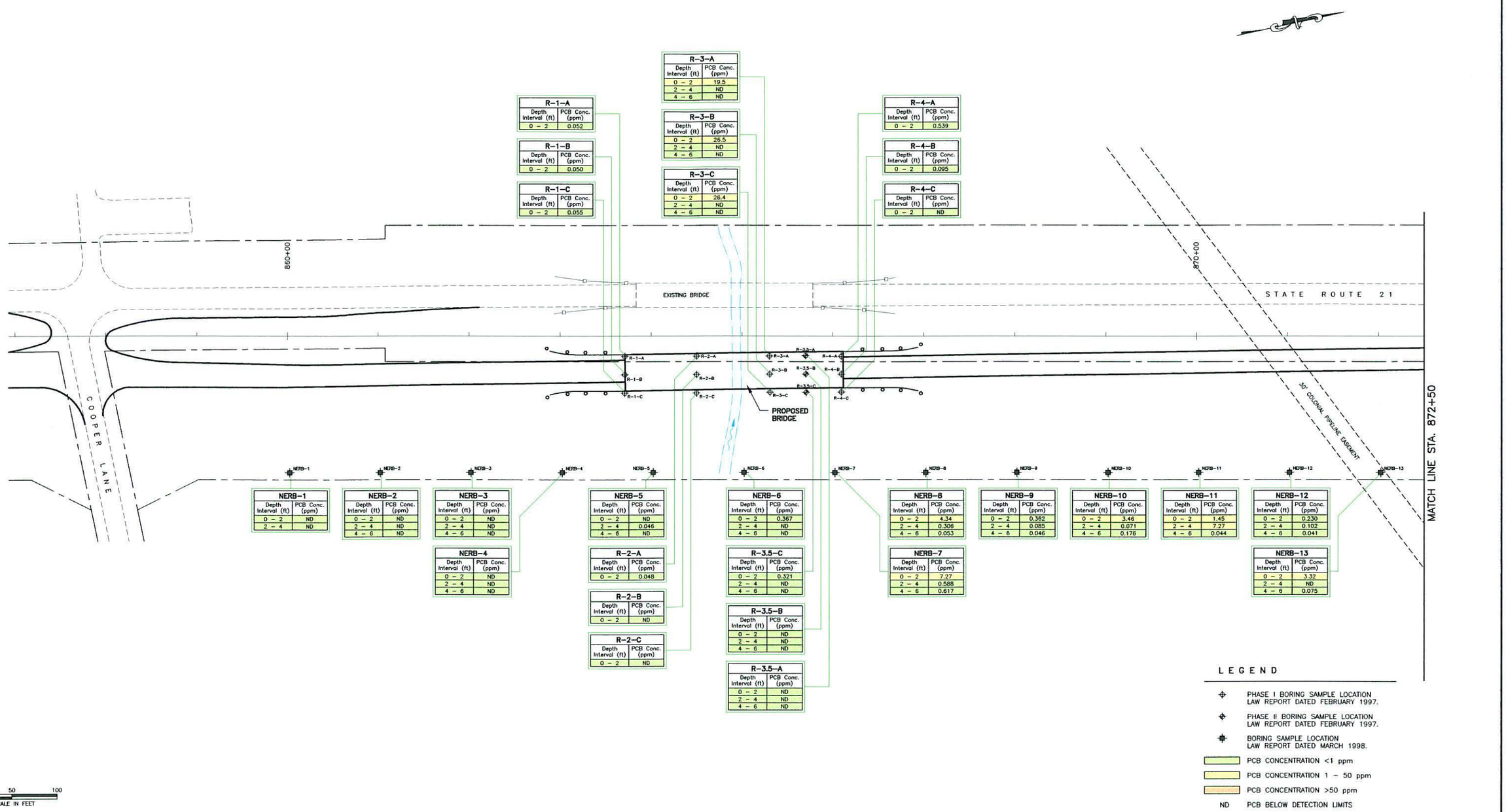

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SOLUTIA
300 Birmingham Highway
Anniston, AL 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED BY:	
DRAWN BY:	SAF/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
RELIEF BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 4 OF 16

FP-1-f	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.61

FP-1-g	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	3.97

FP-1-e	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	15.4

FP-1-d	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	18

FP-4-e	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	2.13

FP-4-d	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	26.4

RP-4-ex	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	3.11

FP-4-f	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.07

FP-4-g	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	1.24

EXISTING R.O.W.

STATE ROUTE 21

EXISTING R.O.W.

MATCH LINE STA. 872+50

FOR SAMPLING DATA WITHIN THIS SHADED AREA SEE SHEET 6 OF 14

880+00

EXISTING BRIDGE

PROPOSED BRIDGE

FOR SAMPLING DATA WITHIN THIS SHADED AREA SEE SHEET 8 OF 14

50' PLANTATION PIPELINE EASEMENT

65' COLONIAL PIPELINE EASEMENT

CHOCCOLOCCO CREEK

TALLADEGA COUNTY

GALHOUN COUNTY

ACQUIRED R.O.W.

NERB-14 NERB-15 NERB-16

FOR SAMPLING DATA WITHIN THIS SHADED AREA SEE SHEET 7 OF 14

FOR SAMPLING DATA WITHIN THIS SHADED AREA SEE SHEET 9 OF 14

NERB-14	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	24.80
2 – 4	0.321
4 – 6	0.446

NERB-15	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	31.80
2 – 4	0.292
4 – 6	0.649

NERB-16	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	6.43
2 – 4	5.55
4 – 6	0.786

FP-2-g	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	11.8

FP-2-f	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	8.25

FP-2-e	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	10.1

RP-2-dx	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	9.19

FP-3-d	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.254

FP-3-e	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	22.7

FP-2-d	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND

FP-3-g	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND

FP-3-f	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.09

0 50 100
SCALE IN FEET

LEGEND

- BORING SAMPLE LOCATION LAW REPORT DATED MARCH 1998.
- BORING SAMPLE LOCATION LAW REPORT DATED JULY 1998.
- BORING SAMPLE LOCATION (RELOCATED) LAW REPORT DATED JULY 1998.
- PHASE I BORING SAMPLE LOCATION LAW REPORT DATED FEBRUARY 1997.
- PHASE II BORING SAMPLE LOCATION LAW REPORT DATED FEBRUARY 1997.
- BORING SAMPLE LOCATION (BOTH PHASES) LAW REPORT DATED FEBRUARY 1997.
- SOLUTIA SAMPLING INVESTIGATION 1999
- PCB CONCENTRATION <1 ppm
- PCB CONCENTRATION 1 – 50 ppm
- PCB CONCENTRATION >50 ppm
- ND PCB BELOW DETECTION LIMITS

REV	DESCRIPTION OF REVISION	BY	DATE
0			

DATE: FEB 22, 2000 TIME: 10:16 AM PLOT #: 19 DRAWING NAME: C4971-1425.DWG

SOLUTIA
300 Birmingham Highway
Anniston, AL 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED BY:	
DRAWN BY:	SAF/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
MAIN BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 5 OF 16

STATE ROUTE 21

EXISTING BRIDGE

880+00

BENT 1 | BENT 2 | BENT 3 | BENT 4 | BENT 5

LIMITS OF BENT EXCAVATION (TYP.)

PROPOSED BRIDGE

CHOCCOLOCCO CREEK

B-2-A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	1.7

B-2-B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	9.034
2 – 4	0.099
4 – 6	ND

B-2-C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.240

B-2BR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	1.33
2 – 4	ND
4 – 6	ND
6 – 8	ND
8 – 10	ND

B-2AR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.93
2 – 4	ND
4 – 6	ND
6 – 8	ND
8 – 10	ND

B-3AR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	22.20
2 – 4	0.057
4 – 6	0.124
6 – 8	ND
8 – 10	ND

B-3BR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.70
2 – 4	ND
4 – 6	ND
6 – 8	ND
8 – 10	ND

B-4-C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	3.97

B-4-B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	1.98

B-4-A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND

B-4BR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	32.90
2 – 4	9.08
4 – 6	ND
6 – 8	ND
8 – 10	ND

B-4.75-B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	3.72

B-4AR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	8.17
2 – 4	4.81
4 – 6	ND
6 – 8	ND
8 – 10	ND

B-5-B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	30.7
2 – 4	1.4
4 – 6	0.122

B-5-C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	33.7
2 – 4	1.3
4 – 6	0.051

B-1-A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.082

B-1B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.330
2 – 4	0.202
4 – 6	0.193
6 – 8	ND
8 – 10	ND

B-1-B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	9.72
2 – 4	0.125
4 – 6	ND

B-1-C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND

B-2C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	11.10
2 – 4	0.260
4 – 6	ND
6 – 8	ND
8 – 10	ND

B-2B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	6.79
2 – 4	ND
4 – 6	0.142
6 – 8	ND
8 – 10	ND

B-2A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND
2 – 4	ND
4 – 6	ND
6 – 8	ND
8 – 10	ND

B-3-C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	3.69

B-3-B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.067

B-3-A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.104

B-3B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	2.54
2 – 4	ND
4 – 6	1.82
6 – 8	ND
8 – 10	ND

B-3A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.512
2 – 4	ND
4 – 6	ND
6 – 8	ND
8 – 10	0.508

B-4.5-A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	38.3
2 – 4	0.728
4 – 6	17.33

B-4.5-B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	8.08
2 – 4	ND
4 – 6	ND

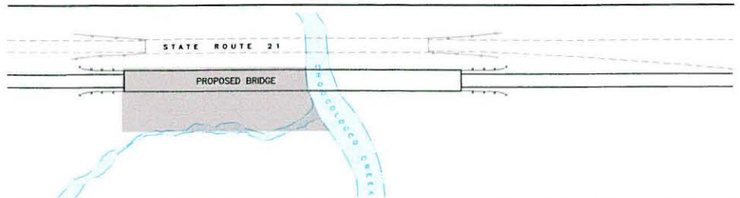
B-4.5-C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	12.4
2 – 4	ND
4 – 6	ND

B-4A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	7.52
2 – 4	2.70
4 – 6	ND
6 – 8	ND
8 – 10	0.109

B-4B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	16.70
2 – 4	ND
4 – 6	ND
6 – 8	ND
8 – 10	0.120

B-4C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	16.90
2 – 4	ND
4 – 6	ND
6 – 8	0.176
8 – 10	ND

RELATIVE SITE LOCATION



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- ND PCB BELOW DETECTION LIMITS

0 20 40
SCALE IN FEET

REV	DESCRIPTION OF REVISION	BY	DATE

SOLUTIA
300 Birmingham Highway
Anniston, Alabama 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

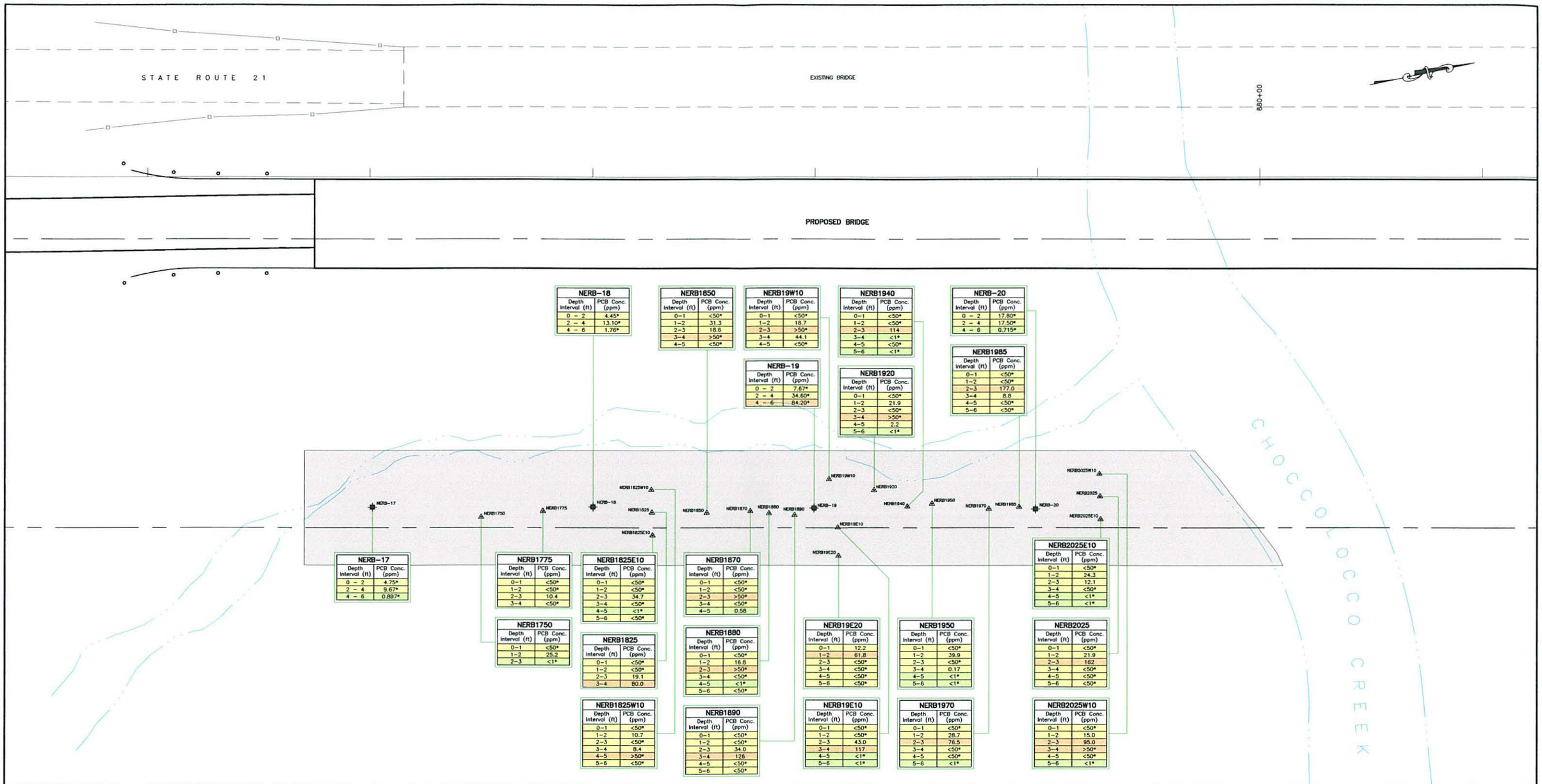
DESIGNED BY:
DRAWN BY: SAF/BH
CHECKED BY:
PEER REVIEWER:
PROJ MANAGER:
DATE: 02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
MAIN BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 6 OF 16

DATE: FEB 23, 2000 TIME: 10:16 AM PLOT # 28 DRAWING NAME: CM97T143S6.DWG



NERB-18	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.45*
2 – 4	13.10*
4 – 6	1.76*

NERB1850	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	31.3
2–3	18.6
3–4	>50*
4–5	<50*

NERB19W10	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	18.7
2–3	>50*
3–4	44.1
4–5	<50*

NERB-19	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	7.67*
2 – 4	34.60*
4 – 6	84.20*

NERB1940	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	114
3–4	<1*
4–5	<50*
5–6	<1*

NERB1920	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	21.9
2–3	<50*
3–4	>50*
4–5	2.2
5–6	<1*

NERB-20	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	17.80*
2 – 4	17.50*
4 – 6	0.715*

NERB1985	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	177.0
3–4	8.8
4–5	<50*
5–6	<50*

NERB-17	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.75*
2 – 4	9.67*
4 – 6	0.897*

NERB1775	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	10.4
3–4	<50*

NERB1750	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	25.2
2–3	<1*

NERB1825E10	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	34.7
3–4	<50*
4–5	<1*
5–6	<50*

NERB1825	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	19.1
3–4	80.0

NERB1825W10	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	10.7
2–3	<50*
3–4	8.4
4–5	>50*
5–6	<50*

NERB1870	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	>50*
3–4	<50*
4–5	0.58

NERB1880	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	16.8
2–3	>50*
3–4	<50*
4–5	<1*
5–6	<50*

NERB1890	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	34.0
3–4	126
4–5	<50*
5–6	<50*

NERB19E20	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	12.2
1–2	61.8
2–3	<50*
3–4	<50*
4–5	<50*
5–6	<50*

NERB19E10	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	<50*
2–3	43.0
3–4	117
4–5	<1*
5–6	<1*

NERB1950	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	39.9
2–3	<50*
3–4	0.17
4–5	<1*
5–6	<1*

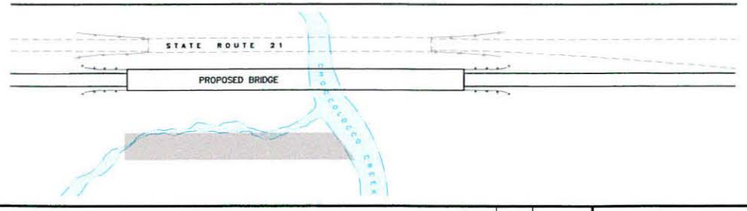
NERB1970	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	28.7
2–3	76.5
3–4	<50*
4–5	<50*
5–6	<1*

NERB2025E10	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	24.3
2–3	12.1
3–4	<50*
4–5	<1*
5–6	<1*

NERB2025	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	21.9
2–3	162
3–4	<50*
4–5	<50*
5–6	<50*

NERB2025W10	
Depth Interval (ft)	PCB Conc. (ppm)
0–1	<50*
1–2	15.0
2–3	95.0
3–4	>50*
4–5	<50*
5–6	<1*

RELATIVE SITE LOCATION



LEGEND

- BORING SAMPLE LOCATION LAW REPORT DATED MARCH 1998.
- SOLUTIA SAMPLING INVESTIGATION 1999
- * INDICATES FIELD SCREENING RESULTS
- PCB CONCENTRATION <1 ppm
- PCB CONCENTRATION 1 – 50 ppm
- PCB CONCENTRATION >50 ppm

0 20 40
SCALE IN FEET

REV	DESCRIPTION OF REVISION	BY	DATE
0			

SOLUTIA
300 Birmingham Highway
Anniston, Alabama 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

DESIGNED BY:	
DRAWN BY:	SAF/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
MAIN BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 7 OF 16

DATE: FEB 23, 2000 TIME: 10:17 AM PLOT #: 26 DRAWING NAME: CMS771-4327.DWG

B–5AR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	15.80
2 – 4	137.00
4 – 6	1.79
6 – 8	ND
8 – 10	0.138

B–5BR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	23.20
2 – 4	6.54
4 – 6	0.400
6 – 8	ND
8 – 10	ND

B–6–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	78.7
2 – 4	54.7
4 – 6	0.431

B–6.5–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.34
2 – 4	23
4 – 6	0.766

B–6.5–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	16.1
2 – 4	29.8
4 – 6	2.34

B–6.5–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	11.2
2 – 4	16.1
4 – 6	2.64

B–6.75–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	7.44

B–7.5–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	6.39
2 – 4	8.34
4 – 6	0.326

B–7.5–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.94
2 – 4	22.4
4 – 6	0.255

B–7.5–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	22.9
2 – 4	3
4 – 6	1.59

B–6AR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	12.70
2 – 4	0.052
4 – 6	ND
6 – 8	ND
8 – 10	ND

B–6BR	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	25.10
2 – 4	0.076
4 – 6	0.053
6 – 8	ND
8 – 10	ND

B–8.5–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.11
2 – 4	ND
4 – 6	ND

B–8.5–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	3.5
2 – 4	ND
4 – 6	ND

B–8.5–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	1.37
2 – 4	ND
4 – 6	ND

B–10–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	1.39
2 – 4	ND

B–10–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND
2 – 4	ND

B–10–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.977
2 – 4	ND

B–5C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	40
2 – 4	142.00
4 – 6	ND
6 – 8	0.070
8 – 10	ND

B–5B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	10.30
2 – 4	105.00
4 – 6	19.00
6 – 8	ND
8 – 10	ND

B–5A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	4.78
2 – 4	94.50
4 – 6	0.397
6 – 8	0.046
8 – 10	ND

B–7–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	68.5
2 – 4	36.7
4 – 6	ND

B–7–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	71.5
2 – 4	20.1
4 – 6	0.141

B–7–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	77.2
2 – 4	0.202
4 – 6	3.59

B–6C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	5.44
2 – 4	0.203
4 – 6	0.139
6 – 8	ND
8 – 10	ND

B–6B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	11.20
2 – 4	0.040
4 – 6	0.067
6 – 8	0.057
8 – 10	ND

B–6A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	12.40
2 – 4	ND
4 – 6	ND
6 – 8	0.212
8 – 10	0.032

B–8–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	88.0
2 – 4	0.055
4 – 6	ND

B–8–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	41.3
2 – 4	0.19
4 – 6	0.475

B–8–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	40.9
2 – 4	0.233
4 – 6	ND

B–7B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.099
2 – 4	ND
4 – 6	ND
6 – 8	ND
8 – 10	ND

B–9–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	5.08
2 – 4	ND
4 – 6	ND

B–9–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.121
2 – 4	ND
4 – 6	0.06

B–9–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.096
2 – 4	ND
4 – 6	ND

B–11–A	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND
2 – 4	ND

B–11–B	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.09
2 – 4	0.043

B–11–C	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	ND
2 – 4	ND

EXISTING BRIDGE

BENT 3

BENT 4

BENT 5

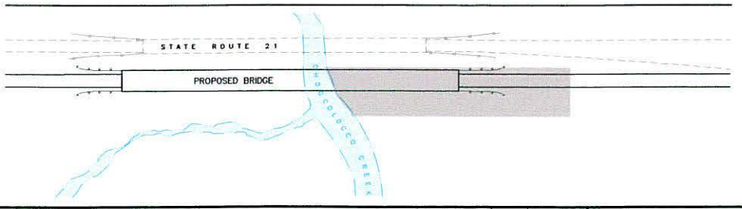
PROPOSED BRIDGE

LIMITS OF BENT EXCAVATION (TYP.)

CHOCCOLOCCO CREEK

SAFFOLD AVENUE

RELATIVE SITE LOCATION



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- ND PCB BELOW DETECTION LIMITS

0 20 40
SCALE IN FEET

REV	DESCRIPTION OF REVISION	BY	DATE

SOLUTIA
300 Birmingham Highway
Anniston, Alabama 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
0 ½ 1
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PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
MAIN BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 8 OF 16

DATE: FEB 23, 2000 TIME: 10:19 AM PLOT #: 20 DRAWING NAME: CMSTT1-4308.DWG

EXISTING BRIDGE

PROPOSED BRIDGE

CHOCCOLOCCO

NBCC–2	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	16.50
2 – 4	40.30

NBCC–3	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	16.40
2 – 4	61.30

NBCC–4	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	3.50
2 – 4	0.248

NBCC–5	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.059
2 – 4	0.088

NBCC–6	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.089
2 – 4	ND

NBCC–2 NBCC–3 NBCC–4 NBCC–5 NBCC–6

GALLOWAY CREEK TRIBUTARY

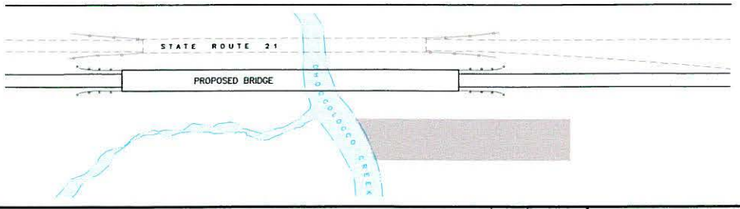
LIMITS OF DITCH EXCAVATION (SEE SHEET 12 OF 14)

NERB–22 NERB–23

NERB–22	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	40.50
2 – 4	5.17
4 – 6	2.73

NERB–23	
Depth Interval (ft)	PCB Conc. (ppm)
0 – 2	0.226
2 – 4	0.043
4 – 6	0.074

RELATIVE SITE LOCATION



LEGEND

- BORING SAMPLE LOCATION LAW REPORT DATED MARCH 1998.
- PCB CONCENTRATION <1 ppm
- PCB CONCENTRATION 1 – 50 ppm
- PCB CONCENTRATION >50 ppm
- ND PCB BELOW DETECTION LIMITS

0 20 40
SCALE IN FEET

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CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
MAIN BRIDGE
PCB SAMPLING LOCATION MAP

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 9 OF 16

DATE: FEB 23, 2000 TIME: 10:19 AM PLOT #: 27 DRAWING NAME: DWT71-4329.DWG

LEGEND

WOODED AREAS TO BE CLEARED (APPROXIMATELY 6.2 ACRES TOTAL) (SEE NOTE 3)

NOTES

1. TREES WILL BE CLEARED WITHIN THE CONSTRUCTION R.O.W. BY CUTTING AT OR NEAR GROUND SURFACE.
2. THE TREES WILL BE REDUCED TO CHIPS THAT WILL BE SPREAD OVER AN AREA WITHIN THE R.O.W., BUT OUTSIDE THE PROPOSED ROADWAY EMBANKMENT.
3. EXACT EXTENTS REQUIRING CLEARING TO BE FIELD DETERMINED.

0 100 200
SCALE IN FEET

REV	DESCRIPTION OF REVISION	BY	DATE
0			

DATE: FEB 23, 2000 TIME: 12:19 PM PLOT #: 42 DRAWING NAME: CMCLEARING.DWG

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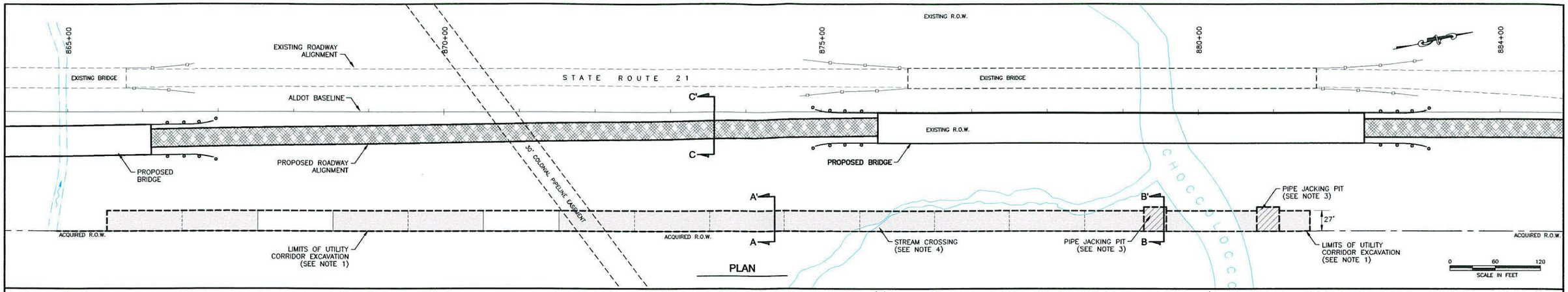
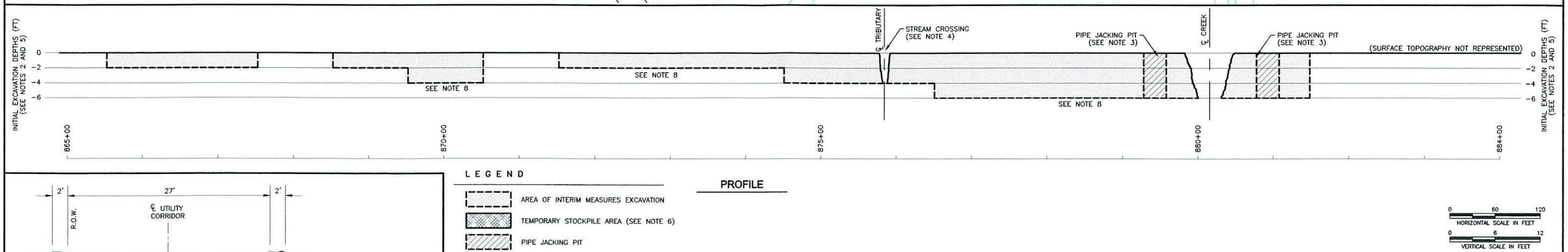
CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
CLEARING AREA

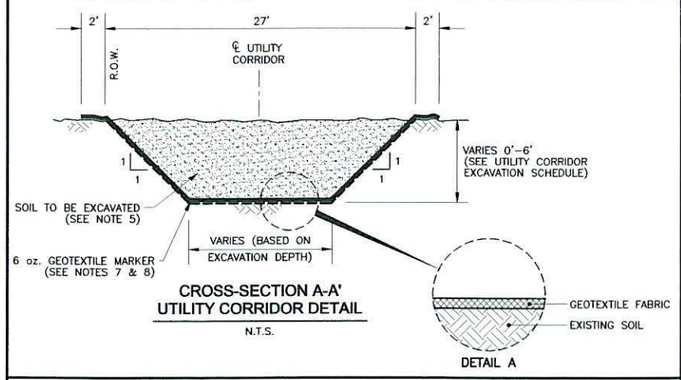
REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 10 OF 16





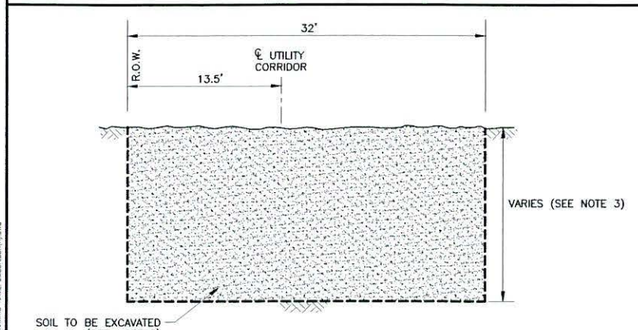
LEGEND

- AREA OF INTERIM MEASURES EXCAVATION
- TEMPORARY STOCKPILE AREA (SEE NOTE 6)
- PIPE JACKING PIT



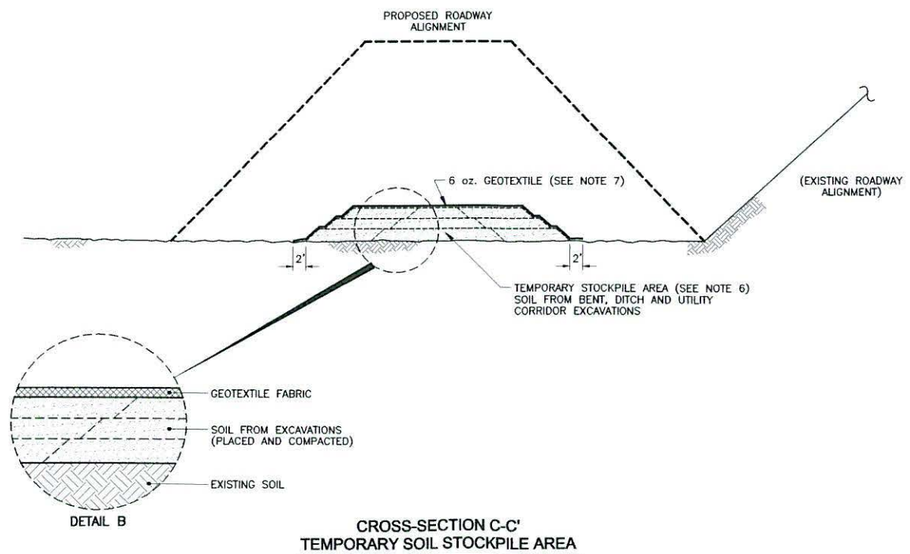
CROSS-SECTION A-A'
UTILITY CORRIDOR DETAIL

N.T.S.



CROSS-SECTION B-B'
PIPE JACKING PIT

N.T.S.



CROSS-SECTION C-C'
TEMPORARY SOIL STOCKPILE AREA

N.T.S.

NOTES

1. UTILITY CORRIDOR EXCAVATION WILL BE PERFORMED ADJACENT TO THE EAST RIGHT OF WAY LINE USING A SURFACE WIDTH OF 27 FEET AND 1:1 SIDE SLOPES.
2. CONFIRMATION SOIL SAMPLING WILL BE PERFORMED IN THE UTILITY TRENCH AFTER INITIAL EXCAVATION TO VERIFY THAT SOILS REMAINING IN THE FLOOR OF THE EXCAVATION HAVE PCB CONCENTRATIONS AT OR BELOW 1 mg/kg. SHOULD CONFIRMATION SAMPLING INDICATE PCB LEVELS EXCEED 1 mg/kg, AN ADDITIONAL ONE FOOT WILL BE EXCAVATED TO A MAXIMUM OF 6 FEET BELOW GRADE. ONCE EXCAVATION DEPTHS IN THE TRENCH REACH SIX FEET, NO FURTHER EXCAVATION WILL BE PERFORMED.
3. CONFIRMATION SAMPLING WILL BE PERFORMED IN THE FLOOR OF THE PIPE JACKING PITS TO IDENTIFY EXCAVATION DEPTH REQUIRED TO ACHIEVE PCB CONCENTRATIONS AT OR BELOW 1 mg/kg. FURTHER EXCAVATION WILL BE PERFORMED UNTIL CONFIRMATION SAMPLING DEMONSTRATES PCB LEVELS BELOW 1 mg/kg. IF EXCAVATION REACHES DEPTH REQUIRED FOR PIPE JACKING AND PCB LEVELS ARE GREATER THAN 1 mg/kg, AN ADDITIONAL ONE FOOT WILL BE EXCAVATED AND ONE FOOT OF CLEAN BACKFILL WILL BE PLACED IN THE PIT TO CREATE A CLEAN WORK ZONE.
4. UTILITY CORRIDOR EXCAVATION MAY BE DISCONTINUOUS AT STREAM CROSSING. TO BE FIELD DETERMINED.
5. SOILS WITH PCB CONCENTRATIONS ABOVE 1 mg/kg BUT BELOW 50 mg/kg WILL BE TEMPORARILY STOCKPILED WITHIN THE PROPOSED ROADWAY EMBANKMENT. SOILS WITH PCB CONCENTRATIONS OF 50 mg/kg OR ABOVE WILL BE SEGREGATED AND DISPOSED OF AT AN APPROVED OFFSITE LANDFILL.
6. EXACT LOCATION AND DISTRIBUTION OF SOIL TEMPORARILY STOCKPILED WITHIN THE PROPOSED ROADWAY ALIGNMENT WILL BE FIELD DETERMINED.
7. EDGES OF GEOTEXTILE TO BE SANDBAGGED FOR TEMPORARY ANCHORING. ADDITIONAL SANDBAGGING AS REQUIRED.
8. GEOTEXTILE MARKER WILL BE INSTALLED ONLY IN AREAS WHERE UTILITY CORRIDOR EXCAVATION DEPTH IS 6 FEET.

UTILITY CORRIDOR EXCAVATION SCHEDULE

Road Station Alignment*	to	Road Station Alignment*	Interval Centered on	Depth (ft)	Activity (see note 5)
865+52	to	866+52	NERB 7	0–2	On–Site Stockpile
866+52	to	867+52	NERB 8	0–2	On–Site Stockpile
868+52	to	869+52	NERB 10	0–2	On–Site Stockpile
869+52	to	870+52	NERB 11	0–4	On–Site Stockpile
871+52	to	872+52	NERB 13	0–2	On–Site Stockpile
872+52	to	873+52	NERB 14	0–2	On–Site Stockpile
873+52	to	874+51	NERB 15	0–2	On–Site Stockpile
874+51	to	875+51	NERB 16	0–4	On–Site Stockpile
875+51	to	876+51	NERB 17	0–4	On–Site Stockpile
876+51	to	877+50	NERB 18	0–3	On–Site Stockpile
876+51	to	877+50	NERB 18	3–5	Off–Site TSCA Landfill
876+51	to	877+50	NERB 18	5–6	On–Site Stockpile
877+50	to	878+50	NERB 19	0–2	On–Site Stockpile
877+50	to	878+50	NERB 19	2–6	Off–Site TSCA Landfill
878+50	to	879+50	NERB 20	0–2	On–Site Stockpile
878+50	to	879+50	NERB 20	2–4	Off–Site TSCA Landfill
878+50	to	879+50	NERB 20	4–6	On–Site Stockpile
879+50	to	881+48	NERB 22	0–6	On–Site Stockpile

* Station alignments are projected from ALDOT baseline to the utility corridor. Utility corridor width extends from the east right–of–way line to 27' inside the east right–of–way line. Final survey required prior to construction.

REV	DESCRIPTION OF REVISION	BY	DATE

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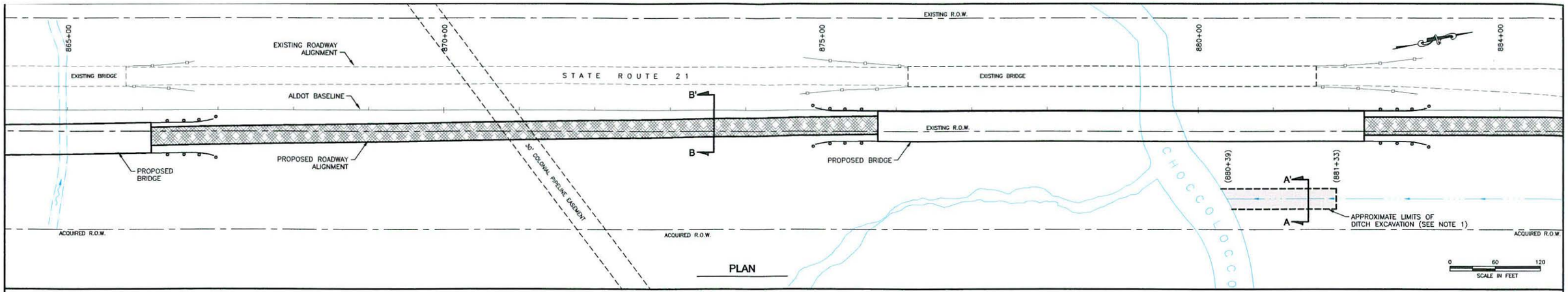
PROJ MANAGER:	
DATE:	02/23/00

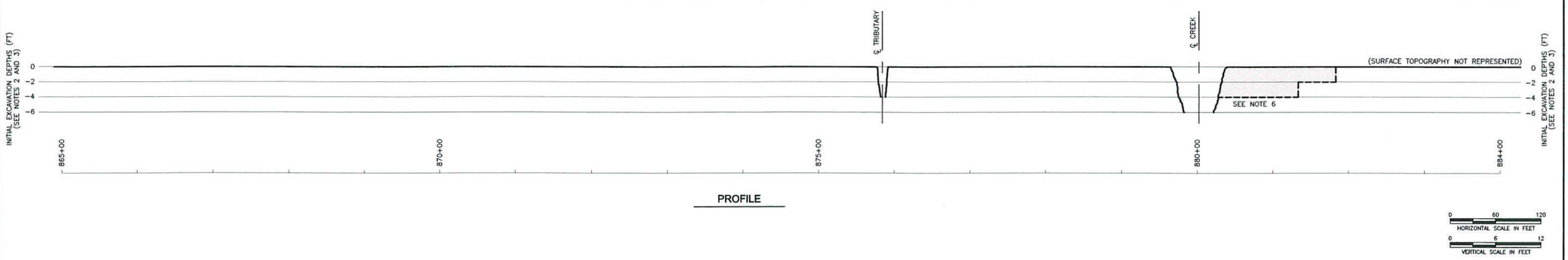
CHOCCOLOCCO CREEK
OXFORD, ALABAMA

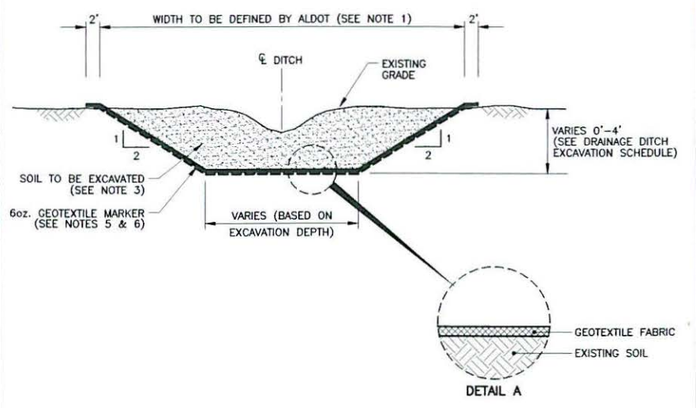
CORRECTIVE MEASURES STUDY
UTILITY CORRIDOR EXCAVATION
DETAILS

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 11 OF 16

DATE: FEB 23, 2000 TIME: 10:23 AM PLOT #: 1 DRAWING NAME: CMCORDDETAIL.DWG

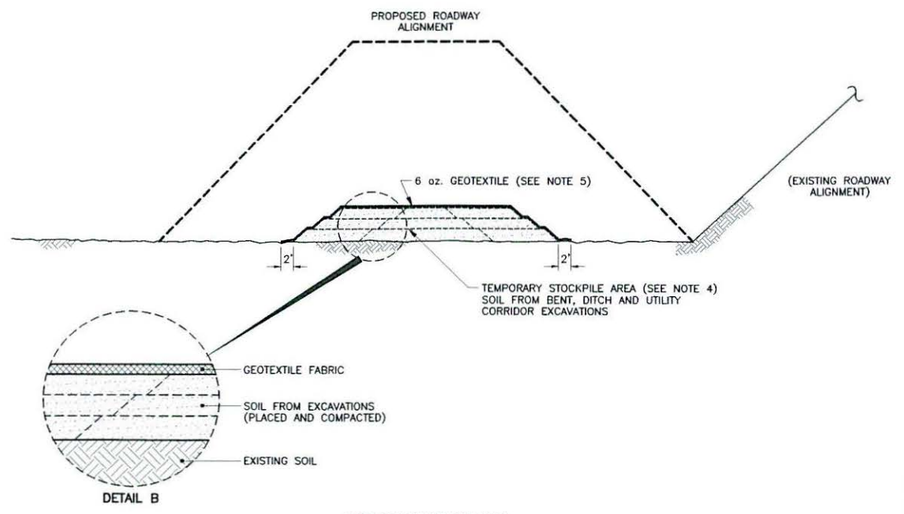






CROSS-SECTION A-A'
DITCH EXCAVATION SECTION
STA. 880+39 TO STA. 881+83

N.T.S.



CROSS-SECTION B-B'
TEMPORARY SOIL STOCKPILE AREA

N.T.S.

LEGEND

AREA OF INTERIM MEASURES EXCAVATION

TEMPORARY STOCKPILE AREA (SEE NOTE 4)

NOTES

1. DRAINAGE DITCH EXCAVATION WILL BE PERFORMED ALONG THE CENTERLINE OF THE DRAINAGE DITCH (SEE ALDOT DRAWING FOR CENTERLINE OF DITCH). THE DITCH EXCAVATION SURFACE WIDTH WILL BE DEFINED BY ALDOT AND WILL UTILIZE 2:1 SIDE SLOPES.
2. CONFIRMATION SOIL SAMPLING WILL BE PERFORMED IN THE DITCH TRENCH AFTER INITIAL EXCAVATION TO VERIFY THAT SOILS REMAINING IN THE FLOOR OF THE EXCAVATION HAVE PCB CONCENTRATIONS AT OR BELOW 1 mg/kg. SHOULD CONFIRMATION SAMPLING INDICATE PCB LEVELS EXCEED 1 mg/kg, AN ADDITIONAL ONE FOOT WILL BE EXCAVATED TO A MAXIMUM OF 4 FEET BELOW GRADE. TOTAL EXCAVATION DEPTHS WILL NOT EXCEED 4 FEET BELOW GRADE.
3. SOILS WITH PCB CONCENTRATIONS ABOVE 1 mg/kg BUT BELOW 50 mg/kg WILL BE TEMPORARILY STOCKPILED WITHIN THE PROPOSED ROADWAY EMBANKMENT. SOILS WITH PCB CONCENTRATIONS OF 50 mg/kg OR ABOVE WILL BE SEGREGATED AND DISPOSED OF AT AN APPROVED OFFSITE LANDFILL.
4. EXACT LOCATION AND DISTRIBUTION OF SOIL TEMPORARILY STOCKPILED WITHIN THE PROPOSED ROADWAY ALIGNMENT WILL BE FIELD DETERMINED.
5. EDGES OF GEOTEXTILE TO BE SANDBAGGED FOR TEMPORARY ANCHORING. ADDITIONAL SANDBAGGING AS REQUIRED. OVERLAP BETWEEN GEOTEXTILE PANELS WILL BE AT LEAST 1 FOOT AND IN THE DIRECTION OF THE OVERLAND FLOW
6. GEOTEXTILE MARKER WILL BE INSTALLED WHERE DITCH EXCAVATION DEPTH IS 4 FEET.

DRAINAGE DITCH EXCAVATION SCHEDULE

Road Station Alignment*	to	Road Station Alignment*	Interval Centered on	Depth (ft)	Activity
880+39	to	880+83	NBCC−2	0−4	On−Site Stockpile
880+83	to	881+33	NBCC−3	0−2	On−Site Stockpile
880+83	to	881+33	NBCC−3	2−4	Off−Site TSCA Landfill
881+33	to	881+83	NBCC−4	0−2	On−Site Stockpile

* Station alignments are projected from ALDOT baseline to the drainage ditch excavation. Refer to ALDOT drawings for exact ditch alignment. Final survey required prior to construction.

REV	DESCRIPTION OF REVISION	BY	DATE

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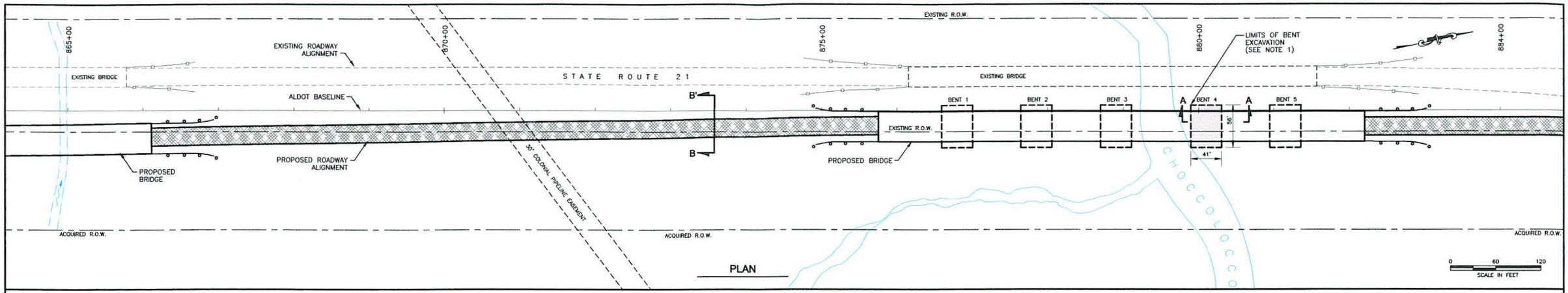
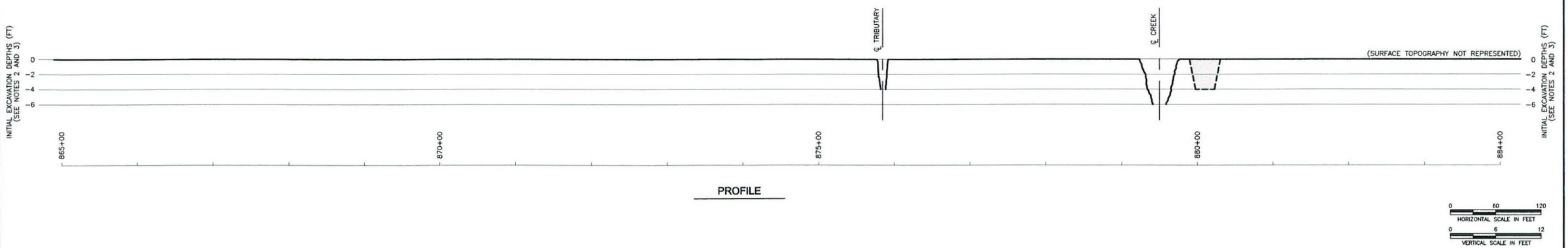
OXFORD, ALABAMA

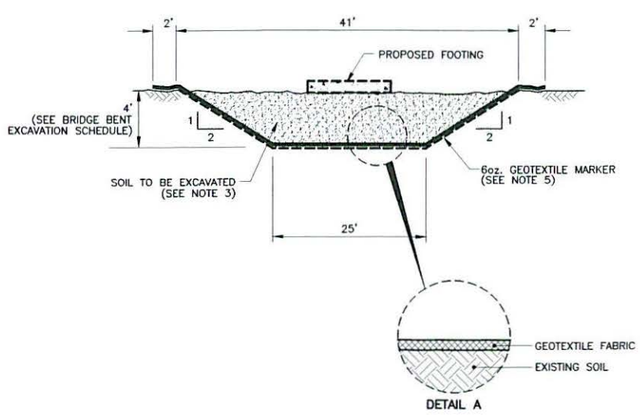
CORRECTIVE MEASURES STUDY
DITCH EXCAVATION
DETAILS

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 12 OF 16

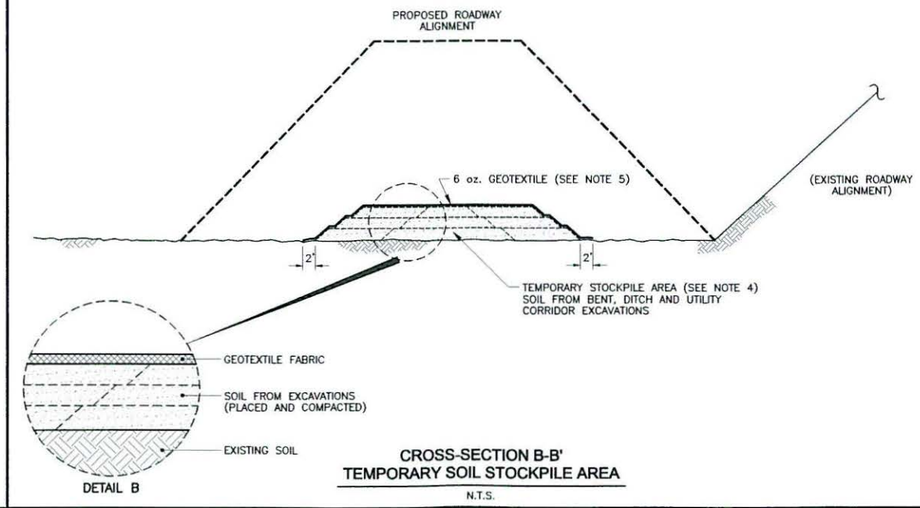
DATE: FEB 23, 2000 TIME: 10:24 AM PLOT #: 59 DRAWING NAME: CMDITCH12.DWG







CROSS-SECTION A-A'
BRIDGE BENT EXCAVATION
N.T.S.



CROSS-SECTION B-B'
TEMPORARY SOIL STOCKPILE AREA
N.T.S.

LEGEND

- AREA OF INTERIM MEASURES EXCAVATION
- TEMPORARY STOCKPILE AREA (SEE NOTE 4)

NOTES

1. BRIDGE BENT EXCAVATION WILL BE PERFORMED AS INDICATED WITH MAXIMUM HORIZONTAL EXTENTS OF 56' BY 41' AT THE SURFACE AND 2:1 SIDE SLOPES.
2. CONFIRMATION SOIL SAMPLING WILL TAKE PLACE AFTER INITIAL EXCAVATION TO VERIFY THAT SOILS REMAINING IN THE FLOOR OF THE EXCAVATION HAVE PCB CONCENTRATIONS BELOW 50 mg/kg. SHOULD CONFIRMATION SAMPLING INDICATE PCB LEVELS EXCEED 50 mg/kg, EXCAVATION WILL CONTINUE UNTIL CONCENTRATIONS ARE BELOW 50 mg/kg.
3. SOILS WITH PCB CONCENTRATIONS ABOVE 1 mg/kg BUT BELOW 50 mg/kg WILL BE PLACED WITHIN THE PROPOSED ROADWAY EMBANKMENT. SOILS WITH PCB CONCENTRATIONS OF 50 mg/kg OR ABOVE WILL BE SEGREGATED AND DISPOSED OF AT AN APPROVED OFFSITE LANDFILL.
4. EXACT LOCATION AND DISTRIBUTION OF SOIL TEMPORARILY STOCKPILED WITHIN THE PROPOSED ROADWAY ALIGNMENT WILL BE FIELD DETERMINED.
5. EDGES OF GEOTEXTILE TO BE SANDBAGGED FOR TEMPORARY ANCHORING. ADDITIONAL SANDBAGGING AS REQUIRED.

BRIDGE BENT EXCAVATION SCHEDULE

Bridge Bent	Road Station Alignment*	Depth (ft)	Activity
Bent #4	880+10	0−4	Off−Site TSCA Landfill

* Station alignments are projected from ALDOT baseline to the center point of bridge bent excavations. Final survey required prior to construction.

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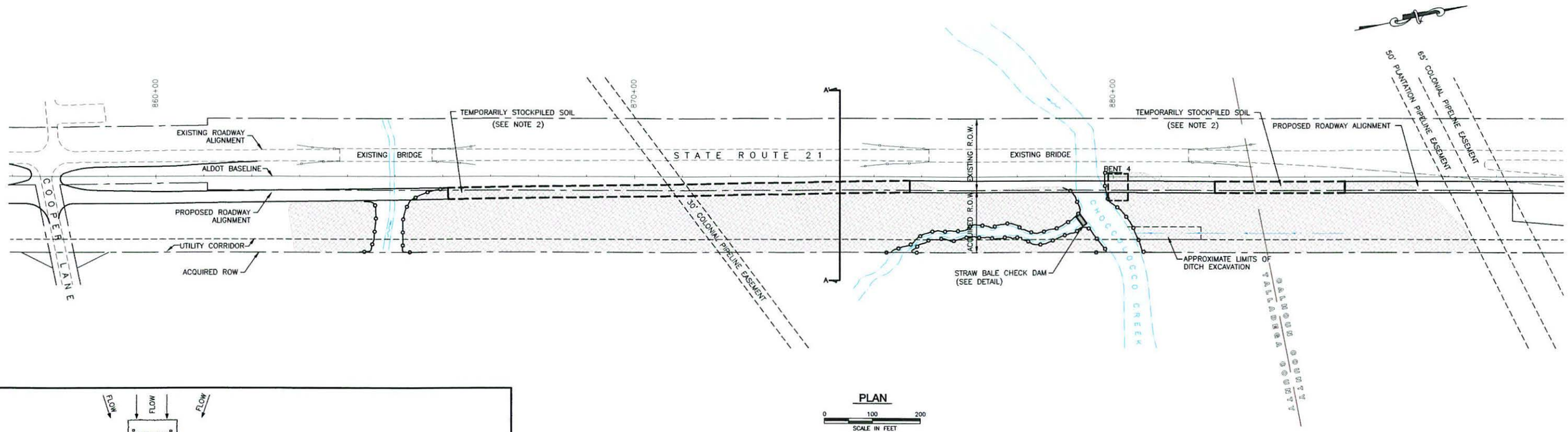
CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
BRIDGE BENT EXCAVATION
DETAILS

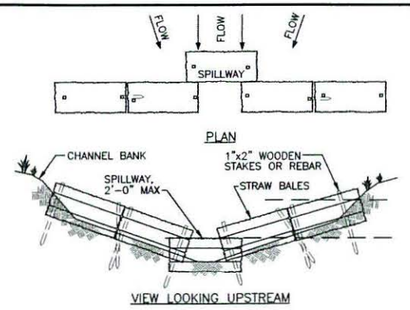
REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 13 OF 16

DATE: FEB 23, 2000 TIME: 12:25 PM PLOT # XLS DRAWING NAME: DWG\BTEXA.DWG



PLAN

0 100 200
SCALE IN FEET



STRAW BALE CHECK DAM DETAIL

N.T.S.

NOTES

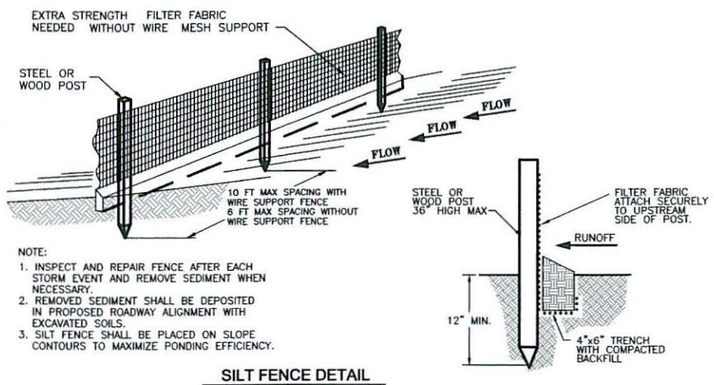
1. EMBED BALES 4 INCHES INTO THE SOIL AND KEY BALES INTO THE CHANNEL BANKS.
2. PLACE BALES PERPENDICULAR TO THE FLOW WITH ENDS TIGHTLY ABUTTING. USE STRAW, ROCKS, OR FILTER FABRIC TO FILL ANY GAPS AND TAMP BACKFILL MATERIAL TO PREVENT EROSION OR FLOW AROUND THE BANKS.
3. SPILLWAY HEIGHT NOT TO EXCEED 2 FEET.
4. INSPECT AFTER EACH SIGNIFICANT STORM, MAINTAIN AND REPAIR PROMPTLY.

LEGEND

- 6 oz. GEOTEXTILE (SEE NOTE 1) (APPROXIMATELY 7.0 ACRES TOTAL)
- SILT FENCE (SEE NOTE 3)
- TEMPORARY STOCKPILE AREA (SEE NOTE 2)
- CHECK DAM

NOTES

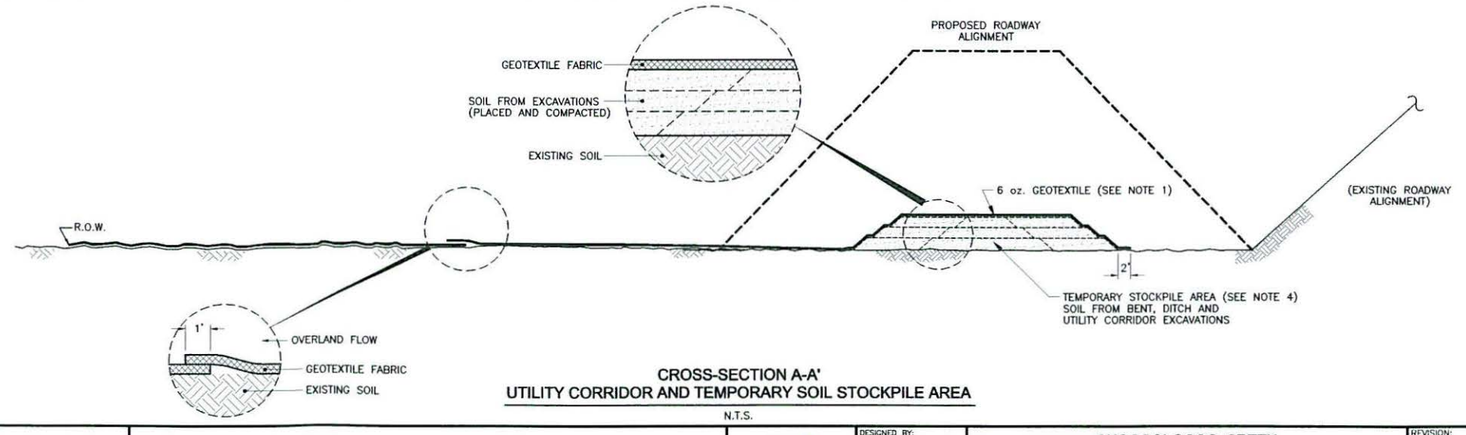
1. SAND BAG AS NECESSARY TO HOLD IN PLACE. OVERLAP OF GEOTEXTILE PANELS SHALL BE AT LEAST 1 FOOT AND IN THE DIRECTION OF OVERLAND FLOW.
2. EXACT LOCATION, DISTRIBUTION AND EROSION PROTECTION OF SOIL TEMPORARILY STOCKPILED WITHIN THE PROPOSED ROAD ALIGNMENT WILL BE FIELD DETERMINED.
3. TURN THE ENDS OF THE SILT FENCE UPHILL.
4. EXACT LOCATION AND DISTRIBUTION OF SOIL TEMPORARILY STOCKPILED WITHIN THE PROPOSED ROADWAY ALIGNMENT WILL BE FIELD DETERMINED.



NOTE:
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED IN PROPOSED ROADWAY ALIGNMENT WITH EXCAVATED SOILS.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

SILT FENCE DETAIL

TRENCH WITH NATIVE BACKFILL
N.T.S.



CROSS-SECTION A-A'
UTILITY CORRIDOR AND TEMPORARY SOIL STOCKPILE AREA

N.T.S.

REV	DESCRIPTION OF REVISION	BY	DATE
0			

DATE: FEB 23, 2000 TIME: 11:29 AM DRAWING NAME: EMSROSION(A).DWG PLOT #: 61

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300 Birmingham Highway
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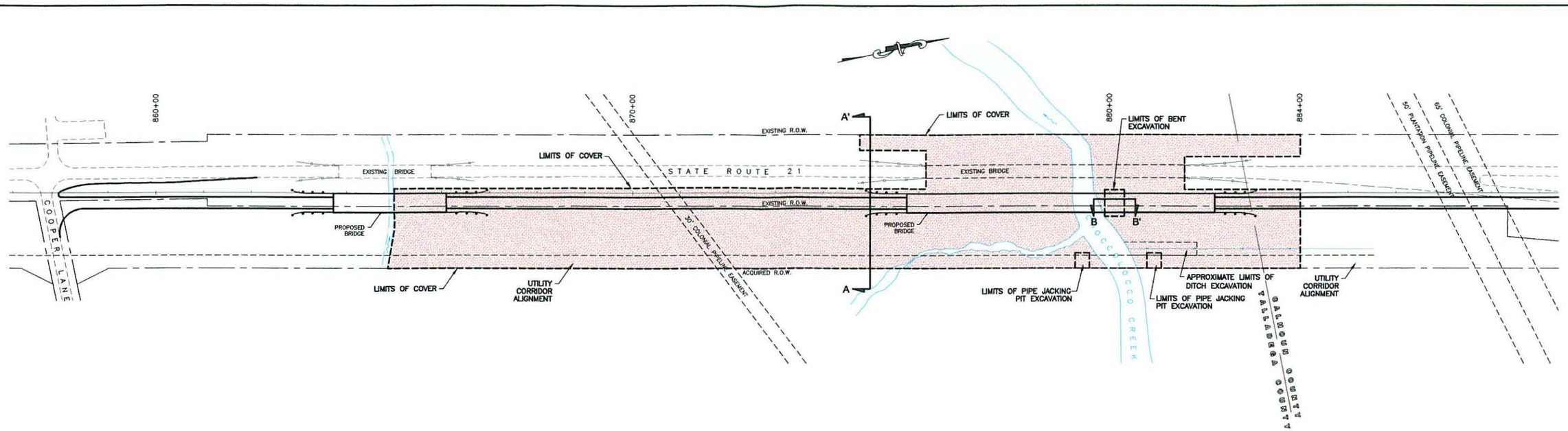
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

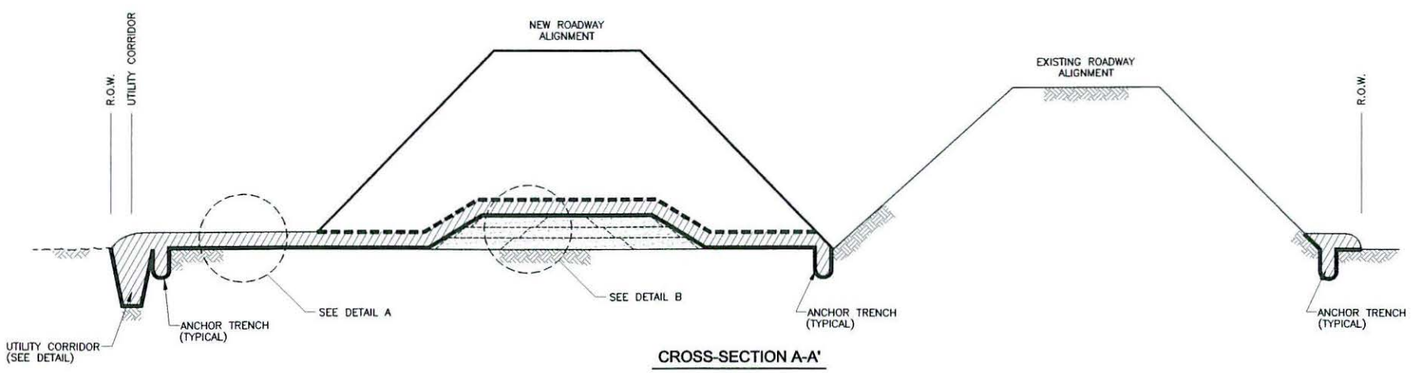
CORRECTIVE MEASURES STUDY
EROSION AND SEDIMENT CONTROLS

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 14 OF 16



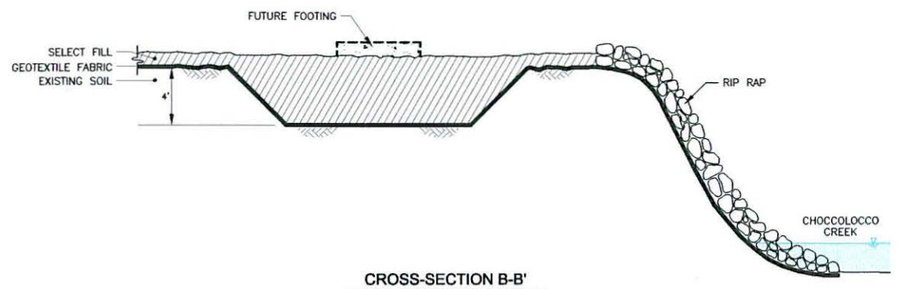
PLAN VIEW

0 100 200
SCALE IN FEET



CROSS-SECTION A-A'

N.T.S.

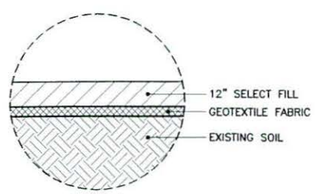


CROSS-SECTION B-B'
FOUNDATION EXCAVATION

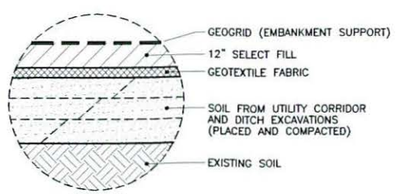
N.T.S.

NOTES

1. ALL SOILS WITHIN THE PROPOSED ROADWAY EMBANKMENT, INCLUDING THE 12" SELECT BACKFILL AND SOIL FROM UTILITY CORRIDOR AND DITCH EXCAVATIONS, SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR (D698) MAXIMUM DENSITY WITH MOISTURE CONTENT OF ±2% OPTIMUM MOISTURE.
2. SOILS WILL BE DRIED USING MECHANICAL MEANS OR BY USE OF ADDITIVES SUCH AS FLYASH, LIME, OR OTHER TO ACHIEVE OPTIMUM MOISTURE CONTENT.
3. GEOTEXTILE FABRIC SHALL BE 6-oz. NON-WOVEN.
4. SPECIFICATIONS FOR GEOGRID MATERIAL SHALL BE PROVIDED BY ALDOT.



DETAIL A



DETAIL B

NOTES

1. GEOTEXTILE FABRIC SHALL BE 6-oz. NON-WOVEN.
2. RIP RAP SHALL BE INSTALLED ON BOTH SIDES OF CHOCCOLOCCO CREEK.
3. RIP RAP TO MEET APPLICABLE ALDOT SPECIFICATIONS.

REV	DESCRIPTION OF REVISION	BY	DATE
0			

SOLUTIA
300 Birmingham Highway
Anniston, AL 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

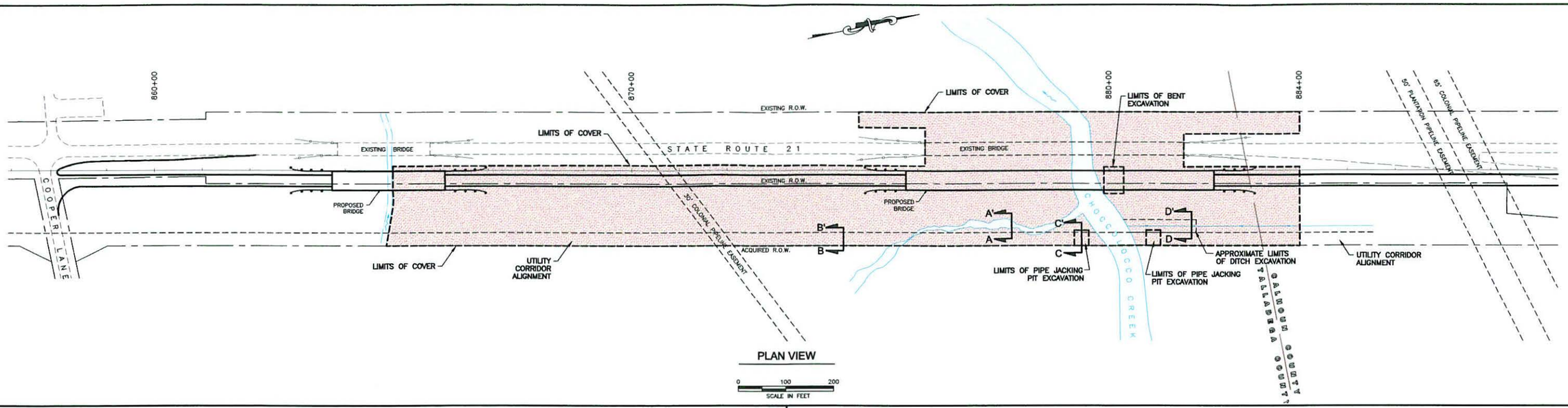
DESIGNED BY:	
DRAWN BY:	SLJ/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
PROPOSED COVER

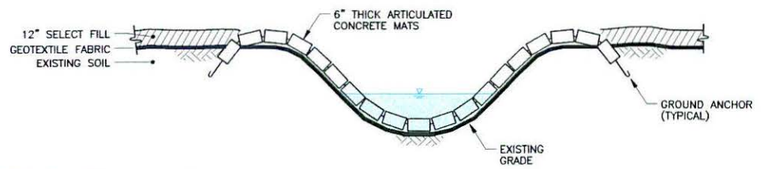
REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 15 OF 16

DATE: FEB 23, 2000 TIME: 11:27 AM PLOT # A1 DRAWING NAME: 97T143ZA1.DWG



PLAN VIEW

0 100 200
SCALE IN FEET

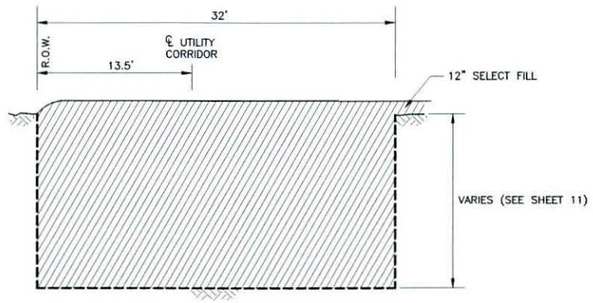


NOTES

1. GEOTEXTILE FABRIC SHALL BE 6-oz. NON-WOVEN.

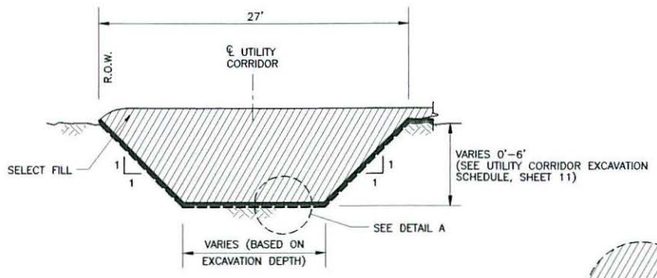
CROSS-SECTION A-A'

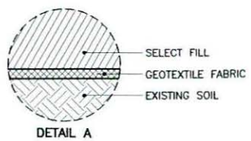
N.T.S.



CROSS-SECTION C-C'
PIPE JACKING PIT

N.T.S.





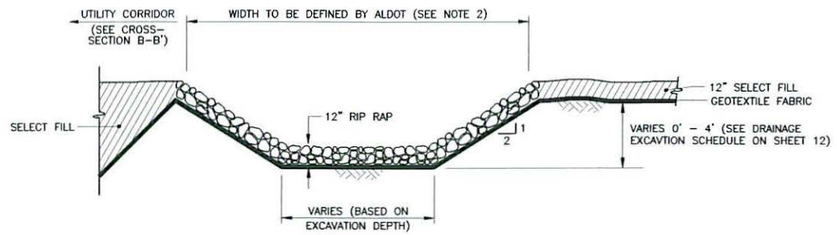
DETAIL A

NOTES

1. GEOTEXTILE FABRIC SHALL BE 6-oz. NON-WOVEN.
2. GEOTEXTILE MARKER WILL BE INSTALLED ONLY WITHIN THE UTILITY CORRIDOR WHERE UTILITY CORRIDOR EXCAVATION IS 6 FEET.

CROSS-SECTION B-B'
UTILITY CORRIDOR DETAIL

N.T.S.



NOTES

1. GEOTEXTILE FABRIC SHALL BE 6-oz. NON-WOVEN.
2. REFER TO ALDOT DRAWINGS FOR EXACT DITCH ALIGNMENT, ELEVATIONS AND DIMENSIONS.
3. RIP RAP TO MEET APPLICABLE ALDOT SPECIFICATIONS.

CROSS-SECTION D-D'
DITCH EXCAVATION SECTION
STA. 881+00 TO STA. 883+50

N.T.S.

REV	DESCRIPTION OF REVISION	BY	DATE

SOLUTIA
300 Birmingham Highway
Anniston, AL 36201

URS Greiner Woodward Clyde
7600 West Tidwell Road, Suite 600
Houston, Texas 77040
United States of America

WARNING
0 ½ 1
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DESIGNED BY:	
DRAWN BY:	SLJ/BH
CHECKED BY:	
PEER REVIEWER:	
PROJ MANAGER:	
DATE:	02/23/00

CHOCCOLOCCO CREEK
OXFORD, ALABAMA

CORRECTIVE MEASURES STUDY
PROPOSED COVER DETAILS

REVISION: 0
PROJECT 460097T143
DRAWING
SHEET 16 OF 16

DATE: FEB 23, 2000 TIME: 11:22 AM PLOT # 29 DRAWING NAME: BFT1432S3.DWG